Appendix R

Closure Plan

Vista Gold Australia Pty Ltd

Mount Todd Project Area

Table of contents

Table index

Figure index

Attachment index

1 Introduction

The Closure Plan forms part of the Environmental Management System (EMS) for the Mount Todd mine and is considered a working document. It has been updated following formal consultation and assessment by Department of Primary Industry and Resources (DPIR) as part of the mining authorisation process.

The purpose of this Closure Plan is to describe the proposed approach to closure and rehabilitation of the gold mine at the Mt Todd Project Area (MTPA). The focus is on the reclamation earthworks associated with closing mine features during and following the completion of mining operations.

This document will be used in conjunction with the Erosion and Sediment Control Plan with regard to sediment controls for the rehabilitation and closure of the MTPA.

Vista Gold will consult with DPIR, nearby landowners and other relevant stakeholders as to what infrastructure e.g. roads and dams, will remain after the MTPA rehabilitation has been completed.

1.1 Background

The MTPA is a brownfield/disturbed site that has a history of gold mining dating back more than one hundred years. Historical mining infrastructure has had some impact the surrounding environment. One of the primary issues is poor water quality due to Acid Mining Drainage (AMD) from old stockpiles, waste rock dumps (WRD), tailing storage facility 1 (TSF1) and Batman Pit.

1.1.1 Title Details

Vista Gold currently holds four Mineral Lease Numbers (MLN). They are MLN 1070, MLN 1071, MLN 1127 and ML 31525 comprising approximately 5,544 hectares (ha). In addition, Vista Australia controls Exploration Licenses (EL) EL 25668, EL 25669, EL 25576, EL 25670 and EL 28321 comprising approximately 134,838ha.

1.1.2 Area of Disturbance

The area of disturbance on site will be approximately 1100ha. This includes the open pits, tailings dams, processing facility and all other associated infrastructure ***Table 1-1 Mining Disturbance*** outlines areas of disturbance on the mine site.

Table 1-1 Mining Disturbance

Disturbance type	Quantity	Volumes	Area (ha)	Total area (ha)
Open pit(s)				137 (Batman) 5.74 (Golf & Tollis)
Underground mine	N/A	N/A	N/A	N/A
Waste rock dumps				217
Product stockpiles				47
Heap leach pads				39
Tailings dams				540
Process water dams				29
Potable water dams	N/A	N/A	N/A	N/A
Mine site infrastructure (including workshops and fuel storage)			35	35
Accommodation facility and associated infrastructure	N/A	N/A	N/A	N/A
Bore field and pipelines	N/A	N/A	N/A	N/A
Borrow pits			TBA	TBA
Access tracks				
Haul roads			24	
Laydown areas and other cleared ground not included elsewhere			TBA	TBA
Exploration (specify)				
Other (specify)				

1.2 Life of Mine Closure Planning

All closure and rehabilitation planning considers the entire life of the mine, from pre-mining site preparation to final closure and rehabilitation. In line with standard practice, the Closure Plan and other aspects of closure and rehabilitation will be updated and refined throughout mining operations, to improve the level of detail, accuracy and scope of these plans. This process will continue up to approximately the end of mine operations, so that the Closure Plan remains up to date and consistent with ongoing research. A rehabilitation register will track the closure work that has been conducted and completed, as well as other future requirements.

1.3 Vista Gold Mine Closure Objectives

The final goal of closure and rehabilitation is to limit environmental impact and to leave the site with minimal or no ongoing management requirements once mining is complete. It is the intention of Vista Gold to undertake progressive rehabilitation throughout the Life of Mine (LOM). Infrastructure and areas that are no longer of any operational value for mining operations will be decommissioned and the areas rehabilitated as soon as practicable.

Taking into consideration the DPIR guidelines, Vista Gold has developed closure objectives for the Project:

- Develop landforms that are consistent with agreed post mining land use and the surrounding landscape;
- Protect public safety;
- Control acid-generating conditions;
- Minimise erosion of facilities containing mine waste;
- Reduce or eliminate the acid and metal loads of seepage and runoff water;
- Minimise adverse impacts to the surface and groundwater systems surrounding the site;
- Physically and chemically stabilise mine waste and other mine related disturbances or landforms;
- Undertake progressive rehabilitation of the site during operations and re-establish pre-mining vegetation types wherever possible;
- Develop an environmental monitoring and reporting program which is focused towards demonstrating the achievement of closure outcomes; and
- Comply with Northern Territory Government regulations governing mine development and closure.

1.4 DPIR Mine Closure Objectives

The Department of Mines and Energy (DME) (now DPIR) developed objectives (DME 2006) to gauge the success of mine closure and rehabilitation. The objectives relevant to the MTPA include the following:

- Compatibility with agreed post mining land use:
    - Specific criteria agreed upon for post mining land use at individual sites will be met; and
    - Monitoring trends should indicate that the ability of the site to support the post-mining land use would be sustained.
- Physical safety:
    - Excavations and subsidence to be rendered safe;
    - All drill holes, shafts, open cuts and other openings to be securely capped, filled or otherwise made safe; and
    - Access of people and livestock to be restricted as appropriate to site conditions.
- Low risk to biota:
    - The quality of water leaving the site should be such as to cause no significant deterioration of water quality to the downstream beneficial use(s) or water quality objectives of the receiving waters declared under Section 73 of the *Water Act* (1992);
    - Production of polluted water (e.g. acidic or caustic runoff from pits, stockpiles, waste rock or tailings) should be minimised, and trends should indicate improvement;

- Continuing active intervention should not be required for site water management; and
- Residual toxic material, such as process chemicals, will be removed or contained, mobilisation of toxicants in general should be prevented and, in the case of acid rock drainage, minimised and controlled.

- Stability:
  - All disturbed areas will be stabilised, including the construction of stable landforms;
  - Drainage will be consistent with post-mining land use (re-establishment of natural drainage patterns where appropriate);
  - Erosion by wind and water should be at least comparable with background levels for the area; and
  - Storages left *in situ* will be stable (providing an adequate margin of safety which is dependent on material stored) against floods, erosion and subsidence.
- Rubbish clean-up:
  - Facilities and equipment will be removed unless they are to remain for an agreed future use; and
  - No rubbish will remain at the surface, or at risk of being exposed through erosion.
- Revegetated or otherwise improved: (If natural habitat regeneration is to occur):
  - All surfaces will be revegetated to a self-sustaining condition similar to vegetation in comparable local areas (to a standard consistent with data obtained from pre-mining baseline environmental studies, where these have been done);
  - Vegetation communities will be developed that will attract and support the re-colonisation by native fauna and flora species found in the region;
  - Vegetation should be able to survive the local fire regime; and
  - Introduction, spread of weeds and pests particularly those of disease significance, should be prevented, and an active program in place to minimise their presence.
- Revegetated or otherwise improved: (If other post mining land uses are to occur):
  - Site specific revegetation criteria may apply, as agreed during project planning and documented in mine / environment plans.
- Visual amenity:
  - Long-term visual impact will be minimised by creating acceptable landforms, preferably compatible with adjacent landscape.
- Heritage and archaeological sites:
  - Condition of heritage and archaeological sites will meet requirements of relevant authorities.

1.5 Rehabilitation Completion Criteria

It is the intent of Vista Gold to use the DPIR guidelines as a minimum standard in relation to the rehabilitation of the MTPA. In addition to these guidelines, Vista Gold has developed key mine closure criteria and assessment criteria to assist in measuring the progress of mine closure and final relinquishment of the site (see ***Table 1-2 Rehabilitation Completion Criteria***).

Table 1-2 Rehabilitation Completion Criteria

Completion Criteria	Assessment Criteria	
Protect public health and safety	Overall health and safety of humans, stability of soils, landforms and hydrology, long-term sustainability without additional management inputs and suitability for agreed land uses. Suitability for agreed land uses is required so that the economic value of sites for agriculture, grazing, forestry, tourism, recreation, etc. is retained.	Rock bund walls to prevent unauthorised entry have sealed off access points to the Open Pits. No subsidence or slipping of the pit walls is present that is a threat to the long-term stability of the pit abandonment bunds. Plant equipment and associated infrastructure has been dismantled and removed from the site for sale and/or disposed appropriately. Surface infrastructure has been removed unless otherwise agreed with the local community and relevant Regulatory Authorities. Pipelines and pumps have been flushed and removed from site (above ground) or left buried (below ground). Boreholes (except those retained for monitoring purposes) have been shutdown, bore casings removed and holes plugged or capped. All surface exploration holes have been capped and backfilled.
Alleviate or Eliminate Environmental Damage	Pollution. Pollution must be managed to prevent environmental impacts in accordance with regulatory processes and community expectations.	Contaminated sites have been remediated in compliance with relevant regulatory standards, guidelines and/or are considered to disperse naturally such that it does not result in any harmful impacts on the surrounding environs or receptors, in the opinion of the Regulators. Future sources of contamination have been identified and assessed for risk and treated by removal of the source and disposed and/or managed through a management plan. Environmental impacts under management will present favourable trends to regulators post closure.
	Off Site Impacts. Significant adverse off-site impacts must be avoided.	Water leaving rehabilitated sites and entering adjacent land is free from contamination and managed in a way that does not lead to significant erosion or hydrological change to downstream ecosystems. Management to prevent the introduction and spread of weeds and feral animals to minimise the risk of impacts to adjacent land. Access to the site following closure does not occur through adjacent land until deemed appropriate.
	Hydrology. Appropriate hydrology is required for effective establishment of vegetation and to ensure site stability.	Natural surface drainage patterns re-established where the post mining landforms allow. The waste rock stockpiles and TSFs have been contoured for water management, spread with topsoil, ripped, seeded and are geo-technically stable. Environmental impacts under management will present favourable trends to regulators post closure.

Completion Criteria	Assessment Criteria	
	Soils. Soil profiles and structures must ensure vegetation establishment and resistance to erosion.	Land Form Monitoring of soil surface condition to determine the quality of stability, nutrient cycling and infiltration and compare favourably with natural analogue site trends. Overall monitoring results must indicate a self-sustaining ecosystem evidenced by stable or increasing trends in indicators of stability, infiltration, nutrient cycling, species diversity and species density levels. Monitoring of soil indicators has continued according to the agreed schedule during the post closure period and the results have been submitted to the Regulators.
Reinstate Natural Ecosystems as similar as possible to the Original Ecosystem	Habitat and Animal Diversity. Rehabilitation design should incorporate the return of appropriate structural habitat components, such as logs and rocks, as effective habitats and refuges for animals. Long-term flora and fauna monitoring as a scientific research objective is required to confirm that there is sufficient habitat diversity.	Evidence of return of native fauna such as ants, bird-life, kangaroos. Continued monitoring of fauna and fauna indicators has continued according to the agreed schedule during the post closure period and the results have been supplied to the Regulators.
	Diversity of Ecological Communities; Completion criteria tailored to specific areas of sites with substantial variations in soils and landforms will help to ensure successful rehabilitation.	Vegetation communities to have a mix of small trees, plants and shrubs @ 500 – 1,000 individuals per ha. Large trees to be planted @ 100 individuals per ha. Monitoring results must indicate a self-sustaining ecosystem evidenced by soil stability or increasing trends in indicators of stability, infiltration, nutrient cycling, species diversity and species density levels. It is important to note that average annual rainfall is a critical factor in plant establishment. Rainfall can dramatically affect vegetation growth (species diversity and density) which in turn affects the stability, infiltration and nutrient cycling. Monitoring flora indicators has continued according to the agreed schedule during the post closure period and the results have been submitted to the Regulators.
	Plant Genetic Diversity. Rehabilitated vegetation should consist of local native plant species which are well adapted to landforms, soils and climate of the site.	All seeds used in the seed mixes are local province species of the Katherine region. Seed mixes are based on the species, which occur in the established ecosystems in the area.
	Plant Species Diversity. Specified targets will be based on reference plot data. Setting targets requires experience in similar habitats and knowledge of the proportion of plant species that are unlikely to recruit or be propagated from seeds in the short term.	Vegetation communities to have a mix of trees, plants and shrubs @ 500 – 1,000 individuals per ha as per EVC benchmarks. Large trees to be planted @ 100 individuals per ha. Monitoring results must indicate a self-sustaining ecosystem evidenced by soil stability or increasing trends in indicators of stability, infiltration, nutrient cycling, species diversity and species density levels. Monitoring flora indicators has continued according to the agreed schedule during the post closure period and the results have been submitted to the Regulators.

Completion Criteria	Assessment Criteria	
Achieve a productive use of the land, or a return to its original condition or an acceptable alternative	Resilient and Self Sustaining Vegetation. Ecosystems must be self-sustaining and/or capable of being sustained without additional expense.	Rehabilitated areas do not require watering, further seeding or planting once established. Vegetation communities have shown establishment and compare favourably with suitable natural analogue sites through required monitoring processes.
	Weed Management. The relative cover of weeds is low and stable or preferably declining.	Any declared weed species will be priority one management status. Target of rehabilitated areas to have an overall weed coverage of less than 5%. Vegetation communities have shown establishment and compare favourably with the suitable natural analogue sites through required monitoring processes.
	Dominant Plant Species and Plant Strata. Dominant plants should be present at appropriate densities and there should be good evidence that sufficient relative cover of these species will eventually be established.	Landforms are re-vegetated with seeds that are typical to *Eucalyptus tintinnans*, *Eucalyptus* spp, *Erythrophleum chlorostachys* woodland around the Yinberrie Hills area Keystone genera include *Eucalyptus tetrodonta*, *E. miniata*, and *E. tintinnans*. Vegetation communities have shown establishment and compare favourably with the suitable natural analogue sites through required monitoring processes. Tree planting for vegetation off sets of 6:1 for site disturbance.
	Plant Abundance and Cover. Sustainable rehabilitation requires the cover of vegetation to be sufficient to stabilise landforms and soils and exclude weeds. In most cases, completion criteria based on relative cover (% of area) will be most effective and efficient.	Vegetation communities to have a mix of trees, plants and shrubs @ 500 – 1,000 individuals per ha. Vegetation communities to have a plant cover of 15% or better and compare favourably with natural analogue site trends. Monitoring results must indicate a self-sustaining ecosystem evidenced by stable or increasing trends in indicators of stability, infiltration, nutrient cycling, species diversity and species density levels. It is important to note that average annual rainfall is a critical factor in plant establishment. Rainfall can dramatically affect vegetation growth (species diversity and density) which in turn affects the stability, infiltration and nutrient cycling. Monitoring flora indicators has continued according to the agreed schedule during the post closure period and the results have been submitted to the Regulators. Tree planting for vegetation offsets of 6:1 for site disturbance.
Consideration for Future Aesthetics and Cultural and Heritage Values	Visual Amenity and Heritage. Visual amenity is defined by community expectations. Significant Aboriginal or European heritage values present at sites should be retained.	All mining infrastructure left for heritage purposes as negotiated by stakeholders are structurally sound and have been well maintained. All historic infrastructure will be returned to its original location on completion of rehabilitation works. Ongoing maintenance of these structures has been agreed with the local community and the Regulatory Authorities. The waste rock stockpiles and TSFs are contoured for water management, spread with topsoil, ripped, seeded and are geo-technically stable. All other areas of disturbance have been covered with topsoil, ripped, seeded and are geo-technically stable.

1.6 Stakeholder Consultation

Vista Gold has taken a proactive approach to community relations and stakeholder consultation and kept the community up to date with changes occurring at the mine site. Vista Gold has actively sought to gain community views and opinions and to work with stakeholders to reduce any impacts – perceived or real.

Vista Gold will engage in ongoing Community/Stakeholder consultation to a degree that there is general acknowledgement that the closure process is satisfactory and delivered in a way that provides opportunity for stakeholders to exert reasonable influence over relevant processes. Stakeholders will be engaged to provide comment on the Mine Closure Criteria and Assessment Criteria (***Table 1-2 Rehabilitation Completion Criteria***).

1.7 Commitment to Research

The following will be undertaken to promote further development and refinement of the Closure Plan:

- Characterisation and analysis of waste and cover material hydraulic properties;
- Tailings traffic ability testing;
- Improvement of the watershed hydrologic data collection system to enable an update of precipitation-yield characteristics of the site;
- Completion of the site-wide soils and closure cover materials inventory and characterisation to identify material sources, properties, and balance;
- Ongoing review of erosion and sediment control practices;
- Ongoing revegetation and weed management trials to build on work conducted from 1989 to 1991 on spoil dumps in the MTPA.

1.8 Knowledge Management

The Closure Plan will also identify the location and responsibility of the filing and cataloguing of important documents. Documentation related to closure and relinquishment includes:

- Operational documents;
- Environmental documents; and
- Stakeholder consultation documents.

2 Site Conditions

This section summarises the site conditions prior to the construction of the MTPA. Site conditions are described in more detail in the Section 2 of the Mine Management Plan (MMP).

2.1 Location, Land use and Tenure

The area surrounding the MTPA is rural and sparsely populated. The Yinberrie Hills site of conservation significance surrounds the mineral leases, and is managed by Jawoyn Rangers and the NT government for nature conservation and Aboriginal land uses. The land tenure is Aboriginal freehold land. Nitmiluk (Katherine Gorge) National Park is located to the south east of the mineral leases. The Werenbun community is located 6.5km to the south east. The Stuart Highway, the main arterial road in the region, is located west of the mine site. The topographical feature named Mt Todd is within the mine lease.

2.2 Climate

The MTPA has a sub-tropical climate with distinct wet and dry seasons, and is susceptible to tropical cyclones occur over the wet season (October - April) due to low-pressure systems forming offshore over warm tropical waters.

Daily temperatures in the dry season typically range from 24°C - 36°C, occasionally reaching 39°C. Nights in the dry season can be quite cool with temperatures falling to 7°C. During the wet season, daily temperatures can range from 27°C - 42°C.

2.3 Land Systems and Topography

The most prominent natural topographic feature around the MTPA is Mt Todd with an elevation of 230m Australian Height Datum (AHD). Surface elevations are approximately 130 to 160m AHD above sea level in the area. There are two main land systems identified around the MTPA and they are:

1. Baker land system:

- Hills, and strike ridges on persistent Burrell Creek Greywacke, sandstone and siltstone in the west of the area enclosing the Batman Pit and extending north and south.
- Mt Todd and similar rises in the east.

2. Bend land system:

- Undulating hills on lower Proterozoic sediments (Burrell Creek Formation) occupying the north-south central portion the area including the waste rock dump, tailings storage facility and heap leach pad, and the eastern portions of the lease.

As a result of previous mining, the primary anthropogenic features of the site include:

- The Batman Pit with a depth of 114 m and surface area of 40 ha;
- The WRD with a height of 24 m and footprint of 70 ha;
- TSF1 with a height of 16 m;
- Low grade ore stockpile (LGO1) and scats stockpile; and

- The Heap Leach Pad (HLP).

2.4 Soils

Throughout the MTPA, soils vary from sandy and loamy red and yellow earths to lateritic and yellow podsolic soils on gently undulating land, often over compacted clay sub-soils. Heavier textured grey soils are found on the floodplains and levees of the Daly River system while stony and skeletal soils occur in the hills. The MTPA encompasses both Land Systems.

Soil pH levels sampled confirmed pH levels ranged from 4.0 - 4.2. Miller and Associates (1990) concluded that the acidic nature of the soil means they are below the optimum range for establishment of vegetation for revegetation purposes. However, salt levels are low with sodium and chloride concentrations averaging 10 ppm. Levels of nitrogen (N), phosphorous (P) and potassium (K) were reported as generally low. Nitrogen levels are generally low corresponding to the low levels of organic matter in the skeletal nature of the soil. Phosphorus levels are very low as would be expected under the observed acidic conditions. Potassium levels vary, and low levels were reported from soils tested from Bend and Baker land systems.

Prior to mining, levels of copper, zinc and boron were interpreted as being potentially limiting for plant growth. Iron and manganese were reported as non-limiting, given the natural acidity of the soils. Based on drill core data, sources of clay are available on site, although there is uncertainty around the quantity and quality of clay available. Calcium/magnesium ratios were found to be low. A generally high percentage of exchangeable aluminium ions in the soil indicated potential for aluminium toxicity affecting plants due to the low pH values.

2.5 Waterways and Hydrology

The MTPA is located in the Daly River Catchment. The Edith River is located directly to the south of the mine site, supported by several ephemeral creeks, five of which dissect the MTPA. The Edith River is the largest of various tributary rivers and creeks to the Fergusson River. The Fergusson River is the closest of the five main tributary river systems of the Daly River Catchment. It is located approximately 15 km to the northwest. The Edith River has a high ecological and recreational value with the site located approximately 9 km downstream of Edith Falls. The river intersects the site to the south and flows from east to west. The river receives the runoff from all the site related catchments as detailed below. The volume of runoff from site related catchments typically contributes less than 50% of the total flow within the Edith River at any time.

2.5.1 Surface Water

No surface flow of mine water enters the Edith River during the dry season as Horseshoe, Batman, Burrell and West Creeks are all ephemeral systems. Stow Creek receives water intermittently from two ephemeral creeks that run through the MTPA: Batman Creek and Horseshoe Creek.

The MTPA contains numerous retention ponds each with their own catchment areas, details of the major ponds are in the MMP, Section 6. The pond waters may contain dissolved metals and may have low pH levels. During the wet season, the high levels of precipitation result in the generation of AMD from the WRD (exposed sulphide rock). There are also a number of smaller ponds, which do not have catchments.

2.5.2 Groundwater

Groundwater flow direction of north to south towards the Edith River remains constant throughout the year. Groundwater discharge to the Edith River and its tributaries is expected, since groundwater elevations are higher than the adjacent creek and riverbed elevations.

Though the regional groundwater flow direction from east (Arnhem Escarpment) to West (Daly River) was not observed onsite, it is believed to be present based on the topography and the flow direction of the Edith River (groundwater discharge point).

2.5.3 Downstream Users

Surface water (which is potentially dependent, in part, on locally discharging groundwater) from the Edith River is used in the Edith Farms area for stock and domestic purposes as well as for irrigation. Cropping occurs downstream of the mine site close to the confluence of the Edith River and Fergusson River.

2.6 Biodiversity

A substantial amount of flora and fauna baseline information was gathered for the 2013 Mt Todd Gold Mine Environmental Impact Statement (EIS), and provides a solid assessment of the local and regional significance of the biodiversity of the Project site, and the risks posed by mining operations.

2.6.1 Vegetation and Flora

There are 12 listed, threatened species of flora and one known threatened ecological community that occurs in the Pine Creek Bioregion. The Arnhem Plateau: Sandstone Shrubland Complex Ecological Community is listed under the Environmental Protection and Biodiversity Conservation (EPBC) Act as endangered. It is not found in the project area. The only threatened plant species recorded from the general area of the Mineral Leases is the bladderwort, Utric*ularia singeriana.* The Northern Territory's Flora Database records the species as located approximately six kilometres west of the western border of the Mineral Leases. It has not been recorded from the Mineral Leases, and could not be located during surveys.

Vegetation in the Pine Creek Bioregion is well represented in conservation areas, with at least 12,124km^2 or 42.6% under conservation management in national parks and reserves (NRETA 2005). This includes large areas in Kakadu, Nitmiluk, Litchfield and Mary River National Parks.

The Mineral Leases lie within part of the Yinberrie Hills Site of Conservation Significance (SOCS). The designation of the area as a SOCS is largely based on the presence of threatened fauna and their habitats.

The MTPA encompasses a variety of habitats forming part of the northern savannah region, which is characterised by Eucalypt woodland with tropical grass understoreys. Eight vegetation types were mapped in the Mineral Leases at 1:50,000 including two degraded vegetation communities.

1. *Melaleuca* forest, with bare areas
2. *Eucaluptus bigalerita*, Eucalyptus spp. open-forest
3. *E. tintinnans* Eucalyptus spp. *Erythrophleum chlorostachys* woodland
4. *E. tintinnans*, *Corymbia dichromophloia* woodland
5. *E. tectifica* woodland

6. *E. tectifica, C. confertiflora* woodland
7. *E. latifolia E. bigalerita* open-woodland with areas of grassland
8. *E. tectifica* woodland*E. tintinnans* Eucalyptus spp. *Erythrophleum chlorostachys* woodland

The dominant communities in the MTPA prior to its development were the *E. tintinnans* dominated woodlands in rocky hills and *E. tectifica* dominated woodlands in the surrounding plains. Previous development of the site resulted in reductions of the extent of the *E. tintinnans* woodlands and the *E. tectifica* woodlands.

2.6.2 Weeds

Twelve species of introduced flora have been recorded from the Mineral Leases (***Table 2-1 Invasive Weed Species Present Across the Mt Todd Gold Leases***). These species include eight listed as Class A or B (or both) under the *Weeds Management Act* (2001). If weeds are not managed, they have the potential to reduce plant diversity, inhibit ecological processes and fragment biological diversity. Weeds also have the potential to alter fire regimes, by increasing the frequency and intensity of fires by increased fuel loads.

These species, and other weeds, are managed as per weed management detailed in the Weed Management Plan attached as Appendix J in the MMP.

Table 2-1 Invasive Weed Species Present Across the Mt Todd Gold Leases

Species Name	Common Name	Schedule Class*
Andropogon gayanus	Gamba Grass	A/B/C
Calotropis procera	Rubber Bush	B/C
Cenchrus ciliaris	Buffel Grass	
Chloris gayana	Rhodes Grass	
Crotalaria goreensis	Gambia Pea	
Hibiscus sabdariffa	Rosella	
Hyptis suaveolens	Hyptis	B/C
Melinis repens	Red Natal Grass	
Passiflora foetida	Stinking Passionfruit	
Cenchrus pedicellatus	Mission Grass (Annual)	
Cenchrus polystachios	Mission Grass (Perennial)	B/C
Stylosanthes hamata	Caribbean Stylo	

2.6.3 Fauna

Mineral Leases were surveyed during the dry (November 2012) and wet season (February 2012) in accordance with the *Environmental Assessment Guidelines: Terrestrial Fauna Survey*. An additional survey was specifically focused on locating species listed as threatened under the Environmental and Biodiversity Conservation Act 19999 (EPBC Act) and the Territory Parks and Wildlife (TPWC) Act in May 2011 and September 2012.

A total of 245 species were detected in the surveys, including 32 mammal, 145 bird, 48 reptile and 20 amphibian species; only a slight increase on the 219 species identified in 1990. Some of the differences are likely to be due to chance associated with failure to record species that are relatively uncommon and / or cryptic e.g. chameleon dragon, northern death adder, northern bandy bandy, and grey falcon. Other differences may be more significant. These include the apparent decline and absence of the northern quoll, the seeming absence / rarity of the yellow-spotted monitor and Mitchell's water monitor, the apparent decline in Mertens' water monitor, and the possible absence of two species of small mammal.

Frequent sightings of larger fauna include feral cattle (*Bos taurus*), water buffalo (*Bubalus bubalis*), donkeys (*Equus asinus*) and horses (*Equus caballus*) within the mineral lease. Feral pigs (*Sus scrofa*) roam the area as indicated by old wallows and 'rooting' evident in low lying areas. Additional exotic species included in a search of the Northern Territory Fauna Atlas for the Project site are the black rat (*Rattus rattus*), feral cat (*Felis catus*) and the cane toad (*Bufo marinus*).

2.6.4 EPBC Species

The EPBC Act prescribes the Commonwealth's role in environmental assessment, biodiversity conservation and management of Matters of National Environmental Significance (MNES). Actions that may have a significant impact on MNES are identified as "controlled actions" and cannot be undertaken without approval under the EPBC Act.

The Project was declared a controlled action with 'listed threatened species and communities (sections 18 and 18A)' and 'listed migratory species (sections 20 and 20A)' as the relevant controlling provisions of the EPBC Act.

The survey targeting threatened species (and the two general fauna surveys) failed to locate the northern quoll, the partridge pigeon, grey falcon, Mitchell's water monitor and the yellow-spotted monitor. The Gouldian finch was observed on six occasions to the west of Batman Pit and the crested shrike-tit heard, but not visually confirmed, on two occasions. Australian bustards were seen on the mine site in disturbed areas on 11 occasions. The pale field-rat was recorded on six occasions. One painted honeyeater was observed and three Mertens' water monitors were seen during baseline and targeted surveys ***Table 2-2 Threatened Fauna Species Identified On-site*** indicates the identified listed threatened fauna species on site.

Table 2-2 Threatened Fauna Species Identified On-site

Threatened Species Identified on Site	Current Status	Location
Gouldian Finch	Endangered (EPBC and TPWC Acts)	The Yinberrie Hills is the location of the largest known breeding population. o Individuals and nests have been recorded in the mineral leases
Crested Shrike-tit (northern)	Vulnerable (EPBC and TPWC Acts)	One record from the mineral leases, immediately north of the Batman Pit; and One record of calling to the west of the Batman Pit.

Threatened Species Identified on Site	Current Status	Location
Australian Bustard	Vulnerable (TPWC Act)	Six records from the mineral leases.
Mertens' Water Monitor	Vulnerable (TPWC Act)	Two records from the mineral leases.
Yellow-spotted Monitor	Vulnerable (TPWC Act)	One record from the mineral leases.
Partridge Pigeon	Vulnerable (EPBC and TPWC Acts)	Six records from the mineral lease.
Northern Quoll	Critically Endangered (TPWC Act), Endangered (EPBC Act)	One record approximately northwest of the mineral lease in 1990.

2.7 Cultural Heritage

The 2011-12 heritage and archaeological survey located and recorded 20 archaeological sites in the MTPA. One site was determined to be of high Aboriginal cultural and archaeological significance. Seven sites were assessed as having medium Aboriginal cultural and archaeological significance and 12 sites were assessed as having low Aboriginal cultural and archaeological significance.

The heritage and archaeological surveys also identified 31 non-indigenous cultural heritage features in the MTPA. Of the identified sites, one site, Mt Todd historical mining site was determined to be of high non-indigenous cultural and archaeological significance. Nineteen sites were assessed as having medium non-indigenous cultural heritage significance and 10 sites were assessed as having low non-indigenous cultural heritage significance.

More detailed information regarding cultural heritage values at the MTPA are available in the Cultural Heritage Management Plan attached as Appendix G in the MMP.

3 Requirements for Closure and Rehabilitation

3.1 Waste Management

A general environmental duty of care exists to manage and control waste materials under Northern Territory (NT) legislation. Policies and guidelines become mandatory under the *Waste Management and Pollution Control Act* (1998) and approval conditions.

Waste management practices for general and hazardous waste will be undertaken as set out in the Vista Gold Waste Management Plan (Appendix D) and Hazardous Substance Management Plan (Appendix C) of the MMP. Some of the non-hazardous waste material will be taken to the Batman Pit for burial.

3.2 Geotechnical Conditions

Vista Gold will consider geotechnical aspects in relation to the final landform design of pit voids, stockpiles and other infrastructure requiring assessment. Geotechnical assessments will be undertaken in the initial design stage of the final landforms and then during the rehabilitation phase, with a final assessment at the completion of works. Assessment reports will be available to relevant parties for review.

3.3 Soil Assessment

Soil profiles and structures will enable vegetation establishment and resistance to erosion. While initial assessments on soil suitability for rehabilitation have been conducted in the past, an assessment will be undertaken on any soils that will be used for rehabilitation throughout the LOM to determine the erosion ability, quality of stability, nutrient cycling and infiltration of top soil and oxide waste material for rehabilitation.

The suitability of the material used for rehabilitation and the suitability for the agreed land uses will be assessed against the rehabilitation completion criteria, to achieve the economic value of the site for future use.

3.3.1 Reclamation Materials & Plant Growth Medium

Reclamation materials will include:

- ROM non acid generating (NAG) waste rock;
- Imported low permeability materials;
- Geocomposite Clay Liner (GCL);
- Plant Growth Medium (PGM) from existing stockpiles;
- PGM salvaged from construction; and
- Crushed NAG waste rock to supplement PGM.

PGM will be used as the top layer of reclamation cover for vegetation establishment. PGM will be obtained from existing stockpiles at the MTPA, as well as through salvage of soils within the footprints of new facility construction, including TSF2 and expansion areas of the WRD. The latter

method will reduce the time soil is stockpiled and thereby maximise its viability to support vegetation. As needed, NAG waste rock will be crushed and mixed with other salvaged soils and used as supplemental PGM.

3.3.2 Plant Growth Medium Stockpiles

Soil to be used as PGM and some sub-soil will be harvested from the footprints of new infrastructure and stockpiled on site to facilitate rehabilitation requirements. Over the LOM these stockpiles will undergo various levels of natural regeneration, therefore, once utilised for rehabilitation purposes this soil will provide a pre-existing seed bank to regenerate areas which can then be boosted by additional planting. Once these stockpiles have been exhausted, their footprint will be scarified and then planted out with native species.

3.4 Revegetation Approach

Vista Gold will undertake progressive rehabilitation throughout the LOM. Infrastructure and areas that are no longer of any operational value for mining operations will be decommissioned and the areas rehabilitated as soon as practicable.

Rehabilitation areas will be capped with un-reactive material followed by the addition of topsoil. The area will then be landscaped with “pitting”, to create pockets that will hold topsoil and water. This will then be seeded and treated with a low application of fertiliser if required.

Seeds will be of native plants where possible, and multiple applications of seed may be required to obtain the level of diversity required. This will involve beginning with grasses and small shrubs, and moving to larger plants and trees. Tube stock of native species will be sourced for revegetation if they are available from a local supplier. In the early stages of revegetation activities, some care and watering will be required to ensure successful establishment. Site prep work will be undertaken during the dry season and planting will be initiated in the early wet season.

Regular visual monitoring will be undertaken to identify whether further maintenance is needed in the form of additional seeding or weed management.

Weed management will be tailored to managing declared weed species and enabling successful rehabilitation outcomes for native plant stock, i.e. reducing the level of competition for space, light and nutrients. Weeds in rehabilitation areas will be managed as part of the project Weed Management Plan.

3.5 Mine Site Features

Vista Gold has adopted a life of mine approach to closure and rehabilitation and is committed to continue with trials and research to further understand the local rehabilitation requirements. Responsibilities for closure and rehabilitation will be allocated during the LOM. The key on-site features requiring rehabilitation include:

- WRDs;
- HLP and moat;
- TSF1 and TSF2;
- Batman Pit; and

- Disturbance areas including the process plant site, power station, buildings, water storage facilities, site roads and stockpile areas.

The various closure and rehabilitation specifications for these features are provided in ***Table 3-1 Summary of Closure and Rehabilitation Specifications***.

Table 3-1 Summary of Closure and Rehabilitation Specifications

Task	Facility							
	Pit Voids	WRD	HLP	TSF 1 & 2 impounded surfaces	TSF 1 & 2 dams	Process Plant	LGOs	Mine Roads
Surface of facility at cessation of production composed of NAF material		✓			✓			
Final overall slope > 3H:1V*	✓	✓						
Final overall slope < 3H:1V*			✓	✓	✓	✓	✓	✓
Benches created during construction	✓	✓			✓			
Install + 1.0 m thick layer of non-PAG material		✓		✓				
Install 0.8 m thick store and release cover				✓	✓			✓
Install 0.2 m thick Plant Growth Medium (PGM) cover			✓	✓	✓	✓	✓	✓
Revegetate with native seed mix			✓	✓	✓	✓	✓	✓
Install GCL liner (with under and over layer of fines)		✓						
Install erosion and sediment controls		✓	✓	✓	✓	✓	✓	✓
Construct access restriction bund	✓							
Additional remediation measures (as necessary)	✓	✓	✓	✓	✓	✓	✓	✓

* > and < indicates slopes are steeper and less steep, respectively.

"✓" denotes where the task or characteristic is applicable to the landform

3.5.1 Waste Rock Dump

During operation of the Mt Todd Gold Project, the Waste Rock Dump (WRD) footprint will expand from 70 ha to 217 ha, providing a total waste rock storage capacity of up to 485 million tonnes (Mt). The WRD's height will increase from its current height of 24 m to approximately 160 m. The waste

rock will be stacked at angle of repose (34 degrees or approximately 1.5H:1V [Horizontal:Vertical]) in 30-m vertical lifts within the WRD. An 8-m wide bench will be left on the dump's exterior between each 30-m lift. These benches will function as stormwater drainages and access for rehabilitation activities and maintenance.

The reclamation goals for the WRD which were identified by Tetra Tech in the Mt Todd Reclamation Plan (Tetra Tech, 2019) (Attachment A8) include the following:

- Control acid-generating conditions;
- Minimise erosion of facilities containing mine waste;
- Reduce or eliminate the acid and metal loads of seepage and runoff water;
- Minimize adverse impacts to the surface and groundwater systems surrounding Mt Todd;
- Stabilise physical and chemical characteristics of mine waste and other mine-related surface disturbances;
- Protect public safety; and
- Comply with NT Government regulations governing mine development and closure.

The WRD will contain both potentially acid-generating (PAG) and non acid-generating (NAG) waste rock. PAG waste rock will be segregated within the interior of the WRD to minimize acidic or metals-laden seepage by minimizing oxygen and meteoric water infiltration exposure. Due to the steep waste rock slopes proposed at closure, traditional closure methods (capping with soil cover) will not be practical due to slope constraints (access and stability).

Vista's consultants (Tetra Tech) have developed an innovative closure approach incorporating the use of geosynthetic liners on top of each 30-m waste rock lift to intercept vertical seepage and direct it to the outer edges where non-reactive waste rock will be strategically placed minimising infiltration to the interior PAG waste rock (TGI 2020). The WRD will be constructed with an encapsulating NAG waste rock outer shell on each waste rock lift.

Due to the steep side slopes proposed at closure, the installation of traditional closure methods (such as store and release cover) will not be practical due to slope constraints (access and stability). Through multiple engineering design and modelling exercises, the preferred cover design was selected. A Cover Trials Design and Monitoring Procedure (***Attachment R2***) was undertaken by Tetra Tech which determined that a cover system composed of a low permeability liner (either geosynthetic clay liner [GCL] or linear low-density polyethylene [LLDPE]) will be placed on the top of each completed 30 m lift to minimise meteoric infiltration and oxygen ingress to the PAG materials within the WRD. The liners will be extended approximately 52 m into the dump to intercept seepage within the WRD and route it to the external 8-m wide benches on the WRD exterior. The liners serve an integral function in WRD closure. This design is referred to as the petticoat option.

Additional detail on the proposed cover system is provided in ***Attachment R2 - Cover Trials Design and Monitoring Procedure***. ***Figure 3-1 WRD Typical Preferred Cover System Cross-section (Tetra Tech, 2020)*** shows the conceptual typical section of the preferred WRD cover systemat closure.

Tierra Group International Limited (TGI) have prepared the Mt Todd Waste Rock Dump Closure Assessment Report which is an independent review of the proposed approach to closing the WRD (***Attachment R1***).

More information regarding the Waste Rock Dump Closure can be found in the Mt Todd Waste Rock Dump Closure Assessment Report (TGI 2020) (***Attachment R1***), the Cover Trials Design and Monitoring Procedure (Tetra Tech 2020) (***Attachment R2***) and the Waste Rock and Acid Metalliferous Drainage Management Plan attached as Appendix F to the MMP.

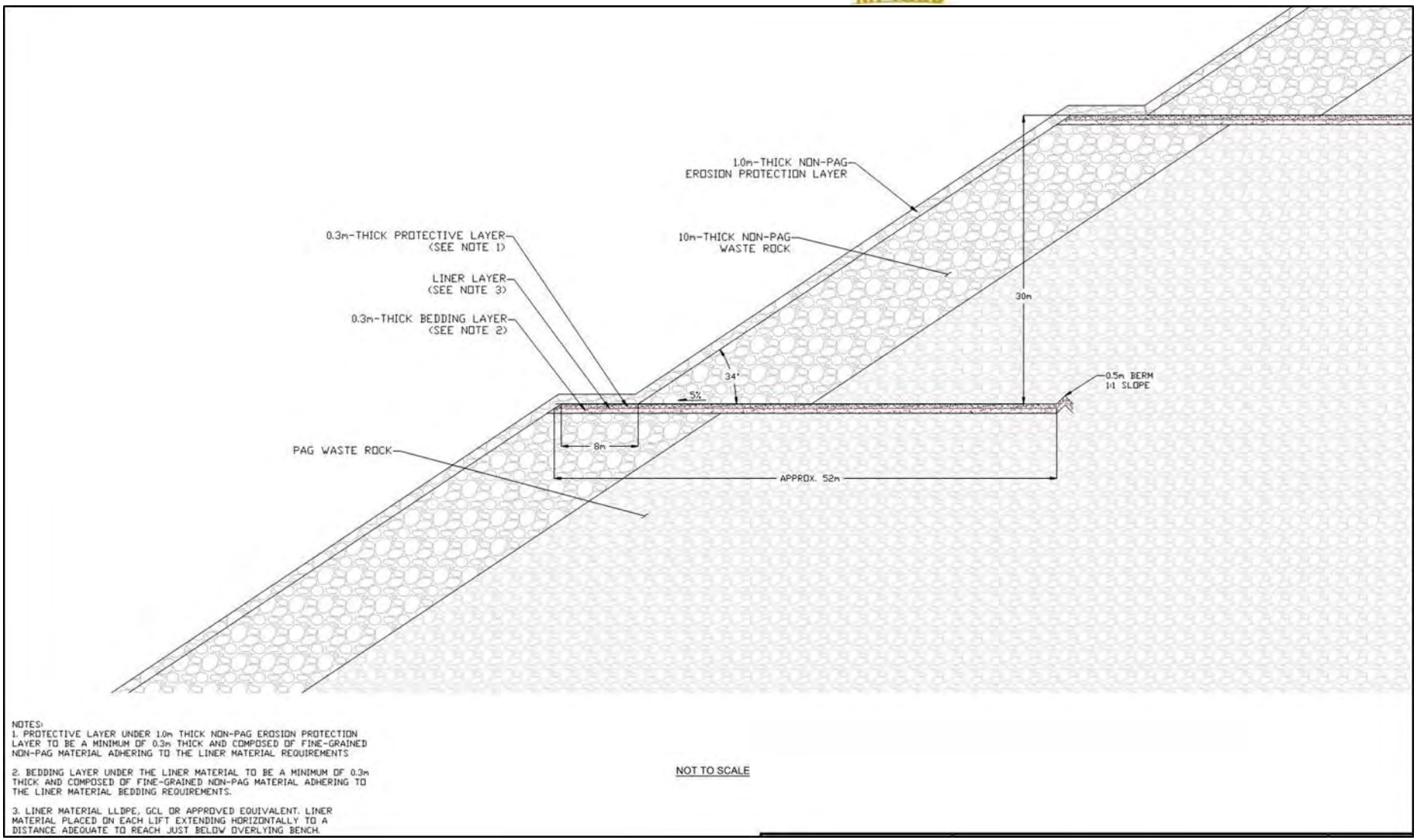


Figure 3-1 WRD Typical Preferred Cover System Cross-section (Tetra Tech, 2020)

3.5.1.1 AMD Management Plan

A Waste Rock and Acid Metalliferous Drainage Management Plan (Appendix F of the MMP) specifies how waste rock will be handled to minimise the potential for AMD and maximise the beneficial use of NAG waste rock for closure. The AMD management plan includes:

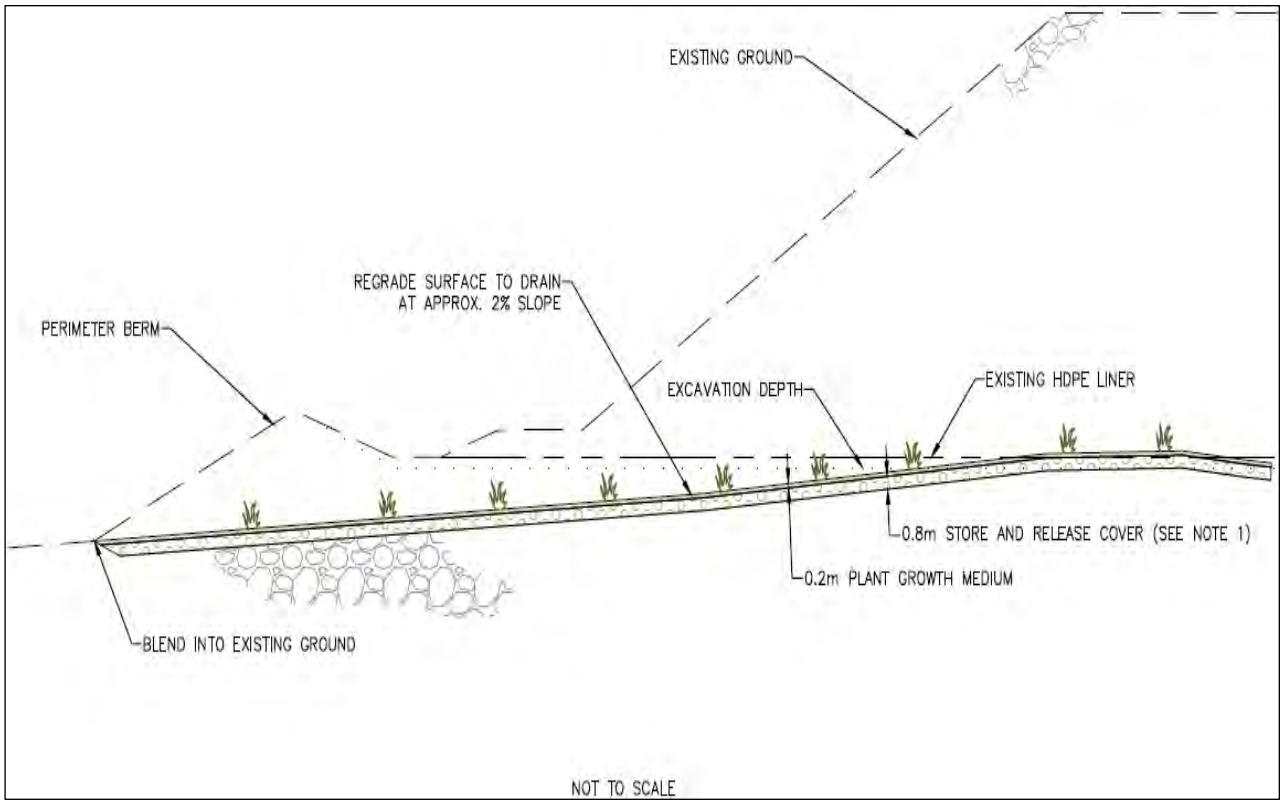
- Routine waste rock testing procedures;
- Staging dump construction to minimise the contact of PAG rock with air and water;
- Selective handling and isolation of the highest sulphide material;
- Contouring WRD surfaces to shed precipitation and runoff away from PAG materials during production and at closure;
- Sequential closure of inactive dump areas and faces as mining progresses; and
- Implementation of operational techniques and dump designs that encourage clean water diversion, surface water runoff, and seepage control during operations and at closure.

3.5.2 Heap Leach Pad & Moat

Currently the HLP covers an area of approximately 39 ha and is 20 m to 25 m thick. Side slopes are as steep as 58^{o} (1 Horizontal: 1.6 Vertical) and are covered by a dense network of rills and gullies. Vista Gold intends to reprocess the HLP, however if the economics for processing is not favourable then the HLP will be rehabilitated as follows:

- Testing of the HLP will be undertaken, (assumed to be NAG material).
- Leached ore from the HLP removed and processed during year 12 and 13 of production.
- HDPE liner and contaminated material below the HDPE liner will be removed and disposed in TSF2.
- The remaining approx. 156,000 m^3 of material at the HLP will be shaped to promote drainage and capped with a 0.8 m layer of low permeability material and NAG waste rock and a subsequent 0.2 m layer of PGM.
- The PGM layer will be sown with a mix of native grasses. Plant material such as native wood chip, branches and logs will be scattered throughout the area. The closure cover design of the HLP is illustrated in ***Figure 3-2 Closure Cover Design of the HLP***.

Figure 3-2 Closure Cover Design of the HLP



3.5.3 Tailings Storage Facilities

The expected final elevation of TSF1 is RL 152 m (an increase of 12.5 m). The expected final elevation of TSF2 is RL 165 m (approximately 45 m).

The TSF closure plan includes the placement of a layer of waste rock over the tailings in order to provide a bridging layer to allow construction of a store and release cover over the entire facility. As detailed in the PFS, the TSF closure cover is the same for both TSFs and consists of, from the top down, a 0.2 meter (m) layer of plant growth media (PGM), 0.8 m 66% low permeability material (LPM) (clay)/34% fine non-potentially acid generating (non-PAG) rock mixture, and at least 1 m of sorter reject (over the tailings surface only). The cover will be placed over the bridging layer of coarser non-PAG waste rock. The waste rock will provide a surface on which to construct the closure cover and allow for the top surface of the facilities to be crowned (graded to drain). The bridging layer will be configured differently for TSF1 and TSF2. The closure of TSF 1 will include the placement of the bridging layer over the tailings and the facility embankment, while the bridging layer for TSF2 will only be placed over the tailings surface. The configuration of the closure cover for TSF1 is shown on ***Figure 3-3 TSF1 Closure Cover Design*** and TSF2 is shown on ***Figure 3-4 TSF 2 Closure Cover Design***.

Additional detail on the closure of the tailings storage facilities is provided TSF1 Assessment Report (TGI 2020) (***Attachment F1***), Attachment A to the Reclamation Plan (***Attachment A8***) and the Tailings Management Plan attached as ***Appendix E*** to the MMP.

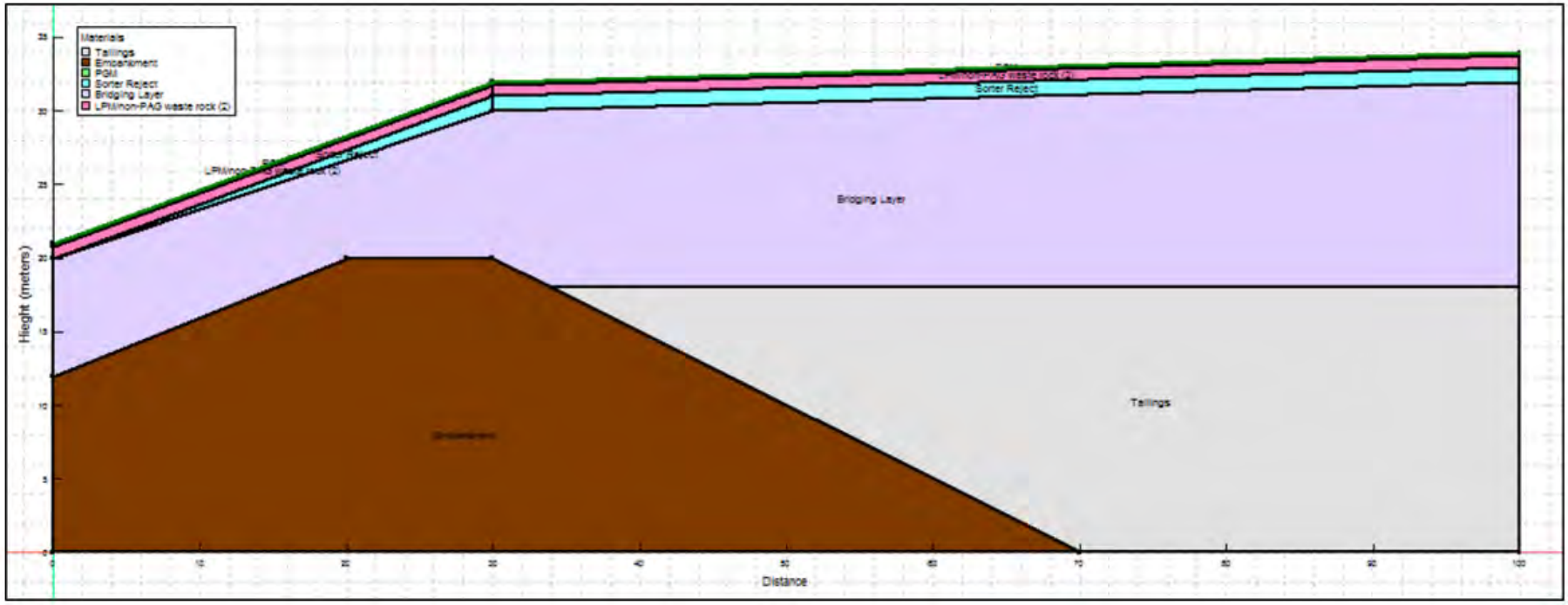
3.5.4 Pit Voids

Currently there are three pit voids on site (Batman, Golf & Tollis). The Golf and Tollis pits are relatively small pits and are currently filled with water. The Batman Pit will be expanded, and at the completion of mining will be 588 m deep with a surface area of 137 ha. At closure, the pit perimeter will be approximately 4,500 m. The design of the pit includes 6 m benches that are 12 m high.

During mine closure, a safety bund will be constructed around the entire perimeter of the Batman Pit to impede human access. The safety bund will be constructed with a 5 m base and 2 m height and the bund will be constructed with a 10 m offset from the potentially unstable pit edge zone to ensure berm longevity and safety as indicated in ***Figure 3-4 TSF 2 Closure Cover Design*** and ***Figure 3-6 Potential Instability Zones and Required Abandonment Bund Location (DIR 1997)***. As such, the pit berm will be approximately 4,500 m in length and utilize nearly 45,000 m3 of non-PAG material from the Batman Pit. A geotechnical assessment of the pit edge will be undertaken to identify exactly where the construction of the 10 m offset bund will be situated.

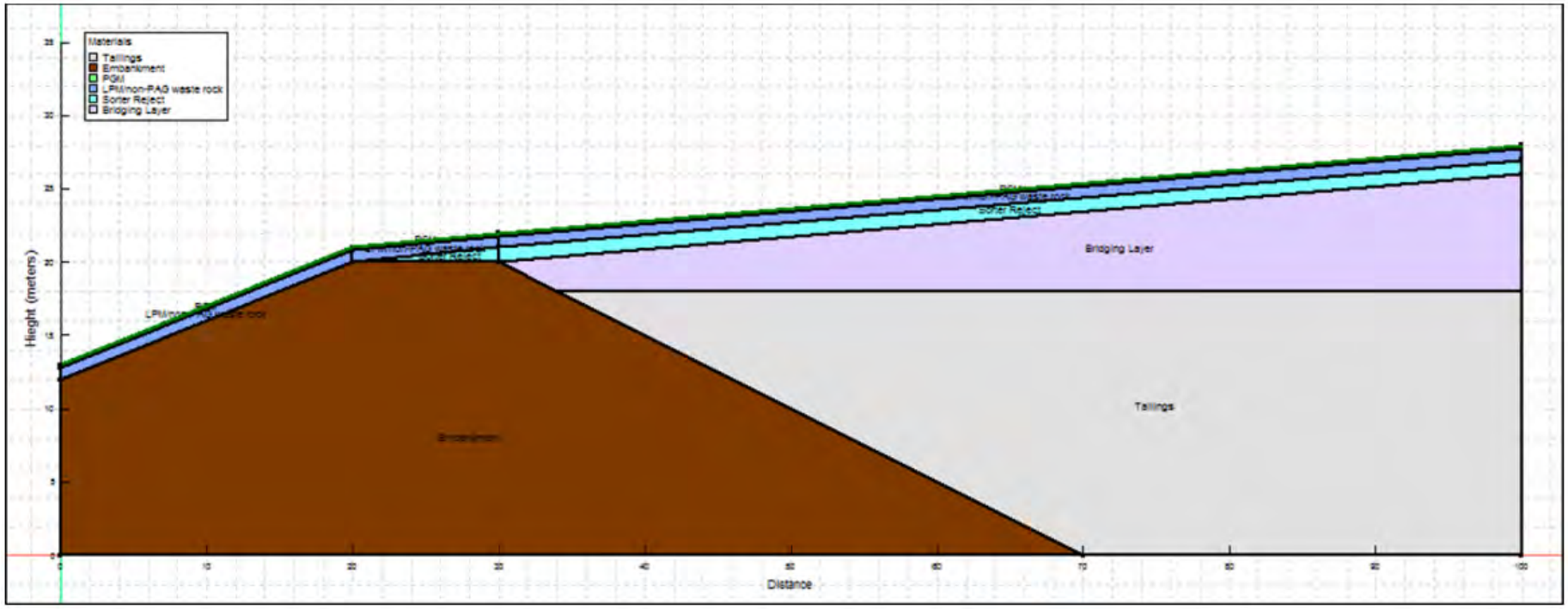
Surface water will be directed away from the pit ramp and a small trafficable soil bund will be placed across the ramp entrance to reduce surface water runoff at the crest of the ramp. A swinging, lockable boom gate will then be placed at the top of the ramp to restrict ramp access. This exclusion bunding will also constructed at Golf and Tollis Pits.

Figure 3-3 TSF1 Closure Cover Design



Note: the brown region is the embankment, the gray region is the tailings, purple is the bridging layer, aqua is the sorter reject, pink (TSF1)/blue (TSF2) is the LPM/non-PAG rock mixture, and green is the PGM.

Figure 3-4 TSF 2 Closure Cover Design



Note: the brown region is the embankment, the gray region is the tailings, purple is the bridging layer, aqua is the sorter reject, pink (TSF1)/blue (TSF2) is the LPM/non-PAG rock mixture, and green is the PGM.

Figure 3-5 Potential Instability Zones (DIR 1997)

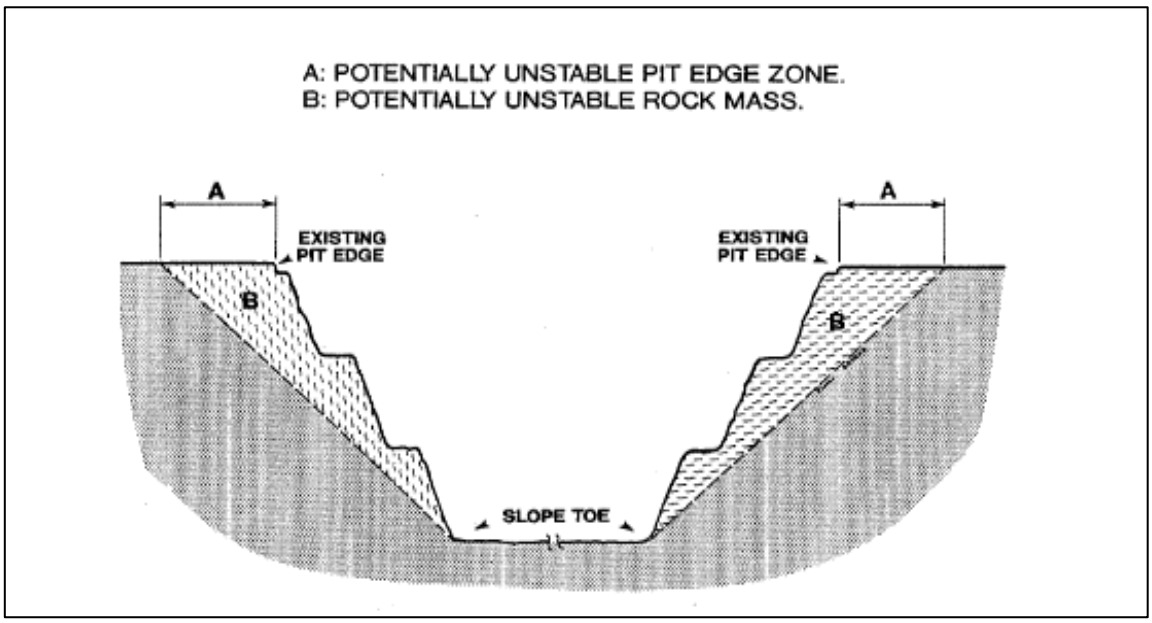
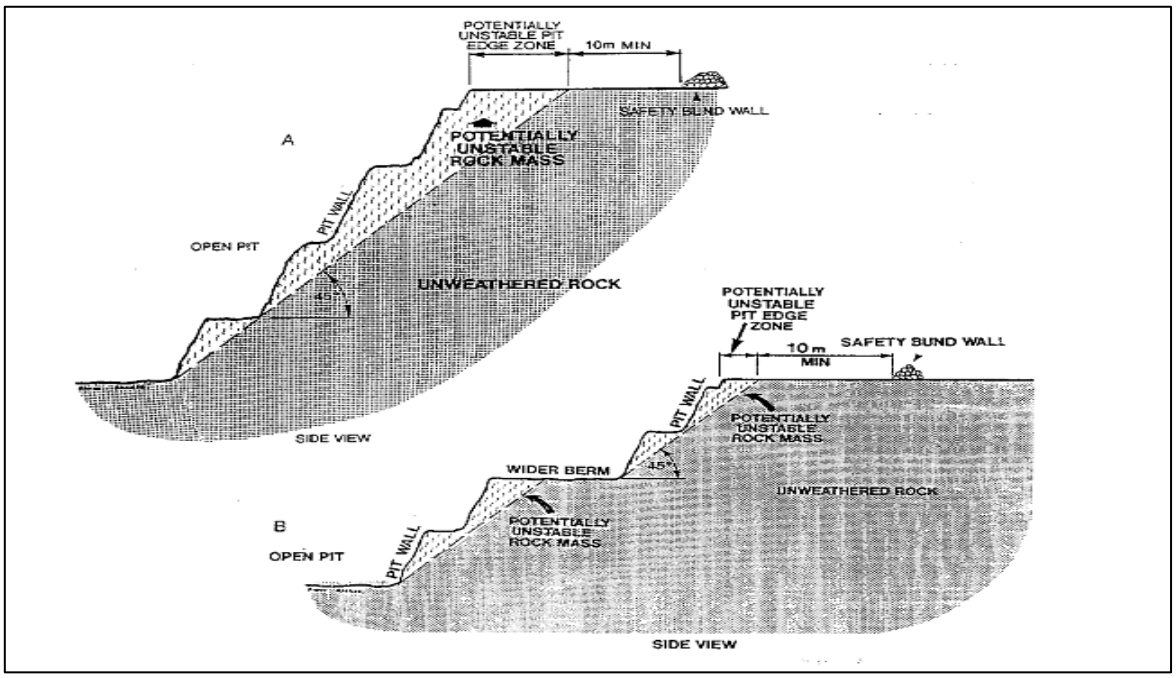


Figure 3-6 Potential Instability Zones and Required Abandonment Bund Location (DIR 1997)



3.5.4.1 Feasibility Assessment of Pit Closure Options

A cost benefit analysis that compares the social, environmental and economic costs associated with the proposed management of the Batman Pit void and the management of waste rock has been undertaken. Options considered include:

1. Backfill of the Pit
2. Partial backfill of the Pit
3. Pit Lake

Although often prescriptively proposed as “best practice” by a number regulatory bodies and sustainability organisations, fully or partially backfilled pits may sometimes lead to poorer regional closure outcomes than retaining a pit lake of some form (McCullough, 2013).

To provide some context around the options analysis provided below, it is important to consider that due to the nature and orientation of the deposit and the sequencing of mining in the Batman Pit, mining will begin with the removal of significant amounts of overburden material and will end with mining of ore material. In the last year of mining (at the end of pit life) there will be very little waste being mined, only ore will be being mined from the bottom of the pit, meaning that the WRD will be completed by this time. As such, any backfilling of the Pit would result in the rehandling of waste rock materials from within the WRD and moved to within the Pit.

Advantages and disadvantages for all options are provided below:

Option 1 - Backfilling of the Pit

Option 1 is based on completely backfilling the Batman Pit open cut void with mine waste material. The primary objective of the complete backfill option would be to remove the entire WRD, aiming to return the project area as close as possible to the original landform.

Key advantages of the complete backfill option include:

- A lower final landform with consequent reduction in erosion and visual impact; and
- Additional employment for the period of backfill operations.

The disadvantages of this option, however, far outweigh the benefits, as discussed below.

The economic cost to backfill the Pit has been calculated at:

Waste placed on the WRD	**522,990,000 t**
Cost per tonne to rehandle waste rock	**AUD $1.87/t**
Cost to backfill 100% of the WRD (AUD)	**AUD $977,991,300**

As the cost of backfilling is greater than the Net Present Value (NPV) of the Project, this option is simply cost prohibitive. These costs would render the Project uneconomic, would prohibit the development of the operation and as such would result in a consequent loss of employment opportunities and associated community investment projects, services, taxes and royalties.

In addition, not all waste rock would be able to be accommodated below the natural surface level of the final void. Due to the waste rock swell factor as the result of fragmentation and swelling resulting from the blasting process, excess waste rock would still need to be stored in a WRD.

Re-exposure of overburden material during re-mining from the WRD would also pose a health and safety risk to people and sensitive receptors. The risks associated with the deconstruction of the WRD, movement and placement of the waste rock material back into the pit void (a mining activity) and the associated impacts of including logistics, surface water management, rehabilitation delays, dust generation and fuel consumption (and greenhouse gas emission) must also be considered.

Option2 – Partial Backfill of the Pit

Option 2 considers a partial backfill option of the Batman Pit open cut void with approximately 50% (261.5 million tonnes) of the mine waste material stored in the WRD.

Key advantages of the partial backfill option include:

- Removing a significant portion of material from the WRD;
- Reduced visual impact, as the result of the reduced height of the WRD;
- Reduced risk of erosion of the WRD due to lower height; and
- Additional employment for the period of backfill operations.

The disadvantages of this option also outweigh the benefits. The WRD would need to be constructed comprising a permanent section to remain in situ post closure, and a temporary section with no permanent cover system, designed to be rehandled. The additional risks associated with this include:

- To enable rehandling of overburden while maintaining a stable landform, the WRD would need to be constructed to a lower height; hence the disturbance footprint would be greater than if the WRD was constructed as a permanent facility to the preferred 160 metre height. A larger footprint would create more ground disturbance.
- The opportunity for progressive rehabilitation would be reduced due to the need to keep both the permanent and temporary sections of the WRD open throughout the life of the mine.
- The safety and environmental risks (as per Option 1) associated with the re-exposure, movement and placement of waste rock into the void.
- Very high costs would be associated with the creation of a large footprint, low height WRD during operations, followed by the rehandling of a large portion of this overburden material. This would render the Project uneconomic and would prohibit the development of the operation. and would result in a consequent loss of employment opportunities and associated community investment projects and NT businesses.

Option 3 – Pit Lake

Option 3 considers leaving all overburden in place within the WRD and creating a pit lake within the Batman Pit mine void.

The various characteristics of pit lakes, including water quality, slope stability, and safety issues, can represent both liabilities and opportunities. The aim of the final Pit lake is to have a landform that is safe, stable and non-polluting. Considerations for each of these aspects are described below:

Safe

Safety may be a concern to both human and animal end-users around a pit lake. Safety is typically addressed through rehabilitation or access to void. At closure, the Batman Pit perimeter will be approximately 4,500 m. A safety bund will be constructed around the entire perimeter of the Batman Pit prevent unauthorised entry. The safety bund will be constructed with a 5 m base and 2 m height and the bund will be constructed with a 10 m offset from the potentially unstable pit edge zone. This safety bund will prevent human access and deter access to the pit by wildlife.

Stable

The design of the pit at closure includes 6 m benches that are 12 m high. These benches will ensure that the pit walls are stable and avoid slipping that could threaten the long-term stability of the pit.

Non Polluting

In terms of mine closure, ‘non-polluting’ refers to the risk of pit lake water causing environmental harm.

Post closure, the Batman Pit lake is predicted to be a terminal sink, with net evaporation from the lake exceeding the contributions from precipitation and runoff into the lake (Tetra Tech, 2018) and as such the water level is not expected to result in overtopping and outward migration of pit lake water to groundwater or surface water is not anticipated. In addition, the simulated ultimate pit water level is predicted to rise relatively rapidly following cessation of pit dewatering (Tetra Tech, 2018). Thus, sulfide oxidation that has occurred will effectively stop once wall rock is inundated by water.

Batman Pit is in metamorphosed (hornfelsed) rock, that is uncommonly strong as noted by the project Geotechnical Engineer (Rippere, 2019). Therefore, the reactive rock mass of the ultimate pit wall rock is likely to be low compared to waste rock, which will have higher fines content/surface area available to undergo weathering and sulfide oxidation. As a result, solute loading from wall rock to the pit lake should be low. This conclusion is supported by Vista Gold observations of continued alkaline pH water in the current Batman Pit lake without recent alkaline reagent addition, and minimal iron staining currently visible on the exposed pit walls.

Option 3 Summary

Advantages of the Pit lake option include no excessive costs associated with the rehandling of waste rock or disruption to the completed WRD, allowing for the proposed mine to go ahead which in turn will result in employment opportunities, services, taxes and royalties.

An additional benefit of retaining all overburden in place within the WRD would lead to a straightforward rehabilitation process. The WRD would be constructed to a high level of performance initially, avoiding the need for rehandling and its associated complexities (i.e. managing gas, water and associated extra oxidation products, as well as dust hazards).

Based on these considerations, there appears to be low risk to human and environmental health associated with the creation of the Batman Pit lake at closure.

Conclusion

Due to the orientation of the deposit and sequencing of mining, at end of mining in the Pit there will very little waste rock and majority ore being removed. As such, to backfill the Pit would mean moving the waste rock dump into the Pit after it is finished. The cost of double handling the waste rock from the completed waste rock dump and back into the Pit at the end of mining is therefore cost prohibitive to the Project.

The costs associated with both the complete backfill option, and the partial backfill option, would render the Project uneconomic and would prohibit the development of the operation. Should one of these options be chosen, the Project would not go ahead and would result in a consequent loss of employment opportunities and associated community investment projects, services, taxes and royalties.

3.5.5 Low Grade Ore Stockpiles

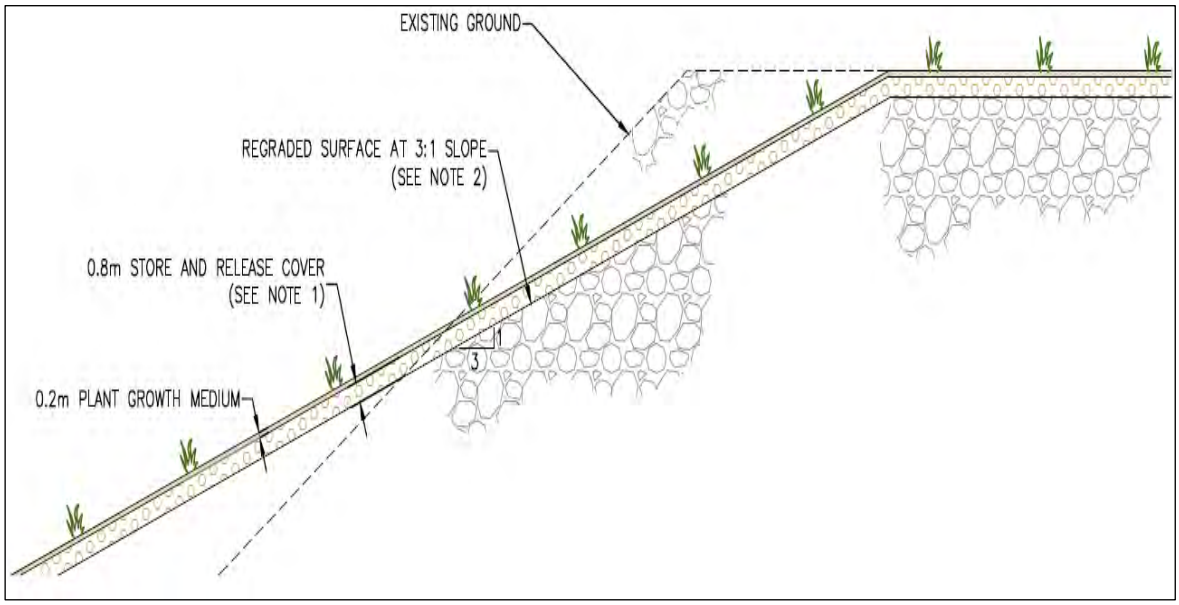
Nearing the end of mining, it is expected that most of the low-grade stockpiles will have been processed along with the material from the HLP. Residual material in these stockpiles will be reshaped using a grader to blend in with the surrounding topography and then the ground will be scarified along the contours of the land.

The area will be covered with a 0.8 m cover layer of LPM and NAG waste rock. A 0.2 m layer of PGM and fertiliser will then be applied, and the PGM layer will be sown with a mix of native grasses,

shrub and tree seeds. Plant material such as native wood chip, branches and logs will be scattered throughout the area.

Stormwater drainage, erosion and sediment controls will be designed and constructed to minimise erosion and channel scour. The proposed closure cover design of LGO stockpiles and the ROM pad is illustrated in ***Figure 3-7 Proposed Cover Design for LGO Stockpiles and ROM***.

Figure 3-7 Proposed Cover Design for LGO Stockpiles and ROM



3.5.6 Run Of Mine (ROM) Pad

The top 0.5 m of the main dumping area of the ROM will be ripped and sampled for gold content. If viable grade is found this material will be processed. The remaining material will be utilised, if suitable, to construct bund walls around any pit voids on site. If any material is still remaining, it will be shaped to form a water shedding landform and covered with a 0.8 m cover layer of LPM and then a 0.2 m layer of PGM and fertiliser will then be applied, and the PGM layer will be sown with a mix of native grasses, shrub and tree seeds. Plant material such as native wood chip, branches and logs will be scattered throughout the area.

3.5.7 Mine Roads

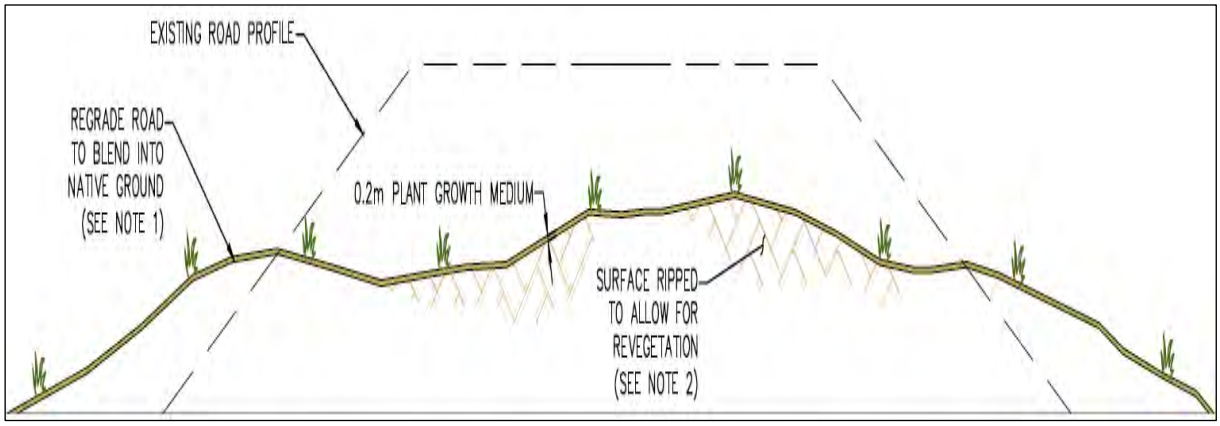
MTPA access roads will remain in place as required, to provide access to the area during closure and if there is a benefit to the freehold land owners. Approximately 24 ha of roads may require remedial work for closure.

To blend the roads back into the surrounding environment, excess material will need to be removed from the roads to return them, as closely as possible, to the surrounding RL. This material should be oxide or NAG, and therefore can be used for remedial work on site. If there is any concern regarding any of this material, samples will be sent to a NATA accredited laboratory for NAG/PAF testing.

The roads will require deep ripping. Using a grader, windrows will be pulled back into the centre of the road to mix soils and then graded back into the surrounding topography. A 0.2 m layer of PGM will then be applied and scarified using a grader and will be sown with a mix of native grasses, shrub

and tree seeds. Plant material such as native wood chip, branches and logs will be scattered throughout the area. The proposed mine road closure cover design is illustrated in ***Figure 3-8 Proposed Cover Design for Mine Road Close Out***.

Figure 3-8 Proposed Cover Design for Mine Road Close Out



3.5.8 Laydown Yards

If there is potential for contamination in soils from stored items that contain hydrocarbons and chemicals, or if there is evidence of spills or leaks, soil samples will be taken to assess contamination. Any contaminated soils deemed an issue will be dug up and taken to the tailings dam and buried.

The area will then be deep ripped to break up the compacted soil using a dozer and then shaped using a grader to blend into the surrounding topography. A grader will be used to scarify the ground along the contour of the land. The area will be covered with a 0.2 m layer of PGM. Fertiliser will be applied if required, and the PGM layer will be sown with mix of native grasses, shrub and tree seeds. Plant material such as native wood chip, branches and logs will be scattered throughout the area.

3.5.9 Processing Plant Area

Once processing ceases the process plant will be decommissioned and any reusable equipment and materials will be salvaged and resold. Remaining infrastructure will be demolished and any wiring and metal will be cut up, loaded into trucks and sent to a scrap metal dealer in either Katherine or Darwin.

Concrete foundations, walls, bridges and other non-reactive, non-combustive, non-corrosive and non-hazardous demolition waste will be broken up and:

- Placed in the WRD and buried;
- Placed in the tailings dam and buried; or
- Placed in the bottom of the pit and buried.

Soil samples will be taken from around the processing plant area to assess any contamination issues and also to assess for any nutrient supplements required for plant growth. Any contaminated soils deemed an issue will be dug up and taken to the tailings dam and buried.

The area will then be deep ripped to break up the compacted soil using a large dozer and then shaped using a grader to blend into the surrounding topography. Final prep work will be to use a grader to scarify the ground along the contour of the land.

The area will be covered with a 0.8 m cover layer of LPM and NAG waste rock and then a 0.2 m layer of PGM will then be applied. Fertiliser will be applied if required and the PGM layer will be sown with a mix of native grasses, shrub and tree seeds. Plant material such as native wood chip, branches and logs will be scattered throughout the area.

3.5.10 RP2

Reclamation of the Process Plant area will also include the site laboratory and closure of RP2 at the LOM. The closure of retention ponds will include removal of sediments, cutting, folding and disposal of liners in place, and backfilling of the pond using surrounding material. The pond surfaces will be covered and revegetated as per the Process Plant and Pad Area.

Closure of RP2 will involve:

- Soil samples will be taken from around the processing plant area to assess any contamination issues and also to assess for any nutrient supplements required for plant growth;
- Removal and burial of sediments in the tailings dam;
- Cutting, folding and disposal of liners in TSF2; and
- Backfilling of the pond utilising NAG material.

The area will then be shaped using a grader to blend into the surrounding topography and then scarifying the ground along the contours of the land. A 0.2 m layer of PGM will then be applied to cover the area. Fertiliser will be applied if required and the PGM layer will be sown with mix of native grasses, shrub and tree seeds. Plant material such as native wood chip, branches and logs will be scattered throughout the area.

3.5.11 Process Water Pond

The Process Water Pond (PWP) will be closed five years after production ceases. The remediation of the PWP will follow the same methodology as described for RP2. Stormwater drainage controls and erosion and sediment controls will be designed and constructed to minimise erosion and channel scour.

3.5.12 Laboratory

The site laboratory will remain until the processing plant has completed processing and has been decommissioned and dismantled. Once that has occurred, all services will be disconnected and removed from the laboratory. Vista Gold will investigate options for other parties to buy and remove any infrastructure that is salvageable. All chemicals will be sold to other mining operations or sold/sent back to the original supplier.

Vista Gold will then proceed with dismantling the infrastructure and stockpile it with other discarded metal to be sold off to a scrap metal dealer. Once the infrastructure has been removed any concrete slabs, retaining walls and bund walls will be broken up by mechanical means and loaded into the back of a truck to be taken to the Batman Pit for disposal and burial.

The laboratory footprint and associated roads will then be deep ripped because of soil compaction and will be covered with a 0.2 m layer of PGM. The area will then be scarified across the contour of the land and planted out with native plant species consistent with the area. Plant material such as native wood chip, branches and logs will be scattered throughout the area.

3.6 Workshops, Offices, Warehouses

Whilst the processing plant is operational and surface stocks are being processed, offices will still be required for the processing crew, surface rehabilitation crew, environmental/safety department and administration staff.

3.6.1 Workshops

Before the removal of all workshops, all services will be disconnected and removed from the workshops. Vista Gold will investigate options for other parties to buy and remove any infrastructure that is salvageable otherwise Vista Gold will then proceed with dismantling the infrastructure and stockpile it with other discarded metal to be sold off to a scrap metal dealer. Once infrastructure has been removed concrete slabs, retaining walls and bund walls will be broken up by mechanical means and loaded into the back of a truck to be taken to the Batman Pit for disposal and burial.

If deemed necessary, soil samples will be taken from around the workshops to assess any contamination issues. Any contaminated soils deemed an issue will be dug up and disposed of in an appropriate manner.

The workshop footprint and main road leading to the workshop will be deep ripped because of soil compaction and the windrows will be pushed into the centre of the road and then levelled off. The area will then be covering with a 0.2 m layer of PGM and will then be scarified across the contour of the land and planted out with native plant species consistent with the area. Plant material such as native wood chip, branches and logs will be scattered throughout the area.

3.6.2 Offices

During closure and rehabilitation work, the requirements for office space will be greatly reduced. Office space will be condensed for housing essential services that will be required for site work. All services will be disconnected and removed from these surplus offices. These surplus offices will be sold and removed from site.

Once the requirements for offices are no longer needed, all services have been disconnected and the offices have been removed, concrete slabs, retaining walls and bund walls will be broken up by mechanical means and loaded into the back of a truck to be taken to the Batman Pit for disposal and burial. The office footprints and associated roads will then be deep ripped because of soil compaction. The area will then be covering with a 0.2 m layer of PGM and scarified across the contour of the land and planted out with native plant species consistent with the area. Plant material such as native wood chip, branches and logs will be scattered throughout the area.

3.6.3 Warehouses

The warehouse will remain until the processing plant has completed processing and has been decommissioned and dismantled. Once that has occurred all services will be disconnected and removed from the warehouse. Vista Gold will investigate options for other parties to buy and remove any infrastructure that is salvageable. Vista Gold will then proceed with dismantling the infrastructure and stockpile it with other discarded metal to be sold off to a scrap metal dealer.

Once the infrastructure has been removed any concrete slabs, retaining walls and bund walls will be broken up by mechanical means and loaded into the back of a truck to be taken to the Batman Pit for disposal and burial. The warehouse footprint and associated roads will then be deep ripped, the area will then be covering with a 0.2 m layer of PGM. The area will then be scarified across the contour of the land and planted out with native plant species consistent with the area. Plant material such as native wood chip, branches and logs will be scattered throughout the area.

3.7 Other infrastructure

There are additional structures that will require decommissioning, dismantling and the areas rehabilitated. The rehabilitation of many of these additional structures, which includes ripping, contouring, scarifying, soil application and planting, will be conducted during works conducted on other areas in close proximity. In this document, each section will be addressed as individual areas.

3.7.1 Power Station

Once the processing plant has been decommissioned, dismantled and removed from site, there will be a dramatic decline in power usage requirements. Vista Gold will no longer require the power station to generate power for rehabilitation work on site and will source suitable diesel powered generators to continue powering the remaining minor infrastructure on site.

Vista Gold will liaise with NT power suppliers and the NT Government to see if there is a future purpose for this power station and if there is an interest in the purchase or lease of this infrastructure. Any leased equipment will be returned to lease company. Vista Gold will then investigate options for other parties to buy and remove any infrastructure that is salvageable. If there is no interest, decommissioning will commence with all services being disconnected and removed and gas feed lines capped off. Infrastructure will be dismantled and stockpiled with other discarded metal to be sold off to a scrap metal dealer.

Once all infrastructure has been removed, concrete slabs, retaining walls and bund walls will be broken up by mechanical means and loaded into the back of a truck to be taken to the Batman Pit for disposal and burial. Any exposed gas feed lines which have been capped off will be fenced off with a locked gate until the gas supplier decides on the future of the feed lines and they are decommissioned.

The power station footprint will then be deep ripped because of soil compaction and the area will then be covering with a 0.2 m layer of PGM. The area will be scarified across the contour of the land and planted out with native plant species consistent with the area. Plant material such as native wood chip, branches and logs will be scattered throughout the area.

3.7.2 Wash Bay

The infrastructure consists of water storage tanks and a concrete pad. All services will be disconnected and removed. Vista Gold will then investigate options for other parties to buy and remove any infrastructure that is salvageable otherwise Vista Gold will then proceed with dismantling the infrastructure and stockpile it with other discarded metal to be sold off to a scrap metal dealer. If deemed necessary, soil samples will be taken from around these facilities to assess any contamination issues. Any contaminated soils deemed an issue will be dug up and disposed of in an appropriate manner.

Once the infrastructure has been removed, concrete slabs, retaining walls and bund walls will be broken up by mechanical means and loaded into the back of a truck to be taken to the Batman Pit for disposal and burial. The footprint will then be deep ripped because of soil compaction and the area will then be covering with a 0.2m layer of PGM. The area will be scarified across the contour of the land and planted out with native plant species consistent with the area. Plant material such as native wood chip, branches and logs will be scattered throughout the area.

3.7.3 Fuel Facility

The infrastructure consists of a bulk fuel tank and associated pipe work, bunded area, fuel bowsers and a concrete pad. All services will be disconnected and removed. All contents will be decanted and sent off site to a certified waste disposal facility. Tanks and bowsers will be returned to the required fuel supply company if applicable. Vista Gold will then investigate options for other parties to buy and remove any infrastructure that is salvageable otherwise Vista Gold will then proceed with dismantling the infrastructure and stockpile it with other discarded metal to be sold off to a scrap metal dealer.

If deemed necessary, soil samples will be taken from around these facilities to assess any contamination issues. Any contaminated soils deemed an issue will be dug up and disposed of in an appropriate manner.

Concrete slabs, retaining walls and bund walls will be broken up by mechanical means and loaded into the back of a truck to be taken to the Batman Pit for disposal and burial. The footprint will then be deep ripped because of soil compaction, the area will then be covering with a 0.2 m layer of PGM, and the area will be scarified across the contour of the land and planted out with native plant species consistent with the area. Plant material such as native wood chip, branches and logs will be scattered throughout the area.

3.7.4 Core Shed and Yards

Discussions will be undertaken with the relevant regulatory bodies in relation to the requirements of what core records need to be retained and what they wish to keep. The drill core retained by Vista Gold will be consolidated and stored in a fenced area on site until a more permanent site can be established.

After the core has been consolidated the vacant area left will then be deep ripped because of soil compaction and the area will then be covering with a 0.2 m layer of PGM. The area will be scarified across the contour of the land and planted out with native plant species consistent with the area. Plant material such as native wood chip, branches and logs will be scattered throughout the area.

3.7.5 Waste Oil Areas

These facilities will be required until all work has been completed on site. Waste oil tanks that are on site will have all services disconnected and removed. All contents will be decanted and sent off site to a certified waste disposal facility. Tanks will be returned to the required supplier if applicable. Vista Gold will then proceed with dismantling the infrastructure and stockpile it with other discarded metal to be sold off to a scrap metal dealer.

Concrete slabs, retaining walls and bund walls will be broken up by mechanical means and loaded into the back of a truck to be taken to the Batman Pit for disposal and burial. If deemed necessary, soil samples will be taken from around these facilities to assess any contamination issues. Any contaminated soils deemed an issue will be dug up and disposed of in an appropriate manner.

The footprint and associated roads will then be deep ripped because of soil compaction, the area will then be covering with a 0.8 m cover layer of LPM, and NAG waste rock and a 0.2 m layer of PGM will then be applied. The area will then be scarified across the contour of the land and planted out with native plant species consistent with the area. Plant material such as native wood chip, branches and logs will be scattered throughout the area.

3.7.6 Borrow Pits

During the development of borrow pits for the MTPA they should be designed to encourage natural drainage and prevent the establishment of ponded water where practicable. Once the borrow pits are no longer required, rehabilitation will be undertaken.

After use, the disturbed landforms will be transformed as much as possible to resemble the topography of the surrounding environment. The final slope of the re-contoured land will be minimised to reduce the potential for water erosion and minimise ponding through self-drainage or by ensuring surface water flows or drainage lines are directed around the pit or depressions. Natural stream and drainage flows will be re-established where practicable to approximate original drainage patterns.

Once contoured, sub-soils and topsoil that has been stockpiled around the borrow pits will be mixed and spread and deep ripped to break up compacted soils and promote regeneration of plant species. Stockpiled vegetation that was a result of clearing will be spread over the area once soil has been spread and ripped.

3.8 Drill Holes and Bores

Open drill holes may attract, and trap small animals seeking refuge or water or fall into the holes and pose a danger to livestock and vehicles, particularly if subjected to erosion or collapse. Many bores on site will remain for post closure monitoring purposes. Bores on site that no longer have any functional use will be rehabilitated as per DPIR (2016) Advisory # AA7-029.

3.8.1 Exploration Drill Holes

Exploration drilling, mining activities and ground disturbance has occurred for many years in this area. It is possible that there will still be open drill holes around the site. In the event that an open or plugged drill collar is found on-site any old drill spoil will be deposited down the drill hole first. Completion will be as per DPIR (2016) Advisory # AA7-029.

3.8.2 Monitoring Bores

Vista Gold has a significant number of monitoring bores on site, which will be required for ongoing monitoring. At this stage, monitoring will continue for an unspecified number of years. When the time comes, a suitably qualified water bore drilling company will be mobilised to site to decommission all monitoring bores associated with the site. Completion will be as per DPIR (2016) Advisory # AA7-029.

3.8.3 Seepage Interception Bores

There are a number of seepage interception bores around the site. These will still be required for ongoing groundwater management, for at this stage an unspecified number of years. When the time comes, all associated infrastructure will be disconnected and all pumps will be removed. A suitably

qualified water bore drilling company will be mobilised to site to decommission all monitoring bores associated with the site. Completion will be as per DPIR (2016) Advisory # AA7-029.

4 Environmental Monitoring

Vista Gold currently has a significant site water monitoring program, which will be expanded throughout the LOM to incorporate other environmental elements. Discussions will be undertaken with Regulatory Departments throughout the LOM for appropriate environmental monitoring regimes to be incorporated into the environmental management of the MTPA post-closure.

5 Contaminated Site Assessment

Over the life of a mine, contaminated sites may be created by the storage and spillage of ore, waste rock, tailings, hydrocarbons and other chemicals. Potential impacts include risks to human health, the local ecology and contamination of local water resources. Tailings for example contain concentrated metals, cyanide, salts and other constituents used in the gold production process. WRDs and stockpiles also have the potential to be the source of heavy metals and other trace elements.

The National Environmental Protection Council (NEPC) introduced the National Environment Protection (Assessment of Site Contamination) Measure (NEPM) in December 1999 (updated 2013). The objective of the NEPM was to provide a nationally consistent approach to the assessment on site contamination and to provide adequate protection for human health and the environment from contamination. The site investigation will be carried out in accordance with the following: National Environment Protection (Assessment of Site Contamination) Measure 1999 (NEPM); AS 4482 Part 1 (2005) and Part 2 (1999) (updated 2013) and the NT EPA Contaminated Land Guideline (June 2017) Version 1.0.

NEPM Health Investigation Levels (HILs) shall be used as a trigger for further investigations. In areas where Category E HILs are exceeded, a risk assessment of the specific area and contamination levels shall be conducted to determine whether the area will be excavated and removed. Verification monitoring shall be conducted in areas where remediation has been completed, to ensure that the contamination has been removed. This shall be incorporated into the final contaminated site investigation report.

A site database has been developed for site and will be used to identify potential contaminated sites. This database will assist in the initial assessment process. A summary of potential contaminated sites is presented in ***Table 5-1 MTPA Potential Contaminated Sites***.

Table 5-1 MTPA Potential Contaminated Sites

Potential (Major) Contaminated Sites	Potential issues	Potential (Minor) Contamination Sites	Potential issues
TD1 and ponds	Heavy metals, CN, salinity, seepage	Car parking areas	Heavy metals, salinity, hydrocarbons
TD2 and ponds	Heavy metals, CN, salinity, seepage	Site minor access tracks	Heavy metals, salinity, hydrocarbons/PAF
Process water pond	Heavy metals, CN, salinity, hydrocarbons	Office areas	Heavy metals, salinity, hydrocarbons
Mill and processing plant	Heavy metals, CN, salinity, chemicals, hydrocarbons	Core yard	Heavy metals, salinity, hydrocarbons
Crushing plant	Heavy metals, salinity, hydrocarbons/PAF	Power station	Hydrocarbons
Bulk fuel farm	Hydrocarbons		
Contaminated soil storage area	Hydrocarbons		
ROM	Heavy metals/PAF		

Potential (Major) Contaminated Sites	Potential issues	Potential (Minor) Contamination Sites	Potential issues
Site roads	Heavy metals, salinity, hydrocarbons/PAF		
Mechanical workshop area	Heavy metals, salinity, hydrocarbons		
Laboratory area	Heavy metals, salinity, chemicals, hydrocarbons		
Wash bay	Heavy metals, salinity, hydrocarbons		
RP1	Heavy metals, CN, salinity, seepage		
HLP	Heavy metals, CN, salinity, seepage		

6 Notification and Communication Strategy

Communication of closure issues will be a continuous dialogue with key stakeholders throughout the LOM. Once the decision has been made to place the MTPA into mine closure, the following notifications will need to be considered and made;

- Disclosure to the relevant Stock Exchanges;
- NT WorkSafe
- General population of Katherine
- Vista Gold workforce and contractors
- Department of Primary Industries and Resources
- Department of Lands, Planning and the Environment
- Environmental Protection Authority
- Power and Water Corporation
- Katherine Regional Council
- NT and Federal Government Ministers
- Local members of Parliament
- Minerals Council of Australia
- Vista Gold suppliers and other contracted parties
- Regional mining operations
- Other organisations that have written agreements for support and emergency services
- Indigenous community groups
- Local land management groups

For each stakeholder group, the order and method of communicating the decision to progress to mine closure will be based on legal requirements (e.g. some stakeholders will require formal notification) and sensitivity to the impact of the announcement. Some stakeholders may be initially advised verbally, followed by a site wide memorandum. Where specific requirements exist for notifications, these are noted below.

6.1 Stock Exchange

On the suspension of operations at MTPA, Vista Gold, a release will be issued to the stock exchanges where Vista Gold is listed.

6.2 NT WorkSafe

It is Vista Gold's primary duty to ensure that the health and safety of their workers and others at the workplace until such a time the site is closed and the mining tenement has been relinquished. To

ensure that NT WorkSafe is aware of pending activities at the MTPA, Vista Gold will submit a notification to NT WorkSafe with:

- Notification of proposed date of suspension of operations; and
- Notification of key personnel and their roles on site until the site closes.

Additional information will be forwarded on as requested.

6.3 Industry Groups and Political Leaders

It is considered prudent to ensure key political organisations are directly informed of a decision to progress to mine closure. Groups, which Vista Gold is a member, may be approached by media and/or other outlets for comment or information. Similarly, key members of Parliament should be advised of the decision to progress to mine closure, which includes the State and Federal members for the Katherine area and the greater NT region.

6.4 Commonwealth Agencies

Vista Gold will be required to provide reports or report data to the following Commonwealth Agencies:

- Department of Resources, Energy and Tourism – Energy Efficiency Opportunities (EEO);
- Department of Sustainability, Environment, Water Population and Communities – National Pollutant Inventory (NPI);
- Department of Climate Change and Energy Efficiency – National Greenhouse and Energy Reporting (NGERS); and
- Department of Environment and Energy.

Vista Gold anticipates that during closure activities Commonwealth Agency reporting requirements will be reduced due to no longer exceeding energy usage guidelines. NPI will still be required but NGERS and EEO reporting requirements may not be required due to the site not exceeding energy usage limits at the time of mine closure.

6.5 Contractors and Suppliers

Once the announcement to enter the closure phase has been made, contract parties will be advised of contract termination, commencement of notice periods or new contractual arrangements reflecting changes to the operation. This will include:

- Stocktaking of stores inventories remaining on site;
- Running down supplies of reagents and consumables to just-in-time quantities;
- Arrange the return of consignments of goods supplied, but are not going to be required for the remaining life of the processing plant;
- Negotiating demobilisation of major components surplus to requirements;
- Return of any leased infrastructure to suppliers if they are superfluous to closure activities requirements;
- Other Australian operations, arrange transfer of common goods and spares that are no longer required;

- Liquidate redundant items and items that will perish within the anticipated life of rehabilitation activities; and
- Items that cannot be sold at commercial or scrap value, recycled or donated shall be disposed either to landfill or to an appropriate offsite disposal facility.

6.6 Media Interests

The announcement of suspending operations at the MTPA may attract local, state or national media interest. In this event, enquiries are to be referred to the designated media spokesperson; the General Manager of Vista Gold, so that the required information is delivered in an appropriate manner.

6.7 Other Mining Companies

Vista Gold will advise other mining companies in the region of the decision to suspend operations. Notification is not only a courtesy to other miners but also advises of the potential to place personnel with other mining operations in the area and addresses any commercial arrangements that may exist.

6.8 Emergency and Support Organisations

MTPA will have a mines rescue team, which will be capable of contributing to the region's emergency response capacity. There will be a requirement to have a small presence on site until such a time that rehabilitation works have been completed. It will be necessary to advise local emergency services that Vista Gold's emergency response capacities will be at a reduced level as it progresses through the rehabilitation phase.

6.9 Indigenous Community Groups

Vista Gold will notify Indigenous Community Groups of the intention of ceasing mining operations and the pending closing of the mine site. Those related organisations will be invited, if interested, along with other stakeholders to participate in closure processes. Closure activities will be communicated at community engagement meetings that will be held during the reclamation phase and other community forums as required.

6.10 Land Management Groups

Vista Gold will advise land management groups in the area of the decision to suspend operations and need to engage in discussions regarding rehabilitation works and the possibility of being involved in monitoring programs going forward post-closure.

7 Human Resources Strategy

From the announcement of the decision to suspend operations, resources will be reduced. Leading up to closure, the mining areas are expected to experience the most immediate and substantial impacts and this will continue until open pit mining ceases. The processing area will experience a small decrease in labour requirements but there will still be a requirement to have a plant operational team to continue with processing surface stockpiles and then preparation works for decommissioning the plant and associated infrastructure on completion of processing.

There will be a reduction in support staff in areas like geology and engineering, and to a lesser extent administration. A small number of staff will be retained to progress with regional exploration and any other surface mining opportunities. The environment and surface maintenance groups will be combined to progress with rehabilitation and closure requirements. The human resources strategy will involve:

- Ensuring transparent and regular communication with employees and contractors;
- Development of a resourcing plan for closure and rehabilitation activities;
- Identifying redundancies to match the resourcing plan;
- Liaison with nearby operations and organisations to see if there are any placement opportunities;
- Making professional outplacement assistance available for employees;
- Processing redundancies; and
- Provide a level of assistance to employees in transition planning and training opportunities.

8 Training and Awareness

Vista Gold's underlying principle of ensuring worker safety is of highest concern. The company is committed to ensuring all employees and contractors are aware of their individual safety and environmental obligations and responsibilities. The company aims to provide all personnel with the appropriate safety and environmental training and an understanding of rehabilitation principles required to make effective decisions regarding various aspects of rehabilitation processes, ensuring that safe, efficient work practices are implemented during closure activities, and that environmental outcomes of a high standard are achieved during closure and rehabilitation activities.

Operational site induction programs will be maintained during the rehabilitation program. Site inductions will contain specific aspects relating to closure activities. All employees and contractors will attend a site induction before commencing work and any relevant safety/environmental awareness programs. The training matrix will be updated to identify the safety and environmental training needs of site employees and contractors. This will be achieved by identifying the current capability of personnel to perform their roles and responsibilities effectively. The training matrix will identify the major activities of employees and determine the significant safety and environmental risks associated with the work tasks to be undertaken.

Additional methods of identifying training needs include observing work practices in operation, analysing past incidents, non-compliances and non-conformances and direct feedback from employees and contractors.

Training and awareness programs developed for safety and environmental aspects of specific tasks will be given to employees and contractors where applicable. These programs include job safety analysis (JSAs), land clearing standards, rehabilitation design and techniques, weed management, recycling and waste management, rehabilitation monitoring and rehabilitation safety. Attendance records will be kept of all personnel attending training and awareness courses.

9 Contingency Planning

The closure and rehabilitation strategy will include plans and strategies for unexpected or unanticipated early closure. As a minimum, unexpected closure would result in the following:

- Environmental audit of the entire site;
- Review of the Care and Maintenance Plan; and
- Submission of the reviewed Care and Maintenance Plan to relevant authorities for their information.

In order for this to occur, the Care and Maintenance Plan will include:

- Emergency Response Procedure;
- Mine access and security review;
- Geotechnical monitoring program to monitor stability of Batman Pit, the WRD, TSF1 and TSF2;
- Program to address incomplete rehabilitation and remediation works; and
- Environmental monitoring and inspection program, which includes:
    - License requirements;
    - Chemical and hydrocarbon storage;
    - Treatment plant condition;
    - Pit water monitoring;
    - Erosion monitoring; and
    - Rehabilitation monitoring.

If the MTPA were to go into Care and Maintenance, Vista Gold would revert to activities that Vista Gold managed in the past on behalf of the NT Government but would now be ultimately responsible for these activities. ***Table 9-1 Care and Maintenance Activities*** below summaries Care and Maintenance that Vista Gold will revert to in case of future unanticipated early closure.

Table 9-1 Care and Maintenance Activities

Section	Required	Activities	Frequency
Site Management & Infrastructure Maintenance	Maintain site Security.	Ensure assets on site remain safe and are not affect/interfered with by external parties.	Daily.
	Asset Maintenance	Maintain assets so that they are fit for purpose.	Monthly/As required.
	Access Management	Maintain tracks and roads on site allowing other care and maintenance activities to take place.	Monthly/As required.
	Clean up	Undertake housekeeping activities to ensure site and work areas are safe and accessible.	As required

Section	Required	Activities	Frequency
	Heap Leach Pad Dewatering	Undertake dewatering activities to maintain capacity.	As required during the year. Significant works during dry if required.
	Ponds, Pipe and Valve inspection and or maintenance	Ensure all water management assets are fit for purpose and able to cope with flows required.	Monthly/As required.
	Health and Safety	New staff and contractors undertake a site specific health and safety induction. Additional health and safety issues related to the operation under care and maintenance.	As Required.
Environmental Management	Soil and Land Management	Maintain the site soils from erosion. Maintain diversion drains and roads. Undertake assessments of erosion and sediment on site.	As required. Additional checks after significant rainfall.
	Water Management	Actively monitor and manage the site water inventory to ensure protection of water holding structures and minimise discharge risks to the environment.	Daily monitoring at various sites as required. Monthly sampling during dry, and more frequently as required during wet season.
	Weed Management	Maintain a pest and weed management program to minimise spread and/or reproduction.	When conditions are suitable. As per Weed Management Plan.
	Feral Animal Management	Maintain a feral animal management program.	As Required.
	Waste and Hazardous Substances Management	Maintain facilities and actively monitor waste production and disposal. Monitor hazardous substances storage and maintain inventory of hydrocarbon storage.	As required and during deliveries.
	Fire Management	Identification of potential fire risks, conducting managed burns across the Mineral Lease to protect assets.	When suitable weather conditions exist and under permit when required.
	Cultural and Heritage Management	Ensure all Aboriginal Areas Protection Authority Certificates are current, education and marking of known heritage sites to avoid/minimise disturbance. Enforcing compliance of all on-site activities.	As required.

10 Closure and Relinquishment

Under community and stakeholder consultation, the final completion criteria for the site will be developed as the MTPA progresses towards the closure of the mine. Mining disturbance is summarise in ***Table 10-1 Mining Disturbance Table*** below. Vista Gold will ultimately close the MTPA and hand over commitments and responsibility to the Northern Territory Government. As a result, the successful closure of the site would result in minimal to no ongoing management, and minimal ongoing monitoring.

Unsuccessful closure could result in the site being left unsafe, unstable or continuing to impact the surrounding environment. This would result in a failure to meet completion criteria and therefore failure to successfully close the MTPA; which would mean that Vista Gold could not relinquish responsibility for the MTPA back to the Northern Territory Government.

Table 10-1 Mining Disturbance Table

Disturbance type	Quantity	Volumes	Area (ha)	Total area (ha)
Open pit(s)				137 (Batman) 5.74 (Golf & Tollis)
Underground mine	N/A	N/A	N/A	N/A
Waste rock dumps				217
Product stockpiles				47
Heap leach pads				35.01
Tailings dams				540
Process water dams				29.16
Potable water dams				
Mine site infrastructure (including workshops and fuel storage)			35	
Accommodation facility and associated infrastructure	N/A	N/A	N/A	N/A
Bore field and pipelines	N/A	N/A	N/A	N/A
Borrow pits				
Access tracks				
Haul roads			24	
Laydown areas and other cleared ground not included elsewhere				
Exploration (specify)				
Other (specify)				

10.1 Post closure Batman Pit water quality

Practical Geochemistry LLC were engaged complete geochemical modelling to assess future water quality for the Batman Pit lake (**Attachment R3**) and to provide expert opinion related to the water quality of the related to the post-closure pit lake (**Attachment R4**).

The ultimate Batman Pit is predicted to be a terminal sink pit lake without groundwater or overflow leaving the pit (Tetra Tech, 2019; Tetra Tech, 2020). Approximately 1,200 years after mining ceases, the pit lake is predicted to reach hydrologic equilibrium at an elevation of approximately -15 metres Australian Height Datum (m AHD), which is approximately 179 m below the pit rim. Direct precipitation on the lake surface and wall rock runoff are the primary predicted inflows while evaporation from the lake surface is the only predicted outflow.

Rainwater over each successive year will ensure a natural pH as the ratio of PAF and Non-PAF is such that the acid generating potential is cancelled by the Non-PAF. It is also noted that due to the initial PAF rock under the water line will not arrest the sulfide oxidation.

The letter provided by Practical Geochemistry LLC (**Attachment R4**) summarises several site-specific factors that highlight why the need for improvements to pit lake water quality following closure is not expected, including:

- Batman Pit is in metamorphosed (hornfelsed) rock, that is uncommonly strong as noted by the project Geotechnical Engineer (Rippere, 2019). Therefore, the reactive rock mass of the ultimate pit wall rock is likely to be low compared to waste rock, which will have higher fines content/surface area available to undergo weathering and sulfide oxidation. As a result, solute loading from wall rock to the pit lake should be low. This conclusion is supported by Vista Gold observations of continued alkaline pH water in the current Batman pit lake without recent alkaline reagent addition, and minimal iron staining currently visible on the exposed pit walls.
- The post-closure pit lake is predicted to be a terminal sink, with net evaporation from the lake exceeding the contributions from precipitation and runoff into the lake (Tetra Tech, 2018). Therefore, outward migration of pit lake water to groundwater or surface water is not anticipated. In addition, the simulated ultimate pit water level is predicted to rise relatively rapidly following cessation of pit dewatering (Tetra Tech, 2018). Thus, sulfide oxidation that has occurred will effectively stop once wall rock is inundated by water.

Reasonable best estimates of future pit lake water quality were predicted by Practical Geochemistry LLC based on the current project understanding and available data. Geochemical mass loading from wall rock was the primary control on predicted pit lake quality. Conservative assumptions were made for the base case predictive model consistent with industry best practices but also resulted in predicted water quality with low pH and livestock watering guideline exceedances for copper and lead. Modification of the scaling factors to account for the high hardness/competency of the metamorphosed Batman Pit wall rock resulted in predicted pit lake chemistry that met the guideline values except for lead, which is likely to be at or below concentrations observed in AMD at Mount Todd Mine. Resumption of mining in Batman Pit will provide additional field scale information regarding wall rock reactivity to support future water quality assessments and allow Vista Gold to optimise the pit lake closure strategy. Additional detail is provided in **Attachment R3**.

Based on these considerations, there appears to be low risk to human and environmental health associated with the Batman Pit lake; therefore, post closure water quality improvements should not be required.

11 References

DME 2006. Minerals and Energy Advisory #: CA7-011 MINE CLOSE OUT OBJECTIVES Life of Mine Planning Objectives. October 2006.

DPIR 2016. Advisory #. AA7-029 Construction and Rehabilitation of Exploration Drill Holes.

McCullough, 2013, Mine Closure of Pit Lakes as Terminal Sinks: Best Available Practice when Options are Limited?

McCullough, 2020, Realizing Beneficial End Uses from Abandoned Pit Lakes.

Practical Geochemistry LLC (2020) Mount Todd Gold Mine, Batman Pit Predictive Geochemical Modelling Report.

Tierra Group International Ltd (2020) Mt Todd Waste Rock Dump Closure Assessment Report, July 2020.

Tetra Tech. (2019). NI 43-101 Technical Report Mt Todd Gold Project 50,000 tpd Preliminary Feasibility Study, Northern Territory, Australia, Hydrogeology, Project No. 114-910589/117-8348001, Prepared for Vista Gold Corp., October 2019.

Tetra Tech. (2020). Mt Todd Groundwater Model Results Update. Prepared for Vista Gold. May 20, 2020.

Tetra Tech.(2020) Reclamation Plan. Prepared for Mine Management Plan 2021-2025. April 2020.

Attachment R1 – Mt Todd Waste Rock Dump Closure Assessment Report (TGI)

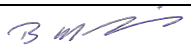
Attachment R2 – Cover Trials Design and Monitoring Procedure (Tetra Tech 2020)

Attachment R3 – Batman Pit Predictive Geochemical Modelling Report (Practical Geochemistry LLC)

Attachment R4 - Post Closure Pit Lake Water Quality (Practical Geochemistry LLC)

File Name: Appendix R - Closure Plan_Final.docx

Document Status

Revision	Author	Reviewer		Approved for Issue		
		Name	Signature	Name	Signature	Date
REV A	Jill Woodworth	James Hill		Nicole Conroy		06/09/2017
REV 0	James Hill	Jill Woodworth		Jill Woodworth		16/11/2017
REV 1	Brent Murdoch	John Rozelle		Brent Murdoch		31/10/2018
REV 2	Julia Curran	Jill Woodworth		Brent Murdoch		04/08/2020

www.mttodd.com.au