ALKANE RESOURCES LTD

ABN: 35 000 689 216

Rehabilitation Management Plan

for the

Peak Hill Gold Mine

Prepared by:

RWCorkery&co

November 2022

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DRAFT

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Ref No. 203/19

November 2022

RWCorkery&co

Summary Table

Name of Mine		Peak Hill Gold Mine		
RMP Commencement Date				
Mineral Authorities		ML1351	**Expiry Date**	24 September 2036
		ML1364		25 December 2035
		ML6036		2 June 2037
		ML6042		2 June 2037
		ML6277		2 June 2037
		ML6310		2 June 2037
		ML6389		2 June 2037
		ML6406		13 February 2037
		ML1479		17 January 2043
		GL5884		2 June 2037
Name of Leaseholder		Alkane Resources Ltd		
Version	**Author**	**Purpose**	**Approved by**	**Date of Submission**
0.1	MF	Draft RMP	M. Sutherland	2 July 2022
0.2	MF	Final Draft	M. Sutherland	4 November 2022

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LIST OF ACRONYMS

AHD	Australian Height Datum
DA	Development Application
EPL	Environment Protection Licence
ML	Mining Lease
MOP	Mining Operations Plan
ROM	Run-of-Mine
RMP	Rehabilitation Management Plan
RWC	R.W. Corkery & Co. Pty Limited
TGO	Tomingley Gold Operations

1. Introduction to Mining Project

This Rehabilitation Management Plan (RMP) has been prepared in accordance with the following documents and guidelines.

- *Form and Way: Rehabilitation Management Plan for Large Mines* (October 2022).
- *Form and Way: Rehabilitation Objectives, Rehabilitation Completion Criteria and Final Landform and Rehabilitation Plan for Large Mines* (October 2022).
- *Guideline: Rehabilitation Risk Assessment* (July 2021)
- *Guideline: Rehabilitation Records* (July 2021).
- *Guideline: Rehabilitation Controls* (July 2021)
- *Guideline: Rehabilitation Objectives and Rehabilitation Completion Criteria* (July 2021)

1.1 History of Operations

The Peak Hill Gold Mine (the "Mine") is located directly east and northeast of the township of Peak Hill, NSW (the "Mine Site") (**Figure 1**). The Mine is owned by Alkane Resource Limited ("Alkane") operated as a drill and blast (daylight hours), heap leach operation 1996-2005 and produced 153,657 fine ounces of gold. The site is currently on care and maintenance with the last gold poured on 20 December 2005.

The site maintains an exploration office and core yard off Roose Road.

Alkane also owns and operates the nearby Tomingley Gold Operations gold mine (the "TGO Mine), located approximately 13km north of the Mine Site and in the immediate vicinity of Tomingley village.

The current layout of the Mine Site is shown on **Figure 2.**

1.1.1 Historical Operations

Alluvial gold in drainage channels was discovered at Peak Hill in 1889. The primary lodes from which the alluvial gold originated were discovered a year later and were worked by various methods until 1916. Total gold production between 1890 and 1916 was approximately 67,900 ounces (oz) recovered from approximately 475 000 tonnes (t) of processed ore, indicating an average grade of approximately 4g/t gold.

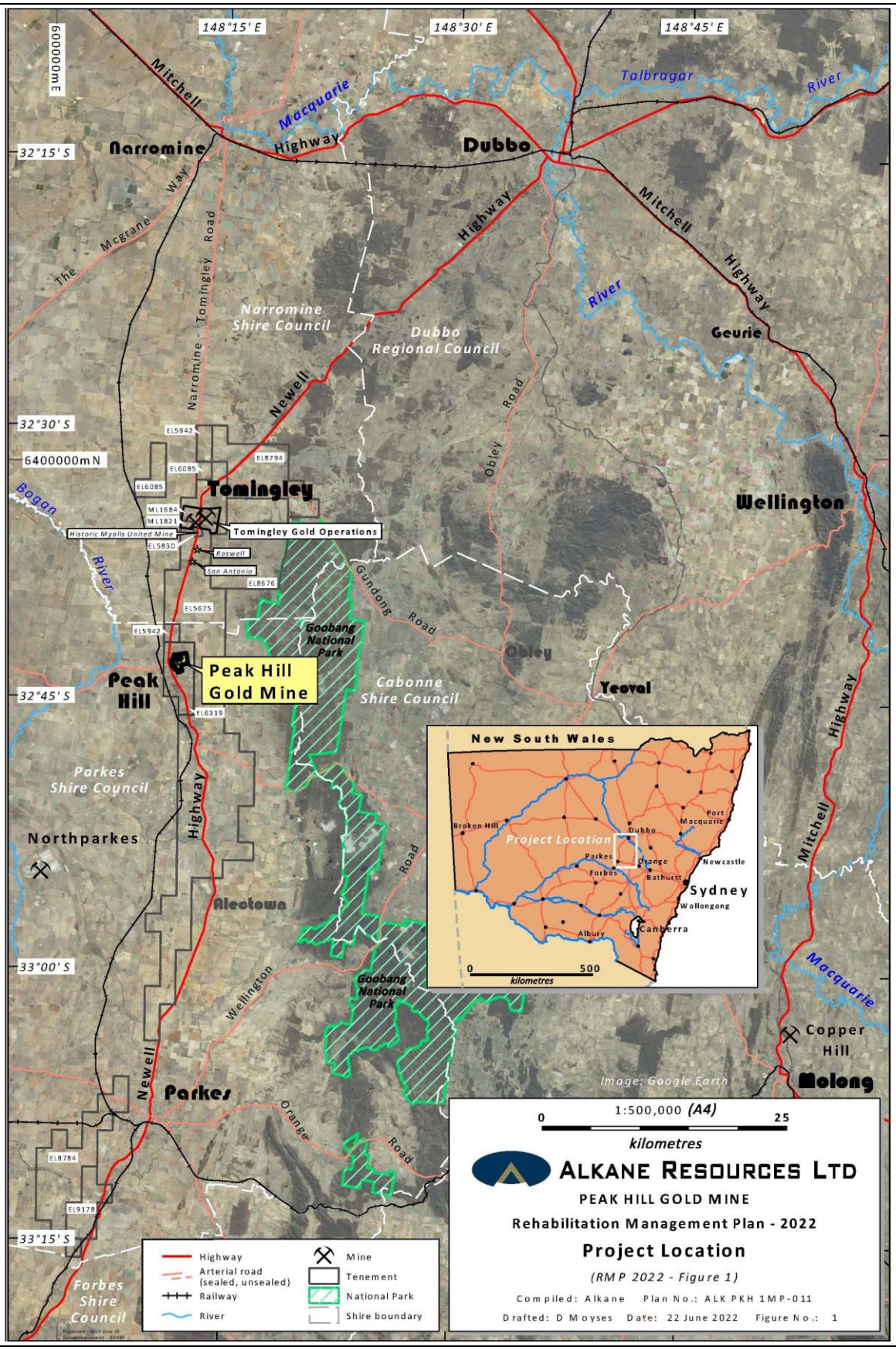


Figure 1
Project Location

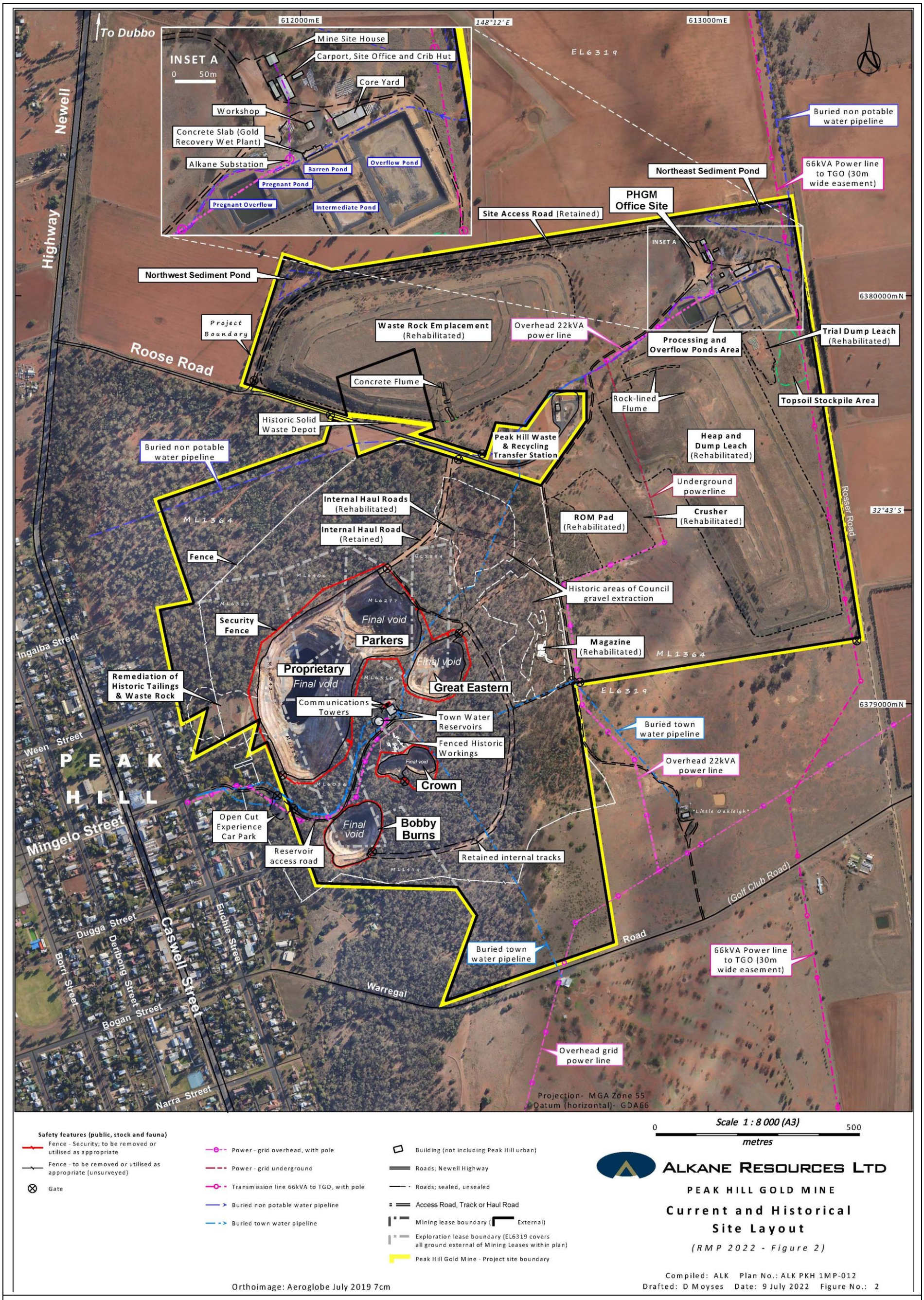


Figure 2
Current and Historical Site Layout

Between 1916 and 1993, mining activity occurred sporadically and to a limited extent. Total gold production in the period between 1939 and 1945 was approximately 1 840oz; by 1965, production had declined to approximately 5oz per annum (RWC, 1993).

Historical mining activities and exploration post-1960 significantly affected the landscape within and in the vicinity of the current Mine Site. A series of waste rock dumps, slag heaps and tailings dams were located sporadically across the landscape. Other evidence of historic activities included derelict mining and processing equipment and extensive glory holes from historical workings.

Other historical activities that are known to have occurred within and in the vicinity of the Mine Site include, but are not limited to, the following.

- Extraction of gravel by various persons/agencies on the northern and eastern slopes of Peak Hill.
- Backfilling of historic workings to improve public safety.
- Soil conservation works in the form of contour banks and waterways.
- Illegal dumping of waste material. For example, two semi-trailer loads of compacted car bodies were removed from the area by Alkane prior to mining recommencing in 1996.
- Mine tailings (three dumps) that were a legacy of mining at Peak Hill (1890-1917) have been removed from Peak Hill (1998-2000) and reprocessed and contained in a tailings facility at the historic McPhail Mine site, located south of Tomingley village (**Figure 1**).

In response to the above, Alkane undertook significant site remediation works prior to and during operation of the Mine.

Management of mining-related heritage items and areas within the Mine Site was and continues to be undertaken in accordance with the *Management Plan for the Mining Heritage of Peak Hill* (Alkane, 1995) (see Section 6.2.1.13).

1.1.2 Exploration

Exploration within and in the vicinity of the Mine Site occurred sporadically between 1963 and 1990 by numerous exploration companies, including Alkane, with exploration intensity increasing during the 1980s.

Alkane obtained development consent (DA648/93) from Parkes Shire Council in September 1993 and commenced construction in February 1996. Near-mine exploration, while the Mine was operational led from the initial development of the Proprietary ore body and subsequently extending to the Parkers, Great Eastern, Bobby Burns, Crown and Parkers Cut Back ore bodies being mined.

Since the Mine moved to care and maintenance in 2005, Alkane has undertaken exploration activities with the aim of assessing all identified exploration targets in the area. The Mine Site is

used as the base of explorations for the Tomingley Gold Extension Project, a State Significant Development located immediately south of the TGO Mine Site. Regional exploration activity (namely between Tomingley village and the township of Peak Hill) is expected to continue throughout the life of the Mine, and exploration personnel will continue to access the Core Yard and Site Offices (see **Figure 2**) as part of ongoing operations.

Given the extent of historic exploration activities in the area, the most prospective targets are either known or expected to occur at depth below the level of previous mining operations. The most recent exploration program for the Mine Site occurred throughout the period between 2018 and 2019 with the aim of further defining the known resources within the Mine Site. Metallurgical test work and resource evaluations continue to be undertaken. However, based on current results, the Mine Site contains a known sulphide resource totalling approximately 4.91Mt grading at 2.05g/t Au and 0.17% Cu (1.0g/t Au cut off).

Current and future exploration activities will concentrate primarily on the extent of mineralisation within and in the vicinity of the Mine Site in consideration of potential future underground mining operations. Exploration activities may include:

- geochemical sampling;
- geological mapping;
- geophysical surveys; and
- diamond and reverse circulation resource and geotech drilling.

1.1.3 Production

The Mine was operated as a drill and blast gold mine throughout the period between 1996 and 2002. Gold was extracted using a heap leach cyanide method and refined on-site to produce gold doré which was despatched for off-site for further refinement and processing. Gold production continued until the last gold was poured 20 December 2005, producing a total of approximately 168,580oz of gold doré.

Gold Production at the Mine from 1996 to 2005 was roughly 153,657 fine ounces from the oxide cap of the large pyrite body at the site mined to a depth of 100m. Processing operations ceased in 2005 when economic gold recovery from the heap leach was exhausted. Since December 2005, the site has since been largely rehabilitated. Rehabilitation of the site currently consists of landform establishment at the heap leach, Waste Rock Emplacement, ROM Pad, and haul roads. The hill at Peak Hill contains five open cut voids and the historic Crown Workings. An area of approximately 8.5ha (under care and maintenance) contains walking trails, a viewing platform, mine relics and interpretive signs. The public access to certain non-operational areas of the Mine Site operated under a Tourist Mine Permit from 2003-2014.

Technological advances and gold prices have made the production of gold from the large sulphide body beneath the oxide cap worth re-evaluating. A 2018 Mineral Resource study inferred a remaining resource of 108,000 ounces of gold below the Proprietary Open Cut. Recent exploration of the Mine includes 10 diamond drill cores on the western edge of the rehabilitated Proprietary Open Cut, angled below historic underground workings. Advanced metallurgical testing and feasibility work is underway to establish whether the ore can be pre-treated and processed at Tomingley Gold Operations.

1.1.4 Mineral Processing

Gold ore was processed on-site using a combination of crushing and agglomeration process and heap leaching. Heap leaching is the process of mass-extraction through the application of a weak dissolving solution to a large amount of ore-bearing material. The historical layout of the Mine Site is shown on **Figure 2**, including the location of key components of the processing.

Approximately 10Mt of rock were mined at the Mine between 1996 and 2002. Approximately 5Mt were classified as oxide ore and sent to leach pads for heap (≥0.75g/t Au) or dump leaching (≤0.4g/t Au - 0.75g/t Au).

For heap leaching, Run-of-Mine (ROM) ore was reclaimed from the ROM Pad and delivered to a series of crushers, consisting of a primary jaw crusher and two cone crushers. Once reduced to ≤7mm, ore was agglomerated with cement to produce agglomerates of a size considered conducive to heap leaching, i.e. to assist the percolation of leaching solution. Agglomerates were transferred via conveyor to a radial stacker to form the heap to a height of approximately 10m. Alternatively, ore material (≤0.4g/t Au to 0.75g/t Au) was 'dumped' directly onto the leach pad. On completion, the upper surface was covered with shade cloth to prevent agglomerate breakdown during subsequent heap irrigation activities.

Heap leaching was undertaken using a two-stage leach cycle; a 'primary' leaching cycle for new heaps and a 'secondary' leaching cycle for previously leached heaps. For the primary cycle, new heap areas were irrigated with a low-strength (200 parts per million (ppm)) low gold grade cyanide bearing solution pumped from the Intermediate Pond. The solution percolated through the heap, dissolving the gold before being returned to the Pregnant Pond for transfer to the Gold Recovery (Wet) Plant where the gold was recovered from the pregnant cyanide solution. Stripped cyanide solution was returned to the Barren Pond where additional make-up reagents were added, and the pH adjusted as required for use in the secondary cycle. For the secondary cycle, the barren cyanide solution was irrigated onto a previously leached heap (primary-leached heap). Leach solution was collected and transferred to the Intermediate Pond for use in the primary cycle.

The economic cut off for the recovery of gold was approximately 0.5g/t Au, at which point the remaining material was considered as 'spent' ore. Cyanide additions ceased 9 July 2004. Following the cessation of mineral recovery, a rinse cycle was commenced using the 'raw' water stored within the processing circuit. The return solution was monitored until target water chemistry was reached. Target parameters were a pH >9, Weak Acid Associable cyanide <10mg/L and a low concentration of total dissolved solids. Target parameters were reached in October 2005.

Recovery of gold from the pregnant solution was undertaken within the Gold Recovery (Wet) Plant. The closed-circuit system consisted primarily of an adsorption circuit, a desorption circuit, electrowinning cell and a gas-fired furnace.

1.1.5 Tailings Management

1.1.5.1 Historical Tailings Re-Processing

Information on the re-processing of historic mining related residue material is provided in Section 1.1.7.1.

1.1.5.2 Mine-related Tailings Management

Residual heaped material remained *in situ* post processing overlying a bunded HDPE-lined pad. Cyanide additions to the processing solutions ceased 9 July 2004. Processing solution with diminishing concentrations of cyanide was re-circulated through the heaped material until levels of weak acid dissociable cyanide were below 10mg/L. By October 2005, return solution from the heap leach circuit generally met livestock water quality criteria.

Following the decommissioning of processing infrastructure (e.g. irrigators, conveyors, shade cloth, etc.), spent ore heaps were recontoured for long-term stability and drainage control and rehabilitated through the application of subsoils, topsoils and a stabilising vegetation cover.

Two processing residue landforms are located within the Mine Site. The Heap Leach, constructed using both heap and dumping methods, and the Trial Dump Leach, a small area to the east of the Heap Leach where the dumping method was originally trialled for the feasibility (see **Figure 2**). The spent material from the Trial Dump Leach was salvaged and relocated to within the Parkers Open Cut.

Key features of the Heap Leach include the following.

- Area – 24Ha;
- 2 lifts of 10m height each;
- Pad construction included topsoil removal, scarification and stick picking before compaction with vibrating roller to achieve <107m/s infiltration rate;
- 300m x 180m pad areas lined with welded 1.0mm thick HDPE;
- Leak detection system under pads reporting to sumps;
- Final batter design during rehabilitation 1:3 (V:H);
- Clay capped top of the final landform; and
- Waterways and berms delivering rainfall runoff to geotextile (Bidim A34) and basalt (240mm (D_{50})) rock-lined flume, with run-off waters report ultimately to the northeast sediment pond which is a licenced discharge point.

1.1.6 Rock/Overburden Emplacement

Approximately 5Mt of waste rock was mined at the Mine between 1996 and 2002. Waste rock was primarily placed within the Waste Rock Emplacement or used to construct infrastructure such as the ROM-Pad and temporary and/or permanent safety or amenity bunding. Waste material was also used as back-fill within the Proprietary and Bobby Burns Pits to address stability issues and to reduce the total amount of material required to be stored within the Waste Rock Emplacement.

The Waste Rock Emplacement contains approximately 4,237,481t of oxidised waste rock (<0.5g Au/t) and 815,059t of sulphidic waste rock (>1g Au/t). The excavated waste rock was paddock dumped by a fleet of 773B dump trucks within the approved emplacement area before being shaped and profiled by bulldozer. Each emplacement was progressively lifted in 10m

vertical increments with a batter slope of 18º created for each lift. A final face angle of each lift of 1:3 (V:H) was shaped with a D7H bulldozer. Between each lift, a 5m wide berm with a 1:20 (V:H) or 5% back slope and a 1:200 (V:H) or 0.5% longitudinal grade was constructed. The Waste Rock Emplacement was compacted during construction by heavy vehicles travelling over its surface.

The acid generating potential of sulphidic waste rock at the Mine is very high though the risk of Acid Mine Drainage is very low. The sulphidic waste rock material has been placed on a compacted oxide base and encapsulated under 1.5m cap of inert and low permeability oxide material. The oxide cap tested permeability at a rate of $<10^{8}$m/s in January 2000 before final compaction. The top of the Waste Rock Emplacement has been shaped with a 1:200 slope to a concrete flume. Rehab of the 1:3(V:H) batters was progressed incrementally. Vegetative cover was established on 200mm of topsoil and a pasture mix of introduced and native perennial and annual species.

The ROM Pad consists of a 4.5ha landform constructed from oxidised waste rock material. The construction of the ROM Pad used similar methodologies to that of the Waste Rock Emplacement. A single 10m lift with a final batter slope of 1:3 (V:H) that was capped using clay and topsoil once mining operations had ceased.

1.1.7 Rehabilitation

1.1.7.1 Rehabilitation of Historic Disturbance

As part of the development of the Mine, Alkane committed to the rehabilitation of historic mining disturbance and contamination of the area within and in the direct vicinity of the Mine Site. The rehabilitation operations were commenced by the (then) Department of Conservation and Land Management under a joint venture between Alkane, the (then) Department of Mineral Resources and the local Gulomogo Land Care Group.

The rehabilitation consisted primarily of the removal of historic processing residues which were known to be a source of pollution for local water quality. Tailings material was removed for re-processing at surrounding operational processing facilities located near Parkes and Tomingley (**Figure 1**).

In addition, significant quantities of waste material such as refuse, abandoned car bodies and other material was removed from the Mine Site and recycled. Items with inherent heritage value were retained on site and positioned in key areas for public viewing; these items now feature as part of the tourism/heritage aspect of the Mine Site.

In addition to historic mining related disturbances, previous local Government operated a small-scale gravel quarry within the Mine Site. This area, located between the ROM Pad and the former solid waste depot (**Figure 2**), was opportunistically rehabilitated with excess topsoil and other material over the life of the Mine.

1.1.7.2 Progressive Rehabilitation of Mine-related Disturbance

During the operational period of the Mine, progressive rehabilitation of Mine-related disturbance occurred, as areas of disturbed land were no longer required for operational purposes. The

following presents an overview of the key milestones for the completed rehabilitation of Mine-related disturbance throughout the life of the Mine. Further details of specific landform design and rehabilitation techniques and methodologies is provided in Section 6.2 of this Plan.

Waste Rock Emplacement

At the cessation of mining operations, the Waste Rock Emplacement was shaped and capped with an approximately 200mm of low-permeability clay layer. The upper surface of the Waste Rock Emplacement was profiled to 1:200(V:H) to create a free-draining landform. Permanent reinforced concrete spillways were designed and constructed by NSW Soil Conservation Service on the crests of the Waste Rock Emplacement to provide long-term stable surface drainage infrastructure. Growth medium was spread at a minimum depth of 200mm and the area was seeded with a mixed native and exotic pasture and grassland species cover.

Rehabilitation of the Waste Rock Emplacement was completed in 2005. The Waste Rock Emplacement is currently in the Ecosystem and Land Use Development phase of Rehabilitation.

Plate 1 shows the rehabilitated Waste Rock Emplacement during January 2005 prior to the cessation of processing operations.

ROM Pad

Once the last ore had been removed from the ROM Pad, the area was shaped and capped with an approximately 200mm low permeability clay layer. Growth medium was placed at a minimum depth of 200mm. The area seeded with a mixed native and exotic pastoral species cover. The western side of the ROM Pad regenerated naturally with native woodland tree species.

Rehabilitation of the ROM Pad was completed in November 2002. The ROM Pad is currently in the Ecosystem and Land Use Development phase of rehabilitation.

Plate 2 photo taken 4 December 2005 shows the Heap and Dump Leach Pad in the foreground and the rehabilitated ROM Pad in the background with a young woodland plant community and established pastoral grassland cover.

Heap and Dump Leach

Upon completion of the leaching process, the associated infrastructure such as pipelines and irrigation equipment was progressively decommissioned and removed. The final landform was shaped with bulldozers and capped using scrapers with an approximately 300mm low-permeability clay layer. As part of the final shaping, the surrounding HPDE lined drains were buried and permanent spillways and table drains were established to provide long-term stable water management infrastructure. NSW Soil Conservation Service designed and constructed the rock lined flumes. Some coarse basalt material was imported from Molong quarry as there was not suitable material left on site. Growth medium was spread at a minimum depth of 200mm and the area was seeded with a mixed native and exotic pastoral and grassland species cover. A small rehabilitation trial was undertaken on the upper surface of the Heap and Leach Dump in 2010.

Spent material located within the Trial Dump Leach was removed and deposited within the Parkers Open Cut in 2010. The surface was ripped and growth medium spread to a minimum depth of 200mm. The area was seeded with a mixed pastoral and grassland cover.

Rehabilitation of the Heap and Dump Leach was completed in 2005. The Heap and Dump Leach is currently in the Ecosystem and Land Use Development phase of Rehabilitation.

Plate 2 shows the Heap and Dump Leach landform in the foreground at the end of the Growth Medium Development phase of rehabilitation. The rehabilitation trial area can be seen on the upper surface of the Heap and Leach Dump. The Trial Dump Leach is visible in the close foreground of the image undergoing decommissioning.

Gold Recovery Wet Plant and Processing and Overflow Ponds

The Gold Recovery Wet Plant was decommissioned once the post-processing treatment of the spent ore was complete in 2005. The various plant and infrastructure were decommissioned and either demolished or salvaged for disposal or use off-site in 2010. The concrete slab of the Gold Recovery (Wet) Plant remains in-situ and will be demolished as part of final rehabilitation task.

The remaining Wet Plant concrete slab, as a minor part of a larger Infrastructure domain, is in the final stages of the Decommissioning phase of rehabilitation.

The Processing and Overflow Ponds formed part of the overall processing infrastructure associated with the Gold Recovery Wet Plant and the Heap and Dump Leach. The Processing and Overflow Ponds and associated pumps and steel walkways were decommissioned once the water quality within the processing circuit reached an acceptable quality to permit agricultural use. The water in those ponds has completely evaporated during dry periods. The HDPE liner remains in-situ and will either be retained or disposed of on-site as part of the final rehabilitation process. They would be retained should extraction of the underground resource at Peak Hill prove feasible as they are connected to Alkane's licenced water supply at the Bogan Weir 6km southwest of the Mine Site.

The Processing and Overflow Ponds are in the Decommissioning phase of Rehabilitation.

Roads, Magazine, Stockpiles, and Other Areas of Disturbance

The progressive rehabilitation of the remaining areas of the Mine Site occurred as they were no longer required for operational purposes. In 2002, the Magazine was decommissioned, and the area recontoured and ripped. Native woodland (Eucalyptus and Acacia species) has regenerated naturally. Laydown areas were similarly rehabilitated, with areas of compaction being ripped and topsoil spread and incorporated into the existing growth medium. Depending on the location of each area, woodland or grassland/ pasture species were seeded. Internal access roads were ripped, spread with topsoil, and similar to the laydown areas, seeded with woodland or pasture grassland species depending on location. Where the target vegetation cover was woodland species, stockpiled woody debris was re-located within areas where available.

The Haul Road from the Waste Rock Emplacement to Bobby Burns open cut (around the eastern side of the hill) was retained for access to the Final Voids and to provide a fire break within the woodland vegetation. Other internal access roads were also retained, at a reduced width, for management purposes.

In general, the rehabilitated ancillary disturbance areas outlined above are in the Ecosystem and Land Use Development Stage (at twenty years maturity). It is noted that these areas consist of multiple rehabilitation Domains as defined in Section 2.4 of this Plan.

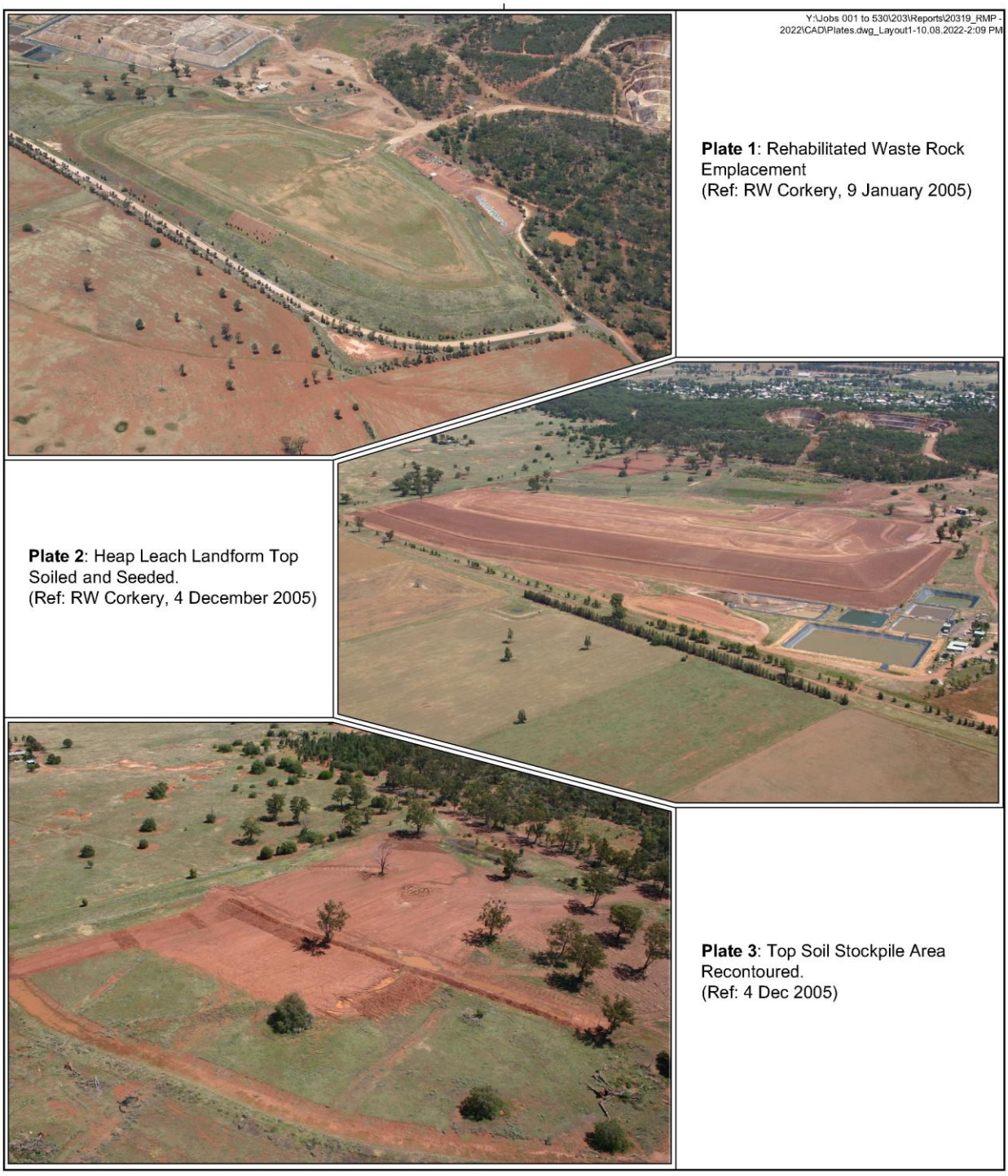
Plate 3 photo taken 4 December 2005 shows the rehabilitation of the topsoil stockpile area located to the south of the ROM Pad, including internal access roads located in the vicinity, during the Landform Development and Growth Medium Development phases of rehabilitation. Note the surface treatment being applied to the rehabilitated areas. The construction of contour bank to replace the original bank located in this area prior to the Mine can be seen in the mid-ground. The rehabilitated topsoil stockpile area can be seen behind a row of remnant vegetation and within the woodland area at the rear of the image. The Magazine area was within the Ecosystem and Land Use Establishment phase of rehabilitation at the image. The progressive and current state of rehabilitation across the Mine Site can be seen in the Annual Environmental Management Reports on the website: www.alkane.com.au/projects/tomingley-gold-project/peak-hill/environmental-reports/

1.1.8 Peak Hill Open Cut Experience

The Peak Hill Open Cut Experience (the "Open Cut Experience") has operated in varying forms over the life of the Mine. Prior to the development of the Mine, the historic workings were accessible to the general public via informal and unregulated access tracks within the surrounding woodland. In recognition of the value of the historic and continued mining heritage surrounding the town of Peak Hill, Alkane considered the heritage and tourism potential of the Mine Site as part of the original *Environmental Impact Statement* for the Mine.

Numerous consent conditions (DA 648/93) pertained to the documentation and interpretation of Peak Hill's mining heritage and social history. A carpark and viewing platform were conditioned to provide access to the public during mining operations (1996-2002) and beyond.

Significant resources were put towards interpreting Peak Hill's mining heritage and the modern mining operation in the form of 22 interpretive signs located along the walking trails.



The construction of infrastructure to support ongoing tourism relating to the Mine and mining heritage was undertaken in accordance with the Development Application. In addition, historical workings (alluvial and glory holes) have been secured from inadvertent access with chainmesh fencing. A grant from the Derelict Mines Fund allowed an elevated walkway to be constructed across the Crown Workings which were not disturbed by mining 1996-2002.

A Permit to operate as a Tourist Mine was issued in 2003. During the first year of operating as a Tourist Mine, the Open Cut Experience attracted over 11,000 visitors. Self-guided tours of the Mine Site and guided tours within the Final Voids allowed visitors to gain an insight into the long

history of gold mining in the local area. The Open Cut Experience was enhanced in 2016 by the Parkes Shire Council through the development of additional infrastructure. In 2017, further additions of the main information shelter, sculptures and other items were installed by Parkes Shire Council. These improvements were officially opened by the Minister for Tourism on 11 August 2017. Parkes Shire Council was awarded a grant of $120,000 under the NSW Government's Regional Visitor Economy Fund to go towards the Peak Hill Gold Mine Visitor Experience Improvement Program.

Due to legislative and regulatory changes with the *Work Health and Safety (Mines and Petroleum Sites) Act 2013* (specifically Section 19 (1 and 2) General Assessment – Tourist Mines), Alkane cannot operate a tourist mine on the Mine Site, because Alkane intends to continue to evaluate the potential for an underground mine on the leases.

Notwithstanding the above, Alkane has had a formal arrangement with Parkes Shire Council to provide public access during daylight hours to the former tourist mine infrastructure. Further information on the management of heritage areas within the Mine Site is provided in Sections 6.2.1.13 and 9.2.2.7.

In addition, the Mine Site has had numerous visits from research organisations and schools over more than 25 years and is considered a very good case study in progressive rehabilitation and final land use.

1.1.9 Peak Hill Waste Transfer Station

Prior to the development of the Mine, the Parkes Shire Council operated the Solid Waste Depot (a land fill) for the town of Peak Hill on Lot 326 DP 755113 partially within the boundary of the current Mine Site. The Solid Waste Depot operated during the operation of the Mine; however, was partially consumed over the life of the Mine as the Waste Rock Emplacement was expanded. Once consumed, the site operated as a temporary Waste Transfer Station until the current Peak Hill Waste Transfer Station was developed.

The Peak Hill Waste Transfer Station is located in the immediate vicinity of the Mine Site, in an area previously used/known as the Contractors Area for the Mine, on Lot 80 DP 1214479. The provision of the 4ha of land for the development of the Peak Hill Waste Transfer Station was undertaken in accordance with Condition 1.25 of DA 15039. Subdivision of the 4ha of land was granted in 2015 and part cancellation of ML 1364 was granted 26 June 2017.

The Peak Hill Waste Transfer Station does not form a component of the Mine Site and is not addressed further in this document.

1.1.10 Remaining Resource and Future Mine Development

As discussed in Section 1.1.2, the Mine Site contains a known sulphide resource totalling approximately 4.91Mt grading at 2.05g/t Au and 0.17% Cu (1.0g/t Au cut off). In addition, the approximately 800,000t of low-grade (>1g/t Au) sulphide material extracted during the Life of the Mine and encapsulated within the Waste Rock Emplacement could also be processed. As indicated in previously approved *Mining Operations Plans* (MOPs) and other approved documents, the potential for further mining continues to be a focus for Alkane.

If the decision to develop the remaining mineral resources within the Mine Site is made prior to the completion of rehabilitation operations, this Plan will be reviewed, revised or replaced as required to address any future development of a mining operation. For the purposes of this Plan, it is assumed that mining operations will not be recommenced. Notwithstanding, the rehabilitation of the Mine Site will be undertaken so as to not prevent the development of any future mineral extraction by Alkane or any other party, where practicable.

It should be noted that a large communications tower was constructed on the top of the hill in 2019-2020 by a government emergency services organisation. There was no consultation whatsoever by the developer with the Mining Lease holder. This development will potentially impact on the resource potential at Peak Hill.

1.2 Current Development Consents, Leases and Licences

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
Development Consent				
DA 648/93	Parkes Shire Council	3 Sep 1993	Replaced by DA 15039	Development Consent – Open Cut Gold Mine and heap leach gold extraction plant
DA 648/93	Parkes Shire Council	16 Aug 1994	Replaced by DA 15039	Modification of Development Consent (Parkers Extension)
DA 1033/97	Parkes Shire Council	15 Jul 1997	-	Extension of Processing Operations
DA 1049/97	Parkes Shire Council	5 Aug 1997	-	Garth Bore Pipeline
DA 1080/97	Parkes Shire Council	6 Feb 1998	-	Main Tailings
DA 99253	Parkes Shire Council	1 Feb 2000	-	Great Eastern
DA 99253	Parkes Shire Council	20 Apr 2000	-	Modification of Development Consent (Great Eastern)
DA 00174	Parkes Shire Council	8 Dec 2000	-	Bobby Burns Pit
DA 01072	Parkes Shire Council	19 Jun 2001	-	Parkers Cutback
DA 01162	Parkes Shire Council	20 Nov 2001	-	Crown Pit
DA 15039	Parkes Shire Council	25 Jun 2015	-	Retention of Mine Buildings at PHGM and supersedes DA 648/93
Subdivision Certificate 15008	Parkes Shire Council	30 Jul 2015	-	Waste Transfer Station
Special Purpose Conditions	Mineral Resources	27 Feb 2003	No longer valid	Permit to Conduct Tourist Activities
Mineral Authorities				
EL6319	Minister for Mineral Resources	12 Oct 2004	11 Oct 2026	Exploration Activities
GL5884		12 Dec 1969	02 Jun 2037	Mining activities at the Peak Hill Gold Mine
ML1351		15 Jun 1994	24 Sep 2036	
ML1364		14 Mar 1995	25 Dec 2035	
ML1479		18 Jan 2001	17 Jan 2043	
ML6036		07 Mar 1968	02 Jun 2037	

ML6042		21 Feb 1968	02 Jun 2037	
ML6277		12 Mar 1971	02 Jun 2037	
ML6310		27 Aug 1971	02 Jun 2037	
ML6389		06 Apr 1973	02 Jun 2037	
ML6406		25 Jan 1974	13 Feb 2037	

Table 1 (Cont'd)
Current Consents, Authorisations and Licenses

Number	Granted by	Grant Date	Expiry Date	Purpose
Licences - Environmental				
EPL5473	Environment Protection Authority	5 Sep 1999	Renewed annually	Regulation of noise, dust and water emissions from the Mine Site.
		7 Nov 2003	NA	Notice of Variation of Licence
		28 Jan 2011	NA	Licence varied by correction to DECCW region record
		17 Jun 2014	NA	Licence variation 1505946
		3 Dec 2018	NA	Licence Variation (reflecting excision of 4Ha of ML1364)
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				

1.3 Land Ownership and Land Use

Figure 3 and **Table 2** presents the land ownership for land within and adjacent to the Mine Site. In summary, land within the Mine Site consists of land owned by Alkane, Parkes Shire, Peak Hill Local Aboriginal Land Council and Crown Land. Land adjacent to the Mine Site consists of a mix of land owned by private individuals, Alkane, Parkes Shire, Peak Hill Local Aboriginal Land Council and Crown Land.

Table 2
Land Ownership

Lot	Deposited Plan	Tenure	Owner	Leases
Mine Site				
1	1005447	Freehold	Peak Hill local Aboriginal Land Council	
2	1005447	Crown	Crown	
3	1005447	Crown	Crown	
4	1005447	Crown	Crown	
5	1005447	Crown	Crown	
468	755113	Crown	Crown	
467	755113	Freehold	Alkane	
453	755113	Freehold	The Council of the Municipality of Peak Hill (PSC)	

Lot	Deposited Plan	Tenure	Owner	Leases
7	1029953	Freehold	Parkes Shire Council	
1	1182433	Freehold	Parkes Shire Council	
2	1182433	Freehold	Parkes Shire Council	
1	639881	Crown	Crown	
7010	1126439	Crown - Reserve	State of NSW	
7309	1162023	Crown - Reserve	State of NSW	
7312	1163996	Crown - Reserve	State of NSW	
7313	1163975	Crown - Reserve	State of NSW	
7314	1164231	Crown - Reserve	State of NSW	
7315	1164140	Crown - Reserve	State of NSW	
7315	1164231	Crown - Reserve	State of NSW	
7316	1164231	Crown - Reserve	State of NSW	
7317	1162292	Crown - Reserve	State of NSW	
7318	1162292	Crown - Reserve	State of NSW	
7320	1167747	Crown - Reserve	State of NSW	
81	1215579	Freehold	Alkane	
291	755113	Crown	Crown	
Land Adjacent to the Mine Site				
80	1215579	Freehold	Parkes Shire Council	-
326	755113	Crown Land	NSW Government	-
378	755113	Freehold	Private	-
379	755113	Freehold	Private	-
381	755113	Freehold	Alkane Resources	-
509	726950	Freehold	Peak Hill LALC	-

Prior to the establishment of the Mine, areas within and in the vicinity of the Mine Site were subject to disturbance associated with small-scale historic mining, exploration (costeaning), gravel extraction and agriculture activities. The historical mining operations within the Mine Site are a key feature of the Peak Hill Open Cut Experience (**Figure 2**).

Figure 4 presents land uses within and surrounding the Mine Site, including the following.

- Urban residential and rural residential.
- Agriculture, including cropping and grazing.
- Transportation (Newell Highway and local roads).
- Water Supply Infrastructure on Peak Hill, Reservoir access road, communications towers, rising and gravity water mains.
- Peak Hill Waste Transfer Station off Roose Road.
- Commercial main street of Peak Hill.
- Recreation (Open Cut Experience - interpretive trails).
- Former mining operations - namely Crown workings and alluvial mine shafts.

- Bushland owned by Peak Hill Local Aboriginal Land Council.

1.3.1 Land Ownership and Land Use Figure

Figures 3 to **6** show the key environmental elements of the area within and in the vicinity of the Mine Site.

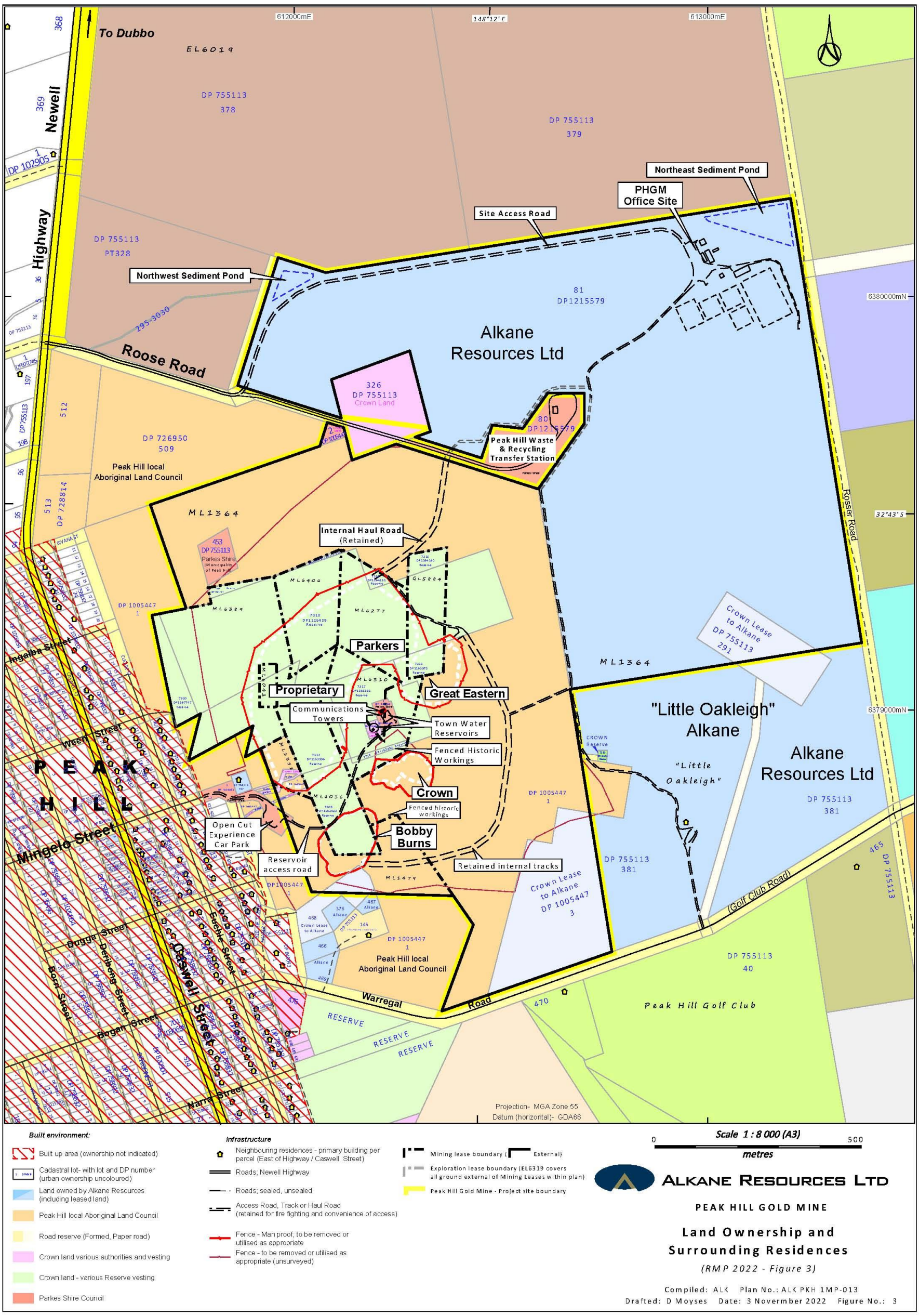


Figure 3
Land Ownership and Surrounding Residences

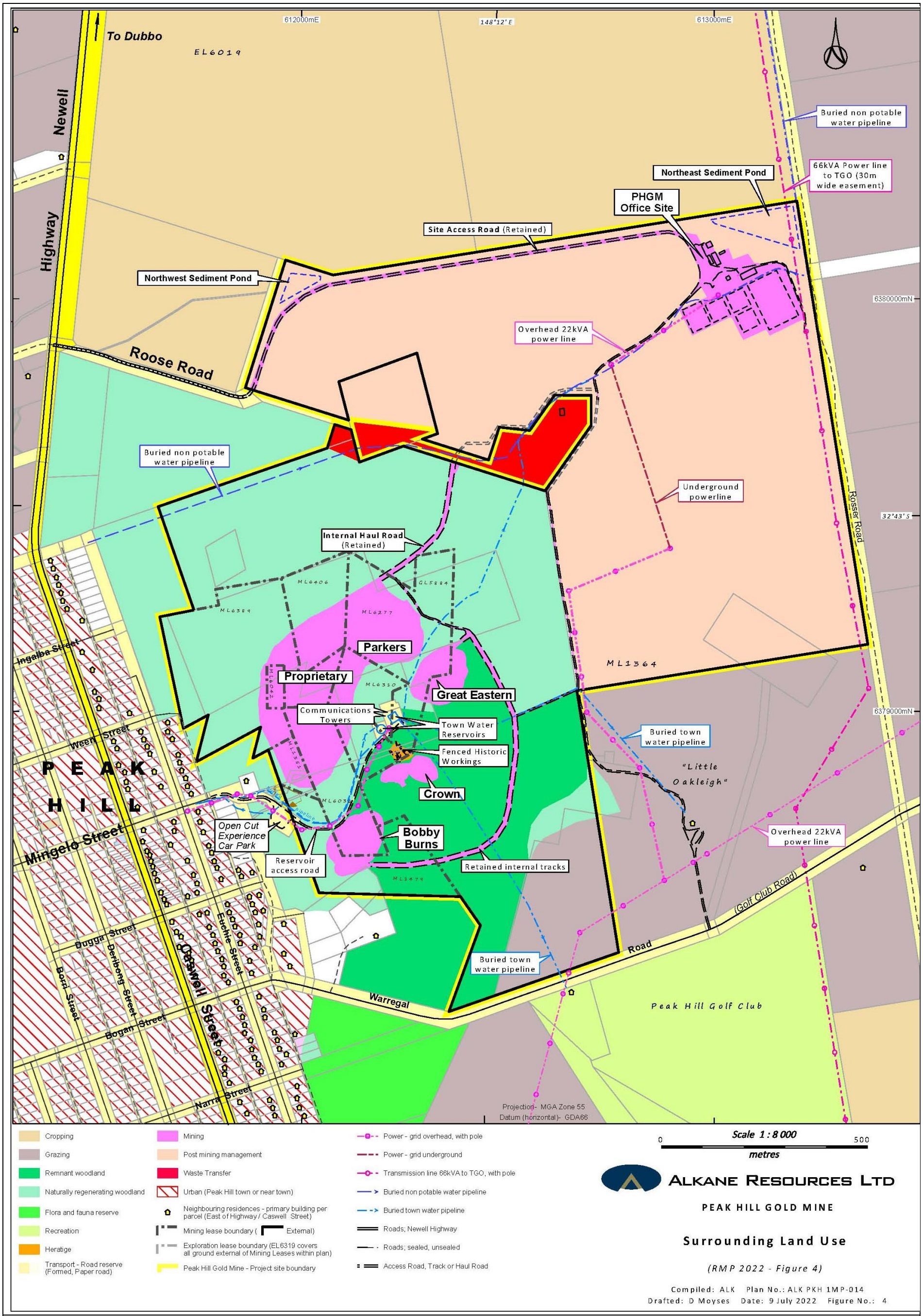


Figure 4
Surrounding Land Use

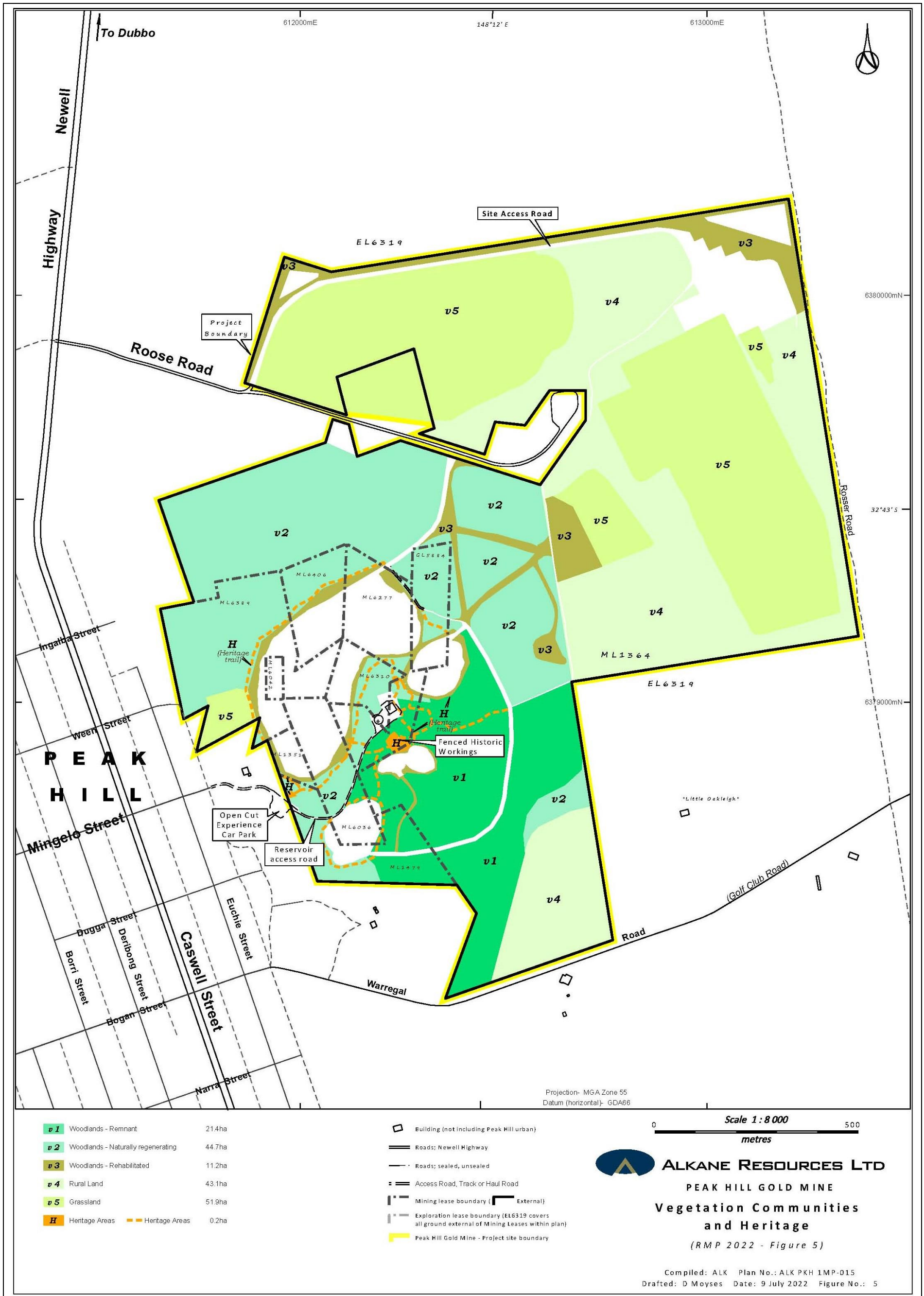


Figure 5
Vegetation Communities and Heritage

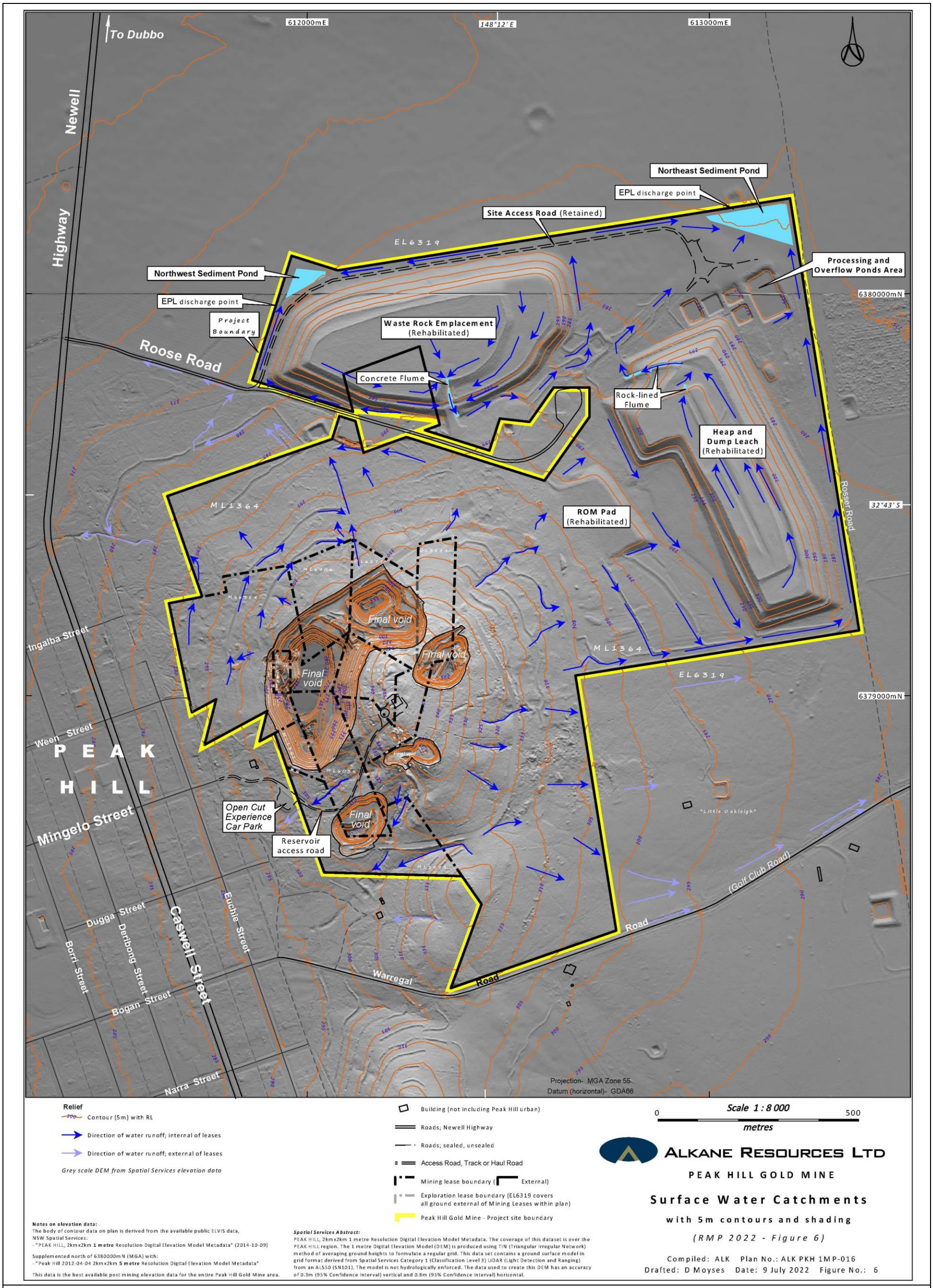


Figure 6
Surface Water Catchments

2. Final Land Use

2.1 Regulatory Requirements for Rehabilitation

Table 3 lists the regulatory requirements relating to rehabilitation of the Mine Site and post-mining land uses.

2.2 Final Land Use Options Assessment

The approved final land use of the Mine Site is defined by the previous approved *Mining Operations Plan (2014 – 2022)*. The following subsection provides a general overview of the approach undertaken by Alkane used to determine the final land use for the Mine Site. **Figure 7** displays the approved final land use for the Mine Site. It should be noted that some changes in the terminology and classification of final land use domains may have occurred as a consequence of changes to approved guidelines and methodologies; however, no significant changes to the approved final land use are proposed by this Plan.

Alkane aims to provide a final landform that is safe, stable, non-polluting, and that recognises the heritage and biodiversity value and potential for socially beneficial post-mining land uses. The nominated post mining land use goals for the Mine Site are:

- to implement successful design and rehabilitation of landforms to ensure structural stability, revegetation success and containment of wastes;
- to ensure rehabilitation and revegetation is self-sustaining; and
- to retain areas of the Mine Site amenable to future mining or tourist activities.

Consultation was undertaken with the local community, indigenous representatives (Peak Hill Aboriginal Community Working Party) and relevant government agencies throughout the operating life of the Peak Hill Gold Mine and during mine closure planning. The community has been keen to have continued access to the mining leases post mine closure. Consequently, the establishment of tourism facilities post mine closure was a voluntary commitment made by Alkane as a demonstration of its commitment to sustainable development.

In addition, Alkane remain committed to ensuring efficient use of lands within and in the vicinity of the Mine Site, namely through the rehabilitation of previously disturbed lands for the purposes of nature conservation and agricultural productivity.

There also exists the potential for future developments across the leases provided that they would be permissible under the Parkes LEP. For example, Alkane has been approached by renewable energy proponents wanting access to the waste rock emplacement and heap leach final landforms for solar developments.

Table 3
Regulatory Requirements for Rehabilitation

Consent / Legislation	Cond. No.	Requirement	Area	Timing	RMP Section
Development Consent(s)					
DA 15039 (replaces DA 94803)	**General**				
	1.1	Undertake the development generally in accordance with development application number 648/93 as amended by application for a modification for development consent dated 22nd day of June 1994 as detailed in the "Statement of Environmental Effects in Support of Section 102 Application for the Extension of Mining at Peak Hill Gold Mine" prepared by GR Meates and Associates and dated June 1994 and modification application No. DA15039 lodged on 30 April 2015 as detailed in the "Statement of Environmental Effects" dated March 2015 and as further amended by these conditions.	Mine Site	Life of Mine	N/A
	1.4	Provide at its own expense stockproof fencing along the common boundaries of its property and all constructed Council Roads. Fencing shall also be maintained between adjoining properties and that of the Company.	Mine Site	Life of Mine	6.2.2.1
	1.5	Provide safety fencing where required by the Department of Mineral Resources.	Mine Site	Life of Mine	6.2.2.1
	1.6	Provide fencing of trees and shrubs peripheral to the construction site.	Mine Site	Life of Mine	6.2.2.1
	1.15	Consult with the Department of Mineral Resources and Parkes Council regarding the future use of the site and final void at least six months before the end of the Mines' life.	Final Voids	Prior to relinquishment	2
	1.17	Conduct in consultation with National Parks and Wildlife Service a follow up flora and fauna survey during spring (September/October). The survey and report shall be submitted to and approved by the National Parks and Wildlife Service and Council and the applicant shall act upon the requirements of National Parks and Wildlife Service and Council prior to the commencement of construction of development.	Mine Site	Prior to commencement of operations	6.2.1.2, 6.1.2.3
	1.23	Implement measures and a programme to the satisfaction of Council and Department of Mineral Resources to make secure old shafts within the boundaries of the project site. A report detailing the measures to be employed and the timetable for implementation shall be submitted to and	Mine Site	Prior to commencement of operations	6.2.2.1, 6.2.2.6

Consent / Legislation	Cond. No.	Requirement	Area	Timing	RMP Section
		approved by council and Department of Mineral Resources prior to the commencement of the construction of the project.			
	1.25	Provide a minimum area of 4 hectares for Waste Disposal purposes. The size, shape and location of this area shall be determined to the satisfaction of Council. Arrangements for the transfer of this area and a timetable for transfer shall be finalised to the satisfaction if Council prior to the commencement of construction works. The transfer of this area shall be provided at no cost to Council. Provide an environmental review for the new garbage depot site at no cost to Council.	Lot 80 DP 1214479	During life of Mine	1.1.9
	Land Management				
	4.3	Conserve all topsoil for use in rehabilitation.	Mine Site	Life of Mine	6.2.1.1, 6.2.1.6
	4.6	Carry out rehabilitation trials where recommended by the Department of Conservation and Land Management.	Mine Site	Life of Mine	9
	4.7	Consult with the Department of Conservation and Land Management in respect to implementation of rehabilitation works and these works are to be carried out to the satisfaction of the Department of Conservation and Land Management, the Department of Mineral Resources and Council.	Mine Site	Life of Mine	This Plan
	4.11	Establish a man proof fence around the perimeter of the void at the end of mining works to the satisfaction of Council.	Proprietary Pit	Cessation of mining activities	6.2.2.1
	Roadworks				
	8.4	Construct at its own expense a sealed access road to the tourist viewing platform to the satisfaction of Council.	Heritage areas	During site development	1.1.8
	8.5	Construct at its own expense a sealed turning bay and parking area for the viewing platform to the satisfaction of Council.	Heritage areas	During site development	1.1.8.
	8.7	Demonstrate to the satisfaction of Council that the access road to the water supply reservoirs and the tourist viewing platform, the turning bay, and the parking area will not be adversely affected by subsidence from old underground workings.	Reservoir access road	Prior to site development	6.2.2.3
	8.8	Dedicate as public road the access road to the tourist viewing platform, the turning bay and the parking area at no cost to council.	Heritage areas	During site development	6.2.2.3
	Water Supply				

Consent / Legislation	Cond. No.	Requirement	Area	Timing	RMP Section
	10.2	Agree that at the end of the mine life, the ownership of the pipeline system pumping facilities and licences which form part of the works in Condition 10.1 shall be transferred, at no cost, to Parkes Council.	Pipeline	Prior to relinquishment	6.2.2.3
	Archaeology and Mining Heritage				
	14.2	Undertake to the satisfaction of Council, the Peak Hill Business Association, Peak Hill and District Advancement and Ratepayers Association, the documentation and photographic and video recording of all mining site and relics likely to be affected by mining and rehabilitation, the identification and relocation of mining relics, the collection of archival information on the history of mining operations at Peak Hill. All information generated by this condition shall be transferred to the ownership of Council at no cost to Council prior to the commencement of construction works.	Heritage areas	Prior to site development	6.2.1.13
	14.4	Establish to the satisfactory of the Council interpretive signs, a viewing area, walking trails at or nearby to the mining site, a permanent sign detailing the history of mining at Peak Hill which is to be located of the satisfaction of Council and development of the remaining mining holes to the south of the open cut as a tourist amenity by the provision of safe access and viewing areas.	Heritage areas	During site development	1.1.8, 6.2.1.13
	14.6	Construct a building with fittings, or other suitable structure acceptable to Council where historical mining information, displays, models and the like may be housed. The building or structure shall be located and connected to adequate services to the satisfaction of Council and the ownership of the building or structure and its contents shall be transferred to Council at no cost to Council.	Off site	During development	6.2.1.13
	Additional Conditions of Consent Associated with Modification Application No. DA15039				
	1	The site is to be progressively rehabilitated in accordance with the Peak Hill Mine Mining Operations Plan 2014-2022.	Mine Site	Life of Mine	This Plan (generally)
	2	The use of the care-takers dwelling must continue to only be used to support the mining related activities associated with the subject land and shall cease once rehabilitation to the site has been finalised and in accordance with the Peak Hill Gold Mine Mining Operations Plan 2014-2022.	Mine Site House	Prior to relinquishment	6.2.2.2
DA 1033/97	-	A copy of this Development Consent has been requested from Parkes Shire Council. This Plan will be updated upon provision of this document.	-	-	-

Consent / Legislation	Cond. No.	Requirement	Area	Timing	RMP Section
DA 1049/97	-	A copy of this Development Consent has been requested from Parkes Shire Council. This Plan will be updated upon provision of this document.	-	-	-
DA 1080/97	-	A copy of this Development Consent has been requested from Parkes Shire Council. This Plan will be updated upon provision of this document.	-	-	-
DA 99253 (Great Eastern)	**General**				
	1.1	Undertake development in accordance with the Statement of Environmental Effects, plans and supporting documentation lodged is respect of Development Application No 99253 except where varied by the following conditions.	Great Eastern Pit (generally)	Life of Mine	6.2.3.4
	1.9	Dispose of all material processed by either heap or dump leach methods at the respective heap leach pad or dump leach area.	Heap and Dump Leach	During processing operations	1.1.5, 6.2.1.9
	1.10	Dispose of all waste rock material within the confined of the existing waste rock emplacement. No alterations to the general size, shape and dimension of the approved waste rock emplacement is permitted without prior consent of Council.	Waste Rock Emplacement	Life of Mine	1.1.6, 6.2.1.4
	1.12	Dedicate as public road the access road to the tourist viewing platform, the turning bay and the parking area at no cost to Council.	Heritage Areas	Life of Mine	1.1.8, 6.2.2.3
	Land Management and Rehabilitation				
	3.3	Conserve all topsoil for use in rehabilitation	Mine Site	Life of Mine	6.2.1.1, 6.2.1.11
	3.7	Ensure the site is progressively rehabilitated as outlined in the Statement of Environmental Effects and in accordance with the requirements of the Department of Land and Water Conservation, Department of Mineral Resources and Council.	Mine Site	Life of Mine	This Plan (generally)
	3.8	Establish a man proof fence around the perimeter of the Great Eastern Pit as soon as practicable and by the time the pit is below 5 meters from the surface.	Great Eastern Pit	During site operations	6.2.2.1
	Water Supply				
	3.2	At the end of mine life, the ownership of the pipeline stem, pumping facilities and licences which form the Peak Hill Gold Mine water supply shall be transferred, at no cost, to Parkes Council.	Pipeline	Prior to site relinquishment	6.2.2.3
	Environment Protection Authority Licence Requirements				

Consent / Legislation	Cond. No.	Requirement	Area	Timing	RMP Section
	7.2	All practicable measures must be taken to prevent and minimise harm to the environment as a result of the construction, operation, and, where relevant, the decommissioning of the development.	Mine Site	Life of Mine	This Plan (generally)
DA 00174 (Bobby Burns)	**General**				
	1.1	Undertake development in accordance with the Statement of Environmental Effects, plans and supporting documentation lodges in respect of Development Application No 00171 except where varied by the following conditions.	Bobby Burns Pit (generally)	Life of Mine	This Plan (generally)
	1.10	Prior to any excavation operations commencing at the site of the Bobby Burns Pit, dedicate as public road to the tourist viewing platform, the turning bay and the parking are at no cost to Council.	Reservoir access road	Prior to development of Bobby Burns Pit	6.2.2.3
	1.12	Prior to any excavation operations commencing at the site of the Bobby Burns Pit, the proponent shall construct a safety barrier along the southern side of the road formation to allow safe vehicular access to the town water reservoirs. Full engineering details of the required safety barrier is required to be submitted to Council for approval prior to roadworks commencing on the site. All costs associated with the construction of the safety barrier shall be borne by the proponent.	Reservoir access road	Prior to development of Bobby Burns Pit	6.2.2.3
	Land Management and Rehabilitation				
	2.3	Conserve all topsoil for use in rehabilitation.	Mine Site	Life of Mine	6.2.1.1, 6.2.1.11
	2.4	Ensure the site is progressively rehabilitated as outlined in the Statement of Environmental Effects and in accordance with the requirements of the Department of Land and Water Conservation, Department of Mineral Resources and Council.	Mine Site	Life of Mine	This Plan (generally)
	2.5	Establish a 2.1 metre high man proof fence around the perimeter of the Crown Pit to the satisfaction of the Department of Mineral Resources.	Great Eastern Pit	During site operations	6.2.2.1
	Water Supply				
	3.2	At the end of mine life, the ownership of the pipeline stem, pumping facilities and licences which form the Peak Hill Gold Mine water supply shall be transferred, at no cost, to Parkes Council.	Pipeline	Prior to site relinquishment	6.2.2.3
	General				

Consent / Legislation	Cond. No.	Requirement	Area	Timing	RMP Section
DA 01072 (Parker Cutback)	1.1	Undertake development in accordance with the Statement of Environmental Effects, plans and supporting documentation lodges in respect of Development Application No 00172 except where varied by the following conditions.	Parkers Pit (generally)	Life of Mine	6.2.3.4
	1.7	Dispose of all material processed by either heap or dump leach methods at the respective heap leach pad or dump leach area.	Heap and Dump Leach	During processing operations	1.1.5, 6.2.1.9
	1.8	Dispose of all waste rock material within the confines of the Great Eastern and Bobby Burns open cuts to the satisfaction of the Department of Mineral Resources and Council.	Waste Rock Emplacement	Life of Mine	1.1.6, 6.2.1.4
	Water Supply				
	3.2	At the end of mine life, the ownership of the pipeline stem, pumping facilities and licences which form the Peak Hill Gold Mine water supply shall be transferred, at no cost, to Parkes Council.	Pipeline	Prior to site relinquishment	6.2.2.3
	Land Management and Rehabilitation				
	2.4	Ensure the site is progressively rehabilitated as outlined in the Statement of Environmental Effects and in accordance with the requirements of the Department of Land and Water Conservation, Department of Mineral Resources and Council.	Parkers Pit (generally)	Life of Mine	This Plan (generally)
	2.5	Establish a 2.1 metre high man proof fence around the perimeter of the extended Parkers Pit to the satisfaction of the Department of Mineral Resources.	Parkers Pit	During site operations	6.2.2.1
DA 01162 (Crown Pit)	**General**				
	1	Undertake the development in accordance with the Statement of Environmental Effects dated September 2001, the Alkane Exploration letter providing additional information dated 166 November 2001 and any other plans and supporting documentation lodged in respect of Development Application No 01162 except where varied by the following conditions.	Crown Pit (generally)	Life of Mine	This Plan (generally)
	7	Dispose of all material processed by either heap or dump leach methods at the respective heap leach pad or dump leach area.	Heap and Dump Leach	During processing operations	1.1.5, 6.2.1.9

Consent / Legislation	Cond. No.	Requirement	Area	Timing	RMP Section
	8	Dispose of all waste rock material in accordance with the Statement of Environmental Effects and to the satisfaction of the Department of Mineral Resources and Council.	Waste Rock Emplacement	Life of Mine	1.1.6, 6.2.1.4
	Land Management and Rehabilitation				
	14	Ensure the site is progressively rehabilitated as outlined in the Statement of Environmental Effects and in accordance with the requirements of the Department of Land and Water Conservation, Department of Mineral Resources and Council.	Parkers Pit (generally)	Life of Mine	This Plan (generally)
	15	Establish a 2.1 metre high man proof fence around the perimeter of the Crown Pit to the satisfaction of the Department of Mineral Resources.	Parkers Pit	During site operations	6.2.2.1
	18	At the end of mine life, the ownership of the pipeline system, pumping facilities and licences which from the Peak Hill Gold Mine water supply shall be transferred, at no cost, to Parkes Council.	Pipeline	Prior to site relinquishment	6.2.2.3
Mining Leases					
All Mining Leases (including Gold Mining Lease)	4(1)	The holder of a mining lease must take all reasonable measures to prevent, or if that is not reasonably practicable, to minimise, harm to the environment caused by activities under the mining lease.	Mine Site	Life of Mine	This Plan (generally)
	5	The holder of a mining lease must rehabilitate land and water in the mining area that is disturbed by activities under the mining lease as soon as reasonably practicable after the disturbance occurs.	Mine Site	Life of Mine	This Plan (generally)
	6(1)	The holder of a mining lease must ensure that rehabilitation of the mining area achieves the final land use for the mining area.	Mine Site	Prior to site relinquishment	This Plan (generally)
	6(2)	The holder of the mining lease must ensure any planning approval has been obtained that is necessary to enable the holder to comply with subclause (1).	Mine Site	Prior to site relinquishment	This Plan (generally)
	6(3)	The holder of the mining lease must identify and record any reasonably foreseeable hazard that presents a risk to the holder's ability to comply with subclause (1).	Mine Site	Life of Mine	3
	6(4)	In this clause— (a) as set out in the rehabilitation objectives statement and rehabilitation completion criteria statement, and	Mine Site	Life of Mine	4
		(b) for a large mine – as spatially depicted in the final landform and rehabilitation plan, and	Mine Site	Life of Mine	5

Consent / Legislation	Cond. No.	Requirement	Area	Timing	RMP Section
		(c) if the final land use for the mining area is required by a condition of development consent for activities under the mining lease – as stated in the condition.	Mine Site	Life of Mine	2
	7(1)	The holder of a mining lease must conduct a risk assessment (a rehabilitation risk assessment) that—	-	-	-
		(a) identifies, assesses and evaluates the risks that need to be addressed to achieve the following in relation to the mining lease— (i). the rehabilitation objectives, (ii). the rehabilitation completion criteria, (iii). For large mines – the final land use as spatially depicted in the final landform and rehabilitation plan, and	Mine Site	Life of Mine	3
		(b) Identifies the measures that need to be implemented to eliminate, minimise or mitigate the risks.	Mine Site	Life of Mine	3
	7(2)	The holder of a mining lease must implement the measures identified.	Mine Site	Prior to site relinquishment	7, 8
	7(3)	The holder of a mining lease must conduct a rehabilitation risk assessment— 1. for a large mine – before preparing a rehabilitation management plan, and	- Mine Site	- Before preparation of this Plan	- 3
		(c) whenever a hazard is identified under clause 6(3) – as soon reasonably practicable after it is identified, and	Mine Site	Life of Mine	3
		(d) whenever given a written direction to do so by the Secretary.	Mine Site	As directed	3
	10(1)	The holder of a mining lease relating to a large mine must prepare a plan (a rehabilitation management plan) for the mining lease that includes the following—			
		(a) a description of how the holder proposes to manage all aspects of the rehabilitation of the mining area,	Mine Site	Prior to site relinquishment	This Plan (generally)
		(b) a description of the steps and actions the holder proposes to take to comply with the conditions of the mining lease that relate to rehabilitation,	Mine Site	Prior to site relinquishment	This Plan (generally)
		(c) a summary of rehabilitation risk assessments conducted by the holder,	Mine Site	Life of Mine	3

Consent / Legislation	Cond. No.	Requirement	Area	Timing	RMP Section
		(d) the risk control measures identified in the rehabilitation risk assessments,	Mine Site	Life of Mine	3, 6
		(e) the rehabilitation outcome documents for the mining lease,	Mine Site	Life of Mine	4, 5
		(f) a statement of the performance outcomes for the matters addressed by the rehabilitation outcome documents and the ways in which those outcomes are to be measured and monitored.	Mine Site	Life of Mine	4, 7
	10(4)	The holder of the mining lease—	-	-	-
		(a) must implement the matters set out in the rehabilitation management plan, and	Mine Site	Life of Mine	This Plan (generally)
		(b) if the forward program specifies timeframes for the implementation of the matters—must implement the matters within those timeframes.	Mine Site	Life of Mine	This Plan (generally)
Local Environmental Plans					
Parkes Local Environmental Plan 2012	Schedule 1	Use of certain land at Roose Road, Peak Hill 1. This clause applies to land at Roose Road, Peak Hill, known as "Peak Hill Gold Mine", being those parts of Lot 7010, DP 1126439, Lot 7011, DP 1127170, Lots 1, 3 and 4, DP 1005447 and Lots 145, 376, 380, 453, 466–468 and 489, DP 755113 that are in Zone RU1 Primary Production. 2. Development for the purpose of agriculture is permitted with development consent.	Mine Site	Prior to relinquishment	N/A
Other Commitments					
EIS (RWC, 1993)	Section 2.13.1 (generally)	The overall objectives of the rehabilitation proposal may be summarised as follows. (i) As far as practicable to blend to created landforms with the surrounding land fabric;	Mine Site	During landform establishment	6.2.3
		(ii) To provide a stable ground cover for erosion control;	Mine Site	Life of Mine	6.2.1.10
		(iii) To minimise impacts on scenic amenity by the retention of existing vegetation where practicable and by the implementation of progressive revegetation;	Mine Site	Life of Mine	6.2.5
		(iv) To revegetate with native tree and shrub species and/or pasture species compatible with pre-existing vegetation communities; and	Native Ecosystem Areas,	During rehabilitation	6.2.5

Consent / Legislation	Cond. No.	Requirement	Area	Timing	RMP Section
			Rehabilitation Areas		
		(v) To provide a low maintenance, stable and safe landform commensurate with a grazing land use capability.	Rehabilitation Areas	Prior to site relinquishment	2
	Section 2.13.2 (generally)	Development of tourism facilities during active mining phase.	Heritage areas	Life of Mine	1.1.8
		Provision of open cut as safe landform on completion of mining.	Final Voids	Prior to site relinquishment	6.2.3.4
		Rehabilitation within open cut limited to shallow ripping and planting of trees on upper benches visible from within Peak Hill.	Final Voids	Prior to site relinquishment	6.2.3.4
	Section 2.13.4 (generally)	Details the rehabilitation of the Waste Rock Emplacement.	Waste Rock Emplacement	During rehabilitation	6.2.3.3
	Section 2.13.5 (generally)	Details the rehabilitation of the Heap and Dump Leach.	Heap and Dump Leach	During rehabilitation	6.2.3.3
	Section 2.13.6 (generally)	Details the decommissioning and/or demolition of plant, equipment and other infrastructure.	Mine Site	During rehabilitation	6.2.2
	Section 2.13.7 (generally)	The Company [Alkane] would progressively rehabilitate disturbed areas once there are no longer being used. Once rehabilitated, these areas would be well defined to prevent inadvertent passage by vehicles.	Mine Site	Life of Mine	This Plan (generally)
		On completion of the Project, the Company [Alkane] would: • Remove all on-site roads, other than those required by Council or the Department of Conservation and Land Management (NSW Soil Conservation Service); • Remove compacted rock from hardstand areas; • Rip all former road, hardstand and stockpile areas; • Install any recommended drainage controls; and • Apply subsoil and topsoil and seed as recommended by the Department of Conservation and Land Management.	Infrastructure domains (generally)	During rehabilitation	6.2.2

Consent / Legislation	Cond. No.	Requirement	Area	Timing	RMP Section
	Section 2.13.8 (generally)	Details Alkane's commitment to the continued rehabilitation of existing disturbance from historical mining and other activities not related to the Mine.	Mine Site	Prior to and during site development	1.1.7
	Section 2.13.9 (generally)	Details ongoing maintenance of rehabilitation operations.	Mine Site	During rehabilitation	This Plan (generally)

2.3 Final Land Use Statement

Final land uses within the Mine Site will include the following (**Figure 7**).

- Native Ecosystem Areas – revegetated areas containing flora species assemblages and ecosystem characteristics consistent with key surrounding vegetation community types (see Section 6.2.5).
- Heritage Areas – areas containing individual or multiple historic heritage items. Where the retention of heritage items may pose a safety risk, these areas will be enclosed by security fencing (e.g. fenced historical workings) to ensure public safety and prevent unauthorised public access.
- Water Management Areas – includes the existing Northwest and North East Sediment Ponds, water diversion drains and other water management infrastructure that may be used to support the future land uses.
- Infrastructure Areas – includes tourism related infrastructure such as shelters, lookouts, walkways and parking areas; retained buildings and structures associated with the Mine Exploration Core yard and Workshop.
- Agriculture – areas suitable for and capable of sustaining agricultural production.
- Final Void Area – the final voids associated with the Proprietary, Parkers, Great Eastern, Crown and Bobby Burns Pits.

2.4 Final Land Use and Mining Domains

The *Form and Way: Rehabilitation Management Plan for Large Mines (July 2021)* guideline defines a domain as follows.

> *"An area (or areas) of the land that has been disturbed by mining and has a specific operational use (mining domain) or specific final land use (final land use domain). Land within a domain typically has similar geochemical and/or geophysical characteristics and therefore requires specific rehabilitation activities to achieve the associated final land use."*

2.4.1 Final Land Use Domains

Table 4 defines the final land use domains for the Mine and **Figure 7** displays the final land use domains for the Mine Site.

Table 4
Final Land Use Domains

Final Land Use Domain		Domain ID[1]	Domain Description
Native Ecosystem Area		A	Includes areas of the Mine Site that have been rehabilitated to a woodland consistent with the Tumbledown Gum/Currawang Community, including part of the ROM Pad, rehabilitated access roads.
Water Management Area		F	Includes all water management infrastructure to be retained for the final land use. This domain does not include the Town Water Reservoirs as these are managed by Parkes Shire Council.
Heritage Areas		H	Includes any built infrastructure, objects or sites to be retained due to known historic or cultural heritage value.
Infrastructure		I	Includes all built infrastructure to be retained or constructed for the final land use (e.g. access roads), with the exception of water management infrastructure, infrastructure considered to have heritage value and communication infrastructure managed by others.
Final Void		J	Includes the final Mine-related voids associated with the Proprietary, Parkers, Great Eastern, Crown and Bobby Burns Pits.
Other	Rehabilitation Area – Rural Land	Ka	Includes areas of the Mine Site that were previously used for agricultural purposes and were either not disturbed by Mine-related activities or have been rehabilitated for agricultural production.
Other	Rehabilitation Area – Grassland	Kb	Includes areas of the Mine Site that were rehabilitated to mixed native and exotic grasslands to ensure rapid ground stabilisation, namely the Waste Rock Emplacement, the Heap and Dump Leach and Trial Dump Leach, part of the ROM Pad and the rehabilitated area of historical disturbance to the immediate west of Proprietary Pit.
Other	Rehabilitation Area – Ephemeral Wetlands	Kc	Includes the 5 HDPE-lined Processing and Overflow Ponds that will be rehabilitated to ephemeral wetlands.
Note 1: See **Figure 6**			

2.4.2 Mining Domains

Table 5 defines the final land use domains for the Mine and **Figure 8** displays the mining domains for the Mine Site.

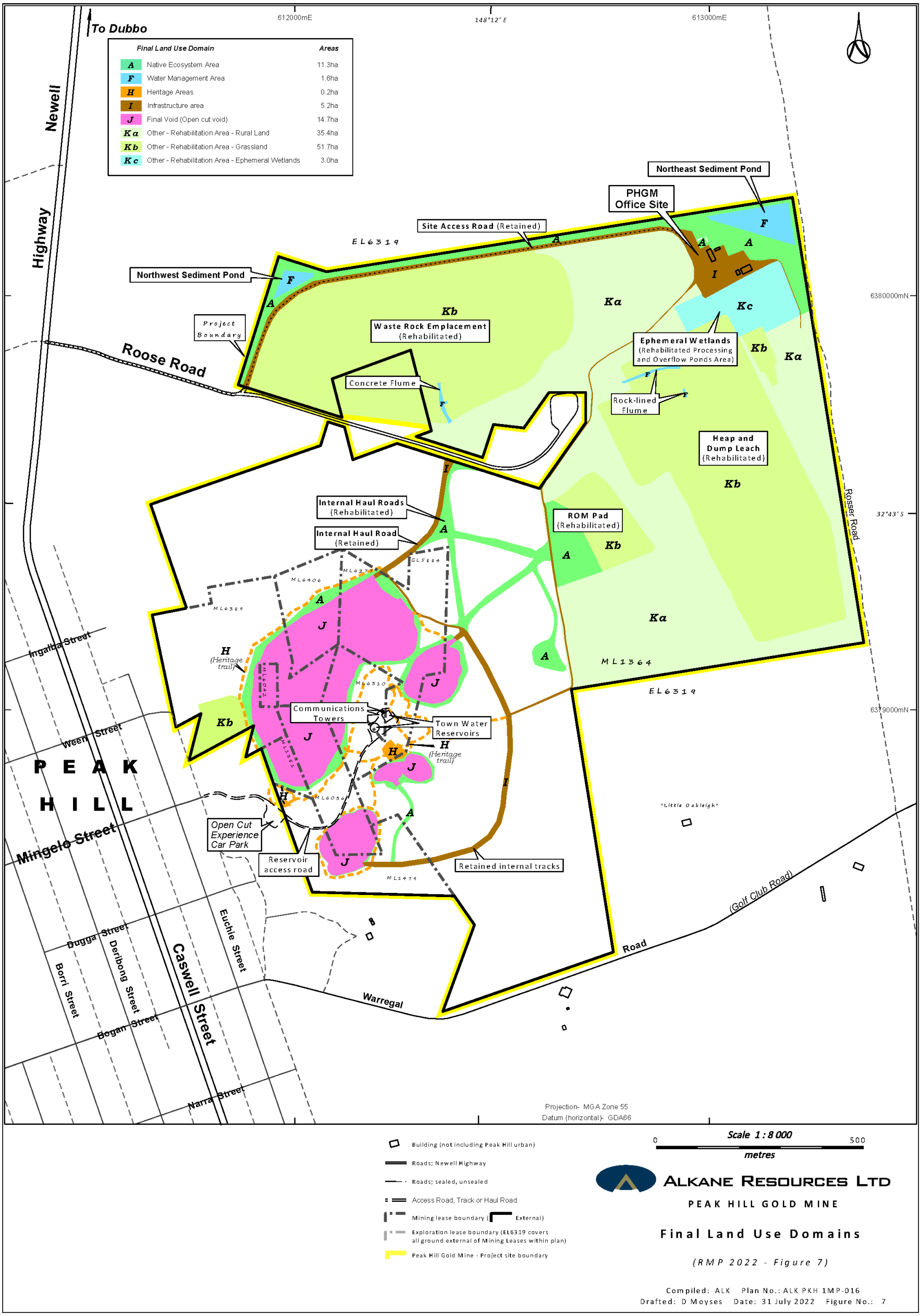


Figure 7
Final Land Use Domains

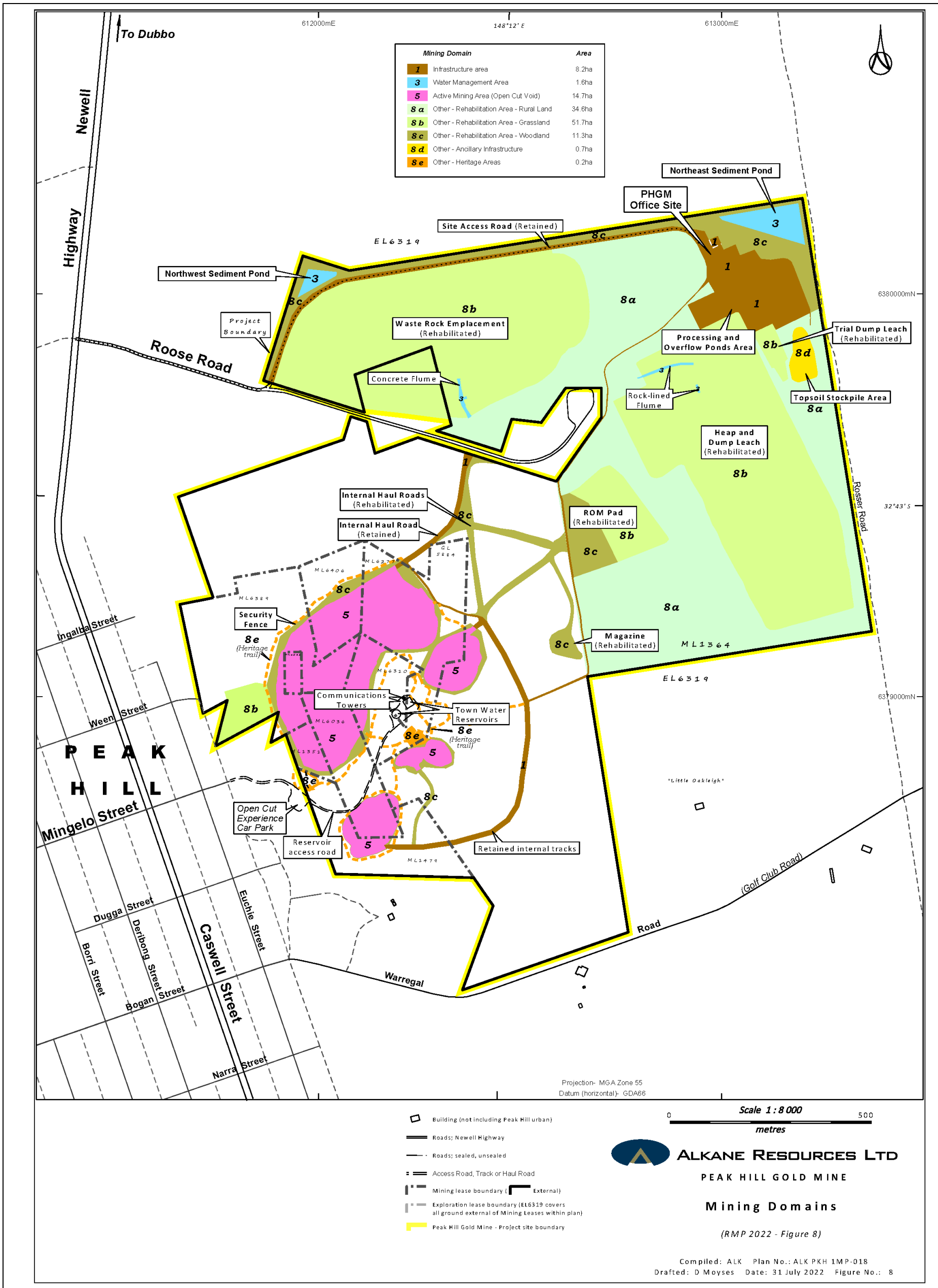


Figure 8
Mining Domains

Table 5
Mining Domains

Mining Domain		Domain ID[1]	Domain Description
Infrastructure		1	Includes the buildings, structures and hardstand areas associated with the Mine Site Office and Exploration Core yard and Workshop, the HDPE-lined ponds and the Site Access Road.
Water Management Area		3	Includes the North West and North East Sediment Ponds and other minor water management infrastructure such as drop structures and drains.
Active Mining Area (Open Cut Void)		5	Includes the final Mine-related voids associated with the Proprietary, Parkers, Great Eastern, Crown and Bobby Burns Pits.
Other	Rehabilitation Area – Rural Land	8a	Includes areas of the Mine Site that were previously used for agricultural purposes and were either not disturbed by Mine-related activities or have been rehabilitated for agricultural production.
Other	Rehabilitation Area – Grassland	8b	Includes the Heap and Dump Leach, Trial Dump Leach, Waste Rock Emplacement, ROM Pad (partial) and area of historical rehabilitation to the west of Proprietary Pit
Other	Rehabilitation Area – Woodland	8c	Includes the ROM Pad (partial) and areas of decommissioned roads and accessways.
Other	Ancillary Infrastructure	8d	Includes the remaining stockpiled topsoil.
Other	Heritage Areas	8e	Includes all tourism-related infrastructure, including paths, carparking and built infrastructure. Includes any built infrastructure, objects or sites to be retained due to known historic or cultural heritage value.
Note 1: See **Figure 8**			

3. Rehabilitation Risk Assessment

The following risk assessment was undertaken generally in accordance with *Australian Standards HB 203:2006*, *AS/NZS 4360:2004* and *AS/NZS ISO 31000:2018 Risk Management – Principles & Guidelines*.

Risks to achieving the rehabilitation objectives and rehabilitation completion criteria outlined in Section 4, as well as the final landform outlined in Section 5, were identified and assessed jointly by Alkane and R.W. Corkery & Co. Pty Limited during the preparation of this Plan. Site-specific threats to rehabilitation were assessed based on both the results of previous rehabilitation effort, as well as observations of site-specific conditions and threats to rehabilitation observed during site inspections. This risk assessment was completed with consideration of existing controls as well as those risk controls outlined in this plan.

For each identified risk to rehabilitation, potential adverse outcomes were identified and allocated a risk rating based on the potential consequences and likelihood of occurrence. **Tables 6**, **7** and **8** present the consequence, likelihood and risk rating used during this analysis. Where risks were determined to be unacceptable, namely those risks classified as "Moderate" or above, a Trigger Action Response Plan has been developed and is presented in Section 10.

Table 9 presents the results of the risk analysis assuming the implementation of standard mitigation measures and those outlined within this Plan.

Table 6
Qualitative Consequence Rating

Level	Descriptor	Description
1	Negligible	No detrimental impact on the final land use is measurable or envisaged.
2	Minor	An event which could have temporary and minor effects on the suitability of the final land use.
3	Moderate	An event which would create substantial temporary or minor permanent damage to the suitability of the final land use.
4	Major	An event which could have a substantial and permanent consequence to the suitability of the final land use.
5	Severe	A major event which could cause severe damage to the suitability of the final land use with actual or potential loss of credibility with key stakeholders, environmental liability, regulatory intervention, national publicity/complaints, or could close the operation prematurely.
Note: Rating modified after AS ISO 31000:2018 Risk Management – Guidelines		

Table 7
Qualitative Likelihood Rating

Level	Descriptor	Description
A	Certain	Is an ongoing occurrence or will occur under all conditions.
B	Almost Certain	Is expected to occur in most circumstances.
C	Likely	Will probably occur in most circumstances.
D	Possible	Will probably occur under favourable circumstances.
E	Unlikely	May occur, but only under favourable circumstances.
F	Rare	Not expected to occur, unless subject to exceptional circumstances.
G	Very Rare	Theoretically possible but not expected to occur.

Source: Rating modified after HB 89:2012 – Figure B7

Table 8
Qualitative Risk Rating

Likelihood	Consequences				
	1 Negligible	2 Minor	3 Moderate	4 Major	5 Severe
A Certain	M	H	H	VH	VH
B Almost Certain	M	M	H	VH	VH
C Likely	M	M	H	H	VH
D Possible	L	M	M	H	H
E Unlikely	L	L	M	M	H
F Rare	L	L	L	M	M
G Very Rare	L	L	L	L	M

Risk Rating: L = Low, M = Moderate, H = High and VH = Very High

Source: Modified after HB 89:2012 – Figure B8

Table 9
Rehabilitation Risk Assessment Summary

Rehabilitation Phase	Risk	Risk Control	Domain A: Native Ecosystem Area	Domain F: Water Management Area	Domain H: Heritage Area	Domain I: Infrastructure Area	Domain F: Vinal Void	Other Ka: Rehabilitation Area – Rural Land	Other Kb: Rehabilitation Area - Grassland	Other Kc: Rehabilitation Area – Ephemeral Wetlands	Where Addressed in this RMP
Active Mining Phase of Rehabilitation	Adverse geochemical/chemical composition of materials such as overburden, processing wastes, topsoils and subsoils.	*Contaminated Site Assessment Procedure*.	2G (L)	N/A	N/A	N/A	1A (M) ALARP	N/A	3C (H)	2G (L)	
Decommissioning Phase of Rehabilitation	Hazards associated with retained infrastructure.	Signage and security fencing.	1F (L)	1F (L)	4E (M)	1E (L)	4F (M)	1F (L)	1F (L)	1F (L)	
Landform Establishment Phase of Rehabilitation	Unstable landform due to erosion and/or mass movement issues associated with inappropriate design and/or quality assurance during landform construction.	Regular inspections	1G (L)	1G (L)	5F (M)	1G (L)	4E (M)	1G (L)	3G (L)	1G (L)	
	Exposure or release of geochemical and/or geotechnically adverse material associated with containment design and construction, including capping/cover system.	Regular inspections Remediation as required	2G (L)	N/A	N/A	N/A	4G (L)	N/A	3E (M)	2F (L)	
	Final landform unsuitable for final land use (e.g., unsuitable surface cover and landform settlement).	Regular inspections	1G (L)	1G (L)	1G (L)	1G (L)	4E (M)	2F (L)	2F (L)	2F (L)	
Growth Medium Development Phase of Rehabilitation	Subsoil and topsoil deficit for rehabilitation activities.	Presence of stockpiled growth medium. Growth medium stockpile assessment. Rehabilitation monitoring.	2D (M)	N/A	N/A	N/A	N/A	N/A	N/A	2D (M)	
Ecosystem and Land Use Establishment Phase of Rehabilitation	Adverse weather and climatic influences (e.g. drought; intense rainfall events; bushfire and climate change).	Meteorological monitoring. Rehabilitation planning/scheduling	N/A	N/A	N/A	N/A	N/A	N/A	N/A	2D (M)	
Ecosystem and Land Use Development Phase of Rehabilitation	Hazards associated with retained infrastructure.	Presence of security fencing. Presence of bunds. Maintenance of operational infrastructure. *Site Relinquishment Engineering Assessment.*	N/A	2E (L)	2E (L)	2E (L)	4E (M)	N/A	N/A	2F (L)	
	Damage to rehabilitation (e.g. fauna, domestic stock, vandalism, vehicular interactions, bushfire).	Existing security and stock-proof fencing. Ongoing agricultural land management. Rehabilitation monitoring program. Pest control by licenced professionals	2E (L)	1G (L)	3D (M)	1G (L)	1G (L)	2E (L)	3E (M)	2E (L)	
	Erosion and failure of landform, drainage and water management/storage structures.	Engineered water management infrastructure. Visual inspection program.	2F (L)	3F (L)	3F (L)	3F (L)	5F (M)	2F (L)	3F (L)	3F (L)	
	Lack of resources for rehabilitation maintenance.	Rehabilitation planning / scheduling.	2F (L)	2F (L)	4F (M)	2F (L)	4F (M)	2F (L)	3F (L)	2F (L)	

4. Rehabilitation Objectives and Rehabilitation Completion Criteria

4.1 Rehabilitation Objectives and Rehabilitation Completion Criteria

Table 10 presents the rehabilitation objectives and rehabilitation completion criteria for individual Final Land Use Domains at the Mine Site. Final Land Use Domains are shown on **Figure 7** and current Mining Domains are shown on **Figure 8**.

4.2 Rehabilitation Objectives and Rehabilitation Completion Criteria – Stakeholder Consultation

Table 11 presents a summary of consultation undertaken with relevant stakeholders with regards to the rehabilitation objectives, rehabilitation completion criteria and proposed final land uses and landforms presented in this Plan. This table will be updated with each revision to this Plan to include details of further consultation with relevant and interested stakeholders.

Table 10
Community Consultation Activities

Stakeholder	Consultation Activities
NSW Environment Protection Authority	Date: 20/06/2022 Topic: Draft Rehabilitation Objectives and Rehabilitation Completion Criteria, Final Landform and Land Use. Response Received: 21/06/2022 Response Summary: Acknowledgement of receipt of consultation items. No further comment received.
NSW Resources Regulator	Activity: Email correspondence. Date: 20/06/2022 Topic: Draft Rehabilitation Objectives and Rehabilitation Completion Criteria, Final Landform and Land Use. Response Received: 21/06/2022 Response Summary: Acknowledgement of receipt of consultation items and statement regarding n further comment will be provided until submission of a Forward Program covering rehabilitation activities is lodged.

Peak Hill Local Aboriginal Land Council	Activity: Email correspondence. Date: 20/06/2022 Topic: Draft Rehabilitation Objectives and Rehabilitation Completion Criteria, Final Landform and Land Use. Response Received: 21/06/2022 Response Summary: Acknowledgement of receipt of consultation items. No further comment received.
Parkes Shire Council	Activity: Email correspondence. Date: 20/06/2022 Topic: Draft Rehabilitation Objectives and Rehabilitation Completion Criteria, Final Landform and Land Use. Response Received: 8/7/2022 Response Summary: General acknowledgement and support of the proposed strategy for rehabilitation of the Mine Site.

Table 11
Rehabilitation Objectives and Completion Criteria

Final Land Use Domain	Spatial Reference[1]	Mining Domain	Spatial Reference[2]	Rehabilitation Objective	Indicator	Rehabilitation Completion Criteria	Validation Method
Infrastructure Area	I	Infrastructure Area	1	All infrastructure and services not required for the final land use are removed.	Presence of infrastructure	All infrastructure including roads and accessways removed unless specified to be retained in this Plan.	Single occurrence inspection and report, including photographs, prior to relinquishment.
					Presence of services	All services disconnected unless required for the final land use.	
				Areas are free from contaminants and hazardous materials.	Contamination levels (concentration of key parameters)	Contamination levels are less than or equal to the relevant thresholds for residential land.	Single occurrence contamination assessment report prepared by a suitably qualified person, including validation testing, prior to relinquishment.
					Presence of hazardous materials	Hazardous materials removed from site	Single occurrence hazardous materials audit undertaken by a suitably qualified person, prior to relinquishment.
					Presence of general waste	All rubbish and waste materials are removed from site.	Single occurrence inspection and report, including photographs, prior to relinquishment.
				Final landforms are safe, stable, non-polluting and suitable for final land use.	Presence of hardstand areas, including roads	Hardstand areas and roads removed or reduced in size/width to that required for final land use.	Single occurrence inspection and report, including photographs, prior to relinquishment.
					Structural integrity of infrastructure	Structural integrity of retained or constructed infrastructure is determined to be suitable and safe as part of the final land use.	Engineering report prepared by a suitably qualified person including photographs.
					Presence of suitable water management structures.	Water management structures meeting relevant design criteria from Landcom (2004) & DECC (2008) for sediment control structures.	Single occurrence inspection and report, including photographs, prior to relinquishment.
					Presence of erosion	No active erosion observed.	Visual inspections, including photographs, undertaken on an annual basis until site relinquishment.
Water Management Area	F	Water Management Area	3	All infrastructure and services not required for the final land use are removed.	Presence of infrastructure	All redundant water management infrastructure decommissioned unless required to be retained to comply with Landcom (2004) & DECC (2008) .	Single occurrence inspection and report, including photographs, prior to relinquishment.
					Presence of services	All services disconnected unless required for the final land use.	
				Areas are free from contaminants and hazardous materials.	Contamination levels (concentration of key parameters)	Contamination levels are less than or equal to the relevant thresholds for agricultural land.	Single occurrence contamination assessment report prepared by a suitably qualified person, including validation testing, prior to relinquishment.
					Presence of hazardous materials	Hazardous materials removed from site	Single occurrence hazardous materials audit undertaken by a suitably qualified person, prior to relinquishment.
					Presence of general waste	All rubbish and waste materials are removed from site.	Single occurrence inspection and report, including photographs, prior to relinquishment.
				Final landforms are safe, stable, non-polluting and provide for long-term water management.	Presence of fencing and warning signs	Agricultural-style fences separate publicly accessible areas from deep water storages	Single occurrence inspection and report, including photographs, prior to relinquishment
					Presence of erosion	No active erosion is observed.	Visual inspections, including photographs, undertaken on an annual basis until site relinquishment..

Table 10 (Cont'd)
Rehabilitation Objectives and Completion Criteria

Final Land Use Domain	Spatial Reference[1]	Mining Domain	Spatial Reference[2]	Rehabilitation Objective	Indicator	Rehabilitation Completion Criteria	Validation Method
Water Management Area (Cont'd)					Presence of stabilised spillways	Stabilised spillways are present at locations where water is discharged off site from water management structures.	Single occurrence inspection and report, including photographs, prior to relinquishment.
					Presence of suitable water management structures.	Water management structures meet relevant design criteria from Landcom (2004) & DECC (2008).	Single occurrence inspection and report, including photographs, prior to relinquishment.
						Dam walls and spillways do not show signs of active erosion.	
					Surface water quality	Monitoring indicates any surface water quality (pH, total dissolved solids, dissolved metals and metalloids) is within 10% of water quality from surrounding non-mine affected catchments	Surface water quality sampling undertaken quarterly for a minimum of two years following the cessation of mining operations.
Other Ka: Rehabilitation Area – Rural Land	Ka	Other 8a: Rehabilitation Area – Rural Land.	8a	All infrastructure and services not required for the final land use are removed.	Presence of infrastructure	All infrastructure including roads and accessways removed unless specified to be retained in this Plan.	Single occurrence inspection and report, including photographs, prior to relinquishment.
					Presence of services	All services disconnected unless required for the final land use.	
				Areas are free from contaminants and hazardous materials.	Contamination levels (concentration of key parameters)	Contamination levels are less than or equal to the relevant thresholds for agricultural land.	Single occurrence contamination assessment report prepared by a suitably qualified person, including validation testing, prior to relinquishment.
					Presence of hazardous materials	Hazardous materials removed from site	Single occurrence hazardous materials audit undertaken by a suitably qualified person, prior to relinquishment.
					Presence of general waste	All rubbish and waste materials are removed from site.	Single occurrence inspection and report, including photographs, prior to relinquishment.
				Final landforms are safe, stable, non-polluting and suitable for the final land use.	Presence of erosion or landform instability	No evidence of active erosion or other landform instability (e.g. mass movement) that would require maintenance greater than that required for similar surrounding non-mining landforms is observed.	Visual inspections and reports, including photographs, undertaken on an annual basis until site relinquishment.
				Growth media suitable for the final land use	Key soil characteristics	Soil parameters meet the following criteria OR are within 20% of analogue site values. • pH – 5.3 to 7.0 • Electrical conductivity – 0.21 to 0.40dS/m. • Cation exchange capacity – 4.9 to 7.1meq/100g • Dispersion index – 4 to 5 • Phosphorus Colwell – 12 to 48mg/kg • Nitrate N – 4.3 to 26mg/kg • Exchangeable Sodium % - 0.6 to 3.2%	Assessment report prepared by a suitably qualified person, prior to relinquishment.

Table 10 (Cont'd)
Rehabilitation Objectives and Completion Criteria

Final Land Use Domain	Spatial Reference[1]	Mining Domain	Spatial Reference[2]	Rehabilitation Objective	Indicator	Rehabilitation Completion Criteria	Validation Method
Other Ka: Rehabilitation Area – Rural Land (Cont'd)				Vegetation communities suitable for final land use	Landscape Function Analysis undertaken using the procedures of Tongway and Lindley (2004)	Stability, infiltration/runoff and nutrient cycling indices consistent with analogue site(s)	Assessment report prepared by a suitably qualified person, prior to relinquishment.
					Vegetation self-sustaining	Evidence of natural regeneration and recruitment	
					Weed and pest species management requirements comparable to analogue sites	Weed abundance within rehabilitated areas is equal to or less than that observed at analogue sites and priority weeds (e.g. Weeds of National Significance) are not present within rehabilitation areas.	
Other Kb: Rehabilitation Area - Grassland	Kb	Other 8b: Rehabilitation Area - Grassland	8b	All infrastructure and services not required for the final land use are removed.	Presence of infrastructure	All infrastructure including roads and accessways removed unless specified to be retained in this Plan.	Single occurrence inspection and report, including photographs, prior to relinquishment.
					Presence of services	All services disconnected unless required for the final land use.	
				Areas are free from contaminants and hazardous materials.	Contamination levels (concentration of key parameters)	Contamination levels are less than or equal to the relevant thresholds for agricultural land.	Single occurrence contamination assessment report prepared by a suitably qualified person, including validation testing, prior to relinquishment.
					Presence of hazardous materials	Hazardous materials removed from site	Single occurrence hazardous materials audit undertaken by a suitably qualified person, prior to relinquishment.
					Presence of general waste	All rubbish and waste materials are removed from site.	Single occurrence inspection and report, including photographs, prior to relinquishment.
				Final landforms are safe, stable and non-polluting and residual waste materials are contained and/or encapsulated and do not pose any hazards or constraints for the final land use.	Presence of safety bunds	Safety bunds are constructed to prevent public access to potentially hazardous, if required.	Single occurrence inspection and report, including photographs, prior to relinquishment.
					Geotechnical stability of final landform	All slopes <18º.	Single occurrence report prepared by a suitably qualified person following landform establishment.
					Waste Rock Emplacement and Heap Leach material capped	Quality assurance records verify that capping has been constructed in accordance with design specifications relevant to site risks and final land use.	As constructed surveys, quality assurance records for construction, single occurrence report prepared by a suitably qualified person prior to relinquishment.
						Top surfaces are free draining.	Single occurrence inspection and report, including photographs, prior to relinquishment.
					Presence of erosion or landform instability	No evidence of active erosion or other landform instability (e.g. mass movement) that would require maintenance greater than that required for similar surrounding non-mining landforms is observed.	Visual inspections and reports, including photographs, undertaken on an annual basis until site relinquishment.
						Suitable drop structures installed	Single occurrence inspection and report, including photographs, prior to relinquishment.
					Presence of ponded surface water	Visual inspection confirms that the landform is free draining.	Single occurrence inspection and report, including photographs, prior to relinquishment.

Table 10 (Cont'd)
Rehabilitation Objectives and Completion Criteria

Final Land Use Domain	Spatial Reference[1]	Mining Domain	Spatial Reference[2]	Rehabilitation Objective	Indicator	Rehabilitation Completion Criteria	Validation Method
Other Kb: Rehabilitation Area – Grassland (Cont'd)					Surface water quality	Monitoring indicates any surface water quality (pH, total dissolved solids, dissolved metals and metalloids) is within 10% of water quality from surrounding non-mine affected catchments	Surface water quality sampling undertaken quarterly for a minimum of two years following the cessation of mining operations.
				Growth media suitable for the final land use	Key soil characteristics	Soil parameters meet the following criteria OR are within 20% of analogue site values. • pH – 5.3 to 7.0 • Electrical conductivity – 0.21 to 0.40dS/m. • Cation exchange capacity – 4.9 to 7.1meq/100g • Dispersion index – 4 to 5 • Phosphorus Colwell – 12 to 48mg/kg • Nitrate N – 4.3 to 26mg/kg Exchangeable Sodium % - 0.6 to 3.2%	Assessment report prepared by a suitably qualified person, prior to relinquishment.
				Vegetation communities suitable for final land use	Landscape Function Analysis undertaken using the procedures of Tongway and Lindley (2004)	Stability, infiltration/runoff and nutrient cycling indices consistent with analogue site	Assessment report prepared by a suitably qualified person, prior to relinquishment.
					Vegetation self-sustaining	Evidence of natural regeneration and recruitment	
					Weed and pest species management requirements comparable to analogue sites	Weed abundance within rehabilitated areas is equal to or less than that observed at analogue sites and priority weeds (e.g. Weeds of National Significance) are not present within rehabilitation areas.	
Native Ecosystem Area	A	Infrastructure, Other 8c: Rehabilitation Area – Woodland.	1, 8c	All infrastructure and services not required for the final land use are removed.	Presence of infrastructure	All infrastructure including roads and accessways removed unless specified to be retained in this Plan.	Single occurrence inspection and report, including photographs, prior to relinquishment.
					Presence of services	All services disconnected unless required for the final land use.	
				Areas are free from contaminants and hazardous materials.	Contamination levels (concentration of key parameters)	Contamination levels are less than or equal to the relevant thresholds for agricultural land.	Single occurrence contamination assessment report prepared by a suitably qualified person, including validation testing, prior to relinquishment.
					Presence of hazardous materials	Hazardous materials removed from site	Single occurrence hazardous materials audit undertaken by a suitably qualified person, prior to relinquishment.
					Presence of general waste	All rubbish and waste materials are removed from site.	Single occurrence inspection and report, including photographs, prior to relinquishment.
				Final landforms are safe, stable, non-polluting and suitable for the final land use.	Presence of safety bunds	Safety bunds are constructed to prevent public access to potential hazards, if required.	Single occurrence inspection and report, including photographs, prior to relinquishment.
					Presence of erosion or landform instability	No evidence of active erosion or other landform instability (e.g. mass movement) that would require maintenance greater than that required for similar surrounding non-mining landforms is observed.	Visual inspections and reports, including photographs, undertaken on an annual basis until site relinquishment.

Table 10 (Cont'd)
Rehabilitation Objectives and Completion Criteria

Final Land Use Domain	Spatial Reference[1]	Mining Domain	Spatial Reference[2]	Rehabilitation Objective	Indicator	Rehabilitation Completion Criteria	Validation Method
Native Ecosystem Area (Cont'd)				Vegetation communities suitable for final land use	Landscape Function Analysis undertaken using the procedures of Tongway and Lindley (2004)	Stability, infiltration/runoff and nutrient cycling indices consistent with analogue site(s)	Assessment report prepared by a suitably qualified person, prior to relinquishment.
					Vegetation self-sustaining	Evidence of natural regeneration and recruitment	
					Weed and pest species management requirements comparable to analogue sites	Weed abundance within rehabilitated areas is equal to or less than that observed at analogue sites and priority weeds (e.g. Weeds of National Significance) are not present within rehabilitation areas.	
Other Kc: Rehabilitation Area – Ephemeral Wetland	Kc	Infrastructure	1	All infrastructure and services not required for the final land use are removed.	Presence of infrastructure	All redundant water management infrastructure decommissioned unless required to be retained to comply with Landcom (2004) & DECC (2008) .	Single occurrence inspection and report, including photographs, prior to relinquishment.
					Presence of services	All services disconnected unless required for the final land use.	
				Areas are free from contaminants and hazardous materials.	Contamination levels (concentration of key parameters)	Contamination levels are less than or equal to the relevant thresholds for agricultural land.	Single occurrence contamination assessment report prepared by a suitably qualified person, including validation testing, prior to relinquishment.
					Presence of hazardous materials	Hazardous materials removed from site	Single occurrence hazardous materials audit undertaken by a suitably qualified person, prior to relinquishment.
					Presence of general waste	All rubbish and waste materials are removed from site.	Single occurrence inspection and report, including photographs, prior to relinquishment.
				Final landforms are safe, stable, non-polluting and provide for long-term water management.	Presence of fencing and warning signs	Agricultural-style fences separate publicly accessible areas from deep water storages	Single occurrence inspection and report, including photographs, prior to relinquishment
					Presence of erosion	No active erosion is observed.	Visual inspections, including photographs, undertaken on an annual basis until site relinquishment..
					Surface water quality	Monitoring indicates any surface water quality (pH, total dissolved solids, dissolved metals and metalloids) is within 10% of water quality from surrounding non-mine affected catchments	Surface water quality sampling undertaken quarterly for a minimum of two years following the cessation of mining operations.
				Wetland ecosystem established	Presence of wetland flora and fauna species.	Target vegetation species present within wetland areas.	Annual rehabilitation monitoring inspection and report, including photographs, until relinquishment.
Heritage Area	H	Other 8e: Heritage Areas	8e	Areas are free from waste materials	Presence of general waste	All rubbish and waste materials are removed from site.	Single occurrence inspection and report, including photographs, prior to relinquishment.
				Final landforms are safe and suitable for the final land use.	Presence of security fences	Security fences are constructed in a manner that would prevent public access to areas.	Single occurrence inspection and report, including photographs, prior to relinquishment.
				Heritage items are appropriately managed and preserved as part of the final landform.	Compliance with the *Management Plan for Mining Heritage of Peak Hill (Dec 1995)*	All heritage areas are managed in accordance with the relevant management categories/responsibilities outlined in the *Management Plan for Mining Heritage of Peak Hill*	Annual inspections and reports detailing management measures undertaken for each heritage item, including an assessment of compliance with any commitments made in the *Management Plan for Mining Heritage of Peak Hill*, until relinquishment.

Table 10 (Cont'd)
Rehabilitation Objectives and Completion Criteria

Final Land Use Domain	Spatial Reference[1]	Mining Domain	Spatial Reference[2]	Rehabilitation Objective	Indicator	Rehabilitation Completion Criteria	Validation Method
Heritage Area (Cont'd)				Heritage areas are suitable for final land use	Compliance with the *Management Plan for Mining Heritage of Peak Hill*	Infrastructure is retained and/or constructed as specified in this Plan to enable safe public access to heritage items and vantage points.	Single occurrence inspection and report, including an assessment of compliance with any commitments made in the *Management Plan for Mining Heritage of Peak Hill*, prior to opening the site for public access.
						Infrastructure (e.g. information boards) is installed within publicly accessible areas, in accordance with the *Management Plan for Mining Heritage of Peak Hill*, to support the interpretation and appreciation of retained heritage items and mine-related landforms.	
					Heritage obligations have been met as identified within the *Heritage Relinquishment Strategy*	Permits and approval documents issued.	Copy of any relevant approval documentation.
						Transfer of management obligations to relevant stakeholders.	Copy of any agreements with relevant stakeholders.
Final Void Area	J	Active Mining Area (Open Cut Void)	5	Final void landforms are safe and stable.	Presence of safety bunds	Safety bunds are present around the perimeter of final voids.	Single occurrence inspection and report, including photographs, prior to relinquishment.
					Presence of security fences around final voids	Security fences are present around the perimeter of final voids.	
				Final void landforms are non-polluting.	Contamination of surface water	Risk of contamination of surface water via discharge from the final void determined to be negligible	Single occurrence inspection and report, including photographs, prior to relinquishment.

Note 1: See Plan 1

Note 2: See Plan 1

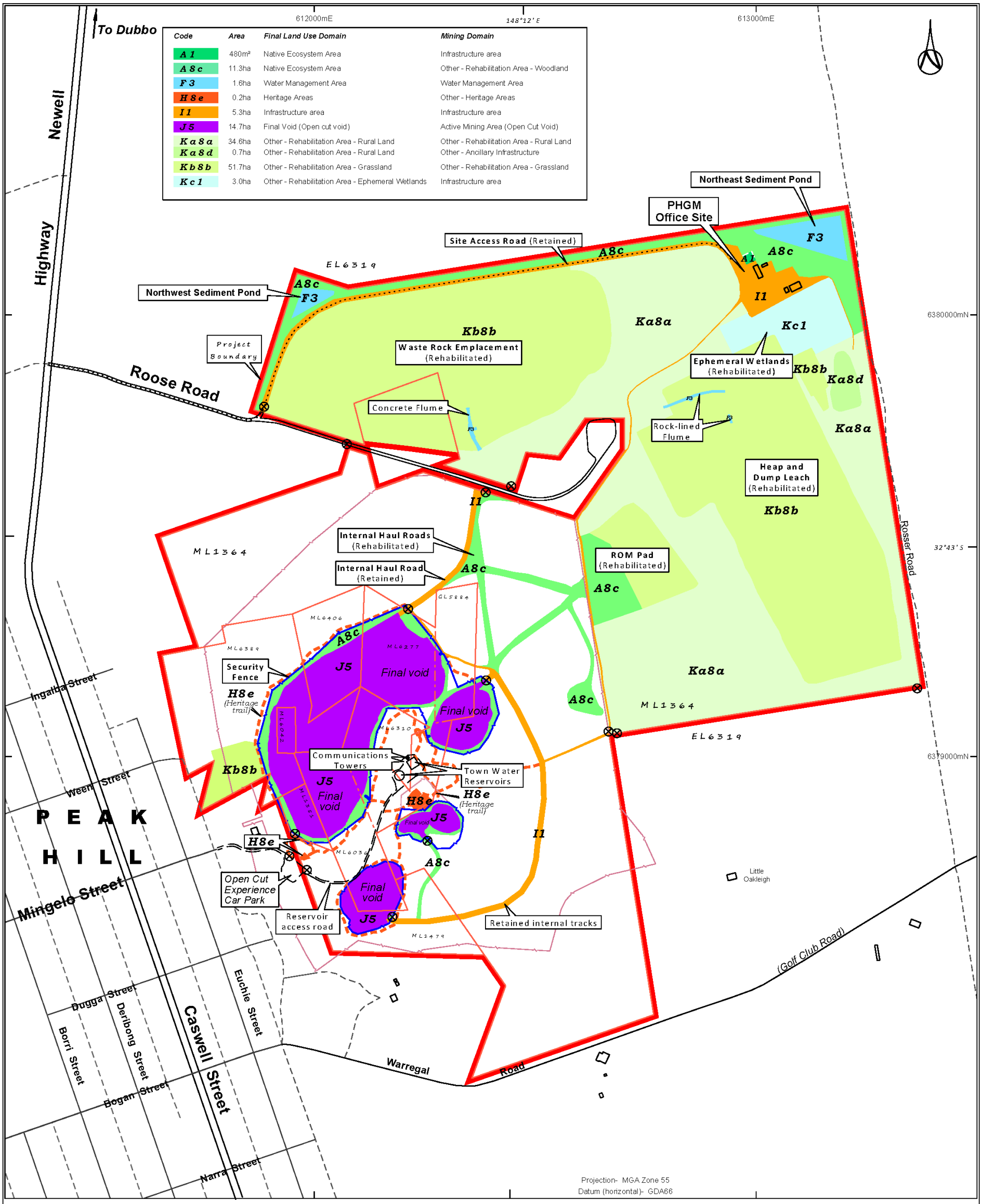
Note 3: Plans, studies and procedures, referenced in red text have not yet been developed.

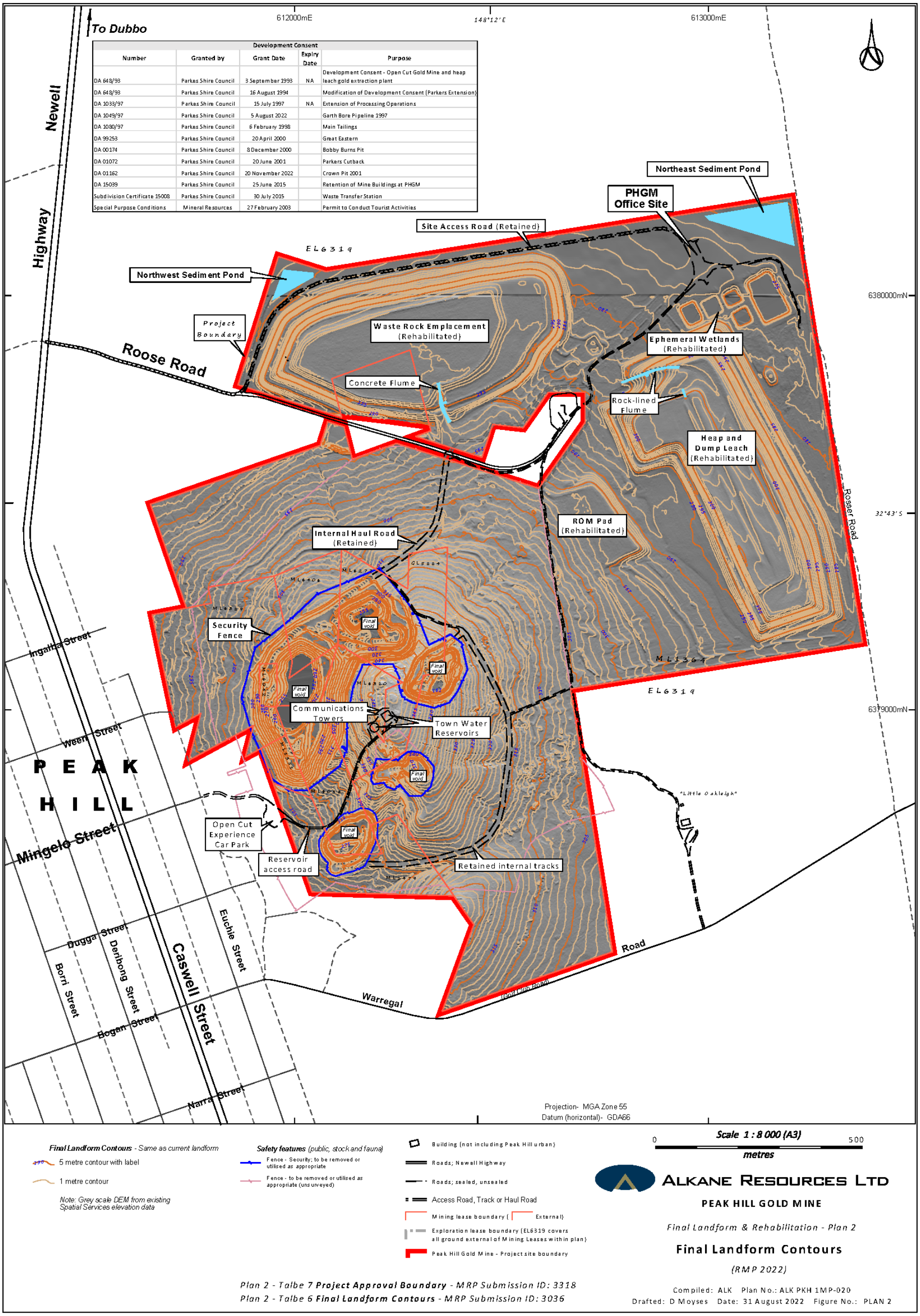
5. Final Landform and Rehabilitation Plan

5.1 Final Landform and Rehabilitation Plan – Electronic Copy

Plan 1 presents the final landform features for the Mine Site and **Plan 2** presents the final landform contours for the Mine Site.

Code	Area	Final Land Use Domain	Mining Domain
A1	480m²	Native Ecosystem Area	Infrastructure area
A8c	11.3ha	Native Ecosystem Area	Other - Rehabilitation Area - Woodland
F3	1.6ha	Water Management Area	Water Management Area
H8e	0.2ha	Heritage Areas	Other - Heritage Areas
I1	5.3ha	Infrastructure area	Infrastructure area
J5	14.7ha	Final Void (Open cut void)	Active Mining Area (Open Cut Void)
Ka8a	34.6ha	Other - Rehabilitation Area - Rural Land	Other - Rehabilitation Area - Rural Land
Ka8d	0.7ha	Other - Rehabilitation Area - Rural Land	Other - Ancillary Infrastructure
Kb8b	51.7ha	Other - Rehabilitation Area - Grassland	Other - Rehabilitation Area - Grassland
Kc1	3.0ha	Other - Rehabilitation Area - Ephemeral Wetlands	Infrastructure area




612000mE
148°12'E
613000mE
To Dubbo
Development Consent
Number | Granted by | Grant Date | Expiry Date | Purpose
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 2022 | | Garth Bore Pipeline 1997
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 2022 | | Crown Pit 2001
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
Newell Highway
Northeast Sediment Pond
PHGM Office Site
Site Access Road (Retained)
EL6319
Northwest Sediment Pond
Project Boundary
Waste Rock Emplacement (Rehabilitated)
Ephemeral Wetlands (Rehabilitated)
Roose Road
Concrete Flume
Rock-lined Flume
Heap and Dump Leach (Rehabilitated)
6380000mN
Rosser Road
32°43'S
ROM Pad (Rehabilitated)
Internal Haul Road (Retained)
ML1364
Security Fence
Final void
Communications Towers
Town Water Reservoirs
EL6319
6379000mN
Ingalba Street
Weeri Street
PEAK HILL
Mingelo Street
"Little Oakleigh"
Open Cut Experience Car Park
Reservoir access road
Retained internal tracks
Dugga Street
Borri Street
Derribong Street
Euchie Street
Caswell Street
Warregal
Golf Club Road
Bogan Street
Narra Street
Projection- MGA Zone 55
Datum (horizontal)- GDA66
Final Landform Contours - Same as current landform
5 metre contour with label
1 metre contour
Note: Grey scale DEM from existing Spatial Services elevation data
Safety features (public, stock and fauna)
Fence - Security; to be removed or utilised as appropriate
Fence - to be removed or utilised as appropriate (unsurveyed)
Building (not including Peak Hill urban)
Roads; Newell Highway
Roads; sealed, unsealed
Access Road, Track or Haul Road
Mining lease boundary (External)
Exploration lease boundary (EL6319 covers all ground external of Mining Leases within plan)
Peak Hill Gold Mine - Project site boundary
Scale 1 : 8 000 (A3)
0
500
metres
ALKANE RESOURCES LTD
PEAK HILL GOLD MINE
Final Landform & Rehabilitation - Plan 2
Final Landform Contours
(RMP 2022)
Compiled: ALK Plan No.: ALK PKH 1MP-020
Drafted: D Moyses Date: 31 August 2022 Figure No.: PLAN 2
Plan 2 - Talbe 7 Project Approval Boundary - MRP Submission ID: 3318
Plan 2 - Talbe 6 Final Landform Contours - MRP Submission ID: 3036

6. Rehabilitation Implementation

6.1 Life of Mine Rehabilitation Schedule

Rehabilitation of the Mine Site is largely complete, with the majority of the Mine Site in the Ecosystem and Land Use Development rehabilitation phase. In addition, the successful rehabilitation and relinquishment of the approximately 4ha of land (by subdivision SC15008 determined 30 July 2015) (including partial cancellation of ML 1364) was completed in May 2017.

As the extent of disturbance at the Mine Site is largely confined to operational areas required to support ongoing exploration and land management activities, the storage of rehabilitation materials (i.e. topsoil stockpiles) and the remaining process water ponds, opportunities for progressive rehabilitation prior to the completion of mining operations are limited.

Figure 8 depicts the current extent of disturbance at the Mine Site (i.e. the Mining Domains). **Plans 3** and **4** present the indicative rehabilitation schedule for the Mine Site by depicting those areas which would be rehabilitated during each 5-yearly increment between the commencement of this plan and Mine closure. It is noted that this schedule is applicable only until the completion of the Ecosystem and Land Use Establishment phase of rehabilitation operations within all Mining Domains (see Section 6.2). Approximate timings for the Ecosystem and Land Use Development phase of rehabilitation have not yet been defined as this phase will continue to principally involve the monitoring and maintenance of completed rehabilitation works until completion criteria identified in Section 4.1 have been achieved, or until the final relinquishment of the Mine Site (i.e. the MLs).

In summary, the rehabilitation schedule indicates that only the rehabilitation of the Processing and Overflow Ponds will be undertaken and completed during the first five-year period (2022 to 2026). It should be noted that this activity will depend on the requirement to use this infrastructure for future mining or other development. Following the cessation of the use of the Mine Site as Alkane's base for mineral exploration, all other Mining Domains (i.e. the Mine Site House) would be subject to the decommissioning, landform establishment, growth medium development and ecosystem and land use establishment rehabilitation phases as outlined in Section 6.2. It is anticipated that the rehabilitation of all Mining Domains and the successful establishment of all Final Land Use Domains (up to the Ecosystem and Land Use Development Phase) will be completed by 2031.

6.2 Phases of Rehabilitation and General Methodologies

6.2.1 Active Mining Phase

6.2.1.1 Soils and Materials

Soils in the Peak Hill area include Sodosols and Dermosols. Sodosols have an abrupt increase of clay down the profile and high sodium content which may lead to soil dispersion and instability (northeast sediment pond). Soil within the Mine Site consists of two principal soil types, as follows.

- Gravelly loam over red gravelly clays (on Peak Hill).

  Highly disturbed by mining and processing operations 1889-1917 and exploration in the 1980's.

- Gravelly red/brown loam over gravelly red/yellow mottled clays (Lot 380).

  Disturbed by historical agriculture (cropping and soil conservation works up until 1996) and Mine-related operations such as soil stripping and stockpiling.

Due to the high levels of historical disturbances, the soils that have been used for the rehabilitation of disturbed areas of the Mine Site are generally considered to be Anthroposols (soil parent materials have been made or altered by human action) consisting of a combination of the two soil types.

Soil testing was undertaken by Graminus Consulting as part of Landscape Function Analysis (LFA) reporting during the Ecosystem and Land Use Development phases (August and October 2013 and May 2014). The resulting reports are presented as **Appendices 1a**, **1b** and **1c**. The use of these soil types has proven to be suitable to rehabilitation with pasture species and woody vegetation, based on the successful rehabilitation of the Mine Site to date. Further information on the results of the soil analyses is presented in Section 8.1.

The location of the remaining stockpiled growth medium is shown on **Figure 8**. The stockpile has a stabilising pastural groundcover to manage potential impacts to the remaining resource and to maintain a viable seedbank *in-situ* for use in rehabilitation.

The volume of remaining stockpiled material is currently estimated to be approximately 2,260m^3, consisting of an estimated 75% subsoil and 25% topsoil.

No further surface disturbance activities are proposed to be undertaken at the Mine Site that would require soils to be stripped, salvaged or stockpiled.

It is estimated that approximately 1290m^2 of topsoil will be required for the remaining rehabilitation operations. Subject to confirmation of actual stockpiled growth medium volumes, estimated growth medium resources available at the Mine Site for rehabilitation operations are likely to be adequate for the coverage of areas which are required to achieve native ecosystems as the final land use. The quantity and quality of growth medium available for rehabilitation operations is therefore not anticipated to be a significant risk to rehabilitation. It should be noted that the waterways and drains that were established in 1996 around the perimeter of Lot 81 were stripped to subsoil and seeded with a mix of grass and legume pasture species. Those drains and

waterways have been well vegetated since established and deliver relatively low sediment waters to the licenced discharge points.

Notwithstanding the above, the following risk controls and management practices will continue to be implemented at the Mine Site.

- Restrict vehicle access to growth medium stockpiles to prevent compaction, except during rehabilitation operations where necessary.
- Undertake extraction of growth mediums materials from stockpiles only during favourable conditions (i.e. not during excessively windy or wet conditions).
- Lightly wet growth medium material prior to extraction from growth medium stockpiles, during growth medium placement and/or following growth medium spreading, as required, to prevent excessive dust generation and wind erosion.

6.2.1.2 Flora

Prior to development of the Mine, the Mine Site was heavily disturbed by historical agricultural and mining related activities. The land within and in the vicinity of the operational area of the Mine Site (excluding the mining areas) was used for conventional tillage and cropping for decades prior to mining activity recommencing. Vegetation clearance, in combination with regular stubble burning and grazing of livestock, significantly reduced the native vegetation cover within these areas. Remnant native vegetation within the remaining areas of the Mine Site was heavily affected by historic mining operations and other anthropogenic activities (see Section 1.1.7.1).

An assessment of the existing flora and fauna of the Mine Site was undertaken as part of the EIS for the Mine (RWC, 1993). The results of that assessment are summarised as follows.

- The vegetation structure of Peak Hill is typical of regenerating woodland and consists of three key vegetation types:
  - lower-slopes dominated by box-type eucalypts such as *Eucalyptus melliodora* (Yellow Box) and *Eucalyptus microcarpa* (Grey Box);
  - westward-facing midslopes dominated by *Eucalyptus dealbata* (Tumbledown Red Gum) and a lower abundance of *Eucalyptus sideroxylon* (Red Iron-bark); and
  - ridgetops dominated by *Eucalyptus dwyeri* (Dwyer's Red Gum) and *Acacia doratoxylon* (Currawang).
- Vegetation communities within the Mine Site showed a greater species diversity compared to the nearby fenced-off flora and fauna reserve to the south of the Mine Site.
- No rare of endangered plant species (as listed at the time) were identified on the Mine Site.

The majority of the Mine Site has been successfully revegetated in accordance with previous MOPs and consisting of three principal vegetation types:

- Pastoral – mixed native and introduced pasture species including grasses and legumes;
- Grassland – mixed native and exotic species consisting of perennial and annual grasses and legume; and
- Woodland – mixed native species including trees and shrubs commensurate with surrounding native vegetation communities.

In addition to active stabilisation and revegetation, the passive revegetation and recruitment of native species across the majority of the rehabilitated Mine Site shows that the existing rehabilitation operations are stable and relatively self-sustaining.

Ongoing management of floral resources within the Mine Site primarily consists of ongoing pest and weed control procedures. In addition, by maintaining a stabilising vegetation cover on the remaining growth medium stockpiles, the viability of the in-situ seedbank is maintained.

The remaining revegetation operations to be undertaken within the Mine Site will consist of the use of woodland and wetland species that are known to grow in other areas of the Mine Site, namely in the vicinity of the Mine Office Site and the Northeast and Northwest Sediment Ponds.

Due to the previous success of revegetation operations, the high abundance of naturally occurring vegetation in the vicinity and the high capacity of the Mine Site to support natural revegetation and recruitment, the risk to rehabilitation associated with establishing specific species or communities of flora are considered to be low and no specific risk controls have been identified.

6.2.1.3 Fauna

An assessment of the flora and fauna of the Mine Site was undertaken as part of the EIS for the Mine (RWC, 1993). The results of that assessment are summarised as follows.

- Sixty-three vertebrate species were identified within the Mine Site consisting of:
  - three species of amphibian;
  - six species of reptile;
  - forty-six species of birds; and
  - eight species of mammal.
- Two species of bird (*Lathamus discolor* (Swift Parrot) and *Grantiella picta* (Painted Honeyeater)) were identified at the time as threatened and one species of bird (*Ninox conniven* (Barking Owl)) was identified as. The observations of Swift Parrot and Painted Honeyeater consisted of single individuals located outside of the principal disturbance area of the Mine Site (i.e. within remnant vegetation on or to the south of Peak Hill). None of those species has been subsequently sighted by Alkane staff on the Mine Site since 1993. However, numerous species (including occasional visitors) have been added to the fauna list since 1996.

- No critical habitat for any threatened or rare species was identified within the Mine Site.

The rehabilitation of the Mine Site since 1996 has resulted in significant improvements to local biodiversity values. The extensive revegetation efforts have resulted in increased habitat availability and diversity within the Mine Site. In addition, the exclusion of stock and restriction of public (and dog) access to certain areas the Mine Site has seen an increase in abundance and diversity of Macropods, including *Macropus rufogriseus* (Red-necked Wallaby), *Macropus robustus* (Common Wallaroo) and other macropod species. Macropod grazing pressure is actively managed within the Mine Site to manage grazing related impacts on other biodiversity values.

The species richness of avifauna has increased since 1996 due to the tree and shrub plantings (particularly around the perimeter of the Mine Site. There has been natural recruitment of local tree and shrub species as well as regeneration of the planted species. Most of the trees planted at the Mine Site have been grown from locally provenanced seed.

Based on the relatively restricted spatial extent of the remaining rehabilitation operations, it is considered unlikely that any specific fauna-related rehabilitation outcomes are required to achieve the final rehabilitation of the Mine Site.

Due to the previous success of rehabilitation operations in regard to increase native fauna abundance and diversity, the risk to rehabilitation associated with establishing specific species or is considered to be low and no specific risk controls have been identified.

6.2.1.4 Rock/overburden Emplacement

A description of the construction and design of the existing Waste Rock Emplacement and ROM Pad is provided in Section 1.1.6. No further waste rock or overburden emplacements will be required for the remaining life of the Mine.

6.2.1.5 Waste Management

Waste disposal and materials handling practices at the Mine aim to mitigate and manage any risks to the environment, including current and future land uses. **Table 12** describes the types of non-production wastes generated at the Mine, the relevant storage and removal methods and the anticipated volume of each waste type generated.

Table 12
Non-Production Waste Management

Waste Type	Storage / Management	Removal / Disposal
General Solid Waste (Putrescible and Non-putrescible)	Covered bins or skips located within lunch rooms, offices, outside workshops and elsewhere as required. Where these bins are located in open areas they are fitted with animal proof lids.	Collected by Mine personnel and transported to Peak Hill Waste Transfer Station.
General Recyclables	Covered bins or skips located within lunch rooms, offices, outside workshops and elsewhere as required. Where these bins are	

Waste Type	Storage / Management	Removal / Disposal
	located in open areas they are fitted with animal proof lids.	
Waste Oils & Greases	There is one compact loader/telehandler (Avant 750) on site and several light vehicles on most days. All vehicles are serviced off site.	No waste oils on the Mine Site.
Batteries	Placed within a covered and marked used battery storage area until removed from site.	Collected on a regular basis by a licensed contractor and transported to an appropriately licensed facility for recycling.
Tyres	Vehicle tyres are serviced and replace off site.	Disposal by tyre re-sellers off site
Scrap Metal	Stored in a specified area within the workshop area or elsewhere as required.	Collected on an occasional basis by a scrap metal recycler.
Waste Water	Treated in the onsite septic system attached the house.	Collected on an occasional basis by a licensed contractor and transported to an appropriately licensed facility.
Source: Alkane Resources Limited		

Management measures targeting the handling and disposal of wastes generated during decommissioning are detailed in Section 6.2.2.

6.2.1.6 Geology and Geochemistry

Existing Environment

The principal geochemical risk to rehabilitation is the high Acid Mine Drainage potential of the sulphidic ore material. Further information on this material is presented in Section 6.2.1.8.

6.2.1.7 Material Prone to Spontaneous Combustion

As no material within the Mine Site is prone to spontaneous combustion, no specific risks to rehabilitation associated with spontaneous combustion have been considered.

6.2.1.8 Material Prone to Generating Acid Mine Drainage

Existing Environment

High pyrite concentrations, a Cu sulphide assemblage dominated by enargite and tennantite and extensive advanced argillic alteration, characterises the Peak Hill deposit as a high-sulphidation porphyry system.

The geochemical characteristics of the wastes, including residue from ore, were assessed as part of the EIS for the Mine (RWC, 1993). That test work determined the following.

- Oxidised material within the Mine Site is non-acid forming.

- Primary or non-oxidised material within the open cuts contains concentrations of sulphide material which is potentially acid forming.

In addition, waste dumps containing potentially acid forming waste from historic mining activity were located sporadically across the pre-Mine landscape.

Pyrite contents of the sulphidic ore and waste immediately adjacent to the ore commonly exceed 15%, with some of the fresh ore containing 50% pyrite. The advanced argillic alteration assemblages offer limited buffering capacity.

The acid mine drainage potential of the waste rock is evidenced by the chemistry of the water within the main Proprietary Pit which in October 2021 had the following composition.

- pH .....1.87.
- Total dissolved solids .....16 400 mg/L
- Sulphate ..... 8 180mg/L SO_4
- Copper.....120mg/L
- Arsenic 3.73mg/L

Handling of Materials

The Waste Rock Emplacement was designed to encapsulate all sulphidic waste rock generated by mining-related operations. The design of the Waste Rock Emplacement, including associated water management infrastructure, is detailed in Section 1.1.6.

Approximately 815 000t of sulphidic waste material was mined but could not be processed and was placed withing the Waste Rock Emplacement for storage. The construction and rehabilitation of the Waste Rock Emplacement is described in Section 1.1.6. **Plate 4** shows the progressive encapsulation of sulphidic material within the Western Cell of the Waste Rock Emplacement, and the completed encapsulation of the Eastern Cell.

In addition, limited quantities of sulphidic material were mined and placed within the Trial Dump Leach and ultimately removed and disposed of within the Parkers Pit (see **Plates 5** and **6**).

Some sulphide-bearing waste rock from active mining areas was used in October 2002 to partially backfill the Proprietary Pit from a tip head on the main ramp. This back-fill has assisted in stabilising a zone of pit wall weakness on the western edge of the Proprietary Pit.

Following the completion of the Waste Rock Emplacement in late 2002, approximately 100t of residual sulphide-bearing material was identified at three different locations of the Mine Site, namely:

- the southern edge of the ROM Pad;
- the Trial Dump Leach site; and
- 25m of the bund on the eastern edge of the Haul Road to the Proprietary Pit.

This material was excavated and deposited within the Proprietary Pit during 2019 (**Plate 6**). In the locations where sulphide-bearing material had been removed, subsoils were treated with

agricultural lime at approximately 2.5t/ha before topsoil was placed at a minimum depth of 200mm. Disturbed areas were seeded with a stabilising vegetation cover.

Plate 4 Encapsulation of Sulphide Material within Waste Rock Emplacement

Plate 5 Proprietary and Parkers Pits

Plate 6 Sulphides from ROM Pad placed at the toe of "Gillignans Island, between Proprietary Pit and Great Eastern Pit

Plate dated 04/11/22 Inserted XX/11/22

Residual Risks to Rehabilitation

Irregular minor occurrences of Acid Mine Drainage have been reported occurring on the surfaces of the Waste Rock Emplacement and the Heap and Dump Leach. The Acid Mine Drainage exhibits as areas of reduced vegetation cover and excess salt extrusions.

The NSW Resources Regulator undertook a Targeted Assessment Program for the Mine Site on 19 June 2020. In response to the Targeted Assessment Program, Alkane undertook a remediation program consisting of the application of agricultural lime to the affected surfaces of the Waste Rock Emplacement and Heap and Dump Leach landforms at a rate of 2t/ha. In April 2021, ag

lime was applied at a rate of 2 t/Ha across the whole heap leach and waste rock emplacement landforms

Monitoring of the affected landforms continues to be undertaken as part of regular visual inspections. Additional treatments, including repeat applications or the application of additional topsoil may be required to achieve final rehabilitation objectives. Drainage from these landforms reports to the northeast sediment pond which has had a pH>7 since 1996. On 9 September 2022 pH at this licenced discharge point was 7.81.

No additional sulphidic material will be mined or handled within the Mine Site during the life of the Mine, therefore, except for the existing instances of Acid Mine Drainage, no additional risks to rehabilitation are expected to occur.

6.2.1.9 Ore Beneficiation Waste Management (Reject and Tailings Disposal)

Section 1.1.4 provides a general overview of the treatment of processing residues as part of the ore beneficiation process that was undertaken at the Mine Site.

The design and construction of the Heap and Dump Leach and Trial Dump Leach is presented in Section 1.1.5. The rehabilitation of the Heap and Dump Leach and Trial Dump Leach is presented in Section 1.1.7.

Due to the process of mineral extraction undertaken within the Mine Site, no Mine-related tailings dams or other processing residues are located within the Mine Site.

6.2.1.10 Erosion and Sediment Control

Undisturbed sections of the Mine Site and rehabilitated areas are largely stable and not prone to erosion and sedimentation. No disturbance of previously rehabilitated areas is proposed as part of this Plan, with the exception of the temporarily rehabilitated topsoil stockpile. Of the remaining rehabilitation operations that will be required to be undertaken, only the decommissioning and removal of the Mine Site House would represent any risk of erosion and sedimentation, which would be considered to be very low as the transportable house site is located on a flat lying pad. Surface disturbance activities associated with the decommissioning of the Processing and Overflow Ponds will largely occur within the boundary of the dams and runoff would be captured internally.

To encourage short-term stabilisation of areas exposed to wind and water erosion, a stabilising vegetation cover will be established. In addition, the Northeast and Northwest Sediment Ponds are permanent structures that would remain in place during all further rehabilitation operations and as functional landform features to support the final land use. No changes to the existing water management infrastructure would be required to manage any residual impacts to rehabilitation associated with erosion and sedimentation control.

Consequently, the potential risks of erosion and sediment impacts is considered to pose a low risk to rehabilitation and has therefore not been considered further.

6.2.1.11 Ongoing Management of Biological Resources for Use in Rehabilitation

During initial clearing operations (1996-2001), habitat features such as woody debris were transferred to undisturbed areas or stockpiled temporarily for use in rehabilitation. Shrubs and other non-woody species were salvaged with topsoil to retain a viable seedbank within the stockpiled growth medium. These stockpiled resources have been fully utilised over the life of the Mine.

Apart from existing growth medium stockpiles and associated seedbanks, no specific biological resources have been salvaged and retained since the initial clearing of the disturbance footprint of the Mine Site. Additionally, as no further clearing of undisturbed land is expected to occur prior to Mine closure, opportunities to salvage habitat features will be minimal.

Growth medium application depths on rehabilitated surfaces will be limited to between 150mm and 250mm. This depth of growth medium is consistent with that applied to areas of successful revegetation within the Mine Site and is also consistent with the depth of growth medium observed on undisturbed areas both within and in the vicinity of the Mine Site.

Due to the limited extent of the remaining areas to be rehabilitated, it is not anticipated that there would be any risk in sourcing appropriate plant species. If required, seeds and/or tube stock will be sourced locally. In addition, seed may be collected from within the Mine Site and, where suitable material is available, individual plant specimens may be transplanted from other areas of the Mine Site in a manner that does not impact on existing biodiversity values.

6.2.1.12 Mine Subsidence

Historic underground mining operations are known to have occurred within the Mine Site. However, these relatively minor areas the workings were largely incorporated into the Open Cuts during mining. As a result, risks to rehabilitation associated with mine subsidence are considered to be low and no specific risk controls have been identified.

6.2.1.13 Management of Potential Cultural and Heritage Issues

An assessment of the cultural and historical heritage values of the Mine Site was undertaken as part of the original EIS for the Mine. In summary, no Aboriginal cultural heritage sites were identified within the Mine Site. Aside from the extensive historical mining operations, no significant historic heritage sites were located within the Mine Site.

Notwithstanding the above, multiple Development Consent conditions for the Mine relate to the assessment, management, and protection of the mining-related heritage of Peak Hill.

An Archaeological and Historical Survey of the Old Gold Workings to the west of the (historic) Main Open Cut (Anne Bickford & Associates 1994) was completed to satisfy Condition 14.1 and 14.2 of DA 15039.

Alkane relocated mining relics from around town to the Open Cut Experience and put together a collection of historical photographs and mining artefacts in a museum display at 62 Caswell Street. Students from the University of Canberra built a 3-D model of the Proprietary Mine

(incorporating the underground workings and surface processing infrastructure) in satisfaction of Condition 14.2 and 14.5 of DA 15039. A Lancashire boiler (installed at the historic Proprietary Mine circa 1891) was carefully relocated to the entrance to the Open Cut Experience walking trails. Documentation of Peak Hill's Aboriginal social history was initiated to satisfy Condition 14.3. The draft was completed but not yet published. In addition, Alkane provided funding to Council for the provision of local heritage education (Museum displays) in satisfaction of Condition 14.6 of DA 5039.

No listed heritage sites are located within the Mine Site as identified by the *Parkes Local Environmental Plan 2012*.

Management of heritage values related to historical mining operations within and in the vicinity of the Mine Site is undertaken in accordance with the *Plan of Management for the Mining Heritage of Peak Hill* (the "Heritage Management Plan"). The Heritage Management Plan provides the context for the identification and management of items or locations of known historic heritage value within the Mine Site. The Heritage Management Plan was developed by the Peak Hill Cultural Heritage Committee (PHCHC) prior to the commencement of mining in 1996. The PHCHC comprised representatives of Parkes Shire Council, the local community, and the developer (Alkane). The Heritage Management Plan delegates responsibility for the Peak Hill Mining and Cultural Heritage Museum (collection) to Parkes Shire Council.

No heritage areas or items are located within or in the vicinity of the remaining areas of the Mine Site to be rehabilitated.

Information on the existing and proposed management of mining-related heritage areas within the Mine Site is presented in Sections 1.1.8 and 9.2.2.7, respectively.

6.2.1.14 Exploration Activities

Rehabilitation of historic and new exploration drill sites, both within and in the vicinity of the Mine Site, has been and will continue to be undertaken as soon as reasonably practical after completion of drilling activities. The rehabilitation of areas subject to exploration-related disturbance will potentially include capping and burial of casings, with site contouring and light raking to promote revegetation completed as required. Monitoring of exploration-related rehabilitation will be undertaken in accordance with Alkane's established monitoring program.

6.2.2 Decommissioning

6.2.2.1 Site Security

Existing site security measures will be maintained during decommissioning and active rehabilitation operations at the Mine unless they are required to be modified for rehabilitation purposes. No public access to the operational areas of the Mine Site is currently permitted, with access to the open cuts and adjacent operational areas restricted by a security fence and the main site entry point secured by a locked gate outside of operating hours. Access to the remainder of the Mine Site is controlled by the presence of perimeter stock-proof fencing and signage.

Existing security fencing that is to be retained will be structurally assessed and repaired or replaced where necessary. Signage warning of the presence of open voids, where not already in place will be installed every 200m on security fencing around the perimeter of the open cut pits, and in the vicinity of historical workings.

During decommissioning and rehabilitation operations, where safety bunds are already in place in areas such as the open cut pits, these will be assessed and repaired as required.

6.2.2.2 Infrastructure to be Removed or Demolished

Table 13 presents a list of the site features to be decommissioned to achieve the final land use. The majority of the mining and processing related infrastructure within the Mine Site has been decommissioned, demolished and/or removed from the Mine Site. Notwithstanding, any infrastructure not required for the final land use will be subject to engineering assessments to identify potential risks associated with closure and decommissioning activities, where required.

Table 13
Mine Site Assets to be Removed or Demolished

Mining Domain[1]	Assets	Decommissioning and Demolition Requirements
1 – Infrastructure Area	Mine Site Access Road and hardstand areas	All roads and hardstand areas to be retained for a lawful final land use reduced in width or size to that suitable for final land use. All remaining access tracks will be removed and rehabilitated.
	Mine Site House and Gold Recover (Wet) Plant concrete slab	The Mine Site House would be demolished or removed following the disconnection of services, with any waste material removed from the Mine Site. Concrete footings/slabs would be removed and disposed of either within the Mine Site or at a licenced waste facility.
	Processing and Overflow Ponds	HPDE liners removed from batters only and disposed of within one or more of the Processing and Overflow Ponds. HDPE liner would be weighed down with re-used concrete waste and covered in layer of clay and soil.
8d – Other - Ancillary Infrastructure	Topsoil Stockpile	Growth medium stockpiles will be progressively removed and utilised as topsoil is applied during rehabilitation operations. Following removal, growth medium stockpile footprints will be profiled and revegetated with wetland species.
Note 1: See **Figure 8**		

As a minimum, the following controls will be implemented during demolition works at the Mine Site.

- Sites will be continually damped down with water to suppress dust during demolition, with potentially contaminated water captured as appropriate.
- Works will be undertaken so as to minimise the generation of particulate matter.
- Works will not be undertaken during periods of high wind.

- Loads of waste material removed from demolition sites will be covered prior to transportation.

All material and waste products generated from any demolition, decommissioning and/or removal operations will be collected and either removed immediately from the Mine Site or stored in appropriate (i.e. disturbed) areas for removal by a licenced waste contractor as soon as practicable.

In addition to the infrastructure identified in **Table 13**, the ownership of Mine-related infrastructure that is non domain-specific (i.e. the buried water pipeline) or is located outside of the disturbance areas of the Mine Site (e.g. the reservoir access road, tourist-related parking facilities) will be transferred to the relevant stakeholders as required in accordance with the Development Consents for the Mine (see Section 2.1).

6.2.2.3 Buildings, Structures and Fixed Plant to be Retained

Plan 1 presents key site infrastructure and other features to be retained to achieve the final land use. Existing infrastructure and services to the retained include the Mine Site access road, internal access roads, water management infrastructure, safety and security fencing, the Mine Exploration Core yard and Workshop, and various heritage-related infrastructure such as viewing platforms, tracks and various historic items.

Short-term risks associated with the retention of nominated infrastructure and structures are relatively low as these features have largely been maintained for use since production stopped at the Mine and are therefore in relatively sound condition. Furthermore, much of the nominated infrastructure to be retained is for safety purposes.

Long-term risks to public safety and the environment associated with retained infrastructure and structures would only occur in the absence of regular maintenance. Roads may need to be inspected following high intensity rainfall events to ensure that conditions remained suitable for future land use. Failure of roads would potentially contribute to the generation of sediment laden water which may impact water quality within water management infrastructure. Security fencing and safety bunds will also need to be inspected regularly to ensure that entry to historic sites and final void areas by humans, fauna and vehicles remains effectively restricted. Failure of security fences and safety bunds would present a significant risk to public safety.

As part of the decommissioning and landform establishment phases of rehabilitation operations, structural and engineering assessments will be carried out as required prior to the relinquishment of retained and newly constructed infrastructure. Any necessary repair, replacement or re-design works recommended as part of these assessments will be carried out and assessed by a suitably qualified engineer before public access is permitted to the Mine Site.

Historic heritage items will be retained and managed in accordance with *the Plan of Management for the Mining Heritage of Peak Hill Implementation Strategy* (see Section 9.2.2.7).

6.2.2.4 Management of Carbonaceous/Contaminated Material

No carbonaceous material is known or is likely to be present within the Mine Site.

Details of previous remediation or preexisting contaminated sites are presented in Section 1.1.7.1.

A contamination assessment of the Mine Site will be undertaken prior to demolition of site infrastructure in order to guide the assessment, remediation and monitoring of potentially contaminated areas within the Mine Site (see Section 9.2.2.2).

Any contaminated material that is identified within key operational areas of the Mine Site (i.e. hardstand areas, Exploration Core yard and Workshop area, Processing and Overflow Ponds, etc.) that is present in an amount that poses a risk to future land use will be removed and either disposed of on-site, such as within the Final Voids or removed for off-site treatment/disposal by suitably licensed persons. On-site remediation may be undertaken if practicable.

Due to the significant progress of the existing rehabilitation of the Mine Site, the development and implementation of the contamination assessment is not expected to significantly affect the timing of completion of the remaining rehabilitation operations.

6.2.2.5 Hazardous Materials Management

No hazardous materials are proposed to be retained following the completion of rehabilitation operations, excluding minor quantities of chemical compounds such as herbicides that would be required to support ongoing maintenance purposes, if required. As part of the contamination assessment, a hazardous materials audit of the Mine Site will be conducted by a suitably qualified expert prior to the commencement of decommissioning activities to identify all potentially hazardous materials and associated risks.

6.2.2.6 Underground Infrastructure

No underground mining operations were undertaken as part of the Mine. Historical underground mining did occur within the Mine Site; however, these workings were incorporated into the Open Cuts and no infrastructure remains. Two historic workings, namely the Magazine Tunnel and Treverrow's Adit daylight within the eastern and northern batters of the Proprietary Pit. However, due to the position of these workings within the pit wall, and the presence of security infrastructure surrounding the Final Voids, inadvertent or easy public access to these historic workings in not considered possible. Therefore, no specific risk management measures are required.

There is a partially back-filled shaft at the historic Crown Workings. This shaft is a feature of the Open Cut Experience and was preserved with assistance from the Derelict Mines Fund. A steel walkway guides visitors across the historic Crown Workings.

6.2.3 Landform Establishment

The final landform is shown on **Plan 2**. It should be noted that no significant further changes to the existing landform are considered practical nor are required to achieve the final land use.

6.2.3.1 Water Management Infrastructure

The North West and North East Sediment Ponds will be retained as water management infrastructure as part of the final land use of the Mine Site. In addition, permanent drop-structures are located on the Waste Rock Emplacement and Heap and Dump Leach. Minor farm dams are also located within areas of the Mine Site that were not disturbed during mining operations are not discussed further.

The existing Sediment Ponds are safe, stable and non-polluting. Due to the age of the existing rehabilitation, significant native vegetation has become established in the vicinity of the Sediment Ponds. Annual visual inspections of the Sediment Ponds are undertaken to monitor function and rehabilitation health. No further rehabilitation of the Sediment Ponds is anticipated to be required.

While an Environment Protection License (EPL5473) is maintained over the Mine Site these two ponds will remain as licensed discharge points.

The drop-structures of the Waste Rock Emplacement and Heap and Dump Leach continue to perform as intended. Periodic inspections of these structures are undertaken to monitor performance. No further rehabilitation of these structures is anticipated to be required.

6.2.3.2 Final Landform Construction: General Requirements

The design and construction of the Waste Rock Emplacement and Heap and Dump Leach is described in Sections 1.1.5.2 and 1.1.6. In summary, these landforms were progressively constructed over the operational life of the Mine and have been vegetated (since 2002 and 2005 respectively) for stability and visual amenity. Landform shaping and profiling was undertaken to control surface water direction and flows towards the existing Sediment Ponds.

6.2.3.3 Final Landform Construction: Reject Emplacement Areas and Tailings Dam

The construction of the Waste Rock Emplacement is described in Section 1.1.6 and the construction of the Heap and Dump Leach is described in Section 1.1.5.2. Finally, the Construction of the ROM Pad (largely constructed from waste rock) is described in Section 1.1.6.

Ongoing rehabilitation monitoring is undertaken to monitor the performance of the Waste Rock Emplacement, Heap and Dump Leach and ROM Pad landforms. No further rehabilitation of these landforms is anticipated to be required.

6.2.3.4 Final Landform Construction: Final Voids, Highwalls and Low Walls

Four final voids comprised of five open cuts are located within the Mine Site, as shown on **Figure 2.** Each of the four final voids are secured using a combination of safety bunds and/or security fencing where required. No additional safety measure are anticipated to be required as part of final rehabilitation operations. Access roads will be retained for emergency and/or management purposes, with existing lockable gates retained to prevent unauthorised access.

6.2.3.5 Construction of Creek/River Diversion Works

No creek or river diversions are located within the Mine Site.

6.2.4 Growth Medium Development

6.2.4.1 Existing Environment

As discussed in Section 6.2.1.1, approximately 2,260m^2 of growth medium is stockpiled for the remaining rehabilitation operations within the Mine Site. A total of approximately 1,290m^2 is expected to be required for the rehabilitation of the Mine House and Processing and Overflow Ponds. Minor amounts of topsoil may also be required for the ongoing treatment and/or maintenance of areas affected by Acid Mine Drainage.

Based on the significant progress of existing rehabilitation operations and the results of previous soil testing, the remaining stockpiled topsoil is suitable for use in rehabilitation.

As discussed in Section 6.2.1.8, treatment of exposed areas of Acid Mine Drainage on Mine-relating landforms has been undertaken twice using an application of Agricultural Lime at a rate of 2t/ha. Ongoing monitoring has shown that this treatment is effective in reducing the negative effect of Acid Mine Drainage on vegetation development.

All remaining areas to be rehabilitated are located within the catchments of the existing Sediment Basins. No additional erosion and sediment controls are required for the remaining rehabilitation operations.

6.2.4.2 Residual Controls to be Implemented

During rehabilitation operations, all disturbed areas will be ripped prior to the application of topsoil in order to reduce compaction and encourage the integration of topsoil into underlying material. Growth medium spreading will aim to achieve a rough final surface in order to encourage the retention of seeds, infiltration of any rain and to minimise surface erosion. Growth medium spreading will not be undertaken during excessively wet or windy conditions.

Following the application of growth medium, disturbed areas will be directly seeded with a suitable species mix to provide surface stabilisation and encourage vegetation community development.

Seasonal and local meteorological conditions will be monitored to identify conditions which may result in delaying vegetation establishment (e.g. extended drought conditions). Land preparation and growth medium spreading activities will only be undertaken where conditions are predicted to be favourable (i.e. not unusually unfavourable) to the establishment of vegetation.

No significant habitat resource stockpiles are present at the Mine Site and no specific habitat augmentation will be required to meet the identified rehabilitation objectives.

6.2.5 Ecosystem and Land Use Establishment

The Mine Site is located within a region of temperate climate. In general, the local climatic conditions are not anticipated to present a significant barrier for the establishment of the remaining vegetation within the Mine Site. This is due in part to the limited spatial extent of the remaining rehabilitation, the success of previous rehabilitation operations, and the use of locally occurring species that are considered to be adapted to the local climate.

The remaining rehabilitation within the Mine Site will consist of two key vegetation types based on the Final Land Use Domains (see **Plan 1**); namely Native Woodland and Ephemeral Wetland. These plant communities are present within and in the vicinity of the Mine Site, and largely consists of mixed native and exotic grassland species with a variable canopy of native trees; within or near ephemeral waterways, species of reeds and rushes such as Cumbungi (*Typha sp.*) and *Juncus sp.* are known to occur.

Due to the limited extent of the remaining areas to be rehabilitated, it is not anticipated that there would be any risk in sourcing appropriate plant species. If required, seeds and/or tube stock will be sourced locally. In addition, seed may be collected from within the Mine Site and, where suitable material is available, individual plant specimens may be transplanted from other areas of the Mine Site in a manner that does not impact on existing biodiversity values.

Direct seeding and broadcast seeding will be utilised in relatively flat areas. Additionally, direct seeding and broadcast seeding will be employed in areas where initial seeding or natural recolonisation via the seedbank and windborne seed have not achieved the target vegetation community species assemblages.

Table 14 presents an indicative and non-exhaustive list of species that may be used during revegetation of the Mine Site for each target vegetation community type and **Figure 7** shows the anticipated extent of target vegetation community types within the Mine Site. The species listed in **Table 14** represent those which have been identified as naturally occurring within and in the vicinity of the Mine Site and includes those that have previously been used for rehabilitation within the Mine Site.

Table 14
Target Species for Revegetation

Species	Common Name
Woodland	
Acacia deanei	Deanes Acacia
Acacia decora	Western Silver Wattle
Acacia doratoxylon	Spearwood
Atriplex Nummularia	Old Man Saltbush
Atriplex sp.	Saltbushes
Callitris endlicheri	Black Pine
Callitris glaucophylla	White Cypress Pine
Carex appressa	Tall Sedge
Eucalyptus camaldulensis	River Red Gum
Eucalyptus dealbata	Tumbledown Red Gum
Eucalyptus dwyeri	Dwyers Red Gum

Species	Common Name
Eucalyptus melliodora	Yellow Box
Eucalyptus microcarpa	Grey Box
Eucalyptus sideroxylon	Mugga Iron Bark
Wetland	
Allocasuarina cristata	Belah
Allocasuarina stricta	Drooping Sheoak
Allocasuarina leuhmannii	Buloke
Carex appressa	Tall Sedge
Juncus usitatus	Common Rush
Juncus sp.	Rushes
Myoporum montanum	Boobialla
Themeda australis	Kangaroo Grass
Typha orientale	Broadleaf Cumbungi

As part of existing and ongoing weed and pest monitoring and controls, the timing of any revegetation operations may be coordinated with broader control operations if monitoring indicates pest activity within the Mine Site may impede vegetation establishment and development.

6.2.6 Ecosystem and Land Use Development

6.2.6.1 Weed and Pest Management and Monitoring Program

Annual weed and pest monitoring of the rehabilitated landforms of the Mine Site will continue until relinquishment. The results of the weed and pest monitoring program will be detailed in an *Annual Rehabilitation Report* together with a record of any specific control operations that have been undertaken. Monitoring frequency may be increased to include post-control monitoring if required.

6.2.6.2 Erosion and Drainage Controls

The existing water management infrastructure that will be retained as part of the final land use will continue to be monitored during annual rehabilitation monitoring. The results of all monitoring will be detailed in an *Annual Rehabilitation Report* together with a record of any specific management operations that have been undertaken.

6.2.6.3 Environmental Management and Monitoring Program

Surface Water

Visual inspections of erosion and drainage control structures, in addition to inspections of the Waste Rock Emplacement and Heap and Dump Leach landform batters for signs of erosion, will be undertaken following significant rainfall events.

The Mine Site has two licenced surface water discharge points in accordance with EPL 5473 which are located in each of the Sediment Ponds. It should be noted that no discharges have occurred from the North West Sediment Pond during the entire history of the Mine. In the event of a discharge, surface water within the relevant Sediment Basin(s) will be sampled and analysed for compliance with the EPL discharge parameters.

Groundwater

No groundwater monitoring is currently undertaken or required at the Mine.

Ecosystem Function

LFA monitoring was undertaken on three separate occasions throughout 2013 and 2014. Due to the limited area of remaining rehabilitation operations, no further LFA monitoring is anticipated to be required.

Soil Analysis

Specific soil chemical parameter criteria have been identified for the Rehabilitation Area – Rural Land and Rehabilitation Area – Grassland final land use domains. Post-rehabilitation soil analyses were undertaken across the rehabilitated landforms of the Mine Site during 2013 and 2014, as discussed in Section 8.1. Based on the results of this testing, further soil testing will be required to monitor the rehabilitation progress of the rehabilitated Waste Rock Emplacement and Heap and Leach Dump landforms. This testing will be undertaken by a suitably qualified persons on at least a bi-annual basis. The results of the soil testing, including any recommendations and follow-up actions will be recorded in annual rehabilitation reporting.

Revegetation Management and Monitoring

Vegetation establishment activities at the Mine, including growth medium spreading and seeding operations, will occur only where favourable climatic conditions are expected to occur. Consequently, unfavourable meteorological conditions may result in extended delays to these rehabilitation conditions. In the event that extended unfavourable periods occur at the Mine Site, rehabilitation schedules will be updated to prioritise other rehabilitation activities and opportunities to prepare additional areas for revegetation once favourable conditions return will be investigated.

Due to the limited extent of remaining rehabilitation operations, no specific revegetation monitoring program is anticipated to be required. In general, monitoring frequency will decrease as vegetation becomes established. In the event of low success rates or unpredicted instances of plant die-off, infill planting and/or soil amelioration (e.g. fertiliser application) may be undertaken. Visual inspections, including photographs, will be used to provide species presence information that will be detailed in an *Annual Rehabilitation Report* together with a record of any specific management operations that have been undertaken.

Alkane retains a documented record of rehabilitation progress from 1996 to present.

6.2.6.4 Land Management and Infrastructure Maintenance

In general, ongoing management of infrastructure such as security and stock fencing occur on a as-needed basis. Regular inspections are undertaken by Mine personnel of Mine Site infrastructure. Due to the limited extent of the remaining rehabilitation operations, no additional or specific land management or infrastructure maintenance is anticipated to be required. The results of ongoing monitoring will be detailed in an *Annual Rehabilitation Report* together with a record of any specific management operations that have been undertaken.

6.3 Rehabilitation of Areas Affected by Subsidence

No areas affected by subsidence are expected or known to occur within the Mine Site.

7. Rehabilitation Quality Assurance Process

The following section details the rehabilitation quality assurance process for the Mine that has been developed in consideration of *Guideline: Rehabilitation Controls (July 2021)* and the current status of rehabilitation of the Mine Site.

In general, the majority of the Mine Site is considered to be in the Ecosystem and Land Use Development stage of rehabilitation, as presented in the previously approved MOP for the Mine. Therefore many of the risk controls outlined in *Guideline: Rehabilitation Controls* (e.g. baseline assessments and monitoring) have either been completed or form part of ongoing investigations to be undertaken during rehabilitation monitoring and maintenance. As such, **Appendix 2** presents a condensed risk control checklist containing items applicable to the remaining active mining and planned rehabilitation phases of the Mine Site. The rehabilitation quality assurance checklist included in **Appendix 2** is intended to be used as an indicative guide for rehabilitation operation managers and practitioners responsible for the rehabilitation of the Mine Site.

It is anticipated that the remaining rehabilitation operations within the Mine Site will occur on a progressive basis as areas are no longer required to be maintained for their current land use. Consequently, it is noted that rehabilitation progress through the planned rehabilitation phases will not occur concurrently across all mining subdomains identified in **Figure 8**.

As part of the rehabilitation quality assurance process, relevant records and documentation will be recorded in a Rehabilitation Quality Assurance Register and reported as part of the Annual Rehabilitation Report. The Rehabilitation Quality Assurance Register will, as a minimum, include a copy of the checklists presented in **Appendix 2** as well as a compliance register used to assess the status of compliance with requirements under relevant development consents, leases and licences. The Rehabilitation Quality Assurance Register will be maintained, reviewed and refined by the General Manager to ensure that it is reflective of current rehabilitation progress, risk controls implemented at the Mine Site and the outcomes of any updated rehabilitation risk assessments.

Table 15 outlines key responsibilities for Alkane and Mine personnel with regards to rehabilitation operations.

Table 15
Key Roles and Responsibilities

Role	Responsibility
Mine Operator	• Ensure adequate resources are available to enable implementation of the RMP.
General Manager – NSW	• Comply with applicable laws, regulations, licences and approvals. • Ensure all contractors, sub-contractors and service personnel are appropriately qualified and/or licenced to undertake required work. • Monitoring and review of performance via field inspections and Annual Rehabilitation Report. • Ensure that the Rehabilitation Quality Assurance Register is maintained and up to date based on site activities. • Ensure that relevant personnel and workforce participants are aware of relevant development and rehabilitation risks and management measures, including an additional corrective and/or preventative measures. • Ensure that the documentation and recording of rehabilitation risk controls occurs within a suitable timeframe as reasonably practicable.
Site Supervisor	• Accountable for the Mine Site security, safety and weed and pest animal monitoring and control. • Notify the General Manager in the event that uncontrolled rehabilitation risks are identified.

8. Rehabilitation Monitoring Program

8.1 Analogue Site Baseline Monitoring

Alkane undertook a program of LFA monitoring for the rehabilitated Waste Rock Emplacement and Heap and Dump Leach landforms on three separate occasions between 2013 and 2014. These reports are provided in full in **Appendices 1a**, **1b** and **1c**. The LFA monitoring, based on the methodology developed by Tongway and Hindley (2004), was adopted for the assessment of analogue sites and rehabilitated areas within the Mine Site. In addition, soil characterisation was progressively undertaken for all transects across the LFA monitoring period.

A detailed description of the LFA and soil characterisation methodology is provided in **Appendices 1a**, **1b** and **1c**. In summary, 14 transects were established across the main operational areas of the Mine Site, consisting of 12 areas disturbed by Mine-related operations and 2 analogue sites located within undisturbed areas of the rural landscape within the Mine Site. The location of the transects is shown on **Figure 2**. Analogue sites were chosen based on target land use parameters, namely ability to support pastoral or grassland cover. Transect locations were recorded using handheld GPS and stakes at the start and end points, located approximately 50m apart. A range or parameters were recorded as part of the LFA assessments which were used to calculate Stability, Infiltration and Nutrient Cycling characteristics at each location.

Figure 9 presents the summary of the most recent LFA monitoring results. In summary, all locations show typical responses to seasonal variations and all locations were recorded as performing either Good or Satisfactory for Stability, Infiltration and Nutrient Cycling.

Table 16 presents the results of the soil characterisation for the 14 transect locations within the Mine Site. **Table 17** describes the average, minimum and maximum values recorded for the two analogue sites (transects 7 and 14). In summary, the analogue sites are generally acidic, show low Electrical Conductivity, high Cation Exchange Capacity, are highly dispersive, and show a wide range of Nitrate and Phosphorus levels. These values have been used to develop specific rehabilitation objectives and completion criteria, as presented in Section 4 of this Plan.

Due to the limited extent of the remaining rehabilitation, no further analogue sites are proposed to be established.

Table 16
Soil Characterisation Results

Transect	1	2	3	4	5	6	7	8[1]	9	10	11	12	13	14[1]
pH in CaCl2	6.1	6.5	7	7	7	5.3	4.1	5.2	5.9	7.1	6.6	7	7	5.3
EC (dS/m)	0.062	0.284	0.959	0.689	0.856	1.65	0.095	0.04	0.193	0.132	0.284	0.2	0.614	0.083
CEC (meq/100g)	13.9	16.17	25.03	24.18	21.75	21.75	10.04	10.19	13.58	16.91	10.34	18.62	19.46	13.13
Dispersion Index	11	0	9	0	0	0	12	12	0	0	12	9	10	12
K mg/kg Colwell k	1155	570	295	352	318	291	238	485	559	1000	656	695	771	976
Ammonium (mg/kg)	2	3	3	2	4	7	3	2	3	3	3	3	3	5
Nitrate (mg/kg)	9	10	3	6	2	2	4	6	4	8	4	5	9	22
Exchangeable Sodium (%)	0.38	1.42	19.41	11.7	5.06	17.54	4.78	1.47	3.98	1.54	2.42	5.32	18.5	0.76
Phosphorus Buffering Index	57	89	68	67	101	124	100	71	60	62	47	69	68	59
Organic Carbon %	2.01	1.84	0.63	0.81	0.87	0.98	0.55	1.56	0.96	1.31	1.2	1.09	1.42	2.21
Colwell P	23	19	4	9	7	13	5	9	21	38	13	9	35	22

Note 1: Analogue site

Source: Graminus Consulting (2013, 2014)

Table 17
Analogue Site Soil Characteristics

Parameter	Average	Minimum	Maximum
pH in CaCl2	4.7	5.2	5.3
EC (dS/m)	0.089	0.04	0.083
CEC (meq/100g)	11.585	10.19	13.13
Dispersion Index	12	12	12
K mg/kg Colwell k	607	485	976
Ammonium (mg/kg)	4	2	5
Nitrate (mg/kg)	13	6	22
Exchangeable Sodium (%)	2.77	0.76	1.47
Phosphorus Buffering Index	79.5	59	71
Organic Carbon %	1.38	1.56	2.21
Colwell P	13.5	9	22

Chart 1: Comparing average indices measurements for all transects for: Stability, Infiltration and Nutrient Cycling. Measurements conducted August 2013, February and May 2014. Green represents Good and Gold Satisfactory results.

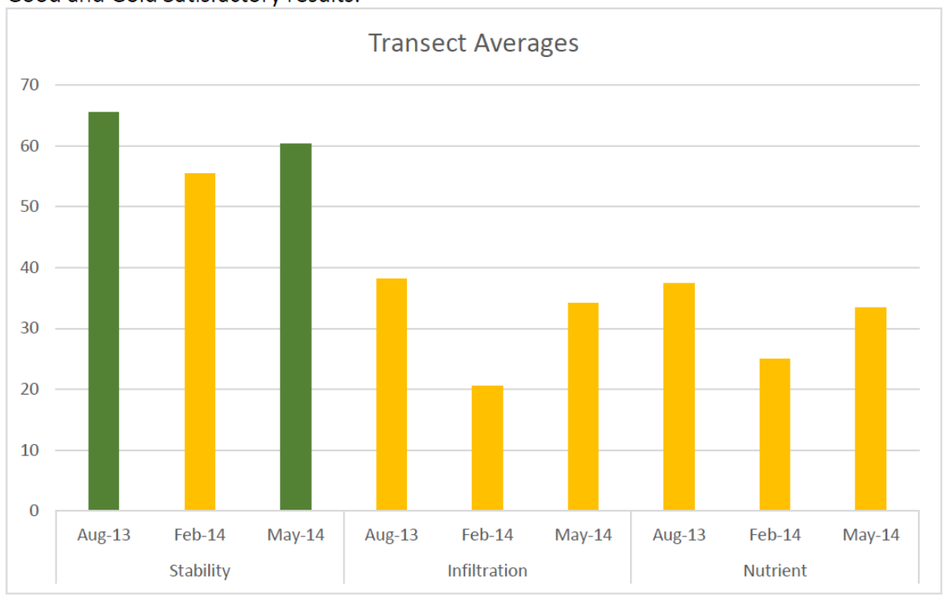


Chart 2: Comparing stability index for Spring, Summer and Autumn LFA measurements

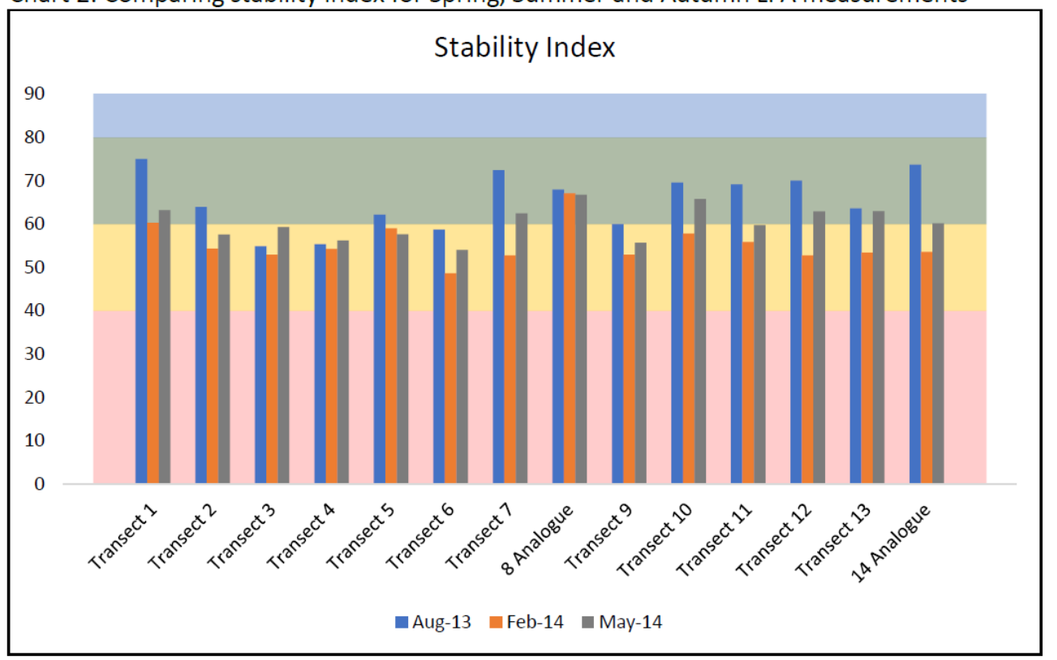


Chart 3: Comparing infiltration index for Spring, Summer and Autumn LFA measurements

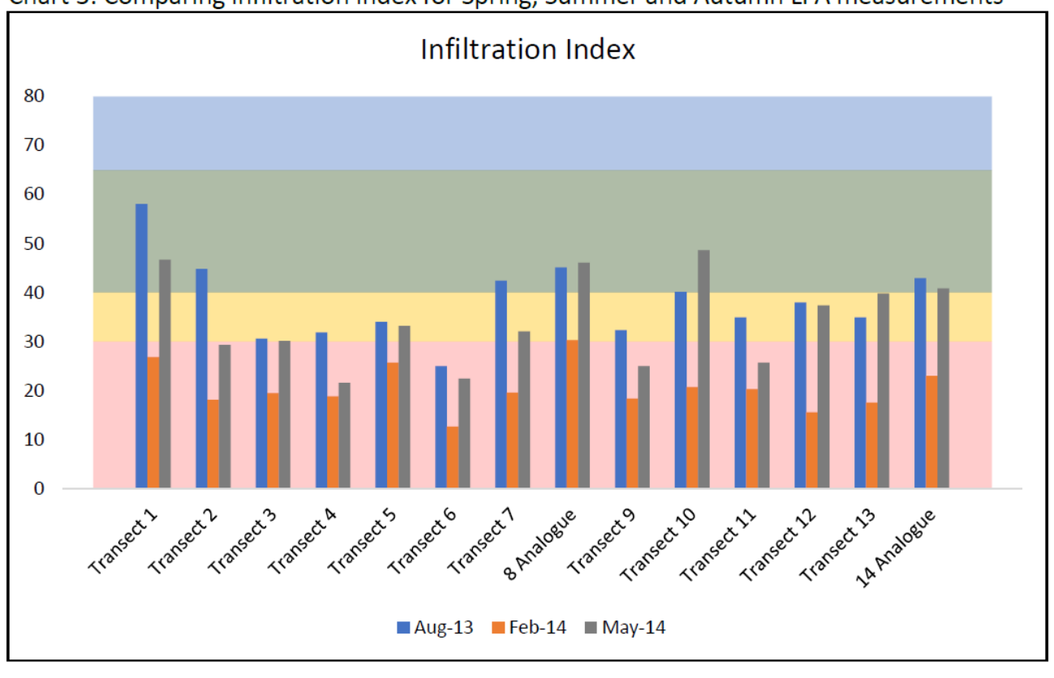
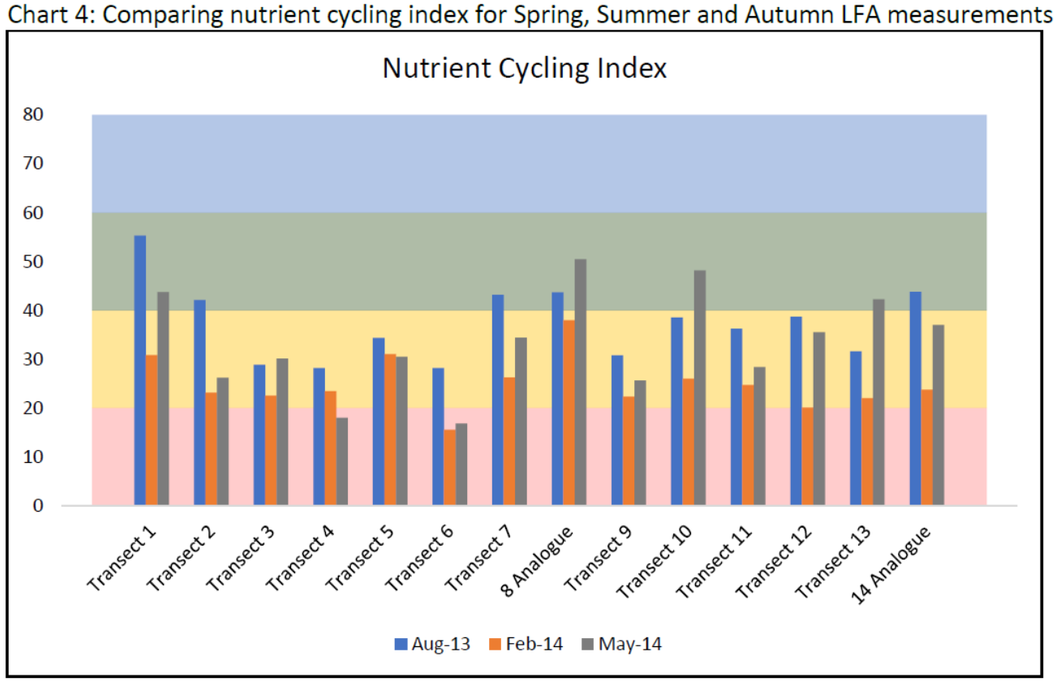


Chart 4: Comparing nutrient cycling index for Spring, Summer and Autumn LFA measurements



Source: Graminus Consulting (2014)

FIGURE 9
LFA RESULTS SUMMARY

8.2 Rehabilitation Establishment Monitoring

In consideration of the relatively minor amounts of remaining rehabilitation to be undertaken, and consideration of information gathered from previous rehabilitation operations, the rehabilitation establishment monitoring that will be implemented within the Mine Site will consist of regular visual inspections at a decreasing frequency as rehabilitation progresses. Photographic monitoring of rehabilitated areas, including photos prior to and immediately following seeding will be undertaken at least quarterly until vegetation has become established. Plant species presence will also be recorded, including the presence of any weed species. All monitoring and inspection events, including results and any follow-up activities, will be recorded in the Rehabilitation Quality Assurance Register.

The principal measure of early rehabilitation establishment will be germination rates and plant survival. Low rates of germination and survival would have the potential to result in elevated risks of erosion and loss of growth medium. Once target establishment values have been achieved, monitoring frequency will be decreased to an annual basis. The relevant trigger values for rehabilitation establishment are presented in **Table 18** in Section 10.

8.3 Measuring Performance Against Rehabilitation Objectives and Rehabilitation Completion Criteria

Details of validation methods and indicators to be employed during monitoring to assess performance against the rehabilitation completion criteria for the Mine Site are provided in Section 4.1.

Annual rehabilitation inspections will continue to be undertaken by Mine personnel to monitor rehabilitation progress and identify emerging or unforeseen risks to rehabilitation. The Rehabilitation Quality Assurance Register will be used to record details of any additional management measures or risk controls implemented during the ecosystem development phase in response to the analysis of rehabilitation monitoring results.

An *Annual Rehabilitation Report* will be prepared for the Mine as required under the new standard mining lease conditions for rehabilitation, to be implemented through amendments to the *Mining Regulation 2016*. Once required, Alkane proposes to submit an *Annual Rehabilitation Report* for the Mine by no later than 60 days after the last day of the reporting period each year to cover the previous 12-month calendar year period. As part of the *Annual Rehabilitation Report*, Alkane will validate and certify that the security deposit covers the estimated cost of rehabilitation liabilities each year.

Where specialist assessments are proposed to be undertaken (e.g. engineering, contamination, etc.), the occurrence and results of these assessments would be included in both the Rehabilitation Quality Assurance Register and *Annual Rehabilitation Report*.

9. Rehabilitation Research and Trials

9.1 Current Rehabilitation Research, Modelling and Trials

No rehabilitation research, modelling or trials are currently undertaken within the Mine Site.

Notwithstanding the above, Alkane undertook various rehabilitation research and trials over the life of the Mine and as part of the extensive and successful progressive rehabilitation that has been undertaken to date. The results of those trials were documented in previous annual reporting documents over the life of the Mine.

In addition, Alkane are involved in the operation and rehabilitation of Tomingley Gold Operations. Alkane's extensive experience in operating and rehabilitating mining affected landforms in the local area has been and continues to be developed for over 25 years.

9.2 Future Rehabilitation Research, Modelling and Trials

9.2.1 Rehabilitation Research

In consideration of the relatively minor rehabilitation activities that remain to be undertaken within the Mine Site, and in consideration of the extensive and successful rehabilitation of the Mine Site to date, no further rehabilitation research, modelling, and trials are proposed to be undertaken.

9.2.2 Rehabilitation Management Plans, Assessments and Procedures

A number of assessments, management plans, and or procedures will be required to be developed and implemented to achieve final rehabilitation of the Mine Site in accordance with this Plan. The following subsections detail the anticipated scope of each of each assessment, plan or procedure.

9.2.2.1 Growth Medium Stockpile Assessment

Prior to the decommissioning of remaining infrastructure, Alkane will undertake and assessment of the remaining stockpiled growth medium resource within the Mine Site and shown on **Figure 7**. Data will be collected using a combination of visual inspections and/or remote sensing to provide an estimation of the remaining topsoil stockpiled for rehabilitation purposes. The results of the growth medium stockpile assessment will be included in the Rehabilitation Quality Assurance Register and *Annual Rehabilitation Report*.

9.2.2.2 Contamination Assessment

Prior to and/or following decommissioning the remaining infrastructure within the Mine Site (see Section 6.2.2.2), a contamination assessment will be commissioned by Alkane to identify and address any residual contamination of the Mine Site from Mining-related activities. The anticipated scope of the contamination assessment will include decommissioned infrastructure areas, sediment within water management infrastructure and high-risk locations within rehabilitated areas of the Mine Site. The anticipated objectives of the contamination assessment will be as follows.

- Identify residual contaminated material within the Mine Site that may present a risk to the final land use.
- Assess the performance of historic contamination management to identify the potential need for revised or additional contamination management.
- Identify options for the handling and remediation/disposal of any contaminated materials.

The results of the contamination assessment, including information on any recommendations or required follow-up actions, will be included in the Rehabilitation Quality Assurance Register and *Annual Rehabilitation Report*.

9.2.2.3 Soils Assessment

As identified in Section 6.2.6.3, further soil analyses will be required to ensure rehabilitation is progressing towards the relevant rehabilitation completion criteria for certain Final Land Use Domains. This testing will be undertaken by a suitably qualified persons on at least a bi-annual basis. The results of the soil testing, including any recommendations and follow-up actions will be included in the Rehabilitation Quality Assurance Register and *Annual Rehabilitation Report*.

9.2.2.4 Site Relinquishment Engineering Assessment

Prior to decommissioning Alkane will commission a site relinquishment engineering assessment to assess the condition, suitability and risks associated with all infrastructure to be retained for final land use. The assessment will be used to identify any residual maintenance and management requirements for retained infrastructure. Depending on the results of the assessment, existing management plans, protocols and/or procedures may be required to be reviewed or revised prior to site relinquishment.

The results of the site relinquishment engineering assessment, including information on any recommendations or required follow-up actions, will be included in the Rehabilitation Quality Assurance Register and *Annual Rehabilitation Report*.

9.2.2.5 Health and Safety Management System

The *Peak Hill Gold Mine Health and Safety Management System* and associated documentation has been revised in June 2022 to ensure compliance with the *Work Health and Safety (Mines and Petroleum Sites) Act 2013* and regulations. Principal Hazard Management Plans have been prepared for the remining hazards on site.. The objectives of the *Health and Safety Management System* were to.

- Identify all relevant legislation, approvals and/or licences required for the safe operation and undertaking of all activities on the Mine Site, including the Mine-related and public/tourism related activities.
- Identify the location and type of all safety related infrastructure located within the Mine Site, e.g. safety bunds, fencing, emergency management infrastructure, etc.
- Provide a register of all safety-related infrastructure, including information on construction date, inspection frequency and scope and anticipated maintenance requirements and schedules.

9.2.2.6 Heritage Relinquishment Strategy

No heritage areas or items are located within or in the vicinity of the remaining areas of the Mine Site to be rehabilitated.

Management of mining-related heritage values within and in the vicinity of the Mine Site post relinquishment will be important to ensure that the rich history of mining at Peak Hill is retained for future generations.

The Heritage Management Plan identifies a strategy for the relinquishment of heritage management obligations relating to the Mine Site and the associated museum collections. This includes:

- ownership and responsibility of the (then) Peak Hill Mining and Cultural Heritage Museum resting with the Parkes Shire Council;
- potential dedication of land containing the Heritage Trail and historic workings as Crown Reserve to be managed by a Reserve Trust (nominally identified by the Heritage Management Plan as the Peak Hill Reserve Trust)

Notwithstanding the above, a significant period of time has past since the development of the Heritage Management Plan. Therefore, Alkane proposes to develop the *Heritage Relinquishment Strategy*. The *Heritage Relinquishment Strategy* would be developed in consultation with the Parkes Shire Council and would indicatively include the following.

- Identification of the current legislative context of managing public access to heritage infrastructure and areas (see **Figure 7**) within the Mine Site.
- Updated agreements between Alkane and any relevant stakeholders for the potential continuation of Tour Activities undertaken by Parkes Shire Council, or, formal recognition of the cessation of Tour Activities by Parkes Shire Council.

- Formal recognition of the full or part relinquishment of the ownership and/or responsibility for the management of all heritage items and/or values as identified in the Heritage Management Plan. This may include a review of the status of all items and/or information provided by Alkane to Parkes Shire Council.
- Identification of the responsibilities for monitoring, maintenance and management of heritage infrastructure post relinquishment of the Mining Leases for the Mine Site.

Preparation of the *Heritage Relinquishment Strategy* will commence once all relevant approvals and agreements have been completed, or if the decision is made to not undertake further mining operations within the Mine Site, as indicated in Section 4.

10. Intervention and Adaptive Management

Table 18 presents the Trigger Action Response Plan for each of the rehabilitation threats and potential adverse outcomes identified in **Table 9** as having a risk rating of moderate or above.

Where the development and implementation of the plans and procedures described in Section 9 is completed, this Plan will be updated to reflect specific management implications for individual areas of the Mine Site and/or target values associated with rehabilitation completion criteria.

Table 18
Trigger Action Response Plan

Rehabilitation Risk	Potential Adverse Outcome	Trigger	Response
Active Mining Phase of Rehabilitation			
Adverse geochemical/chemical composition of materials such as overburden, processing wastes, topsoils and subsoils.	Insufficient resources available for rehabilitation limiting suitability or final land use	Visual monitoring of growth medium stockpiles identifies unnecessary damage/deterioration (e.g. erosion).	Review maintenance and monitoring practices to identify potential sources of damage/deterioration and revise practices where practicable
		Growth Medium Stockpile Assessment identifies a potential deficit.	Commence investigation to identify a suitable source of additional growth medium resources.
Decommissioning Phase of Rehabilitation			
Hazards associated with retained infrastructure.	Insufficient or unsuitable safety/security related infrastructure to support final land use.	Visual monitoring identifies failure or lack of existing safety/security.	Commence investigation to identify status of existing infrastructure and any required maintenance or additional infrastructure required.
		Health and safety related incident resulting from lack of suitable infrastructure.	Commence investigation into cause of incident to identify potential for further risk/injury.
Landform Establishment Phase of Rehabilitation			
Unstable landform due to erosion and/or mass movement issues associated with inappropriate design and/or quality assurance during landform construction.	Increased erosion and sedimentation resulting in final landform as a source of pollution.	Visual monitoring identifies increased erosion of Mine-related landforms or increased sedimentation of water management infrastructure.	Commence investigation into the source of increase erosion/sedimentation and implement necessary remediation works.
		EPL discharge monitoring identifies water quality does not meet EPL criteria.	
	Increased risk to human and/or environmental health.	Monitoring identifies instability / unacceptable movement (actual or potential) in final landform.	Engage a suitably qualified geotechnical engineer to assess the instability and provide a range of recommendations to remediate the instability.
Exposure or release of geochemical and/or geotechnically adverse material associated with containment design and construction, including capping/cover system.	Increased demand on existing rehabilitation resources.	Monitoring identifies exposure of unsuitable material due to insufficient or ineffective capping and/or growth medium.	Commence investigation into available rehabilitation resources, including potential external sources.
	Final landform is a source of pollution.	EPL discharge monitoring identifies water quality does not meet EPL criteria.	Commence investigation into the source of increase erosion/sedimentation and implement necessary remediation works.
	Structural failure of landforms.	Monitoring identifies instability / unacceptable movement (actual or potential) in final landform.	Engage a suitably qualified geotechnical engineer to assess the instability and provide a range of recommendations to remediate the instability.

Table 19 (Cont'd)
Trigger Action Response Plan

Rehabilitation Risk	Potential Adverse Outcome	Trigger	Response
Landform Establishment Phase of Rehabilitation (Cont'd)			
Final landform unsuitable for final land use (e.g. unsuitable surface cover and landform settlement).	Increased risk to human and/or environmental health.	Monitoring identifies instability / unacceptable movement (actual or potential) in final landform.	Engage a suitably qualified geotechnical engineer to assess the instability and provide a range of recommendations to remediate the instability.
Growth Medium Development Phase of Rehabilitation			
Subsoil and topsoil deficit for rehabilitation activities.	Insufficient growth medium available for construction of sustainable final landform and land use.	Growth Medium Stockpile Assessment indicates a deficit in material required for rehabilitation.	Identify an alternative source of additional suitable material.
Ecosystem Establishment Phase of Rehabilitation			
Adverse weather and climatic influences (e.g. drought; intense rainfall events; bushfire and climate change).	Delay or failure of vegetation establishment.	Visual monitoring during and/or after adverse weather/climatic events identifies limited opportunities for progressive rehabilitation or negative effects on vegetation establishment	Review the rehabilitation schedule and update the forward schedule with revised rehabilitation timing estimates.
			Identify any alternative areas which can be rehabilitated or activities which can be progressed during adverse weather conditions.
			Assess rehabilitated areas for damage and undertake necessary repairs or additional revegetation as required.
Ecosystem Development Phase of Rehabilitation			
Hazards associated with retained infrastructure.	Insufficient or unsuitable safety/security related infrastructure to support final land use.	Visual monitoring identifies failure or lack of existing safety/security.	Commence investigation to identify status of existing infrastructure and any required maintenance or additional infrastructure required.
		Health and safety related incident resulting from lack of suitable infrastructure.	Commence investigation into cause of incident to identify potential for further risk/injury.
Damage to rehabilitation (e.g. fauna, domestic stock, vandalism, vehicular interactions, bushfire).	Vegetation does not become established on final landform.	Rehabilitation monitoring identifies failure or partial failure of vegetation establishment on final landform.	Review site security measures and implement remedial rehabilitation where practicable.
Erosion and failure of landform, drainage and water management/storage structures.	Final landform is a source of pollution.	EPL discharge monitoring identifies water quality does not meet EPL criteria.	Commence investigation into the source of increase erosion/sedimentation and implement necessary remediation works.

Table 19 (Cont'd)
Trigger Action Response Plan

Rehabilitation Risk	Potential Adverse Outcome	Trigger	Response
Ecosystem Development Phase of Rehabilitation (Cont'd)			
Lack of resources for rehabilitation maintenance.	Sustainable vegetation communities do not become established on final landform.	Rehabilitation monitoring identifies failure or partial failure of vegetation establishment on final landform.	Suitably qualified ecologist or revegetation expert engaged to assess reasons for failure of revegetation and recommend actions to ensure that the final vegetation community corresponds as closely as possible to baseline studies. Implement above recommendations in consultation with the Resources Regulator.
	Weeds and pests become established and require significant resources to manage.	Rehabilitation monitoring identifies higher weed or pest occurrence or more significant impacts within rehabilitated areas compared to analogue sites.	Review weed and pest control programs and revise intensity and frequency of control efforts as required. If the above is unsuccessful, engage a suitably qualified professional to provide recommendations to control pests or protect rehabilitation areas.

11. Review, Revision and Implementation

Table 19 presents the triggers for reviewing this Plan. Following each review, this Plan will be revised if significant structural amendments are necessary and provided to the Resources Regulator. Additionally, further consultation with relevant stakeholders will be undertaken where revisions to this Plan result in significant changes to proposed final land uses final landforms, rehabilitation objectives, rehabilitation completion criteria and/or the rehabilitation schedule. Milestones as documented in this Plan will be updated in the Annual Rehabilitation Report and will trigger an update to this Plan in the event that a significant change in rehabilitation risks and/or proposed rehabilitation methodologies is identified.

Table 19
Triggers for Review of this Plan

Trigger	Review
Request from the Resources Regulator or other relevant government agency to review the Plan.	As required by any notice
Modification of an existing development consent or mineral authority	Within 3 months
Preparation of a revise Rehabilitation Risk Assessment	Within 1 month
Submission of each Annual Rehabilitation Report	Within 1 month
Finalisation of any of the following. • Growth Medium Stockpile Assessment. • Contamination Assessment • Site Relinquishment Engineering Assessment. • Health and Safety Management System. • .	Within 3 months
Consultation with relevant stakeholders with significant implications for the final land use or final landform.	Within 3 months
Consultation with relevant stakeholders with significant implications of rehabilitation objectives and/or rehabilitation completion criteria.	Within 3 months

In addition to reviews of this Plan as outlined in **Table 19**, a Rehabilitation Quality Assurance Register will be developed and regularly maintained to ensure that mining and rehabilitation activities at the Mine Site are being conducted in accordance with this Plan. The Rehabilitation Quality Assurance Register will include the checklist presented as **Appendix 2** as well as a compliance register used to assess the status of compliance with requirements under relevant development consents, leases and licences. Additionally, the Rehabilitation Quality Assurance Register will include:

- records of any contaminated water or hazardous materials collected at the Mine Site and disposed of off site;
- the latest map of contamination at the Mine Site; and
- details of any additional rehabilitation measures and/or risk controls implemented within individual subdomains during rehabilitation operations.

12. References

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Appendix 1

Land Function Analysis and Soil Analysis Report

(Total No. of pages including blank pages = 270)