Broula King Enterprises Pty Ltd

ABN: 97 645 933 599

Rehabilitation Management Plan

for the

Broula King Gold Mine

ML1617

Prepared by:

RWCorkery&co

May 2023

ACKNOWLEDGEMENT

R.W. Corkery & Co. acknowledge and pay our respects to the Traditional Custodians of the lands comprising NSW and Australia on which our projects are located. We appreciate the knowledge, advice and involvement of the Elders and extended Aboriginal community that contribute to our Projects and extend our respect to all Aboriginal and Torres Strait Islander peoples.

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Summary Table

Name of Mine		Broula King Gold Mine		
RMP Commencement Date				
Mineral Authorities		ML1617	**Expiry Date**	
Name of Leaseholder		Broula King Enterprises Pty Ltd		
Version	**Author**	**Purpose**	**Approved by**	**Date of Submission**

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PLANS

LIST OF ACRONYMS

AHD	Australian Height Datum
DA	Development Application
EPA	Environment Protection Authority
MOP	Mining Operations Plan
RMP	Rehabilitation Management Plan
RWC	R.W. Corkery & Co. Pty Limited

1. Introduction to Mining Project

This Rehabilitation Management Plan (RMP) for the Broula King Gold Mine (the Mine) has been prepared by R.W. Corkery & Co. Pty. Limited (RWC) in conjunction with Broula King Enterprises Pty Ltd (the Company) and in accordance with the following documents and guidelines.

- *Form and Way: Rehabilitation Management Plan for Large Mines (July 2021)*
- *Form and Way: Rehabilitation Objectives, Rehabilitation Completion Criteria and Final Landform and Rehabilitation Plan for Large Mines (October 2022)*
- *Guideline 1: Rehabilitation Risk Assessment (July 2021)*
- *Guideline 2: Rehabilitation Records (July 2021)*
- *Guideline 3: Rehabilitation Controls (July 2021)*
- *Guideline 5: Rehabilitation Objectives and Rehabilitation Completion Criteria (April 2023)*

1.1 History of Operations

1.1.1 Background

The Broula King Gold Mine is located south of the Mid-Western Highway, near the village of Bumbaldry, approximately 25km west-southwest of Cowra, NSW (see **Figure 1**). The Mine is currently owned and operated by Broula King Enterprises Pty Ltd (BKE).

The discovery of gold and the commencement of mining at Broula King occurred in 1901. Mining and processing operations continued intermittently until 1940. Mining of the relatively narrow quartz reefs was achieved by numerous surface and underground workings to a maximum depth of approximately 45m. Recorded production exceeds 2 800oz at a recovered grade of approximately 15g/t gold.

Modern exploration activity was commenced by Western Mining Corporation Limited during 1975-76, followed by Mines Exploration Pty Limited from 1978-1982. In the period 1985 to 1999 Lachlan Resources NL explored the project in periodic joint venture with Cluff Resources Pacific Ltd and Placer Pacific Pty Limited. In 1999, Golden Hills Mining NL acquired the project from Lachlan Resources and planned to investigate the feasibility of a heap leach operation, however the project was relinquished in 2000.

During the period 1975 to 1989, 209 exploration holes were drilled at Broula King and surrounding prospects totalling 8 430m. Other exploration work completed during this period included, geological mapping, geochemical sampling, trenching, airborne and ground geophysics, metallurgical test work, resource calculations, pit design and prefeasibility studies. As a result of this work, a gold resource of approximately 23 000oz was identified.

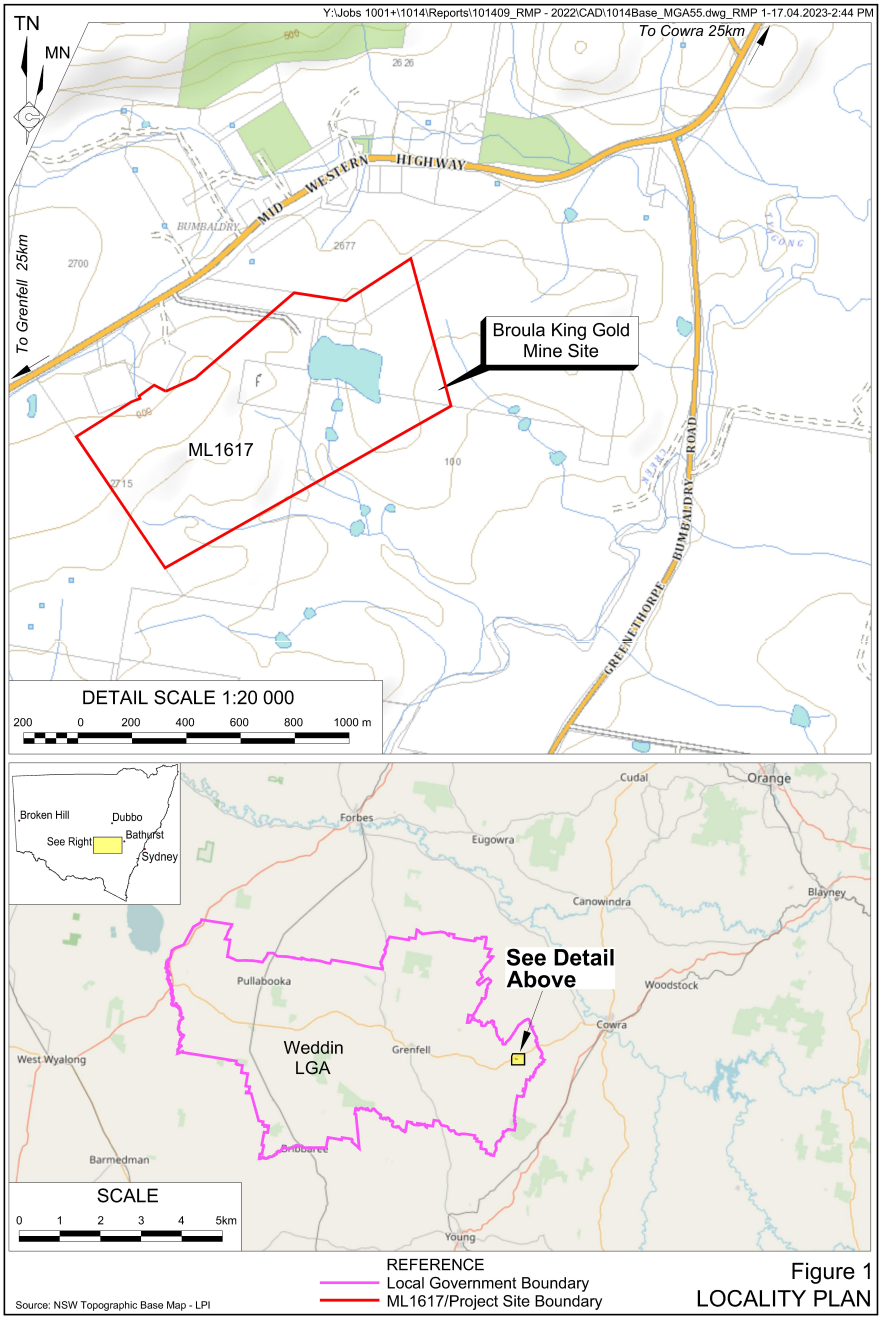

Figure 1
LOCALITY PLAN

In 1988, Lachlan Resources NL lodged Mining Lease Applications, commissioned and part completed a draft Environmental Impact Statement based on commencing an open pit operation and associated processing facilities. However, nothing further eventuated in regard to project implementation.

In August 2000, Mr David Hobby, trading as Hardwon Resources, was granted an Exploration Licence covering an area of approximately 9km^2, centred on the Broula King deposit, and surrounding prospects. Mr Hobby obtained the licence with the principal aim of investigating the feasibility of establishing a small-scale gold mining and processing operation on previously identified resources at Broula King. Subsequent feasibility studies indicated that a small-scale operation was economically viable, and Broula King Joint Venture Pty Ltd (BKJV) was formed to develop the Mine under the stewardship of Mr Bill Flannery and Mr Hobby, with the assistance of consultants including Mr Peter Kelliher and Mr Alan Fraser.

Resource Base Ltd (RBX) was incorporated on 15 March 2005 for the primary purpose of establishing a gold mining and exploration company. BKJV was sold to RBX in 2007 as an acquisition that would assist RBX in listing through an Initial Public Offering on the Australian Securities Exchange.

RBX completed raising capital for the Mine in 2012 when production commenced. The directors of BKJV at that time were as follows.

- Mr Peter Armitage – Non-executive Chairman.
- Mr Alan Fraser – Managing Director.
- Mr Peter Kelliher – Executive Director.
- Mr Geoffrey Turner – Non-executive Director.
- Mr Glenn Connor – Non-executive Director representing the major shareholder, the Asipac Group.

Production ceased in August 2014 when the recovery of the defined ore was completed. Consultations were held with the regulators and agencies after the cessation of mining. There was general recognition that the Broula King plant, because of its strategic central location, could potentially supply ore processing services to assist the development of other mining operations in the area, though this would be subject to further approvals. The Mine was then placed on care and maintenance. Equipment in the treatment plant is started monthly and the processing plant and Mine Site are actively maintained. The compact size of the Mine Site plus the potential for the recommencement of processing operations has resulted in limited rehabilitation being completed to date.

On 1 June 2020 representatives from Baker Young Limited were appointed to the board of RBX, following the departure of the previous board, with a mandate to divest BKJV. On 18 December 2020, BKJV and all its assets were acquired by Broula King Enterprises Pty Ltd (BKE), a wholly owned subsidiary of Sunshine Reclamation Pty Ltd (SRP). As a result, BKE now owns 100% of BKJV.

1.1.2 Mine Development and Production

It was predicted that the mineral resource would support a mining operation having a life of less than two years, following construction. Exploration of the orebody defined a gold resource of approximately 23 000oz. Pit design optimisation predicted that mining would result in the removal of up to 180 000t of ore and approximately 250 000t of waste rock. The open pit was to have approximate dimensions of 150m long, 100m wide and 50m deep at the high wall. Total material moved was expected to be approximately 168 000 BCM.

Mining commenced in May 2012 and the open cut was excavated in 5m benches. A contract driller was used to drill the blasthole patterns and the drill cuttings were sampled and assayed for waste and ore differentiation. Blasting was carried out by a contractor. A local earthmoving company was contracted to do the load and haul of the ore and waste rock.

The processing rate was designed to be 126 000tpa. Ore was treated in a three-stage crushing circuit then processed in a conventional gold CIP plant. The dacite ore was extremely hard and this reduced mill throughput to around 110 000tpa. The metallurgy was complicated by the presence of cyanide soluble copper and a refractory sulphide component. Ore processing involved crushing, grinding, leaching and adsorption of the gold onto activated carbon, stripping of the gold from the carbon and the production of doré bullion. The tailings were decanted to recover some cyanide solution, followed by cyanide destruction of thickened tailings by an air/SO_2 process and the tailings were deposited into the Tailings Storage Facility (TSF).

Mining was suspended in August 2014 after the removal of 186 863t of ore to produce 11 482oz of gold. There were lower grade ore blocks left unmined in the floor of the open cut and in quartz veining evident in the southwest wall of the open cut. The northeast open cut was not mined as additional RC drilling reduced the ore grade estimate and mining in the western lobe off the main open cut was suspended early due to disappointing grades. The approximate pit dimensions at surface are 115m x 100m.

The Mine has been on care and maintenance since August 2014. The Mine Site, including the treatment plant, open pit, TSF, mine rock and topsoil stockpiles are surrounded by a 1.9m high wire link fence. The old historical processing area and the associated contaminated tailings are outside of this fence but are fenced separately to protect the site from accidental disturbance by earth moving equipment.

The operations described in this RMP cover the ongoing activities at the Mine Site, which include site clean-up, maintenance and progressive rehabilitation of the Mine Site. Concurrent with these activities, the Company will continue to evaluate options for a resumption of material processing activities likely to involve treatment of ore imported into the Mine Site. Any resumption of processing operations would be subject to further assessment and approvals.

1.2 Current Development Consents, Leases and Licences

Table 1 presents the current consents, leases and licences for the Mine.

Table 1
Broula King Gold Mine – Consents, Leases and Licences

Consent/Lease/Licence	Issue Date	Expiry Date	Details / Comments
Development Consent 26/2005	10 November 2005	-	Granted by Weddin Shire Council
Mining Lease (ML) 1617	31 March 2008	31 March 2029	Granted by the Minister for Mineral Resources incorporating an area of 74.92ha for prospecting and mining of gold
Environment Protection Licence (EPL) No. 12845	9 November 2007	Not applicable - renewed annually	Issued by the EPA. Current version dated 9 February 2023.

Source: Broula King Enterprises Pty Ltd.

1.3 Land Ownership and Land Use

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 CJ Day and CM Sullivan, as well as Crown land owned by the State of NSW. The Crown land is subject to various licences for grazing, access and occupation as shown in **Table 2**. Land adjacent to the Mine Site consists of privately owned land, land owned by Essala Pty Ltd, and land owned by Cowra Local Aboriginal Land Council.

Table 2
Land Ownership

Page 1 of 2

Commented [S1]: DY - Please confirm details in table below

Title		Tenure	Owner	Crown licence and restrictions
Lot	DP			
Mine Site				
5	1230935	Freehold	CJ Day & CM Sullivan	
204	754579	Freehold	CJ Day & CM Sullivan	
201	754579	Freehold	Private Landowner 2	
207	754579	Freehold	Private Landowner 2	
209	754579	Freehold	Private Landowner 3	
208	754579	Crown Land	State of NSW	Licence 383499 for grazing held by Private Landowner 2 and Licence 409578 for access held by Broula King Enterprises Pty Ltd. The purpose of the reserve is for Future Public Requirements. The only restrictions maybe with the type of licence sought for the Lot.
215	723436	Crown Land	State of NSW	Licence 383499 for grazing held by Private Landowner 2 and Licence 409578 for access held by Broula King Enterprises Pty Ltd. The purpose of the reserve is for Future Public Requirements. Reserved for future public requirements with no further restrictions.
216	723436	Crown Land	State of NSW	Licence 383499 for grazing held by Private Landowner 2. Reserved for Future Public Requirements with no further restrictions.
217	723436	Crown Land	State of NSW	
218	723436	Crown Land	State of NSW	
7303	1138587	Crown Land	State of NSW	Licence 367332 for occupation held by David Hobby and Bill Flannery. The reserved purpose is for Future Public Requirements.

Table 2 (Cont'd)
Land Ownership

Commented [S2]: DY - Please confirm details in table below

Title		Tenure	Owner	Crown licence and restrictions
Lot	DP			
Mine Site				
7305	1138590	Crown Land	State of NSW	Licence 404972 for grazing held by Gareth, Lisa, and CJ Day and CM Sullivan. The reserved purpose is for Future Public Requirements.
Land Adjacent to the Mine Site				
206	754579	Freehold	Private landowner	
183	754579	Freehold	Private landowner	
1	1129004	Freehold	Private landowner	
13	132216	Freehold	Private landowner	
162	599076	Freehold	Essala Pty Limited	
3	1230935	Freehold	Private landowner	
1	1230935	Freehold	Cowra Local Aboriginal Land Council	
205	754579	Freehold	Private landowner	
209	754579	Freehold	Private landowner	
165	754579	Freehold	Private landowner	
13	113197	Freehold	Private landowner	
2	781964	Freehold	Private landowner	

The Mine Site (**Figure 2**) and surrounding area is zoned RU1 – Primary Production under the *Weddin Local Environment Plan 2011* (Weddin LEP). Open cut mining is permissible with consent within this zone.

Land uses within the Mine Site include the following.

- Care and maintenance activities associated with the Mine.
- Nature conservation within rehabilitated areas and areas of remnant vegetation or regrowth.
- Agricultural uses (intermittent sheep grazing).

Land uses in the vicinity of the Mine Site include the following.

- Residential/urban development located to the north and east of the Mine Site within Weddin Shire.
- Transportation infrastructure, including the Mid-Western Highway and local streets within Weddin Shire.
- Agricultural uses (intermittent sheep grazing and cereal cropping) on all sides adjacent to the Mine Site.

The approved final land use for the Mine Site is general nature conservation with retention of infrastructure to support post-mining land uses within and in the vicinity of the Mine Site. Further information is presented in Section 2.

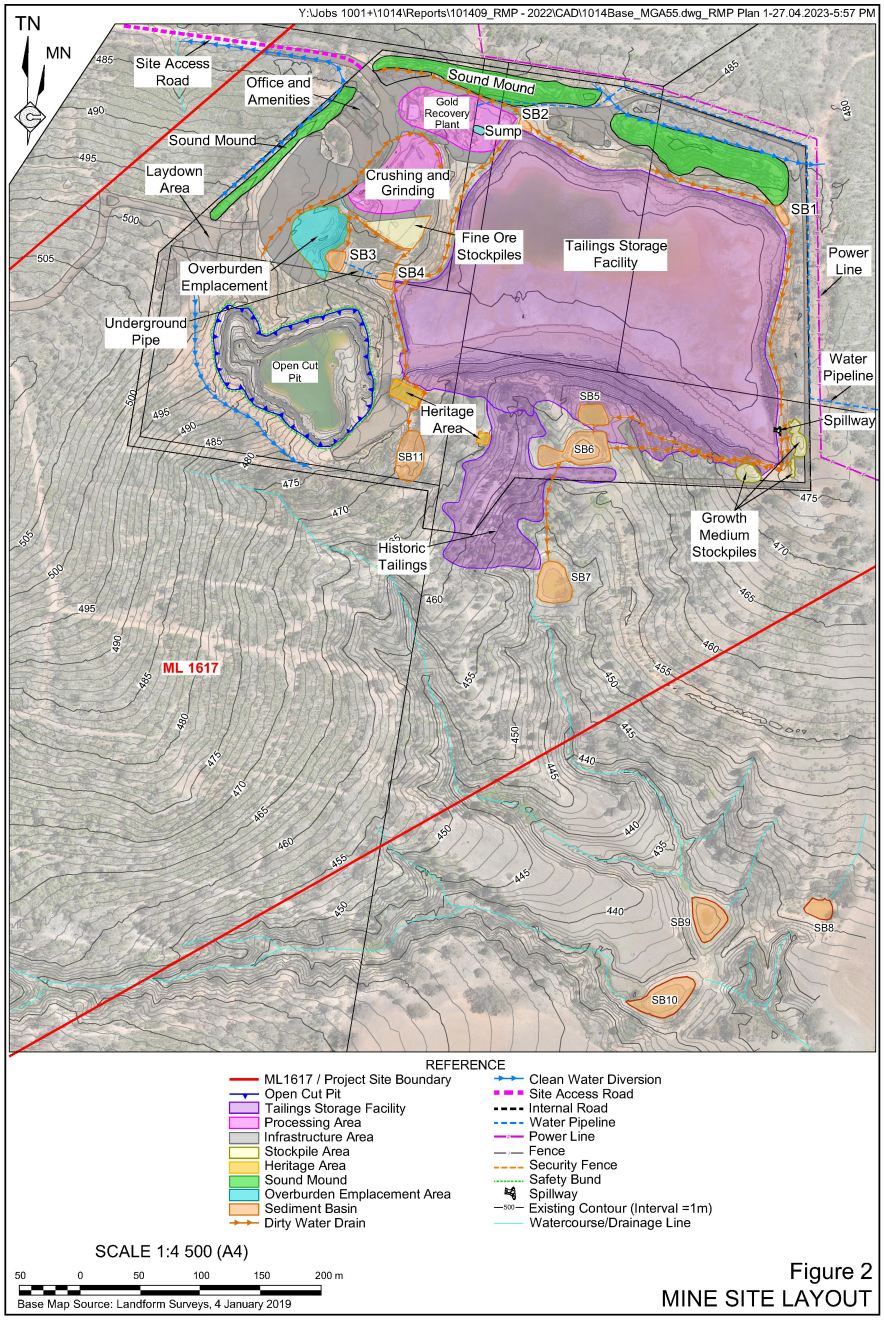

Figure 2
MINE SITE LAYOUT

There are currently no Stewardship Agreements, Conservation Agreements or other similar agreements applicable to the Mine Site.

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1.3.1 Land Ownership and Land Use Figures

Figure 3 presents land ownership for areas within and surrounding the Mine Site. **Figure 4** presents land uses in the vicinity of the Mine Site. **Figure 5** presents heritage areas within the Mine Site and vegetation communities (state PCT mapping) within and surrounding the Mine Site. **Figure 6** presents land zoning in the vicinity of the Mine Site.

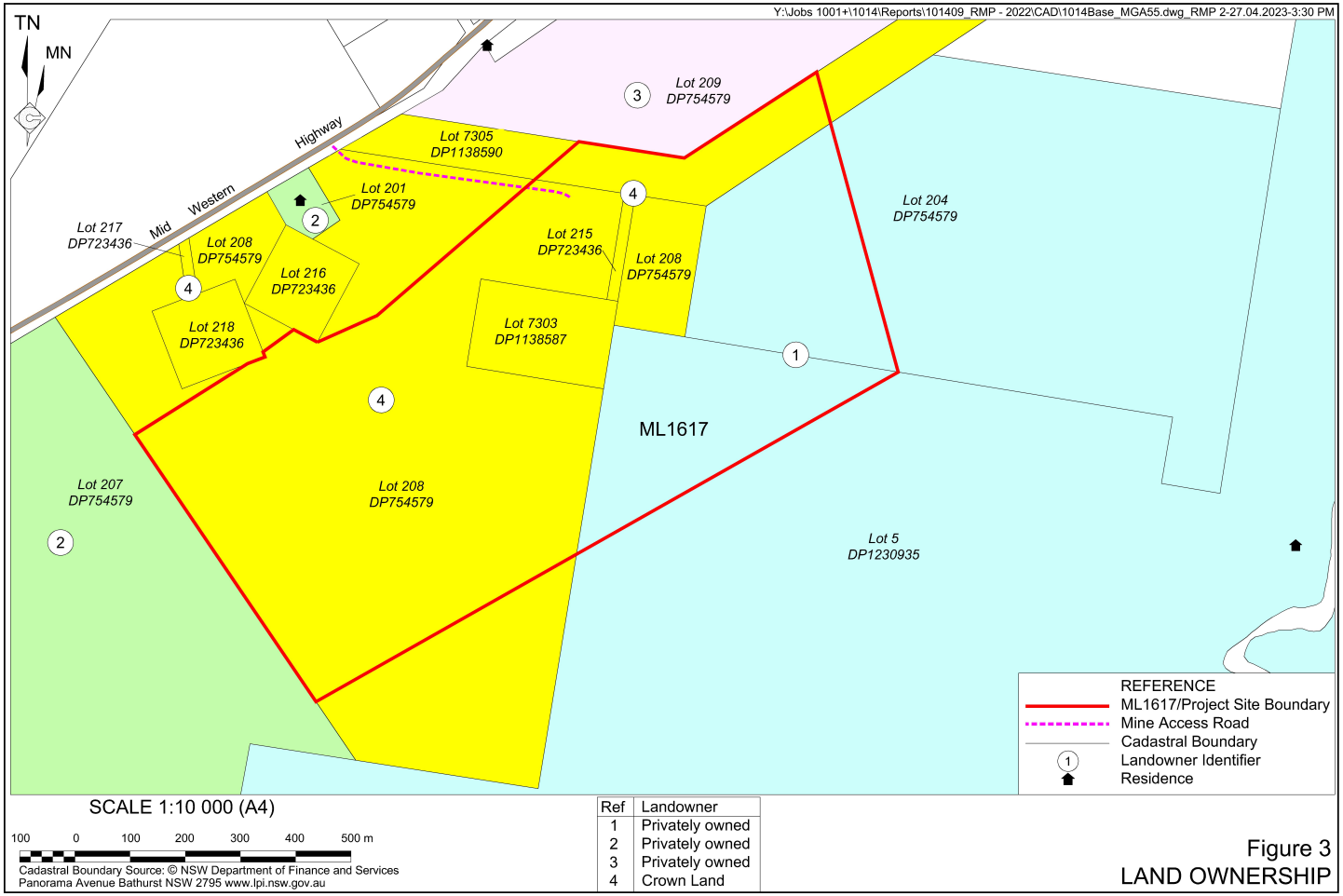


Figure 3
LAND OWNERSHIP

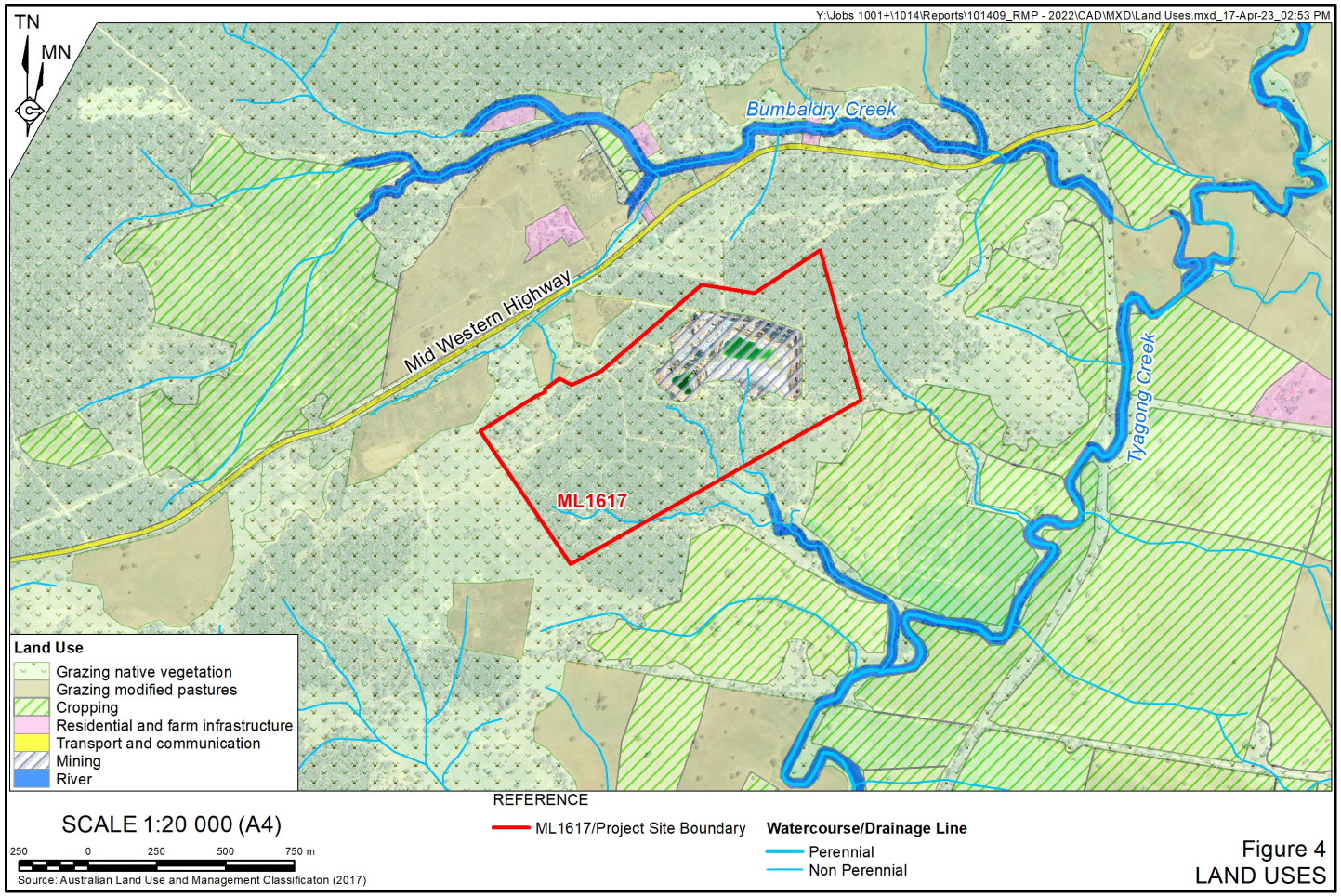


Figure 4
LAND USES

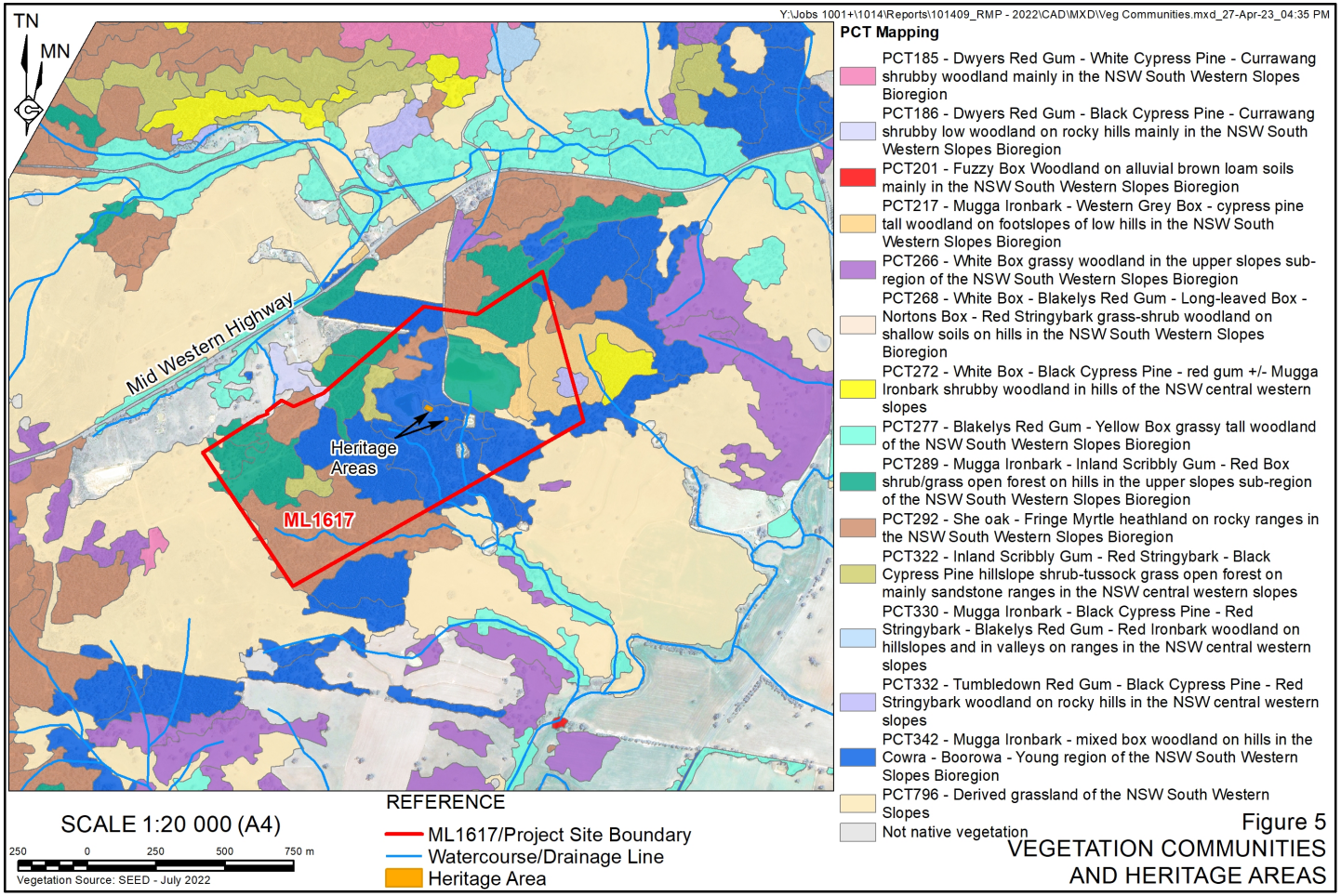


Figure 5
VEGETATION COMMUNITIES AND HERITAGE AREAS

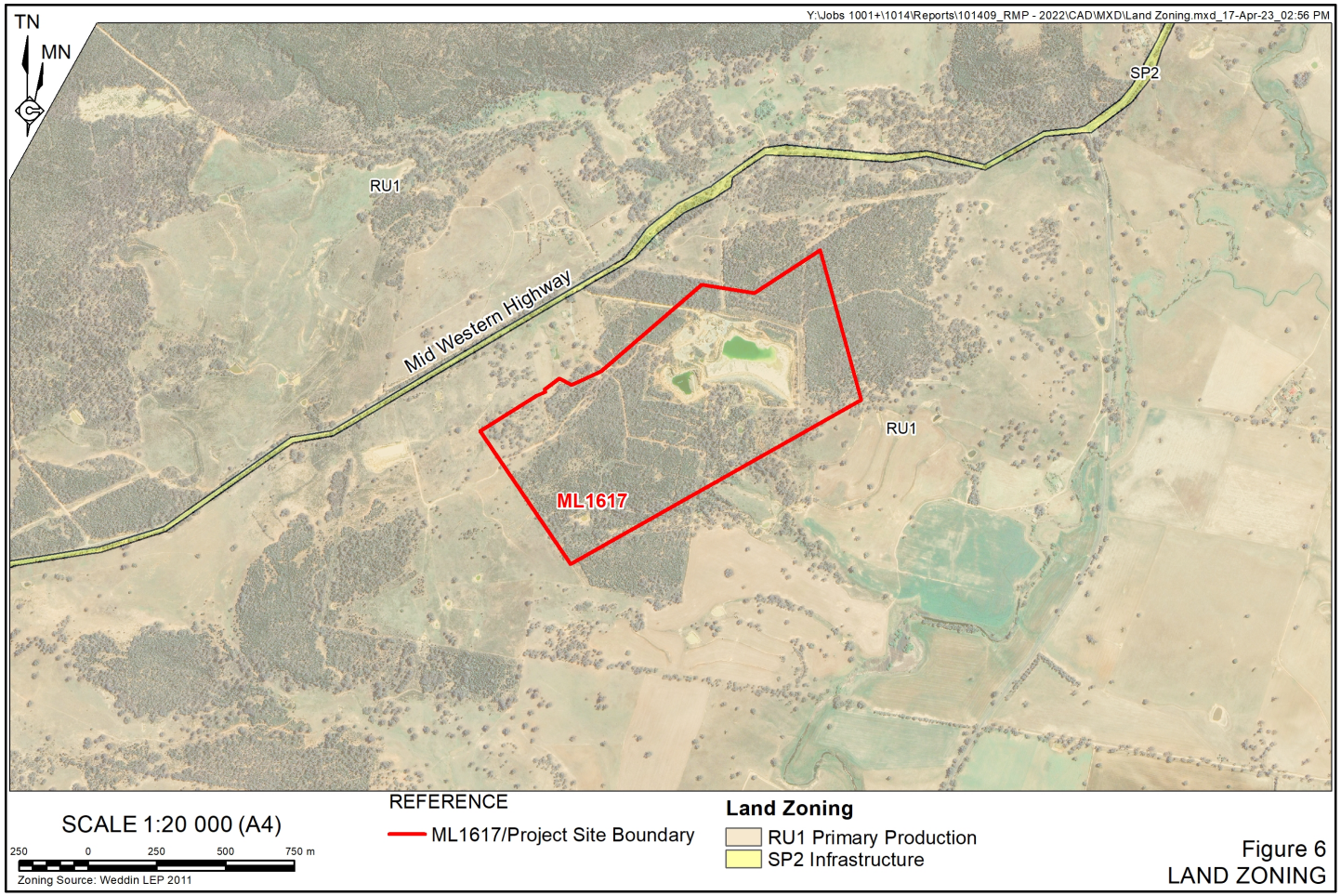


Figure 6
LAND ZONING

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-extraction land uses. It is noted that the conditional requirements for ML1617 have been adopted from Schedule 8A of the *Mining Amendment (Standard Conditions of Mining Leases – Rehabilitation) Regulation 2021*, gazetted by the NSW Government on 2 July 2021. It has been assumed that site specific conditions within Mining Authorities relating to rehabilitation have been retained, and the standard conditions have been replaced by those identified in Schedule 8A of the *Mining Amendment (Standard Conditions of Mining Leases – Rehabilitation) Regulation 2021*. In the event that there are any discrepancies between the conditions identified in this Plan and those included in the Mining Authorities for the Mine Site following updates to the conditions of these Mining Authorities, this Plan will be updated to correct these discrepancies.

2.2 Final Land Use Options Assessment

The final land use following rehabilitation of the Mine has historically been defined in the approved Mining Operations Plan (MOP) for the Mine and is identified in Section 2.3. In accordance with *Form and Way: Rehabilitation Objectives, Rehabilitation Completion Criteria and Final Landform and Rehabilitation Plan for Large Mines* (Resources Regulator, 2021), no further land use options assessment is required.

2.3 Final Land Use Statement

Final land uses within the Mine will include the following.

- Native ecosystem – nature conservation and grazing.
- Heritage conservation.
- Final void.
- Infrastructure – access roads for future land use and maintenance purposes.
- Water management (stabilised diversion drains) and water storages.

Final land use and rehabilitation plans for the Mine are presented in Section 5.

Table 3
Regulatory Requirements for Rehabilitation

Consent	Cond. No.	Requirement	Area	Timing	RMP Section
DA 26/2005	56	The development must comply with the conditions of the Mining Lease for the land and within the Mining, Rehabilitation and Environmental Management Process (MREMP) which includes the development and implementation of a satisfactory Mining Operation Plan (MOP) which must be approved prior to the commencement of operations. These documents will prevail where there are inconsistencies with the information in the application.	Mine Site	Prior to commencement of mining operations.	Noted
	59	All cleared vegetative material should remain on site and be utilized in the rehabilitation program for habitat provision and protection of the soil surface. Each tree to be removed should be inspected by a suitably qualified person prior to removal and any fauna found should be suitably relocated. The need for the placement of nest boxes should be at the decision of the relevant consultant. Any cut hollows should be retained and placed appropriately in trees outside the disturbance area within similar vegetation communities.	Mine Site	During construction, operation and rehabilitation.	6.2.1.11, 6.2.5
	76	An Annual Environmental Management Report is to be lodged with and to the satisfaction of WSC, DEC, DNR and DPI Mineral Resources commencing one year after the commencement of mining operations and continuing until all the listed authorities advise otherwise. The report is to include, but is not limited to: a. compliance of the development with the Mining Operation Plan b. compliance with development consent conditions c. compliance with the DEC and DNR licence and approval conditions, and any other statutory approval d. details of any variations to environmental approvals applicable to the lease area e. results of environmental monitoring for the past year as per the Monitoring Table5.6 at page 151 of Volume 1 of the EIS as amended by these conditions f. list all hazards that have occurred to wildlife as a result of construction and operations and proposed measures to mitigate the issue - this includes the tailings dam fauna incidents report and measures to reduce this impact g. a copy of the current Environmental Management and Closure Plan is to be included. h. where relevant progress towards final rehabilitation and closure	Mine Site	During, operation and rehabilitation.	6.2.6.2

Table 3 (Cont'd)
Regulatory Requirements for Rehabilitation

Consent	Cond. No.	Requirement	Area	Timing	RMP Section
DA 26/2005 (Cont'd)	77	At the completion of mining and processing operations all potential acid forming material and mineralised waste on the site not contained in the tailings facility is to be recovered and placed back in the open cut, below the final groundwater level.	Mine Site	During rehabilitation	6.2.1.4, 6.2.1.8
	78	At the end of the mine life the tailings facility surface is to be shaped, covered by a pore breaking zone followed by a compacted clay seal, followed by benign waste rock, a filter zone, subsoil and topsoil and the surface sown with a pasture mix and fenced prior to the abandonment of the site.	Mine Site	During rehabilitation	6.2.1.8, 6.2.3.3
	79	Fencing of the site is to be maintained in place until all rehabilitation work is established and the site is considered safe to the public and wildlife.	Mine Site	During construction, operation and rehabilitation.	6.2.2.1, 6.2.2.2, 6.2.2.3, 6.2.6.4
	80	Stripping and stockpiling of topsoil is to be undertaken to ensure its preservation for later rehabilitation use together with its stored seeds and plant organic matter. Stockpiles should not exceed 1.5m in height and are to be aligned parallel with the land surface. Stockpiles must be protected from wind and water erosion with use of a cover crop or other protection measures where the storage period is significant (normally over 14 days).	Mine Site	During construction, operation and rehabilitation.	6.2.1.1, 6.2.1.10, 6.2.1.11, 6.2.4
	82	Rehabilitation measures are to be employed to establish vegetative cover on constructed drainage channels and other disturbed sites immediately following construction. The respreading of topsoil to a minimum depth of 50mm should be applied prior to revegetation of sites. For temporary short term cover, exotic grasses and cover crop species are most effective because of their rapid germination and growth and ready availability of seed. For long term cover, native grasses, shrubs and trees will be more appropriate.	Mine Site	During operation and rehabilitation.	6.2.1.10, 6.2.1.11, 6.2.5
DA 26/2005 Attachment A	O2.1	The licensee must implement control strategies to minimise the potential for dust emissions from the premises. These strategies must include minimisation of exposed surfaces with potential for dust generation, rehabilitation of disturbed areas, minimising drop heights when handling extracted material, use of water for dust suppression where appropriate and restricting high dust-generating activities during adverse weather conditions.	Mine Site	During construction, operation and rehabilitation.	6.2.1.10
ML1617	4	**Must prevent or minimise harm to the environment** (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. (2) In this clause – **harm** to the environment has the same meaning as in the Protection of the Environment Operations Act 1997**.**	Mine Site	During operation and rehabilitation.	Noted

Table 3 (Cont'd)
Regulatory Requirements for Rehabilitation

Consent	Cond. No.	Requirement	Area	Timing	RMP Section
ML1617	5	**Rehabilitation to occur as soon as reasonably practicable after disturbance** i. The holder of a mining lease must rehabilitate land and water in the mining area that is disturbed by mining activities under the mining lease as soon as reasonably practicable after the disturbance occurs.		During operation and rehabilitation.	Noted
ML1617	6	**Rehabilitation must achieve final land use** (1) The holder of a mining lease must ensure that rehabilitation of the mining area achieves the final land use for the mining area. (2) The holder of a mining lease must ensure any planning approval has been obtained that is necessary to enable the holder to comply with subclause (1). (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) **Note –** clause 7 requires a rehabilitation risk assessment to be conducted whenever a hazard is identified under this subclause. (4) In this clause – ***final land use*** for the mining area means the final landform and final land uses to be achieved for the mining area – (a) as set out in the rehabilitation objectives statement and rehabilitation completion criteria statement, and (b) for a large mine – as spatially depicted in the final landform and rehabilitation plan, and (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. ***planning approval*** means – (a) a development consent within the meaning of the *Environmental Planning and Assessment Act 1979*, or (b) an approval under that Act, Division 5.1.	Mine Site	During rehabilitation	2.2, 3, 10, 4.1

Table 3 (Cont'd)
Regulatory Requirements for Rehabilitation

Consent	Cond. No.	Requirement	Area	Timing	RMP Section
ML1617	7	**Rehabilitation risk assessment** (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 (b) identifies the measures that need to be implemented to eliminate, minimise or mitigate the risks. (1) The holder of the mining lease must implement the measures identified. (2) The holder of a mining lease must conduct a rehabilitation risk assessment – (a) for a large mine – before preparing a rehabilitation management plan, and (b) for a small mine – before preparing the rehabilitation outcome documents for the mine, and **(c)** whenever a hazard is identified under clause 6(3) – as soon as reasonably practicable after it is identified, and **(d)** whenever given a written direction to do so by the Secretary.	Mine Site	During rehabilitation.	3
ML1617	8	**Application of Division** This Division does not apply to a mining lease unless— **(a)** the security deposit required under the mining lease is greater than the minimum deposit prescribed under the Act, section 261BF in relation to that type of mining lease, or **(b)** the Secretary gives a written direction to the holder of the mining lease that this Division, or a provision of this Division, applies to the mining lease.	Mine Site	During construction, operation and rehabilitation.	Noted
ML1617	9	**General requirements for documents** A document required to be prepared under this Division must— (a) be in a form approved by the Secretary, and Note— The approved forms are available on the Department's website. (b) include any matter required to be included by the form, and (c) if required to be given to the Secretary—be given in a way approved by the Secretary.	Mine Site	During construction, operation and rehabilitation.	Noted

Table 3 (Cont'd)
Regulatory Requirements for Rehabilitation

Consent	Cond. No.	Requirement	Area	Timing	RMP Section
ML1617	10	**Rehabilitation management plans for large mines** (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, (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, (c) a summary of rehabilitation risk assessments conducted by the holder, (d) the risk control measures identified in the rehabilitation risk assessments, (e) the rehabilitation outcome documents for the mining lease, (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. (2) If a rehabilitation outcome document has not been approved by the Secretary, the holder of the mining lease must include a proposed version of the document. (3) A rehabilitation management plan is not required to be given to the Secretary for approval. (4) The holder of the mining lease— (a) must implement the matters set out in the rehabilitation management plan, and (b) if the forward program specifies timeframes for the implementation of the matters—must implement the matters within those timeframes.	Mine Site	During construction, operation and rehabilitation.	This Plan.
ML1617	11	**Amendment of rehabilitation management plans** The holder of a mining lease must amend the rehabilitation management plan for the mining lease as follows— (a) to substitute the proposed version of a rehabilitation outcome document with the version approved by the Secretary—within 30 days after the document is approved, (b) as a consequence of an amendment made under clause 14 to a rehabilitation outcome document—within 30 days after the amendment is made, (c) to reflect any changes to the risk control measures in the prepared plan that are identified in a rehabilitation risk assessment—as soon as practicable after the rehabilitation risk assessment is conducted, (d) whenever given a written direction to do so by the Secretary—in accordance with the direction.	Mine Site	During construction, operation and rehabilitation.	11

Table 3 (Cont'd)
Regulatory Requirements for Rehabilitation

Consent	Cond. No.	Requirement	Area	Timing	RMP Section
ML1617	12	**Rehabilitation outcome documents** (1) The holder of a mining lease must prepare the following documents (***the rehabilitation outcome documents***) for the mining lease and give them to the Secretary for approval— (a) the ***rehabilitation objectives statement***, which sets out the rehabilitation objectives required to achieve the final land use for the mining area, (b) the ***rehabilitation completion criteria statement***, which sets out criteria, the completion of which will demonstrate the achievement of the rehabilitation objectives, (c) for a large mine, the ***final landform and rehabilitation plan***, showing a spatial depiction of the final land use. If the final land use for the mining area is required by a condition of development consent for activities under the mining lease, the holder of the mining lease must ensure the rehabilitation outcome documents are consistent with that condition.	Mine Site	During construction, operation and rehabilitation.	4, 5
ML1617	13	**Forward program and annual rehabilitation report** (1) The holder of a mining lease must prepare a program (a *forward program*) for the mining lease that includes the following— (a) a schedule of mining activities for the mining area for the next 3 years, (b) a summary of the spatial progression of rehabilitation through its various phases for the next 3 years, (c) a requirement that the rehabilitation of land and water disturbed by mining activities under the mining lease must occur as soon as reasonably practicable after the disturbance occurs. (2) The holder of a mining lease must prepare a report (an *annual rehabilitation report*) for the mining lease that includes— (a) a description of the rehabilitation undertaken over the annual reporting period, (b) a report demonstrating the progress made through the phases of rehabilitation provided for in the forward program applying to the reporting period, (c) a report demonstrating progress made towards the achievement of the following— (i) the objectives set out in the rehabilitation objectives statement, (ii) the criteria set out in the rehabilitation completion criteria statement, (iii) for large mines—the final land use as spatially depicted in the final landform and rehabilitation plan. If a rehabilitation outcome document has not been approved by the Secretary, the holder of the mining lease must rely on a proposed version of the document.	Mine Site	During construction, operation and rehabilitation.	8.3

Table 3 (Cont'd)
Regulatory Requirements for Rehabilitation

Consent	Cond. No.	Requirement	Area	Timing	RMP Section
ML1617 (Cont'd)	13 (Cont'd)	(3) The holder of the mining lease must give the forward program and annual rehabilitation report to the Secretary. (4) In this clause— *annual reporting period* means each period of 12 months commencing on— (a) the date on which the mining lease is granted, or if the Secretary approves another date in relation to the mining lease— the other date			
ML1617	14	**Amendment of rehabilitation outcome documents and forward program** (1) This clause applies to— (a) a rehabilitation outcome document if it has been approved by the Secretary, and (b) a forward program if it has been given to the Secretary. (2) The holder of a mining lease must not amend a document to which this clause applies that relates to the mining lease unless— (a) the Secretary gives the holder a written direction to do so, or (b) the Secretary, on written application by the holder, gives a written approval of the amendment. (3) The holder of the mining lease must amend the document in accordance with the Secretary's direction or approval. Nothing in this clause prevents the holder of a mining lease preparing a draft amendment for submission to the Secretary for approval.	Mine Site	During construction, operation and rehabilitation.	Noted.
ML1617	15	**Times at which documents must be prepared and given** (1) The holder of a mining lease must do the following before the end of the initial period— (a) prepare a rehabilitation management plan, and (b) prepare rehabilitation outcome documents and give them, other than the rehabilitation completion criteria statement, to the Secretary for approval, and (c) prepare a forward program and give it to the Secretary. (2) The holder of the mining lease must prepare a forward program and annual rehabilitation report and give them to the Secretary before— (a) 60 days after the last day of each annual reporting period, commencing with the annual reporting period in which the forward program was given to Secretary under subclause (1)(c), or (b) a later date approved by the Secretary.	Mine Site	During construction, operation and rehabilitation.	11

Table 3 (Cont'd)
Regulatory Requirements for Rehabilitation

Consent	Cond. No.	Requirement	Area	Timing	RMP Section
ML1617 (Cont'd)	15 (Cont'd)	(3) A rehabilitation completion criteria statement relating to completion of rehabilitation during a period covered by a forward program must be given to the Secretary for approval when the forward program is required to be given to the Secretary. (4) The holder of the mining lease must prepare updated rehabilitation outcome documents for the mining lease and give them to the Secretary for approval before— (a) 60 days after a development consent is modified following an application referred to in clause 20(1)(b), or (b) a later date approved by the Secretary. (5) A rehabilitation completion criteria statement is not required to be given to the Secretary under subclause (4) unless a rehabilitation completion criteria statement has already been given to the Secretary under subclause (3). (6) The Secretary may, by written notice, direct the holder of a mining lease to prepare, or give to the Secretary, a document required to be prepared under this Division at a time other than that specified in this clause. (7) The holder of the mining lease must comply with the direction. (8) In this clause— initial period means the period commencing when the mining lease is granted and ending— (a) 30 days, or other period approved by the Secretary, after this Division first applies to the mining lease, or (b) if this Division applies to the mining lease because of an increase in the required security deposit— (i) when the surface of the mining area is disturbed by activities under the mining lease, or **(ii)** at a later date approved by the Secretary.			
ML1617	16	**Certain documents to be publicly available** (1) This clause applies to the following documents— (a) a rehabilitation management plan, (b) a forward program, (c) an annual rehabilitation report.	Mine Site	During construction, operation and rehabilitation.	Noted.

Table 3 (Cont'd)
Regulatory Requirements for Rehabilitation

Consent	Cond. No.	Requirement	Area	Timing	RMP Section
ML1617 (Cont'd)	16 (Cont'd)	(2) The holder of a mining lease must make a document to which this clause applies publicly available by— (a) publishing it on its website in a prominent position, or (b) if the holder does not have a website— providing a copy of it to a person— (i) on the written request of a person, and (ii) without charge, and (iii) within 14 days after the request is received. (3) If a document is published on the website of the holder of the mining lease, the holder must ensure that it is published— (a) for a rehabilitation management plan—within 14 days after it is prepared or amended, or (b) for a forward program or an annual rehabilitation report—within 14 days after it is given to the Secretary or amended, Personal information within the meaning of the *Privacy and Personal Information Protection Act 1998* is not required to be included in a document made available to a person under this clause.			
ML1617	17	**Records demonstrating compliance** The holder of a mining lease must create and maintain records of all actions taken that demonstrate compliance with each of the conditions set out in this Part. **Note—** The Act, sections 163D and 163E provide for the form in which records must be kept and the period for which they must be retained.	Mine Site	During construction, operation and rehabilitation.	Noted.
ML1617	18	**Report on non-compliance** (1) The holder of a mining lease must provide the Minister with a written report detailing any non-compliance with— (a) a condition of the mining lease, or Note— The Act, section 364A contains provisions relating to the use and disclosure of information provided under this condition. (b) a requirement of the Act or this Regulation relating to activities under the mining lease. (2) The holder of the mining lease must provide the report within 7 days after becoming aware of the non-compliance.	Mine Site	During construction, operation and rehabilitation.	Noted.

Table 3 (Cont'd)
Regulatory Requirements for Rehabilitation

Consent	Cond. No.	Requirement	Area	Timing	RMP Section
ML1617 (Cont'd)	18 (Cont'd)	(3) The holder of the mining lease must ensure the report— (a) identifies the condition of the mining lease, or the requirement of the Act or this Regulation, to which the non-compliance relates, and (b) describes the non-compliance and specifies the date or dates on which, or the period during which, the non-compliance occurred, and **(c)** describes the causes or likely causes of the non-compliance, and **(d)** describes the action that has been taken, or will be taken, to mitigate the effects, and to prevent any recurrence, of the non-compliance.			
LEGISLATION					
NSW Legislation					
Protection of Environmental Operations Act 1997	s42-58	Discusses the provision of Environment Protection Licences.	Mine Site	During operations and rehabilitation works.	1.2, 6
	s89-113	Discusses the application of Clean-up Notices.			
	Chapter 5	Discusses environmental offences including water, air, noise and land pollution.			
Heritage Act 1977	Part 3 (s27-30)	Discusses interim orders for items of State or local significance.	Mine Site	During decommission and rehabilitation works.	6.2.1.13
	Part 3A (s31-38)	Discusses listing of items, places or buildings on the state heritage register.			
	Part 4	Discusses the effect of interim heritage orders and listings on the State Heritage Register			
	Part 6	Discusses other measures for the conservation of environmental heritage.			
	Division 8	Discusses controlling and restricting harm to buildings, works, relics and places not subject to interim heritage orders or State Heritage Registered listings.			
Mining Act 1992	Division 3	Under these sections the Minister can direct a company to rehabilitate their land, or, should the company not comply with this direction, rehabilitate the land at the Ministers expense and recover the cost from the company.	Mine Site	During rehabilitation works.	Noted
Long-term Rehabilitation Objectives					
2005 EIS (CWES, 2005)		Stabilise all final landforms, earthworks, drainage lines and all other disturbed areas to prevent erosion	Mine Site	During rehabilitation works.	4.1, 6.2.1.10, 6.2.3
		Restore and maintain productive grazing land, vegetation in which natural regeneration can occur and habitat commensurate with the carrying capacity and pre-mining land use as agreed upon with current land managers.			2.3, 4.1

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	A	Includes areas to be revegetated to form native ecosystems.
Water Management Area	F	Includes all water management infrastructure to be retained for the final land use (i.e. water diversion drains and pipelines).
Water Storage	G	This domain includes the sediment basins and dam (SB6) which is to be retained for the final land use.
Infrastructure	I	Includes all built infrastructure to be retained or constructed for the final land use (e.g. access roads and fencing), with the exception of water management infrastructure (see relevant domain above). Also includes any built infrastructure, objects or sites to be retained due to known historic or cultural heritage value (i.e. historic workings).
Final Void	J	Includes any final voids which are to remain within the landscape following the completion of rehabilitation activities.
Note 1: See **Figure 7**		

2.4.2 Mining Domains

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

Table 5
Mining Domains

Mining Domain	Domain ID[1]	Domain Description
Infrastructure Area	1	This domain includes demountable buildings, office administration and amenities, workshop, assay laboratory, employee carparks, laydown and hardstand areas, open storage area, material stockpiles (e.g. ore, growth medium) and miscellaneous infrastructure including access and haul roads, pipelines, water tanks and power lines. This domain also includes the heritage area, which comprises of historic workings and mine infrastructure ruins southeast of the open cut which have been fenced off.
Tailings Storage Facility	2	This domain includes the approved Tailings Storage Facility and historic tailings.
Water Management Area	3	Includes the sediment basins, retained dam (SB6) and drainage diversions.
Overburden Emplacement Area	4	This domain includes the Net Acid Generating (NAG) Potentially Acid Forming (PAF) waste rock stockpile.
Active Mining Area	5	Includes the open cut void which has been historically mined.
Beneficiation facility	7	This domain includes the Processing Plant which is composed of enclosures, flotation circuit, carbon-in-leach circuit, secure gold room, ball mill, fine ore bin and lime silo. This domain also includes the Crushing and Grinding Area which is composed of a primary and secondary crusher, re-feeder, conveyors, grinding equipment and storage area.
Note 1: See **Figure 8**		

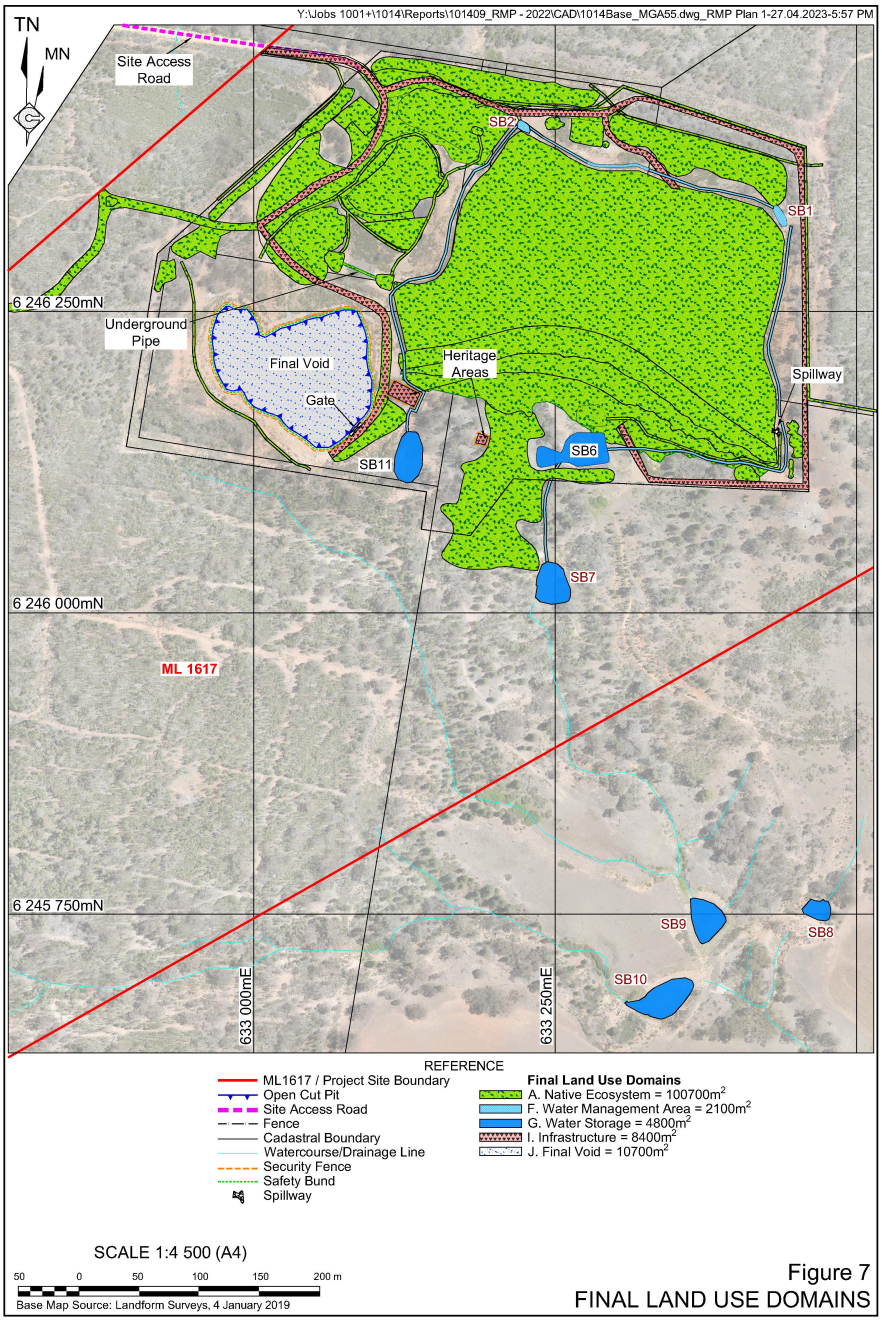


Figure 7
FINAL LAND USE DOMAINS

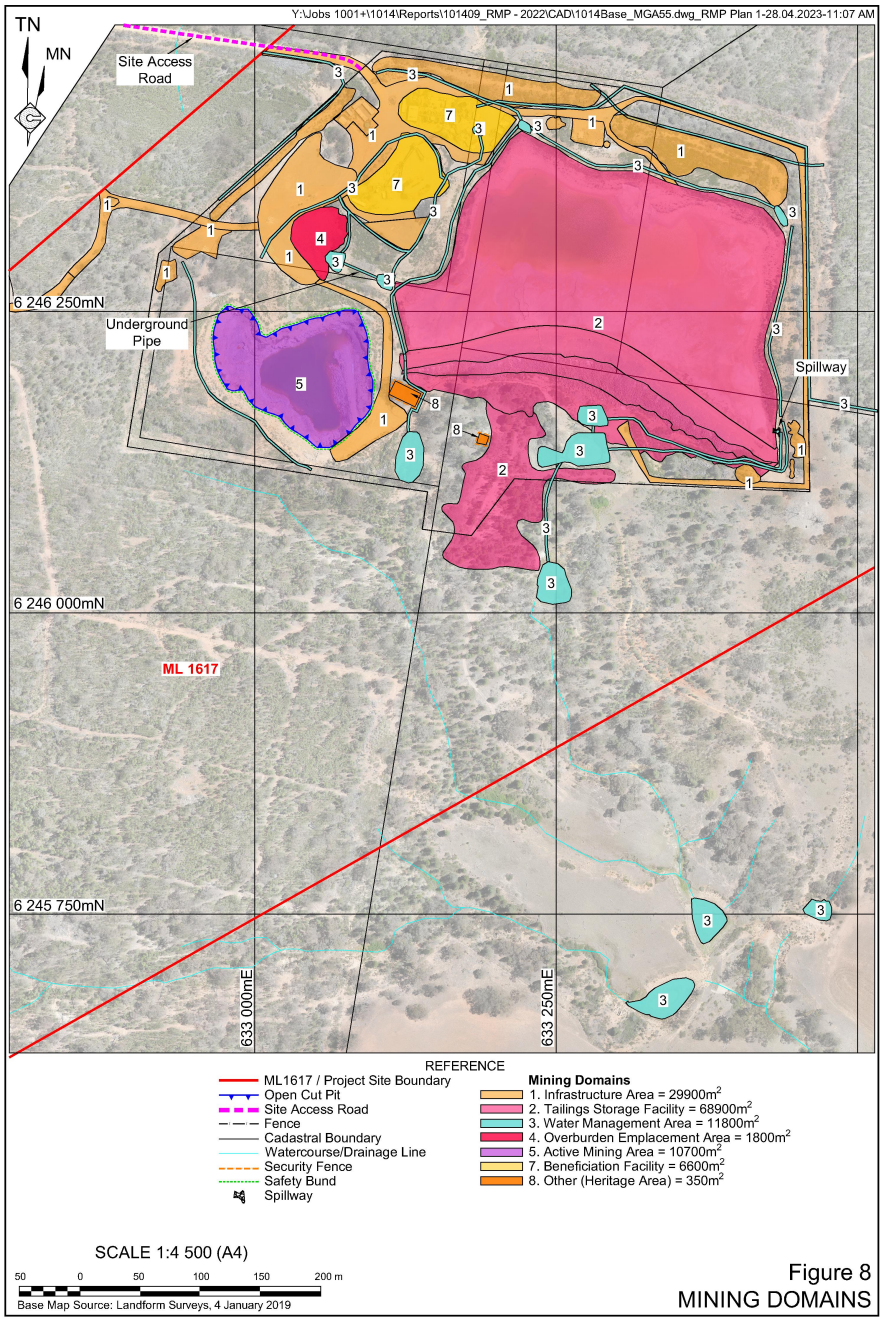


Figure 8
MINING DOMAINS

3. Rehabilitation Risk Assessment

In accordance with Clause 17 of Schedule 8A of the Mining Regulation 2016 a rehabilitation risk assessment will be maintained and be available on site as a record, and upon request. A Trigger Action Response Plan for each of the rehabilitation threats and potential adverse outcomes identified in the rehabilitation risk assessment as having a risk rating of moderate or above is presented in Section 10.

4. Rehabilitation Objectives and Rehabilitation Completion Criteria

4.1 Rehabilitation Objectives and Rehabilitation Completion Criteria

Table 6 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**.

Table 6
Rehabilitation Objectives and Rehabilitation Completion Criteria

Final Land Use Domain	Spatial Reference[1]	Mining Domain	Spatial Reference[2]	Proposed Rehabilitation Objective	Indicator	Proposed Rehabilitation Completion Criteria	Validation Method
Native Ecosystem Area	A	Infrastructure Area, Tailings Storage Facility, Water Management Area, Overburden Emplacement Area, Beneficiation Facility	1, 2, 3, 4, 7	All infrastructure and services not required for the final land use are removed.	Removal of infrastructure not required for the final land use.	All infrastructure removed unless specified to be retained.	Single occurrence relinquishment inspection and report, including photographs, following decommissioning.
					Removal of services not required for the final land use.	All services disconnected unless required for the final land use.	
					Absence of waste	All rubbish and waste materials are removed from site or disposed of in areas designated within this Plan.	Single occurrence relinquishment inspection and report, including photographs, following decommissioning.
				Final landforms are safe, stable and non-polluting.	Presence of safety bunds	Safety bunds are constructed to prevent public access to potentially hazardous landforms (e.g. final void) or sensitive rehabilitation areas.	Single occurrence relinquishment inspection and report, including photographs, following decommissioning.
					Presence of appropriate surface materials	All surface materials (i.e. waste rock and growth medium) used to construct surface infrastructure (e.g. safety bunds, retained roads) and final landform surfaces are considered appropriate for surface use in accordance with the *Waste material and soil characterisation assessment*.	Waste rock testing in accordance with the *Waste material and soil characterisation assessment* prior to use for infrastructure/landform construction.
							Soil / growth medium testing in accordance with the *Waste material and soil characterisation assessment* prior to use for infrastructure/landform construction.
					Landform constructed in accordance with design specifications	Quality assurance records verify that tailings storage facility 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, inspection report prepared by a suitably qualified engineer, and geotechnical reports (where required).
						Tailings storage facility top surfaces are profiled to facilitate drainage towards stabilised spillway.	Single occurrence relinquishment inspection and report, including photographs, following landform profiling and growth medium placement.
					Water quality (pH, EC, total suspended solids, major ions, dissolved metals and metalloids).	Surface water monitoring verifies adequate capping function (i.e. stabilisation) and that water quality does not present a risk of environmental harm.	Water quality testing undertaken on a campaign basis (i.e. following recorded flows in drainage system or captured in dams) for a minimum of two years following tailings storage facility top surface revegetation.
					Visual evidence of erosion or landform instability	No evidence of active erosion or other landform instability (e.g. mass movement) that would require moderate or significant maintenance is observed.	Visual inspections undertaken on a quarterly basis until site relinquishment.
							Visual inspections undertaken following significant rainfall events (i.e. ≥25mm within 24 hours).
					Biophysical process indices	Biophysical process indicators are equivalent to or better than those recorded for relevant analogue site types.	Ecosystem Function Analysis surveys undertaken within two years following rehabilitation, with subsequent surveys undertaken every three years until target values are achieved.

Commented [DY4]: I would have thought a significant rainfall event would be 100mm in 24 hrs?

Commented [DY5]: What happens if target values achieved ? Is it relinquishment?

Table 6 (Cont'd)
Rehabilitation Objectives and Rehabilitation Completion Criteria

Final Land Use Domain	Spatial Reference[1]	Mining Domain	Spatial Reference[2]	Proposed Rehabilitation Objective	Indicator	Proposed Rehabilitation Completion Criteria	Validation Method
Native Ecosystem Area (Cont'd)	A (Cont'd)	Infrastructure Area, Tailings Storage Facility, Water Management Area, Overburden Emplacement Area, Beneficiation Facility (Cont'd)	1, 2, 3, 4, 7 (Cont'd)	The site is free of contamination and hazardous materials and residual waste materials are appropriately contained and do not pose any hazards or constraints for the final land use.	Absence of contamination on site that is incompatible with the final land use or that poses a threat of environmental harm.	Identified contaminated material removed and placed into either the final void or the tailings storage facility.	Single occurrence contamination assessment report prepared by a suitably qualified person, with follow up validation testing to be undertaken if required.
						Contaminated land assessment indicates contamination acceptable for final land use and does not pose a threat of environmental harm.	
					Absence of hazardous materials on site that is incompatible with the final land use or that poses a threat of environmental harm.	Hazardous materials assessment indicates contamination acceptable for final land use and does not pose a threat of environmental harm.	Single occurrence hazardous materials audit, with follow up inspections to be undertaken if required.
					Water quality (pH, EC, total suspended solids, major ions, dissolved metals and metalloids).	Surface water monitoring verifies adequate containment of waste materials and that seepage / leachate is not contributing to land or groundwater contamination.	Water quality testing undertaken on a campaign basis (i.e. following recorded flows in drainage system or captured in dams) for a minimum of two years following tailings storage facility top surface revegetation.
						Groundwater monitoring verifies adequate containment of waste materials and that seepage / leachate is not contributing to land or groundwater contamination.	Groundwater quality sampling undertaken quarterly for a minimum of two years following tailings storage facility top surface revegetation.
				Final landforms are capable of supporting native ecosystems.	Growth medium depth	Minimum depth of 250mm growth medium present on areas to be revegetated.	Visual inspections, including test pits and photographs demonstrating growth medium depth and key biophysical indicators.
					Surface treatment	Growth medium applied to tailings storage facility embankment is profiled to achieve design slope.	Visual inspection, including photographs, following growth medium application.
				The vegetation composition of the rehabilitation is recognisable as the target vegetation community type.	Vegetation composition	Vegetation composition and species assemblages are generally consistent with the target vegetation community type.	Ecosystem Function Analysis surveys undertaken within two years following rehabilitation, with subsequent surveys undertaken every three years until target values are achieved.
				The vegetation structure of the rehabilitation is recognisable as or is trending towards the target vegetation community type.	Vegetation structure (cover and abundance of plant growth)	Vegetation structure (cover and abundance of plant growth) is trending towards or generally equivalent to that associated with the target vegetation community type.	
				Levels of ecosystem function have been established that demonstrate the rehabilitation is self-sustainable.	Indication of sustainable nutrient cycling	Litter cover is consistent with relevant analogue sites.	
					Plant survival and recruitment	Plant survival and recruitment are suitable for sustaining the target vegetation community type.	
					Grazing impacts (foliage cover (%) and plant mortality)	Grazing impacts within rehabilitated areas are equal to or less than those observed at analogue sites.	
					Resilience to drought and fire	Resilience demonstrated by the effects of drought and fire on composition, structure and other ecosystem function attributes.	
					Presence of priority weed species (e.g. high threat, noxious, invasive, or weed of national significance) or excessive weed abundance	Weed abundance within rehabilitated areas is equal to or less than that observed at analogue sites.	Regular weed inspections and reports detailing observed weed occurrence (species and extent) and control measures implemented, undertaken within two years following rehabilitation and every three years until relinquishment.
						Priority weeds (e.g. Weeds of National Significance) are not present within rehabilitation areas.	
				Risks to the community, environment and infrastructure have been addressed as part of rehabilitation.	Presence of bushfire controls	Appropriate bushfire hazard controls implemented, where required, on the advice from the NSW Rural Fire Service.	Single occurrence relinquishment inspection and report, including photographs, following decommissioning.

Commented [DY6]: Shouldn't there be a reference to 'equal to or better than surrounding environment . We are taking water readings from natural springs that have high metal contaminant readings

Commented [DY7]: Should be a a reference equal to or better than surrounding natural environment

Commented [DY8]: Reference to equal or better than surrounding environment

Commented [DY9]: Believe this is excessive . Once rehabilitation is establishment , there should be relinquishment. There will be ongoing weed occurrences with wind , birds and runoff contaminations , this is a natural occurrence

Table 6 (Cont'd)
Rehabilitation Objectives and Rehabilitation Completion Criteria

Final Land Use Domain	Spatial Reference[1]	Mining Domain	Spatial Reference[2]	Proposed Rehabilitation Objective	Indicator	Proposed Rehabilitation Completion Criteria	Validation Method
Water Management Area	F	Water Management Area	3	All infrastructure and services not required for the final land use are removed.	Removal of infrastructure not required for the final land use.	All infrastructure removed unless specified to be retained.	Single occurrence relinquishment inspection and report, including photographs, following decommissioning.
					Removal of services not required for the final land use.	All services disconnected unless required for the final land use.	
					Absence of waste	All rubbish and waste materials are removed from site or disposed of in areas designated within this Plan.	Single occurrence relinquishment inspection and report, including photographs, following decommissioning.
				The site is free of contamination and hazardous materials.	Absence of contamination on site that is incompatible with the final land use or that poses a threat of environmental harm.	Identified contaminated material removed and placed into either the final void or the tailings storage facility.	Single occurrence contamination assessment report prepared by a suitably qualified person in, with follow up validation testing to be undertaken if required.
						Contaminated land assessment indicates contamination acceptable for final land use and does not pose a threat of environmental harm.	
				Retained water management structures are safe, stable and provide for long-term water management.	Visual evidence of erosion	No active erosion is observed.	Visual inspections undertaken on a quarterly basis until site relinquishment.
							Visual inspections undertaken following significant rainfall events (i.e. ≥25mm within 24 hours).
					Maintenance requirements (cost and frequency of works)	Maintenance levels for retained water management infrastructure are commensurate with maintenance requirements for similar structures in Weddin Shire.	Annual report detailing infrastructure maintenance costs, including comparison against costs for similar maintenance works within Weddin Shire, until relinquishment.
					Presence of stabilised spillway(s).	Stabilised spillway(s) is present where water is discharged off site from water management structures.	Single occurrence relinquishment inspection and report, including photographs, following decommissioning.
				Retained water management structures are non-polluting and suitable for use as part of the final land use.	Water quality (pH, EC, total suspended solids, major ions, dissolved metals and metalloids).	Water quality samples collected downstream of discharge to natural drainage demonstrate water quality parameter levels within 10% of analogue levels (or better) on three consecutive occasions.	Water quality testing undertaken on a campaign basis (i.e. following recorded flows in drainage system or captured in dams).
Water Storage	G	Water Management Area	3	All infrastructure and services not required for the final land use are removed to ensure the site is safe and free of contaminants and hazardous materials.	Removal of infrastructure not required for the final land use.	All infrastructure removed unless specified to be retained.	Single occurrence relinquishment inspection and report, including photographs, following decommissioning.
					Removal of services not required for the final land use.	All services disconnected unless required for the final land use.	
					Absence of waste	All rubbish and waste materials are removed from site or disposed of in areas designated within this Plan.	Single occurrence relinquishment inspection and report, including photographs, following decommissioning.
				The site is free of contamination and hazardous materials.	Absence of contamination on site that is incompatible with the final land use or that poses a threat of environmental harm.	Identified contaminated material removed and placed into either the final void or the tailings storage facility.	Single occurrence contamination assessment report prepared by a suitably qualified person in, with follow up validation testing to be undertaken if required.
						Contaminated land assessment indicates contamination acceptable for final land use and does not pose a threat of environmental harm.	
				Retained water storage structures are safe, stable and provide for long-term water storage.	Visual evidence of erosion	No active erosion is observed.	Visual inspections undertaken on a quarterly basis until site relinquishment.
							Visual inspections undertaken following significant rainfall events (i.e. ≥25mm within 24 hours).
					Maintenance requirements (cost and frequency of works)	Maintenance levels for retained water storage infrastructure, are commensurate with maintenance requirements for similar structures in Weddin Shire.	Annual report detailing infrastructure maintenance costs, including comparison against costs for similar maintenance works within Weddin Shire, until relinquishment.
				Retained water management structures are non-polluting and suitable for use as part of the final land use.	Water quality (pH, EC, total suspended solids, major ions, dissolved metals and metalloids.	Water quality samples from retained dams demonstrate water quality parameter levels within 10% of analogue site levels (or better) on three consecutive occasions.	Water quality testing undertaken on a campaign basis (i.e. following recorded flows in drainage system or captured in dams).

Commented [DY10]: Query on significant rainfall event ???

Commented [DY11]: Should be linked to background water qualities

Commented [DY12]: Query as above

Commented [DY13]: Should be linked to background water qualities

Table 6 (Cont'd)
Rehabilitation Objectives and Rehabilitation Completion Criteria

Final Land Use Domain	Spatial Reference[1]	Mining Domain	Spatial Reference[2]	Proposed Rehabilitation Objective	Indicator	Proposed Rehabilitation Completion Criteria	Validation Method
Infrastructure Area	I	Infrastructure Area	1	All infrastructure and services not required for the final land use are removed.	Removal of infrastructure not required for the final land use.	All infrastructure removed unless specified to be retained.	Single occurrence relinquishment inspection and report, including photographs, following decommissioning.
					Removal of services not required for the final land use.	All services disconnected unless required for the final land use.	
					Road width (m)	Roads to be retained are no wider than 5m.	
					Absence of contamination on site that is incompatible with the final land use or that poses a threat of environmental harm.	Identified contaminated material removed and placed in-pit.	Single occurrence contamination assessment report prepared by a suitably qualified person, with follow up validation testing to be undertaken if required.
						Contaminated land assessment indicates contamination acceptable for final land use and does not pose a threat of environmental harm.	
					Absence of hazardous materials on site that is incompatible with the final land use or that poses a threat of environmental harm.	Hazardous materials assessment indicates contamination acceptable for final land use and does not pose a threat of environmental harm.	Single occurrence hazardous materials audit, with follow up inspections to be undertaken if required.
					Absence of waste	All rubbish and waste materials are removed from site or disposed of in areas designated within this Plan.	Single occurrence relinquishment inspection and report, including photographs, following decommissioning.
				The site is free of contamination and hazardous materials.	Absence of contamination on site that is incompatible with the final land use or that poses a threat of environmental harm	Identified contaminated material removed and placed into either the final void or the tailings storage facility.	Single occurrence contamination assessment report prepared by a suitably qualified person in, with follow up validation testing to be undertaken if required.
						Contaminated land assessment indicates contamination acceptable for final land use and does not pose a threat of environmental harm.	
				Retained infrastructure is safe, stable and non-polluting.	Absence of potential hazards (e.g. electrical, mechanical)	Potential hazards have been effectively isolated and secured.	Statement provided by suitably qualified contractor(s).
					Presence of appropriate surface materials	All surface materials (i.e. waste rock and growth medium) used to construct surface infrastructure (e.g. safety bunds, retained roads) are considered appropriate for surface use in accordance with the *Waste material and soil characterisation assessment*.	Waste rock testing in accordance with the *Waste material and soil characterisation assessment* prior to use for infrastructure construction.
					Visual evidence of erosion	No active erosion observed.	Visual inspections undertaken on a quarterly basis until site relinquishment.
							Visual inspections undertaken following significant rainfall events (i.e. ≥25mm within 24 hours).
					Maintenance requirements (cost and frequency of works)	Maintenance levels for retained infrastructure (i.e. access tracks, safety bunds) are commensurate with maintenance requirements for similar structures in Weddin Shire.	Annual report detailing infrastructure maintenance costs, including comparison against costs for similar maintenance works within Weddin Shire, until relinquishment.
				Heritage areas are safe and secure.	Presence of infrastructure	Security fences are constructed around the perimeters of designated heritage areas as specified in this Plan.	Single occurrence relinquishment inspection and report, including photographs, following decommissioning.

Commented [DY14]: Query as above

Table 6 (Cont'd)
Rehabilitation Objectives and Rehabilitation Completion Criteria

Final Land Use Domain	Spatial Reference[1]	Mining Domain	Spatial Reference[2]	Proposed Rehabilitation Objective	Indicator	Proposed Rehabilitation Completion Criteria	Validation Method
Final Void Area	J	Active Mining Area	5	The final void landform is stable for the long-term and does not pose a safety risk or a risk of environmental harm.	Geotechnical stability of final void landforms	Geotechnical assessment determines that the retained void walls are not likely to actively erode or 'slip' to an extent requiring further earthworks.	Single occurrence geotechnical assessment and report prepared by a suitably qualified person following establishment of final landform, with follow up assessment to be undertaken in the event that further earthworks are required.
					Presence of safety bund around final void	Safety bund is present around the perimeter of the final void.	Single occurrence relinquishment inspection and report, including photographs, following decommissioning.
					Presence of security fences around the final void	Security fence is present around the perimeter of the final void.	
					Absence of contamination on site that is incompatible with the final land use or that poses a threat of environmental harm.	Identified contaminated material removed and placed into either the final void or the tailings storage facility.	Single occurrence contamination assessment report prepared by a suitably qualified person, with follow up validation testing to be undertaken if required.
						Contaminated land assessment indicates contamination acceptable for final land use and does not pose a threat of environmental harm.	
					Absence of hazardous materials on site that is incompatible with the final land use or that poses a threat of environmental harm.	Hazardous materials assessment indicates contamination acceptable for final land use and does not pose a threat of environmental harm.	Single occurrence hazardous materials audit, with follow up inspections to be undertaken if required.
					Absence of waste	All rubbish and waste materials are removed from site or disposed of in areas designated within this Plan.	Single occurrence relinquishment inspection and report, including photographs, following decommissioning.
					Groundwater quality (pH, TDS, dissolved metals and metalloids)	Groundwater quality monitoring results demonstrate parameter levels within 10% of baseline groundwater quality monitoring results over four consecutive monitoring periods.	Groundwater quality sampling undertaken quarterly for a minimum of two years following the cessation of mining operations.
				Sufficient licence shares are held in the water source to account for final void water take, where required.	Water approval / licence or advice from relevant government agency	Final void water take is appropriately accounted for.	Confirmation from relevant government agency that water approvals / licences have been granted or are not required.

Note 1: See **Table 4** and **Figure 7.**

Note 2: See **Table 5** and **Figure 8.**

Note 3: Procedures, plans and assessments referenced in red text have not yet been developed.

4.2 Rehabilitation Objectives and Rehabilitation Completion Criteria – Stakeholder Consultation

Table 7 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 7
Community Consultation Activities

Page 1 of 3

Stakeholder	Consultation Activities
Weddin Shire Council	• Form of Consultation: Letter (email transmission). • Date: 6 April 2023. • Matters Subject to Consultation: Rehabilitation Objectives and Rehabilitation Completion Criteria, and Final Land Use Domain Plans. • Outcomes: No response received by 30 May 2023.
Cowra Local Aboriginal Land Council	• Form of Consultation: Letter (email transmission). • Date: 6 April 2023. • Matters Subject to Consultation: Rehabilitation Objectives and Rehabilitation Completion Criteria, and Final Land Use Domain Plans. • Outcomes: No response received by 30 May 2023.
Department of Planning and Environment	• Form of Consultation: Letter (email transmission). • Date: 6 April 2023. • Matters Subject to Consultation: Rehabilitation Objectives and Rehabilitation Completion Criteria, and Final Land Use Domain Plans. • Outcomes: The DPE Western Region Planning office responded on 11 April 2023 and advised they have forwarded the consultation letter to the Resources Regulator.
Department of Planning and Environment – Biodiversity Conservation Sciences Directorate	• Form of Consultation: Letter (email transmission). • Date: 6 April 2023. • Matters Subject to Consultation: Rehabilitation Objectives and Rehabilitation Completion Criteria, and Final Land Use Domain Plans. • Outcomes: No response received by 30 May 2023.
Department of Planning and Environment - Water	• Form of Consultation: Letter (email transmission). • Date: 6 April 2023. • Matters Subject to Consultation: Rehabilitation Objectives and Rehabilitation Completion Criteria, and Final Land Use Domain Plans. • Outcomes: DPE Water Licensing and Approvals responded on 21 April 2023, having directed the consultation letter to DPE Water Assessments. No further response from DPE Water Assessments has been received as of 8 May 2023.
Heritage NSW	• Form of Consultation: Letter (email transmission). • Date: 6 April 2023. • Matters Subject to Consultation: Rehabilitation Objectives and Rehabilitation Completion Criteria, and Final Land Use Domain Plans. • Outcomes: A response was received on 5 May 2023 advising Heritage NSW notes the rehabilitation objective 'heritage areas are safe and secure' and confirms no further referral to Heritage NSW is required.

Table 7 (Cont'd)
Community Consultation Activities

Stakeholder	Consultation Activities

NSW Environment Protection Agency	• Form of Consultation: Letter (email transmission).
	• Date: 6 April 2023.
	• Matters Subject to Consultation: Rehabilitation Objectives and Rehabilitation Completion Criteria, and Final Land Use Domain Plans.
	• Outcomes:
	  ○ A response was received on 28 April 2023 advising the EPA have no specific comments relating to the proposed rehabilitation objectives and completion criteria. The inclusion of SB7 in the final land use domain plans was queried. It was also noted that a proposed modification to the existing development consent is being prepared in which an additional sediment basin (SB12) would be constructed to facilitate reprocessing of the historic tailings (see Section 6.2.3.3.1) and, should the proposed modification be approved, SB12 would need to be considered during rehabilitation.
	  ○ SB7 has since been added to this RMP and, pending further approval of the proposed modification, this RMP would be updated to include SB12.

NSW Local Land Services	• Form of Consultation: Letter (email transmission). • Date: 6 April 2023. • Matters Subject to Consultation: Rehabilitation Objectives and Rehabilitation Completion Criteria, and Final Land Use Domain Plans. • Outcomes: No response received by 30 May 2023.
Mining, Exploration and Geoscience	• Form of Consultation: Letter (email transmission). • Date: 6 April 2023. • Matters Subject to Consultation: Rehabilitation Objectives and Rehabilitation Completion Criteria, and Final Land Use Domain Plans. • Outcomes: A response was received on 12 April 2023 advising the Resources Regulator has received the consultation letter and will respond directly with any comments.
NSW Rural Fire Service	• Form of Consultation: Letter (email transmission). • Date: 6 April 2023. • Matters Subject to Consultation: Rehabilitation Objectives and Rehabilitation Completion Criteria, and Final Land Use Domain Plans. • Outcomes: No response received by 30 May 2023.
NSW Resources Regulator	• Form of Consultation: Letter (email transmission). • Date: 6 April 2023. • Matters Subject to Consultation: Rehabilitation Objectives and Rehabilitation Completion Criteria, and Final Land Use Domain Plans. • Outcomes: A response was received on 18 April 2023 recommending that the rehabilitation objectives chosen are consistent with examples provided in relevant Resources Regulator guidelines.
Transport for NSW	• Form of Consultation: Letter (email transmission). • Date: 6 April 2023. • Matters Subject to Consultation: Rehabilitation Objectives and Rehabilitation Completion Criteria, and Final Land Use Domain Plans. • Outcomes: No response received by 30 May 2023.

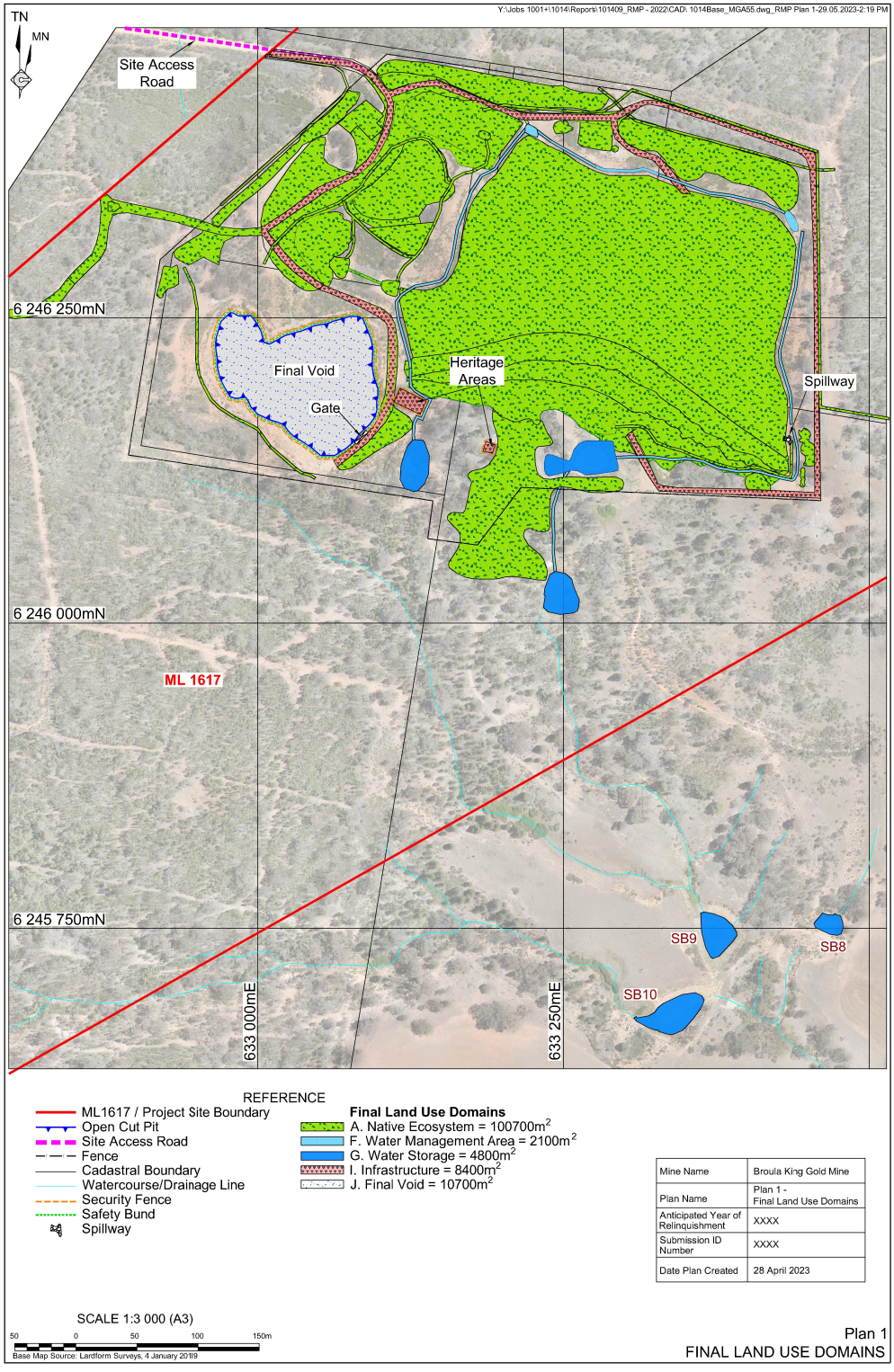
Table 7 (Cont'd)
Community Consultation Activities

Stakeholder	Consultation Activities
NSW Crown Lands	• Form of Consultation: Letter (email transmission). • Date: 11 April 2023. • Matters Subject to Consultation: Rehabilitation Objectives and Rehabilitation Completion Criteria, and Final Land Use Domain Plans. • Outcomes: No response received by 30 May 2023.

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.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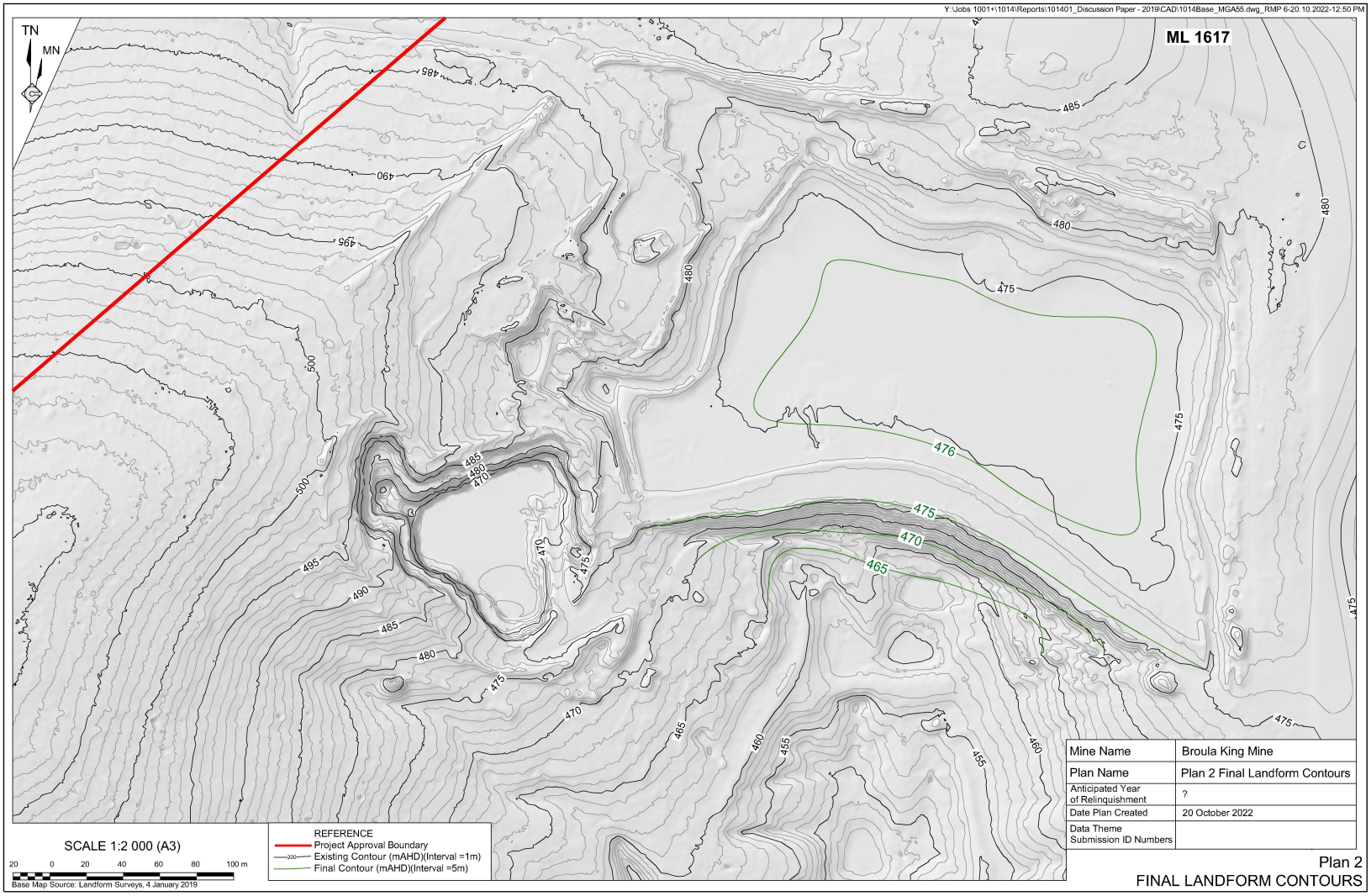
TN
MN
Site Access Road
6 246 250mN
Final Void
Gate
Heritage Areas
Spillway
6 246 000mN
ML 1617
6 245 750mN
SB9
SB8
SB10
633 000mE
633 250mE
REFERENCE
ML1617 / Project Site Boundary
Open Cut Pit
Site Access Road
Fence
Cadastral Boundary
Watercourse/Drainage Line
Security Fence
Safety Bund
Spillway
Final Land Use Domains
A. Native Ecosystem = 100700m2
F. Water Management Area = 2100m2
G. Water Storage = 4800m2
I. Infrastructure = 8400m2
J. Final Void = 10700m2
Mine Name
Broula King Gold Mine
Plan Name
Plan 1 - Final Land Use Domains
Anticipated Year of Relinquishment
XXXX
Submission ID Number
XXXX
Date Plan Created
28 April 2023
SCALE 1:3 000 (A3)
50 0 50 100 150m
Base Map Source: Landform Surveys, 4 January 2019
Plan 1
FINAL LAND USE DOMAINS



6. Rehabilitation Implementation

6.1 Life of Mine Rehabilitation Schedule

Extraction and processing operations at the Mine Siet ceased in August 2014 when the recovery of the defined ore was completed. The Mine was then placed on care and maintenance, with ongoing operations on site including the maintenance of treatment plant and processing equipment, site clean-up and limited progressive rehabilitation.

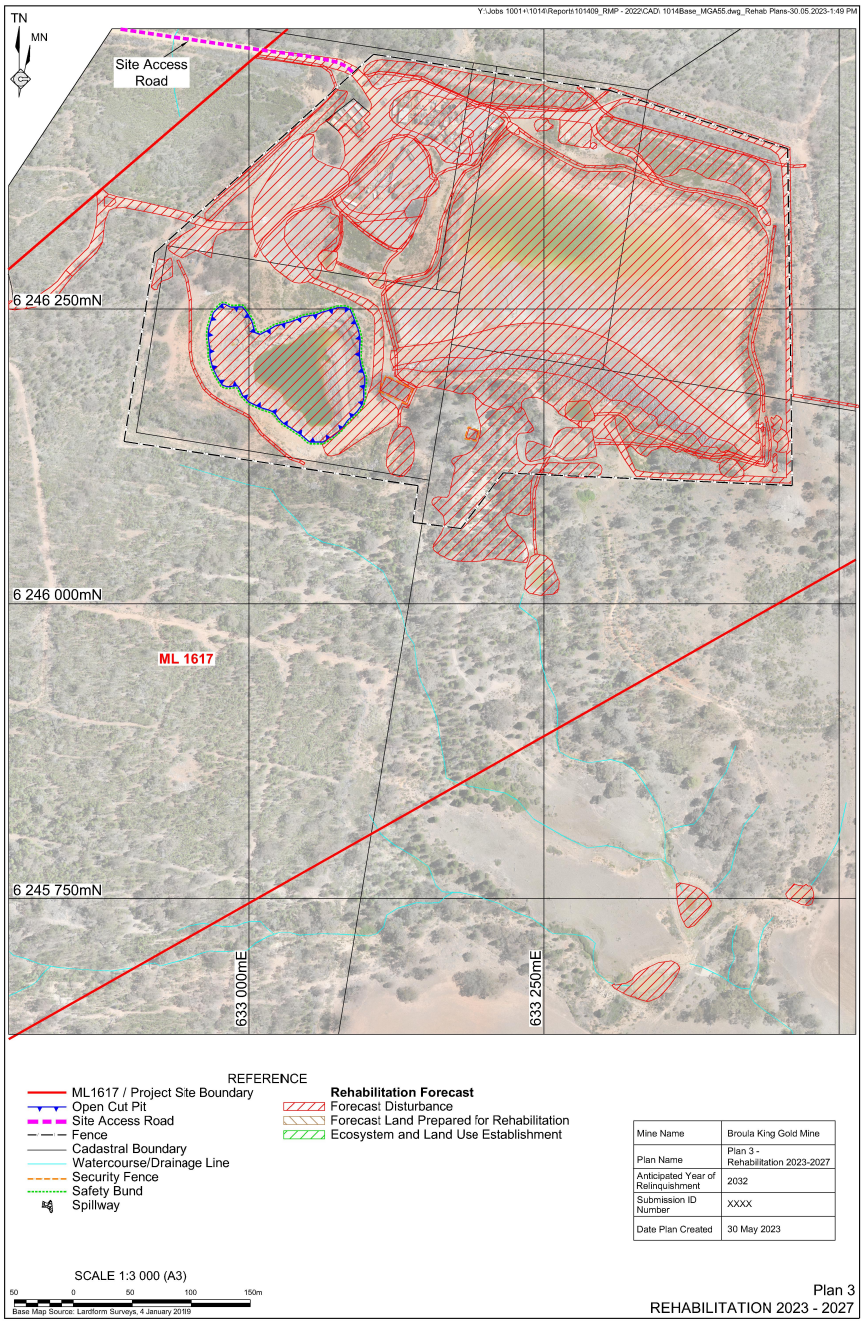
Following the cessation of mining and processing operations, the site was acquired by Broula King Enterprises Pty Ltd on 18 December 2020. Since that time, consultation with internal company stakeholders and external stakeholders (e.g. government agencies, potential commercial partners) regarding the potential use of the Mine Site as a central ore processing facility has been ongoing. Any resumption of processing operations at the Mine Site would be subject to further assessment and approval(s).

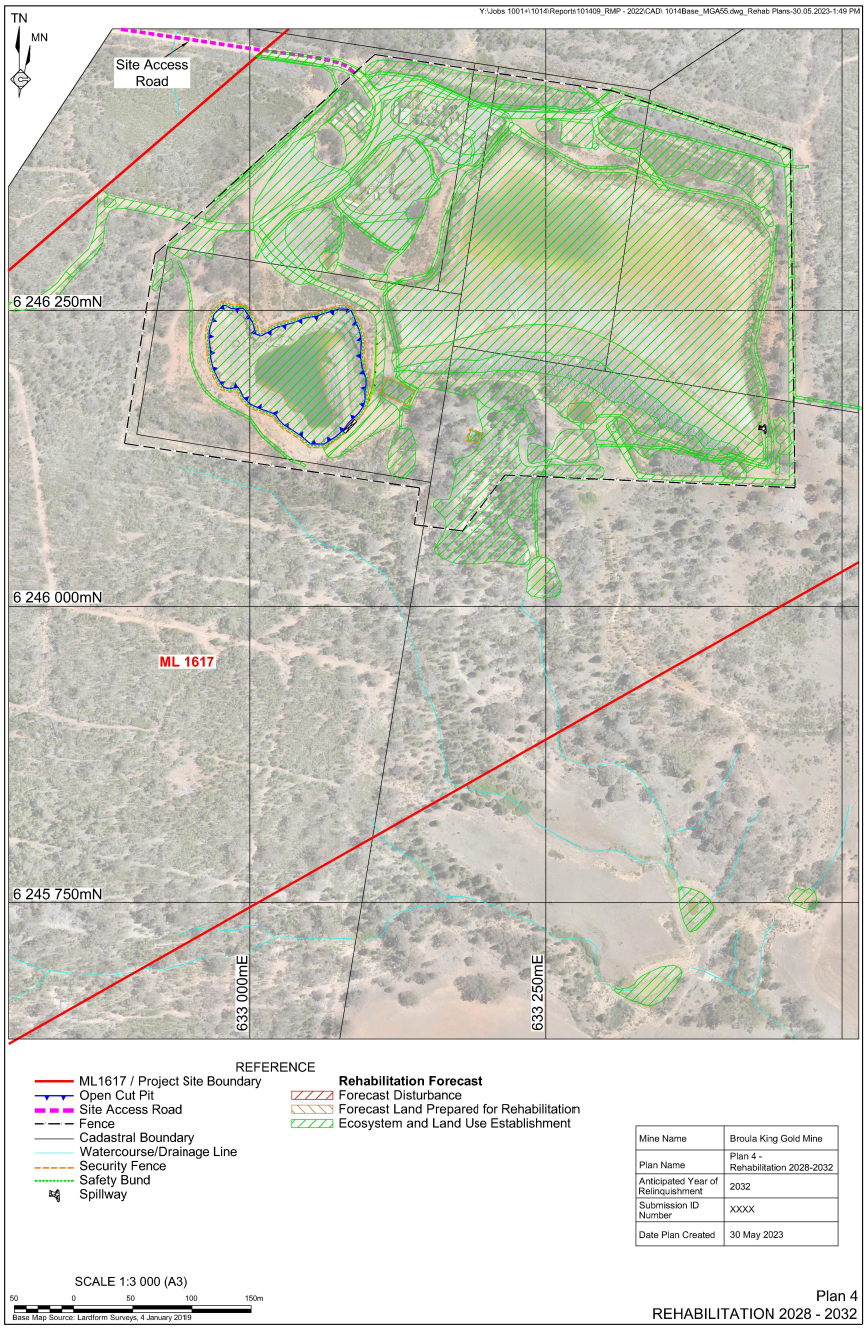
The rehabilitation schedule presented in this Plan assumes that consultation regarding the potential resumption of operations at the Mine Site will be ongoing for a period of approximately 5 years (i.e. from 2023 to 2027). As such, no significant progressive rehabilitation works would be undertaken during this period as areas would need to remain available for further operations. **Figure 8** identifies the current mining domains at the Mine Site, effectively delineating the extent of areas required for ongoing mining operations and ancillary activities (e.g. waste rock and growth medium stockpiling, storage). This Plan further assumes that operations will not resume and that all rehabilitation works would be completed during the next five years (i.e. from 2027 to 2032).

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 reflects the above assumptions and 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 principally involve the monitoring and maintenance of completed rehabilitation works until completion criteria identified in Section 4.1 have been achieved.

In summary, the rehabilitation schedule indicates that the following areas will be subject to the decommissioning, landform establishment, growth medium development and ecosystem and land use establishment rehabilitation phases prior to the cessation of mining operations.

- 2023 to 2027 (**Plan 3**):
  - No significant progressive rehabilitation works.
  - Ongoing care and maintenance activities, including general clean up and plant and equipment maintenance.
- 2028 to 2032 (**Plan 4**):
  - Rehabilitation of all Mine Domains to achieve the Final land Use Domains shown on Plan 1.

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TN
MN
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6 246 250mN
6 246 000mN
ML 1617
6 245 750mN
633 000mE
633 250mE
REFERENCE
ML1617 / Project Site Boundary
Open Cut Pit
Site Access Road
Fence
Cadastral Boundary
Watercourse/Drainage Line
Security Fence
Safety Bund
Spillway
Rehabilitation Forecast
Forecast Disturbance
Forecast Land Prepared for Rehabilitation
Ecosystem and Land Use Establishment
Mine Name | Broula King Gold Mine
Plan Name | Plan 4 - Rehabilitation 2028-2032
Anticipated Year of Relinquishment | 2032
Submission ID Number | XXXX
Date Plan Created | 30 May 2023
SCALE 1:3 000 (A3)
50 0 50 100 150m
Base Map Source: Lardform Surveys, 4 January 2019
Plan 4
REHABILITATION 2028 - 2032

6.2 Phases of Rehabilitation and General Methodologies

6.2.1 Active Mining Phase

6.2.1.1 Soils and Materials

Soil characteristics and soil management implications and measures at the Mine Site were assessed by CWES, 2005. The dominant soils are yellow podzolic and brown podzolic soil on higher slopes. Within the Mine Site the soils are skeletal, or tending towards skeletal, sandy loam deposits typical of eroded ridge crests and associated slope formation in the region (CWES, 2005). The soils are moderately to highly vulnerable to structural degradation and erosion, particularly in areas of surface disturbance.

Soils within the Mine Site have previously been disturbed by historic mining operations. **Table 8** presents an inventory of the clean fill, clay and crushed rock materials required for Mine Site rehabilitation. For the purposes of this RMP, clean fill is either stockpiled soil and subsoil or imported Virgin Excavated Natural Material (VENM) that is suitable for growth medium.

Stockpiles of topsoil and subsoil are present within the Mine Site and have been seeded to stabilise the stockpiles and help prevent erosion. There is approximately 14 500m^3 of soil stockpiled on the Mine Site at the locations shown on **Figure 2**. These stockpiles will be used for rehabilitation purposes. Soil stockpiles are regularly inspected to ensure stability and to monitor weed or vermin invasion and erosion. If required, minor maintenance works, or spraying are undertaken.

Table 8
Rehabilitation Material Inventory

Page 1 of 2

Mining Domain	Item	Material[1]	Volume (m^3)		Purpose
			Available	Required	
1 – Infrastructure Area	Office & Amenities	Clean fill		126	Growth medium
	Laydown Area	Clean fill		1,291	Growth medium
	Road	Clean fill		480	Growth medium
	Ore Stockpile	Clean fill		174	Growth medium
	Soil Stockpile	Clean fill	639		Growth medium
	Soil Stockpile - sound mound	Clean fill	13,826		Growth medium
2 – Tailings Storage Facility	TSF	Clay		65,865	Impermeable clay zone
	TSF	Clean fill		21,955	Growth medium
	TSF crest cap	Clay		1,286	Impermeable clay zone
	TSF crest wearing course (20mm)	Crushed NAF rock		1,600	Wearing course

	TSF embankment cap	Clay		56,000	Impermeable clay zone

Table 8 (Cont'd)
Rehabilitation Material Inventory

Mining Domain	Item	Material[1]	Volume (m^3)		Purpose
			Available	Required	
	TSF embankment growth medium	Clean fill		2,115	Growth medium
	TSF embankment stabilisation (150mm to 300mm)	Crushed NAF rock		423	Embankment stabilisation
	TSF toe growth medium	Clean fill	2,856		Stockpiled in Laydown Area for growth medium
	Key trench	Clay		2,500	Compacted clay for impermeable sub-surface seepage key cutoff
	Historic tailings area growth medium	Clean fill		1,660	Growth medium
4 – Overburden Emplacement Area	NAG Stockpile	Clean fill		356	Growth medium
7 – Beneficiation Facility	Processing Plant	Clean fill		634	Growth medium
	Crushing & Grinding	Clean fill		666	Growth medium
Material Inventory	**Total**	**Clean fill**	**17,321**	**29,457**	
		Clay		**125,651**	
		Crushed NAF rock		**2,023**	

Source: Broula King Joint Venture Pty Ltd

VENM that will be used for rehabilitation will be tested prior to importation to ensure it is suitable for use as growth medium. The testing would also determine if the VENM requires conditioning prior to placement. It is assumed that the crushed NAF rock will be secured from a source within 20km of the Mine Site.

The Company has investigated sourcing the clay from the neighbouring property of Mr John Sutton, which the Company has an option to purchase if approved. A visual inspection of this clay indicated that it was likely to have a CL – CH classification with a permeability in the order of 1 x 10^{-9}m/sec (TCA, 2020). The Company tested samples of this clay and the results show it is CH classification, well graded, high plasticity clay with a very low permeability of between 2

x 10^{-10}m/sec and 5 x 10^{-11}m/sec, which is suitable for encapsulating the PAF material in the TSF wall. The clay testing results are included herein as **Appendix 1.**

However, if the clay from Mr Sutton's property is unavailable, the clay will have to be sourced from elsewhere. Regardless of the source, the clay will be tested in accordance with AS 1289[1] to confirm its suitability for capping. These tests will include particle size distribution, Atterberg limits, Emerson dispersion, permeability and triaxial shear strength (TCA, 2020).

In addition to the above investigations, the following risk controls and management practices will 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 medium 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.
- Construct any new growth medium stockpiles:
  - with topsoil and subsoil materials stockpiled separately;
  - by paddock dumping to avoid compaction by vehicles;
  - to a maximum height of 3m for topsoil or 4m for subsoil;
  - with a rough surface to promote water infiltration and airborne seed retention;
  - on flat surfaces away from overland flow paths; and
  - with signage labelling individual stockpiles, material types (e.g. topsoil or subsoil) and indicating the presence of growth medium materials.

6.2.1.2 Flora

An ecological survey of the Mine Site was conducted in November 2003 by Central West Environmental Services during the preparation of the EIS (CWES, 2005). In the EIS, three flora community associations were identified for use in rehabilitation including:

- White Box Dominant Woodland
- Tumble-down Red Gum Dominant Woodland; and
- *Eucalyptus polyanthemos* Dominant Woodland.

No endangered ecological communities or threatened flora species have been identified within the Mine Site. Consequently, no species-specific flora rehabilitation objectives for threatened ecological communities or flora species have been established and no specific risk controls are

[1] Australian Standard (AS1289) – methods of testing soils for engineering purposes

required. Target vegetation communities and associated species, as well as methods for the introduction of flora to rehabilitated areas, are detailed in Section 6.2.5.

6.2.1.3 Fauna

An ecological survey of the Mine Site was conducted in November 2003 by Central West Environmental Services during the preparation of the EIS (CWES, 2005). No endangered ecological communities, threatened fauna species or populations have been identified within the Mine Site. Consequently, no species-specific fauna rehabilitation objectives have been established and no specific risk controls are required.

Pest management and control measures to be implemented as part of rehabilitation at the Quarry Site are provided in Sections 6.2.5 and 6.2.6.

6.2.1.4 Rock/Overburden Emplacement

The Overburden Emplacement Area holds PAF waste rock extracted from the open cut (**Figure 2**). This stockpile is acid generating and runoff from it is contained within SB3 which drains into the TSF through a partly buried PVC pipe and is therefore contained. An inventory of available and required material for rehabilitation is presented in **Table 8**.

The Company plans to assess the material in the Overburden Emplacement Area to determine if it is suitable for reprocessing to recover contained metals, though this would be subject to further approvals. If reprocessing of this material is viable, a detailed plan would be prepared for the PAF waste rock recovery, which would include an estimate of contained metals, and the processing required to extract those metals. Residual tailings would be placed into the TSF. The footprint of the Overburden Replacement Area will be rehabilitated.

If reprocessing of PAF waste rock is not viable, the material will be used to construct surface infrastructure (e.g. safety bunds) or to cap or rock armour completed landform surfaces (e.g. TSF batters). Waste rock required for the construction of surface infrastructure to be retained as part of the final land use (e.g. safety bunds) will be subject to classification in accordance with a *Waste Material and Soil Characterisation Assessment* to be prepared prior to use of waste rock material for rehabilitation.

6.2.1.5 Waste Management

Negligible wastes will be generated within the Mine Site given that no processing of material currently occurs as the Site is on care and maintenance. The only wastes likely to be produced within the Mine include those described in **Table 9**, which also describes the waste management practices at the Mine.

Table 9
Non-Production Waste Management

Page 1 of 2

Waste Type	Storage	Removal Method	Anticipated Volume and Destination
General Solid Waste	Covered bins located within offices and elsewhere, as required.	Removed by caretaker as required.	Negligible. Disposed in licensed facility.

Waste Type	Storage	Removal Method	Anticipated Volume and Destination
(Putrescible and Non-putrescible)			
General Recyclables	Covered bins located within offices and elsewhere.	Removed by caretaker as required.	Negligible. Disposed in licensed facility.

Table 9 (Cont'd)
Non-Production Waste Management

Waste Type	Storage	Removal Method	Anticipated Volume and Destination
Waste Oils and Greases	Placed within bunded tank(s) within the Processing Area.	A licensed waste contractor will collect and transport this waste to an appropriately licensed facility. If this service is unavailable the Company will arrange for this waste to be transported to a licenced facility.	Negligible. Disposed in licensed facility.
Batteries	Placed within a covered and marked storage area.	A licensed contractor will collect and transport this waste to an appropriately licensed facility.	Negligible. Disposed in licensed facility.
Tyres	Placed within a storage area until removed from site or used for another purpose.	Reused on site for construction of retaining walls, erosion protection, and traffic control, or removed from site for recycling.	Negligible. Disposed in licensed facility.
Scrap Steel/Metal	Stored in specified areas as required.	Collected as required by a scrap steel recycler.	Variable
Waste Water	Waste water from ablutions is stored in a septic system onsite.	Pumped out and removed offsite.	Negligible. Disposed in licensed facility.
Source: Broula King Enterprises Pty Ltd			

6.2.1.6 Geology and Geochemistry

The main rock types at the Mine are dacite, dacite porphyry and minor hydrothermal breccia and calcareous sedimentary rocks. The dacite porphyry is the main host for the gold mineralisation and gold grades are associated with increasing alteration intensity. The highest-grade gold mineralisation was hosted in NNW-trending sub-parallel quartz vein lode structures with a steep southwest dip. Most of these structures were mined out prior to Company ownership by small scale underground and open cut mining.

Company operations targeted the remaining lower-grade gold mineralisation in the halo of the lodes, which comprises predominantly fine-grained disseminated interstitial gold within highly altered rocks adjacent to the quartz veins. Alteration minerals within this zone include silica, sericite, carbonate and chlorite. Pyrite is also disseminated within the alteration zone but rarely exceeds 2% by volume. Minor galena and sphalerite generally occur within thin quartz veins, occasionally with pyrite and chalcopyrite.

The downstream face of the TSF wall is formed from waste rock that is rough and angular in nature with a diameter generally between 200mm to 600mm (GTS, 2014). The rock comprises dacite porphyry, calcareous sedimentary rock and minor tuff breccia. The dacite porphyry is

slightly to highly weathered or fresh with varying degrees of alteration and silica veining. The more oxidised (limonitic) rocks are distinguished by a yellow-brown colouration. It is likely that some of the limonite has formed from pyrite oxidation, most likely in situ within the open cut, prior to placement on the TSF wall.

The waste rock on the TSF wall is classified as PAF-LC, PAF or Uncertain based on the NAG testing completed to date. It would appear likely that continuing oxidation of this material and its interaction with rainwater is contributing to the low pH of the water in SB5. As a result, risks to rehabilitation associated with the material in the TSF wall is an environmental issue to be managed during rehabilitation. The rehabilitation of the TSF is described 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 Rock Drainage

The Overburden Emplacement Area contains PAF waste rock. It is acid generating and runoff from it is contained within SB3 which drains into the TSF through a partly buried PVC pipe and is therefore contained (**Figure 2**). The waste rock on the TSF wall is classified as PAF-LC, PAF or Uncertain based on the NAG testing completed to date, which is described further below.

Design Documents

The original design of the TSF was prepared in 2003 by Trevor Clark & Associates (Aust) Pty Ltd (TCA), a civil engineering company with extensive tailings dam design and construction experience in Australia and overseas. In 2012, TCA prepared the TSF construction report, followed in 2013 by a TSF surveillance report. In 2020, TCA prepared the capping strategy for the TSF crest and embankment, which is described in Section 6.2.3.3.2. These documents are listed below and are included with this RMP as **Appendices 2a** to **2d**.

- TCA 2003 – Broula King Gold Project Tailings Storage Facilities Design, April 2003 (**Appendix 2a**).
- TCA 2012 – Broula King Gold Mine Tailings Storage Facility Stage 1 to R.L. 466.78 Construction Report, August 2012 (**Appendix 2b**).
- TCA 2013 – Broula King Gold Mine Tailings Storage Facility Broula King – 1 General Audit & Type 2 Surveillance Report, November 2013 (**Appendix 2c**).
- TCA 2020, Tailings Storage Facility Embankment Acid Mine Drainage Containment. ML1617 Broula King Gold Mine, November 2020 (**Appendix 2d**).

Construction of the TSF

Construction of the TSF commenced in 2012 with a design capacity of 180 000t. The entire footprint of the TSF and the embankment was cleared down to a firm foundation. Successive stages of the core trench and the clay zone in the embankment were overlapped to provide

continuity. Photographs of the construction of the clay liner and the core trench are provided in Appendix C of TCA 2012 (**Appendix 2b**).

The construction of the TSF embankment was progressive as waste rock material from the open cut became available. The mining schedule limited the availability of waste rock, so the upstream impermeable zone of the embankment was constructed ahead of the downstream waste rock zone (TCA 2013). The size of the compacting equipment used dictated that the upstream zone needed to be widened from the design width of 3.5m to a more practical 4.5m for the zone constructed separately. During the initial stages of construction, the near surface waste rock from the open cut was a well oxidised silty clay. This material was placed immediately behind the clay liner in the embankment to provide a transition zone between the clay liner and the coarse waste rock in the back of the embankment. Coarse waste rock was placed over the entire footprint of the downstream waste rock zone to provide a sound working platform during inclement weather (TCA 2013).

Wall construction varied from the design plan because the steep valley within the dam required rapid elevation of the wall to match plant output of tailings. This meant that the limited waste available from the open cut was placed immediately behind the compacted clay zone to provide support. As the rate of wall rise reduced in proportion with the increased storage area, the waste rock was end dumped on the downstream wall from the crest of the TSF (TCA 2013). The construction methodology resulted in a wider than design crest surface and a steeper than design downstream slope.

In line with procedures in place at the time, the protocol for separating acid generating and non-acid generating waste permitted the use of Potentially Acid Forming – Low Capacity (PAF-LC) waste on the TSF wall. However, recent acid and metalliferous drainage control strategies would instead classify PAF-LC as acid generating material. It is also possible that truck load(s) of acid generating waste or ore may have been incorrectly delivered to the TSF during operations (TCA 2020).

Characterisation of the TSF Wall

The Regulator direction notice NTCE0002871 issued on 9 July 2019 requested characterisation of the material in the TSF wall to determine if runoff from the TSF wall was contributing to the low pH of the water in downstream sediment basins. The notice also requested the determination of the source of leachate that periodically emanates from seepages in the toe of the TSF wall.

Current guidelines on Acid Mine Drainage (AMD) define the following categories of material based on acid generation capacity (DITR, 2016).

- PAF – Potentially acid forming
- PAF-LC – Potentially acid forming – low capacity
- NAF – Non-acid forming
- ACM – Acid consuming
- Uncertain – used where the Net Acid Producing Potential (NAPP) and Net Acid Generation (NAG) results conflict. Further testing of samples classified as Uncertain is required to resolve their AMD characterisation.

A report was submitted to the Regulator in response to direction notice NTCE0002871, which included the results of geochemical sampling of material from the TSF, the TSF wall and downstream sediment basins. Previous geochemical characterisation work and water monitoring results were also assessed. The report classified samples of material from the TSF wall according to the AMD classification outlined above.

In summary, that report concluded the following.

- The waste rock on the TSF wall is classified as PAF-LC, PAF or Uncertain based on the NAG testing completed to date.
- The sheared tuff breccia appears to have the highest acid forming potential and the highest proportion of this material was placed in the central section of the TSF wall immediately above SB5 (See **Figure 2**).
- It would appear likely that continuing oxidation of this material and its interaction with rainwater is contributing to the low pH of the water in SB5.
- The leachate that sporadically emanates from seepages in the toe of the TSF wall is unlikely to be TSF water for the following reasons.
  - The seepages only flow after periods of high rainfall and dry out afterwards, despite the TSF retaining a standing water level.
  - The chemical variances between the seepage water and TSF water.
  - The TSF floor and wall both have an engineered clay liner that was constructed to current standards with a coefficient of permeability of 900mm at 1 x 10^{-9}m/sec.
- Groundwater monitoring below the TSF shows stable standing water level over many years and no evidence of reduced pH (RWC, 2020).
- In the absence of any other potential source of the leachate, the evidence suggested that the leachate is sourced from rainwater percolation through the waste rock on the TSF wall. This evidence includes the following.
  - The crest and external face of the TSF wall are not clay lined.
  - The seepages only flow after periods of high rainfall and dry up afterwards.
  - The water chemistry of the seepages has elevated levels of the trace elements As, Cd and Zn, which are known to be enriched in the Mine waste rock.

As described further in Section 6.2.1.10, an update to the Erosion and Sediment Control Plan was proposed and implemented to reduce the volume of runoff being directed to SB5 at the base of the TSF wall. SB5 is not an EPL monitoring point, however the Company monitored the pH of the Mine's sediment basins, including SB5 from November 2015 to October 2016. The monitoring showed that SB5 has a consistently low pH with a range of 2.8 to 4.8 and average of 3.7 (RWC, 2020). This low pH was attributed to the continuing oxidation of PAF material in the TSF wall and the interaction of that material with rainwater and subsequent runoff into SB5.

However, the Regulator was not satisfied with the report and in a letter (Ref: LETT0004904, received 2 September 2020) directed the Company to engage a suitably qualified independent

expert to complete a site-based performance and risk assessment of the TSF wall (the Independent Expert Assessment). The Company complied with that direction and appointed Dr Alan Robertson of RGS Environmental Pty Ltd (RGS) to complete the Independent Expert Assessment, which was undertaken in two stages with an addendum to the Stage 2 report after a request for further information from the Regulator, as outlined below.

Stage 1 Geochemical Assessment Report (RGS, 2020a)

- Included with this RMP as **Appendix 3a**.
- Reviewed relevant geochemical information for the site.
- Identified any deficiencies or errors in the current documentation.
- Recommended corrective actions, including further sampling and testing.
- The Stage 1 geochemical assessment report was to be an interim response to the direction provided in LETT0004904 and would include a scope and timeframe for the delivery of the Stage 2 report.
- The Stage 1 report was submitted to the Regulator on 28 October 2020.

Stage 2 Geochemical Assessment Report (RGS, 2020b)

- Included with this RMP as **Appendix 3b**.
- TSF wall and beach sampling was completed on 25 November 2020.
- RGS undertook a site visit on 27 November 2020 to:
  - Meet with site personnel.
  - Obtain an appreciation of key site infrastructure.
  - Complete a site walkover.
  - Transport the additional samples of site materials to ALS Brisbane for further geochemical testing.
- The Stage 2 Geochemical Assessment has been completed and the report was submitted on 19 December 2020.

Stage 2 Geochemical Assessment Report addendum letter (RGS, 2020c)

- Included with this MOP as **Appendix 3c**.
- Addressed request for further information issues identified in Regulator letter LETT005585 (received 3 February 2021).

The conclusions and recommendations from the Stage 2 Assessment Report (RGS, 2020b) and addendum letter are summarised in the following subsections.

Stage 2 Geochemical Assessment Report Conclusions

A site visit was completed, and a sampling and testing program was implemented for representative samples of TSF wall rock and tailing materials. The number of samples of waste rock (and tailing) materials obtained and tested to date is now adequate. When taken alongside

existing geochemistry and water quality information from the site, there is a reasonable level of confidence that the likely source of leachate emanating from the TSF wall is the near surface materials on the TSF wall itself (rather than tailing materials contained in the TSF).

Given the TSF construction method and materials used, the available information points to rainwater percolating through the waste rock on the TSF wall and being the main contributor to the presence of poor quality leachate/seepage recorded at Sediment Basin SB5.

The Company proposes to develop a cover system (TCA, 2020) to:

- minimise the potential for transport of oxidation products from source to the receiving environment;
- contain and treat the drainage of acid and metals/metalloids to minimise the risk of significant off-site impacts;
- close, cover and rehabilitate the TSF wall; and
- ultimately close, cover and rehabilitate the main body of the TSF.

RGS has reviewed the proposed cover system and believes that it is achievable and sustainable providing that certain key design parameters are met including:

- reprofiling the final TSF wall to the preferred design slope;
- selection and use of NAF cover materials (and/or amendment of cover materials) that have a reduced risk of dispersion and erosion;
- use of a well vegetated topsoil growth medium to ensure that any dispersive materials are not exposed and potentially subject to erosion;
- consideration of a capillary break layer in the cover system employed at the main body of the TSF, if required; and
- a final surface batter profile at the TSF wall that is ripped on the contour and allows excess surface water to drain during storm events without causing significant erosion.

The Regulator requested further information from RGS regarding the suitability of the TSF clay liner and the TSF embankment cap, and whether the various matters raised by Mr Craig Day required reconsideration of the Stage 2 Assessment Report conclusions. As stated in the addendum letter to the Stage 2 Assessment Report (**Appendix 3c**), RGS concluded that it was not necessary to modify or change the Stage 2 Assessment Report conclusions.

Stage 2 Assessment Report Recommendations

The following are the recommendations provided by the Stage 2 Assessment Report prepared by RGS (2020b).

- A cover system should be used to isolate any PAF TSF wall rock materials from atmospheric oxidising conditions in line with that described in TCA, 2020. As part of closure planning, the cover system should be extended to cover tailing materials. This approach should limit the potential for sulfidic materials to react and reduce

the potential for acid generation and potential liberation of soluble metals/metalloids into any seepage at the site.

- Until the cover system is completed and water quality meets release criteria, seepage water collecting in Sediment Basin 5 should continue to be returned to the TSF for evaporation.
- The proposed changes to the surface drainage system at the site should be implemented.
- Dynamic geochemical tests (such as kinetic leach column tests) on specific sample materials should be considered when the site is operational.

6.2.1.9 Ore Beneficiation Waste Management (Reject and Tailings Disposal)

As the Mine is currently on care and maintenance, no further process residues or tailings will be generated from extraction or processing operations, therefore, no management measures related to rejects or tailings are required. The existing TSF and historical tailings area are addressed in the following sub-sections.

Geotechnical Assessment of the TSF Wall

A geotechnical assessment of the existing TSF downstream wall was completed by Geotechnical Testing Services Pty Ltd in 2014 (GTS 2014). The geotechnical assessment is included as **Appendix 4.** Stability analysis was assessed across three sections of the TSF wall to determine if it could support a 3m lift (GTS, 2014). The geotechnical assessment determined that:

- minimum factor of safety requirements were met under existing conditions;
- minimum factor of safety requirements would be met under seismic and post seismic conditions; and
- the TSF wall could support a 3m lift under normal and seismic loading conditions.

The Regulator inspected the Mine Site on 4 December 2018 and 5 June 2019 and in a subsequent direction notice NTCE0002871 (received 9 July 2019) the Regulator noted a medium size tree on the dam embankment and the presence of a deep erosion gully at the toe of the TSF wall with the potential for undermining the structural integrity of the wall. Notice NTCE0002871 also directed the Company to complete a geotechnical assessment for the tailings dam wall.

In reply, the Company, in a letter report dated 23 December 2019, addressed the geotechnical direction by referencing the previous geotechnical assessment (GTS, 2014), and the letter report included that assessment as an appendix.

It is the Company's view that the tree predates the construction of the TSF wall, and the tree is surrounded by coarse rock due to waste rock being end dumped from the crest of the TSF wall, which rolled downslope and settled around the tree.

There is a deep erosion gully at the toe of the TSF, which is caused by runoff from the western side of the TSF reporting to the toe due to poorly implemented site drainage. That gully has

reached bedrock at depths ranging from 30cm to 1m. The changes to site drainage described in Section 6.2.1.10 limit the runoff reporting to the toe of the TSF.

The Regulator remains concerned about the structural integrity of the TSF wall. The Company has engaged an experienced tailings dam engineer to prepare detailed design plans for the proposed reshaping and capping of the TSF wall, which is described in Section 6.2.3.3.2 and the report and design plans are included as **Appendix 2d**. The proposed works will remove the tree from the wall, fill in the erosion gully and establish toe drains to direct water away from the toe and thus minimise the potential for future undercutting. It is the Company's intention to have that engineer complete a site assessment of the TSF wall prior to the commencement of the proposed capping in the landform establishment stage of rehabilitation.

Rehabilitation of Historic Tailings

Mining of gold at Broula King occurred intermittently between 1901 and 1940. Mining of the narrow quartz reefs was achieved by numerous surface and underground workings to a maximum depth of approximately 45m. Some of this historic mining infrastructure remains in the Heritage Area southeast of the open cut void (**Figure 2**). The quartz reefs were processed in the Heritage Area and the tailings were deposited onto the natural land surface to varying shallow depths, generally less than 2m deep.

The historical tailings will be sampled for material characterisation to determine the technical and commercial viability of reprocessing this material. The Company understands that under Section 2.13 of the *State Environmental Planning Policy (Resources and Energy) 2021* (Resources and Energy SEPP), Exempt Development requires no approval under the *Environmental Planning and Assessment Act 1979*. Subclause 2.13 (2)(b)(ii) of the Resources and Energy SEPP states that sampling and coring using hand-held equipment, including a hand-held motorised post hole auger, is Exempt Development if it is of minimal environmental impact. If the Company uses a tractor with a mechanised auger attachment for the sampling, it could manoeuvre around existing vegetation, with no requirement for vegetation clearing. The Company contends that use of both hand-held and tractor mounted equipment would have minimal environmental impact, and thus qualify as Exempt Development.

If the viability of historical tailings recovery is established – though the Company understands this would be subject to further approvals – the quantity of contained metals in the tailings would be estimated. A detailed plan would be prepared for the historical tailings recovery with a particular focus on erosion and sediment control to prevent downstream impacts from recovery activities. The historical tailings would then be processed to recover residual metals with the tailings deposited into the TSF. Heritage items will not be disturbed and will be fenced off. The historical tailings footprint would then be rehabilitated and revegetated.

If the viability of historic tailings recovery is not established, or if approval is not granted for the reprocessing of the historic tailings, the footprint will nonetheless be rehabilitated and revegetated as described in this Plan, with all tailings deposited into the TSF.

6.2.1.10 Erosion and Sediment Control

A summary of meteorological conditions representative of the Mine Site is provided in Section 6.2.5.

The main drainage feature in the region is Tyagong Creek which flows from north to south-southwest towards Greenthorpe and passes approximately 1.3km east of the Mine Site. Rainfall in the region, including all catchments surrounding the Mine Site, ultimately flows into Tyagong Creek. Undisturbed sections of the Mine Site and rehabilitated areas with low slopes are largely stable and not prone to erosion and sedimentation. The key erosion and sediment control management measure implemented at the Mine Site is the containment of sediment-laden water and diversion of clean water away from disturbed areas of the Mine Site. The TSF and emergency spillway is also regularly inspected by the Site/Mine Supervisor for indications of physical changes such as cracks, erosion, bulges, and obstructions. Stockpiles of topsoil and subsoil have been seeded and are regularly inspected to ensure stability and monitor erosion.

The establishment of vegetation is also key to minimising the generation of particulate matter and achieving long-term stabilisation of rehabilitated areas. Where unfavourable climatic conditions prevent the commencement of growth medium spreading and revegetation activities in exposed areas, polymer- or lignosulfonate-based dust suppressants may be applied as a short-term measure prior to the establishment of sustainable vegetation communities to minimise the generation of particulate matter.

An updated *Erosion and Sediment Control Plan* (ESCP) was prepared for the Mine Site in 2019 in response to Regulator direction notice NTCE0002873, as outlined in Section 6.2.1.8. Changes were subsequently made to the ESCP after further consultation with the EPA. In summary, the ESCP involved the following.

- Construct a new sediment basin, SB11 southeast of the open cut using the design criteria nominated in the ESCP.
- Extend the dirty water diversion on the western side of the TSF with a PVC pipe to discharge into SB11. SB11 would hold runoff from the western side of the TSF and areas surrounding the open cut and would have adequate settling capacity prior to discharge. Water in SB11 that meets discharge specifications should be discharged via a drainage bund into a natural drainage gully on bedrock south of SB11. Water that does not meet discharge specifications should be pumped into the TSF.
- Construct a bund wall on the dirty water diversion along the eastern side of the TSF, upstream of the spillway. A discharge pipe should be built into the bund wall and discharge should be directed via a PVC pipe to SB6.
- The TSF spillway should be rock armoured.

The above recommendations would reduce the volume of runoff being directed to SB5 at the base of the TSF wall. Once implemented, SB5 would only receive runoff from the TSF wall and the immediate catchment at its base. However, in the unlikely event that the TSF water level rose high enough, spillway flow would be directed via the existing drain to SB5.

Therefore, a concomitant reduction in impact on the receiving environment downstream would be expected. This notwithstanding however, erosion and sediment control is a matter requiring ongoing consideration during rehabilitation operations and represents a moderate risk to rehabilitation.

6.2.1.11 Ongoing Management of Biological Resources for Use in Rehabilitation

Biological resources including soil and growth medium stockpiles are to be managed as per Section 6.2.3.3.2.

The improvement of the downstream TSF wall slope to 3(H):1(V) (See Section 6.2.1.8) requires the extension of the embankment by up to 32m to the south. The removal of all vegetation, topsoil and subsoil down to a firm foundation is necessary for the entire additional footprint of the embankment.

This provides an opportunity to salvage significant amounts of biological resources (e.g. habitat features, growth medium) for use in rehabilitation. It is anticipated that additional material i.e. Virgin Excavated Natural Material (VENM), clay and Non-Acid Forming (NAF) crushed rock would also be imported to complete rehabilitation activities.

6.2.1.12 Mine Subsidence

Subsidence within the Mine Site is only an issue in the vicinity of historical mine workings, the location of which are shown on **Figure 2**. As the historic workings have been identified as having heritage significance, access to the heritage areas is blocked by suitable security fencing.

Some old shafts and adits were intersected by the open cut and may pose future subsidence risks, particularly those on the periphery of the current void. Since the cessation of mining there has been minor fretting of the north wall in the pit and minor fretting away from the pit crest. A suitable bund and security fencing will prevent access to the void in the final landform, and a geotechnical assessment will be undertaken by a suitably qualified person prior to relinquishment. In the case that the assessment identifies instability or unacceptable movement (actual or potential) in the final landform, a geotechnical engineer will be engaged to provide a range of recommendations to remediate the instability.

6.2.1.13 Management of Potential Cultural and Heritage Issues

Aboriginal Heritage

An archaeological study of the Mine Site was conducted for the Mine's EIS (CWES, 2005). No sites of Aboriginal cultural heritage significance are present with the Mine Site. The Mine Site has previously been subject to significant disturbance associated with historic mining activities and it is not anticipated that any remaining undisturbed areas within the Mine Site would be impacted during rehabilitation operations..

In the event that any Aboriginal artefacts, sites or human remains are identified at the Mine Site during rehabilitation operations, all operations in the vicinity of the site/remains would cease immediately. A minimum 10m buffer zone would be established around the area and the find would be reported to Heritage NSW and the Cowra Local Aboriginal Land Council. Work would not be recommenced in the area until written permission has been received from Heritage NSW.

Historic Heritage

Surveys of historic heritage within the Mine Site were reported in CWES (2005). The historic workings at the Mine are considered to have archaeological potential. These areas, identified on **Figure 2**, have been fenced off and would not be disturbed by the proposed removal of the historic tailings and subsequent rehabilitation of that area.

6.2.1.14 Exploration Activities

Since acquisition of ML1617, BKE has undertaken no exploration or assessment activities within the Mine Site. As extraction of the resource has ceased and activities detailed within this RMP would only involve rehabilitation of the Mine Site – or, if approved, reprocessing of historic tailings – no further exploration is anticipated to be required.

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. The Mine Site is not manned full time but is inspected by a caretaker approximately every four weeks for routine maintenance on the treatment plant. Entry to the Mine Site is via a 400m gravel road from the Mid-Western Highway. The main entry gate, the site perimeter fence, the treatment plant perimeter fence and all buildings are separately locked.

A security camera installation covers the site with 10 cameras, which are monitored by the caretaker. The cameras are always active and record activity when motion is detected. If any unusual activity is detected the caretaker will investigate.

During periods of heavy rainfall, the caretaker visits the Mine Site on an as required basis to pump out accumulated water from sediment basins into the TSF to avoid discharge of polluted water from the Mine Site. This may require several consecutive days on site during wet periods.

Security fencing is also currently in place around areas of the Mine Site containing historic workings which have been identified as having heritage significance. These areas would not be disturbed by the proposed removal of the historic tailings and subsequent rehabilitation of that area. Existing security fencing that is to be retained will be structurally assessed and repaired or replaced where necessary.

Permanent security fencing will be constructed around the perimeter of the final void and heritage areas which contain potentially unsafe historic infrastructure to prevent unauthorised access. Signage warning of the presence of the open void and potentially unstable structures will be installed every 50m on security fencing. Historic heritage areas will also be fenced to prevent access and disturbance.

Permanent safety bunds will be constructed around the top edge of TSF batter walls to prevent inadvertent access to steep batter slopes and rehabilitated areas. Where safety bunds are already in place, these will be assessed and repaired as required or removed and replaced with waste rock safety bunds where existing safety bunds contain growth medium material required for rehabilitation.

6.2.2.2 Infrastructure to be Removed or Demolished

Table 10 presents a list of the site features to be decommissioned to achieve the final land use. No specific formal requirements exist for the decommissioning of built infrastructure at 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 10
Mine Site Assets

Mining Domain[1]	Assets	Decommissioning and Demolition Requirements
1 – Infrastructure Area	Buildings: includes office administration and amenities and carparks.	All buildings to be demolished/removed would have all services disconnected, with any rubble removed to the Open Cut Pit.
	Includes the ore, growth medium and other stockpiles.	Stockpile areas are used to store materials including topsoil and ore. Material in other stockpiles would be used as growth medium in rehabilitation activities. Stockpile areas would be graded and ripped prior to rehabilitation to native vegetation.
	Laydown Area: includes hardstand and open storage area.	Hardstand for temporary equipment storage or stockpiles. These areas would be rehabilitated.
	Roads: includes the Site Access Road, internal haul roads, access tracks and vehicle parking.	Roads provide access to the Mine Site, processing area, open cut void, vehicle parking, TSF, water storage and management structures. Access to the Mine Site, final void, and TSF would be retained. All remaining access tracks would be rehabilitated.
	Mining heritage areas.	Heritage items will not be disturbed and will be fenced off.
2 – Tailings Storage Facility	Includes the approved TSF and historical tailings deposited onto the natural land surface	The TSF would be reprofiled, capped and rehabilitated to native vegetation. The footprint of the historic tailings area will be rehabilitated with the tailings deposited into the TSF. Further approval may be sought to reprocess the historic tailings in the existing Processing Area to recover residual precious metals and other metals with the residual tailings deposited into the TSF.
3 – Water Management Area	Sediment Basins	The sediment basins collect dirty runoff water from around the Mine Site. The sediment basins would be decontaminated and removed from the final landform. SB1, SB2, SB7, SB8, SB9, SB10 and SB11 would be retained as water storages in the final landform.
	Retained Dam	The Retained Dam (labelled as SB6) collects sediment laden runoff from east of the TSF and also receives overflow from SB5 at the toe of the TSF wall in extreme rainfall events. The Retained Dam would be maintained for the final landform as a water storage.

Table 10 (Cont'd)
Mine Site Assets

Mining Domain[1]	Assets	Decommissioning and Demolition Requirements
3 – Water Management Area (Cont'd)	Drainage Diversions	Drainage diversions direct dirty and clean water runoff around the site. The clean water diversions would be retained in the final landform.
4 – Overburden Emplacement Area	Includes the NAG stockpile.	Material in the NAG stockpile would be subject to a *Waste Material and Soil Characterisation Assessment prior to* use in rehabilitation activities.
5 – Active Mining Area	Includes the Open Cut Pit.	Final void would be made safe, with bunds constructed and stock exclusion fencing installed to restrict access.
7 – Beneficiation Facility	Processing/Gold Recovery Plant: includes enclosures, flotation circuit, carbon-in-leach circuit, secure gold room, assay laboratory and associated infrastructure.	The Gold Recovery Plant is used in the processing of ore and gold bearing material. Processing infrastructure would be demolished/salvaged or otherwise removed from the Mine Site. The footprint would be rehabilitated.
	Crushing and Grinding: includes crushing and grinding equipment and storage area.	Crushing and grinding infrastructure for crushing of ore material. Crushing and grinding infrastructure would be demolished/salvaged or otherwise removed from the Mine Site. The footprint would be rehabilitated.
Note 1: Domains as shown in **Figure 8**.		

6.2.2.3 Buildings, Structures and Fixed Plant to be Retained

Figure 7 shows key infrastructure to be retained as part of the final land use. Existing infrastructure to be retained includes:

- Mine Site access roads off the Mid-Western Highway ;
- internal access roads for site maintenance;
- all historic heritage areas, as identified on **Figure 7**.
- existing safety bunds and security fencing around open voids, batters and heritage areas.

Short-term risks associated with the retention of nominated infrastructure and structures are relatively low as these features have primarily been retained for safety purposes (e.g. safety bunds, security fences), to facilitate access to areas of the Mine Site or for heritage conservation purposes.

Long-term risks to public safety and the environment associated with retained infrastructure and structures would only occur in the absence of appropriate maintenance. Roads will need to be inspected following high intensity rainfall events (i.e. ≥25mm within 24 hours) to ensure that

conditions remain suitable for safe access. Failure of roads would potentially contribute to the generation of sediment laden water which may impact water quality within local watercourses. Security fencing and safety bunds will also need to be inspected regularly to ensure that entry to historic heritage areas 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.

Prior to and during 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 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 the Mine Site is relinquished.

6.2.2.4 Management of Carbonaceous/Contaminated Material

A *Closure Management Plan* will be developed and implemented in order to guide the assessment, remediation and monitoring of potentially contaminated areas within the Mine Site (see Section 9.2.1).

Where organic contaminants are identified and on-site remediation is practicable, remediation would be undertaken on site. Where it is not feasible to undertake remediation of contaminated materials at the Mine Site, contaminated materials will be transported to an appropriately licenced facility and remediated prior to being returned to site. Following verification of contaminated material remediation in accordance with the *Closure Management Plan*, returned material will be used during rehabilitation operations or disposed of at the Mine Site.

In the event that contaminated materials are identified and it is not possible or practicable to remediate these materials either on or off site, contaminated materials will either be removed from the Mine Site and disposed of at an appropriately licenced waste facility or disposed of at the Mine Site, where appropriate.

In the event that significant volumes of contaminated material are identified through the implementation of the *Closure Management Plan*, contaminated material remediation and/or disposal activities may result in significant delays to planned rehabilitation operations. Additionally, the identification of unacceptable contamination levels within stockpiled rehabilitation resources (e.g. growth medium and waste rock) would likely increase anticipated rehabilitation resource deficits. In order to account for and mitigate these risks, investigations into alternative growth medium and waste rock sources would commence as soon as practicable following the identification of any resource deficits.

6.2.2.5 Hazardous Materials Management

A *Closure Management Plan* will be developed by a suitably qualified expert in order to identify procedures for the identification, removal and appropriate disposal of hazardous materials (see Section 9.2.4). It is anticipated that this procedure would address hazardous materials including asbestos, hydrocarbons, highly contaminated materials and any other hazardous materials considered likely to occur at the Mine Site.

No hazardous materials are proposed to be retained following the cessation of mining and rehabilitation operations. A hazardous materials audit of the Mine Site will be conducted by a suitably qualified expert in accordance with the *Closure Management Plan* prior to the commencement of decommissioning activities to identify all potentially hazardous materials and any associated risks.

On-site hydrocarbons and storage will also be retained for use during rehabilitation operations before being removed. All remaining fuel and oil will be removed from site before storage and filling infrastructure is decommissioned and removed. Any soils or material that is identified as being contaminated by hydrocarbons will be removed and treated as outlined in Section 6.2.2.4.

All other hazardous materials identified at the Mine Site will either be retained in situ, disposed of at the Mine Site or removed and disposed of at an appropriately licenced facility in accordance with the *Closure Management Plan*. Hazardous material types, volumes, removal methods, dates of associated removal works and contractors who completed those works, disposal methods (including the details of any off-site disposal facility) and any waste transportation records and receipts will be recorded in the *Rehabilitation Quality Assurance Register*.

6.2.2.6 Underground Infrastructure

All underground infrastructure on site is associated with historic gold mining operations and have been fenced off within the Heritage Areas shown on **Figure 2**. The existing security fencing will be retained during and after decommissioning operations to prevent access.

Historic underground workings daylight in the eastern wall of the open cut at an elevation of approximately 470m AHD. It is understood that the workings extend to the old mine infrastructure in the Heritage Area. The water level in the open cut would need to be higher than 470m AHD to discharge through this point. The current level of the open cut water is approximately 466m. No discharges of groundwater are proposed to occur, and no specific measures to manage groundwater accumulation in underground workings are expected to be required. Quarterly groundwater quality sampling will continue to be undertaken for a minimum of two years following decommissioning until relevant completion criteria are achieved.

6.2.3 Landform Establishment

6.2.3.1 Water Management Infrastructure

The drainage channels along the perimeter of the TSF, eight sediment basins (as indicated on **Figure 2** as SB1, SB2, SB6, SB7, SB8, SB9, SB10 and SB11) and the spillway southeast of the TSF will be retained as part of the final landform (See **Figure 7**) to permit the ongoing management of water after decommissioning.

All other water management structures, including storage dams, evaporation ponds, sediment dams, water diversion drains, the sump to the northwest of the TSF, toe drains and associated infrastructure (e.g. water tanks, pipelines and pumps) will be removed and disturbed areas rehabilitated. Following the cessation of dewatering activities, water stored in these dams would be permitted to evaporate naturally.

Sediment material on the floor of all dams, drainage channels and sediment basins will be tested for contamination in accordance with the *Closure Management Plan* and any contaminated material will be remediated and disposed of in accordance with procedures outlined in Section 6.2.2.4. Following the removal of any contaminated material, growth medium bunds which form dam walls will either be harvested for rehabilitation use elsewhere within the Mine Site or pushed and spread during profiling of the dam footprints. Dam and drain floor surfaces will be profiled to be consistent with the surrounding landscape and either allowed to revegetate naturally through the seedbank contained within spread growth medium, colonisation via airborne seed, or revegetated using hydromulch where there is a risk of erosion.

6.2.3.2 Final Landform Construction: General Requirements

As shown on **Figure 7**, a significant proportion of the Mine Site will be progressively rehabilitated to achieve the appearance of vegetated natural landforms in the surrounding area. Areas which will remain unvegetated, with the exception of the final void, will be consistent with the final land uses for the Mine Site. Furthermore, it is envisaged that the final landform would be safe, stable and internally draining to ensure there would be no impacts to downslope cultural or ecological values. Notwithstanding, should any changes to the final landform arise, any potential downslope impacts will be re-assessed.

Disturbed areas within the Mine Site which do not form part of identified heritage areas, water management areas, infrastructure areas or final void will be rehabilitated to achieve a final land use of native ecosystem areas (**Figure 7**). Following revegetation with species identified in the EIS (see Section 6.2.5), these areas will enhance habitat connectivity and ecosystem values within adjacent areas of remnant vegetation.

Following the completion of rehabilitation operations, it is not expected that these areas will present any specific geotechnical or geochemical risks. Additionally, it is not expected that these areas will require specific erosion and sediment control measures following the establishment of vegetation. Notwithstanding, a geotechnical assessment of the final landform will be completed prior to relinquishment.

6.2.3.3 Final Landform Construction: Reject Emplacement Areas and Tailings Dams

6.2.3.3.1 Rehabilitation of Historic Tailings Area

Historic mining activity at Broula King occurred intermittently between 1901 and 1940. During this period, ore was processed in the Heritage Area and the tailings produced were deposited onto the natural land surface southeast of the open cut void to varying shallow depths, generally less than 2m deep. A previous assessment of the historic tailings in the 1980's estimated that approximately 15 000t to 20 000t of slimes and tailings are present in this area with gold grades ranging between 0.4g/t Au to 3.3g/t Au, based on 19 auger samples (CRPL, 1986).

The historic tailings are a point source for downstream contamination. Two sediment samples collected in 2019 from a drainage gully that intersects the tailings returned 4.1mg/kg and 1.2mg/kg mercury and 1 740mg/kg and 787mg/kg lead respectively (RWC, 2020).

The distribution of the historic tailings will be confirmed by field mapping, supported by auger sampling to determine the depth of the tailings and provide samples for assaying. The results of the sampling will assist with material characterisation and estimating the metal content of the tailings. Interpretation of the results will inform the strategy for the rehabilitation of this domain.

After the tailings have been mapped and characterised, vegetation will be removed and stockpiled for rehabilitation purposes. The tailings will then be removed, and further approval may be sought to enable the tailings to be reprocessed through the processing plant. If this reprocessing is not viable or approval is not granted, the tailings will be directly placed into the TSF. If sampling confirms that the soil and subsoil beneath the tailings is contaminated, the contaminated material will also be removed and placed directly into the TSF for safe storage.

The footprint of the removed tailings will then be shaped for stability and drainage in a non-erosive manner followed by spreading of growth medium over the tailings footprint to a depth of approximately 200mm. Approximately 1 600m^3 of growth medium will be required for this purpose, which will be sourced from imported VENM (**Table 8**). Stockpiled vegetation and timber would be replaced. The VENM will be conditioned and ripped, if necessary, before being reseeded.

6.2.3.3.2 *Sealing and Capping of the TSF Wall and Crest*

As detailed in Section 6.2.1.8, the construction of the TSF wall diverged from the original design provided by TCA, resulting in a much steeper profile and a wider crest than the original design.

TCA prepared design plans for reprofiling, capping and revegetation of the TSF wall and crest. Those plans, along with a TCA capability statement, are included herein as **Appendix 2d** (TCA, 2020). A summary of the proposed works required for the sealing and capping of the TSF wall and crest is provided as follows (TCA, 2020).

Vegetation Clearing

The improvement of the downstream TSF wall slope to 3(H):1(V) per the original design requires the extension of the embankment by up to 32m to the south. The removal of all vegetation, topsoil and subsoil down to a firm foundation is necessary for the entire additional footprint of the embankment.

End dumped rock has rolled down over an area where the vegetation had not been removed. An existing tree is now surrounded by the waste rock and this tree should be removed in conjunction with the stripping of the proposed additional footprint. As the tree predates the TSF, its root system is in natural material and its removal will not have an adverse effect on the embankment.

The additional footprint area is approximately 7 140 m^2 and assuming a 0.4m depth of topsoil and subsoil, approximately 2 900m^3 of topsoil and subsoil will be removed and stockpiled in the Laydown Area for use in rehabilitation. The extension of the embankment footprint will consume the downstream sediment basin SB5.

Diversion Drains

The extension of the embankment footprint necessitates the extension and redirection of the drainage diversions on the eastern and western boundaries of the TSF so that there is no risk of erosion of the embankment caused by discharge from those drains.

There is a deep erosion gully at the existing toe of the TSF, which is caused by runoff from the western side of the TSF reporting to the toe due to poorly implemented site drainage. That gully has reached bedrock at depths ranging from 30cm to 1m. The western diversion will report to sediment basin SB11 that has been constructed as part of the ESCP drainage works described in Section 6.2.1.10. (**Figure 2**). The eastern diversion will report to sediment basin SB6. The extension of the embankment will fill in the erosion gully and establish toe drains to direct water away from the toe.

Key Trench

A key trench will be constructed into natural material within the footprint of the extended embankment to provide for stability against sliding of the embankment and an impermeable cut-off barrier to restrict subsurface seepage. The key trench will be backfilled with clay from the same source as the material to be used to encapsulate the waste rock in the embankment.

The trench side slopes will be 1(V):1(H) so that the compaction equipment can compact each layer to the edge of the trench. The width of the base of the trench will be a minimum of 1.25 times the width of the compaction equipment to be used to ensure that compaction is achieved across the full width of the trench. The depth of trench will be a minimum of 1.2m, or to a firm foundation, whichever is greater.

Approximately 2 500m^3 of material will be removed from the trench, which will be cast over the large boulders at the base of the existing toe of the TSF. This will fill voids between the boulders and provide a suitable material for binding with the inner surface of the clay layer.

Construction

Before any material is placed, the key trench floor and the foundation of the extended footprint should be proof rolled and any unsound material should be removed. The surface should then be ripped, and moisture conditioned. The existing embankment crest should also be ripped, and moisture conditioned before the clay capping is placed. Once capped, the moisture content within the rock zone is unlikely to vary significantly and capillary action is not anticipated. The waste rock zone will consist of voids between the rocks and additional measures to accommodate the capillary action of trapped water are not considered necessary.

Subject to confirmation by the geotechnical testing of the clay, the specification for placing and compaction of the clay material is likely to be as follows (TCA, 2020).

Key Trench

- Place material in 200mm to 250mm loose thickness layers, moisture condition if necessary and compact to 98% A.S. @ + 2% of Optimum Moisture Content (OMC).
- Lightly rip before placing each layer.

Impermeable Clay Zone

- Place material in 250mm loose thickness layers, moisture condition if necessary and compact to 95% A.S. @ + 3% of OMC.
- Lightly rip between layers.
- Each layer is to extend a minimum 750mm into the existing embankment profile.
- Over-construct and trim to 3(H):1(V) profile and track roll along the contours.

Embankment Crest Capping

- Moisture condition, place and compact two layers to 95% A.S. @ + 3% of OMC.
- Rip the surface lightly before the first layer is placed and again between layers and trim the surface to design levels.
- Place a 250mm thick wearing course of crushed rock NAF on the crest to retain moisture in the clay and provide an all-weather surface for vehicle access.

Capping Efficacy

Following the assessment of the Stage 2 geochemical results described in Section 6.2.1.8, RGS reviewed the proposed capping system and determined that it is achievable and sustainable, and that it should isolate any PAF material in the TSF wall and crest from atmospheric oxidising conditions (RGS, 2020b). RGS also recommended that, as part of closure planning, the cover system should be extended to cover the TSF beach. This approach should limit the potential for sulfidic materials to react and reduce the potential for acid generation and potential liberation of soluble metals/metalloids into any seepage at the site (RGS, 2020b – refer to **Appendix 3b**).

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

The Open Cut would be retained as a partially filled open void. The void would be bunded to prevent runoff entry and fenced to exclude stock and prevent human access.

The final heights and slopes of the open cut void walls will remain as they are in their current state, subject to a geotechnical investigation that will be conducted prior to relinquishment. In the event that potential geotechnical issues are identified, the recommendations of that report will be implemented in order to ensure that the final void landform is safe and stable.

Based on monthly groundwater monitoring data recorded between 2019 and 2020, standing groundwater levels in groundwater bores surrounding the Mine Site (GMP1 – GMP 4) have stabilised at a maximum of approximately 458m AHD. The base of the open cut is approximately 466m AHD. Therefore, it is not anticipated that standing groundwater will occur in the open cut final void following the decommissioning stage of rehabilitation and cessation of dewatering operations.

6.2.3.5 Construction of Creek/River Diversion Works

No creek or river diversion works will be required during the rehabilitation of the Mine Site and thus is not considered further in this document.

6.2.4 Growth Medium Development

The management of stockpiled growth medium within the Mine Site is described in Section 6.2.1.1.

VENM that will be used for rehabilitation will be tested prior to importation to ensure it is suitable for use as growth medium. The testing would also determine if the VENM requires conditioning prior to placement.

Where growth medium has previously been cleared from disturbed areas within the Mine Site, growth medium will be applied to a depth of between 150mm and 300mm in order to support the establishment and survival of vegetation. In areas which are not located on TSF landforms, growth medium will be spread and profiled to achieve slopes consistent with the surrounding landscape. Former road and hardstand surfaces at the Mine Site will be deep ripped prior to the application of growth medium material to address compaction and allow growth medium to be keyed into underlying material.

Water carts will be employed to lightly wet growth medium material prior to spreading in order to minimise dust generation. In areas where there is an elevated risk of erosion, earthworks and revegetation via direct seeding or hydromulch will be applied to facilitate stabilisation and vegetation establishment. In areas which are vulnerable to wind erosion where revegetation cannot be achieved in the near term (e.g. due to climate constraints), polymer- or lignosulfonate-based dust suppressants will be applied to minimise the generation of particulate matter. Areas which are not considered vulnerable to erosion will either be hydromulched, sown using broadcast seeding methods or allowed to revegetate naturally from the stored seedbank and airborne seed. Growth medium spreading will not be undertaken during excessively wet or windy conditions.

The rehabilitation objectives for the downstream slope of the TSF wall are as follows (TCA, 2020).

- Shape the surface for stability and drainage in a non-erosive manner.
- Spread available subsoil and topsoil over the storage surface.
- Condition soil and rip if necessary.
- Seed during favourable climatic conditions.

The construction of the additional clay zone to the specified compaction levels will provide the necessary stability and prevent infiltration of rainwater into the waste rock zone. Shaping the crest away from the downstream zone will minimise the amount of runoff on the embankment. Approximately 2 100m^3 of growth medium will be placed to a depth of 200mm on the embankment. It is anticipated that this material would be sourced from stockpiled soil and subsoil stripped from the extended footprint of the TSF toe. Track rolling along the contour will create micro moisture storages and check banks. Subject to the results of a *Material and Soil Characterisation Assessment, a*pproximately 430m^3 of crushed NAF rock (150mm to 300mm) will also be placed as loose rock on the surface to reduce and slow runoff from rainfall that falls directly onto the embankment. As a result, defined drains and armouring on the embankment are not considered necessary.

Soil conditioning and seeding, emulsified seeding or hydro mulching can then take place. Placing topsoil over the clay embankment will provide protection against cracking and dispersion of the clay material. Plastic clays have a propensity to crack as they dry out and this clay is also likely to be dispersive. The geotechnical testing will provide information on the characteristics of the clay to determine whether a protective layer is essential immediately or not.

No specific habitat augmentation activities are required to be undertaken at the Mine Site. Vegetation and woody debris cleared during rehabilitation activities would be salvaged opportunistically for use as habitat augmentation.

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. average or above average annual rainfall) to the establishment of vegetation.

6.2.5 Ecosystem and Land Use Establishment

The climate of the Central West region represents a key consideration which must be accounted for during the establishment of vegetation at the Mine Site. **Table 11** provides a summary of relevant meteorological data recorded at the Bureau of Meteorology-operated Grenfell (Manganese Road) Automatic Weather Station (Station No. 073014). The weather conditions at the Mine Site are similar to the available data from the Grenfell station that is located 25 km to the west. In summary, mean maximum temperatures exceed 30°C during summer and mean minimum temperatures fall below 4°C during winter each year. Mean annual rainfall in the Grenfell area is equivalent to 626.0mm, with rainfall exceeding 1mm occurring on fewer than 70 days per year on average.

Table 11
Grenfell - Meteorological Data Summary

Parameter	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Annual
Mean Maximum Temperature (°C)	31.9	30.9	27.8	22.7	17.7	13.9	13.0	14.8	18.4	22.7	26.6	29.9	22.5
Mean Minimum Temperature (°C)	16.4	16.0	13.4	9.3	6.2	4.0	3.1	3.9	6.0	8.9	11.8	14.4	9.5
Mean Rainfall (mm)	52.8	47.7	49.4	46.9	49.5	58.4	56.2	55.5	50.6	54.6	51.8	55.2	626.0
Mean Number of Rain Days ≥1mm	4.7	4.1	4.3	4.4	5.7	7.6	8.2	7.6	6.4	6.3	5.2	4.8	69.3

Source: Bureau of Meteorology – Grenfell (Manganese Road) AWS (Station No. 073014) – data between 1907 and 2023

Vegetation establishment activities at the Mine, including the application of hydromulch and broadcast seeding, will occur only where favourable climatic conditions are expected to occur. Consequently, prolonged drought periods may result in extended delays to rehabilitation activities including growth medium spreading and seeding.

Given suitable climatic conditions, rehabilitation earthworks will comprise the first stage of the process. The aim of these earthworks will be to control surface water runoff and also provide micro-scale niche environments where nutrients, water and seed can collect and increase the likelihood of germination and survival of emergent seedling. Contour ripping on flat and sloped ground (slopes up to approximately 20˚) will be preferentially employed to achieve these aims.

Revegetation will be undertaken following any earthworks and surface preparation works. Seeding of available areas will be completed using a combination of direct seeding, broadcast seeding and hydromulch application methods.

Areas located adjacent to sustainable vegetation which are generating seed on a routine basis (e.g. former unsealed road areas) may not require the application of supplemental seed during rehabilitation operations. Larger disturbed areas will require direct seeding of local species

following the completion of earthworks, with methods including hydromulching and other direct seeding methods (mechanical, manual or pneumatic) to be employed as appropriate throughout the Mine Site.

Seed material will be sourced where possible from local suppliers, nurseries and/or propagation specialists. Seed will also be sourced from commercial suppliers where the required volume of seed material or specific species are not available locally for rehabilitation works.

As described in Section 6.2.1.2, the EIS identifies three vegetation community types on which to base rehabilitation. These include:

- White Box Dominant Woodland
- Tumble-down Red Gum Dominant Woodland; and
- *Eucalyptus polyanthemos* Dominant Woodland.

As limited areas within the Mine Site have were classified as *Eucalyptus polyanthemos* Dominant Woodland and these primarily occur over the TSF surface, this community will not be a target vegetation community type during rehabilitation.

Table 12 presents an indicative (but not exhaustive) list of species that may be used during revegetation of the Mine Site and **Table 13** presents the indicative compositions of each of the vegetation community types above. The species listed in **Table 12** and **Table 13** include those identified in the EIS (CWES, 2005) as representative of the surrounding native vegetation. **Figure 9** shows the anticipated extent of target vegetation community types and features within the Mine Site.

Table 12
Target Vegetation Species and Pasture Seed Mixes for Revegetation

Native Trees	Native Shrubs	Native Grasses	Pasture Seed Mixes
Callitris endlicheri	*Stypandra glauca*	*Microlaena stipoides*	Victorian Perennial Ryegrass (@ 8kg/ha)
Eucalyptus albens	*Acacia genistifolia*	*Austrostipa nodosa*	Sirosa Phalaris (@ 4kg/ha)
Eucalyptus bridgesiana	*Acacia decora*	*Austrostipa nitida*	Currie Cocksfoot (@ 4kg/ha)
Eucalyptus dealbata	*Dillwynia sericea*	*Dichelachne spp.*	Demeter Fescue (@ 4kg/ha)
Eucalyptus goniocalyx	*Hardenbergia violacea*	*Themeda australis*	Seaton Park Sub Clover (@ 4kg/ha)
Eucalyptus macrorhyncha	*Acacia verniciflua*	*Poa sieberianna*	Haifa White Clover (@ 1kg/ha)
Eucalyptus microcarpa	*Dianella revoluta*	*Elymus scaber*	Cereal Ryecorn (@ 8kg/ha)
Eucalyptus polyanthemos	*Casuarina littoralis*	*Austrodanthonia spp.*	Lovegrass (@ 1kg/ha)
Eucalyptus sideroxylon	*Lomandra multiflora*	*Aristida racemose*	Lucerne (@ 5kg/ha)
	Bracyloma daphnoides		Japanese Millet (@ 8kg/ha)
	Stypellia triflora		
	Grevillia floribunda		
	Dianella longifolia		

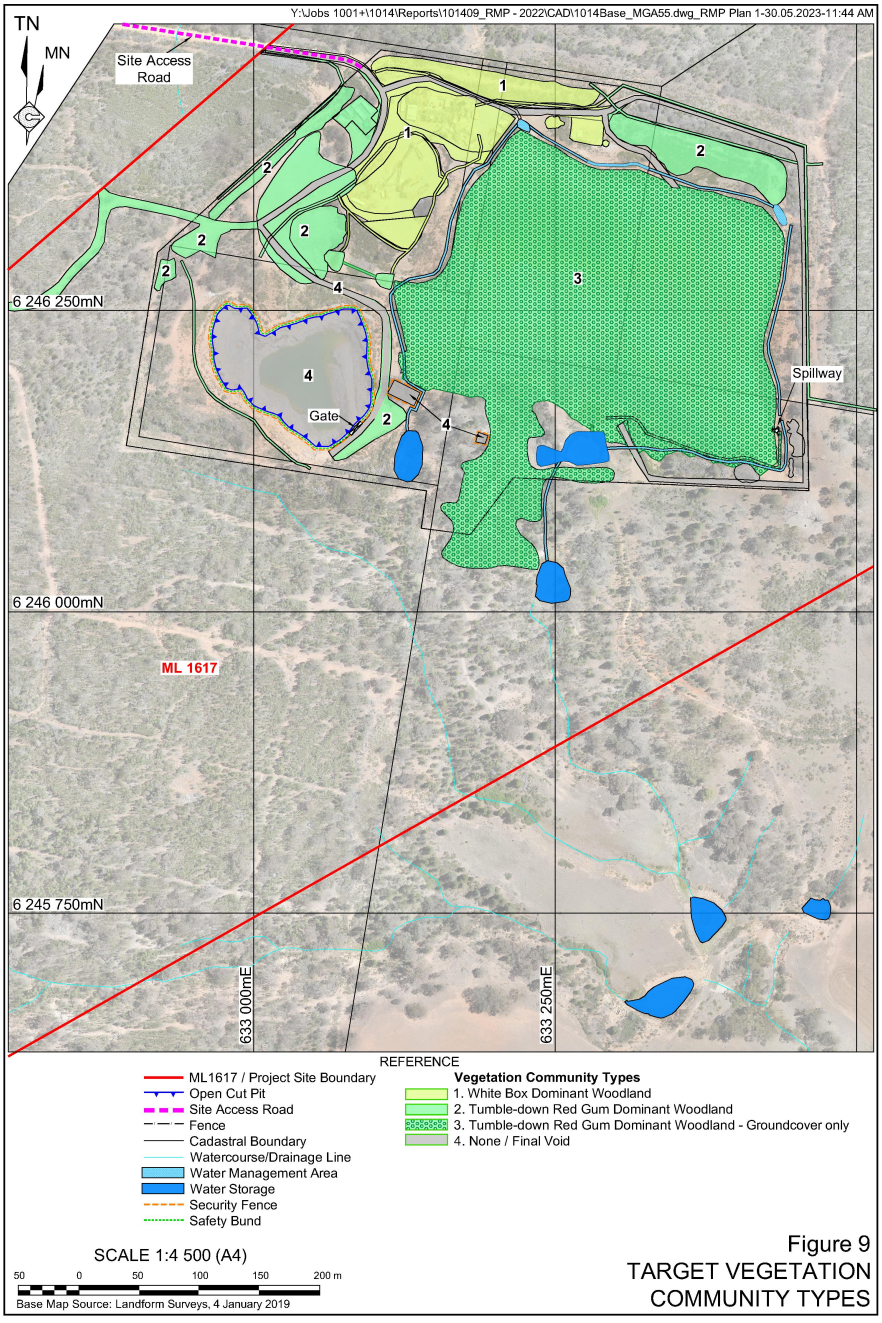

Figure 9
TARGET VEGETATION COMMUNITY TYPES

Table 13
Target Composition of Native Vegetation Community Types

Percentage of Tree Species	Percentage of Shrub Species
Zone 1 – White Box Dominant Woodland	
70% Eucalyptus albens	20% Acacia genistifolia
6% Eucalyptus bridgesiana	20% Acacia decora
6% Eucalyptus macrorhyncha	10% Acacia verniciflua
12% Callitris endlicheri[1]	10% Dianella revoluta
	5% Lomandra multiflora
	3% Casuarina littoralis
	10% Dillwynia sericea
	10% Hardenbergia violacea
	12% Stypandra glauca
Zone 2 – Tumble-down Red Gum Dominant Woodland	
5% Eucalyptus macrocarpa	20% Acacia decora
10% Eucalyptus sideroxylon	15% Acacia verniciflua
5% Eucalyptus polyanthemos	15% Bracyloma daphnoides
50% Eucalyptus dealbata	10% Stypellia triflora
10% Eucalyptus albens	10% Grevillia floribunda
20% Callitris endlicheri	20% Dianella revoluta
	10% Acacia genistifolia
Zone 3 – *Eucalyptus polyanthemos* Dominant Woodland	
70% Eucalyptus polyanthemos	20% Acacia decora
5% Eucalyptus albens	20% Acacia verniciflua
5% Eucalyptus goniocalyx	20% Acacia genistifolia
8% Eucalyptus macrorhyncha	20% Grevillia floribunda
12% Callitris endlicheri	20% Stypandra glauca
Note 1 – Total tree species percentages for Zone 1 add up to 94% as reported in the EIS (CWES, 2005). Individual species percentages will be increased proportionately to equal 100%.	

6.2.6 Ecosystem and Land Use Development

6.2.6.1 Weed and Pest Management and Monitoring Program

Several parameters associated with the presence of weeds and grazer impacts will be recorded during Ecosystem Function Analysis (EFA) assessments as part of rehabilitation monitoring activities. The results of EFA assessments will be detailed in an Annual Rehabilitation Report. The Annual Rehabilitation Report will also include the following.

- An overview of any weed and pest management measures implemented at the Mine Site during the reporting period.
- A list of weed species identified during rehabilitation monitoring and any other inspections completed at the Mine Site to delineate the distribution of weeds within ML1617.

- Details of any pests or evidence of grazer damage to revegetated areas identified during inspections, including a plan showing distribution within the Mine Site, where appropriate.
- Recommendations for specific weed and pest management measures to be implemented during the subsequent 12-month period.

6.2.6.2 Environmental Management and Monitoring Program

Currently, the main requirement for water management is to keep the sediment basins at a low level to provide catchment and settling time in a rain event. Water collected in the dams is pumped up into the TSF using a diesel-powered pump. The TSF has a large water surface area and evaporation over summer prevents an excessive build-up of water in the TSF.

EPL12845 requires monthly monitoring of water level, pH and conductivity for surface water and groundwater at the monitoring sites shown in **Table 14** and **Figure 10**. Monthly onsite monitoring of surface water and groundwater pH and conductivity using portable instruments will continue until vegetation is established on the top surface of the TSF. The EPL also requires annual monitoring for a range of analytes for surface water and groundwater. These monitoring results are recorded and discussed in an *Annual Environmental Monitoring Report* (AEMR).

EPL12845 also requires that the water in SB6 be sampled every 24 hours during discharge.

Table 14
Surface Water and Groundwater Monitoring Points

EPL Ref[1]	Mine Ref[2]	Description
6	SMP1	Sediment Basin SB6
15	SMP1	Sediment Basin SB6 discharge point
7	SMP2	Sediment Basin SB7
8	SMP3	Sediment Basin SB9
2	GMP1	Groundwater Bore south of SB6
3	GMP2	Groundwater Bore west of SB6
4	GMP3	Groundwater Bore upstream of SB9
5	GMP4	Groundwater Bore south of SB10
9	SMP4	Tyagong Creek – upstream
10	SMP5	Tyagong Creek – downstream

Notes: 1. Monitoring point nominated in EPL12845
2. Mine reference for monitoring point

The weather forecast for the Bumbaldry area will continue to be actively monitored during rehabilitation and local landowners will also call the caretaker when a major rain event is expected. This will enable the caretaker to plan pumping activities to maintain a low water level in the sediment basins.

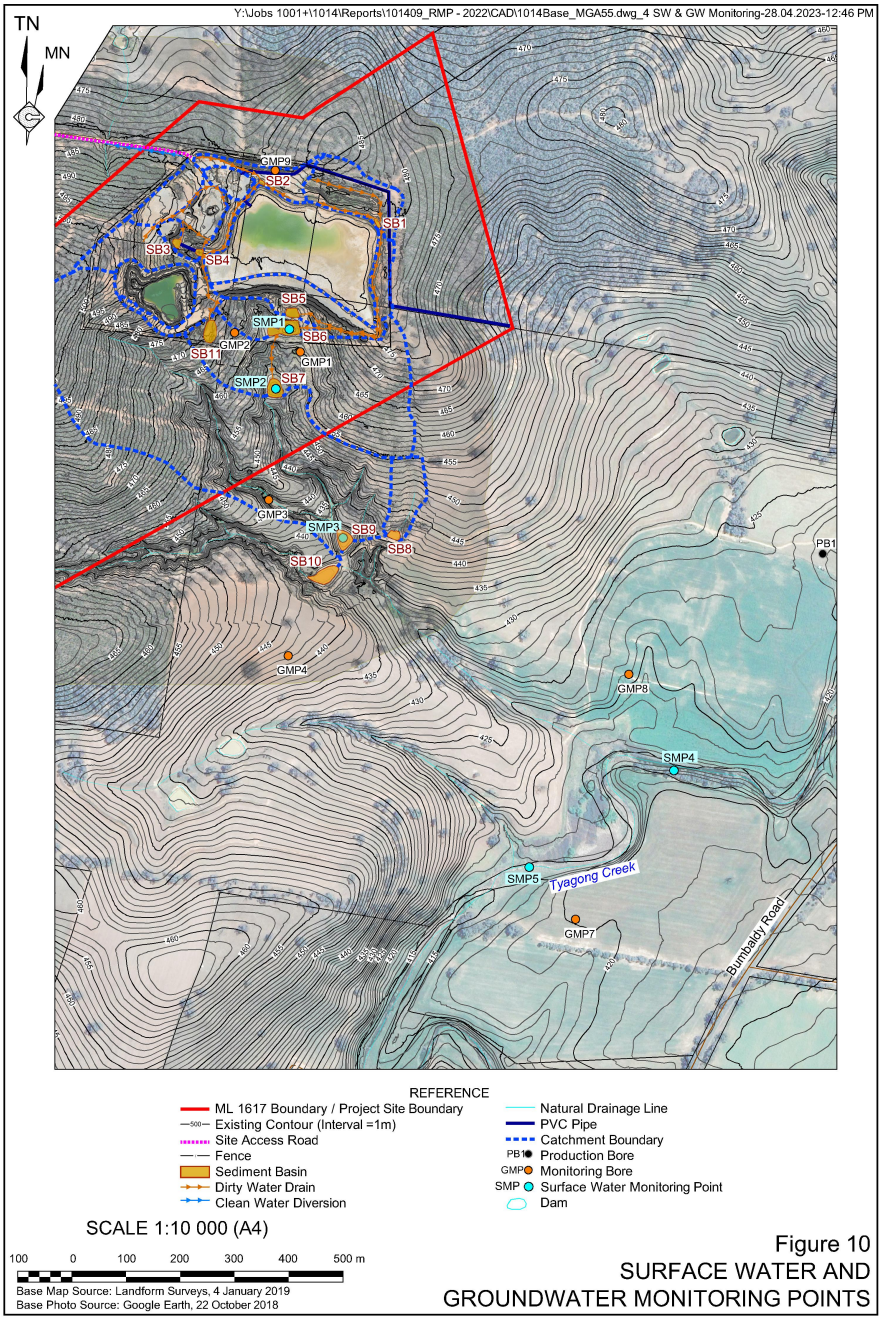

Figure 10
SURFACE WATER AND GROUNDWATER MONITORING POINTS

Following the establishment of vegetation on the top surface of the TSF, the following surface water and groundwater monitoring activities would commence.

- Visual inspections of erosion and drainage control structures, in addition to inspections of the TSF landform batters for signs of erosion, will be undertaken following significant rainfall events (i.e. ≥25mm within 24 hours).
- Water quality testing will be undertaken on a campaign basis (i.e. following recorded flows in drainage system or captured in dams) for a minimum of two years following tailings storage facility top surface revegetation.
- Groundwater quality sampling will be undertaken quarterly for a minimum of two years following tailings storage facility top surface revegetation.

Monitoring both upstream and downstream of Tyagong Creek during flow events will allow comparison of water quality before and following the input of runoff from the Mine Site. Surface water monitoring will target parameters including pH, electrical conductivity, total suspended solids, major ions and dissolved metals and metalloids (e.g. lead, zinc, arsenic). Monitoring will be undertaken to confirm the success of final rehabilitation, represented by water quality parameter measurements for the downstream location which are within 10% (or better) of the upstream location on three consecutive occasions.

Groundwater monitoring will continue to target parameters including pH, total dissolved solids, salinity and dissolved metals and metalloids in order to demonstrate any ongoing impacts on groundwater quality.

6.2.6.3 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, prolonged drought periods may result in extended delays to these rehabilitation conditions. In the event that extended drought 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.

The following management measures will be implemented to monitor revegetation operations during the ecosystem development phase of rehabilitation.

- Undertake Ecosystem Function Analysis (EFA) assessments within the first three years following initial vegetation establishment activities, subject to confirmation of favourable rainfall conditions[2].
- Undertake EFA assessments every three years following the initial assessment until target values are achieved.

[2] Favourable rainfall conditions are defined as confirmation of two consecutive years of rainfall equal to or exceeding the annual average for Bumbaldry, as recorded by the Grenfell (Manganese Road) Automatic Weather Station (Station No. 073014).

Results from EFA surveys will be used to assess the progress of revegetated areas towards target values based on analogue sites for each of the established vegetation community types (i.e. White Box Dominant Woodland, Tumble-down Red Gum Dominant Woodland and *Eucalyptus polyanthemos* Dominant Woodland). Indicative locations for analogue sites within the Mine Site are described in Section 8.1.

The results of EFA monitoring will also be compared against the triggers outlined in Section 10 and additional management actions implemented as required. These additional management actions may include, but would not be limited to:

- growth medium amelioration (e.g. fertiliser or organic matter application);
- reseeding of areas with seed of target species where species assemblages are not consistent with those of analogue sites;
- weed and/or pest control programs; and
- engaging a suitably qualified expert to provide recommendations to improve rehabilitation outcomes.

6.2.6.4 Land Management and Infrastructure Maintenance

Site infrastructure including roads, security and stock-proof fencing, safety bunds and signage will be inspected on an annual basis. Additionally, infrastructure vulnerable to erosion (e.g. unsealed roads, safety bunds, clean water diversions will be inspected following significant rainfall events (i.e. ≥25mm within 24 hours).

The results of infrastructure inspections as well as records of annual infrastructure maintenance activities and costs will be included as part of an Annual Rehabilitation Report, including comparison against costs for similar maintenance works within Weddin Shire, until relinquishment.

6.3 Rehabilitation of Areas Affected by Subsidence

No incidences of mine subsidence have been identified as occurring within the Mine Site or as a result of mining operations associated with the Mine. Subsidence within the Mine Site is only a risk in the vicinity of historical mine workings, the location of which are shown on **Figure 2**. As the historic workings have been identified as having heritage significance, access to the heritage areas is blocked by suitable security fencing.

Some old shafts and adits were intersected by the open cut and may pose future subsidence risks, particularly those on the periphery of the current void. Since the cessation of mining there has been minor fretting of the north wall in the pit and minor fretting away from the pit crest. A suitable bund and security fencing will prevent access to the void in the final landform, and a geotechnical assessment will be undertaken by a suitably qualified person prior to relinquishment. In the case that the assessment identifies instability or unacceptable movement (actual or potential) in the final landform, a geotechnical engineer will be engaged to provide a range of recommendations to remediate the instability.

7. Rehabilitation Quality Assurance Process

The following section details the rehabilitation quality assurance process for the Mine in accordance with *Guideline 3: Rehabilitation Controls (July 2021)*. The rehabilitation quality assurance checklist included in this section is intended to be used as an indicative guide for rehabilitation operation managers and practitioners responsible for the rehabilitation of the Mine Site.

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 risk control checklists 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 Site/Mine 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 the Company and Mine personnel with regards to rehabilitation operations.

Table 15
Key Roles and Responsibilities

Role	Responsibility
Site/Mine Manager	• Comply with applicable laws, regulations, licences and approvals. • Ensure all contractors, sub-contractors and service personnel are appropriately qualified and/or licenced to undertake the required work. • Ensure that appropriate resources are available to site management and personnel to enable the implementation of this Plan. • Ensure that the Rehabilitation Quality Assurance register is maintained and up to date based on site activities. • Ensure that the workforce is aware of relevant development and rehabilitation risks and management and mitigation measures, including any additional corrective and/or preventative measures. • Ensure that the rehabilitation quality assurance process outlined in Section 7 is implemented as required. • Ensure that the documentation and recording of rehabilitation risk controls occurs within a suitable timeframe. • Ensure that specialist contractors adhere to the guidelines and methodologies outlined in this RMP where required, or that the guidelines and methodologies in this Plan are updated to reflect those employed at the Mine Site.
All other employees and contractors	• Follow direction provided by the Site/Mine Manager. • Notify the Site/Mine Manager in the event that uncontrolled rehabilitation risks are identified at the Mine.

8. Rehabilitation Monitoring Program

8.1 Analogue Site Baseline Monitoring

No specific assessments or monitoring have been undertaken to define the proposed rehabilitation objectives and completion criteria for the Mine Site, as defined in Section 4 and **Table 10**. Notwithstanding the above, information from existing assessments (see Section 6.2.1.2) and observations and experience from Company personnel has been used to identify defining characteristics and benchmark values for each final land use domain.

Native vegetation has re-established itself in most of the disturbed areas of the Mine Site, including drainage diversions, with minimal intervention from the Company. Ongoing monitoring of the condition of this vegetation will inform future rehabilitation practice.

A program of monitoring would also be established at the Mine Site in order to inform rehabilitation objectives and establish robust rehabilitation completion criteria based on the identification of appropriate analogue sites. The Ecosystem Function Analysis (EFA) methodology, representing a combination of the Landscape Function Assessment methodology developed by Tongway and Hindley (2004) and the biometric method developed by Gibbons *et al.* (2008), would be adopted for both the assessment of analogue sites and the monitoring of rehabilitated areas within the Mine Site.

In summary, each EFA site (analogue and rehabilitation monitoring sites) would be permanently marked using stainless steel markers to enable the identification and reassessment of sites as required. A range of parameters including flora species richness, vegetation cover, habitat features, soil surface condition and landscape function indices would be recorded for each site. It is intended that the range of parameters will be adjusted for future assessment rounds in order to ensure that all key characteristics as well as relevant indicators of ecosystem condition (e.g. grazer impacts) are assessed for each vegetation community type.

Indicative analogue sites were selected by the Company to include areas of minimal historical disturbance which are representative of key vegetation community types present in and surrounding the Mine Site. **Figure 11** shows the locations of the three indicative analogue sites which would be confirmed by a suitably qualified ecologist during the initial round of EFA assessments. Section 6.2.5 provides an overview of the vegetation community types which are intended to be established within the Mine Site (see **Figure 9**). In summary, the vegetation community types and therefore analogue site types relevant to the Mine Site will include the White Box Dominant Woodland, Tumble-down Red Gum Dominant Woodland, and *Eucalyptus polyanthemos* Dominant Woodland communities.

Additional EFA assessment rounds will be undertaken to inform the development of robust rehabilitation completion criteria. Re-assessment of analogue ecosystem characteristics and function may occur every three to five years or as required to account for anticipated changes as a result of natural events (e.g. prolonged drought conditions).

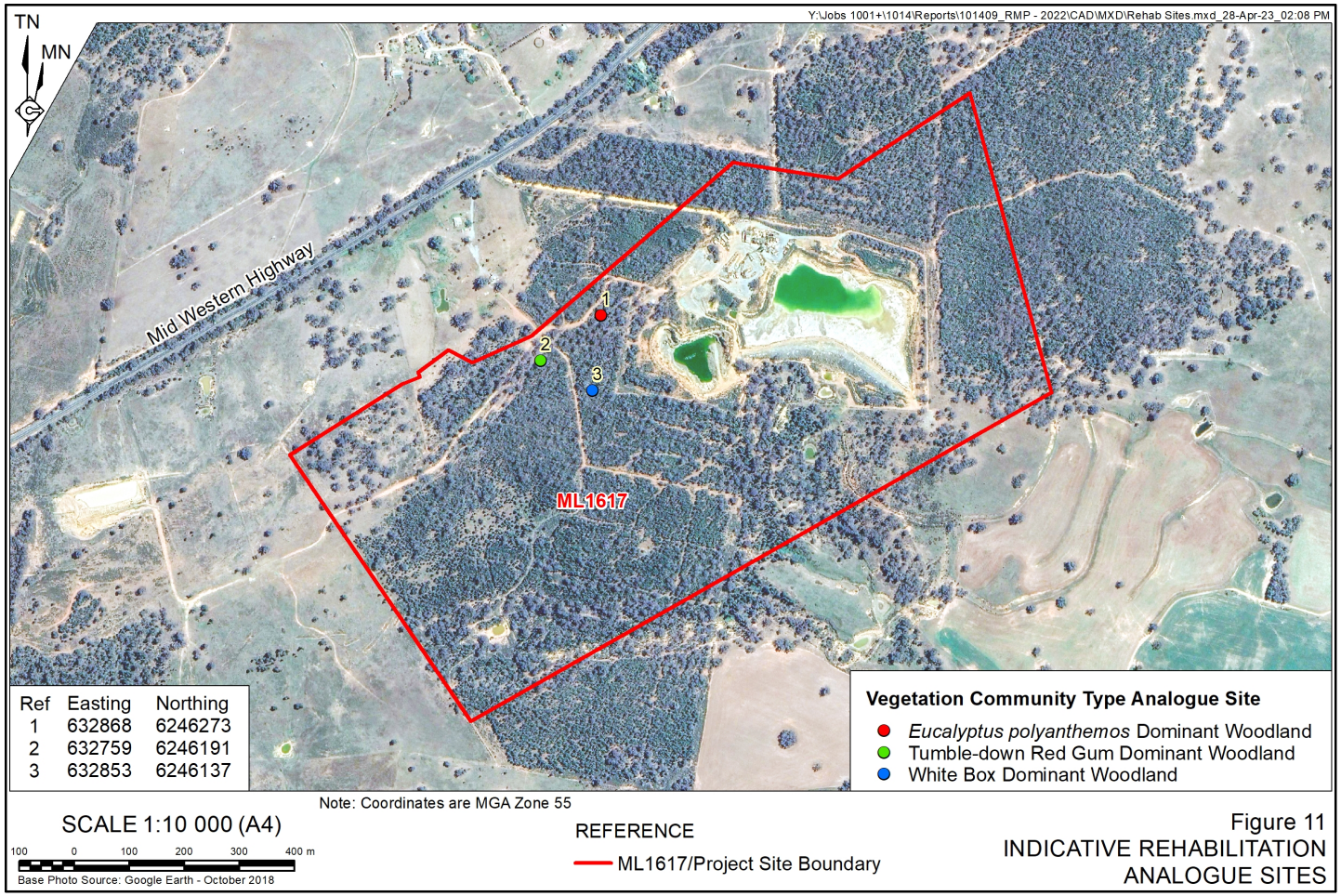

Figure 11
INDICATIVE REHABILITATION ANALOGUE SITES

8.2 Rehabilitation Establishment Monitoring

EFA assessments will form the primary monitoring method used to assess the progress of rehabilitation towards rehabilitation completion criteria based on target vegetation community characteristics (see Section 8.3). It is expected that the first EFA assessment for each area will occur within three years following the completion of growth medium spreading and seeding activities, subject to confirmation of suitable rainfall condition (i.e. average or above average annual rainfall during at least two consecutive years).

In the event that successful rehabilitation is not achieved within three years following the completion of initial rehabilitation works and favourable rainfall conditions, a suitably qualified expert would be engaged to assess rehabilitation performance and provide recommendations for alternative rehabilitation methods. These recommendations would be implemented as soon as reasonably practicable, and the above steps would be repeated until the nominated rehabilitation criteria have been achieved.

8.3 Measuring Performance Against Rehabilitation Objectives and Rehabilitation Completion Criteria

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

EFA assessments (or their equivalent) will form the foundation of long-term rehabilitation monitoring at the Mine Site. As outlined in Section 8.2, initial EFA assessments for rehabilitated areas will be undertaken within three years following the completion of growth medium spreading and seed application activities, subject to confirmation of suitable rainfall conditions (i.e. average or above average rainfall during two consecutive years). Subsequent EFA assessments will be undertaken every three years until target rehabilitation completion criteria values are achieved.

As detailed in Section 8.1 analogue sites and associated target values for key ecosystem characteristics within the identified vegetation community types will be established to inform rehabilitation completion criteria. These target values will then be recorded in an update to this Plan.

The results of rehabilitation monitoring will be graphed and compared against target values in order to determine:

- the relative performance of rehabilitated areas compared to other sites within the Mine Site;
- the rate of development towards target values, including a timeline for the achievement of target values and/or rehabilitation completion criteria; and

- whether additional controls, management measures or specialist assessments to identify issues and provide recommendations are required based on trigger values (see Section 10).

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 and Forward Program will be prepared for the Mine in accordance with the *Mining Amendment (Standard Conditions of Mining Leases – Rehabilitation) Regulation 2021*. Once required, the Company proposes to submit an Annual Rehabilitation Report and Forward Program for the Mine each year to cover the previous 12-month calendar year period. As part of the Annual Rehabilitation Report and Forward Program, the Company will validate and certify that the security deposit covers the estimated cost of rehabilitation liabilities each year.

9. Rehabilitation Research, Modelling and Trials

9.1 Current Rehabilitation Research, Modelling and Trials

No rehabilitation research, modelling or trials are being undertaken as the Mine Site is on care and maintenance.

9.2 Future Rehabilitation Research, Modelling and Trials

9.2.1 Closure Management Plan

A *Closure Management Plan* will be developed for the Mine Site with the aim of defining action plans for key closure assessments. The following subtitles summarise the key assessments that will be undertaken as part of the *Closure Management Plan*.

Engineer Assessment of Structures

The engineer assessment of structures will aim to:

- establish engineer assessment requirements of structures to remain in final land use; and
- establish stability assessment criteria for the Tailings Storage Facility.

Contaminated Site Assessment

The contaminated site assessment will aim to:

- establish a procedure for the sampling and testing of contaminated materials and areas; and
- establish target contamination levels which are appropriate for individual final land use types.

Contamination testing will be undertaken progressively prior to and during the decommissioning phase of rehabilitation operations. Contaminated areas and the relative concentration of key contaminants will be mapped, and results of testing will be recorded in the Rehabilitation Quality Assurance Register.

Post-Closure Surface and Groundwater Assessment

The post-closure surface and groundwater assessment will aim to:

- establish target water quality parameters which are appropriate for individual final land use types; and
- undertake modelling groundwater following closure.

Hazardous Materials Assessment Procedure

The hazardous materials assessment will aim to:

- outline procedures for the identification and investigation of key hazardous materials;
- identify any specific management measures to be implemented during the removal or retention of hazardous materials; and
- identify any specific waste disposal methods and locations for individual hazardous material types.

10. Intervention and Adaptive Management

Table 16 presents the Trigger Action Response Plan for each of the rehabilitation threats and potential adverse outcomes identified in the rehabilitation risk assessment (refer Section 3) as having a risk rating of moderate or above.

The results of rehabilitation trials, including the development of procedures to be implemented during rehabilitation operations as outlined in Section 9, will be continually reviewed and reported in the Annual Rehabilitation Report for the Mine. Where rehabilitation trial outcomes suggest that rehabilitation methods outlined in this Plan may not support the realisation of rehabilitation completion criteria, this Plan will be updated to detail additional or alternative rehabilitation methods as required. Additionally, where the development of procedures or plans 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 16
Trigger Action Response Plan

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Rehabilitant Risk	Potential Adverse Outcome	Trigger	Action/Response
Active Mining Phase of Rehabilitation			
Adverse geochemical/chemical composition of materials such as overburden, interburden, processing wastes, subsoils and topsoils and imported cover materials.	Final landform unsuitable for biological development.	Substrate and material characterisation testing identifies geochemical/chemical composition of materials outside of target values.	Suitably qualified soils or rehabilitation specialist engaged to investigate options of material amelioration and/or alternative suitable source of materials.
Handling and containment of geochemical and geotechnically unsuitable process residue and reject materials.	Landform unsuitable for intended land use.	Monitoring of flora indicates survival/growth outcomes outside of target values.	Suitably qualified contamination specialist and/or engineer engaged to investigate source of handling/containment failure and provide recommendations for remedial works.
	Final landform is a source of pollution.	Surface and groundwater quality monitoring indicate unsatisfactory levels of water contamination resulting from Mine-related operations.	
Adverse surface and groundwater quality and quantity (underground and surface operations).	Final landform unsuitable for final land use.	Surface and groundwater quality monitoring indicate unsatisfactory levels of water contamination resulting from Mine-related operations.	Review and inspect existing water management infrastructure to identify potential sources of contamination and investigate potential control operations, including removal and/or treatment of contaminated material.
Decommissioning Phase of Rehabilitation			
Exposure or access to underground workings.	Public/stock access to Void and Portal poses unacceptable risk to safety.	Rehabilitation monitoring identifies potential for public/stock access to Void and portal or access by unauthorised persons is identified.	If necessary, additional security measures to be installed including fencing, suitable signage, additional bunding, etc.

Table 16 (Cont'd)
Trigger Action Response Plan

Rehabilitant Risk	Potential Adverse Outcome	Trigger	Action/Response
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.	Landform unsuitable for intended land use.	Monitoring identifies instability / unacceptable movement (actual or potential) in final landform.	Suitably qualified geotechnical engineer engaged to assess the instability and provide a range of recommendations to remediate the instability.
	Final landform is a source of pollution.	Surface water monitoring or visual inspection indicates that final landform is eroding or is a source of unacceptable levels of pollution.	Remediate eroding area through additional earthworks, soil works, revegetation or other stabilisation works.
Exposure or release of geochemical and/or geotechnically adverse material associated with containment design and construction, including capping/cover system.	Final landform geotechnically unstable	Monitoring or final closure geotechnical and/or environmental assessment identifies instability / unacceptable movement (actual or potential) in final landform.	Suitably qualified geotechnical engineer engaged to assess the instability and provide a range of recommendations to remediate the instability.
	Final landform is a source of pollution.	Surface water monitoring or visual inspection indicates that final landform is eroding or is a source of unacceptable levels of pollution.	Remediate eroding area through additional earthworks, soil works, revegetation or other stabilisation works.
			If the above is unsuccessful, engage a suitably qualified professional in sediment and erosion control to prepare an assessment report and recommendations.
Lack of availability of suitable materials for encapsulation or capping of adverse materials.	Final landform presents risk to public safety.	*Waste Material and Soil Characterisation Assessment* identifies rehabilitation material deficits.	Identify an alternative source of additional suitable material, including the potential for amelioration of available unsuitable resources.
	Inability to construct final landform capable of sustaining the final land use.		
Final landform unsuitable for final land use (e.g. unstable landform).	Final landform prevents sustainable future land use.	Landform assessment and/or visual inspection identifies areas or features that may prevent effective final land use.	Remediate areas or features through additional earthworks and land-shaping until final land use domains meet design specifications.
Lack of availability of suitable materials for construction of final landform features.	Final landform presents risk to public safety	Inspections during and/or after construction of landform features identifies lack of available suitable materials.	Suitable source of additional suitable material to be identified, including potential for amelioration of available resources.
	Inability to construct final landform capable of sustaining final land use.		

Table 16 (Cont'd)
Trigger Action Response Plan

Rehabilitant Risk	Potential Adverse Outcome	Trigger	Action/Response
Growth Medium Development Phase of Rehabilitation			
Substrate inadequate to support revegetation or agricultural land capability (e.g. lack of organic matter, nutrient deficiency, lack of soil biota, adverse soil chemical properties, exposed hostile geochemical materials, and any other factors impeding the effective rooting depth).	Inadequate soil thickness applied to final landform.	Test pitting following placement of soil material identifies placed soil thickness not consistent with final approved soil thickness.	Additional soil material spread on the final landform.
	Soil not capable of sustaining vegetation community.	Soil parameters not consistent with baseline studies / analogue sites.	Prepare a report incorporating soil analysis results and identifying a range of recommendations to be implemented to ensure that the soil is suitable for sustaining the vegetation community.
Ecosystem and Land Use Establishment Phase of Rehabilitation			
Adopting inappropriate or inadequate rehabilitation techniques, including equipment fleet.	Vegetation does 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 analogue sites.
	Rehabilitation operations result in a greater disturbance footprint from rehabilitation activities.	Identification of significant areas of disturbance outside and/or within rehabilitation areas.	Suitably qualified ecologist or revegetation expert engaged to assess reasons for additional disturbance and recommend actions to align techniques and management practices to industry best practice.
Adverse weather and climatic influences (e.g. drought; intense rainfall events; bushfire and climate change).	Delay to 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 of rehabilitation schedule and update to forward schedule.
			Rehabilitation areas are assessed for damage and necessary repairs and/or revegetation efforts are employed as required.
Lack of habitat structures for colonisation or use.	Reduced suitability of final landform for native flora and fauna.	Ecosystem Function Analysis identifies that relevant indices are not consistent with analogue sites.	Investigate availability of additional and/or supplementary structural habitat resources and apply as required.
Adverse weather and climatic influences (e.g. drought; intense rainfall events; bushfire and climate change).	Delay to or failure of vegetation development.	Vegetation monitoring identifies negative effects on vegetation development.	Investigate need for additional actions to support vegetation development (e.g. soil amelioration, supplementary planting).
			Review of rehabilitation schedule and update to forward schedule.
Substrate inadequate to support revegetation or agricultural land capacity.	Soil not capable of sustaining vegetation community.	Soil parameters not consistent with baseline studies / analogue sites.	Prepare a report incorporating soil analysis results and identifying a range of recommendations to be implemented to ensure that the soil is suitable for sustaining the vegetation community.

Table 16 (Cont'd)
Trigger Action Response Plan

Rehabilitant Risk	Potential Adverse Outcome	Trigger	Action/Response
Ecosystem and Land Use Establishment Phase of Rehabilitation (Cont'd)			
Post-closure water quality and quantity issues.	Final landform is a source of pollution.	Surface and groundwater quality monitoring indicate unsatisfactory levels of water contamination resulting from Mine-related operations.	Engage suitably qualified expert to investigate source of water quality impacts and provide recommendations for remedial works.
	Final landform is unstable.	Inspections identify erosion of water management infrastructure (e.g. diversion drains, spillway).	Undertake repair works or engage a geotechnical engineer to inspect water management structures and provide recommendations for repair/reconstruction works.
Damage to rehabilitation (e.g. fauna, domestic stock, vandalism, vehicular interactions, bushfire, insects and plant disease).	Vegetation does not become established on final landform.	Rehabilitation monitoring identifies higher grazing pressure within rehabilitation areas compared to analogue sites.	Review existing pest exclusion and management processes for potential modes of failure (e.g., damage to fences) and revise type, intensity and frequency of pest controls until assessments indicate a return to background grazing levels.
		Rehabilitation monitoring identifies damage to rehabilitation areas from public access.	Review existing safety and exclusion infrastructure to identify potential modes of failure and/or strengths and weaknesses in infrastructure design, and implement any necessary repairs/improvements where practicable.
	Final landform requires significantly more management than analogue sites.	Visual assessment of groundcover, biomass or Landscape Function Analysis identify that relevant indices are not trending towards the baseline sites.	Suitably qualified ecologist or revegetation expert engaged to assess reasons for additional management requirements and recommend actions to align management required with that of the analogue sites.
	Bushfire impacts are more severe compared to analogue sites.	Rehabilitation monitoring identifies bushfire impacts which are more severe compared to analogue sites.	Review bushfire management and mitigation measures and revise as required.
Insufficient establishment of target species and limited species diversity.	Species assemblage on final landform does not conform to target species assemblages based on analogue sites.	Rehabilitation monitoring identifies floristic assemblages inconsistent with analogue sites.	Undertake additional revegetation works to develop species assemblage comparable to analogue sites.
Erosion and failure of landform, drainage and water management/storage structures.	Final landform is a source of sedimentation that negatively impacts rehabilitation or contributes to pollution in surrounding areas.	Surface water monitoring or visual inspection indicates that final landform is eroding or is a source of unacceptable levels of sedimentation.	Remediate eroding area through additional earthworks, soil works, revegetation or other stabilisation works.

11. Review, Revision and Implementation

Table 17 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 17
Rehabilitation Management Plan Review Triggers

Trigger	Review
Amendment (required under Clause 11 of Schedule 8A of the Mining Regulation 2016)	
Approval of the proposed rehabilitation outcome document by the Secretary.	Within 30 days
Amendment to the rehabilitation outcome document under Clause 14 of Schedule 8A of the Mining Regulation 2016.	Within 30 days
Changes to risk control measures in the Rehabilitation Risk Assessment.	As soon as practicable
Written request from the Secretary.	As required by any notice
Review	
Finalisation of the *Closure Management Plan*	Within 12 months
Modification of an existing development consent.	Within 3 months
Modification of ML1617	Within 3 months
Submission of each Annual Rehabilitation Report and Forward Program.	Within 1 month
Completion of a rehabilitation trial.	Within 1 month
Receipt of a specialist consultant report prepared in response to a trigger outlined in Section 10.	Within 3 months
Consultation with relevant stakeholders with significant implications for the final land use and/or final landform.	Within 3 months
Consultation with relevant stakeholders with significant implications for rehabilitation objectives and/or rehabilitation completion criteria.	Within 3 months

In addition to reviews of this Plan as outlined in **Table 17**, 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 a risk control checklist 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 domains during rehabilitation operations.

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