

Mining Management Plan Exploration Activities

YES Northern Territory of Australia – Mining Management Act

It is recommended that the Mining Management Plan is completed in conjunction with the user guide, available on the [Northern Territory Government website](#).

Section 1 – Project Details

Project Name Provide new or existing project name	Cosmo Howley Cosmo Tailing and Dam Drilling
Authorisation Number Insert existing authorisation number, where applicable	Authorisation 0968-01
Operator Name Use ASIC-ABR registered name (if a company), or name of the applicant	NT Mining Operations (NTMO)
Location and Access Details Include brief description of the location, access details, and distance to nearest town or community	<p>NTMO operations are centred between the villages of Adelaide River to the north and Pine Creek to the south. The area was historically an important gold mining centre and is serviced by the Stuart Highway. They are located 248 km south-southeast of Darwin, the capital city of the Northern Territory.</p> <p>The CHPA is located approximately 130 km south east of Darwin (160 km by road), between Adelaide River and Pine Creek. The nearest township is Adelaide River located 50 km to the north-west of the project area. The site is approximately 12 km north-west of accommodation and services at the Hayes Creek Wayside Inn.</p> <p>The CHPA is accessed via the sealed Dorat Road either directly from the Stuart Highway or via Fountain Head Road West. The main site facilities are less than 1 km from employee accommodation at Cosmo Village on Ooloo Road accessed off Dorat Road. A separate haul road restricted to heavy vehicles extends to the Stuart Highway to transport ore resources to the processing facility at the Union Reefs Project Area (URPA).</p>
Target Commodity Details Include target commodities (i.e. gold, copper etc)	Gold

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<p>Mining Activities Summarise the mining activities (exploration) to be the subject of the proposed Authorisation or Variation</p>	<p>Exploration programmes described in this document include activities in historically disturbed areas. Separate documents will be submitted to DPIR for each upcoming exploration activity.</p> <p>Presently, this includes information on the “Cosmo Tailings” drilling programme.</p> <p>Drilling of the area included some geochemical assessment of the drill cores to determine potential gold grades of the tailings.</p> <p>Assessment of Dam walls have now been included in the programme for understanding geotechnical and geochemical material of the Dam structures.</p>
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<p>Proposed Schedule Include start and finish dates of ground disturbing work</p>	<p>May 2021 – September 2021</p>
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Mining Interest and Land Ownership

List the mining interests (titles), the title holder name/s, the title expiry date and the Property name/Land holder (e.g. pastoralist or Aboriginal land trust) for each title.

Title Number	Title Holder	Expiry Date	Property Name or Land Holder
ML30892	NT Mining Operations PTY LTD	22/07/2025	Douglas Station (PPL1217)
ML30887	NT Mining Operations PTY LTD	22/7/2025	Douglas Station (PPL1217)
MLN809	NT Mining Operations PTY LTD	31/12/2021	Douglas Station (PPL1217)
MLN890	NT Mining Operations PTY LTD	31/12/2020	Douglas Station (PPL1217)
MLN891	NT Mining Operations PTY LTD	31/12/2020	Douglas Station (PPL1217)
MLN892	NT Mining Operations PTY LTD	31/12/2020	Douglas Station (PPL1217)
MLN993	NT Mining Operations PTY LTD	03/11/2021	Douglas Station (PPL1217)
MLN1000	NT Mining Operations PTY LTD	01/03/2039	Douglas Station (PPL1217)
MLN1027	NT Mining Operations PTY LTD	01/11/2021	Douglas Station (PPL1217)
MLN1053	NT Mining Operations PTY LTD	26/06/2029	Douglas Station (PPL1217)
MLN1062	NT Mining Operations PTY LTD	01/11/2023	Douglas Station (PPL1217)
ML31017	NT Mining Operations PTY LTD	29/12/2025	Douglas Station (PPL1217)

Delete or add rows as required

Mining Management Plan Exploration Activities**Organisational Structure**

Position Title	Name
VP Australia (Co-Lead)	John Landmark
Project Director	Mark Edwards
Manager Projects, Rehabilitation and Environment	Trevor Edwards
Senior Exploration Geologist	Meg Ellis
Lead Environmental Engineer	Sam Yang
Health, Safety, Training and Security Manager	Allan Sinclair

Delete or add rows for various position titles as required

Section 2 – Operator Self-Assessment of the Environmental Risk

The purpose of this self-assessment is to ensure Operators complete a project risk assessment of potential environmental impacts and are aware of other legislative obligations from various Agencies. As a result of this self-assessment, further information may be required in the form of a management plan to enable full assessment of the MMP. If you have any queries please contact a Mining Officer prior to submitting the MMP. Useful resources to assist with this self-assessment are provided in the User Guide.

Environmental considerations

ASSESSMENT ASPECT	YES or NO	ACTIONS REQUIRED (if answered YES)	APPENDED INFORMATION (Evidence of consultation with DENR and/or management plan)
Step 1: Are there any threatened flora and fauna species or habitats of significance that may occur in the proposed work area?	YES	There is potential for threatened fauna species to occur in the CHPA. The main control for managing the risk to known vulnerable flora species at the CHPA is through the requirement for personnel to seek approval from the NTMO Environment Department through a Clearing/Ground Disturbance Permit. This process requires an area walkover prior to the issuing of Clearing/Ground Disturbance Permit. NTMO site disturbance checklists include checks to ensure that access tracks and drill pads do not impact on vulnerable flora species.	Flora and Fauna Management Plan (Appendix 9)
Step 2: Are there any known declared weeds within the proposed work area?	YES	Five declared weed species have been recorded in the vicinity of the CHPA (Baker et al., 2005): <ul style="list-style-type: none"> • Horehound or Hyptis (<i>Hyptis suaveolens</i>) - Declared Class B and C • Lion's Tail (<i>Leonotis nepetaefolia</i>) - Declared Class B and C • Gamba Grass (<i>Andropogon gayanus</i>) - Declared Class B and C • Rubber bush (<i>Calotropis procera</i>) - Declared Class B and C • Mission Grass (<i>Pennisetum polystachion</i>) - Declared Class B and C 	Weed Management Plan (Appendix. 10)
Step 3: Will you be using water from bores or other sources for the operation?	NO	No water is currently being pumped from groundwater bores for use in exploration activities. This unlikely to occur with future projects; however separate documents will be submitted detailing this in the MMPs pertaining to specific activities.	

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Environmental assessment and cultural considerations

ASSESSMENT ASPECT	YES or NO	MANAGEMENT REQUIREMENTS
Step 4: Is your project likely to have a significant impact on the environment?	NO	NTMO believe that by following the management plans attached, these activities will not have a significant impact on the environment.
Step 5: Are there Aboriginal sacred sites in the Project area?	NO	AAPA certificate C2009/263 has been issued for the CHPA in accordance with Section 22 of the NT <i>Aboriginal Sacred Sites Act 1989</i> .
Step 6: Are there archaeological and heritage sites in the Project area?	YES	To ensure protection of sites, the Clearing and Ground Disturbance Permitting system, monitoring and mitigation measures are in place to ensure any potential impacts on cultural and heritage sites are avoided.

Section 3 – Amendments

As per Section 41(3) of the *Mining Management Act*, an MMP reviewed and amended under Section 41(1)(a) is to clearly identify amendments made.

Section	Amendment
N/A	N/A

Delete or add rows as required

Section 4 – Activities Proposed

Mining Interests (i.e. titles)	MLN1000	MLN1053	MLN993
Number and type of proposed drill holes	3 x Sonic Drill holes	1 x Sonic drill hole	1 x Diamond holes 1 x Sonic Drill Holes
Maximum depth of proposed holes (m)	15	15	15
Number and size of drill pads to be cleared (Length: m x Width: m)	3 x pads 10x20m	1 x pad 10x20m	2 x pads 10x20m
Total area of drill pads to be cleared (ha)	0.06ha	0.02ha	0.04ha
Is drilling likely to encounter groundwater? (Y, N, unsure)	YES	YES	YES
Number of costeans (Length: m x Width: m x Depth: m)	NIL	NIL	5 x costeans 2x1x1m
Number of bulk sample pits	NIL	NIL	NIL
Total bulk sample (tonnes) (Length: m x Width: m x Depth: m)	NIL	NIL	NIL
Bulk sample pits approved under <i>Mineral Titles Act</i> ? (Y or N)	NIL	NIL	NIL
Length of line/track clearing (km: x Width: m)	NIL	NIL	NIL
Camp area to be cleared (ha)	NIL	NIL	NIL
Camp Infrastructure (i.e. demountable, tents)	NIL	NIL	NIL
Previous disturbance yet to be remediated on title (ha) if known	NIL	NIL	0.04ha
Other: sumps LxWxD metres	2 x sumps 4x3x1		
Total area disturbed proposed (ha)	0.062ha	0.02ha	0.04ha

Section 5 – Previous Disturbance (for existing Authorisations only)

Mining Interests (i.e. titles)	MLN1000	MLN1053	MLN993	
Number/type of holes drilled	NIL	NIL	6 x CPT holes 3 x Sonic 1 x DDH	
Maximum depth of holes drilled (m)	NIL	NIL	20m	
Number of holes remediated (i.e. plugged/capped)	NIL	NIL	6 x CPT 1 x Sonic	
Number and size of drill pads cleared (Length: m x Width: m)	NIL	NIL	1 x 20x20m	
Total area of drill pads cleared (ha)	NIL	NIL	0.04ha	
Total area of drill pads remediated (ha)	NIL	NIL	0	
Was groundwater encountered? (Y or N)	NIL	NIL	YES	
Length of line/track cleared (Length: km x Width: m)	NIL	NIL	0.8km x 3m 0.24ha	Tracks remain open for monitoring
Length of line/track remediated (Length: km x Width: m)	NIL	NIL	0.59km x 3m	
Number of costeans excavated (L: m x W: m x D: m)	NIL	NIL	NIL	
Number of costeans remediated	NIL	NIL	NIL	
Total bulk sample pits excavated (Length: x Width: x Depth: m)	NIL	NIL	NIL	
Total bulk sample pits remediated	NIL	NIL	NIL	
Camp area/s cleared (ha)	NIL	NIL	NIL	
Camp area/s remediated (ha)	NIL	NIL	NIL	
Total area disturbed (ha)	NIL	NIL	0.28ha	
Total area remediated (ha)	NIL	NIL	0.177ha	

Section 6 – Environmental Management

By checking these boxes, you are agreeing to implement the following minimum environmental management standards on the project area. Where boxes have been left unchecked, justification is required.

6.1	✓	Blade-up approach for clearing will be used (i.e. no windrows, leave root stock and topsoil)
6.2	✓	Significant vegetation will be avoided during clearing (i.e. large trees, specimens providing habitat or food sources, riparian vegetation, and threatened species)
6.3	✓	Vegetation clearing during, and immediately after rainfall events, will be avoided
6.4	✓	Vegetation clearing will be kept to the minimum required to safely traverse vehicles and drill rigs along tracks and drill pads
6.5	✓	Where blade-up techniques cannot be employed, topsoil and vegetation will be stockpiled appropriately for remediation purposes
6.6	✓	All employees and contractors will be trained and inducted in relation to the management of environmental risks in the work area, including weeds, waterways, threatened species, soil erosion, sacred sites and heritage areas
6.7	✓	Sumps will be lined or tanks of appropriate size to contain water, sediment and drilling fluids encountered during drilling, will be used
6.8	✓	Sumps, drill holes, and fuel stores will be located away from environmentally significant areas and water courses
6.9	✓	Excavations (sumps, costeans and pits) will be appropriately ramped to allow fauna egress
6.10	✓	Drill holes will be securely capped immediately after drilling
6.11	✓	Vehicle hygiene measures will be employed to prevent the introduction and spread of invasive species and pathogens when mobilising vehicles and equipment from one location to another
6.12	✓	Hydrocarbon spills will be minimised using liners and drip trays under machinery, and appropriately sized spill-kits available in the event of a spill
6.13	✓	Hazardous substances (including hydrocarbons) will be stored and handled in accordance with relevant Australian Standards
6.14	✓	Hydrocarbons will be stored in lined and bunded areas
6.15	✓	Waste will be stored securely while on-site to minimise windblown rubbish and access by feral animals
6.16	✓	Waste will be removed off-site and disposed of at an appropriate waste management facility
6.17	✓	All environmental incidents will be reported to the Department in accordance with Section 29 of the <i>Mining Management Act</i> .

Justification and alternative management measures:

Section 7. A rehabilitation register has been drafted in 2020 to commence with a framework of rehabilitation and reporting. Drill holes will be temporarily plugged until revisited. Once drilling and use of tracks are complete, NTMO will remediate areas referring to the Department of Primary Industry and Resources "*Construction and Rehabilitation*

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of Exploration Drill Sites” and Clearing and Rehabilitation of Exploration Gridlines and Tracks” as a guide. NTMOs current rehabilitation register has been attached as Appendix 7.

Section 7 – Remediation and Closure

By checking these boxes, you are agreeing to implement the following minimum remediation standards on the project area. Where boxes have been left unchecked, justification is required.

7.1	✓	Drill holes plugged below ground level at a minimum depth of 0.4 metres and soil mounded to prevent subsidence, within 6 months of completion of drilling
7.2	✓	Drill samples/spoil returned down drill holes, buried in sumps, or removed from site
7.3	✓	All drill hole and access markers including flagging tape, wooden markers and star pickets will be removed from site
7.4	✓	Re-contouring of cut and fill drill pads will be consistent with the surrounding terrain
7.5	✓	Ripping/scarifying of drill pads, and compacted areas along the contour (on sloping ground) and cross-ripping (zig-zag) along tracks
7.6	✓	Tracks will be remediated, including pushing in all windrows
7.7	✓	Appropriate erosion and sediment controls will be installed where erosion is evident or likely to occur
7.8	✓	All tracks will be remediated unless otherwise agreed in writing by the land holder or appropriate third party
7.9	✓	Access through watercourses will be removed and banks restored
7.10	✓	No erosion is occurring in disturbed areas, on tracks and in remediated areas
7.11	✓	All excavations backfilled within 6 months of completion of drilling
7.12	N/A	All water bores decommissioned unless otherwise agreed in writing by the land holder or appropriate third party. The bore must comply with the Minimum Construction Requirements for Water Bores in Australia and may require permits or licenses under the <i>Water Act</i>
7.13	✓	All rubbish and infrastructure will be removed from site
7.14	✓	Replacement of topsoil and vegetation
7.15	✓	Contaminated soils (e.g. hydrocarbon or hazardous chemicals) will be remediated or removed from site
7.16	✓	Monitoring will be undertaken following the wet season or a significant rainfall event

Justification and alternative management measures:

7.1 Monitoring Bores to be installed for continued monitoring where holes have been drilled into the wall of the Dams and Tailings structures.
Drill holes that will not be installed with monitoring bores will be remediated to minimum remediation standards.

7.6 Some access tracks will need to be left open in order to gain access to monitor the bores that are installed.

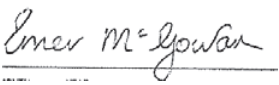
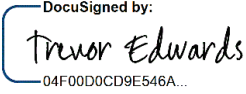
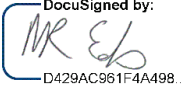
7.12 No water bores are being commissioned or used during drilling activities.

Section 8 – Required Attachments

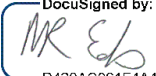
8.1	✓	Security Calculation Spreadsheet
8.2	✓	Nomination of Operator Form
8.3	✓	Spreadsheet with coordinates of proposed drill holes or polygons of target areas
8.4	✓	Google Earth KML/shape files/track logs of proposed tracks and camp sites
8.5	✓	<p>A map of the work area(s) showing:</p> <ol style="list-style-type: none"> 1. title boundaries and title numbers 2. current and proposed drill holes, or polygons of target areas 3. current and proposed tracks 4. remediated areas 5. camp sites 6. sacred/heritage sites 7. environmental constraints
8.6	✓	Remediation Register (for existing Authorisations)
8.7	✓	Photographs of remediation work
8.8	×	Radiation Management Plan (if applicable)

Section 9 – Declaration

The Mining Management Plan must be endorsed by a senior representative of the company who has the appropriate level of authority to do so.

	Author	Reviewed by	Approved by
Date	06/04/2021	04-May-2021 7:12 AM AEST	04-May-2021 1:24 PM ACST
Name	Emer McGowan	Trevor Edwards	Mark Edwards
Signature			

I**Mr Mark Edwards**.....**Project Director - NT Mining Ops**, declare that I have the authority to make the commitments contained in this mining management plan on behalf of the company. To the best of my knowledge the information contained in this plan is true and correct and commit to undertake the works in accordance with the agreed minimum standards and all relevant Northern Territory and Commonwealth Government legislation.

DocuSigned by:

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SIGNATURE:

04-May-2021 | 1:24 PM ACST

DATE:

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Appendix 1 (updated)

CHPA Exploration Security Calculation

DEPARTMENT OF PRIMARY INDUSTRY AND RESOURCES

<https://nt.gov.au/minerals-energy>

AF7-014		last review: September 2012
M & E Security Calculation Tool Exploration Operations Kirkland Lake Gold		

Security Calculation Summary

Details			
Contact Name	Mark Edwards	Authorisation #	0968-01
Project	Cosmo Howley Project Area	Date	28-Apr-21
MMP	CHPA Tailing Drilling		

Calculation Trigger			
New Authorisation	MMP Renewal/amendment	Audit Finding	Client Request
	*		

Domains	Calculated Cost
Site Infrastructure	\$0.00
Exploration	\$1,188.00
Post Closure Management	\$0.00
Sub-Total - All Domains	\$1,188.00
CONTINGENCY @15%	\$178.20
TOTAL COST	\$1,366.20
10% Discount	\$137
Amended amount	\$1,230
1% levy	\$12

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DISTURBANCE AREA INVENTORY	Total Area (ha)	Progressively rehabilitated area	Remaining area
Whole of site summary			
Lease surface area			
Disturbed operational area			
Disturbance type			
Camp and other infrastructure			
Drill pads and sumps	0.28		
Costeans/pits			
Tracks/gridlines	0.24		
Other (specify)			
TOTAL	0.52		



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Domain 1: Infrastructure							
Management Area	Technique	Unit of Measure (UOM)	Range per UOM (\$)	Cost per UOM (\$)	Estimated Quantity	Sub Total (\$)	Technique Notes
Infrastructure	Remove temporary buildings and associated equipment	m ²	70-90	75.00		0.00	Enter the total area of small buildings and caravans. Range can be low ered for larger quantities.
	Remove concrete pads and footings	m ²	10-30	15.00		0.00	Enter the total area of concrete pads, concrete bunds, etc. Range can be adjusted depending on thickness (e.g. \$10/m ² for <300mm thick, \$30/m ² for >300mm thick).
	Remove above ground tanks	@	200.00	200.00		0.00	Enter number of tanks.
	Excavate and remediate contaminated soil	m ³	30-55	55.00		0.00	Enter quantity of hydrocarbon contaminated soil required to be excavated and remediated on site
	Waste disposal offsite	@	650	650.00		0.00	Enter number of bin loads. Cost includes removal of potentially-contaminating waste (e.g. waste oil, contaminated soil, etc.) and materials from laydown area by a contractor with a skip bin.
	Fill in landfill	m ³	2.00-3.00	3.00		0.00	Enter quantity of fill material required. Range can be low ered for larger quantities.
	Pump, septic tank, disconnect and Infill/cave-in tank	item	400-1000	1000.00		0.00	Enter number of septic tanks. Range can be low ered for multiple tanks.
	Bore closure	@	2000-3300	2000.00		0.00	Enter number of bores. Cost includes sealing and rehabilitation. Range can be adjusted based on the number of bores.
	Infill dams	m ³	2.00-5.00	5.00		0.00	Enter quantity of material to be excavated. Cost includes backfilling to natural surface level. Range can be low ered for larger quantities.
	0.00						
Revegetation Activities - all infrastructure areas	pushing windrows, final trim and deep rip infrastructure areas	ha	250-1000	1000.00		0.00	Enter all areas disturbed by infrastructure as above and including laydown, core and sample storage, parking areas, etc. Range can be adjusted based on the soil type and quantity of ripping required. See assumptions and considerations tab
	Respread topsoil	m ²	0.25-0.55	0.55		0.00	Enter size of area where topsoil is required. Range can be low ered for large quantities.
	Revegetation by direct seeding	ha	1200-2000	2000.00		0.00	Enter size of relevant area. Apply for substantial areas where topsoil resources poor and where reasonable seed dispersal from nearby areas unlikely. Range can be adjusted based on sensitivity/significance and
	Fertiliser application	ha	150-750	750.00			include a single application of fertiliser during the initial seeding program
DOMAIN 1 TOTAL						0.00	
						\$0.00	



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Domain 7: Exploration							
Management Area	Technique	Unit of Measure (UOM)	Range per UOM (\$)	Cost per UOM (\$)	Estimated Quantity	Sub Total (\$)	
Drillholes, Pads, sumps, costeans	Cap drillholes below ground	@	80-275	150.00	6.00	900.00	
	Grout with concrete	@	1250	1250.00	0.00	0.00	
	Empty and remove plastic sample bags	hole	25-235	235.00	0.00	0.00	
	Rip/scarify drill pads	ha	240-900	900.00	0.12	108.00	
	Reshape and rip drill pads	@	320-2500	500.00	0.00	0.00	
	Infill costeans	m ³	2.00-3.00	3.00	0.00	0.00	
	Infill bulk sample pits and dams	m ³	2.00-8.00	2.00	0.00	0.00	
	Scaling, battering for stabilisation	m ²	1.21-3.00	3.00	0.00	0.00	
	Contouring for erosion control	ha	700-1540	1500.00	0.00	0.00	
	Revegetation by direct seeding	ha	1200-2000	1500.00	0.12	180.00	
	Fertiliser application	ha	150-750	750.00	0.00	0.00	
							1188.00
	Tracks and Gridlines	Ripping/scarifying minor tracks and gridlines	km	120-500	400.00	0.00	0.00
		Ripping major tracks and roads	km	550-1000	1000.00		0.00
	Removal of gridpegs	item	1500	1500.00		0.00	
	Topsoil replacement	m ²	0.25-0.55	0.55	0.00	0.00	
	Revegetation by direct seeding	ha	1200-2000	2000.00		0.00	
	Fertiliser application	ha	150-750	750.00	0.00	0.00	
DOMAIN 7 TOTAL						\$1,188.00	



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Closure Management							
Management Area	Technique	Unit of Measure (UOM)	Range per UOM (\$)	Cost per UOM (\$)	Estimated Quantity	Sub Total (\$)	Technique Notes
Closure	Mobilisation/demobilisation	km	10.00-15.00	15.00		0.00	This reflects a contractor bringing equipment to the site to undertake rehabilitation. Enter distance from nearest large centre, unless another location is stipulated and supported by the operator. Cost based on 1 piece of machinery required for earthworks. Range can be adjusted depending on size of machinery required.
	Project management	month	1,600	1600.00		0.00	Enter proportion/number of year/s required to coordinate rehabilitation activities. Costs includes tender preparation, financial reporting, procurement, contractor management, etc. Time frame assumed is minimum 1 month and may be substantially more, depending upon the size and complexity of the project.
	Monitoring and weed management	ha	200 - 250	250.00	0.00	0.00	Entry automated from 'Key Information' tab. Includes total area and assumes 1 year post closure. Range can be adjusted based on level of weed infestation.
	Revegetation maintenance, monitoring & assessment	ha	1200-2000	1200.00	0.00	0.00	Enter 20% of the size of the relevant area (assumes a 20% failure rate of revegetation). Apply for significant cleared areas (e.g. large camps). Range can be adjusted based on the sensitivity and significance of vegetation.
	Earthwork maintenance	ha	1,100	1100.00	0.00	0.00	Enter 20% of the size of disturbed erosion-prone areas (assumes 20% erosion rate). Apply for tracks/gridlines, drill pads and other clearing in erosion-prone areas (e.g. hilly areas, creek crossings, erosion-prone soils).
POST CLOSURE TOTAL						0.00	
POST CLOSURE TOTAL						0.00	



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Assumptions & Considerations
<p>Ripping:</p> <p>Deep rip low level disturbance - 14G grader or equivalent with multishank ripper to 3m width. At \$180/hr and at 3km/hr with 0.83 efficiency will cover 7500m²/hr = \$240/ha.</p> <p>Deep rip medium level disturbance - Cat D6 with triple shank rippers ripping to a depth of 0.3m and 3m width covered per pass. At \$220/hr and 2km/hr with 0.83 efficiency will cover 4980m²/hr = \$441/ha</p> <p>Deep rip high level of disturbance and compaction - using a Cat D9 with multishank ripper to a width of 2.64m. At \$300/hr and 1.6km/hr with 0.83 efficiency will cover 3320m²/hr = \$900/ha</p>
<p>RC drillpads assume average 15mx15m, DDH pads 15mx20m</p>
<p>Reshape drill pads:</p> <p>using a Komatsu PC650 excavator or similar at \$320/hr, can move 300bcm/hr assume one pad per hour</p> <p>if water cart required add \$140/hr</p> <p>if grader required in addition add \$110/hr</p> <p>if dozer required in addition add \$250/hr</p> <p>include supervision and dump truck</p>
<p>Infilling costeans:</p> <p>Assumes material does not have to be carted.</p>
<p>Tracks:</p> <p>Assume D9 used to rip to depth of 0.3m, which can do 1.36km/hr. Assume \$300/hr. Requires 2 passes on track ~5m wide = \$440/km.</p> <p>Windrows - 14G grader will grade in windrows at 3km/hr (2nd gear) and require two passes each side of road = 1500m of road/hr @ \$180/hr = \$120/km.</p> <p>Two passes with grader to rip track <4m wide at 3km/hr = \$120/km.</p>
<p>Respread topsoil:</p> <p>Assume minimum of 10cm depth.</p>
<p>Revegetation by direct seeding:</p> <p>This rate includes acquiring a mix of native tree and shrub species appropriate for the area, mixing and treating the seed and applying by hand at a rate of 4-10kg/ha.</p>
<p>Post closure cost for weed management comes from contractors estimate for Woodcutters site</p> <p>Contractor costs for meals, accommodation, travel and supervision:</p> <p>Meals & accom @ \$150/head/day.</p> <p>Travel @ \$60/head/hr.</p> <p>Supervision @ \$1000/day.</p> <p>So for 10.5hr day daily costs = \$1845/hr/300bcm/hr of production = \$6.15/bcm</p> <p>This tool has assumed cost of \$210-\$320/man/day.</p>
<p>assume septic tank pumping say \$150-\$300 for urban pumping, include travel for remote</p> <p>1000gallon tank = 4.5m³</p> <p>backfill at \$5/m³ = \$22.5</p>
<p>fertiliser - current (09/01/09) Landmark price per tonne for NPK fertiliser = \$1487.50</p> <p>fertiliser applied at 500kg/ha (best practice) = \$743.75/ha</p> <p>If applied at only 100kg/ha = \$148.75/ha</p> <p>application dependent on growth medium</p>

Mining Management Plan Exploration Activities

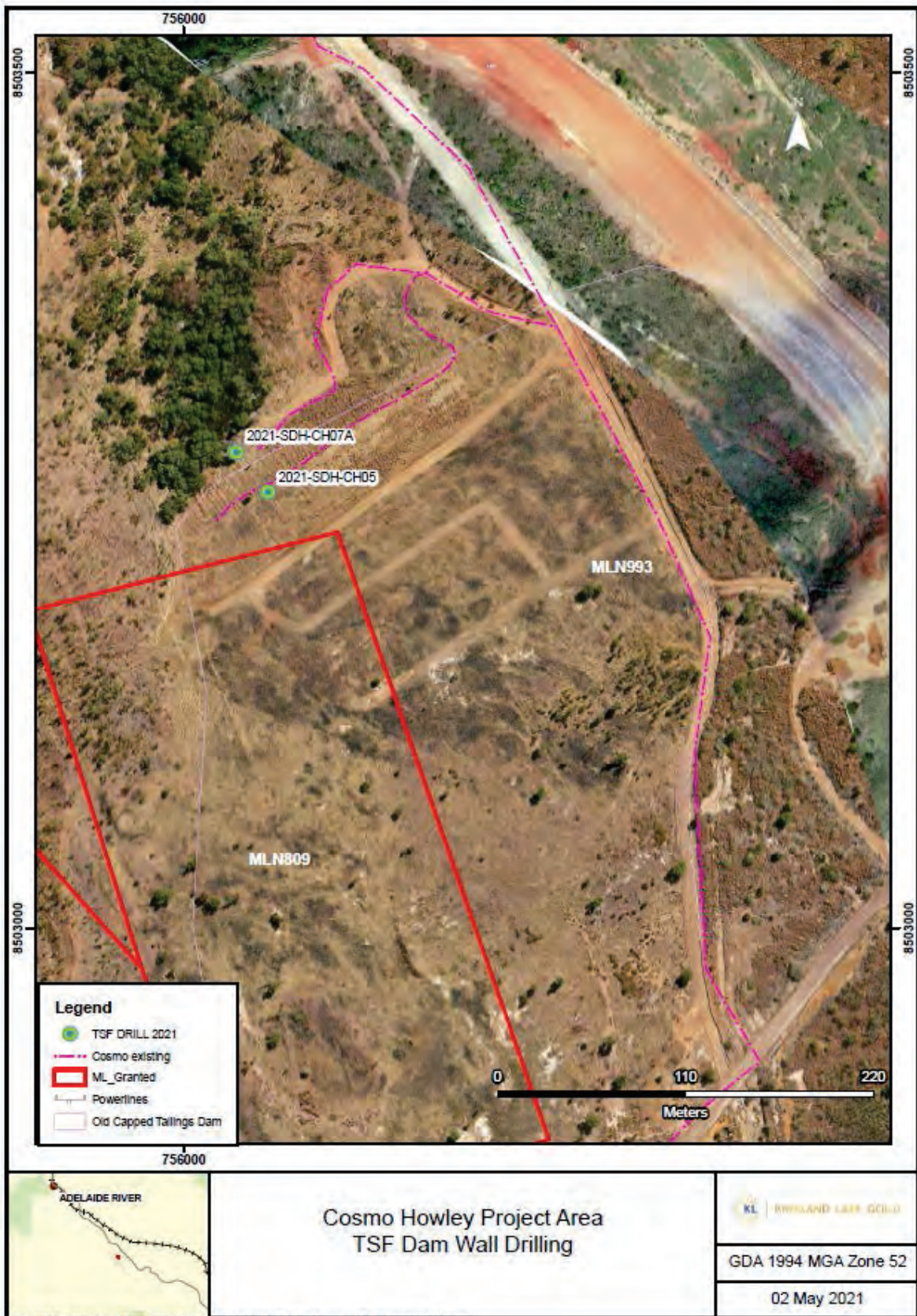
Appendix 2

Nomination of Operator

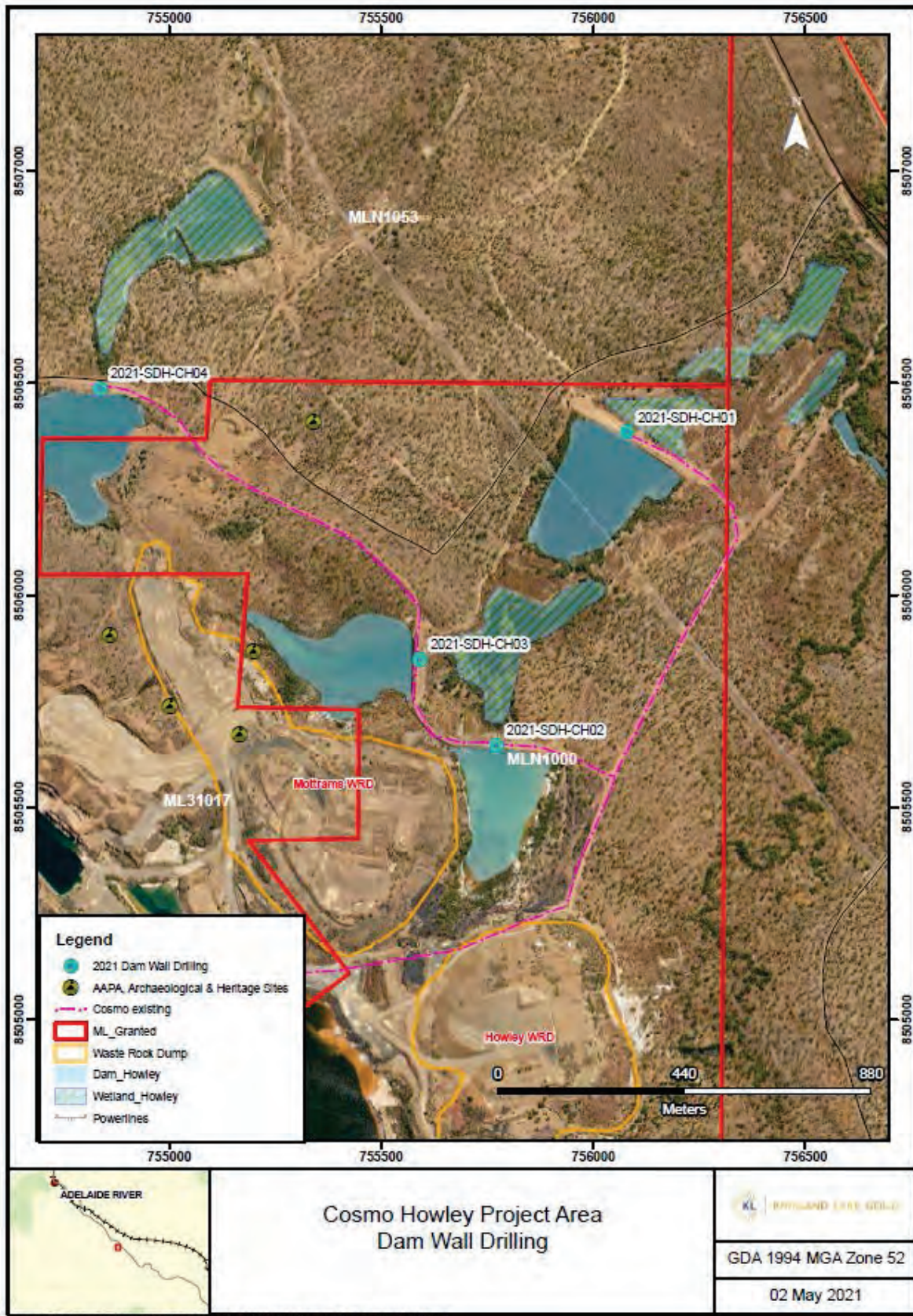
Mining Management Plan Exploration Activities

Appendix 3 -Site Maps

Mining Management Plan Exploration Activities



Mining Management Plan Exploration Activities



Mining Management Plan Exploration Activities

Appendix 4

Shapefiles

Mining Management Plan Exploration Activities

Appendix 5

Drill Hole Coordinates

NAME	TYPE	EASTING	NORTHING	AREA	LEASE
2021-SDH-CH01	Borehole Sonic	756080.77	8506384.76	COSMO WATER DAMS	MLN1000
2021-SDH-CH02	Borehole Sonic	755772.35	8505646.81	COSMO WATER DAMS	MLN1000
2021-SDH-CH03	Borehole Sonic	755592.46	8505849.73	COSMO WATER DAMS	MLN1000
2021-SDH-CH04	Borehole Sonic	754837.8	8506487.6	COSMO WATER DAMS	MLN1053
2021-SDH-CH05	Borehole Sonic	756049.15	8503254.48	COSMO TSF	MLN993
2021-SDH-CH07A	Borehole Sonic	756030.73	8503278.53	COSMO TSF	MLN993

Mining Management Plan Exploration Activities

Appendix 6 AAPA Certification

Mining Management Plan Exploration Activities

Appendix 7 Rehabilitation Register




NTMO CHPA Exploration Activities Rehabilitation Summary (Cumulative)											
Reporting period	Tenement	MMP Reference	Drill Holes / Pads (No.)	Drill Holes/ Pads under Rehab (No.)	Drill Line/ Access Track Length (km)	Drill line/ access track under Rehab (km)	Camp (ha)	Camp under Rehab (ha)	Costeans /Bulk Samples (No.)	Costeans /Bulk Samples Under Rehab (No.)	Comments
2020	MLN993	2013/2017	57/30	34/11	0.07	0.07	15.86	0	-	-	Lantern prospect. 23 of 57 drill holes and 19 of 30 drill pads were located on pre-existing cleared areas and therefore not fully Rehabilitated. All previously undisturbed areas cleared for drilling were rehabilitated.
2020	MLN993	2019/2020	1/1	1/1	0	0	15.86	0	-	-	Liberator Prospect. Drill pad was fully rehabilitated. Pad was accessed from track built on other tenement.
2020	EL31908	2019/2020	4/8	4/8	0.52	0.52	15.86	0	-	-	Liberator Prospect. 4 of 8 cleared drill pads were drilled on. All access tracks and drill pads were rehabilitated. Drill pads utilised pre disturbed fenceline track where possible.
2020	ML30887	2019/2020	4/3	4/3	0.866	0.866	15.86	0	-	-	Liberator Prospect. 4 holes were drilled from 3 pads and rehabilitated. Drill pads utilised pre disturbed fenceline track where possible.
2021	MLN993	2020/2021	13	8/13	0.573	0.573	15.86	0	-	-	CPT Drill Tracks and Drill holes were rehabed in late 2020. SDH and DDH were installed with monitoring bores and tracks left for access



Mining Management Plan Exploration Activities

Appendix 8

Photos of Rehabilitation Work

Drill ID	2020-CPT-CH01											
Coordinates GDA 94 / MGA Zone 52	E: 756173, N: 8503248											
Works completed	<p>This CPT (1 of 6) drill hole did not require a pad but access tracks were cleared. Drill hole was then plugged upon completion. Earth works were carried out to return the ground level/slope to as near original condition as possible. All over burden that was excavated from the site was re spread over the area loosely to promote water infiltration and revegetation. Any pre-existing vegetation was re-spread over the site to assist with regrowth. A new track was developed from a pre-existing track The new access track was ripped to loosen the topsoil and promote revegetation. SDH and DDH holes had monitoring bores installed.</p>											
Before	<table border="1" style="width:100%; border-collapse: collapse;"> <tr style="background-color: #1a3d4d; color: white;"> <td style="text-align: center; padding: 5px;">DIRECTION 236 deg(T)</td> <td style="text-align: center; padding: 5px;">756181 8503252</td> <td style="text-align: center; padding: 5px;">ACCURACY 7 m DATUM GDA94</td> </tr> <tr> <td colspan="3" style="text-align: center;">  </td> </tr> <tr> <td colspan="3" style="text-align: center; padding: 5px;"> Photo taken 15/07/2020. Pink flag indicates drill hole location. </td> </tr> </table>			DIRECTION 236 deg(T)	756181 8503252	ACCURACY 7 m DATUM GDA94				Photo taken 15/07/2020. Pink flag indicates drill hole location.		
DIRECTION 236 deg(T)	756181 8503252	ACCURACY 7 m DATUM GDA94										
												
Photo taken 15/07/2020. Pink flag indicates drill hole location.												

Mining Management Plan Exploration Activities





ABORIGINAL AREAS PROTECTION AUTHORITY

GPO BOX 1890
DARWIN NT 0801
TELEPHONE: 08 8981 4700
FACSIMILE: 08 8981 4169
EMAIL: enquiries.aapa@nt.gov.au

File: D89/199; 90/307

In reply please quote: 68672

Crocodile Gold Australia Pty Ltd
PO Box 346
PALMERSTON NT 0831

Attention: GRANT DAVEY

RE: RE- ISSUE OF AUTHORITY CERTIFICATE C2007/008 FOR COSMO MINE SITE

I refer to your application for Authority Certificate received on the 18th August 2009 for the above location.

Accordingly, under the powers delegated to me under Section 19 of the *Northern Territory Aboriginal Sacred Sites Act 1989* I am pleased to issue the attached Authority Certificate.

Please read carefully the conditions outlined in the Certificate. In particular, you should note that it has been issued for an indefinite period of time, providing that the works covered by the Certificate start within the period stipulated in condition 3.

You should also note that the Authority has issued you with two identical copies of digitised maps attached. One copy should be retained with your original Certificate. The second is supplied for use by contractors to avoid unnecessary photocopying of a colour coded document.

Please note that the cost of this Authority Certificate will be **\$50** and an invoice will be issued to you by the Department of Business and Employment (DBE). The terms and conditions of the invoice will require you to make payment within 30 days of receipt.

If you have any further queries regarding this Authority Certificate please contact Gareth Lewis on 8982 4227.

Yours faithfully

A handwritten signature in black ink, appearing to read 'Ben Scambary', written in a cursive style.

DR BEN SCAMBARY
Chief Executive Officer

8 October 2009

ABORIGINAL AREAS PROTECTION AUTHORITY AUTHORITY CERTIFICATE

Issued in accordance with Section 22 of the Northern Territory Aboriginal Sacred Sites Act 1989

REFERENCE: D89/199; 90/307 (Doc: 68672) C2009/263
(Supersedes C2007/008)

APPLICANT: Crocodile Gold Australia Pty Ltd
PO Box 346
PALMERSTON NT 0831

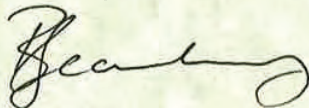
SUBJECT LAND: Re-issue of C2007/008 for the various mineral leases and exploration retention licences comprising the Cosmo mine site area, as shown on the map which is annexure 'A' hereto.

PROPOSED WORK OR USE: Mining of ore, construction and use of access roads, mineral exploration including drilling costeaning, bulk metallurgical test work, surface geochemical sampling, geophysical surveys, geological mapping and reconnaissance

CONDITIONS:

1. The applicant shall ensure that the conditions of this Certificate are included in any subsequent contract or tender documents for the works or use described herein.
2. The applicant shall ensure any agent, contractor or employee is aware of the conditions of this Certificate and the obligations of all persons (who enter on, or carry out works or use land on which there is a sacred site) under Part IV of the *Northern Territory Aboriginal Sacred Sites Act 1989*.
3. This Certificate shall lapse and be null and void if the works in question or the proposed use is not commenced within 24 months of this Certificate.
4. The applicant shall ensure any agent, contractor or employee is aware of the content of section 40(1) of the *Northern Territory Aboriginal Sacred Sites Act 1989* which provides that this Certificate does not negate the need for consent, approval or permission for the subject works or use of the land which may be required under another statute.

The COMMON SEAL of the
ABORIGINAL AREAS PROTECTION AUTHORITY
was hereto affixed on the 8 day
of October 2009



DR BEN SCAMBARY
Chief Executive Officer





KIRKLAND LAKE GOLD

ACN 136-525-990

**FLORA AND FAUNA ENVIRONMENTAL
MANAGEMENT PLAN
FOR
NORTHERN TERRITORY MINING OPERATIONS
PTY LTD**

2021

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APPENDICES

Appendix A – Ground Disturbance Permit Instructions

Appendix B – Fauna Sighting and Fatality Register

Appendix C – Pest Fauna Register

1. INTRODUCTION

This Plan forms part of the Environmental Management Plan (EMP) for the mine and is considered a working document. It will be updated following formal assessment by Department of Primary Industry and Resources (DPIR) as part of the mining authorisation process.

1.1 Purpose

The Cosmo Howley Project Area (CHPA) involves several activities and facilities on site which may present risks for flora and fauna. Specifically these activities include:

- Uncontrolled vehicle movements
- Uncontrolled land clearance
- Water treatment and discharge
- Water quality stored within CHPA pits and dams
- Hazardous materials use and storage
- Open pits and voids
- Poor waste management

The nature and scope of activities conducted at CHPA aims to minimise adverse flora and fauna impacts associated with Cosmo Howley operational activities (Cosmo Deeps underground operation), water treatment, rehabilitation and maintenance of infrastructure across the project area. The purpose of this plan is to ensure that appropriate controls are developed and implemented to effectively protect flora and fauna at CHPA.

Northern Territory Mining Operations (NTMO) has procedures relating to specific aspects of flora and fauna management and this document provides an overarching plan for the coordination and strategic management of effort embedded in those individual plans.

1.2 Objectives

The objective of this Plan is to reduce the impact of the mine activities on biodiversity at, and surrounding the mine through:

- Continuing to gather information on the flora and fauna that inhabit the area
- Managing areas of disturbance to flora and fauna through the Permit to Clear system
- Assigning responsibilities for impact monitoring and management
- Progressively rehabilitating with a suitable seed species mix endemic to the area
- Minimising adverse impacts on flora and fauna
- Promoting awareness of protection of flora and fauna

This Flora and Fauna Environmental Management Plan applies to all personnel and work activities conducted under the direction of NTMO at CHPA.

1.3 Context

The NTMO Environment policy requires the undertaking of business in a manner that minimises any potential environmental impacts.

Day-to-day management is implemented through the procedures and plans across each of the NTMO operations. This plan aims to integrate and coordinate existing resources into a coordinated approach.

1.4 Associated Management Plans

This Plan specifically applies to flora (excluding weeds) and fauna (including both native and non-native animals). However, consideration of the management of flora and fauna is also addressed in several other sub-management plans including:

- Fire Environmental Management Plan
- Weed and Pest Environmental Management Plan
- Waste Environmental Management Plan
- Rehabilitation Environmental Management Plan

1.5 Legislation and Guidelines

Legislation, guidelines and plans relating to the management of flora and fauna include:

Commonwealth Legislation

- *Environment Protection and Biodiversity Conservation Act 1999* (EPBC Act)

Northern Territory Legislation

- *Bushfires Management Act 2016*
- *Mining Management Act 2001*
- *National Environment Protection Council (Northern Territory) Act 1994*
- *Territory Parks and Wildlife Conservation Act 1976* (TPWC Act)
- *Weed Management Act 2001*.

Guidelines

- *Northern Territory Survey Methods for Flora and Fauna Surveys Used for Standard Biodiversity Unit Survey Sites 2013*.
- *Survey Guidelines for Australia's Threatened Mammals. EPBC Act Survey Guidelines 6.5*
- *Survey Guidelines for Australia's Threatened Reptiles: Guidelines for Detecting Reptiles Listed as Threatened Under the EPBC Act*.

Recovery and Abatement Plans

The Commonwealth Department of Environment and Energy provide a framework to guide and coordinate management of threatened species and feral animals. The following Plans are relevant for CHPA:

- *Threat Abatement Plan for Predation by Feral Cats*
- *Threat Abatement Plan to reduce the Impacts on Northern Australia's Biodiversity by the Five Listed Grasses*
- *National Recovery Plan for the Gouldian Finch (*Erythrura gouldiae*)*
- *National Recovery Plan for the Northern Quoll (*Dasyurus hallucatus*)*

1.6 NTMO Standard Operating Procedures

NTMO Standard Operating Procedures (SOP) applicable to flora and fauna management within the project area include:

- NTMO ES – SOP 15 Weed Spraying
- NTMO ES – SOP 23 Snake Capture and Relocation
- NTMO ES – SOP 28 Ground Disturbance
- NTMO ES – SOP 31 Incidents and Notification Reporting
- NTMO ES – SOP 33 Fauna Injury and Death Management
- NTMO ES – SOP 35 Controlled Burning

Approval Conditions

The following approval conditions may be applicable:

- Permit to Undertake Scientific Research on Wildlife
- Permit to Interfere with Protected Wildlife
- Animal ethics support and approvals
- Permit to Clear approval

1.7 Previous Investigations

There have been a number of flora and fauna surveys undertaken in the vicinity of the CHPA including:

- Studies carried out on 100 ha of the Cosmo Howley lease in 1985 (ELB, 1985);
- A set of surveys carried out on Bridge Creek, Western Arm and Kazi in 1997 (AGC Woodward-Clyde, 1997); and
- Surveys of the CHPA in 2007 by Low Ecological Services (Moon and Low, 2007).

This Plan has been prepared on the basis of information obtained from these previous studies of the mine site.

2. EXISTING ENVIRONMENT

2.1 Vegetation

Bioregion

CHPA occurs within the Pine Creek Bioregion. It lies in Mapping Unit 15 of Wilson et al. (1990), which, in an undisturbed state, is characterised by northern box (*Eucalyptus tectifica*), round leaf box (*Eucalyptus latifolia*) woodland with annual spear grass (*Sorghum spp.*) grassland. Understory layers include *Petalostigma spp.*, *Gardenia megasperma*, kapok bush (*Cochlospermum fraseri*), billygoat plum (*Terminalia ferdinandiana*), *Grevillea heliosperma* and turkey bush (*Calytrix exstipulata*). Dominant grass species include annual spear grass (*Sorghum intrans* and other *Sorghum spp.*), kangaroo grass (*Themeda triandra*) and *Chrysopogon spp.* Average tree heights in the upper story are around 10 m, and the mid story layers consist mainly of smaller individuals of the dominant trees.

Threatened Flora Species

Table 1 lists flora species with the potential to occur within CHPA specially protected at a national and/or Territory level, based on listing in the Environment Protection and Biodiversity Conservation Act 1999 (EPBC Act) Threatened Species database and the Territory Parks and Wildlife Conservation Act 2000 (TPWC Act) Wildlife Instrument, respectively. Previous surveys have recorded one flora species listed as Vulnerable under the EPBC Act and two vulnerable species listed under the TPWC Act. However, the 2007 survey did not record any specially protected species during the August 2007 survey of CHPA.

TABLE 1: SIGNIFICANT FLORA SPECIES WITH THE POTENTIAL TO OCCUR IN THE PROJECT AREA

Species	Conservation Status (Updated 2019)		Recorded on Site
	TPWC Act	EPBC Act	
<i>Acacia praetermissa</i>	VU	VU	Yes
<i>Cycas armstrongii</i>	VU	-	No
<i>Eleocharis retroflexa</i>	DD	VU	No
<i>Endiandra limnophila</i>	VU	-	No
<i>Helicteres sp. Glenluckie Ck</i>	EN	EN	No
<i>Hibiscus brennanii</i>	VU	VU	No
<i>Lithomyrtus linariifolia</i>	VU	-	No
<i>Ptychosperma macarthurii</i>	EN	-	No
<i>Sauropus filicinus</i>	DD	-	No
<i>Schoutenia ovata</i>	VU	-	No
<i>Utricularia singeriana</i>	VU	-	No
<i>Zeuxine oblonga</i>	VU	-	Yes
VU = Vulnerable, NT = Near Threatened, EN = Endangered, DD = Data Deficient			

Flora

The CHPA has already been extensively modified from previous mining operations and only marginal, less impacted areas are likely to be affected by planned activities. The findings of the August 2007 survey found a higher number of weeds and a higher prevalence of species used in the 1993-1994 Cosmo Howley mine rehabilitation program, when compared with the 1985 survey. The results of the rehabilitation program, in particular areas of regrowth following previous mining, showed impressive revegetation in low lying areas where water remains available for plant growth.

2.2 Terrestrial Fauna

Overview

A fauna survey undertaken in 2007 recorded up to 85 fauna species within the CHPA. This included:

- 27 mammal species (including up to 16 bat species)
- Five reptile species
- Two amphibian species
- Two fish species
- Two macro-invertebrates species
- 47 bird species

Threatened species

A search of the Department of Environment and Natural Resources (DENR) Threatened Species List and Department of Environment EPBC Act List of Threatened Fauna identified a number of species with potential to occur, or have suitable habitat, in the CHPA, as detailed in Table 2.

The northern quoll has been recorded the CHPA. The 2007 survey did not detect any individuals of this species during the survey of the CHPA. Northern quolls have been declining in the NT for several decades, possibly because of impacts from feral cats, disease and/or changed fire regimes. However, the arrival of cane toads (*Rhinella marina*) presents a more serious threat as the northern quoll is particularly susceptible cane toad toxin.

TABLE 2: SIGNIFICANT SPECIES WITH POTENTIAL TO OCCUR IN THE PROJECT AREA

Species	Conservation Status (updated 2019)		Recorded on-site
	TPWC Act	EPBC Act	
Birds			
White-throated grasswren (<i>Amytornis woodwardi</i>)	EN	VU	No
Australian Painted-snipe (<i>Rostratula australis</i>)	VU	EN	No
Curlew Sandpiper (<i>Calidris ferruginea</i>)	VU	CR	No
Red goshawk (<i>Erythrotriorchis radiatus</i>)	VU	VU	No
Gouldian finch (<i>Erythrura gouldiae</i>)	VU	EN	No
Crested shrike-tit (<i>Falcunculus frontatus whitei</i>)	-	VU	No
Partridge pigeon (eastern) (<i>Geophaps smithii smithii</i>)	VU	VU	Yes
Eastern Curlew (<i>Numenius madagascariensis</i>)	VU	CR	No
Masked owl (northern) (<i>Tyto novaehollandiae kimberli</i>)	VU	EN	No
White-throated grasswren (<i>Amytornis woodwardi</i>)	EN	VU	No
Yellow chat (<i>Epthianura crocea tunneyi</i>)	EN	EN	No
Mammals			
Brush-tailed tree-rat (<i>Conilurus penicillatus</i>)	EN	VU	No
Fawn Antechinus (<i>Antechinus bellus</i>)	EN	VU	No
Ghost Bat (<i>Macroderma gigas</i>)	-	VU	No
Black-footed Tree-rat (<i>Mesembriomys gouldii gouldii</i>)	VU	EN	No
Nabarlek (<i>Petrogale concinna canescens</i>)	VU	EN	No
Northern quoll (<i>Dasyurus hallucatus</i>)	CR	EN	No

Species	Conservation Status (updated 2019)		Recorded on-site
	TPWC Act	EPBC Act	
Arnhem leaf-nosed bat (<i>Hipposideros inornatus</i>)	VU	EN	No
Golden-backed tree-rat (<i>Mesembriomys macrurus</i>)	CR	-	No
Northern brush-tailed phascogale (<i>Phascogale pirata</i>)	EN	VU	No
Bare-rumped sheath-tail bat (<i>Saccolaimus saccolaimus nudicluniatus</i>)	DD	VU	No
Arnhem rock-rat (<i>Zyzomys maini</i>)	VU	VU	No
Fish			
Lorentz's grunter (<i>Pingalla lorentzi</i>)	VU	-	No
Reptiles			
Oenpelli python (<i>Morelia oenpelliensis</i>)	VU	-	No
Arnhemland egernia (<i>Bellatorias obiri</i>)	EN	EN	No
Yellow-snouted gecko (<i>Lucasium occultum</i>)	VU	EN	No
Mertens water monitor (<i>Varanus mertensi</i>)	VU	-	No
Yellow-spotted monitor (<i>Varanus panoptes</i>)	VU	-	No
Plains Death Adder (<i>Acanthophis hawkei</i>)	VU	VU	No
Sharks			
Freshwater sawfish (<i>Pristis microdon</i>)	VU	VU	No
DD= Data Deficient, VU = Vulnerable, NT = Near Threatened, EN = Endangered, CR= Critically Endangered			

Partridge pigeon

The partridge pigeon (*Geophaps smithii smithii*) was recorded during the 2007 survey. This species is commonly seen around the CHPA, and the region in general. This species nests and forages on the ground and occurs across the top-end. It is well represented in conservation reserves such as Kakadu and Litchfield National Parks but has declined in the lower rainfall parts of its range. It prefers a mixture of dense and sparse understory and is therefore thought to be affected by frequent firing which opens up the understory. A 'patch burning' regime of fire management is therefore recommended for this species (NRETAS, 2010). Control exotic grass species (e.g. mission grass) is also recommended to conserve this species (NRETAS, 2010).

Other species

Gouldian finches were not recorded during the 2007 survey, despite targeted searches. The northern nail-tail wallaby (*Onychogalea unguifera*), pale field rat (*Rattus tunneyi*), red-tailed black cockatoo (*Calyptorhynchus banksii*) and pictorella mannikin (*Lonchura pectoralis*) have also been recorded within the CHPA.

2.3 Risks

The issues in relation to native flora and fauna at the site include the potential threat to populations from invasion and spread of weeds, uncontrolled wildfires and potential loss of habitat from operational activities.

Site-specific flora and fauna issues addressed by this plan include:

- Destruction or alteration of flora vegetation communities as a result of vegetation clearing
- Destruction of fauna habitat as a result of vegetation clearing
- Potential significant impact to threatened species, (EPBC Act listed partridge pigeon, northern quoll) as a result of direct impact (e.g., vehicle strike) or indirect impact (e.g., noise and dust impact on habitat).

2.4 No-go zones

No-go zones acknowledge the presence and significance of ecological and or cultural heritage values within the mine site. No-go zones include:

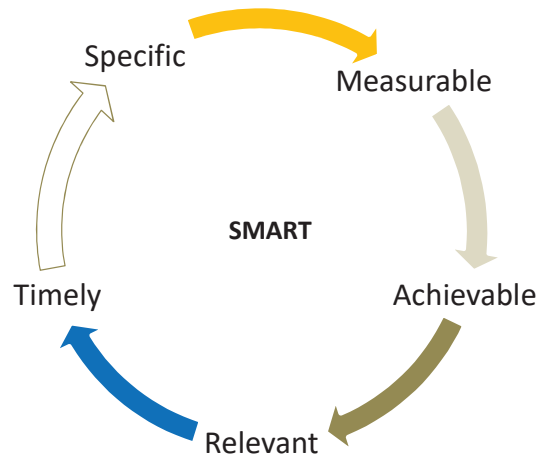
- 50 m buffer zone around the creeks and the undisturbed grassland areas within the project area which protect habitat. Access into this zone will only be granted by the Environment and Community Manager.

3. OBJECTIVES AND TARGETS

NTMO has reviewed the previous reporting period objectives and targets and have provided a discussion and analysis of results and corrective actions required in the upcoming Mine Management Plan (MMP). The following management strategies table includes the objectives and targets NTMO have proposed for the 2019-20 period (Figure 1).

As part of continual improvement, NTMO reviews and assesses performance against these targets. A review and status of environmental performance against these targets are provided to the Department of Primary Industry and Resources in the MMP.

FIGURE 1: SPECIFIC, MEASURABLE, ACHIEVABLE, RELEVANT AND TIMELY METHOD



NTMO considers the Specific, Measurable, Achievable, Relevant and Timely (SMART) method when considering annual objectives and targets.

TABLE 3: FLORA AND FAUNA MANAGEMENT STRATEGIES

Specific		Measurable			Achievable	Timely	Relevant	Non Conformance and Corrective Action
Strategies (What)	Actions (How)	Explanation (Why)	Responsibility (Who)	Measurement (Deliverable)	Targets	Target Date	Key Performance Indicators	
Review the fauna sightings register.	Continued logging and review of fauna sightings of note.	To develop improved management of fauna species and abundance at the site.	Environmental Officer	Fauna sightings register with log entries and review of register.	Environmental Officer to undertake a review of the database and undertake continued logging of fauna sightings of note.	Annual	Conclusions of fauna sightings interpretation to be included in the flora and fauna EMP for the following reporting period. Fauna sightings database and entries of fauna sightings (if applicable).	A review of field and reporting systems and process will be undertaken. Items not addressed will be re-evaluated for their priority status and updated into the MMP commitments.
Avoid areas of flora and fauna significance.	Obtain Permit to Clear approval prior to any ground disturbance activities and construct and rehabilitate exploration locations in accordance with NTMO SOPs.	To minimise impact to native flora and fauna in the project area.	As above.	Approved Permits to Clear. Before and after rehabilitation photographs of the drill locations taken by the field geologist.	Approved Permits to Clear. Before and after rehabilitation photographs of the drill locations taken by the field geologist.	Annual	Permit to Clear approval obtained and documented rehabilitated photographs obtained. No adverse impact to flora and fauna identified.	As above.

4. FLORA AND FAUNA MANAGEMENT

The general approach for management of biodiversity before, during and after mine construction and operations is as follows:

- **Key Activities, Risks and Impacts:** A summary of the key activities being undertaken during the management period. The potential environmental impacts and residual risk levels are identified for each environmental aspect.
- **Objective:** The guiding environmental management objective(s) and activities that apply to the element.
- **Mitigation Measures:** The procedures to be employed to ensure that the relevant objectives are met.
- **Trigger, Action, Response Plan (TARP):** The actions to be implemented in the case of non-compliance. This includes strategies of remediation and the person(s) responsible for the actions.

4.1 Key Activities, Risks and Impacts

The key activities and potential impacts to flora and fauna are provided in Table 4. The residual risk level identified is the risk remaining once management and mitigation measures are implemented.

TABLE 4: KEY ACTIVITIES, RISKS AND IMPACTS

Activity	Potential Environmental Impact	Residual Risk Level		
		Likelihood	Consequence	Risk
Vehicle collision	Adverse impact in fauna	Possible	Major	Medium
Unauthorised vegetation disturbance	Adverse impact on fauna and flora	Unlikely	Moderate	Low
Cattle on lease grazing and drinking water not of stock quality	Adverse impact in fauna health and stakeholder relations	Unlikely	Moderate	Low

4.2 Objective

Flora and fauna management objectives have been established and are detailed in Table 5.

TABLE 5: FLORA AND FAUNA MANAGEMENT OBJECTIVES

Objective	Target	Indicator
Establish and maintain awareness and importance of protecting biodiversity across the mine.	All onsite personnel (including Contractors) to undertake site induction that will include a summary of the mine biodiversity.	Percentage of personnel who completed the site induction.
Minimise the extent of vegetation clearance and undertake in accordance with the Ground Disturbance Permit system (0).	Zero incidents of unapproved vegetation clearing.	Number of incidents of clearing outside of approved clearance areas.
Minimise injury or death to native fauna from mine activities.	All vehicles to adhere to established mine speed limits.	Number of incidents of speeding.
	Zero incidents of native fauna injury or death from mine activities.	Number of incidents involving native fauna injury or death from mine activities.

Objective	Target	Indicator
Minimise introduction of new pest or weed species or increase in existing populations.	No change in the existing pest (cane toad only) or weed populations	Number of new declared pests or weeds.
		Percentage increase in population sizes or increase in weed affected areas. Cane Toads Trapped in the cane toad musters.
Minimise likelihood of poisoning to fauna utilising tailing dam and acid ponds.	Zero incidents of fauna mortality from poisoning.	Number of mortalities.

4.3 Mitigation Measures

Mitigation measures have been developed to minimise potential impacts associated with biodiversity. The mitigation measures, appropriate timing and assignment of responsibilities are provided in Table 6.

TABLE 6: MITIGATION MEASURES

Mitigation Measures	Timing	Responsibility
General		
<p>Site induction will include the following components for biodiversity management:</p> <ul style="list-style-type: none"> ● Summary of biodiversity at the mine including ecologically sensitive areas (i.e. no-go zones) and threatened fauna; ● Induct personnel on the importance of protecting native vegetation; ● Identification of potential impacts to biodiversity from the mine activities; ● Requirement for speed restrictions across the mine; and ● No work to be undertaken without an approved Ground Disturbance Permit. 	Prior to work commencing	OH&S Manager
<p>Implement all aspects of the Environmental Management Plan including the following sub-plans:</p> <ul style="list-style-type: none"> ● Fire Environmental Management Plan; ● Weed Environmental Management Plan; ● Rehabilitation Environmental Management Plan. 	At all times	All personnel
Vegetation Clearing		
<p>Adhere to buffer widths recommended by the Northern Territory Land Clearing Guidelines, where possible, with regard to riparian vegetation in drainage lines. If not possible install structures that would capture sediment downstream of development.</p> <p>If the requirement arises where virgin bush is required to be dozed, the use of fauna spotters may be required. This would be assessment prior to any disturbance works being conducted</p>	At all times	Environment Team
<p>A 50 m “no-go” buffer zone has been implemented around the creek and the undisturbed grassland areas within the project area. Access into this zone will only be granted by the Environmental Manager</p>	As Required	Environment Team
<p>Identify key flora species and collect seeds (where possible and appropriate) for revegetation programmes</p>	At all times	Environment Team
<p>Stage clearing of vegetation to minimise areas of bare ground, particularly on any steep slopes. Clear land only as required.</p>	Prior to work commencing	Environment Team

Mitigation Measures	Timing	Responsibility
All vehicle parking, laydown areas and temporary materials stockpiles and other temporary facilities are located within existing hardstand areas or previously cleared sites and that environmental discharges from these areas are contained, controlled and monitored.	During construction	Environment Team
Adopt and implement a Ground Disturbance Permit system.	At all times	All personnel
Minimise land clearing for construction during the Wet Season (Dec-May).	At all times	All personnel
Fence no-go zones identified as habitat for threatened flora species.	Prior to work commencing	Environment Team
Targeted survey by botanist if no-go zones identified as habitat for threatened flora species proposed for vegetation clearing. A botanist must review and approve the Ground Disturbance Permit.	Prior to work commencing	HSEC Manager
Onsite assessment for threatened flora species to be included in Ground Disturbance Permit form.	At all times	All personnel
Relocation procedure to be implemented if threatened flora to be destroyed e.g. collect seeds, relocate plant.	Prior to work commencing	Environment Team
Pre-clearing survey to be undertaken by qualified environmental personnel	Prior to vegetation clearing	Environmental Manager
Any areas outside those required that are inadvertently cleared or disturbed will be rehabilitated (in addition to reporting breaches in accordance with the notification of breach procedures)	As required	Environment Team
Clearing of vegetation will be monitored daily during clearing activities to ensure no intrusions occur.	During vegetation clearing	Environment Team
Weeds		
Imported fill to be certified weed-free prior to being utilised at the mine.	At all times	All personnel
All contractors/consultant vehicles used for onsite activities will have a vehicle inspection completed by an environmental officer prior to works as far as practical.	At all times	Environmental personnel
Weed control to be implemented annually as detailed in the Weed Management Plan.	At all times	Environmental Manager
Annual weed monitoring to be completed by an appropriately experienced and qualified person (monitoring will establish potential requirements for control activities for the following year).	At all times	Environment Team
Air Quality		

Mitigation Measures	Timing	Responsibility
Stabilisation of surface silt content through application of localised chemical dust suppressants (suitable for access roads which are traversed less frequently).	At all times	Site Manager
Water carts will operate across the mine during construction and operation. Watering rate of 2 L/m ² /application to all haul roads.	At all times	Site Manager
Defined access roads and haul routes to be used.	At all times	Site Manager
Stockpiles of soils across the mine will be managed to reduce dust emission including spraying with water, covering or the application of surface veneers (surfaces static for an extended period).	At all times	Site Manager
Retention of vegetation around the boundary as a buffer, and to limit potential dust sources.	At all times	Site Manager
Mimimising exposed subsoil through progressive clearing and reinstatement/re-vegetation on areas no longer required in accordance with the Rehabilitation Management Plan and Erosion and Sediment Control Plan.	At all times	Site Manager
Control of mechanically induced dust emissions (from clearing, scraping, excavation, loading, dumping filling and levelling activities) by application of water sprays.	At all times	Site Manager
Material drop heights during loading and unloading to be reduced as far as practical.	At all times	Site Manager
Post and enforce speed limits to reduce airborne fugitive dust from vehicular traffic	At all times	Site Manager
All dump trucks must have covered loads before travelling on public roads	At all times	All personnel
Avoid conducting dust generating activities during high wind speeds, where practical	At all times	All personnel
Noise and Vibration		
Operation of more recent and silenced equipment where possible and maintained in good working condition	At all times	Site Manager
All new equipment to have sound control devices no less effective than those provided on the original equipment	At all times	Site Manager
Whenever feasible, schedule different noisy activities (e.g. blasting and earthmoving) to occur at the same time, since additional sources of noise generally do not add a significant amount of noise (i.e. less frequent noisy activities would be less disruptive than frequent less-noisy activities).	At all times	Site Manager
Identify alternative, lower-impact equipment of methods wherever possible	At all times	Site Manager
Sequence operations so that vibration-causing activities do not occur simultaneously	At all times	Site Manager
Isolate vibration causing equipment on resilient mounts	At all times	Site Manager
Bushfire		
Early Dry Season 'patchy' mosaic approach to controlled burns across the mine site to be implemented whereby patches of habitat could be left unburnt for subsequent years and not burnt at all.	At all times	Environmental Manager

Mitigation Measures	Timing	Responsibility
Controlled asset protection burns will only be carried out over a four week prior in the late Wet/early Dry Season.	At all times	Site Manager
If “hot work” is to be undertaken in any area where a potential fire hazard exists or in areas designated as a potential fire risk by Contractor in the risk assessment, a ‘Hot Works’ permit is required. In addition, a fire watcher or fire warden shall remain on watch for a minimum of 30 minutes after completion of the hot works. The “hot work” risk assessment will use Australian Standard AS 1674.1 Safety in welding and allied processes – Fire precautions to determine the required controls will be implemented.	At all times	Site Manager
No fire to be lit during designated fire bans. Fire ban status can be checked at: http://www.bom.gov.au/nt/warnings/index.shtml .	At all times	All personnel
Fauna		
Visual observations are recorded, and if required Environmental Advice is issued out to inform staff of particular species presence particularly on the roads.	At all times	Environment Team
Assess the requirement for boundary fencing due to CHPA location on pastoral lease with observed cattle activity.	As Required	Environment Team
Pests		
General site wastes will be managed to prevent/reduce interaction with fauna. Waste management includes:	At all times	All personnel
<ul style="list-style-type: none"> ● Regular burning of the landfill which helps to minimise blown rubbish; ● Waste storage outside of the landfill is to be situated in bins with lids secured; ● Waste oils and/or hazardous substances will be kept in sealed containers and/or covered; and ● All domestic waste outside the landfill/waste-storage facility is to be stored in vermin-proof bins with lids secured. 		
Management and removal of putrescible waste to limit the potential for colonisation by black rats.	At all times	Environment Team
Light		
Implement a light reduction strategy including:	At all times	Site Manager
<ul style="list-style-type: none"> ● Limit artificial light to areas where it is essential; ● Turn off lights when not required; ● Avoid the flood of light into natural habitats and limit the escape of light into surrounding areas of fauna habitat (i.e. using shields/deflectors); ● Ensure that artificial lighting is not directed upwards or laterally (i.e. should be directed towards the ground); 		

Mitigation Measures	Timing	Responsibility
<ul style="list-style-type: none"> ● Lighting guards/shutters should be installed to direct light to road/working surfaces and away from adjacent vegetation; ● Use lower (i.e. closer to the ground) rather than higher lighting installations; ● Use lower wavelengths of light wherever possible i.e. red/yellow lights; ● Use light intensities that are as low as possible without reducing safety or efficiency. ● Avoid adverse offsite lighting impacts by implementing work procedures related to the use of mobile lighting plants ● Where possible, conduct operations behind light barriers, especially at night to avoid adverse offsite lighting impacts ● Consider including reinforcement of screen plantings around areas where lighting plant are used extensively at night in offsite treatments 		
Avoid painting large structures bright or reflective colours and minimise use of bright or reflective construction materials and finishes for large structures.	At all times	Site Manager
Water Storage Areas		
Compliance with the Waste Discharge Licence	At all times	Environmental Manager
Traffic		
Vehicle driving policies will be implemented (including speed restrictions) to minimise risk to fauna	At all times	All personnel
Use of pooled vehicles such as buses and work vehicles (to minimise exposure)	At all times	All personnel
Revegetation		
Revegetate disturbed areas as soon as possible after disturbance	At all times	Site Manager

4.4 Trigger, Action and Response Plan

The Trigger, Action and Response Plan (TARP) outlines remedial actions and responses to the situation. The TARP is provided in Table 7.

TABLE 7: TRIGGER ACTION RESPONSE PLAN

Responsibility	Situation	
	Level 1	Level 2
Vegetation Clearing		
	Normal	
	Clearing activities are being managed in accordance with management plan and no incidents have occurred.	Areas of vegetation to be cleared outside of existing disturbance without prior approval (not within no-go zone).
All Personnel	Comply with: <ul style="list-style-type: none"> • Site Induction requirements. • Vehicle and Equipment Hygiene Procedures. • Ground Disturbance Permit Procedures (0). 	Vegetation cleared without prior approval and within no-go zone. Stop work and inform the Environmental Manager of additional disturbance.
Environmental personnel	Undertake walkovers / inspection of work areas.	Provide guidance on rehabilitation of additional disturbance. Survey additional disturbance. Ensure sufficient erosion and sediment control measures are used. Undertake investigation into disturbance incident.
Environmental personnel	Ensure the Flora and Fauna Management Plan is being implemented by all Site Personnel.	Assess the ground disturbance incident and undertaken relevant corrective measures.
Fauna		
	Fauna observed and behaving normally.	Native fauna injured or killed due to mine activities.
All Personnel	Continue to operate diligently in accordance with site induction flora and fauna components.	Report to Site Manager. If fauna is killed, remove from road at least 20 m into adjacent bush land.
Environmental personnel	-	If fauna is injured, assess the situation and potential requirement to euthanize and/or contact Nina's Ark for advice: M: 0447 000 326 If fauna is killed, remove from road at least 20 m into adjacent land if safe.

Responsibility	Situation	
	Normal	Level 1
		Level 2 Record incident in Fauna Sighting and Incident Register (Appendix C). Determine if species is a threatened species and if the death activates additional contingency measures. Record death within Fauna Sighting and Fatality Register (Appendix C) or record as an environmental incident in the case of a threatened species death.
Site Manager	Ensure the Flora and Fauna Management Plan is being implemented by all Site Personnel.	Assist the Environmental Manager in addressing potential installation of contingency measures.

4.5 Roles and Responsibilities

Roles and responsibilities are set out in the following Responsible, Accountable, Consulted and Informed (RACI) matrix.

TABLE 8: ACCOUNTABILITY MATRIX

Task Description	Employees & Contractors	Environmental Officers	Environment & Community Manager	Health & Safety Manager	General Manager	All Managers
Understand and apply all required procedures and systems in regards to native flora and fauna management	R					A
Report any non-compliance with the native flora and fauna management requirements through the event/incident reporting system	R				I	A
Sign off on ground clearance approvals as required by the system and in accordance with the approved ground clearance	I	R	A			
Undertake pre and post-inspection & take photos of Clearing Permit area		R	A			
Ensure all employees and contractors are aware of all required procedures and systems for native flora and fauna management and are provided with all required resources to implement the requirements effectively	I	C	R		A	
Ensure all employees and contractors are provided with appropriate clearance approvals and on-ground guidance prior to giving any native vegetation clearing instructions	I	C	R		A	
Ensure all employees and contractors are provided with appropriate flora and fauna management related training	I	C	R		A	
Undertake annual review of the fauna sightings register and Flora and Fauna EMP		R	A		I	

Key:

R	Responsible	Person working on activity
A	Accountable	Person with decision authority, ultimately responsible of failure
C	Consult	Key stakeholder who should be including in decision
I	Inform	Person that needs to know of decision/action/outcome

5. MONITORING PROGRAM

Monitoring programs will be established in ways that allow baseline information to be compared against subsequent repeat surveys.

Flora and fauna surveys are conducted when deemed necessary.

Monitoring plans have been established to determine if mitigation measures at the mine are sufficient.

Monitoring plans that measure sufficiency of mitigation measures associated with flora and fauna include:

- Pest Monitoring Plan (summary in Table 9).
- Weed Monitoring Plan (refer to Weed Management Plan);
- Bushfire Monitoring Plan (refer to Fire Management Plan);

TABLE 9: PEST MONITORING PLAN

Program		Pest Monitoring Plan
Objective		Establish baseline and subsequent comparative data on population sizes of pest species to inform control program.
Survey Effort	Survey	Establish baseline data by undertaking a motion-sensing camera survey prior to construction, using site occupancy as the measure of predator populations. Cameras to be deployed for a minimum of 28 nights. Complete of the pest fauna register (Appendix D).
	Operation	Establish 30 baited camera stations that can be repeatedly used including: 10 sites within 100 m of proposed mine activities (particularly around the landfill); 10 sites approximately 1 km from mine activities; and 10 sites more than 5 km from mine activities.
	Timing	Annual (during operation)
	Personnel	Qualified ecologists.

5.1 Incident Reporting

Where a flora and fauna related incident, causes or threatens to cause material¹ or serious² environmental harm, on and offsite the Northern Territory DPIR will be informed as soon as practicable in accordance with the Mining Management Act. As a minimum, NTMO internal policy prescribes reporting within 12 hours and submission of a Section 29 report to DPIR within 24 hours. For all environmental incidents offsite the Department of Environment Protection Authority (EPA) will be informed as soon as practicable (and in any case within 24 hours after) as per the Waste Management and Pollution Control Act 1998.

Reporting of incidents and non-compliances will be undertaken in accordance with the NTMO ES – SOP31 Incidents and Notification Reporting and in the GHPA OPR and/or MMP.

The occurrence of new declared weeds in the project area will be reported to EPA, as per the Weed Management Act and to DPIR as per Section 29 of the Mining Management Act.

¹ Where material environmental harm is defined as ‘environmental harm that is not trivial or negligible in nature, consists of an environmental nuisance of a high impact or on a wide scale, results, or is likely to result, in not more than \$50,000 or the prescribed amount (whichever is greater) being spent in taking appropriate action to prevent or minimise the environmental harm or rehabilitate the environment or results in actual or potential loss or damage to the value of not more than \$50,000 or the prescribed amount (whichever is greater).

² Where serious environmental harm is defined as ‘environmental harm that is more serious than material environmental harm and includes environmental harm that is irreversible or otherwise of a high impact or on a wide scale, damages an aspect of the environment that is of a high conservation value, high cultural value or high community value or is of special significance, results or is likely to result in more than \$50,000 or the prescribed amount (whichever is greater) being spent in taking appropriate action to prevent or minimise the environmental harm or rehabilitate the environment or results in actual or potential loss or damage to the value of more than \$50,000 or the prescribed amount (whichever is greater).

6. PREVIOUS PERIOD PERFORMANCE

The Flora and Fauna EMP will be reviewed and updated annually. A review may occur sooner consequent to a material change in risk, legal requirements or an incident relevant to flora and fauna management.

6.1 Reporting of results & non-compliances

NTMO has provided performance results against the EMPs and MMP commitments/ requirements for the period (2018-19) within the MMP. A copy of the fauna sightings register has been included in the CHPA MMP 2019-2020. Any non-compliance found in this performance report is discussed, analysed with corrective and preventative actions identified.

REFERENCES

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Threatened Species of the Northern Territory, 2019, Department of Environment and Natural Resources, Accessed 27 July 2019, <https://nt.gov.au/environment/animals/threatened-animals>.

Wilson BA, Brocklehurst PS, Clark MJ and Dickinson JJM. 1990. Vegetation of the Northern Territory, Australia. Technical Report No. 49. Conservation Commission of the Northern Territory, Darwin.

Appendix A

Appendix B – Ground Disturbance Permit Instructions

Section 1 - Application

Upon completion of design or instruction from NTMO the applicant is to complete and submit Section 1 a minimum of 72 hours prior to ground disturbance. No ground disturbance is to be undertaken prior to approval. The applicant is required to complete, sign and submit the form to the HSEC Manager. The form requires the following details:

Applicant: Contractor or supervisor responsible for the work area.

NTMO Area Manager/Supervisor: Company representative responsible for the works area.

Summary of Clearing Request:

Contractor(s): Applicant Company and any subcontractors to be used are summarised including roles and contact details.

Purpose: Summary of works and its relation to the mine.

Related Infrastructure: Detail what infrastructure will be constructed post clearing (i.e. drill pad, ROM Pad, etc).

Location: Brief description of the location for ground disturbance.

Clearing Summary: Equipment to be utilised, process to be followed (i.e. vegetation removal, topsoil strip, etc) and location of stockpiles.

Proposed Clearing Dates: Dates for clearance to occur and timings (i.e. day shift 06:00 to 18:00).

Area: Details of total area to be cleared as part of this permit.

No-go zones: Summary of no-go zone at or adjacent to proposed ground disturbance including Aboriginal Area Protection Authority (AAPA) Restricted Works Area (RWA), heritage locations and/or identified threatened species or sensitive vegetation

Section 2 - Review

Section 2 provides a framework for the disturbance to be assessed against to ensure compliance with mine approvals including the Cultural Heritage, Weed and Flora and Fauna Management Plans.

The application will be assessed by the Environmental Manager or representative. The assessment will determine if the disturbance is approved as part of the existing approvals and if it is compliant with the relevant Management Plans. Should insufficient detail have been provided within Section 1, the application will be returned to the Applicant with a request for more information.

Section 3 – Approval

Section 3 provides approval to an applicant to undertake the disturbance and describes associated approval conditions. The approval will be provided with a unique identification number and will be signed by the Environmental Manager (or representative), applicant and Company Area Manager / Supervisor.

Section 4 – Ground Disturbance

Section 4 will capture the disturbance process including duration and a summary of the works. The summary will include conditions encountered, animals observed or translocated, stockpile locations and weed status.

Clearing/Ground Disturbance Permit

Section 1 – General Information

This form must be completed before any work commences. Applicant to complete Sections 1-3.



KL Gold

Cosmo Deeps Howley Project Area

Weed management action plan

December 2019 – June 2022



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1. Introduction

This plan sets out the weed control actions to be carried out by Territory Weed Management on Cosmo Howley project area to ensure:

- Compliance with legislation.
- Control of vegetation to protect infrastructure
- Control of vegetation to provide a safer work environment.

2. Objectives.

This three year plan will

- **meet the requirements of the NT Weed Management Act.**
- **meet requirements of the statutory Gamba Grass Weed Management Plan 2018.**
- meet requirements of regional weed management plans
- control all target weeds on the nominated land.
- control all target weeds before seed set thus reducing seed bank.
- reduce spread of weeds.
- reduce wildfire risk.
- reduce fire intensities.
- protect property from damage.
- facilitate safe and efficient access to infrastructure
- compliment weed control on neighbouring land including road corridors.
- provide an aesthetically pleasing environment.

TWM actions will also focus on protecting areas of native vegetation by preventing the spread of weeds into these areas. This will be best achieved through containment, and land protection measures. TWM will also reduce the extent of large gamba infestations through a staged control program. Isolated occurrences of gamba, outside of legislative requirements, will be controlled beginning in year one of this program.

Most gamba grass seed is not viable after three years. There is a high likelihood that, over time, gamba will be eradicated from these areas. In addition, if appropriate mitigation and monitoring measures are implemented, these areas could be successfully protected from future reinfestation.

3. Declared weeds to be controlled.

KL gold have a legal obligation to control declared weeds on land they occupy.

Section 9 of the Weeds Management Act 2001 states:

“The owner and occupier of land must:

- a) take all reasonable measures to prevent the land being infested with a declared weed;
- b) take all reasonable measures to prevent a declared weed or potential weed on the land spreading to other land;

The declared noxious weeds that occur on the Cosmo Deeps Howley project area are all class B weeds, requiring growth and spread to be prevented.

The declared weeds have been recorded on the Cosmo Deeps Howley project area and subject to this action plan are:

Gamba grass (*Andropogon gayanus*)
Perennial mission grass (*Cenchrus polystachios*)
Hyptis (*Hyptis suaveolens*)
Sida (*Sida acuta*)
Sicklepod (*Senna obtusifolia*)
Lions tail (*Leonotis nepetifolia*).
Candlebush (*Senna alata*).
Mossman river grass (*Cenchrus echinatu*).
Flannel weed (*Sida cordifolia*).

Of these weeds, only gamba grass is considered a high priority for control.

Gamba grass is a Weed of National Significance and is listed as a key threatening process under the *Environment Protection and Biodiversity Conservation Act 1999*. Minimum requirements for control of Gamba grass are detailed in the Weed Management Plan for Gamba grass 2018. This is a statutory plan under the Weeds Management Act for high risk declared weeds in the Northern Territory. The following extract from this statutory plan is applicable to the Cosmo Deeps Howley Project Area.

TWM's responsibility is to implement actions specified in 7.2, 7.5, 7.6 and 7.8. in this table.

PART 7 – Class B zone: Mining and extractive industries.	
All land owners and occupiers with gamba grass on their mining and/or exploration leases must:	
7.1	Establish and maintain by chemical, mechanical or physical means, a gamba grass free buffer zone on all land parcels that are ≤ 200 hectares, that is a distance of 15 m in width around property/lease area boundaries, infrastructure, flammable materials and along tracks and roads, within one year of commencement of this plan.
7.2	Establish and maintain by chemical, mechanical or physical means, a gamba grass free buffer zone on all land parcels that are > 200 hectares, that is a distance of minimum 15 m in width along existing firebreaks, river corridors, infrastructure such as roads and tracks and fence lines, or other natural land formations to prevent spread into clean areas or into neighbouring land.
7.3	Consult with adjoining land owners and the Weed Management Branch prior to applying for exploration and mining leases, licences and development of mines and associated roads and infrastructure. Utilise the Northern Territory Government's NR Maps website as a guide to identify possible weed locations in your proposed lease areas.
7.4	Survey for and map weeds (including gamba grass) in areas proposed for exploration lines, extractive leases and associated infrastructure and road corridors. Submit weed survey and control data to the Weed Management Branch prior to exploration or construction commencing.
7.5	Destroy gamba grass in areas scheduled for construction, extraction or exploration works prior to flowering. No earthworks to occur through seeding gamba grass.
7.6	Actively control, contain and reduce all gamba grass infestations by minimum 50% of infestation size within five years of commencement of this plan and demonstrably reduce infestations for the term of the lease (during the life of this plan).
7.7	Not move machinery or transport materials contaminated with gamba grass seed from site.
7.8	Regularly inspect and destroy gamba grass on stockpiles, tracks, windrows and haul roads.
7.9	Design and implement a weed seed spread prevention program in accordance with the " Preventing Weed Spread Is Everybody's Business " document, including hygiene procedures. Include exclusion zones in heavily infested areas. Educate contractors and maintenance staff in gamba grass identification. Avoid exploration or grading through seeding gamba grass and collaborate with adjoining land owners. Align and plan in conjunction with owner/manager of underlying tenure.

Mission grass, hyptis, sida, flannel weed, lions tail, candlebush, Mossman river grass and sicklepod do not come under statutory plans. They will however be controlled in high use and sensitive areas and in other areas as time permits.

4. Non declared weeds to be controlled.

Non declared weeds designated for control in this Weed Action Plan for Cosmo Deeps Howley Project Area 2019 are:

Rubberbush (*Calotropis procera*) – note that rubberbush is a declared weed south of 16° 30'

Annual Mission grass (*Cenchrus pedicellatus*).

Wild passionfruit (*Passiflora foetida*).

These non-declared weeds warrant control because of their ability to build a high fire load, impact on assets and infrastructure and ability to invade other controlled areas. TWM has carried out a very successful control of rubberbush at Cosmo Deeps Howley for several years.

TWM recommend that this control continue.

Annual mission grass is widespread, and like gamba grass and perennial grass, is very invasive and develops a high fire load. TWM recommend that annual mission grass be controlled in conjunction with gamba grass perennial mission grass.

Wild passionfruit can smother fences and other infrastructure and may also carry fires higher into tree canopies than would normally occur and will be targeted for control where this occurs.

5. Vegetation control to assets and infrastructure.

KL Gold have an extensive network of pipelines, buildings, dam walls, retaining walls, fences, buildings, fuel storage areas, electrical and pumping installations that are impacted on by vegetation growth. These impacts include fire, impeding access, increased difficulty of inspection, harbouring of animal pests.

This program includes an extensive program to control vegetation around all assets and infrastructure and vegetation on firebreaks. Some of the firebreaks are on steep slope where continued mechanical disturbance will enhance erosion. TWM will treat all nuisance vegetation, including woody weeds, on firebreaks thereby minimising use of mechanical control on areas prone to erosion.

The 3 metre buffer around pipelines can be varied following advice from KL Gold Environmental officers.

6. The work program.

This three year weed control program will ensure that KL Gold meet the requirements of the NT Weeds Management Act and protect people, assets and infrastructure from fire risk and other negative impacts of unwanted vegetation.

TWM strongly recommended that KL Gold implement an early wet season prescribed burn prior to the commencement of the on-ground control programs in areas where there is extensive gamba and mission grass. This will allow better access and increase the overall effectiveness and efficiency of herbicide program.

TWM also encourage follow up burns following year one herbicide control. Gamba grass is severely depleted following a burn-spray-burn program.

TWM will meet with representatives from KL Gold Environmental Officers to discuss the proposed work program at the start of each visit. Proposed work may be influenced by wet weather conditions and access restrictions.

In all cases the control of gamba grass and protection of assets remain the highest priority.

The timing of treatments will vary depending on the wet season. TWM have allowed for 3 treatments to ensure a thorough program. This is a maximum treatment regime. The work program and number of days allocated to each round is flexible.

6.1 Year 1. 2019-2020.

1. Control gamba grass and mission grasses to meet legislative requirement - 15 metre gamba free buffer zone along all tracks, existing firebreaks, river corridors, water bodies, fencelines and infrastructure.
2. Control hyptis, sida, sicklepod and passionfruit vine on an opportune basis whilst targeting the grass weeds.
3. Control all grass and brush vegetation to 3 metres either side of all pipelines.
- 4.. Control vegetation on rock gabions, dam and settling pond walls as directed.
5. Control of rubberbush in all accessible areas.

Estimated time:

Round 1 – December 2019/January 2020 2 men for 10 days.

Round 2. – February 2020/March/mid April 2020. 2 men for 6 days.

Round 3. – March 2020/April 2020. 2 men for 6 days

May 2020 – Rubberbush control. 2 men for 3 days.

Submit report – June 2020.

6.2 Year 2. 2020-2021.

1. Extend gamba and mission grass buffer to 20 metres along all tracks, existing firebreaks, river corridors, water bodies, fencelines and infrastructure.

Control isolated gamba and mission grass infestations up to 20 metres x 20 metres in area.

Reduce area of large infestations.

Ensure all new weed occurrences are controlled – Keep clean areas clean.

2. Control hyptis, sida, sicklepod and passionfruit vine on an opportune basis whilst targeting the grass weeds.
3. Maintain control all grass and brush vegetation to 3 metres either side of all pipelines, extended if necessary.
4. Maintain control of vegetation on rock gabions, dam and settling pond walls as directed.

Estimated time:

Round 1 – December 2020/January 2021 2 men for 8 days.

Round 2. – February 2021/March/mid April 2021. 2 men for 4 days

Round 3. – March 2021/April 2021. 2 men for 4 days.

May 2021 – Rubberbush control. 2 men for 3 days

Submit report – June.

6.3 Year 3. 2021-2022.

1. Extend gamba and mission grass buffer to 30 metres along all tracks, existing firebreaks, river corridors, water bodies, fencelines and infrastructure.

Where practical extend buffer to control to control all of infestation where infestation is a discrete stand alone infestation.

Control isolated gamba and mission grass infestations up to 20 metres x 20 metres in area.

Continue to reduce area of large infestations.

Ensure all new weed occurrences are controlled – Keep clean areas clean.

2. Control hyptis, sida, sicklepod and passionfruit vine on an opportune basis whilst targeting the grass weeds.

3. Maintain control all grass and brush vegetation to 3 metres either side of all pipelines, extended if necessary.

4. Maintain control of vegetation on rock gabions, dam and settling pond walls as directed.

Estimated time:

Round 1 – December 2021/January 2022. 2 men for 6 days.

Round 2. – February 2022/March/mid April 2022. 2 men for 4 days

Round 3. – March/April 2022. 2 men for 4 days

May 2022 – Rubberbush control. 2 men for 2 days

Submit report – June 2022.

7. Monitoring.

TWM recommend that KL Gold conduct surveillance monitoring of this control program. This is essential to measure the effectiveness of the TWM control program to ensure that, as a minimum, all legislative requirements are met and assets and infrastructure protected.

Weed management plans can then be adapted as needed to improve results and accommodate changing circumstances or changes in the local environment.

8. Herbicides to be used:

TWM will only use herbicides approved by the Australian Pesticides and Veterinary Medicines Authority. All herbicides will be used strictly as per label. A list of all herbicides to be used will be provided to the project supervisor prior to commencing work.

Safety Data Sheets for all herbicides used will be carried in TWM vehicles and supplied to KL Gold as required.

9. Data Recording.

TWM log books record all required information including:

- Names of applicators
- Herbicide, rate and amount used
- Method of application
- Vehicle used
- Date and time of application
- Location
- Weather conditions including wind, temperature, wind direction, relative humidity.
- Target weeds

TWM will log all track and point data as required.

10. Reporting:

TWM will report regularly to KL Enviros throughout the control works. At completion of each years control program TWM will provide a written report detailing all control areas, weeds controlled, new weed occurrences, other environmental issued and recommendations.



Murray Fuller
Director.
15/11/2019



INSTRUCTIONS

This form is to be completed prior to work commencement, where vegetation clearing/ground disturbance is intended.

Clearing / Ground Disturbance can be defined as and not limited to the following:

- 1) Creation of tracks/access/drill pads/fire breaks
- 2) Tree lopping
- 3) Vegetation removal or relocation
- 4) Digging of pits/sumps

Works must be completed within the validity period/prior to the expiration date; otherwise, the issued permit will need to be reviewed and re-signed to ensure all information is still accurate.

Responsibilities:

- Section 1–3 – Disturbance Description – Applicant to complete
- Section 4 – Safety Considerations – Applicant to complete
- Section 5 – Utilities Information – Project & Maintenance Department to sign off
- Section 6 – Environmental & Archaeological considerations – Environmental Department to sign off
- Authorisation – Signed by Applicant, Environmental Department & Clearing Operator

Permit ID:

SECTION 1: General Information

If applicable;

Related Approved Permit(s)

Project Area

Location

Previously Disturbed Site? Yes No

Disturbance Dimensions

Estimated Area to be Disturbed

Expected Disturbance Date

Type of Disturbance Permanent Temporary

If temporary;

Expected Rehabilitation Date

SECTION 2: Purpose and Description

- Exploration Mining Pipeline
- Other (specify):

Description of Activities:

SECTION 3: Type of Surface Disturbance

<input type="checkbox"/> Auger Holes	Excavation information: Length/depth/width: _____ Utilities present (YES/NO): _____		
<input type="checkbox"/> Excavation			
<input type="checkbox"/> Trenching			
<input type="checkbox"/> Topsoil stripping	Volume (approx..) (m ³):		
<input type="checkbox"/> Vegetation removal			
<input type="checkbox"/> Surface water flow alteration	<input type="checkbox"/> Yes	<input type="checkbox"/> No	<i>If yes, provide details here:</i>
<input type="checkbox"/> Regulatory approval required	<input type="checkbox"/> Yes	<input type="checkbox"/> No	Approval date:

SECTION 4: Safety Considerations

Aspect	Addressed?			Details <i>If yes, provide details and attach supporting documents If no, provide details why.</i>
	Yes	No	N/A	
Any other permits required? (e.g. Hot Work, working at heights)				
Has a JHA been completed?				
Have the job requirements been clearly explained?				
Specific safety instructions:				

SECTION 5: Utilities Information

Description (Internal and External)	Utilities in the area			Details <i>If yes, provide details and attach supporting documents If no, provide details why.</i>
	Yes	No	N/A	
Electrical				
Cable / Fibre optic				
Water / Tailings pipe lines				
Sewer				
Gas				

Maintenance Department Sign Off:

I have checked that the above information in Section 4 is true and correct at the time of signing.

Name Department Signature Date

Surface Projects Sign Off:

I have checked that the above information in Section 4 is true and correct at the time of signing.

Name Department Signature Date

SECTION 6: Environmental Considerations

Aspect	Addressed?			Details <i>If yes, provide details and attach supporting documents. If no, provide details why.</i>
	Yes	No	N/A	
<u>Compulsory</u> Area surveyed and marked out?				
Has Survey Plan / Drawing been developed with correct GPS coordinates and projection system?				
Surface water flow alteration required?				
Ground water management required?				
Heritage / Archaeology assessment completed?				
Significant Flora or habitat present?				
Topsoil to be stockpiled (topsoil stockpiles to be no higher than 2m)? Stockpile location?				

Date of Initial site inspection completed:

Site Description:

Revisions to initial application:

Yes

No

If yes; details:

Date of additional site inspection

Completed

Findings:Conditions:

Application Outcome

Approved

Rejected

Permit ID

Version

Permit Validity/Expiration Date

Revision 1

Last Edit Date: 15/09/2019

Printed Date: 8-Apr-21

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Once Printed, this is an 'Uncontrolled' Document

AUTHORISATION

Applicant:

This Permit is true and correct at the time of signing. Any further alterations will require a variation undertaken by the Environment Department.

If a later version of this Permit has been issued, it will be deemed as current and the superseded version will be no longer valid.

The final area of clearing has boundaries marked (with exceptions*)

I accept the conditions set out in this Permit and any breaches must be reported to the Environment Department immediately for rectification.

Name	Department	Signature	Date
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Environment Department:

This Permit is true and correct at the time of signing. Applicant(s) have acknowledged and understood conditions set out on this Permit.

The final area of clearing has boundaries marked (with exceptions*)

Environmental Officer	Department	Signature	Date
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Clearing Operator (if required):

I have read and understood this document and am informed of the works to be undertaken.

I accept the conditions set out in this Permit and any breaches must be reported to the Environment Department immediately for rectification.

Name	Department/Company	Signature	Date
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* Exceptions apply where it is unable/physically unsafe to be done (e.g. lopping of tree branches).

PHOTOS (add more pages where required)

TO BE USED BY ENVIRONMENT DEPARTMENT IF VARIATION IS REQUESTED

Revision Number:

Reason for requesting revision (including date of request):

Date of site inspection completed:

Findings:

Conditions:

Revision Outcome

Approved

Rejected

Permit ID

Version

Permit Validity/Expiration Date

