Ongoing Controls

Growth Medium

Soil resources have been progressively stripped during previous mining activities and stored through stockpiling within the Mine Site for progressive and future use in rehabilitation activities (see stockpile locations on **Figure 7**). No further topsoil or subsoil stripping is planned at the Mine Site, with the exception of material to be stripped during the Open Cut Extension, which will be stored within stockpiles at the Mine Site until use in rehabilitation.

Existing growth medium topsoil stockpiles have been progressively stripped and stored in a dry, isolated area within the Mine Site (**Figure 7**). During excavation of the Open Cut pit and underground workings, topsoil was stripped and transported directly to the stockpile areas for storage. This process ensures that the re-handling of topsoil is minimised. Topsoil stockpiles are stored no higher than 2m to maintain the quality and integrity of the resource for future use in rehabilitation. Future planned disturbance of the Open Cut will generate additional topsoil. The topsoil will be stripped and stored in the topsoil stockpile areas until required for rehabilitation. Information on stockpiled growth medium is kept within the Biological Resource Register, including location, type, and volume of material.

Table 13 presents the current topsoil and subsoil inventory for the Murrawombie Mine.

Table 13
Murrawombie Topsoil and Subsoil Inventory

Site	Type	Quantity (m^3)
Murrawombie	Subsoil	78,270
	Topsoil	22,220
	Total	100,490

Capping Material

Capping material for the Heap Leach Pads is anticipated to be sourced from the Open Cut Extension, from which approximately 6.9Mt or 2.6 million bank cubic meters (Mbcm) is expected to be removed during mining. The majority of the waste rock produced from the Open Cut Extension is anticipated to be stored within the Murrawombie Waste Rock Emplacement; however, use of waste rock for capping material is approved under DA1/91.

Controls to be Implemented

Soil and material resources within the Mine Site will continue to be managed in accordance with existing management practices.

Rehabilitation Requirements

- Topsoil and Subsoil (Growth Medium)

  Based on current disturbances, approximately 144,00m^3 of growth medium will be required for the rehabilitation of the Mine Site.

  Based on the current growth medium stockpile register, approximately 100,500m^3 of growth medium is currently stockpiled within the Mine Site (**Table 13**).

Based on the above, there is potential for a deficit in growth medium of approximately 43,500m^3, or approximately 30% of the total requirement.

The Company is in the process of undertaking a review of the inventory, which will be updated in conjunction with the Murrawombie Waste Rock Emplacement southern extension design. During the review, the Company will determine the quantity of soil materials that will be required for rehabilitation and relinquishment of ML1280. It is expected that the current topsoil and subsoil quantities currently stored at the Mine Site, in addition to the topsoil that will be generated from the Open Cut Extension, will be sufficient to complete rehabilitation activities.

Capping Material

Capping material will be sourced from the Open Cut Extension or from the Murrawombie Waste Rock Emplacement, should a deficit of materials occur. Notwithstanding, due to the significant volumes of material available, no deficit is anticipated to occur. Further information on waste rock characterisation is presented in Section 6.2.1.8.

Only Non-Acid Forming (NAF) waste rock will be salvaged for use in rehabilitation as capping material. Further information on the Murrawombie Waste Rock Emplacement is presented in Section 6.2.1.4. Information on the waste rock characterisation process is presented in Section 6.2.1.8.

6.2.1.2 Flora

Existing Environment

Final land uses within the Mine Site are a combination of native ecosystem conservation (woodland and grassland) and agricultural grazing. **Table 16** (refer Section 6.2.5.1) presents the targeted flora species for use in rehabilitation.

Existing Assessments

EnviroKey has undertaken multiple ecological assessments, over numerous years, within the Mine Site and at the Company's nearby operations. As a result, a comprehensive understanding of the Mine Site and surrounds has been developed. The following are ecological assessments that have been drawn upon for preparation of the current assessment.

- *Flora and Fauna Study of the Murrawombie and North East Mine (ML1280, ML1383 and MPL295), 2011* (EnviroKey, 2011a) – within the Mine Site.
- *Flora and Fauna Impact Assessment: Proposed ROM Pad Extension, TRL North East Site* (ML1383), 2011 (EnviroKey, 2011b) – covering an area immediately to the north of the Mine Site.
- *Ecological Assessment: Proposed Avoca Tank Exploration Project, 2012* (EnviroKey, 2012a) – covering an area to the north of the Mine Site.
- *Ecology Assessment: Proposed Avoca Tank Mining Project, 2014 (EnviroKey, 2014)* – covering an area to the north of Mine Site.

The above previous ecological assessments undertaken by EnviroKey Pty Ltd were supplemented by resources describing the classification of vegetation communities in western NSW (Benson, 2006 and 2008 and Benson *et al*. 2006) and the OEH threatened species, populations and ecological communities of NSW predictor database (OEH, 2014a) to develop a representative status of the existing flora and fauna environment within the Mine Site.

The four plant communities identified as occurring within the Mine Site are shown on **Figure 6** and include:

- Benson ID 103 – Poplar Box – Gum Coolabah and White Cypress Pine Shrubby Woodland mainly in the Cobar Peneplain Bioregion;
- Benson ID 105 – Poplar Box Grassy Woodland on flats mainly in the Cobar Peneplain and Murray – Darling Depression Bioregions;
- Benson ID 119 – Sandplain Mulga Tall Shrubland – Open Shrubland of the semi-arid and arid climate zones; and
- Benson ID 176 – Green Mallee – White Cypress Pine very tall Mallee Woodland on gravel rises mainly in the Cobar Peneplain Bioregion.

Target Species and Communities

The proposed final vegetation types and covers are shown on **Plan 1** and include:

- Native Ecosystem Area – consisting of modified native and exotic grassland plant communities within the Tailings Storage Facility mining domain; and
- Agricultural – Grazing – consisting of modified native and exotic woodland plant communities within all remaining areas of the Mine Site excluding the Active Mining Area and Water Management Area mining domains.

In summary, no specific Plant Community Types are proposed to be established as part of the final land use. Rather, the final vegetation types will consist of modified plant communities comprised of mixed native species commensurate with surrounding vegetation and land uses.

For the Native Ecosystem Areas, DnA Environmental (2024) state exotic pasture species are unlikely to persist in the semi-arid environment and will not be sustainable in the longer term without ongoing intervention. Therefore, native grasslands similar to those in the surrounding derived grassland areas are likely to provide the most reliable outcomes and sustainability of the vegetation cover system in the longer-term within the Native Ecosystem Areas. Exotic species may be considered suitable for use with native species within areas proposed to be managed for agricultural production where ongoing maintenance would form part of typical land management practices. Exotic species may also be used for more-rapid stabilisation of surfaces where required, to give time for native species to establish and eventually out-compete exotic species in the long term.

For the Agricultural – grazing areas, the reference plant communities will be the modified Poplar Box Grassy Woodlands (Benson ID103 and 105) that are common within and in the vicinity of the Tritton Copper Operations. DnA Environmental (2024) states that all remnant vegetation within the ML's, including the reference sites, have been subjected to some form of disturbance, in particular clearing, over grazing, erosion and "woody weed invasion". The reference sites are, however, typical of the local environment.

Further information is presented in Section 6.2.5.1 and **Table 18**.

Ongoing Controls

Management of flora within the Mine Site is undertaken in accordance with the *Flora and Fauna Management Plan* and *Weed Management Plan*. These plans will continue to guide implementation of programs to limit and reduce impacts to native flora within the Mine Site.

Controls to be Implemented

General Management of Flora

Management of flora within the Mine Site is undertaken generally in accordance with the *Flora and Fauna Management Plan* and *Weed Management Plan*. During rehabilitation, each Plan will continue to be used to guide implementation of programs to limit and reduce impacts to native flora and fauna within the Mine Site. Management of existing flora populations and resources within the Mine Site will help to maintain genetic integrity and ecosystem resilience throughout operations including rehabilitation.

Propagation Resource Management

Revegetation strategies will likely include a combination of the use of seeds and tubestock, where relevant. Management of seed resources is further discussed in Section 9.2.1.

Two main sources of seed material will be used during rehabilitation of the Mine Site:

- in-situ seed bank and other vegetative material within stockpiled growth medium; and
- seed collected from surrounding areas within and in the vicinity of the Mine Site that are owned and/or controlled by the Company, and areas where access and collection are permitted.

All seed and propagation material collection will be undertaken by or under the guidance of suitably qualified revegetation practitioners.

Propagation material for woodland species will be sourced from local populations, were practicable. To promote retention of existing genetic integrity, DnA (2024) recommends sourcing material from viable, healthy populations ideally located within 20km of the Tritton Copper Operations.

DnA (2024) state that the areas of derived native grassland within and in the vicinity of the Mine Site are suitable for use as a source of propagation material. Dominant grasses within the local native pastures typically set seed early October – November (spring) and March – April (autumn) depending on seasonal conditions. DnA (2024) states the follow methods would be suitable for collection of mature seeds from surrounding native pastures.

- Hand collection (brushcutters, scythes, mower catchers).
- Mechanical brush-harvesters.
- Baling using conventional farm machinery.
- Silage harvesters.

In addition to the above, DnA (2024) identifies that planning for harvesting periods will be critical and will require consideration of the following key components.

- Identifying suitable areas for harvesting, including consideration of:
  - low weed density;
  - high diversity and abundance of desired species;
  - accessibility; and
  - proximity to the rehabilitation area to minimise costs;
- Engaging specialist contractors with suitable equipment, if required.
- Ensuring appropriate access rights are attainted, where required.
- Ensuring appropriate handling of collected materials.

As a result of the continued implementation of the above management plans and revegetation strategies, flora-related risks to rehabilitation are considered to be low.

The Company will begin a Seed Balance Strategy in late 2023 to ensure that sufficient seed is collected, or purchased, in order to achieve the rehabilitation objectives outlined in Section 4.2 (refer Section 9.2.1).

6.2.1.3 Fauna

Existing Environment

Existing Assessments

The following fauna assessments have been undertaken within the Mine Site.

- EnviroKey (2011b) – Flora and Fauna Study for Murrawombie and North East Mine.
- EnviroKey (2015) – Ecological Assessment for the proposed Murrawombie Open Cut Extension.

In summary, eleven fauna species listed under the EPBC Act and the BC Act, have been identified as occurring within the Mine Site.

Target Fauna and Habitat

No specific target fauna species are identified as part of the proposed rehabilitation objectives for the Mine Site.

Notwithstanding the above, rehabilitation completion criteria relating to management of grazing pressure from native and introduced species will require specific management practices during rehabilitation.

Ongoing Controls

Ongoing management of fauna within the Mine Site is undertaken in accordance with the *Flora and Fauna Management Plan*. General management activities include:

- establishment/maintenance of alternative clean water sources;
- regular fauna monitoring;
- exclusion of stock from vegetated areas of the Mine Site;
- regular pest monitoring and control;
- reduction in speed of mobile and heavy equipment in areas known to be populated or used by fauna; and
- providing training and awareness to employees and contractors.

Controls to be Implemented

The *Flora and Fauna Management Plan* will continue to be implemented during rehabilitation for general management of fauna within the Mine Site.

Management of grazing pressure through agricultural activities, exclusion fencing, and feral and native animal control programs will continue to be implemented to manage risks relating to the establishment of vegetation communities.

As a result of the continued implementation of the above management plans, fauna-related risks to rehabilitation are considered to be low.

6.2.1.4 Rock/Overburden Emplacement

Existing Environment

Murrawombie Waste Rock Emplacement

The Murrawombie Waste Rock Emplacement was approved under the original consent for the Mine Site. Construction and placement of waste rock occurred via standard 10m lifts. Material was placed at angle of repose before being shaped to 18° at the completion of each lift. The Murrawombie Waste Rock Emplacement was constructed to a maximum height of approximately 230m AHD. PAF material was encapsulated within certain sections of the Murrawombie Waste Rock Emplacement.

All earthworks on the Murrawombie Waste Rock Emplacement were completed by July 2000. In areas with underlying PAF, additional NAF waste rock at a minimum depth of 1m was used as capping material. Topsoil was spread at a minimum depth of 100mm. Drop Down Drains were constructed to control surface water drainage from the landform. Rehabilitation of the Murrawombie Waste Rock Emplacement was undertaken progressively during operations and was largely completed by 2000. Further information is provided in Section 6.2.3.

In 2015 the southern extension of the Waste Rock Emplacement was approved, allowing for approximately 6.9Mt of waste rock to be added to the existing Murrawombie Waste Rock Emplacement. This area remains operational, with the material to be made available for rehabilitation and/or underground backfill at the cessation of mining. And residual material will be capped and rehabilitated at during mine closure.

Controls to be Implemented

NAF waste rock will be emplaced on the approved southern extension of the Murrawombie Waste Rock Emplacement which will be developed to the following indicative final design criteria.

- Maximum elevation ..... approximately 235m AHD
- Operational batter angle ..... angle of repose
- Bench height ..... approximately 10m
- Berm width ..... approximately 5m
- Final face angle ..... approximately 18°
- Design volume ..... 3.5 million m^3

Environmental consultants O'kane Consultants Pty Ltd (O'kane) were engaged by the Company in late 2021 to review the design criteria approved in 2015 in order to ensure an optimised WRE design for the Open Cut Pit Extension Project. The review will also consider the waste rock for other rehabilitation and closure purposes onsite. Optimisation of waste rock will involve:

1. Completing a background review of rehabilitation practices and closure plans at the Murrawombie Open Cut and documenting a Basis of Design for the Southern Murrawombie WRE extension;
2. Designing a final landform for the Southern WRE and developing an optimised integrated mining and closure plan for the management of waste rock from the Open Cut Pit Extension Project; and
3. Documenting a Rehabilitation Quality and Assurance Program for the proposed work, in accordance with the NSW Resource Regulator's *Form and Way Rehabilitation management plans for large mines document* (Section 7).

Capping

The Heap Leach Pads will require capping as part of landform establishment and closure of the Mine Site. The total required volume of capping material required will depend on final landform shaping undertaken prior to capping, However, based on preliminary capping designs identified by *Murrawombie HLF Cover System and Landform Design* (O'Kane, 2018), and an estimated 53ha of total area, approximately 0.48Mm^3 of NAF waste rock will be required for closure of the facility. As identified in Section 6.2.1.1, the Company does not anticipate any deficit of capping material will occur.

In addition to the above, material identified as PAF has been placed at the southern end of the Murrawombie Waste Rock Emplacement. The Company currently utilises this material for backfilling of underground mining areas and is actively salvaging stockpiled material for this use. Notwithstanding the above, based on current mine planning an excess of PAF material is considered likely to occur and will require capping and rehabilitation prior to Mine closure. The PAF material is located within the approved boundaries of the extension to the Murrawombie Waste Rock Emplacement, and the Company anticipates that sufficient NAF material will be produced from the Open Cut to safely encapsulate all PAF material both currently stockpiled, and that scheduled to be mined as part of the Open Cut Cutback.

Furthermore, targeted capping of certain areas of the Mine Site be required following the result of contamination assessments undertaken during decommissioning and landform establishment. Such areas may include water management infrastructure associated with Dirty and/or Contaminated water storage, the Pregnant Liquor Ponds, and Containment Dams. As identified above, due to the significant volume of NAF waste rock forecast to be produced as part of the Open Cut Cutback, no deficit of capping material is expected to occur.

6.2.1.5 Waste Management

Existing Environment

Management of all wastes generated at the Tritton Operations is undertaken in accordance with the *Waste Management Plan*. Management of the use and disposal of hydrocarbons and chemicals is also undertaken in accordance with the *Hydrocarbon and Chemical Management Plan*.

Waste produced at TM is classified into different categories. These include:

- **Process Wastes**: includes acid sulphate soils, overburden material, coal rejects, general mine wastes, topsoil's, subsoil's and filter cake.
- **Non-process Waste**: includes any solid or liquid (or combination) that is leftover, surplus or an unwanted by-product whether of value or not, that is generated at any Straits operation.
- **Non-hazardous waste:** Wastes which are not ignitable, corrosive, reactive or toxic.
- **Hazardous Waste:** Any waste containing significant quantities of a substance that may present danger to human health and/or the environment when released into the environment or is improperly managed.

Process Waste Management

Management of overburden (i.e. topsoils and subsoils) is discussed in Section 6.2.1.1.

Management of waste rock is discussed in Sections 6.2.1.4 and 6.2.1.8.

General Waste Management

Waste disposal and materials handling practices at the Mine aim to mitigate and manage any risks to the environment, including current and future land uses. In most cases, non-production waste will be collected on the Mine Site and removed for disposal or recycling by a suitably qualified contractor. **Table 14** presents an estimate of the non-production waste and briefly describes how each class of waste is stored and subsequently removed from Mine Site.

Minor maintenance or other administrative activities may occur at the Mine Site to maintain the condition of infrastructure or to service equipment used for progressive rehabilitation. **Table 14** presents an estimate of the non-production waste and briefly describes how each class of waste will be stored and subsequently removed from the Mine.

Table 14
Non-Production Waste Management

Waste Type	Storage / Management	Removal / Disposal
General waste (including food scraps)	Covered bins or skips located at lunch areas, offices, outside workshops and elsewhere as required. Where these bins are located in open areas they will be fitted with animal proof lids.	Collected on a regular basis by a licensed contractor and transported to an appropriately licensed facility for disposal.
General Recyclables	Covered bins or skips located at lunch areas, offices, outside workshops and elsewhere as required. Where these bins are located in open areas they will be fitted with animal proof lids.	Collected on a regular basis by a licensed contractor and transported to an appropriately licensed facility for recycling.
Waste Oils and Greases	Placed within the bunded laydown pad within the workshop area. Where required, smaller, temporary storage containers may be positioned close to work areas, with the contents of those containers transferred to the larger storage tank.	Collected on an as needs basis by a licensed contractor and transported to an appropriately licensed facility for recycling.
Batteries	Placed within a covered and marked used battery storage area until removed from Mine Site.	Collected on an as needs basis by a licensed contractor and transported to an appropriately licensed facility for recycling.
Tyres	Placed within a marked used tyre storage area until removed from site.	Tyres will be disposed of at a licensed waste management facility or removed by a third party approved to recycle tyres.
Scrap Metal	Stored in a specified area within the workshop area or elsewhere as required.	Collected on an as needs basis by a scrap metal recycler.
Ablutions	Treated in the on-site septic system.	The on-site system will be pumped out by a licenced contractor on an as needs basis.
Source: Tritton Resources Pty Ltd		

Management measures targeting the treatment and disposal of contaminated waste materials (e.g. contaminated growth medium) are detailed in Section 6.2.2.4.

6.2.1.6 Geology and Geochemistry

Existing Environment

The Company or its predecessors have been operating the Mine since 1991. The Company has continued intermittent exploration within the Mine Site and on adjacent land since that time. As a result, the geology and mineralisation of the Mine Site are well understood.

Copper mineralisation occurs within a thinly laminated to massive lenticular quartzite horizon as well as within surrounding sericite-chlorite-quartz schists. Styles of mineralisation include: massive, thinly laminated to banded, disseminated as well as fracture fill-ins in oxidised rocks. Dominant copper-bearing minerals include malachite, chalcocite, native copper and chalcopyrite. Assessments completed for the original EIS for the Mine (RWC, 1990) identified that nine distinct ore types have been identified on the basis of mineralogical variations and associations.

Ongoing Controls

The geochemical characteristics of waste rock were considered during preparation of the *Waste Rock Characterisation and Management Plan*, which incorporates the management of waste rock at the Mine Site and the Company's other operations. The waste rock has previously been assessed for its net acid generation potential, that is, the potential for sulphide materials within the waste rock to oxidise to form a low pH or acidic leachate when exposed to oxygen. An initial waste characterisation and inventory was developed for the Murrawombie Open Pit cutback (O'Kane, 2022). This was based on the mine geological block model using a total sulfur cut-off of 1 wt%S. This material characterisation will be refined and further work completed prior to the commencement of mining.

Section 6.2.1.4 describes the approved strategy for waste rock management and Section 6.2.1.8 describes the risks associated with material prone to acid mine drainage.

Controls to be Implemented

As a result of the historic mining and exploration activities undertaken within the Mine Site and surrounding land, and the proposed approach to managing waste rock at the Mine Site, the risks associated with unknown or unexpected geological or geochemical features is considered to be low.

6.2.1.7 Material Prone to Spontaneous Combustion

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

6.2.1.8 Material Prone to Generating Acid Mine Drainage

Existing Environment

As described in Section 6.2.1.4, and Section 6.2.1.6, PAF waste rock has previously been generated at the Mine Site and within the Company's other operations in the region. PAF waste rock is identified based on resource definition drilling.

Management of potentially acid generating material within the Mine Site is identified as a key control due to the significant volume of waste rock that will be required for use in rehabilitation.

Ongoing Controls

The *Waste Rock Characterisation and Management Plan* describes the process for testing, separation and management of acid forming materials. In summary, the Murrawombie underground mine is not anticipated to bring any additional waste rock to the surface. Any waste rock that is temporarily required to be brought to the surface is stored at the base of the Murrawombie pit prior to being taken back underground for disposal. As such, material characterisation of the underground deposit is not required.

If known or suspected PAF material is encountered during mining operations, PAF waste rock may be:

- left in-situ; or
- placed directly underground within completed stopes; or
- brought to surface and temporarily stored within the Open Cut prior to being returned underground for disposal.

The waste rock currently stored at the southern end of the Murrawombie Waste Rock Emplacement is assumed to be PAF material. This will be used, whenever possible, to supplement underground backfill requirements. The remaining rock will be encapsulated with NAF rock during mining of the Murrawombie Open pit cutback.

Based on an industry standard produced by Environment Australia and site expertise, rock samples are retrieved while in-situ in order to continuously build a database of compositional rock samples to enable effective management of the waste rock stream. The sampling and characterisation process is based on four overarching steps – Plan, Sample, Model and Check.

Each of these steps is explained below.

- Plan for sampling – ensure that drill holes are drilled at least 20m beyond the footwall contact, to provide information on the typically mined waste rock expected after extraction.
- Routinely sample drill holes for PAF rock material using the Net Acid Producing Potential (NAPP) and Net Acid Generation (NAG) tests.
- Model potential waste rock zones by extending the geology ore block model and using Sulphur content (S%) within the waste rock as a comparable replacement to PAF testing. Currently this modelling approach is still being developed.
- Check to ensure that the correlation between S% and PAF is correct by regularly reviewing the results of PAF testing and checking the statistics for the break point where S% equals PAF. Also spot checks are regularly undertaken by wall sampling the underground waste rock zones and submitting for PAF testing.

Controls to be Implemented

The *Waste Rock Characterisation and Management Plan* will continue to be implemented during mining operations to ensure that sufficient NAF material is available for use in rehabilitation. Following the cessation of mining operations, targeted testing of materials may be undertaken to ensure as far as practicable that PAF contamination is below criteria levels.

Given the continued implementation of the *Waste Rock Characterisation and Management Plan,* the risk of acid mine drainage resulting from the ongoing operation of the Mine is considered to be low.

6.2.1.9 Ore Beneficiation Waste Management (Reject and Tailings Disposal)

Heap Leach Pads

The Heap Leach Pads are shown on **Figure 2**.

No processing of ore is undertaken at the Mine Site, with all ore mined across the Tritton Copper Operations now being processed at the Tritton Mine Site (see **Figure 1**). Notwithstanding the above. The Heap Leach Pads at the Mine Site still contain recoverable copper left over from past operations. A viable method to recover this copper is the cementation process. A process plant was constructed and commissioned in October 2008 to recover this copper.

The Heap Leach Pads consist of copper ore stockpiles on top of a lining of high-density polyurethane. A low pH solution is sprayed over the crushed ore to percolate through, dissolving the copper out of the ore. The resulting solution containing the dissolved copper (called Pregnant Liquor Solution (PLS)) is then captured by the lining underneath and channelled to collection ponds for processing.

The Heap Leach Pads are turned and mixed intermittently to ensure copper is better exposed to the solution over time as the solution will tend to channel itself into paths of low retention, and not disperse evenly across the heaps.

Management of Heap Leach Material

The Company acknowledges the risks associated with the stockpiled heap leach material with regard to the potential for acid mine drainage or sedimentation that could result in groundwater, surface water or land-based pollution. The Heap Leach Pads will continue to be irrigated for the recovery of copper by the copper cementation process until 2025. A rehabilitation trial for improving the geochemistry of the Heap Leach Pads (refer Section 9.1.2) is planned to investigate methods that may stop the leaching process and neutralise the acidic heap leach material within the pads to assist with neutralising the encapsulated heap leach materials in the final landform.

Further, design of a closure cover for the Heap Leach Pads to ensure the risk of pollution is as low as reasonably possible is required. A conceptual design of the cover has been prepared and will be advanced during the active mining period at the mine. The design of a closure cover for the Heap Leach Pads will consider the geochemical characterisation results from the rehabilitation trial.

Runoff of water and leachate from the Heap Leach Pads is directed to the Pregnant Liquor Ponds (**Figure 2**) where it is stored. The Pregnant Liquor Ponds are lined with HDPE to ensure that the leachate is contained and not discharged to the surrounding environment.

The Heap Leach Pads remain a moderate risk of causing environmental impact while the leaching operation continues. Current groundwater monitoring has identified copper contamination in the vicinity of the Heap Leach Pads and this has been the focus of a remediation program. The risk will be substantially reduced following rehabilitation of this domain.

6.2.1.10 Erosion and Sediment Control

Existing Environment

Erosion and sediment controls implemented at the Mine Site are described in detail in the *Water Management Plan* and *Erosion and Sediment Control Plan*. There are moderate risks to erosion and sediment control associated with the development and operation of the Mine.

Figure 9 presents surface water management at the Mine Site. Surface water is managed in accordance with the *Water Management Plan* and based on the categorisation of water into the following three categories.

- Clean Water – runoff from non-operational, clean areas.
- Dirty Water – runoff from disturbed areas containing levels of suspended solids.
- Contaminated Water – runoff generated from operational areas that can lead to potentially contaminated water by means of concentrations from heavy metals, hydrocarbons, process slurry, acidification etc.

Therefore, the management of surface water at the Mine Site is guided by the following principles.

- diverting clean water away from disturbed areas;
- collecting coarse sediments in runoff from disturbed areas;
- collect and contain any chemicals or process solution within the system on site; and

reuse of water where practicable for processing or dust suppression.

The Company utilises diversion drains or banks to direct runoff into various storages to reduce catchment size and divert clean runoff away from the site (**Figure 9**). Sediment retention basins are used in catchments where there are exposed soils but little to no risk of contamination occurring. Sediment basins are designed to capture and retain runoff up to the 5 day 90th percentile rainfall event. Containment dams are used to capture runoff from catchments containing potentially contaminated material. Storm water storage is for clean water entering the site from external catchments. Containment dams are designed to capture the volume of water from the 100 year 72-hour storm event. Water storage locations are presented on **Figure 2**.

Ongoing Controls

The *Water Management Plan* and the *Erosion and Sediment Control Plan* incorporate specific design, construction and maintenance protocols for erosion and sediment control structures in accordance with the requirements of Landcom (2004) and DECC (2008). In summary, clean and potentially contaminated water is separated through a series of sediment basins and diversion drains constructed throughout the Mine Site (see **Figure 9**). Existing water management has proved to be effective at separating and managing clean and potentially contaminated water.

The *Erosion Remediation and Maintenance Plan* was prepared for the Mine in response to incidences of increased erosion of the perimeter bunding of the Murrawombie Waste Rock Emplacement. Under the Plan, various remediation and maintenance measures were identified, including minor repair works, filling and shaping to redirect runoff, revegetation of batter slopes in proximity to drop down drains, and relocation of stockpiled resources to better facilitate surface drainage.

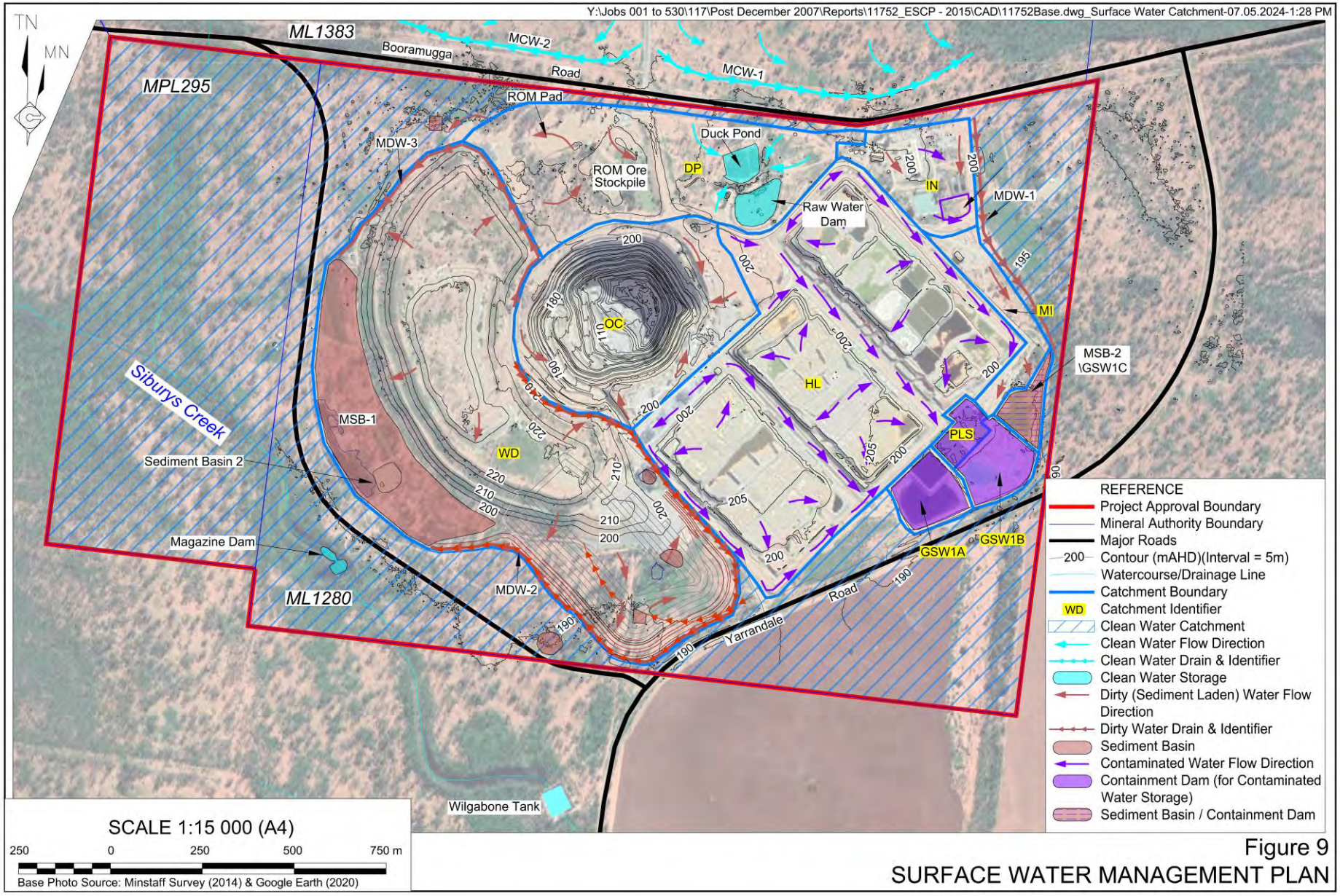

Figure 9
SURFACE WATER MANAGEMENT PLAN

RWCorkery&co

Controls to be Implemented

The *Water Management Plan* and *Erosion and Sediment Control Plan* will continue to be implemented throughout rehabilitation of the Mine Site.

Erosion and sedimentation risks are likely to change as areas of the Mine Site progress through the stages of rehabilitation. The Company will undertake periodic reviews of relevant management plans in consideration of landform and land use changes as part of the rehabilitation and closure planning process. Additional erosion monitoring locations may be established across the Mine Site, as required.

Temporary erosion and sediment control measures that may be implemented during high erosion-risk periods/activities include but are not limit to the following.

- Installation of sediment fencing and/or straw bale filters to manage impacts of increased sediment generation on existing water management infrastructure and other downstream environments.
- Use of relatively fast germinating/establishing temporary ground stabiliser species such as sterile and/or agricultural pasture species (depending on advice from revegetation specialists.
- Use of organic/synthetic mulches and/or surface binding agents.

Drainage from completed landforms is currently being reviewed as a component of planning for the extension of the Murrawombie Waste Rock Emplacement. A design guide and construction procedures are in preparation with final designs to be implemented across the Mine. This may require remediation of some areas where slopes are not suitable or drainage should be improved.

The final void is intended to act as a groundwater sink, with drainage to be constructed that directs runoff from the Heap Leach Pads to the final void.

As discussed in Section 6.2.1.1, Emerson Aggregate Tests indicated that soils within the Mine Site are moderately dispersive although some samples were non-dispersive. A monthly surface water monitoring program, undertaken within sediment dams and areas downstream of Sibury's Creek, will continue to provide an indication of the performance of existing erosion and sediment controls. As a result, risks associated with erosion and sediment movement will be adequately managed.

6.2.1.11 Ongoing Management of Biological Resources for Use in Rehabilitation

Seedbank Management

Management of stockpiled growth medium is described in Section 6.2.1.1.

Management of stockpile seedbanks includes the following.

- Stripping of vegetation with soils to maintain existing seedbanks and other biologically active components of soils.

- Stockpiling methods which promote plant development and growth and minimise soil loss.
- Regular pest and disease monitoring and management, including weed control, to reduce pressure from grazing and competition.

Management of existing vegetation and plant communities within and in the vicinity of the Mine Site helps maintain ecosystem resilience and productivity. As the sourcing of propagation material from locally occurring species form the basis of revegetation strategies for the Mine Site (excluding exotic pasture species), these activities form part of an overall risk management strategy for management of biological resources.

Required Topsoil Depths

Current rehabilitation planning anticipates a minimum depth of 100mm of growth medium will be required for revegetation activities.

Propagation of Resources for Revegetation

Propagation of plant material will primarily be undertaken via germination of seed material, and primarily directly from material sown within areas undergoing revegetation.

Salvage and Storage of Habitat Structures

Salvage of habitat features for rehabilitation has progressively occurred over the development of the Mine Site. In general, habitat features such as tree hollows and large rocks have been directly relocated to non-disturbed areas of the Mine Site. Minor volumes of biological resources (i.e. woody material) have been stockpiled outside of key operational areas. Biological resource stockpiles are recorded in the Biological Resource Stockpile Register, including the location and type of stockpile as well as a photographic record. It should be noted that no specific rehabilitation objectives relate to fauna and/or fauna habitat.

During any further disturbance activities, any significant habitat features will be salvaged and in first instance placed directly within un-disturbed areas of the Mine Site. If direct placement is not practicable, resources will either be stockpiled in existing stockpile locations, or within a new stockpile and subsequently recorded within the Biological Resource Register.

6.2.1.12 Mine Subsidence

Underground mining methods are modified to suit the grade and geometry character of the ore body, which will be determined over time as more data becomes available from drilling and development within the mineralisation.

Open stope methods may use material recovered from the heap leach as backfill. The backfilling of open stopes will prevent any subsidence due to mining. Minor subsidence risk will remain for any underground mining operation, however subsidence is not expected.

6.2.1.13 Management of Potential Cultural and Heritage Issues

Existing Environment

No items of Aboriginal cultural heritage have been identified within the Mine Site. However, three sites are known to be located between 100m and 350m from the eastern side of ML1280. Items identified in previous surveys of land surrounding the Mine Site are displayed on **Figure 2** and will remain in the landscape following mine closure.

Ongoing Controls

Management of heritage across the Tritton Copper Operations is undertaken in accordance with the *Cultural Heritage Management Plan*, which identifies the key management structure and responsibilities for all personnel and contractors.

Key management measures relating to heritage include the following.

- Heritage training as part of site inductions for all personnel and contractors.
- Avoid disturbance of all known heritage sites within the Mine Site as far as practicable.
- Requirement for Surface Disturbance Permits prior to any disturbance, including vegetation removal.
- Exclusion of all activities within 50m of a known heritage site without specific approval from the General Manager.
- Implementation of an Unexpected Finds Protocol.
- Installation of temporary fencing/flagging around identified heritage sites within 50m of proposed disturbance areas.

Controls to be Implemented

During rehabilitation, management of heritage within the Mine Site will continue to be undertaken in accordance with the *Cultural Heritage Management Plan*.

Given the highly disturbed nature of the existing landscape it is not likely that any items of cultural significance remain to be located. No specific post-mining management obligations are or will be required following rehabilitation of the Mine Site. In addition, it is not expected that rehabilitation of the Mine Site will present any risks to non-Aboriginal heritage. Notwithstanding, prior to mine closure the Company will undertake heritage survey and risk assessments to ensure that mine closure activities do not impact on heritage within the Mine Site.

6.2.1.14 Exploration Activities

Underground exploration and infill drilling will be undertaken within ML1280.

In general, surface exploration activities within the Mine Site will largely occur within existing surface and/or underground mining areas. Notwithstanding, in the event of exploration activities requiring rehabilitation, all exploration-related disturbance will be rehabilitated in accordance with relevant guidelines and industry best practice. This may include the following key activities.

- Removal and/or lawful disposal of all consumables and waste.
- Removal of drill cores.
- Cap and rehabilitate all drillholes.
- Removal of all surface infrastructure and mobile plant.
- Visual assessment of residual disturbance/rehabilitation areas to identify potential contaminants.

6.2.2 Decommissioning

6.2.2.1 Site Security

No public access to the Mine Site is currently permitted, with access restricted by rural fencing and signs.

The open cut void at the Mine Site is currently surrounded by suitable safety bunds which will be maintained throughout the life of the Mine. The adequacy of the bunds will be reassessed, as necessary, during and following completion of mining operations in the open cut. The bund will be repaired / upgraded, as required. Following decommissioning and rehabilitation, the open cut void will continue to be secured by safety bunds and, if necessary, a fence will be installed, and access restricted through a lockable gate.

During rehabilitation of the Mine, safety bunds will be constructed around the Heap Leach Pads to prevent inadvertent vehicle access. If necessary, additional security measures such as fencing and signage, will be installed to minimise risk of inadvertent public access as far as practicable.

During rehabilitation of the Murrawombie Waste Rock Emplacement and Heap Leach Pads, the areas will be fenced, if required, to minimise as far as practicable inadvertent disturbance by mine-related activities and to control grazing by pest species, domestic stock and native fauna until the revegetated areas have become sufficiently established.

6.2.2.2 Infrastructure to be Removed or Demolished

Table 15 presents a list of the site features to be decommissioned to achieve the final land use, including identification of key management actions that may be required. While no conditional requirements for the decommissioning of specific infrastructure are included as part of the approval for the Mine, general commitments for the removal of key infrastructure are included as part of the EIS, as shown in **Table 3**. 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.

6.2.2.3 Buildings, Structures and Fixed Plant to be Retained

Plan 1 shows key infrastructure and structures to be retained as part of the final land use. **Table 16** identifies key infrastructure to be retained including key actions required to support retention. All infrastructure to be retained will be surveyed and recorded on a plan (or suitable alternative) with a suitable caveat developed to provide that they are readily identifiable for future land holders.

Table 15
Requirements for Infrastructure to be Removed or Demolished

Mining Domain[1]	Assets	Decommissioning and Demolition Requirements	Key Actions Required
1 – Infrastructure Area	Roads: Various access tracks.	Where roads are not required for the post-mining land use they will be deep ripped to scarify the surface and seeded with covering crops and understorey species.	None required.
	Buildings: The main Administration Area includes office buildings, workshops, a small equipment graveyard and amenities. Other infrastructure areas include a former magazine storage shed and former storage shed for exploration drilling cores.	All buildings to be removed unless required/capable of supporting post-mining land use. Electrical supply to be removed/retained per use requirements. Concrete slabs and other building foundations will be demolished and rubble removed to a suitable recycling facility if practicable. It is not anticipated that use of retained buildings for minor grazing activities such as feed storage will require development approval.	Preliminary Contamination Assessment to identify potential unknown contamination (possible). Decommissioning / Integrity Assessment to confirm infrastructure for removal/retention (likely).
	Processing: Includes the Copper Cementation Plant and associated infrastructure.	The removal of the Copper Cementation Plant used to process heap leach materials will involve salvage of any equipment that is to be sold or used at an alternate facility, before demolition of infrastructure and disposal or sale or any scrap metal and general rubbish. Any remaining concrete pads or footings will be broken up and removed to a suitable recycling facility if practicable.	Preliminary Contamination Assessment to identify potential unknown contamination (likely). Decommissioning / Integrity Assessment to confirm infrastructure for removal/relocation (likely).
	Other: Includes the former and recently relocated ROM Pad and areas of the Mine Site that have been cleared or disturbed for mine-related activities.	The ROM Pad and other areas of mine-related disturbance will be rehabilitated to support a final land use of agricultural grazing (see **Table 11**). All remaining stockpiled material or miscellaneous infrastructure will be removed prior to decommissioning.	Preliminary Contamination Assessment to identify potential unknown contamination (possible).
2 – Heap Leach Pads	Three Heap Leach Pads have been constructed to a maximum height of 220m AHD or approximately 20m above the natural surface.	The Heap Leach Pads will be rehabilitated in accordance with the recommendations of characterisation assessments currently being undertaken. All exposed pipes and infrastructure will be removed, where it is safe to do so and disposed at an appropriate landfill facility. The Heap Leach Pads will be appropriately shaped and rehabilitated (see **Table 11**).	None required.
3 – Water Management Area (Clean Water)	Includes the Raw Water Pond and Duck Pond. The Raw Water Pond contains a caisson. A water pipeline directs water pumped under licence from the Bogan River to the Raw Water Dam.	The Raw Water Pond and Duck Pond will be retained for final land use. The pipeline and pumps will be removed prior to decommissioning unless required for final land use, and they will be used as natural water dams for wildlife and stock.	Preliminary Contamination Assessment to identify potential unknown contamination (possible). Engineering Assessment (or otherwise suitable) to confirm suitability for retention and identify final land use maintenance requirements (possible).
3 – Water Management (Contaminated Water)	The Pregnant Liquor Ponds and Containment Dams 1a, 1b and 1c. Other various sediment dams located within the Mine Site.	The Pregnant Liquor Ponds and Containment Dams 1a, 1b and 1c will be removed and rehabilitated to agricultural grazing land unless required for long-term management of the Heap Leach Pads. Sediment within other sediment dams will be tested for its acid generating capacity and/or contaminants. The dams are anticipated to either be removed or remain in the final landform as sediment dams. Decommissioning will be subject to contamination assessments.	Contamination Assessment to identify potential contamination and/or remediation requirements, and suitability for retention (likely). Engineering Assessment (or otherwise suitable) to confirm suitability for retention and identify final land use maintenance requirements (possible).
4 – Murrawombie Waste Rock Emplacement Area	Includes the existing Murrawombie Waste Rock Emplacement and the recently approved southern extension.	The Murrawombie Waste Rock Emplacement will be rehabilitated to a native ecosystem woodland area. The final landform will be constructed with maximum slope of 1:3 and it will be revegetated with a species mix outlined in **Table 16**.	Engineering/Geotechnical Assessment prior to sign-off (likely)
5 – Active Mining Area (Open Cut Void)	Includes a haul road that accesses the floor of the Open Cut, and the portal and decline for access to underground workings.	The final void will be retained as permanent water storage. All access to underground workings will be sealed to prevent entry.	Engineering/Geotechnical Assessment prior to sign-off (likely)
8 – Other (Topsoil Stockpile)	Includes all stockpiles of topsoil material preserved for rehabilitation activities.	All topsoil will be used for rehabilitation activities. The remaining areas will be rehabilitated to support a final land use of agricultural grazing (see **Table 11**).	None required.
Note 1: Domains as shown in **Figure 7**.			
Source: Tritton Resources Pty Ltd.			

Table 16
Requirements for Infrastructure to be Retained

Mining Domain[1]	Assets	Decommissioning and Demolition Requirements	Key Actions Required
1 – Infrastructure Area	Roads: Various access tracks.	Where roads are not required for the post-mining land use they will be deep ripped to scarify the surface and seeded with covering crops and understorey species.	Engineering Assessment for the roads and intersection (access points) to be retained (possible).
	Buildings: The main Administration Area includes office buildings, workshops, a small equipment graveyard and amenities. Other infrastructure areas include a former magazine storage shed and former storage shed for exploration drilling cores.	No buildings are to be retained unless required for final land use and benefit from relevant approvals.	Engineering Assessment for structures to be retained to identify risk/opportunities, as well as potential maintenance requirements. (likely). Confirmation of permissibility regarding retention of structures (likely). Modification of DA 41/98 to allow retention of structures (pending confirmation of existing permissibility).
	Processing: Includes the Copper Cementation Plant and associated infrastructure.	Not retained.	None required.
	Other: Includes the former and recently relocated ROM Pad and areas of the Mine Site that have been cleared or disturbed for mine-related activities.	No infrastructure to be retained.	None required.
2 – Heap Leach Pads	Three Heap Leach Pads have been constructed to a maximum height of 220m AHD or approximately 20m above the natural surface.	The Heap Leach Pads will be rehabilitated in accordance with the recommendations of characterisation assessments currently being undertaken. Water management infrastructure such as drains and drop structures may be required to be constructed to support final landform. However No existing infrastructure is anticipated to be required to be retained to support final land use.	None required.
3 – Water Management Area (Clean Water)	Includes the Raw Water Pond and Duck Pond. The Raw Water Pond contains a caisson. A water pipeline directs water pumped under licence from the Bogan River to the Raw Water Dam.	The Raw Water Pond and Duck Pond will be retained for final land use. The pipeline and pumps will be removed prior to decommissioning unless required for final land use, and they will be used as natural water dams for wildlife and stock.	Contamination Assessment for infrastructure to be retained (likely). Engineering Assessment for infrastructure to be retained to confirm suitability for retention (possible).
3 – Water Management Area (Contaminated Water)	The Pregnant Liquor Ponds and Containment Dams 1a, 1b and 1c. Other various sediment dams located within the Mine Site.	Sediment within other sediment dams will be tested for its acid generating capacity. The dams are anticipated to either be removed or remain in the final landform as sediment dams. Decommissioning will be subject to contamination assessments.	Contamination Assessment to identify potential retention of infrastructure (possible) Engineering Assessment for infrastructure to be retained to confirm suitability for retention (possible).
4 – Murrawombie Waste Rock Emplacement Area	Includes the existing Murrawombie Waste Rock Emplacement and the recently approved southern extension.	The Murrawombie Waste Rock Emplacement will be rehabilitated to a native ecosystem woodland area. The final landform will be constructed with maximum slope of 1:3 and it will be revegetated with a species mix outlined in **Table 16**.	None required.
5 – Active Mining Area (Open Cut Void)	Includes a haul road that accesses the floor of the Open Cut, and the portal and decline for access to underground workings.	The final void will be retained as permanent water storage. All access to underground workings will be sealed to prevent entry.	Engineering/Geotechnical Assessment prior to sign-off (likely)
8 – (Other) Topsoil Stockpile	Includes all stockpiles of topsoil material preserved for rehabilitation activities.	No infrastructure to be retained.	None required.

Note 1: Domains as shown in **Figure 7**.

Source: Tritton Resources Pty Ltd.

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) or to facilitate access to areas of the Mine Site.

Long-term risks to public safety and the environment associated with retained infrastructure and structures will only occur in the absence of regular maintenance. Roads will need to be inspected following high intensity rainfall events to ensure that conditions remained suitable for safe access to publicly accessible areas. Failure of roads will potentially contribute to the generation of sediment laden water which may impact water quality within local watercourses.

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

6.2.2.4 Management of Carbonaceous/Contaminated Material

Existing Environment

Risks to contaminated or polluted land principally relate to the potential for formation of acid mine drainage or operational contamination relating to hydrocarbon and reagent management. Based on the above, the following areas/components of the Mine Site would have the potential for the occurrence of contaminated material (see **Figure 2**).

- Containment Dams and Pregnant Liquor Ponds (high-risk);
- ROM Pads (high risk);
- Sediment Dams (high risk);
- Historic and current low-grade stockpile areas (medium risk)
- Copper Cementation Plant (medium risk);
- Workshops and re-fuelling areas (medium risk);
- Hazardous material storage areas (low-medium risk) and
- all other contaminated water management infrastructure (i.e. drains, Settling Pond) (low-medium risk).

Ongoing Controls

Management of risks associated with handing, storage, and use of contaminated or otherwise hazardous material is undertaken in accordance with the following.

- *Waste Rock Characterisation and Management Plan* – for the identification and management of PAF material.
- *Environmental Management Plan* for general environmental management, including handling of hazardous material.

- *Water Management Plan 2021* and *Erosion and Sediment Control Plan* – for identification and management of water management infrastructure.
- *Pollution Incident Response Management Plan*.

The Company has operated the Mine Site since 1992, and during the intervening period has not experienced significant issues relating to hydrocarbon management. Hydrocarbons and other chemicals are stored in specified areas on site, with hydrocarbons stored in bunded areas in accordance with the AS1940. Any identified contamination will either be remediated or removed prior to site relinquishment.

The Company has developed a contaminated site register to record any known contamination. All 'at risk' areas are subject to contamination assessments, and remediation is undertaken as required.

At the Mine Site , the Heap Leach Pads are lined with a High-Density Polyurethane (HDPE) liner and are fitted with containment structures to contain any potential contamination from leaching into the environment. A conceptual cover design has been designed for use on the Heap Leach Pads as part of rehabilitation.

The Company also conducts regular groundwater and surface water monitoring to ensure that contaminated material is not polluting the surrounding environment. This enables the Company to remediate any contamination issues through groundwater purging and surface water treatment and/or containment. Potential post-closure groundwater management and monitoring requirements will be identified as part of the Post-Closure Water Management Strategy (see Section 9.2.2).

Controls to be Implemented

Contamination Assessment

Risk controls identified as part of the rehabilitation risk assessment include implementation of survey and testing within historical mining areas to identify unknown contamination risks, and contamination assessments within all known 'at risk' areas (see previous subsection and **Tables 15** and **16**), with all consequent remediation activities undertaken as required. Following remediation, validation sampling will be used to identify residual contamination and verification of the concentration of any detected compounds against relevant guidelines.

Removal and Management of Contaminated Material

Contaminated material identified in exceedance of relevant guidelines may be:

- treated in-situ;
- excavated for treatment either on-site or off-site; or
- excavated for disposal either on-site (e.g. for disposal of PAF) or at a licenced disposal vicinity.

If required, handling and treatment plans for contaminated material may be developed by or in consultation with suitably qualified persons.

Timing of Testing and Remediation Activities

In general, contamination assessments where risks are considered by the Company to be more known/understood, will be undertaken during the decommissioning phase of rehabilitation. Timing of any remediation activities will depend on the extent of contamination (i.e., volume/area of contaminated material, and any requirements for use of said material as part of landform development or growth medium development.

It is therefore not expected that contaminated land or pollution will present a risk to rehabilitation of the Mine Site.

6.2.2.5 Hazardous Materials Management

Existing Environment

The risks associated with hydrocarbon contamination have been addressed in relation to contaminated or polluted land (Section 6.2.2.4).

Ongoing Controls

Ongoing controls regarding the handling, storage, use and disposal of hazardous materials is undertaken in accordance with:

- *Environmental Management Plan* for general environmental management, including handling of hazardous material; and
- *Pollution Incident Response Management Plan*.

Controls to be Implemented

Risk controls identified as part of the rehabilitation risk assessment include a hazardous materials assessment/audit to be undertaken prior to decommissioning of areas/infrastructure with relatively increased use/occurrence of hazardous materials. That assessment will be used to identify the location and volume of hazardous materials within the Mine Site, including a qualitative assessment of the condition of all storage infrastructure.

In summary, due to existing management measures implemented for hazardous material transport, handing and storage it is not expected that hazardous materials will present a risk to rehabilitation of the Mine Site.

6.2.2.6 Underground Infrastructure

Existing Environment

Underground infrastructure that will require specialist capping/closure includes the portal within the Open Cut and the ventilation shaft/emergency access/egress point.

Other infrastructure associated with underground mining generally includes pipelines, electrical transmission cables, communication lines, and other removable infrastructure such as rooms and emergency bunkers.

Controls to be Implemented

The portal within the open cut void will be backfilled with waste rock and sealed to prevent access. The design of the sealed portal will be undertaken by suitably qualified person and in accordance with relevant standards and/or guidelines, as required.

Existing security fencing will be retained during and after sealing and decommissioning to prevent unauthorised access to underground workings and to the open cut final void. Services and infrastructure associated with the vent rises will be disconnected and removed prior to the shaft being sealed, with temporary security fencing established during sealing works to prevent unauthorised access.

Salvageable infrastructure that can be relocated or sold will be removed where practicable. No specialist assessments or otherwise relating to salvageable infrastructure are anticipated to be required.

Groundwater levels within the underground workings will be left to return to natural levels. No discharge of groundwater is expected to occur, and no specific measures to manage groundwater accumulation in underground workings are considered necessary. Quarterly groundwater quality sampling will continue to be undertaken for a minimum of two years following cessation of mining operations.

6.2.3 Landform Establishment

6.2.3.1 Water Management Infrastructure

Infrastructure to be Retained

Key mining-related water management infrastructure located within the Mine Site to be retained as part of the final landform is identified in **Table 16**.

Rehabilitation of the Heap Leach Pads at the Mine Site will involve construction of passive drainage between the Heap Leach Pads and the open cut. All runoff from the rehabilitated Heap Leach Pads will drain to the open cut void, creating a closed diversion system. The cover of the Heap Leach Pads will be designed to be water shedding and the drainage system will be in place to divert any potentially contaminated water to the open cut void. As a result it is anticipated that no runoff from the Heap Leach Pads will enter the surrounding environment.

All surface water runoff will drain directly to the open cut void via diversion drain. The Company will undertake groundwater modelling and water balance modelling, to understand the specific risks associated with surface water and groundwater, and to determine the most efficient passage of water from the Heap Leach Pads to the open cut void at the Murrawombie Mine Site. This information will be included in a detailed Post-Closure Water Management Plan to control the risks.

The water supply pump, caisson and pipeline located within MPL294 will be retained post-closure to support final land use within the Mine Site and surrounding areas.

6.2.3.2 Final Landform Construction: General Requirements

The proposed final landform of the Mine Site is shown on **Plans 1** and **2**, and consists of:

- water management/storage infrastructure (see Section 6.2.3.1)
- a combined and capped Heap Lead Pad (see Section 6.2.3.3);
- a waste rock emplacement (see Section 6.2.3.4);
- a final void (see Section 6.2.3.4); and
- a generally safe, stable, and non-polluting landform.

The following presents an overview of the general requirement of the key design aspects of the above.

Geotechnical

Geotechnical-related risks to rehabilitation of the Mine Site include stability of the Murrawombie Waste Rock Emplacement, the Heap Leach Pad embankments, and stability of final void walls.

The design and construction of the Murrawombie Waste Rock Emplacement is undertaken in accordance with detailed engineering assessment/design reports prepared by suitably qualified persons. The design of the landform has been determined based on results from extensive geotechnical and geochemical testing of embankment and tailing materials. Operational performance/stability is monitored and assessed during active mining, and any areas of instability are identified and repaired during operational phases in consultation with relevant Government agencies.

The geotechnical stability is a critical factor of the design of the Open Cut and is monitored regularly as part of ongoing operational monitoring. Monitoring data is used to confirm predicted performance and identify potential modes or points of failure.

During the landform establishment phase of rehabilitation, additional geotechnical assessments may be undertaken to identify risks and/or opportunities relating to long-term geotechnical stability of the final landform. In addition to the above, the Company will also undertake landform evolution modelling for all landforms to develop detailed designs for long-term stability of the landforms (see Section 9.2.6). The designs will be prepared at least 18 months prior to implementation to allow for adequate budget and scheduling.

Geochemical

Geochemical constraints relating to rehabilitation of the Mine Site are identified in Sections 6.2.1.6 and 6.2.1.8. In summary, other than the material to be encapsulated within the Heap Leach Pads, geochemical constraints are not considered to present a significant risk during landform establishment.

Erosion

The principle erosion-related risk in regard to the final landform will be the long-term erosional stability of the Heap Leach Pad and Murrawombie Waste Rock Emplacement.

In consideration of the recommendation of O'Kane (2018, 2023), design of the final capping for the Heap Leach Pad includes utilisation of a store and release cover system, with channelised drainage systems to support drainage of excess rainfall. The final slope of the upper surface of the capped landform will be approximately 1° to 3° to encourage infiltration and functioning of the store and release cover. Channelised drains would utilise low permeability liners and coarse rip-rap armour to prevent scouring of the channel over time.

Erosion modelling will also form part of Landform Evolution Modelling undertaken as part of rehabilitation planning for both the Heap Leach Pad and Murrawombie Waste Rock Emplacement (see Section 9.2.5).

Further information on pre- and post-closure water management infrastructure, including erosion and sediment infrastructure and/or controls, is provided in Sections 6.2.3.1, 6.2.6.2, and 9.2.3.

Visual Amenity

The final landform of the Mine Site will be generally consistent with the surrounding landscape and capable of supporting native ecosystem and agricultural grazing. Excluding the Murrawombie Waste Rock Emplacement, Heap Leach Pad, and the final void, the gentle slopes of the final landform will be relatively consistent with the pre-mining landscape. Impacts to visual amenity are not considered to be a significant risk due to the location of the Mine Site, and prevalence of native vegetation.

6.2.3.3 Final Landform Construction: Reject Emplacement Areas and Tailings Dams

Murrawombie Waste Rock Emplacement

No further significant landform establishment activities are anticipated to be required for the completed areas of the Murrawombie Waste Rock Emplacement; i.e. outside of the areas required to be disturbed for the construction of the extension to the Murrawombie Waste Rock Emplacement. Minor remediation works may be undertaken, if required. This may include re-stabilisation of surfaces, and/or construction/modification of surface water management infrastructure.

Final dimensions for the extended Murrawombie Waste Rock Emplacement are provided in Section 6.2.2.4. In summary, the extended Murrawombie Waste Rock Emplacement will be constructed to have final slopes of 18° and a maximum height of approximately 235m AHD. At this angle it is anticipated that the Murrawombie Waste Rock Emplacement will be geotechnically stable.

The Murrawombie Waste Rock Emplacement will form part of the scope of any Geotechnical and LEM assessments undertaken prior to relinquishment.

Heap Leach Pads

Prior to landform establishment, heap leach material may be removed to underground operations where it will be used as backfill material, if feasible. Pending the results of the current Soda Ash Brine Trial (see Section 9.1.2), heap leach materials will be treated with an alkaline solution, where necessary, until the pH of the recovered leach solution has reached 5.0 (refer Section 9.1.2).

Shaping of the Heap Leach Pads prior to capping will be determined in consideration of the results/requirements of the *Murrawombie HLF Cover System and Landform Design* (O'Kane, 2018), as well as the results of any future capping design reports (see Section 9.2.5).

Based on the current conceptual design as identified by O'Kane (2018), the final landform of the Heap Lead Pad would consist of the following.

- Reshaped and regraded upper surface that promotes surface runoff towards runoff collections channels between the leach pads with a minimum gradient of 1%.
- Drainage infrastructure both to promote drainage of the reshaped landform, and for redirection of 'clean' runoff water from the landform towards the final void.
- Modified seepage management infrastructure.
- Outer slope 1:4
- Capping consisting of a minimum of 900mm of NAF waste rock and 100mm of growth medium.

Further information on the current conceptual capping design is presented as **Appendix 2**.

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

Existing Environment

A geotechnical stability assessment of the extension of the Murrawombie open cut was prepared by engineering consultants Pells Sullivan Meynink (PSM, 2014). The open cut is designed to match the PSM recommended slope design parameters. The existing open cut has been stable since completion of mining in 1995. The extension of the open cut uses similar slope angles as the current open cut so the risk of slope failure is considered to be very low. It is therefore anticipated that the completed Open Cut landform will be stable.

The final void will be retained as a permanent water storage for runoff surrounding the void and from the Heap Leach Pads. The portal into the underground workings through the open cut will be sealed using suitable waste rock material from the Murrawombie Waste Rock Emplacement as part of an engineered seal (see Section 6.2.2.6) to prevent access.

Controls to be Implemented

An assessment of the geotechnical stability of the final open cut void landform will be undertaken once the open cut extension has been completed and while access remains available for geotechnical data collection and mapping. The assessment will estimate the long-term stability of the open cut void walls once they have been excavated. In the event that the review indicates that the risk of long-term instability within the open cut is not acceptable, the TARP procedures identified in Section 10.2 will be implemented.

The final void will be secured by a safety bund, fenced and access restricted through a lockable gate. Clean water diversions will be established to divert clean water from entering the void. All access to underground workings will be sealed or otherwise made inaccessible.

The impact of the final void on surface water and groundwater quality and quantity will form part of the Post-closure Water Management Strategy to be undertaken prior to Mine closure. It is anticipated that the final void at the Mine Site will be a groundwater sink. However, groundwater modelling and water balance modelling of the pit will be undertaken to confirm this is the case. In addition to the above, future licensing requirements will be determined by the Post-closure Water Management Strategy.

6.2.3.5 Construction of Creek/River Diversion Works

No creek or river diversions are proposed as part of the rehabilitation works and closure of the Mine Site.

6.2.4 Growth Medium Development

Material Characterisation

Risk controls identified as part of the rehabilitation risk assessment include geochemical characterisation of growth medium and capping materials during stripping. Further testing may be implemented to identify risks and opportunities relating to material characterisation such as fertility, erodibility, and the potential use of ameliorants, if required.

Ameliorants and Strategies

Depending on the results of existing or future material characterisation assessments, amelioration and/or selective handling strategies may be required to be developed and implemented.

Amelioration, if required, may include the use/application of fertilisers, lime, gypsum and/or organic matter. In consideration of the proposed final land use for the Mine Site, largely consisting of agricultural grazing, typical agricultural products and machinery will likely be highly applicable and therefore no specialist strategies or equipment is anticipated to be required.

Erosion and Sediment Control

Ongoing monitoring and management of existing surface water management infrastructure during all phases of rehabilitation will help to ensure that all necessary infrastructure is functioning as intended/required.

Temporary erosion and sediment controls that may be used during establishment of groundcovers are identified in the *Erosion and Sediment Control Plan* and may include the use of sediment fencing, straw bale filters.

The application of mulches, including plant matter or Hydromulch, may be required during periods of elevated erosion risk. In general, rehabilitation scheduling will be undertaken in consideration of long-term meteorological patterns to determine optimal timing for key activities and as such, the application of mulches is not anticipated to be required outside of exceptional circumstances.

Growth Medium Establishment

Deep ripping of in-situ substrates will be implemented where required to promote water infiltration and encourage root penetration and development. Ripping will occur along contours to reduce erosion risks on sloped landforms, where practicable. Topsoils/subsoils will be placed within or adjected to areas undergoing rehabilitation and material will be spread and shaped using appropriate machinery such as bulldozers and graders. Tillage of surfaces to integrate substrates and promote water infiltration may be implemented where required.

Seasonal Considerations

Table 17 presents a summary of the regional climate statistics, as recorded at the Nyngan Airport AWS (051039), located approximately 45km south-southeast of the Mine Site. An AWS is located near the town of Girilambone; however, that station (Girilambone (Okeh) AWS Site No. 51164) has only been operational since 2017 and therefore long term seasonal information cannot be determined at this time.

Table 17
Regional Climate Statistics

Statistics	Jan	Feb	Mar	Apr	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Annual
Mean Max Temp (°c)	34.4	33.4	30.6	25.7	20.7	17.1	16.5	18.5	22.7	26.7	30.1	25.8
Mean Min Temp (°c)	19.6	19.3	16.5	11.9	7.8	5.0	3.8	4.7	7.8	11.5	15.1	11.7
Mean Rainfall (mm)	51.2	46.3	41.9	34.2	35.6	33.8	28.7	29.5	27.6	34.2	36.0	445.6
Mean 9am Wind Speed (km/h)	13.6	13.3	12.9	10.9	9.6	8.7	9.2	10.3	12.6	13.7	13.8	11.8
Mean 3pm Wind Speed (km/h)	12.8	12.0	12.0	10.8	10.5	11.2	12.1	13.1	14.1	14.2	13.4	12.4
Source: Bureau of Meteorology Climate Data Online – Nyngan Airport (051039), accessed 17/03/2023												

In summary, average temperatures are higher throughout December to March when mean temperatures are above the annual average. Rainfall follows a similar distribution, with above annual average rainfall (36.8mm) occurring in January, February and March. Average 9am show more seasonal variation compared to windspeeds at 3pm. Average 9am and 3pm windspeeds are higher than the annual average from October to March, and from September to February, respectively.

Consideration of long-term regional, and short-term local meteorological patterns will be undertaken during the planning of key rehabilitation activities, such as during landform establishment and growth medium development. In general, as rainfall is relatively consistently low, impact from high rainfall events is not anticipated to present significant risks to rehabilitation outside of extreme weather conditions.

Should adverse conditions delay vegetation establishment, the following management and mitigation measures may be implemented by the Company.

- Increase frequency/scope of routine/targeted inspections.
- Apply measures to increase soil water holding capacity such as mulch.
- Apply additional growth medium if erosion of existing material is considered unacceptable.
- Commission additional specialist reports/assessment to ascertain scope of potential impacts and identify any remedial actions, such as supplementary planting or revision of target species selection.

Sourcing of Additional Growth Medium

If required, a suitable source of additional soil material / growth medium will be identified, including the need for importation of material from off site, and an investigation into measures that may be implemented to ameliorate other materials to make them suitable for use as a growth medium will be conducted.

6.2.5 Ecosystem and Land Use Establishment

DnA Environmental (DnA) have prepared a Revegetation Strategy (DnA, 2024) to guide ecosystem and land use establishment at the Mine Site. The following subsections present a summary of the Revegetation Strategy that will be applied to the ecosystem and land use establishment phase of rehabilitation.

6.2.5.1 Revegetation Methodology

Revegetation Using Seeds

DnA (2024) has identified a combination of revegetation methods that may be used for revegetation at the Mine Site, summarised as follows.

- Seed sowing of a mix of species identified in **Table 19**, using:
  - hand broadcasting;
  - seed spreaders;
  - brush-matting;
  - hydro-mulching; and / or
  - aerial sowing using helicopter or plane.
- Direct seed application, facilitated by strategic planning for seed collection to occur simultaneously with final landform completion to provide the following benefits:
  - seed can be directly distributed onto revegetation areas;
  - long-term storage not required;
  - no drying or processing of seed required;
  - native seeds are adapted for natural burial; and
  - need for pre-treatments is reduced as the seed is allowed to weather and germinate naturally when conditions are optimum.
- Seed-bearing native pasture hay application, to provide the following benefits:
  - effective in early slope stabilisation for highly sodic and dispersive soils (refer Section 6.2.1.1) (DnA, 2024);
  - accelerates soil and ecological development and function;
  - decomposition of hay provides nutrients and organic matter required for sustaining microbial function and plant growth;
  - provides immediate soil surface protection and protection against erosion; and
  - provides an additional source of local grassland seed.

To ensure adequate seed availability for rehabilitation activities, a *Seed Balance Strategy* will be conducted, which will include a seed inventory and forecast, supported by a seed collection and procurement strategy to ensure that an adequate seed collection schedule is in place (see Section 9.2.1).

Revegetation Using Tubestock

A combination of the seeding and planting techniques will be utilised by the Company for revegetation of the Mine Site. Tubestock will be ordered, as required, in accordance with the Revegetation Strategy (DnA, 2024).

Tubestock of tree and shrub species will be planted in accordance with the Revegetation Strategy and summarised as follows.

- Local provenance seed will be collected and supplied to a local and qualified nursery provider at least six to twelve months prior to planting to allow adequate propagation time.
- Tubestock will be at least 25cm in height and have a well-established root system.
- Planting will be undertaken by an experienced planting team between April and August after suitable rainfall events have resulted in suitable soil moisture conditions.
- Where practicable, plants will be watered in on the day of planting to settle soil around the root ball and remove voids which would otherwise increase the rate of moisture loss around the plant. Watering in will take place no more than 24 – 48 hours post planting.
- During the three to six month establishment period, the frequency of watering will depend on the prevailing climatic conditions at the time of planting and thereafter. Watering will be frequent enough to maintain adequate soil moisture to prevent water stress and repressed growth during establishment.
- On average, the density of mature tubestock will be 150 stems per hectare accounting for up to 50% mortality. The density of juvenile or shrub trees will be approximately 600 shrubs per hectare.
- Tubestock will be planted approximately 8m to 12m apart.

6.2.5.2 Target Species

Native Ecosystem Woodland and Agricultural Grazing Domains

Table 18 presents an indicative and non-exhaustive list of species identified by DnA (2024) that may be used during revegetation of the native ecosystem and agricultural grazing areas of the Mine Site (refer **Plan 1**). The species listed in **Table 18** represent those which have been identified within analogue sites representative of the target vegetation types. While all species listed are suitable for revegetation of native ecosystem and agricultural grazing areas, favourable key species have been identified.

Table 18
Mine Rehabilitation Species List

Growth Form	Scientific Name	Common Name	Key Species
Trees	*Acacia doratoxylon*	Currawang	Yes
	Acacia excelsa	Ironwood	
	Brachychiton populneus	Kurrajong	Yes
	Callitris glaucophylla	White Cypress Pine	Yes
	Eucalyptus intertexta	Gum Coolibah	Yes
	Eucalyptus populnea	Bimble Box	Yes
	Eucalyptus viridis	Green Mallee	Yes
	Geijera parviflora	Wilga	Yes
Shrubs	*Acacia deanei*	Deane's Wattle	Yes
	Acacia decora	Western Silver Wattle	Yes
	Acacia hakeoides	Hakea Wattle	Yes
	Acacia oswaldii	Miljee	Yes
	Dodonaea viscosa subsp. Cuneata	Wedge-leaf Hopbush	
	Dodonaea viscosa subsp. Mucronata	A Hopbush	Yes
	Eremophila deserti	Turkey Bush	
	Eremophila longifolia	Emubush	Yes
	Eremophila mitchellii	Budda	Yes
	Eremophila sturtii	Turpentine	Yes
	Senna artemisioides subsp filifolia	Punty Bush	
	Senna artemisioides subsp. X artemisioides	Silver Cassia	Yes
	Senna artemisioides subsp. Zygophylla	Senna	Yes
Sub-shrubs	*Atriplex semibaccata*	Creeping Saltbush	Yes
	Atriplex spinibractea	Spiny-fruit Saltbush	
	Atriplex stipitata	Mallee Saltbush	
	Chenopodium desertorum	Mallee Goosefoot	
	Enchylaena tomentosa	Ruby Saltbush	Yes
	Maireana microphylla	Eastern Cottonbush	Yes
	Maireana villosa	Blue Pearlbush	Yes
	Ptilotus sessilifolius var. sessilifolius	Crimson Foxtail	Yes
	Ptilotus spathulatus	Pussy Tails	Yes
	Salsola australis	Buckbush	Yes
	Sclerolaena muricata	Black Roly Poly	
	Sclerolaena parviflora	Mallee Copperburr	Yes
Herbs	*Brachyscome ciliaris var. ciliaris*	Variable Daisy	Yes
	Calotis cuneifolia	Purple Burr Daisy	
	Calotis lappulacea	Yellow Burr Daisy	Yes
	Chrysocephalum apiculatum	Common Everlasting	Yes
	Convolvulus erubescens	Australian Bindweed	Yes
	Einadia nutans	Climbing Saltbush	Yes
	Erodium crinitum	Blue Storksbill	
	Glycine tabacina	Variable Glycine	Yes
	Leptorhynchos tetrachaetus	Beauty Buttons	Yes
	Maireana enchylaenoides	Wingless Fissure Weed	

Table 18 (Cont'd)
Mine Rehabilitation Species List

Growth Form	Scientific Name	Common Name	Key Species
Herbs (Cont'd)	*Minuria leptophylla*	Minnie Daisy	Yes
	Oxalis perennans	Yellow Wood-sorrel	
	Portulaca oleracea	Pigweed	
	Ptilotus polystachyus	Long Tails	
	Ptilotus spathulatus	Pussy Tails	Yes
Herbs (Cont'd)	*Rhodanthe corymbiflora*	Small White Sunray	
	Rhodanthe floribunda	Common White Sunray	Yes
	Sida corrugata	Corrugated Sida	
	Sida cunninghamii	Ridge Sida	
	Solanum ellipticum	Velvet Potato Bush	Yes
	Solanum ferocissimum	Spiny Potato Bush	
	Swainsona microphylla	Poison Swainson-pea	Yes
	Vittadinia cuneata	Fuzzweed	Yes
	Vittadinia pterochaeta	Rough Fuzzweed	
	Vittadinia sulcata	A Fuzzweed	Yes
	Wahlenbergia stricta	Tall Bluebell	Yes
	Xerochrysum bracteatum	Golden Everlasting	Yes
Grasses	*Anthosachne [Elymus] scabra*	Common Wheatgrass	Yes
	Aristida behriana	Bunch Wiregrass	Yes
	Aristida jerichoensis	No. 9 Wiregrass	Yes
	Aristida ramosa	Threeawn Grass	
	Austrostipa scabra	Speargrass	Yes
	Bothriochloa macra	Red Grass	Yes
	Chloris truncata	Windmill Grass	Yes
	Chloris ventricosa	Tall Windmill Grass	
	Cynodon dactylon	Couch	Yes
	Digitaria divaricatissima	Umbrella Grass	
	Enneapogon intermedius	Nineawn	
	Enneapogon nigricans	Blackheads	
	Enteropogon acicularis	Curly Windmill Grass	Yes
	Eragrostis parviflora	Lovegrass	
	Eragrostis setifolia	Neverfail	
	Eriochloa creber	Cup Grass	
	Monachather paradoxus	Bandicoot Grass	
	Panicum effusum	Hairy Panic	
	Paspalidium constrictum	Knottybutt Grass	Yes
	Rytidosperma caespitosum	Wallaby Grass	Yes
	Sporobolus caroli	Fairy Grass	
	Themeda triandra	Kangaroo Grass	Yes
	Thyridolepis mitchelliana	Mulga Mitchell Grass	Yes
	Walwhalleya subxerophila	Cane Panic	Yes

Source: DnA (2024) – modified after Table 3-3

Native Ecosystem Grassland Domain

Grassland revegetation trials are planned on the Heap Leach Pads at the Mine Site to determine the most effective method for establishing native perennial ground covers and grasses to achieve the required pasture coverage. The revegetation trials are expected to provide guidance on the best combination of species, as well as the most effective revegetation methods to employ for final rehabilitation of the Heap Leach Pads.

Table 19 presents an indicative list of species identified by DnA (2024) that will be used during revegetation trials of the Heap Leach Pads at the Mine Site. The species listed in **Table 18** include species common within the Mine Site and those recommended as useful pasture species in the arid and semi-arid rangelands of NSW[1]. The species that have been selected are extremely hardy native perennial grasses and saltbushes to ensure that they can sustain extreme climatic conditions in the long-term.

Table 19
Suitable Species for Revegetation Trials on Murrawombie Heap Leach Pads

Pasture type	Scientific Name	Common Name	Common in ML	DPI Tested[1]
Native Perennial Ground Covers	*Atriplex semibaccata*	Creeping Saltbush	Yes	
	Enchylaena tomentosa	Ruby Saltbush	Yes	
	Maireana microphylla	Eastern Cottonbush	Yes	
	Maireana villosa	Blue Pearlbush	Yes	
	Vittadinia species	Fuzzweed	Yes	
Native Perennial Grasses	*Anthosachne [Elymus] scabra*	Common Wheatgrass	Yes	Yes
	Aristida behriana	Bunch Wiregrass	Yes	
	Aristida jerichoensis	No. 9 Wiregrass	Yes	Yes
	Aristida ramosa	Threeawn Grass	Yes	Yes
	Austrostipa scabra	Speargrass	Yes	Yes
	Bothriochloa macra	Redgrass	Yes	Yes
	Chloris truncata	Windmill Grass	Yes	Yes
	Cynodon dactylon	Couch		Yes
	Enteropogon acicularis	Curly Windmill Grass	Yes	Yes
	Eragrostis setifolia	Neverfail	Yes	Yes
	Panicum decompositum	Hairy Panic		Yes
	Paspalidium constrictum	Knottybutt Grass	Yes	
	Rytidosperma caespitosum	Wallaby Grass	Yes	Yes
	Themeda australis	Kangaroo Grass		Yes
	Walwhalleya subxerophila	Cane Panic	Yes	
Annual Cover Crops	*Echinochloa esculenta*[2]	Japanese Millet		
	Secale cereale[2]	Ryecorn		

Note 1: Species recommended for arid and semi-arid regions of NSW by the Department of Primary Industries
Note 2: Exotic species

Source: DnA (2024) – modified after Table 3-7

[1] https://www.dpi.nsw.gov.au/agriculture/pastures-and-rangelands/rangelands

6.2.5.3 Management of Emergent Vegetation

Management measures to be implemented for protection of emergent and/or juvenile vegetation may include:

- exclusion of vehicles and stock from revegetation area;
- increased monitoring frequency to identify effectiveness of revegetation methodologies and for early identification of potential risks; and
- increased frequency of weed and pest monitoring and controls prior to, during, and following vegetation establishment to ensure pest pressure is kept to a minimum while vegetation is more at-risk.

6.2.5.4 Habitat Enhancement

Any stockpiled habitat features within the Mine Site will be distributed throughout areas to be rehabilitated. This may include large woody debris salvaged during vegetation clearing (see Section 6.2.1.11) or large rocky debris from confirmed NAF stockpiles. If required, distribution of habitat features may be undertaken in consultation with suitably qualified persons.

6.2.6 Ecosystem and Land Use Development

6.2.6.1 Weed and Pest Management and Monitoring Program

Weed and pest management is currently undertaken in accordance with the *Weed Management Plan3.* In summary, weeds at the Mine Site are currently managed through bi-annual controls that include spraying and physical removal, where necessary. Feral animals are monitored through regular visual inspections and include reactive measures such as short-term baiting programs.

While weeds and non-native fauna impacts are a risk to revegetation success, it is expected that they will continue to be managed until such time as the completion criteria are met and ML1280 is relinquished. The Company anticipates that weed and pest management across the Tritton Copper Operations will be undertaken in consideration of the results of rehabilitation monitoring reports, namely observations of weed and pest occurrence made by suitably qualified person(s). Management activities, including monitoring and control frequencies, may be revised in accordance with any recommendations. Furthermore,

It is anticipated that weeds and non-native fauna will remain in the final landform, however the pervasiveness of species will be consistent with or below that of the surrounding landscape. Therefore the need for ongoing controls are considered to be a relatively minor risk for the successful rehabilitation of the Mine Site.

6.2.6.2 Environmental Management and Monitoring Program

Surface Water

Water management infrastructure associated with the Heap Leach Pads may be retained for post-closure leachate evaporation / management.. The cover of the Heap Leach Pads will be designed to limit infiltration and therefore leaching of contaminated materials As a result it is anticipated that no runoff from the Heap Leach Pads will enter the surrounding environment. Notwithstanding, periodic monitoring of water within the containment structures may be undertaken to monitor long-term performance and trends.

Diversion structures will be monitored quarterly to ensure that they are in acceptable condition and still fit for purpose. Surface water monitoring in the sediment basins will be undertaken monthly to check for any potential contamination. If there is any contamination found, an investigation into identifying the source of contamination will commence immediately. Surface water in the containment dams will be monitored monthly for contamination. If contamination is found, it will be managed in accordance with the *Water Management Plan*.

A detailed Post-Closure Water Management Plan will be developed to determine management of erosion and sediment control at the Murrawombie Mine Site post closure (see Section 9.2.2).

Groundwater

The primary focus of groundwater monitoring at the Mine Site is to identify potential contamination from the Heap Leach Facility and track groundwater inflows into active underground mining areas. Groundwater monitoring sites have been established around site infrastructure to monitor any changes in the standing water level and monitor water quality.

In 2013 a Remedial Action Plan (RAP) was prepared for the Mine following groundwater monitoring results identifying an impact to groundwater. The RAP concluded that the impact to groundwater is contained within the site, however 6-monthly monitoring reports have been provided to the EPA.

Groundwater monitoring is conducted either monthly or quarterly, in accordance with the EPL 4501 or the RAP monitoring requirements. The groundwater monitoring locations, frequency, analysis requirements and performance criteria are presented in the *Water Management Plan*.

6.2.6.3 Revegetation Management and Monitoring

Ecological management of rehabilitated lands will consist of regular monitoring, review and response to identify any revegetation and maintenance requirements to achieve final land use. Monitoring will consist of a combination of regular visual inspections undertaken by Company personnel and semi-regular formal monitoring assessments undertaken by suitably qualified persons. The Company will undertake a photo-point and annual monitoring program for all rehabilitated areas of the Mine Site as they are progressively rehabilitated. The Company will report the results of the monitoring program in the Annual Rehabilitation Report. All information collected by Company personnel will be made available during formal monitoring assessments, if required.

In response to outcomes of the monitoring program, the Company will undertake maintenance or remedial works as required, which will be reported on in the Forward Program. These may include the following.

- Earthworks or stabilisation measures to repair erosion;
- Repair drainage structures and de-silt sediment control structures;
- Additional seeding or planting;
- Application of fertilisers and/or mulches;
- Application of gypsum or lime to control pH and improve soil structure;
- Fencing maintenance and repair;
- Irrigation system maintenance and repair;
- Bushfire management; and
- Implementation of weed and pest control measures.

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 as a minimum. 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 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. As outlined in Section 6.2.1.13, subsidence represents a low risk to rehabilitation at the Mine Site. As such, no specific subsidence-related management and maintenance programs are required at the Mine.

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 the Mine is currently operational, many of the pre-disturbance risk controls outlined in *Guideline 3* (e.g. baseline assessments and monitoring) have either been completed or form part of ongoing investigations to be undertaken during rehabilitation planning. As such, **Appendix 3** presents a condensed risk control checklist containing items applicable to the remaining active mining and planned rehabilitation phases of the Mine Site.

It is anticipated that rehabilitation operations within the Mine Site will occur on a progressive basis as areas are no longer required for operational purposes. Consequently, it is noted that rehabilitation progress through the planned rehabilitation phases will not occur concurrently across all mining domains identified in **Figure 8**.

In addition to the above, the Company has prepared a detailed Rehabilitation Quality Assurance and Quality Control Template to be applied to relatively higher-risk landforms/domains within the Mine Site. The Rehabilitation Quality Assurance and Quality Control Template identifies the key actions and/or processes required for rehabilitation and includes a responsibility assignment matrix in the form of a standard RACI (Responsible, Accountable, Consulted, Informed) model to delineate the key roles for each action/process.

As part of the rehabilitation quality assurance process, relevant records and documentation will be recorded in a Rehabilitation Quality Assurance Register and reported as part of the Annual Rehabilitation Report. The Rehabilitation Quality Assurance Register will, as a minimum, include a copy of the checklists presented in **Appendix 3** 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 Environment Superintendent 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 20 summarises the key responsibilities outlined in **Appendix 3** for the Company and Mine personnel with regards to rehabilitation operations.

Table 20
Key Roles and Responsibilities

Role	Responsibility
Mine Operator	• 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.
Environmental Superintendent / Site Supervisor	• Ensure that the Rehabilitation Quality Assurance register is maintained and up to date based on site activities. • Ensure that relevant personnel and workforce participants are aware of relevant development and rehabilitation risks and management 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.
Environmental Superintendent / Site Supervisor (Cont'd)	• Ensure that the documentation and recording of rehabilitation risk controls occurs within a suitable timeframe as reasonably practicable. • 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 Mine Personnel	• Follow direction provided by the Environmental Superintendent / Site Supervisor. • Notify the relevant supervisor in the event that uncontrolled rehabilitation risks are identified.