Mining Management Plan Exploration Activities

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	Pine Creek Project Area Pine Creek Tailing Drilling

Authorisation Number Insert existing authorisation number, where applicable	Authorisation 1029-01

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	The PCPA is approximately 225 km southeast of Darwin via the Stuart Highway, and is to the western side of the Pine Creek Township. Access to the north of the PCPA is via the Enterprise and Goldfields Roads, which traverse MLN13 and MLN1130. A second access point in the south exists from the Old Stuart Highway which runs parallel to the east side of Process Water Dam (PCPWD), located in the south eastern corner of MLN13.

Target Commodity Details Include target commodities (i.e. gold, copper etc)	Gold

Mining Activities Summarise the mining activities (exploration) to be the subject of the proposed Authorisation or Variation	Exploration programmes described in this application include activities in historically disturbed areas. Separate documents will be submitted to DPIR for each upcoming exploration activity. Presently, this application includes information on the “Pine Creek Tailings” drilling programme. Drilling of the area included some geochemical assessment of the drill cores to determine potential gold grades of the tailings. Assessment of Dam walls have now been included in the programme for understanding geotechnical and geochemical material of the Dam structures.

Proposed Schedule Include start and finish dates of ground disturbing work	JUNE 2021- SEPTEMBERr 2021

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
ML31020	NT Mining Operations (NTMO)	15/10/2030	Bonrook Station Parcel 710
MLN13	NT Mining Operations (NTMO)	13/02/2030	Jindare Station Parcel 709
MLN1130	NT Mining Operations (NTMO)	13/02/2030	Vacant Crown Land Parcel 272
MA416	NT Mining Operations (NTMO)	31/12/2025	Freehold Parcel 157

Delete or add rows as required

Organisational Structure

Position Title	Name
VP Australia (Co-Lead)	John Landmark
Project Director	Mark Edwards
Projects Manager	Trevor Edwards
Senior Geologist	Meg Ellis
Lead Environmental Engineer	Sam Yang
Health, Safety, Training and Security Lead	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 PCPA. A known colony of ghost bats (*Macroderma gigas*) is found in the Kohinoor Adit to the south of the PCPA. It is not expected that any of this drilling activity will impact the ghost bats within Kohinoor Adit due to the distance from proposed activities for this tailings and Dam wall study as the adit is over 1.2km away and of drillhole depth of 20m. NTMO commits to conduct monitoring of the Kohinor adit during all drilling activities to monitor the Ghost bats. With baseline data been collected since September 2020. Previous monitoring of the adits at Union Reefs showed that drilling outside of the 130 buffer did not impact on the Ghost Bats located in the OK and Union North adits, this proposed Pine Creek program is well outside of the required buffer zone with the closest hole around 1,200m from the adit entrance. The main control for managing potential risk to known vulnerable flora species in the project area is the requirement for personnel to seek approval from the NTMO Environment Department for a Clearing/Ground Disturbance Permit. This process requires an area walkover prior to the issuing of Clearing/Ground Disturbance Permit. NR maps, FloraNT and field guides will be used in conjunction with assessment of area before permit will be issued, to highlight areas of potential vulnerable flora. Further, NTMO site disturbance checklists include checks to ensure that access tracks and drill pads do not impact on vulnerable flora species. All other fauna and flora management and monitoring will be undertaken in line with care and maintenance activities as per PCPA MMP (Authorisation 0538-01). Measurable targets and objectives are set out in Section 4.5 of the Integrated Management System (IMS) as an appendix in the MMP.	IMS (Appendix 8) EMS PCPA Adit Assessment (Appendix 9)

ASSESSMENT ASPECT	YES or NO	ACTIONS REQUIRED (if answered YES)	APPENDED INFORMATION (Evidence of consultation with DENR and/or management plan)
Step 2: Are there any known declared weeds within the proposed work area?	YES	Where new machinery or vehicles are brought to any of NTMO project areas, a weed and seed inspection is undertaken in order to prevent spread and introduction of new species. Declared weed species present in the PCPA include: • Gamba Grass • Olive Hymenachne • Flannel Weed • Hyptis • Mission Grass • Neem • Rubber bush • Snake Weed All weed management, treatment and monitoring will be undertaken in line with care and maintenance activities in compliance with Authorisation 0538-01 and exploration activities in compliance with 1029-01. A Weed Action Plan has been developed for the PCPA for the upcoming reporting period. It identifies statutory weeds as priority for a targeted weed management program. The weeds listed above will be targeted and be part of an ongoing mitigation program which will be carried out by external contractor Territory Weed Management. As well as treatment, NTMO will undertake a range of mitigation measures to prevent the introduction of new species which include: • Record and monitor management progress; • Establish an integrated weed management action; • Prevention and Hygiene; • Education; and Control methods for existing or newly established species.	Weed Action Plan (Appendix 10)
Step 3: Will you be using water from bores or other sources for the operation?	YES	Water will be sourced from Enterprise Pit and Dam C which is close the proposed drilling and has been the source of water for past drilling projects	

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 IMS attached, these activities will not have a significant impact on the environment.

ASSESSMENT ASPECT	YES or NO	MANAGEMENT REQUIREMENTS
Step 5: Are there Aboriginal sacred sites in the Project area?	YES	Sacred sites are protected under the NT *Aboriginal Sacred Sites Act* and administered by the Aboriginal Areas Protection Authority (AAPA). It is recommended that advice be sought from AAPA in relation to sacred site protection. The drilling planned for this program is all located in or very close to mine site infrastructure and is heavily disturbed. Any historic sites on the lease of note are not near the current drilling plans.
Step 6: Are there archaeological and heritage sites in the Project area?	YES	Archaeological and heritage sites are protected in the NT. NT Heritage Branch of the Department of Natural Resources and Environment (DENR) administers the *Heritage Act*. Seek advice in relation to protection of heritage and archaeological sites. Drilling at Pine Creek is around existing site infrastructure which has historically been heavily disturbed. With no site in the vicinity of the proposed works on the tailings infrastructure Further, all disturbances are managed through a permitting system. Part of this process is to undertake on the ground and desktop studies to identify any archaeological or heritage sites. As shown in Appendix 4 all heritage areas can be identified during mapping. Environmental Officers will take appropriate measures to avoid impact to the declared sites.

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)	**MLN13**
Number and type of proposed drill holes	3x Diamond holes 5 x Sonic Drill
Maximum depth of proposed holes (m)	20m
Number and size of drill pads to be cleared (Length: m x Width: m)	8 x drill pads 20x10m
Total area of drill pads to be cleared (ha)	0.16ha
Is drilling likely to encounter groundwater? (Y, N, unsure)	YES
Number of costeans (Length: m x Width: m x Depth: m)	NIL
Number of bulk sample pits	NIL
Total bulk sample (tonnes) (Length: m x Width: m x Depth: m)	NIL
Bulk sample pits approved under *Mineral Titles Act*? (Y or N)	NIL
Length of line/track clearing (km: x Width: m)	1.74km x 3m 0.52ha
Camp area to be cleared (ha)	NIL
Camp Infrastructure (i.e. demountable, tents)	NIL
Previous disturbance yet to be remediated on title (ha) if known	0.4ha
Other sumps LxWxD	4 x sumps 4x3x1m
Total area disturbed proposed (ha)	0.69ha

Section 5 – Previous Disturbance (for existing Authorisations only)

Mining Interests (i.e. titles)	MLN13	
Number/type of holes drilled	12 x CPT 6 X Sonic 2 x DDH	
Maximum depth of holes drilled (m)	20m	
Number of holes remediated (i.e. plugged/capped)	12 x CPT 1 x Sonic	DDH and SDH were capped for monitoring
Number and size of drill pads cleared (Length: m x Width: m)	5 x drill pads @ 20x20m	
Total area of drill pads cleared (ha)	0.2ha	
Total area of drill pads remediated (ha)	0.12ha	
Was groundwater encountered? (Y or N)	YES	
Length of line/track cleared (Length: km x Width: m)	1.86km x 3m	
Length of line/track remediated (Length: km x Width: m)	0.83km x 3m	Tracks left open for monitoring bores
Number of costeans excavated (L: m x W: m x D: m)	NIL	
Number of costeans remediated	NIL	
Total bulk sample pits excavated (Length: x Width: x Depth: m)	NIL	
Total bulk sample pits remediated	NIL	
Camp area/s cleared (ha)	NIL	
Camp area/s remediated (ha)	NIL	
Total area disturbed (ha)	0.758ha	
Total area remediated (ha)	0.36ha	

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 *Mining Management Act.*

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*

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 *Water Act*
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	✓	A map of the work area(s) showing: 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	08/04/2021	04-May-2021 | 7:13 AM AEST	04-May-2021 | 1:22 PM ACST
Name	Emer McGowan	Trevor Edwards	Mark Edwards
Signature	Emer McGowan	DocuSigned by: Trevor Edwards 04F00D0CD9E546A...	DocuSigned by: MR EA D429AC961F4A498...

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.

SIGNATURE: …… DocuSigned by: MR EA D429AC961F4A498... **……..……..**

04-May-2021 \| 1:22 PM ACST

DATE: ……

Appendix 1 (updated)

PCPA Exploration Security Calculation

DEPARTMENT OF PRIMARY INDUSTRY AND RESOURCES

https://nt.gov.

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 #**	1029-01
Project	Pine Creek Project Area	**Date**	28-Apr-21
MMP	PCPA Tailing Drilling		

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

Domains	Calculated Cost
Site Infrastructure	$0.00
Exploration	$3,480.00
Post Closure Management	$0.00
Sub-Total - All Domains	$3,480.00
CONTINGENCY @15%	$522.00
TOTAL COST	$4,002.00
10% Discount	$400
Amended amount	$3,602
1% levy	$36

Mining Management Plan Exploration Activities

DISTURBANCE AREA INVENTORY			
Whole of site summary	**Total Area (ha)**	**Progressively rehabilitated area**	**Remaining area**
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**		

Mining Management Plan Exploration Activities

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 lowered 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/m2 for <300mm thick, $30/m2 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 lowered 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 lowered 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 lowered 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 lowered 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
						0.00	
DOMAIN 1 TOTAL						$0.00	

NORTHERN TERRITORY GOVERNMENT

Mining Management Plan Exploration Activities

Domain 7: Exploration							
Management Area	Technique	Unit of Measure (UOM)	Range per UOM ($)	Cost per UOM ($)	Estimated Quantity	Sub Total ($)	Technique Notes
Drillholes, Pads, sumps, costeans	Cap drillholes below ground	@	80-275	150.00	8.00	1200.00	Enter number of holes. Cost includes cutting collar, inserting plug and backfilling. Range can be adjusted based on number of holes (more holes is less expensive).Assume using, concrete or plastic cone plugs or bridge (no 'occy' plugs)
	Grout with concrete	@	1250	1250.00	0.00	0.00	Enter number of holes that will require grouting (e.g. likely to encounter multiple or confined aquifers). Exclude these from above row for capping.
	Empty and remove plastic sample bags	hole	25-235	235.00	0.00	0.00	Enter number of holes where plastic bags are used. Cost is to return cuttings to hole and remove plastic bags to a waste disposal facility. Cost is in addition to capping. Range can be adjusted based on the number of anticipated bags and holes.
	Rip/scarify drill pads	ha	240-900	900.00	0.16	144.00	Enter total area of drill pads. Cost is for minor ripping/scarifying of pads to depth of 0.3m in flat/gentle terrain. Includes sump infilling. Range can be adjusted based on the soil type and number of drill pads.
	Reshape and rip drill pads	@	320-2500	500.00	0.00	0.00	Enter number of drill pads where cut and fill is required in steep terrain. Cost includes excavator/dozer to return pad to slope and establish erosion control. Includes sump infilling. Exclude these pads in above row for ripping/scarifying pads.
	Infill costeans	m^3	2.00-3.00	3.00	0.00	0.00	Enter quantity of material required to backfill costean and trenches. This assumes material does not have to be carted.
	Infill bulk sample pits and dams	m^3	2.00-8.00	2.00	0.00	0.00	Enter quantity of material excavated from pit. Range can be adjusted depending on depth of pit and if battering of walls required for appropriate slope.
	Scaling, battering for stabilisation	m^2	1.21-3.00	3.00	0.00	0.00	If borrow pits or bulk sampling pits are excavated and not backfilled and require battering of walls. This includes the area requiring reshaping for stabilisation and preparation for revegetation
	Contouring for erosion control	ha	700-1540	1500.00	0.00	0.00	Enter size of area where minor pushing required to construct water management structures, such as contour banks and diversion drains in steep terrain. Range can be adjusted depending on the scale of works required.
	Revegetation by direct seeding	ha	1200-2000	1500.00	0.16	240.00	Enter size of relevant area. Apply when disturbance is intense (e.g. resource definition drilling, if most of area cleared for drill pads). Range can be adjusted based on sensitivity/significance and diversity of vegetation.
	Fertiliser application	ha	150-750	750.00	0.00	0.00	include a single application of fertiliser during the initial seeding program
						1584.00	
Tracks and Gridlines	Ripping/scarifying minor tracks and gridlines	km	120-500	400.00	1.74	696.00	Enter length. Range can be adjusted depending on width of track, soil type, grading vs raised blade, quantity (see considerations tab). Cost assumes no windrows and no erosion control measures required in flat terrain.
	Ripping major tracks and roads	km	550-1000	1000.00		0.00	Enter length. Range can be adjusted depending on width of track and soil type (see considerations tab). Cost includes pushing windrows and establishing erosion control measures in undulating and steep terrain.
	Removal of gridpegs	item	1500	1500.00		0.00	includes removal offsite of all grid pegs in exploration area
	Topsoil replacement	m^2	0.25-0.55	0.55	1600.00	880.00	Enter size of area where topsoil replacement is required. Range can be lowered for large quantities. Assumes approx 10cm of topsoil being replaced over the area.
	Revegetation by direct seeding	ha	1200-2000	2000.00	0.16	320.00	Enter size of relevant area. Range can be adjusted based on sensitivity/significance and diversity of vegetation.
	Fertiliser application	ha	150-750	750.00	0.00	0.00	include a single application of fertiliser during the initial seeding program
						1896.00	
DOMAIN 7 TOTAL						$3,480.00	

NORTHERN TERRITORY GOVERNMENT

Closure Management

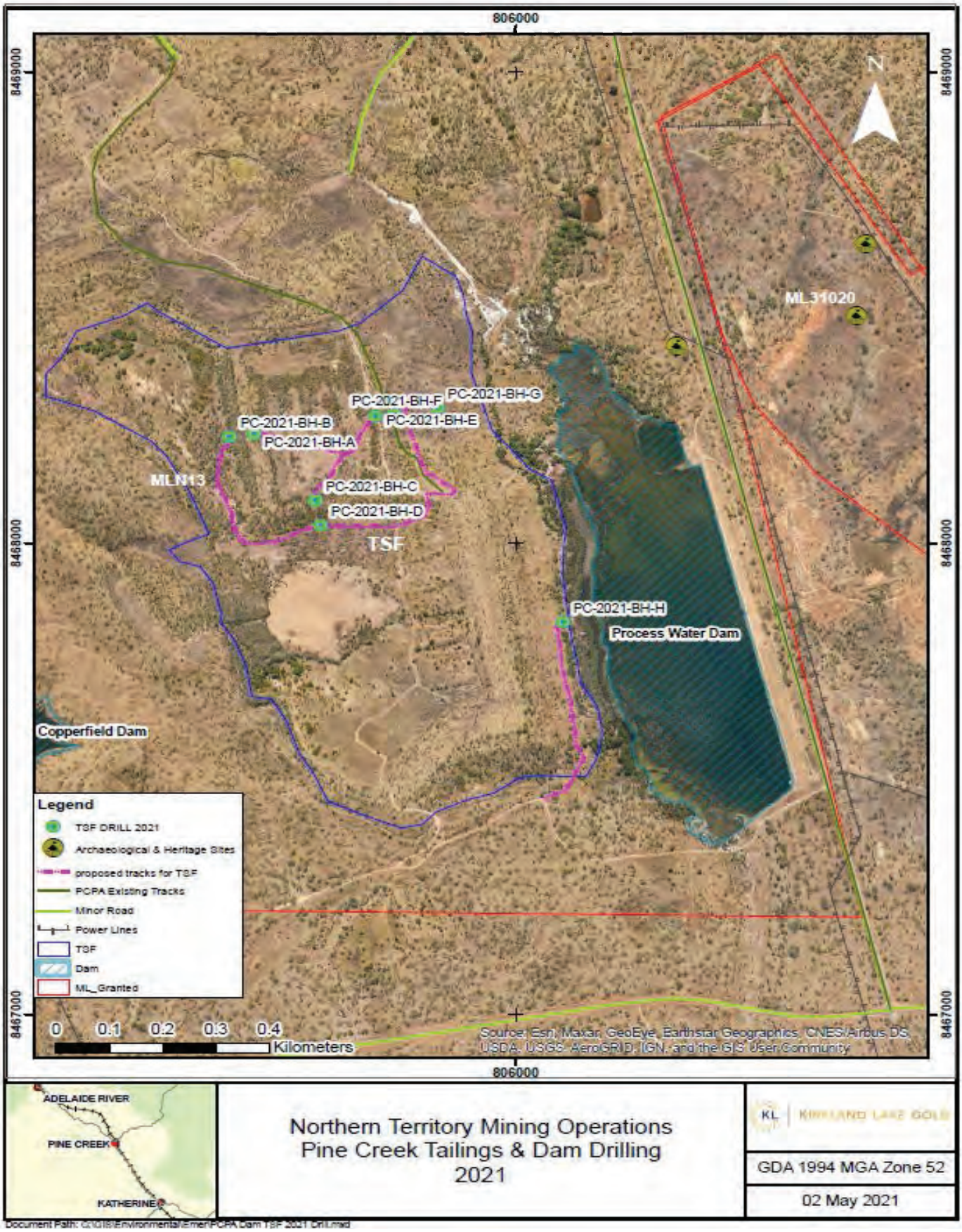
Management Area	Technique	Unit of Measure (UOM)	Range per UOM ($)	Cost per UOM ($)	Estimated Quantity	Sub Total ($)	Technique Notes
Closure	Mobilisation/demobilisation	km	10.00-15.00	15.00		0.00	This reflects a contractor bringing equipment to the site to undertake rehabilitation. Enter distance from 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 form '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 signficant 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	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).
						0.00	
POST CLOSURE TOTAL						0.00	

Assumptions & Considerations
Ripping: 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. 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 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
RC drillpads assume average 15mx15m, DDH pads 15mx20m
Reshape drill pads: using a Komatsu PC650 excavator or similar at $320/hr, can move 300bcm/hr assume one pad per hour if water cart required add $140/hr if grader required in addition add $110/hr if dozer required in addition add $250/hr include supervision and dump truck
Infilling costeans: Assumes material does not have to be carted.
Tracks: 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. 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. Two passes with grader to rip track <4m wide at 3km/hr =$120/km.
Respread topsoil: Assume minimum of 10cm depth.
Revegetation by direct seeding: 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.
Post closure cost for weed management comes from contrators estimate for Woodcutters site
Contractor costs for meals, accommodation, travel and supervision: Meals & accom @ $150/head/day. Travel @ $60/head/hr. Supervision @ $1000/day. So for 10.5hr day daily costs = $1845/hr/300bcm/hr of production = $6.15/bcm This tool has assumed cost of $210-$320/man/day.
assume septic tank pumping say $150-$300 for urban pumping, include travel for remote 1000gallon tank = 4.5m3 backfill at $5/m3 = $22.5
fertiliser - current (09/01/09) Landmark price per tonne for NPK fertiliser = $1487.50 fertiliser applied at 500kg/ha (best practice) = $743.75/ha If applied at only 100kg/ha = $148.75/ha application dependent on growth medium

Appendix 2

Nomination of Operator

Mining Management Plan Exploration Activities



Appendix 4

Shapefiles

Appendix 5

Hole Coordinates

NAME	TYPE	EASTING	NORTHING	AREA	LEASE
2021-SDH-PC02	Borehole-Sonic	805509.42	8468232.44	PINE CREEK	MLN13
2021-SDH-PC03	Borehole-Sonic	805464.15	8468226.78	PINE CREEK	MLN13
2021-SDH-PC04	Borehole-Sonic	805624.85	8468090.98	PINE CREEK	MLN13
2021-SDH-PC05	Borehole-Sonic	805635.04	8468038.92	PINE CREEK	MLN13
2021-SDH-PC06	Borehole-Sonic	805738.02	8468268.66	PINE CREEK	MLN13
2021-SDH-PC07	Borehole-Sonic	805773.11	8468273.18	PINE CREEK	MLN13
2021-SDH-PC08	Borehole-Sonic	805854.59	8468286.76	PINE CREEK	MLN13
2021-DDH-PC01	Borehole-Diamond	806089.54	8467832.84	PINE CREEK	MLN13

Appendix 6

Rehabilitation Register

NTMO PCPA Exploration Activities Rehabilitation Summary (Cumulative)																			
Year			Drill Holes (No.)				Pads (No.)				Sumps (No.)				Drill Line/ Access Track (km)				
Reporting period	Tenement	MMP Reference	Planned	Drilled	Rehabed	Remaining Rehab	Planned	Cleared	Rehabed	Remaining Rehab	Planned	Cleared	Rehabed	Remaining Rehab	Planned	Cleared	Rehabed	Remaining Rehab	Comments
2018/2019	MLN1130	2018	2	2	2	0	2	2	2	0	0	0	0	0	0.175	0.054	0.054	0.000	All drill site rehabilitation complete
2019/2020	MLN1130	2019	25	16	16	0	18	8	6	2	0	0	0	0	0.740	0.657	0.390	0.325	Two drill sites and access track remain for further drilling in 2020. 58m of pre-existing track rehabilitated.
2020/2021	ML13	2020																	
Total	All	2018-2020	27	18	18	0	20	10	8	2	0	0	0	0	0.915	0.711	0.444	0.325	

NORTHERN TERRITORY GOVERNMENT

Appendix 7

Photos of Rehabilitation Work

Drill ID	**2020-SDH-PC01**
Coordinates **GDA 94 / MGA Zone 52**	**E: 805702.7, N: 8467584.8**
Works completed	This SDH drilled, and a monitoring bore was installed to monitor the geochemistry of the wall. 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. Tacks have been left for access to monitor the bore.
Before	 .

After	

NT Mining Operations Pty Ltd

Integrated Management System

Version 1.1

KL | KIRKLAND LAKE GOLD

DISTRIBUTION LIST

Internal	NT Mining Operations Pty Ltd (NTMO)
External	Department of Primary Industry and Resources (DPIR)

AMENDMENTS

The following table outlines key amendments to the NTMO Integrated Management System (IMS):

Version	Review Date	Amendment Details
1.0	31 August 2018	This document represents the first collated NTMO ESRMS.
1.1	13 September 2019	This document represents the second review of NTMO ESRMS Renamed to NTMO Integrated Management System (IMS).

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TABLES

FIGURES

1 INTRODUCTION

Kirkland Lake Gold NT Mining Operations (NTMO) aims for a relationship with our Employees, Contractors and Stakeholders based on cooperation and a mutual desire to achieve the best possible results. The Integrated Management System outlines the conditions and expected work practices at NTMO, in particular, those that may cause physical harm or impact on the environment or our community.

NTMO promotes a Core Values based culture to encourage behaviour consistent with site expectations. Core Values should be used to guide everyone's actions, behaviour and decision-making every day including:

- **People**: We treat people with dignity and respect. We communicate openly and with honesty and invest in the development of people. This applies to employees and all stakeholders.
- **Zero Harm**: We aspire to zero harm to employees, the environment, and to local communities. We minimise risks with the intent to operate in a sustainable manner. We recognise community engagement is critical to sustainability.
- **Value Driven**: We recognise that value creation is critical for shareholders. It also provides opportunities and benefits for employees, business partners, and local communities. A focus on productivity and innovation is critical to sustainable value creation.
- **Accountability**: We are sincere in our commitments to each other and our stakeholders. We hold each other accountable to deliver on these commitments.
- **Teamwork and Collaboration**: We believe that success is achieved through teamwork and collaboration at our sites, and between the sites and our corporate functions. We acknowledge team success in addition to individual success. We will collaborate with our business partners for our mutual benefit.

All NTMO Employees and Contractors are required to understand their roles and responsibilities with regards to Occupational Health, Safety, Environment and Social Responsibility. This includes following procedures, understanding legal requirements or the potential impact of your work, and identifying and controlling risks. Risks must be identified and controlled in accordance with documented processes.

NTMO considers that it is the duty of our Employees and Contractors to:

- Work safely, protecting people, environment and community;
- Comply with all Laws, conditions of any Permits, Licences and Authorisations or any NTMO standards and procedures applicable to their activities;
- Identify any hazards or risks associated with their work and implement appropriate controls; and
- Report and rectify any observed unsafe acts, incidents or hazards.

NTMO expects all Employees and Contractors to work safely, considerately, and remember that effective health, safety, environment and community management programs will benefit us all, consistent with our vision of "Zero Harm".

Mark Edwards

NTMO Project Director

2 Integrated Management System Overview

NTMO's Integrated Management System (IMS) includes Environmental and Social Responsibility (ESR) Policies, Environmental Management Plans (EMPs) and Standard Operating Procedures (SOPs), which enable the systematic review and management of site environmental and social aspects.

The IMS outlines a process to manage and minimise ESR risks; comply with legislation and other requirements, and is designed to deliver:

- Site wide awareness and accountability of ESR issues;
- All NTMO Employees and Contractors effectively managing operations with a goal to reduce ESR impacts; and
- A continuous improvement framework and culture to be leaders in ESR performance.

The IMS covers all activities undertaken by NTMO that have the potential to impact on ESR performance. Communication and participation across all site levels is vital to ensure the IMS is effective and success is dependent on active involvement by all Employees and Contractors.

2.1 Policies

ALL EMPLOYEES AND CONTRACTORS MUST COMPLY WITH THE KIRKLAND LAKE GOLD POLICIES, WHICH OUTLINE THE ORGANISATIONS COMMITMENTS TO PROTECTING HEALTH, SAFETY, ENVIRONMENTAL, SOCIAL RESPONSIBILITY AND WORKPLACE ASPECTS AT ITS OPERATIONS. SPECIFIC TO THE IMS ARE THE ENVIRONMENTAL AND SOCIAL RESPONSIBILITY POLICIES OUTLINED BELOW AND PROVIDED IN FIGURE 1 AND

.

ENVIRONMENTAL POLICY

> "The vision of Kirkland Lake Gold is to integrate and promote sustainability into all facets of our company through implementing environmentally responsible practices throughout every level of our business."

SOCIAL RESPONSIBILITY POLICY

> "The vision of Kirkland Lake Gold is to be a respected leader in Social Responsibility. The Company believes that social responsibility is essential to its business success, and we believe that building relationships is based on trust and open, honest communication."

Other Kirkland Lake Gold Policies are the Health and Safety; and Workplace Violence, Harassment and Discrimination Policies which are outlined below and available on the Kirkland Lake Gold website - http://www.klgold.com/about-us/policies/.

HEALTH AND SAFETY POLICY

> "The Health and Safety Policy reflects Kirkland Lake Gold's commitment to protect the health and safety of its Employees, Business Partners and Visitors and the intent to deliver on measurable objectives that will drive the continuous improvement necessary to deliver a workplace free of occupational injury and illness on our journey to a culture of Zero Harm."

WORKPLACE VIOLENCE, HARASSMENT AND DISCRIMINATION POLICY

> "Kirkland Lake Gold is committed to providing an equal opportunity and safe work environment and has developed this Policy to ensure that all individuals are treated with respect and dignity, free from harassment, discrimination, bullying and retaliation."

FIGURE 1: KIRKLAND LAKE GOLD ENVIRONMENTAL POLICY

SOCIAL RESPONSIBILITY POLICY

Kirkland Lake Gold is committed to making a positive impact by creating meaningful opportunities for our employees and local suppliers, and by facilitating lasting improvements in the communities in which we operate.

Kirkland Lake Gold believes that Social Responsibility is essential to operational and financial success and is committed to developing relationships based on open and honest communication with our stakeholders. To further our commitment to Social Responsibility, Kirkland Lake Gold endeavours to:

- **Meet or Exceed** all applicable laws, regulations, and Kirkland Lake Gold company standards.
- **Acknowledge** cultural and other human rights and ensure all levels of the workforce understand and respect such rights.
- **Integrate** social responsibility into our decisions and activities.
- **Act Ethically and Respectfully** regarding Indigenous rights, cultural beliefs and aspirations.
- **Understand, encourage and promote** cross-cultural awareness.
- **Engage** our stakeholders regarding their values in connection with the development, operation and closure of mineral projects.
- **Communicate** openly and honestly with respect to the Company's performance in a timely manner.
- **Maintain** ongoing dialogues based on transparency, respect and good faith.

To fulfil our commitment to social responsibility, we will aim to continually improve our performance by regularly:

- reviewing objectives and targets;
- engaging with our employees and stakeholders to find improvements that benefit both local economic development and our shareholders;
- identifying and managing significant social impacts, risks and opportunities;
- measuring and reporting performance transparently against objectives and targets; and
- communicating this policy to our employees, contractors, suppliers and visitors while also making it available to the public.

KIRKLAND LAKE GOLD

April 22, 2019

Anthony Makuch
President and CEO

FIGURE 2: KIRKLAND LAKE GOLD SOCIAL RESPONSIBILITY POLICY

2.2 Environmental Management Plans

NTMO manages significant environmental and social aspects of its operations through a series of EMPs which are a compilation of the work required to:

- Meet the requirements of the Kirkland Lake Gold ESR Policies;
- Comply with all applicable regulatory requirements;
- Achieve objectives and targets; and
- Manage and reduce the impact of environmental and social aspects.

Each EMP has been developed to address significant environmental and social aspects based on the activities undertaken at NTMO sites. The EMP sets key objectives and targets and management and mitigation measures which are aimed to prevent or minimise higher risk impacts identified during the site risk assessments.

NTMO regularly reviews and assesses performance against these objectives and targets and aims for continuous improvement. Performance against these objectives and targets is reported annually in the NTMO Mining Management Plans (MMP) submitted to the Department of Primary Industry and Resources (DPIR).

NTMO uses the SMART (Specific, Measurable, Achievable, Relevant and Timely) method when developing EMP objectives and targets. This method requires that objectives and targets are:

- **Specific** - and unambiguous, with set targets;
    - Strategies (What): Plan of action(s) to achieve targets.
    - Actions (How): Specific tasks to accomplish the strategy.
    - Explanation (Why): Justification for the actions.
- **Measurable** - so performance can be measured against targets;
    - Responsibility (Who): Person(s) responsible to undertake the task.
    - Deliverable (Outcome): End product of action.
- **Achievable** - ensuring adequate resources and capability to meet targets;
    - Target: (When): NTMO commitment to meet and achieve the set action.
- **Relevant** – review of the effectiveness of the management and mitigation strategies;
    - Key Performance Indicator (KPI): Analysis and interpretation of results and determination as to whether targets are being met.
    - Non-Conformance and Corrective Action: Procedures for implementing corrective actions should an undesirable impact result.
- **Timely** - targets met within a certain time frame.
    - Time frame (When): Time frame for completion or frequency.

2.3 Standard Operating Procedures

A series of SOPs have been developed by NTMO to guide Employees and Contractors when carrying out some activities outlined in the EMPs. The SOPs include step by step instructions and aim to achieve efficiency, quality output and uniform performance. The SOPs are not included in this document but are referenced and available from the NTMO Environment Department as required.

2.4 Management System Review

NTMO regularly reviews its performance against the EMPs to determine the effectiveness of control strategies and whether the targets are being met within the site MMPs submitted to the DPIR. Any non-conformances are discussed and analysed with appropriate corrective and preventative actions identified.

The NTMO IMS will be reviewed annually to ensure the system is functional and identify any areas requiring improvement. During the IMS review the following information will be considered:

- Results of audits and legal compliance;
- Communication from external parties;
- Environmental and social performance;
- Relevance of objectives and targets;
- Incident or complaint trends and resulting corrective and preventative actions; and
- Any change in activity or risk.

3 NTMO Sites

NTMO manages a number of mining, exploration; and care and maintenance sites, which form part of the larger Kirkland Lake Gold NT Operations (Table 1). Geographically, the NT Operations are centred between the towns of Adelaide River to the north and Pine Creek to the south. The area was historically an important gold mining region, and is serviced by the Stuart Highway, 248 kilometres (km) south-southeast of the NT Capital City Darwin.

TABLE 1: NTMO SITES AND OPERATIONAL STATUS

NTMO Site	Operational Status
Brocks Creek Project Area (BCPA)	Care and Maintenance (Project Area Acquired by Bacchus Minerals August 2019)
Cosmo Howley Project Area (CHPA)	Mining and Exploration
Maud Creek Project Area (MCPA)	Care and Maintenance
Moline Project Area (MOPA)	Care and Maintenance (PNX Purchase In Progress)
Mount Paqualin Project Area (MPPA)	Exploration
North Point / Princess Louise Project Area (NPPLPA)	Care and Maintenance
Pine Creek Project Area (PCPA)	Care and Maintenance
Union Reefs Project Area (URPA)	Mining, Processing and Exploration

It should be noted that some EMPs and/or objectives and targets may not be applicable at all sites as this will depend on the site operational status, activities and risk assessment (Table 2). However, NTMO requires all Employees and Contractors to be familiar with and implement appropriate management and mitigation measures while undertaking activities at any NTMO sites to minimise potential environmental and social impacts.

TABLE 2: APPLICABLE IMS MANAGEMENT PLANS AT NTMO SITES

NTMO IMS Management Plan	BCPA	CHPA	MCPA	MOPA	MPPA	NPPLPA	PCPA	URPA
Consultation and Socio-Economic	N/A	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Cultural Heritage	N/A	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Dust	N/A	Yes						Yes
Energy	N/A	Yes						Yes
Environmental Emergency Response	N/A	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Fire	N/A	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Flora and Fauna	N/A	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Hazardous Substances	N/A	Yes						Yes
Landform, Erosion and Sediment Control	N/A	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Rehabilitation	N/A	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Tailings	N/A							Yes
Waste	N/A	Yes						Yes
Waste Rock	N/A	Yes				Yes		Yes
Water	N/A	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Weeds and Pests	N/A	Yes	Yes	Yes	Yes	Yes	Yes	Yes

4 Environmental Management Plans

It is the responsibility of Employees and Contractors to ensure that they are at all times fully familiar and compliant with NTMO EMPs and SOPs applicable to their activities. NTMO Employees and Contractors must also comply at all times with applicable Laws and Conditions of Site Permits, Licences and Authorisations issued by various Governmental Agencies.

The NTMO Environment Department can be contacted for any environmental emergency, incident or enquiry during office hours on 08 8978 1736 and/or after hours to respond to any environmental emergency or incident on 0457 300 519.

Key environmental aspects covered under the NTMO EMPs include:

- Dust;
- Energy;
- Emergency Response;
- Fire;
- Flora and Fauna;
- Hazardous Substances;
- Landform, Erosion and Sediment Control;
- Rehabilitation;
- Tailings;
- Waste;
- Waste Rock;
- Water; and
- Weed and Pests.

4.1 Dust Management Plan

4.1.1 Purpose and Objectives

The purpose of the Dust Management Plan is to prevent and minimise dust emissions through management and controls of NTMO activities. Through implementation of this EMP, NTMO aims to meet the following objectives:

- Manage activities which generate dust and identify if additional controls are required to minimise emissions.

4.1.2 Legal and Other Requirements

Legal requirements applicable to the Dust Management Plan include:

- *National Environment Protection Council Act 1994* - Specifies reporting requirements for the National Pollutant Inventory (NPI) which is an internet database providing the community, industry and government with information on the types and amounts of certain substances being emitted to the air, land and water.
- *National Environment Protection Council (Northern Territory) Act* - NT's part in the co-operative legislative scheme to establish the National Environment Protection Council and implement the Intergovernmental Agreement on the Environment.
- *Soil Conservation and Land Utilisation Act* - Areas of land that are subject to soil erosion or that are likely to become subject to soil erosion may be declared Areas of Erosion Hazard.
- *Mining Management Act* - MMPs require technical studies, data and management plans based on the risk assessment of proposed activities.
- *Waste Management and Pollution Control Act* – Provides a general framework for protecting the environment from pollution and waste, including offence provisions and enforcement tools; and licensing and approvals for specified activities. In general terms, for mining activities the Act does not apply to any contaminants and wastes that are confined on mining tenure.

Guidelines applicable to the Dust Management Plan include:

- *National Environment Protection (Ambient Air Quality) Measure 1998* – Aims for ambient air quality that adequately protects of human health and well-being.
- *Australian Standard 2922:* Ambient Air-Guide for the siting of sampling units.

- *Australian Standard 3580:* Methods of sampling and analysis of ambient air. Method 10.1: Determination of particulate matter – Deposited matter – Gravimetric method.

NTMO SOPs applicable to the Dust Management Plan include:

- NTMO ES – SOP044 Dust Deposition Sampling Procedure; and
- NTMO ES – SOP031 Incident and Complaint Notification and Reporting.

4.1.3 Management and Mitigation Strategies

The following dust mitigation and management measures will be implemented as applicable:

- Undertake identified dust deposition monitoring during the dry season for a minimum of 3 months.
    - Monitoring results will be reviewed to determine if high volumes of dust generated by NTMO operations are leaving the tenement boundary.
    - Consistent results showing dust deposition levels below the internal trigger value (2 g/m^2/month plus the background value for insoluble solids) will confirm whether monitoring can be decommissioned after sufficient data (i.e. 3 years) has been collected and a risk assessment has been completed.
- Regular watering using water carts across ROM pads, access and haul roads during operation;
- Water sprays used to wet crushed ore on conveyor belts;
- Minimise exposed subsoil through progressive clearing and reinstatement/re-vegetation on areas no longer required;
- Trucks have covered loads before travelling on public roads;
- Employees and Contractors are educated in dust management during inductions.
- Defined access roads and haul routes to be used and speed restrictions applied;
- Only critical fire breaks mechanically maintained and works performed at end of wet season;
- Retention of vegetation around site boundaries as a buffer, and to limit potential wind-blown dust sources;
- Stockpiles of soils across the mine will be managed to reduce dust emission including spraying with water, covering or the application of dust suppressants (where surfaces are static for an extended period);
- Stabilisation of surface silt content through application of localised chemical dust suppressants (suitable for access roads which are traversed less frequently);
- Regular watering during any clearing, scraping, excavation, loading or dumping activities;
- Avoid conducting dust generating activities during high wind speeds, where practical;
- Material drop heights during loading and unloading to be reduced as far as practical.

4.1.4 Monitoring and Measurement

The specific strategies and actions designed to achieve the Dust Management Plan objectives and targets are outlined in Table 3.

TABLE 3: DUST MANAGEMENT STRATEGIES

Specific			Measurable		Achievable	Timely	Relevant	
Objective (What)	Actions (How)	Explanation (Why)	Responsibility (Who)	Deliverable (Outcome)	Targets (When)	Time frame (When)	Key Performance Indicators	Non-Conformance and Corrective Action
Manage dust generation and identify if additional controls are required to minimise emissions.	Obtain NTMO Clearing/Ground Disturbance Permit approval prior to any ground disturbance activities and rehabilitate areas once available.	To minimise and manage potential dust emissions during clearing.	Environment Officer (or delegated person)	Approved Clearing/Ground Disturbance Permits.	Clearing/Ground Disturbance Permit obtained and areas progressively rehabilitated once available.	Ongoing As Required	Clearing/Ground Disturbance Permits obtained. No incidents or complaints related to dust.	Inspection findings to be documented and discussed at the Environment and Community Department meetings. A review of company resources and operating requirements will be undertaken to determine why action wasn't completed. Develop and implement an action plan to ensure the action is achieved. A review of activities likely contributing to the dust deposition source for areas of improvement may be undertaken, dust suppression may be increased or review of dust suppression methods may be undertaken.
	Identify and manage dust generating activities and areas.	To target areas of high dust emissions.	Environment Officer (or delegated person)	Documented inspection notes. Site awareness through inductions and meetings.	No excessive dust plumes recorded in inspection notes or complaints recorded. Inspect and manage key dust generating activities.	Quarterly	Documented inspection notes. No incidents or complaints related to dust.	
	Install dust deposition gauges at identified locations.	Monitor dust levels and identify additional controls if required.	Environment Officer (or delegated person)	Dust monitoring data and interpretation.	Undertake dust monitoring and analyse dust deposition data.	Annual Dry Season	Dust monitoring data and interpretation.	
	Complete annual National Pollutant Inventory (NPI) Reporting.	To identify and quantify sources of dust emissions.	Senior Environment Officer (or delegated person)	NPI Report Submission.	NPI reporting completed by due date.	Annual 30 September	NPI reporting completed by due date.	

4.2 Energy Management Plan

4.2.1 Purpose and Objectives

The purpose of the Energy Management Plan is to understand and minimise energy use and to ensure that energy use is appropriately reported. Through implementation of this EMP, NTMO aims to meet the following objectives:

- Understand energy use to identify where savings can be made to minimise emissions and manage costs.

4.2.2 Legal and Other Requirements

Legal requirements applicable to the Energy Management Plan include:

- *National Greenhouse and Energy Reporting Act 2007* - A single national framework for reporting and disseminating company information about greenhouse gas emissions, energy production, energy consumption and other information specified under NGER legislation.
- *National Environment Protection Council Act 1994* - Specifies reporting requirements for the National Pollutant Inventory (NPI) which is an internet database providing the community, industry and government with information on the types and amounts of certain substances being emitted to the air, land and water.
- *National Environment Protection Council (Northern Territory) Act* - NT's part in the co-operative legislative scheme to establish the National Environment Protection Council and implement the Intergovernmental Agreement on the Environment.
- *Mining Management Act* - MMPs require technical studies, data and management plans based on the risk assessment of proposed activities.

Guidelines applicable to the Energy Management Plan include:

- *National Environment Protection (Diesel Vehicle Emissions) Measure 2001* - Aims to reduce exhaust emissions from diesel vehicles.
- *National Environment Protection (NPI) Measure 1998* - Aims to improve the sustainable use of resources.
- *National Greenhouse and Energy Reporting (Measurement) Technical Guidelines* - Assists corporations to understand and apply the NGER (Measurement) Determination 2008.

NTMO SOPs applicable to the Energy Management Plan include:

- NTMO ES – SOP045 NPI Reporting

4.2.3 Management and Mitigation Strategies

The following energy mitigation and management measures will be implemented as applicable:

- Mobile and stationary equipment will be used in a planned manner and regularly maintained and appropriate energy saving devices fitted to ensure efficient fuel and electricity use;
- Energy use (fuel and electricity) per tonne of ore milled and ore mined will be compared with previous periods to determine fuel efficiency trends and improvement opportunities;
- Appropriate fuel storage and handling practices implemented to minimise fuel spillages and wastage; and
- Minimise greenhouse gas emissions through recycling of materials, rehabilitation and fire management.

4.2.4 Monitoring and Measurement

The specific strategies and actions designed to achieve the Energy Management Plan objectives and targets are outlined in Table 4.

TABLE 4: ENERGY MANAGEMENT STRATEGIES

Specific			Measurable		Achievable	Timely	Relevant	
Objective (What)	**Actions (How)**	**Explanation (Why)**	**Responsibility (Who)**	**Deliverable (Outcome)**	**Targets (When)**	**Time frame (When)**	**Key Performance Indicators**	**Non-Conformance and Corrective Action**
Understand energy use to identify where energy savings can be made to minimise emissions and manage costs.	Complete annual National Pollutant Inventory (NPI) Reporting.	To establish baseline energy use and report accordingly.	Senior Environment Officer (or delegated person)	NPI Report Submission.	NPI reporting completed by due date.	Annual 30 September	NPI reporting completed by due date.	Review company resources and operating requirements to determine why action wasn't completed. Develop and implement an action plan to ensure the action is achieved.
	Complete annual National Greenhouse Energy Reporting (NGER).	To identify sources and quantities of energy usage.	Senior Environment Officer (or delegated person)	NGERS Report Submission.	NGER reporting completed by due date.	Annual 31 October	NGER reporting completed by due date.	
	Compare energy usage data to tonnes of ore milled and mined.	To establish baseline data and identify areas for further investigation or improvement in energy use efficiencies.	Senior Environment Officer (or delegated person)	Identification of areas for improvement to reduced emissions and energy use.	Determine NTMO energy use (fuel and electricity) per tonne of ore milled and mined.	Annual 31 October	Interpretation and use of data for identifying areas for improvement in energy use efficiencies.	If action is not completed then it will be done retrospectively.

4.3 Environmental Emergency Response Management Plan

4.3.1 Purpose and Objectives

The purpose of the Environmental Emergency Response Management Plan is to provide a framework for the safe response and management of environmental emergencies. Through implementation of this EMP, NTMO aims to meet the following objectives:

- Ensure the safe response to environmental emergencies and minimise any environmental impacts.

4.3.2 Legal and Other Requirements

Legal requirements applicable to the Environmental Emergency Response Management Plan include:

- *Dangerous Goods Act* - Covers explosives (including fireworks) and fuel gas (including autogas). The legislation sets out the requirements and allowances for licensing (explosives and fireworks only), packaging, storage, transportation and use of these two types of dangerous goods.
- *Heritage Act* - Provides protection to nominated areas, places, sites, buildings, and heritage objects on the NT Heritage Register from accidental and deliberate damage or harm. Discovery of or any damage related to any significant cultural heritage sites are required be reported to the Department of Tourism, Sport and Culture (DTSC) Heritage Branch.
- *Mining Management Act* – Section 29 requires all environmental incidents are reported to the DPIR as soon as practicable. Any environmental incident deemed to be of any significant nature will be detailed in a formal Incident Report.
- *Northern Territory Aboriginal Sacred Sites Act* – Protects sacred sites in the NT whether the location of the sites are known or not, and is administered by the Aboriginal Areas Protection Authority (AAPA), which is responsible for issuing Authority Certificates. Entry or any damage related to any sacred site or restricted works area are required be reported to the AAPA.
- *Waste Management and Pollution Control Act* – Section 14 requires all off-site environmental incidents associated with NTMO site activities are reported to the NT Environmental Protection Authority (EPA) within 24 hrs. A written response must be received by the NT EPA within 7 days.
- *Work Health and Safety (National Uniform Legislation) Act* - Requires notification to NT Worksafe if certain incidents occur in the workplace. Notifiable incidents that are reportable include the death of a person (employee, contractor or member of public); serious injury or illness; or a dangerous incident required to notify NT WorkSafe immediately after becoming aware a notifiable incident in their workplace.

Guidelines applicable to the Environmental Emergency Response Management Plan include:

- *Australian Standard ISO 31000:* Risk Management -- Principles and guidelines.
- *Australian Standard AS 4452:* The Storage and Handling of Toxic Substances.
- *Australian Standard AS 2187.1:* Explosives – Storage, transport and use.
- *Australian Standard AS 1940:* The Storage and Handling of Flammable and Combustible Liquids.
- *NTEPA Northern Territory Contaminated Land Guideline* - Details the responsibilities and roles of parties involved in the assessment and remediation of contaminated land.

NTMO SOPs applicable to the Environmental Emergency Response Management Plan include:

- NTMO ES – SOP006 Remote Work;
- NTMO ES – SOP017 General Waste Disposal;
- NTMO ES – SOP018 Bioremediation;
- NTMO ES – SOP020 Waste Oil and Grease Disposal;
- NTMO ES – SOP022 Chemical and Hydrocarbon Management;
- NTMO ES – SOP031 Incident and Complaint Notification and Reporting; and
- NTMO ES – SOP042 Spot Messenger GPS; and
- NTMO ES – SOP061 Cyanide Spill Response.

4.3.3 Management and Mitigation Strategies

The following emergency response mitigation and management measures will be implemented as applicable:

- The emergency response process will be managed by the site Emergency Response Team (ERT) which will consist of dedicated staff;
- All ERT personnel will undergo regular training and participate in regular mock and desktop exercises. Records of training content and attendance will be maintained by the Health and Safety Superintendent;
- Employees and Contractors are educated in site emergency management, their responsibilities and emergency preparedness and response during inductions;
- Tool-box awareness sessions will be presented as required. The tool-box talks will summarise any relevant emergency responses and details of any historical and/industry specific incidents which have occurred and management measures implemented.
- A risk assessment will be completed for any activities that may expose people, equipment, environment or community to hazards, which may not be, or may not be adequately, covered by EMPs or SOPs. All tasks carried out at NTMO must ensure a risk assessment is undertaken by means of a Take 5, Job Safety and Environmental Analysis (JSEA) or Formal Risk Assessment;
- Vehicles carry fire extinguishers and UHF/VHF radios with a dedicated emergency channel (Channel 12);
- When an emergency is raised via the emergency channel /alarm the information provided requires to be clear and concise stating the following:
    - Your name;
    - Location of the incident;
    - Description of the incident scene;
    - Best route to be used to approach the incident location;
    - If safe to do so, render assistance or first aid if required until the ERT have arrived;
    - Once the ERT have arrived, evacuate the location and assemble to Muster Point(s) or to a safe location.
- Each work area will have a dedicated ERT Member who will be appropriately trained to assess incidents and undertake required protocols in accordance with the appropriate emergency response action plan;
- During emergencies and emergency training exercises, personnel will be required to evacuate to a place of safety. Designated Site muster points are established across the site based on being the least hazardous in the event of an emergency;
- In the event of an evacuation, all personnel will cease work immediately; leave all equipment in a safe condition, before walking calmly and quickly toward the nearest muster point;

- The ERT Coordinator is responsible for closing out incidents and providing the 'All Clear' radio call to all site personnel and Muster Points effected. Once the all clear signal has been given, personnel may return to their work areas. In most situations a debrief will be held following the incident;
- All incidents will be reported with notifiable incidents will be reported to the appropriate Government Agency and non-reportable incidents will managed through internal processes;
- Spill kits shall always be fully stocked and placed in appropriate locations around the mine site, including hazardous materials storage areas, waste management areas, vehicle and equipment wash down areas, equipment servicing areas and fuel delivery and handling areas;
- Several of the most likely emergency situations have the potential to cause environmental impacts to soil, surface water and/or groundwater. Investigations into the extent of the impact and recommendations for remediating areas will be determined based in sampling and site investigations;
- A review of NTMO risk registers has identified the following environmental emergency situations pertaining to activities on NTMO sites are:
    - Fire / Explosion;
    - Sacred Site / Restricted Works Area Interference;
    - Structural / Slope Failure;
    - Hazardous Substance Release;
    - Vehicle Incident;
    - Severe Weather; and
    - Uncontrolled Release of Water.
- Emergency response actions have been prepared and provided in the following sections to facilitate the management of environmental emergencies at NTMO sites. Incidents may include one or more response plans and they should be used in unison as required.

4.3.3.1 Fire / Explosion Emergency Response Actions

- The response steps to be undertaken in an emergency regarding fire or explosion are outlined in Figure 3.

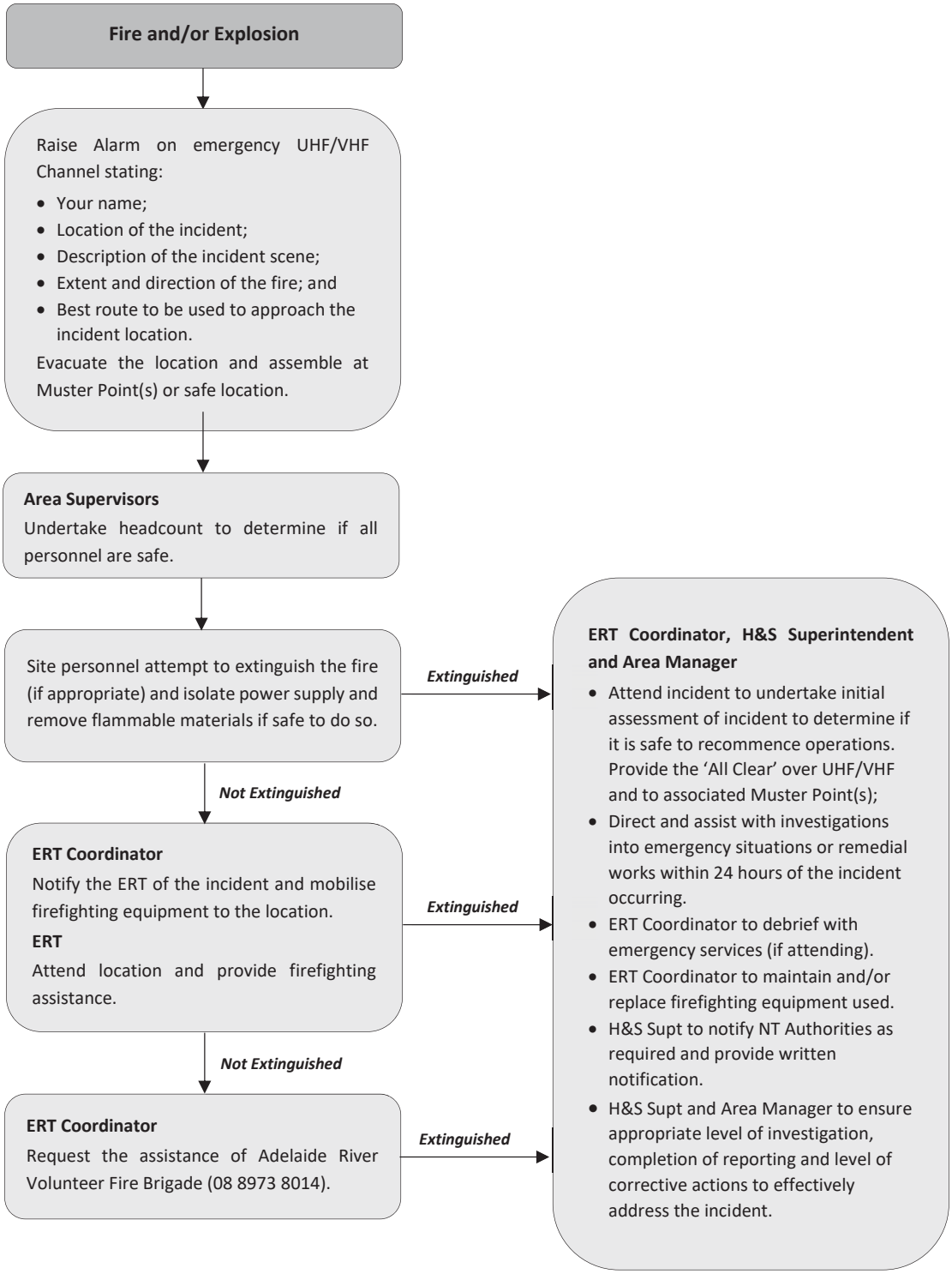

FIGURE 3: FIRE / EXPLOSION EMERGENCY RESPONSE FLOW CHART

4.3.3.2 Sacred Site / Restricted Works Area Interference Emergency Response Actions

- The response steps to be undertaken in an emergency regarding interference with a cultural heritage sites and/or no go zones are outlined in .

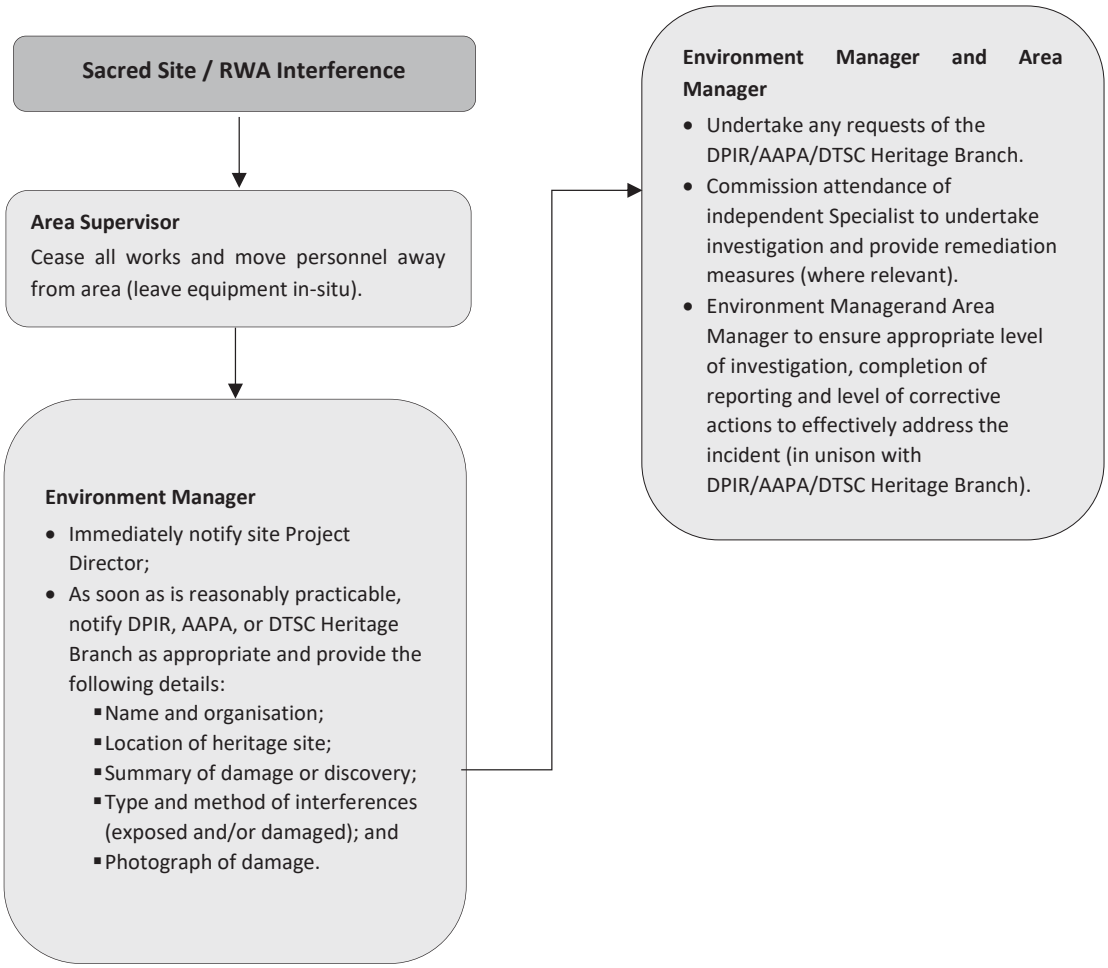

Figure 4: Sacred Site / Restricted Works Area Interference Emergency Response Flow Chart

4.3.3.3 Structural / Slope Failure Emergency Response Actions

- The response steps to be undertaken in an emergency regarding a structural / slope failure are outlined in Figure 5.

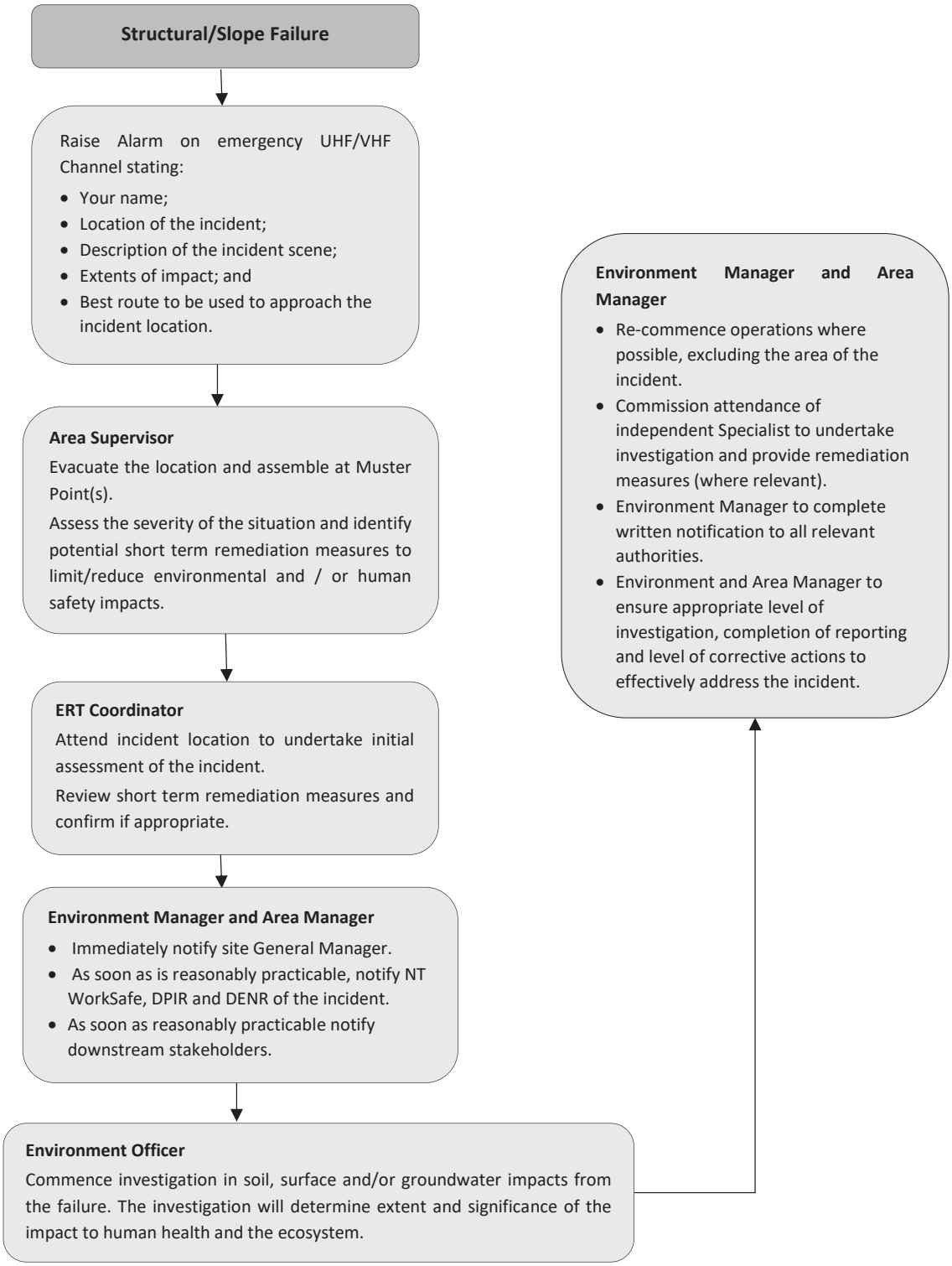

FIGURE 5: STRUCTURAL / SLOPE FAILURE EMERGENCY RESPONSE FLOW CHART

4.3.3.4 Hazardous Substances Release Emergency Response Actions

The response steps to be undertaken in an emergency regarding hazardous substances release are outlined in Figure 6.

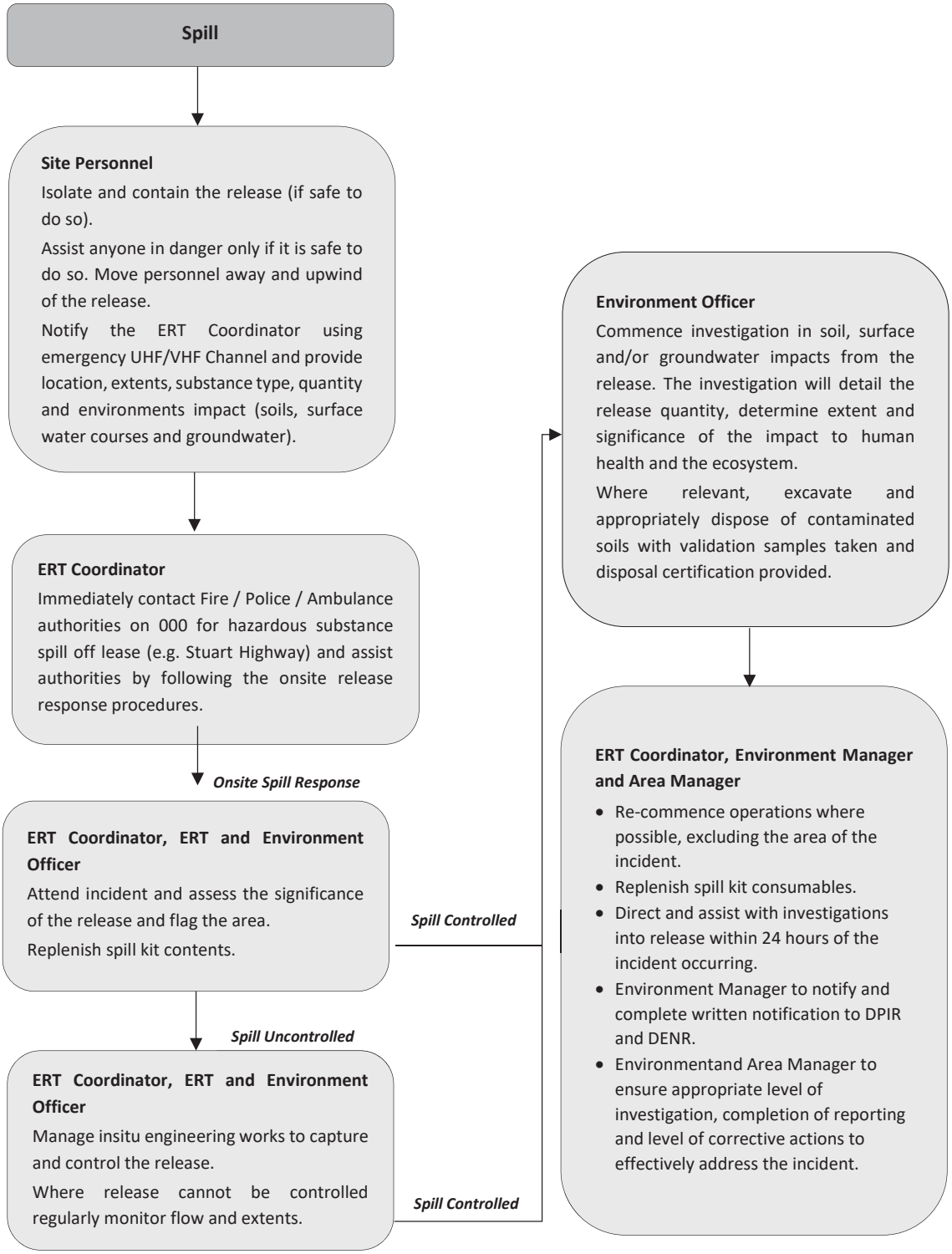

FIGURE 6: HAZARDOUS SUBSTANCE RELEASE EMERGENCY RESPONSE FLOW CHART

4.3.3.5 Vehicle Incident Emergency Response Actions

- The response steps to be undertaken in an emergency regarding a vehicle incident and resulting spill or fire are outlined in Figure 7.

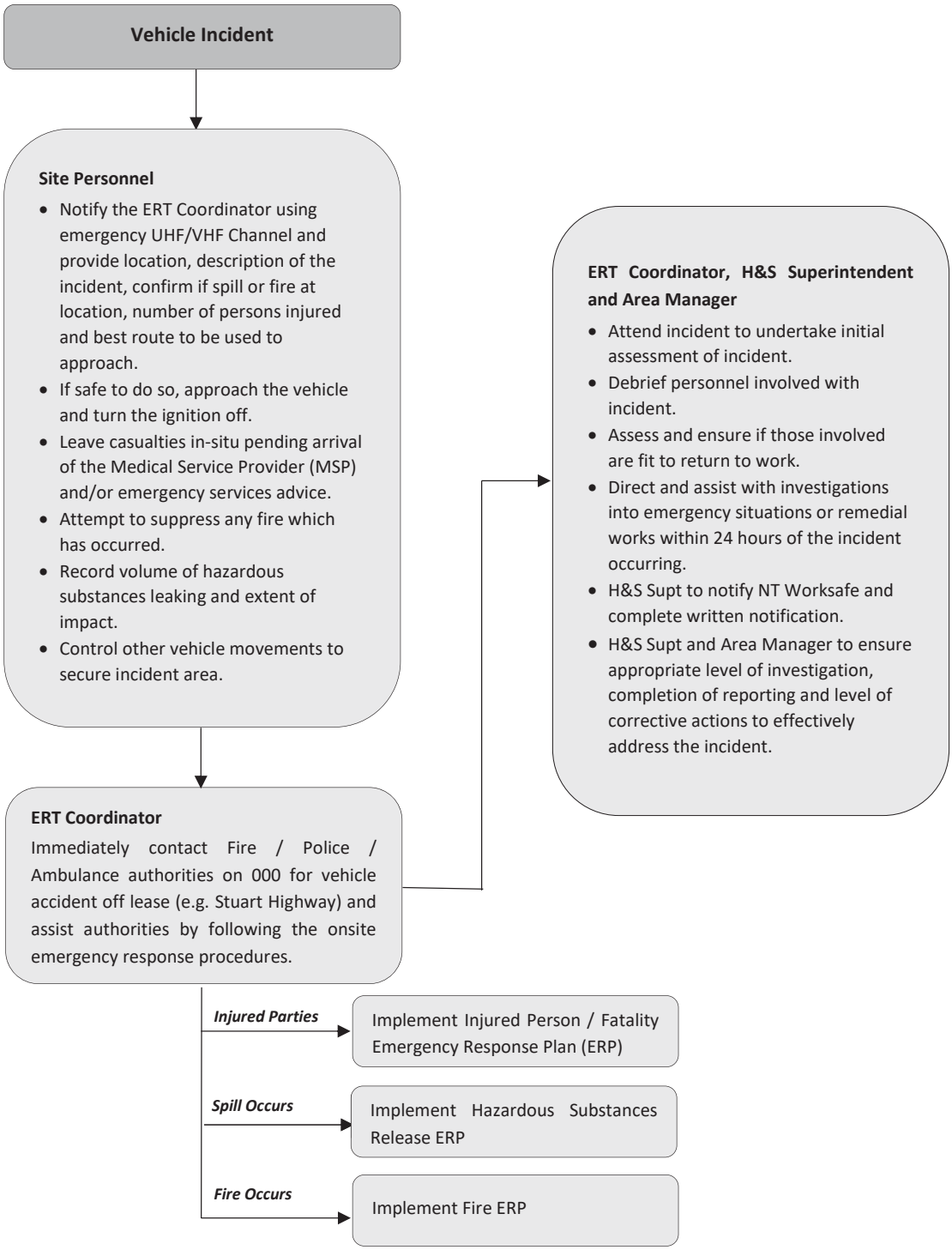

FIGURE 7: VEHICLE INCIDENT EMERGENCY RESPONSE FLOW CHART

4.3.3.6 Severe Weather Emergency Response Actions

- This scenario includes threat of cyclone, strong winds and heavy rain events. These events if not managed appropriately could cause damage to equipment and structure resulting in an environmental impact;
- As the nature of the threat can vary greatly in this scenario guidance on how to respond are provided in specific procedures. These procedures generally look at implementing controls to prevent a risk to the health and safety of the public and employees, however as they are designed to prevent a risk from eventuating, these controls are often considered appropriate from an environmental impact prevention perspective; and
- General environmental considerations in a severe weather scenario should include:
  - **Cyclones/strong winds**
    - Inspection of at-risk infrastructure (pumps, equipment, buildings mounted securely);
    - Relocation of any equipment to a secure location; and
    - Continuing to monitor Bureau of Meteorology (BoM) weather predictions.
  - **Heavy rains**
    - Checking BoM for predicated rainfall and tropical cyclone prediction, tracking and weather warning;
    - Check/updating water balance models;
    - Conducting regular water level measurements on all high risk water bodies;
    - Determining pumping requirements (if applicable);
    - Contacting DPIR / Department of Environment and Natural Resources (DENR) regarding approval to actively discharge;
    - Implement appropriate site discharge management strategies;
    - Maintenance/turn pumps on/move pumps;
    - Determination of any additional pumping requirements.
  - **Lightning**
    - Checking BoM for storm proximity and spatial distribution and frequency of lightning activity flash density data;
    - Working in high risk areas such as dams and creeks or other water storage facilities, outdoors in open spaces, around surface drilling etc;
    - Lightning protection devices; and
    - Work activity and action in accordance with HS SAF OS 27.1 Lightning Events.

4.3.3.7 Uncontrolled Release of Water Emergency Response Actions

- The response steps to be undertaken in an emergency regarding uncontrolled release of water are outlined in Figure 8.

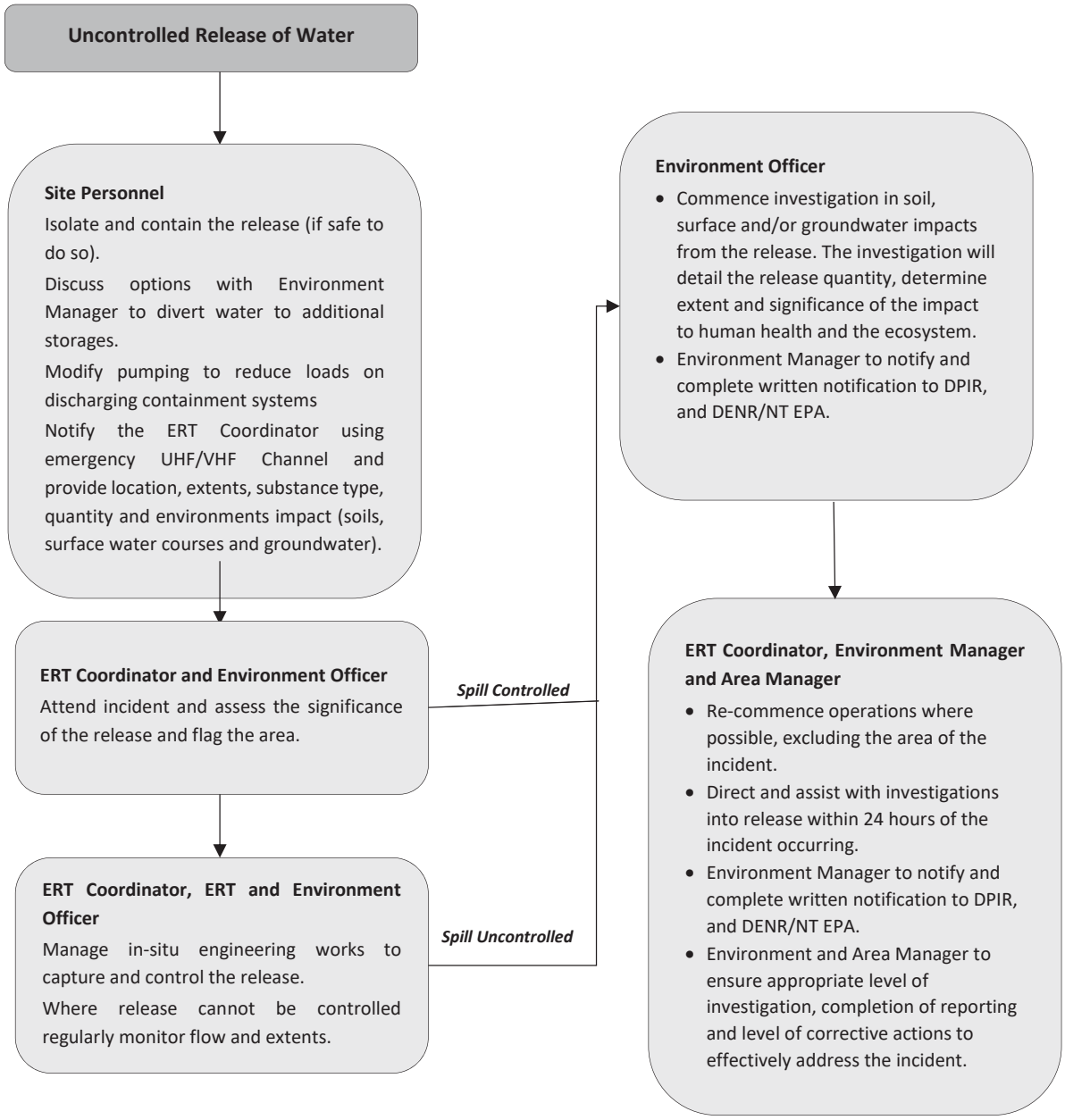

FIGURE 8: UNCONTROLLED RELEASE OF WATER EMERGENCY RESPONSE FLOW CHART

4.3.4 Monitoring and Measurement

The specific strategies and actions designed to achieve the Emergency Response Management Plan objectives and targets are outlined in Table 5.

TABLE 5: ENVIRONMENTAL EMERGENCY RESPONSE MANAGEMENT STRATEGIES

Specific			Measurable		Achievable	Timely	Relevant	
Objective (What)	Actions (How)	Explanation (Why)	Responsibility (Who)	Deliverable (Outcome)	Targets (When)	Time frame (When)	Key Performance Indicators	Non-Conformance and Corrective Action
Ensure safe response to environmental emergencies and minimize any environmental impacts.	Review environmental risk registers.	To review the risk of activities and determine if updates to emergency response plans are required.	Environment Manager (or delegated person)	Updated risk registers.	Review an update site risk register considering any change in activities.	Annual	All current and planned activities captured in risk registers.	Review company resources and operating requirements to determine why action wasn't completed. Develop and implement an action plan to ensure the action is achieved.
	Emergency Response Team (ERT) Training.	To ensure ERT have skills required to respond appropriately.	Health and Safety Superintendent (or delegated person)	Certificates of competency for required skills.	Trained ERT equipped with required skills and equipment to be able to respond to emergency situations.	Ongoing according to ERT Training schedule	ERT attendance registers and certificates of competency. Equipment to adequately respond to an incident. e.g. Chemical spill response kit, functioning fire appliance etc.	

4.4 Fire Management Plan

4.4.1 Purpose and Objectives

The purpose of the Fire Management Plan is to ensure the safety of people, natural, archaeological and built assets at NTMO sites and surrounding properties. Through implementation of this EMP, NTMO aims to meet the following objectives:

- Monitor and record the occurrences of fires;
- Ensure compliance with Bushfires NT requirements;
- Conduct controlled burning, install fire breaks and manage weeds;
- Maintain installed fire breaks; and
- Manage site access to minimise the likelihood of unplanned / controlled wildfires.

4.4.2 Legal and Other Requirements

Legal requirements applicable to the Fire Management Plan include:

- *Bushfires Management Act* – Requires the prevention and control of bushfires including fire breaks, fire management plans and permits for lighting fires (Permit to Burn).
- *Fire and Emergency Act* - The owner is required to maintain the building's essential services, which include required fire detection and alarm systems.
- *Mining Management Act* - MMPs require technical studies, data and management plans based on the risk assessment of proposed activities.
- *Territory Parks and Wildlife Conservation Act* - Regulates or prohibits the use of fire in parks and reserves.

NTMO SOPs applicable to the Fire Management Plan include:

- NTMO ES – SOP030 Weed Control;
- NTMO ES – SOP031 Incident and Complaint Notification and Reporting;
- NTMO ES – SOP035 Controlled Burning; and
- NTMO ES – SOP048 Landfill Burn.

4.4.3 Management and Mitigation Strategies

The following fire mitigation and management measures will be implemented as applicable:

- Grading of fire breaks and associated tracks. Fire breaks (4 m wide minimum) around the perimeter of the mining lease, infrastructure (10 m wide minimum), underground mine ventilation (50 m wide minimum) and other fire prone areas are maintained prior to commencement of the dry season;
- Fire detection and suppression systems and firefighting equipment will be routinely inspected, maintained and tested. Dedicated firefighting equipment and trained personnel for fire management;
- Identify areas with high fuel loads requiring controlled burns. Implement patchy burns of low scorch height wherever practicable. Liaise with local Pastoralists and Bushfires NT prior to burning including required Permits to Burn prior to conducting controlled burns;
- Hot work to be permitted and restricted to designated hot work areas. Smoking only in designated areas;
- Vehicles will be regularly serviced and will carry fire extinguishers and VHF/UHF radios. No vehicles will be left running unattended;

- Inspections of landfill and waste management practices to identify potential accumulation of combustible materials and associated risks prior to April. Controlled burns of the landfill site as necessary to control amount of putrescible and windblown waste;
- Monitor the fire Danger Rating for the Darwin and Adelaide River Region and no fires lit during designated fire bans;
- Storage of flammable and combustible materials will be in accordance with the Hazardous Substances Management Plan. Open flame or other ignition sources are prohibited within 20 m of bulk flammable storage areas, fuel dispensing vehicles or refuelling operations and activities in hazardous atmospheres;
- Employees and Contractors are educated in fire management, their responsibilities and environmental emergency preparedness and response during inductions;
- Active working areas, fire breaks and fuel storage locations will be regularly inspected to determine if there are any developing fire risks;
- Vegetation growth around assets controlled during the wet season through the application of herbicides and then removal. Weed spraying to reduce fuel loads surrounding infrastructure (pipelines, buildings, bores etc) and hazardous storage areas; and
- Monitor and record the occurrences of controlled and wildfires. Implement firefighting strategies as required in accordance with the Emergency Response Plan.

4.4.4 Monitoring and Measurement

The specific strategies and actions designed to achieve the Fire Management Plan objectives and targets are outlined in Table 6.

TABLE 6: FIRE MANAGEMENT STRATEGIES

Specific			Measurable		Achievable	Timely	Relevant	
Objective (What)	Actions (How)	Explanation (Why)	Responsibility (Who)	Deliverable (Outcome)	Targets (When)	Time frame (When)	Key Performance Indicators	Non-Conformance and Corrective Action
Monitor and record the occurrences of fires.	Create a fire incident register and log uncontrolled fires and controlled burning events.	To obtain information regarding fire occurrences at NTMO sites.	Environment Officer (or delegated person)	Fire incident register.	Documented fire incidences across NTMO sites.	Annual	Fire occurrence register and log entries of fire occurrences.	If action is not completed, then Northern Australian Fire Information (NAFI) data will be utilised to retrospective create a log of fire occurrences.
Ensure compliance with NT Bushfires Permitting requirements.	Liaise with Bushfires NT.	To reduce risk to surrounding properties from local controlled burning of the project area.	Senior Environment Officer (or delegated person)	Approved Permit to Burn.	Obtain applicable permits to undertaken controlled burning (Bushfires NT – Permit to Burn).	Annual	Ability to install internal fire breaks and undertaken controlled burning.	If compliance with Bushfires NT requirements are not met, then incident reporting will be undertaken in accordance with NTMO's Incident reporting procedures.
Conduct controlled burning, install fire breaks and manage weeds.	Develop a site-specific Fire Action Plan.	To mitigate against uncontrolled wildfire impacts.	Senior Environment Officer (or delegated person)	Fire Action Plan.	Fire Action Plan developed	Annual	A documented Fire Prevention Action Plan.	Ensure Fire Prevention Action Plan remains on Environment meeting agenda items list until complete.
	Undertake control burning within the project area.	To mitigate potential wildfire impacts to personnel, infrastructure and adjacent properties and manage weed spread.	Senior Environment Officer (or delegated person)	Completed controlled burning of high risk areas.	Controlled burning completed.	Annual	Documented task completed in Environment and Community Department meetings minutes.	Review company resources and operating requirements to determine why action wasn't completed. Develop and implement an action plan to ensure the action is achieved.
Maintain installed fire breaks.	Slash or grade fire breaks when access is available following wet season.	To contain controlled burning of the site.	Senior Environment Officer (or delegated person)	Fire breaks are slashed or graded.	Fire breaks installed.	Annual	No controlled burning will be undertaken unless adequate fire breaks are in place.	Ensure Fire Prevention Action Plan remains on Environment and Community meeting agenda until complete.
Manage access within the project area.	Restrict vehicle access to existing roads and tracks by utilising up to date maps of the site as required.	To reduce risk of vehicular initiated grass fires.	Environment Officer (or delegated person)	No incidents of vehicle ignited fires.	No incidents of vehicle ignited fires and no new access tracks.	Quarterly	Site inspection records. No observed new tracks created in the project area from the previous inspection.	Review of site security infrastructure and procedures and implement outcomes. Liaise with surrounding land managers on trespassing and unauthorised access issues.

4.5 Flora and Fauna Management Plan

4.5.1 Purpose and Objectives

The purpose of the Flora and Fauna Management Plan is to ensure that appropriate controls are developed and implemented to effectively protect flora and fauna at NTMO sites. Through implementation of this EMP, NTMO aims to meet the following objectives:

- Gather information on the flora and fauna that inhabit NTMO project areas;
- Manage disturbance to flora and fauna;
- Minimise adverse impacts on flora and fauna; and
- Promote awareness of the protection of flora and fauna.

4.5.2 Legal and Other Requirements

Legal requirements applicable to the Flora and Fauna Management Plan include:

- *Environment Protection and Biodiversity Conservation Act 1999* – Any activity that will have, or is likely to have a significant impact on a matter of national environmental significance requires Commonwealth Government approval. This includes nationally threatened animal and plant species and ecological communities.
- *Bushfires Management Act* – Requires the prevention and control of bushfires including fire breaks, fire management plans and permits for lighting fires (Permit to Burn).
- *Mining Management Act* - MMPs require technical studies, data and management plans based on the risk assessment of proposed activities.
- *Territory Parks and Wildlife Conservation Act* - Lists plants and animals that are protected in the NT and requires management plans for impacts on protected species. Permits may be required to undertake studies for approvals or to remove or relocate problem animals during development or operations (Permit to Take or Interfere with Wildlife and / or Permit to Undertake Scientific Research).
- *Weed Management Act* - Duties of land owners to manage and prevent the spread of weeds into and out of the NT in accordance with a Weed Management Plan.

Guidelines applicable to the Flora and Fauna Management Plan include:

- *DENR Advisory Note: Native Vegetation Buffers and Corridors* – Buffers and corridors support natural processes that occur in a healthy environment, including the movement of species

NTMO SOPs applicable to the Flora and Fauna Management Plan include:

- NTMO ES – SOP011 Fauna Monitoring;
- NTMO ES – SOP015 Weed Spraying;
- NTMO ES – SOP023 Snake Capture and Relocation;
- NTMO ES – SOP028 Ground Disturbance;
- NTMO ES – SOP030 Weed Control;
- NTMO ES – SOP031 Incident and Complaint Notification and Reporting; and
- NTMO ES – SOP032 Pest and Vector Management;
- NTMO ES – SOP033 Fauna Injury and Death Management;
- NTMO ES – SOP034 Feral Animal Management; and
- NTMO ES – SOP046 Rehabilitation - Seeding.

4.5.3 Management and Mitigation Strategies

The following flora and fauna mitigation and management measures will be implemented as applicable:

- Implement the NTMO Ground Disturbance SOP, which includes threatened flora and fauna checks, prior to undertaking any ground disturbance activities and issue of a NTMO Clearing/Ground Disturbance Permit;
- Minimise areas of disturbance and vegetation clearing. Staged clearing of vegetation as required to minimise areas of bare ground, particularly on any steep slopes. Avoid land clearing where possible during the Wet Season (Dec-May). Revegetate disturbed areas as soon as possible after disturbance;
- Reduce the potential impact of soil and vegetation disturbance in accordance with the DENR Fact Sheet for Native Vegetation Buffers and Corridors;
- Weed control to be implemented as detailed in the Weed Management Plan;
- Driving speed restrictions are in place and off-road driving is restricted or prohibited to avoid accidental disturbance to flora and fauna;
- Appropriate approvals will be obtained prior to the disturbance of any protected flora and fauna site as a result of NTMO operations;
- Conduct flora and fauna surveys prior to activities within previously undisturbed areas and implement any identified site specific mitigation and management measures (i.e. fencing of threatened flora);
- Ensure the induction includes a flora and fauna awareness module;
- Fauna sightings to be recorded in the fauna register to assess presence of threatened fauna and assessment of mitigation and management measure effectiveness;
- Disturbance to historical shafts and adits will be minimised and avoided where possible to maintain and provide potential roosts for bats;
- Identify key flora species and collect seeds (where possible and appropriate) for revegetation programs;
- Ensure appropriate fauna egress is available for any ponds or dams;
- Assess water quality in the pit voids and mine water dam for suitability for fauna during operations and after mine closure. Fence off or bund access points to water bodies to minimise stock and native mammal access if unsuitable;
- Early Dry Season ‘patchy’ mosaic approach to controlled burns to leave patches of habitat;
- Determine the risk of dust emissions and potential impacts on threatened flora and implement mitigation and management measures if required;
- Limit artificial light to areas where it is essential and turn off lights when not required;
- Manage general site wastes to prevent/reduce interaction with fauna and introduction of vermin; and
- A suitable qualified member of the ERT or Environment Department is to respond to injured animal reports. An injured animal will likely be highly stressed from shock, they may inadvertently cause harm to people attempting a rescue, therefore it is important for responders to consider personal protection;
- Determine the risk of noise and vibration emissions and potential impacts on threatened fauna and implement mitigation and management measures if required.

4.5.4 Monitoring and Measurement

The specific strategies and actions designed to achieve the Flora and Fauna Management Plan objectives and targets are outlined in Table 7.

TABLE 7: FLORA AND FAUNA MANAGEMENT STRATEGIES

Specific			Measurable		Achievable	Timely	Relevant	
Objective (What)	Actions (How)	Explanation (Why)	Responsibility (Who)	Deliverable (Outcome)	Targets (When)	Time frame (When)	Key Performance Indicators	Non-Conformance and Corrective Action
Gather information on the flora and fauna that inhabit NTMO project areas.	Register and review fauna sightings.	To improve management of fauna species at NTMO sites.	Environment Officer (or delegated person)	Fauna sightings recorded and review of register.	Undertake a review of the register and ensure fauna sightings are recorded.	Annual	Fauna sightings recorded and review of register.	Conduct a retrospective review of fauna sightings register to identify any trends or changes in fauna populations.
	Engage a specialist consultant to undertake flora and fauna surveys in any new areas prior to any disturbance or if new threatened flora and fauna observed.	To identify and prevent potential impacts to threatened flora and fauna.	Senior Environment Officer (or delegated person)	Flora and Fauna Survey Report.	Complete flora and fauna surveys prior to activities within previously undisturbed areas.	As Required	Completed flora and fauna survey prior to new disturbance. Implement any recommended actions.	If a threatened flora or fauna is impacted, an incident will be logged and reported to the appropriate authority will be notified. Investigation will be undertaken with root causes and corrective actions identified.
Manage disturbance to flora and fauna.	Obtain NTMO Clearing/Ground Disturbance Permit approval prior to any ground disturbance activities and rehabilitate areas once available.	To minimise impact to native flora and fauna.	Environment Officer (or delegated person)	Approved Clearing/Ground Disturbance Permits.	No adverse impact to threatened flora and fauna identified.	Ongoing As Required	Clearing/Ground Disturbance Permits obtained. No incidents of impacts to threatened flora or fauna.	If threatened flora and fauna are impacted an assessment will be undertaken to determine the level of impact and remediation activities undertaken as necessary.
Minimise adverse impacts on flora and fauna.	Implement any identified measures to protect and appropriately manage any threatened species.	To ensure adequate protection of threatened species.	Environment Manager (or delegated person)	To be determined based upon any sightings of threatened species.	Develop appropriate strategies to protect species if identified to be at risk of impact from NTMO operations.	Annual.	Review of fauna register and flora and fauna surveys and implement protection methods if identified to be a risk of impact from operations.	Review of protection measures or implementation methods. Develop alternative solutions.
Promote awareness of the protection of flora and fauna.	Conduct flora and fauna awareness as part of the induction.	To promote employee protection of fauna and flora.	Senior Environment Officer (or delegated person)	Environment Induction completed by Employees and Contractors.	Environment Induction includes flora and fauna management module.	Prior to Site Access	Environment Induction completed by Employees and Contractors.	Review company resources and operating requirements to determine why action wasn't completed.

4.6 Hazardous Substances Management Plan

4.6.1 Purpose and Objectives

The purpose of the Hazardous Substances Management Plan is to ensure the safe and responsible use and control of all hazardous materials handled at NTMO sites and to ensure that spills are appropriately managed. Through implementation of this EMP, NTMO aims to meet the following objectives:

- Ensure the appropriate transport, use, storage and disposal of hazardous materials at NTMO sites.

4.6.2 Legal and Other Requirements

Legal requirements applicable to the Hazardous Substances Management Plan include:

- *Dangerous Goods Act* - Covers explosives (including fireworks) and fuel gas (including autogas). The legislation sets out the requirements and allowances for licensing (explosives and fireworks only), packaging, storage, transportation and use of these two types of dangerous goods.
- *Mining Management Act* - MMPs require technical studies, data and management plans based on the risk assessment of proposed activities.
- *Waste Management and Pollution Control Act* – Provides a general framework for protecting the environment from pollution and waste, including offence provisions and enforcement tools; and licensing and approvals for specified activities. In general terms, for mining activities the Act does not apply to any contaminants and wastes that are confined on mining tenure.
- *Work Health and Safety (National Uniform Legislation) Act* - Operators of any facility where hazardous chemicals are present or likely to be present in a quantity that exceeds 10% the threshold quantity detailed in Schedule 15 of the WHS Regulations, are required to provide certain information to NT WorkSafe using the 'Major hazard facility Schedule 11' notification form.

Guidelines applicable to the Hazardous Substances Management Plan include:

- *Australian Dangerous Goods Code* – Relates primarily to the transport of dangerous goods although it provides relevant information on segregation and compatibility of different classes of dangerous goods. Also references many Australian Standards, which represent good practice, as defined by industry experts.
- *NT WorkSafe Code of Practice: Labelling of Workplace Hazardous Chemicals* - Provides practical guidance on how to correctly label hazardous chemicals used in the workplace.
- *UNECE: Globally Harmonized System (GHS) of Classification and Labelling of Chemicals* - Uses internationally consistent terms and information on chemical labels and Safety Data Sheets.
- *Safe Work Australia: Code of Practice: Managing Risks of Hazardous Chemicals in the Workplace* - Provides practical guidance on how to manage health and safety risks associated with hazardous chemicals.
- *NT Worksafe Guide: Manifest Requirements for Hazardous Chemicals* – Provides guidance on the requirements for a manifest for hazardous chemicals including an example manifest with site plan and a checklist to help ensure the required information is included.

NTMO SOPs applicable to the Hazardous Substances Management Plan include:

- NTMO ES – SOP018 Bioremediation (in development);
- NTMO ES – SOP020 Waste Oil and Grease Disposal;
- NTMO ES – SOP021 Spill Response;
- NTMO ES – SOP022 Chemical and Hydrocarbon Management (in review); and
- NTMO ES – SOP031 Incident and Complaint Notification and Reporting.

4.6.3 Management and Mitigation Strategies

The following hazardous substances mitigation and management measures will be implemented as applicable:

- NTMO has a Safety Management System which requires the safe storage and management of hazardous substances. Management of hazardous substances will be in accordance with applicable Legislation, Australian Standards and Codes of Practice;
- Any hazardous substances used on NTMO sites must be submitted for approval by NTMO prior to transport and use. This ensures that the products are reviewed for potential risks to health and the environment in their use;
- All hazardous substances used on site are required to be accompanied by a Safety Data Sheet (SDS), copies of which shall be located both where the hazardous substance is being used and where it is stored;
- An inventory of hazardous substances on site is recorded within Chem-Alert online register including the location and volumes. The inventory and accompanying SDSs are available for viewing by all personnel;
- All hazardous substances must labelled in accordance applicable Codes of Practice and Australian Standards. Hazardous substances must not be kept in a wrongly marked or unmarked container;
- When hazardous substances are contained in an enclosed system, i.e. piping system or process vessel, it must be identified to those that may be exposed to the contents. Suitable means of identification include colour coding and signs in accordance with applicable Codes of Practice and Australian Standards;
- Storage requirements vary significantly depending on the hazardous substance classification. Storage areas will be designed in accordance with applicable Codes of Practice and Australian Standards. This includes appropriate signage, bunding and separation distances between hazardous substances;
- Site security procedures and infrastructure will be maintained to minimise uncontrolled access to hazardous materials storage and handling areas;
- Spill kits will be located in areas of hazardous materials storage and use and all relevant personnel will be trained in their use;
- All personnel are trained in the appropriate handling, storage, disposal and containment practices for hazardous substances and provided with appropriate safety equipment as is relevant to their position. Activities involving the use of higher risk chemicals, will have a specific procedure specifying handling requirements;
- Regular inspections of hazardous substance storage locations and spill kits will be undertaken;
- All waste oils, oily or spilt materials will be collected and stored in properly labelled 205 L drums or 1,000 L pods. Hydrocarbon liquids will be collected in sumps, drums and bulk containers. The oil-water separator at the wash down bay will be maintained. Hydrocarbon wastes are collected by the waste oil recycler for disposal or recycling according to the relevant legislation and guidelines;
- The Site Manager is responsible for ensuring that all waste and unused hazardous substances are removed from site in accordance with legislative requirements;
- All supervisors and personnel working directly with hazardous substances will undertake training in spill prevention and response on site; and
- Any hazardous substance spills must be reported and cleaned up immediately with any contaminated soils either remediated or removed from site for disposal. Where the spill is reportable to Government Agencies an Incident Report will be completed. The Spill Response SOP includes spillage cleanup procedures immediate cleanup of accidental spills.

4.6.4 Monitoring and Measurement

The specific strategies and actions designed to achieve the Hazardous Substances Management Plan objectives and targets are outlined in Table 8.

TABLE 8: HAZARDOUS SUBSTANCES MANAGEMENT STRATEGIES

Specific			Measurable		Achievable	Timely	Relevant	
Objective (What)	Actions (How)	Explanation (Why)	Responsibility (Who)	Deliverable (Outcome)	Targets (When)	Time frame (When)	Key Performance Indicators	Non-Conformance and Corrective Action
Ensure appropriate transport, use, storage and disposal of hazardous materials.	Maintain a site Manifest and Plan of the hazardous materials register and storage locations.	To ensure amounts and types hazardous substances are kept up to date and stored appropriately.	Health and Safety Superintendent (or delegated person)	Up to date site hazardous chemical Manifest and Plan.	Submission of current site Hazardous Substances Manifest and Plan to NT Worksafe.	As Required	All hazardous materials on site are recorded on the manifest, plan and register. SDSs for all hazardous materials are kept in the central register as well as in the vicinity of the material storage and use areas.	Review company resources and operating requirements to determine why action wasn't completed. Develop and implement an action plan to ensure the action is achieved.
	Inspections of operational areas reviewing hazardous substance storage practices.	To ensure a good level of housekeeping is maintained, hazardous substances are stored correctly and any spills or leaks have been identified, reported and remediated.	Environment Officer (or delegated person)	Documented inspection checklist.	Inspections of operational areas for hazardous substance storage practices, spills, leaks and capacity in waste oil containers.	Quarterly	Good level of housekeeping maintained. Hazardous substances stored correctly. Any spills or leaks identified, reported and cleaned up.	
	Inspections of operational areas spill kit locations and contents.	To ensure spill kits are in appropriate locations and contain all required materials.	Environment Officer (or delegated person)	Documented inspection checklist.	Inspections of operational areas for spill kit presence and contents.	Quarterly	Spill kits are present in appropriate locations and contain all required materials.	
	Conduct hazardous substance awareness part of the induction.	To ensure awareness of appropriate hazardous substance management.	Senior Environment Officer (or delegated person)	Induction completed by Employees and Contractors.	Induction includes hazardous substance management module.	Prior to Site Access	Induction completed by Employees and Contractors.	

4.7 Landform, Erosion and Sediment Control Management Plan

4.7.1 Purpose and Objectives

The purpose of the Landform, Erosion and Sediment Control Management Plan is to ensure the ongoing management of erosion risks and to minimise the potential for erosion and sedimentation from NTMO activities. Through implementation of this EMP, NTMO aims to meet the following objectives:

- Minimise areas of disturbance and implement appropriate erosion control measures; and
- Monitor and manage erosion in mine impacted areas.

4.7.2 Legal and Other Requirements

Legal requirements applicable to the Landform, Erosion and Sediment Control Management Plan include:

- *Mining Management Act* - MMPs require technical studies, data and management plans based on the risk assessment of proposed activities.
- *Soil Conservation and Land Utilisation Act* - Areas of land that are subject to soil erosion or that are likely to become subject to soil erosion may be declared Areas of Erosion Hazard.

Guidelines applicable to the Landform, Erosion and Sediment Control Management Plan include:

- *DPIR Advisory Note: Construction and Rehabilitation of Exploration Drill Sites* - A guide to constructing and rehabilitating drill pads, benches and drill holes.
- *DPIR Advisory Note: Clearing and Rehabilitation of Grid Lines and Tracks* - A guide to clearing and rehabilitating grid lines and tracks during exploration.
- *DENR Advisory Note: Native Vegetation Buffers and Corridors* – Buffers and corridors support natural processes that occur in a healthy environment, including the movement of species.
- *DENR Technical Notes for Soil Management, Erosion and Sediment Control* - https://nt.gov.au/environment/soil-land-vegetation/soil-management-erosion-sediment-control
- *International Erosion Control Association (IECA): Best Practice Erosion and Sediment Control* - BPESC is an essential reference for all erosion and sediment control practitioners.

NTMO SOPs applicable to the Landform, Erosion and Sediment Control Management Plan include:

- NTMO ES – SOP026 Construction and Rehabilitation of Drill Pads and Benches;
- NTMO ES – SOP028 Ground Disturbances; and
- NTMO ES – SOP031 Incident and Complaint Notification and Reporting;

4.7.3 Management and Mitigation Strategies

The following landform, erosion and sediment control mitigation and management measures will be implemented as applicable:

- Manage earthworks to minimise disturbance to drainage channels and reduce potential erosion. Various strategies will be used on site, depending on the exact location, the proximity to watercourses or other sensitive receiving environments and the slope of the land;
- Implement the NTMO Ground Disturbance SOP, which includes a check of the nearest watercourse and any potential sedimentation and erosion issues, prior to undertaking any ground disturbance activities and issue of a NTMO Clearing/Ground Disturbance Permit;
- Minimise areas of disturbance and vegetation clearing, utilise existing cleared areas where possible. Staged clearing of vegetation as required to minimise areas of bare ground, particularly on any steep slopes;

- Avoid land clearing where possible during the Wet Season (Dec-May). Revegetate areas as soon as possible after disturbance;
- All temporary exploration tracks and associated disturbed areas will be scarified when no longer required for use. Stockpiled topsoil will be re-spread during scarification. On steeper slopes areas will be cross ripped where necessary;
- Reduce the potential impact of soil and vegetation disturbance in accordance with the DENR Fact Sheet for Native Vegetation Buffers and Corridors;
- Topsoil and subsoil will be stripped and stockpiled in accordance with the following:
    - Separate stripping and stockpiles to prevent mixing and contamination of topsoil;
    - Stockpiles retained for more than 1 month will be stabilized with a soil polymer or revegetated to minimize erosion and weed infestation;
    - Stockpiles will be up to a maximum of 2.5 m high (allowing settlement to 2m) with 3(h):1(v) batter slopes; and
    - Stockpiles will be protected from run-on water by installing water diversion structures upslope.
- Appropriate drainage control measures installed to prevent or reduce soil erosion caused by concentrated flows including the management of rill and gully erosion, and to appropriately manage the movement of “clean” and “dirty” water through the site;
- Where applicable, any slope lengths shall be reduced via the use of catch or diversion drains at regular intervals down the slope and drains must be appropriately stabilised as soon as they are constructed to ensure erosion and sediment transportation does not occur;
- Access tracks/roads will be maintained to minimise storm wash out;
- Drainage, erosion and sediment controls for temporary watercourse crossings to minimise the potential for sediment inflow into the watercourses include:
    - Directing sediment laden water to off-line sediment traps. In-stream sediment traps shall be utilized only for dry watercourse crossings; and
    - In high eroded areas, it may be necessary to protect the banks of watercourses from short-term erosion with the aid of an erosion control blanket, mat or soil binder. However, the use of synthetic mesh is not suggested along waterways containing ground-dwelling wildlife.
- Other erosion controls may include (as appropriate):
    - Matting, slope design, and contour ripping;
    - Silt fencing around potentially affected area;
    - Sediment retention basin or dams;
    - Rock armoured drains;
    - Rock filters/rock check dams;
    - Water diversion drains around disturbed areas; and
    - Bunds where applicable.

4.7.4 Monitoring and Measurement

The specific strategies and actions designed to achieve the Landform, Erosion and Sediment Control Management Plan objectives and targets are outlined in Table 9.

TABLE 9: LANDFORM, EROSION AND SEDIMENT CONTROL MANAGEMENT STRATEGIES

Specific			Measurable		Achievable	Timely	Relevant	
Objective (What)	**Actions (How)**	**Explanation (Why)**	**Responsibility (Who)**	**Deliverable (Outcome)**	**Targets (When)**	**Time frame (When)**	**Key Performance Indicators**	**Non-Conformance and Corrective Action**
Minimise areas of disturbance and implement appropriate erosion control measures.	Obtain NTMO Clearing/Ground Disturbance Permit approval prior to any ground disturbance activities and rehabilitate areas once available.	To minimise disturbance to the environment, including buffer zones and protected areas.	Environment Officer (or delegated person)	Approved Clearing/Ground Disturbance Permits. Documented before and after rehabilitation photographs.	Area of disturbance minimised and no protected areas or buffer zones are disturbed. Disturbance progressively rehabilitated.	Ongoing As Required	Clearing/Ground Disturbance Permits obtained. Documented before and after rehabilitation photographs.	If erosion and sedimentation observed an assessment will be undertaken to determine the level of impact and remediation activities undertaken as necessary.
	Install identified erosion controls as part of ground disturbance activities.	To prevent potential erosion and sedimentation from clearing.	Environment Officer (or delegated person)	Approved Clearing/Ground Disturbance Permits. The requirement for erosion controls assessed during inspections.	Develop appropriate plans to implement erosion controls in high risk areas. Controls implemented as identified.	Ongoing As Required	Controls implemented as identified. No evidence of significant erosion or sedimentation.	
Monitor and manage erosion in mine impacted areas.	Conduct inspections of mining landforms, cleared and rehabilitated areas and prioritise actions based on risks.	To identify any erosion and sedimentation risks that may require additional control measures.	Environment Officer (or delegated person)	Identification of mining areas requiring remediation or additional controls. Documented inspections and photographs (as required).	Develop appropriate plans to implement erosion controls in high risk areas.	Quarterly	Documented notes from inspections and follow up assessments and actions required.	Item to remain on Environment meeting agenda list until appropriate action items are identified and implemented.
	Maintain tracks and roads to prevent washout during storm events.	To ensure roads and tracks at risk of erosion are repaired or controls installed to allow access prior to wet season.	Environment Officer (or delegated person)	An assessment of roads and tracks in disrepair and requiring action for remediation.	All roads and tracks to be inspected and assessed and maintenance and repairs scheduled.	Quarterly	Priority tracks and roads are accessible during wet season.	Develop and implement an action plan to ensure the action is achieved.

4.8 Rehabilitation Management Plan

4.8.1 Purpose and Objectives

The purpose of the Rehabilitation Management Plan is to progressively rehabilitate available areas to promote native species emergence and work towards the overall closure of the mine in the future. Through implementation of this EMP, NTMO aims to meet the following objectives:

- Minimise the NTMO disturbance footprint;
- Prepare site-specific Mine Closure Plans and progressively rehabilitate available areas;
- Monitor the of progress of rehabilitation success; and
- Manage site access to reduce disturbance and the spread of weeds into rehabilitation areas.

4.8.2 Legal and Other Requirements

Legal requirements applicable to the Rehabilitation Management Plan include:

- *Environment Protection and Biodiversity Conservation Act 1999* - Protects natural, Indigenous and historic places that are of outstanding heritage value to the nation or are owned or controlled by the Australian Government.
- *Bushfires Management Act* – Requires the prevention and control of bushfires including fire breaks, fire management plans and permits for lighting fires (Permit to Burn).
- *Heritage Act* - Provides protection to nominated areas, places, sites, buildings, and heritage objects on the NT Heritage Register from accidental and deliberate damage or harm.
- *Mining Management Act* - MMPs require technical studies, data and management plans based on the risk assessment of proposed activities.
- *Soil Conservation and Land Utilisation Act* - Areas of land that are subject to soil erosion or that are likely to become subject to soil erosion may be declared Areas of Erosion Hazard.
- *Territory Parks and Wildlife Conservation Act* - Lists plants and animals that are protected in the NT and requires management plans for impacts on protected species. Permits may be required to undertake studies for approvals or to remove or relocated problem animals during development or operations (Permit to Take or Interfere with Wildlife and / or Permit to Undertake Scientific Research).
- *Weed Management Act* - Duties of land owners to manage and prevent the spread of weeds into and out of the NT in accordance with a Weed Management Plan.

Guidelines applicable to the Rehabilitation Management Plan include:

- *DPIR Advisory Note: Construction and Rehabilitation of Exploration Drill Sites* - A guide to constructing and rehabilitating drill pads, benches and drill holes.
- *DPIR Advisory Note: Clearing and Rehabilitation of Grid Lines and Tracks* - A guide to clearing and rehabilitating grid lines and tracks during exploration.
- *DPIR Draft Guidelines for Mine Closure Plans* - Provide clarity on mine closure expectations in the NT.
- *WA Guidelines for Preparing Mine Closure Plans* - Provide guidance on the preparation of Mine Closure Plans to meet Western Australian regulatory requirements and consistent with industry-leading practice.

NTMO SOPs applicable to the Rehabilitation Management Plan include:

- NTMO ES – SOP 25 Waste Rock Characterisation;
- NTMO ES – SOP026 Construction and Rehabilitation of Drill Pads and Benches;
- NTMO ES – SOP027 Capping and Plugging of Exploration Drill Holes and Abandonment of Bores;

- NTMO ES – SOP028 Ground Disturbances;
- NTMO ES – SOP031 Incident and Complaint Notification and Reporting; and
- NTMO ES – SOP 46 Rehabilitation - Seeding.

4.8.3 Management and Mitigation Strategies

The following rehabilitation mitigation and management measures will be implemented as applicable:

- Appropriately qualified and experienced professionals will be used to determine progressive and final rehabilitation of major landforms (i.e. waste rock dumps and tailings storage facilities) including the final rehabilitation design, planting, monitoring and management requirements. These will be incorporated into the site-specific Closure Plan;
- Involvement of community, interested persons and non-governmental organisations will be encouraged for major rehabilitation projects including an appropriate approach to cultural needs and requirements. This will be undertaken via consultation with the Pastoral Station and Traditional Owner's;
- Decommission and progressively rehabilitate infrastructure and areas that are no longer required for mining, exploration or processing operations as soon as practicable. In most cases rehabilitation will be undertaken in accordance with the following:
    - Removal of plant and equipment, any contaminated material or soil will be removed and remediated or disposed at an appropriate facility. Large concrete footings and foundations will be made safe and buried in situ;
    - Fill any excavations, level all bunds (other than pit abandonment bunds) and general levelling of area to create a landform that blends with the surrounds;
    - Deep rip any compacted areas to allow for water and root infiltration;
    - Understand soil profiles and structures to enable vegetation establishment and resistance to erosion. Replace any available topsoil and/or oxide material across the area;
    - Scarify the area across the contour to provide for water capture, minimise soil erosion and provide surface relief for seed establishment;
    - Seed the area with a native vegetation seed mix (in the early wet season) appropriate to the required end land use as identified in the site-specific Closure Plan, and treat with a low application of fertiliser if required; and
    - Weed management will be tailored to managing declared weed species and enabling successful rehabilitation outcomes for native plant stock, i.e. reducing the level of competition for space, light and nutrients. Weeds in rehabilitation areas will be managed as part of the project Weed Management Plan.
- Any access roads remaining at closure will be left stable with erosion control measures in place so that they do not pose a risk to public safety or the environment. All other roads will be rehabilitated;
    - Roads that have sulfidic material or other potential contaminants material removed and placed in pits for encapsulation. The roads will then be ripped and seeded with native grasses and woodland species.
- Environmental performance indicators will be determined to monitor the success of rehabilitation activities. Site inspections following rehabilitation will focus on seed emergence and erosion control. Photographic evidence will be taken for documentation and filed accordingly.

4.8.4 Monitoring and Measurement

The specific strategies and actions designed to achieve the Rehabilitation Management Plan objectives and targets are outlined in Table 10.

TABLE 10: REHABILITATION MANAGEMENT STRATEGIES

Specific			Measurable		Achievable	Timely	Relevant	
Objective (What)	Actions (How)	Explanation (Why)	Responsibility (Who)	Deliverable (Outcome)	Targets (When)	Time frame (When)	Key Performance Indicators	Non-Conformance and Corrective Action
Minimise areas of disturbance.	Obtain NTMO Clearing/Ground Disturbance Permit approval prior to any ground disturbance activities.	To ensure areas cleared are kept to a minimum.	Environment Officer (or delegated person)	Inspection and photographic monitoring of clearing and rehabilitation.	NTMO Clearing/Ground Disturbance Permit requires all disturbance and work to remain within the approved permit area.	As Required	NTMO Clearing/Ground Disturbance Permit approved with the aim of disturbance to be rehabilitated following completion of works.	Review company resources and operating requirements to determine why action wasn't completed. Develop and implement an action plan to ensure the action is achieved. Assess if any negative impact has occurred.
Prepare Mine Closure Plan and rehabilitate available areas.	Mine Closure Plan to include rehabilitation options and actions for NTMO disturbances.	To establish agreed Mine Closure Plan and final land use objectives.	Environment Manager (or delegated person)	Site-specific Mine Closure Plan detailing rehabilitation plans for NTMO disturbances.	Review of site Mine Closure Plan detailing rehabilitation plans for NTMO disturbances.	Three Yearly Review	Mine Closure Plan and Rehabilitation Action Plans developed and implemented. Security Calculations updated to reflect activities.	
	Rehabilitate available disturbance areas with the aim to leave area as close to original condition.	To stabilise landforms and soils appropriate to post mining land use.	Environment Officer (or delegated person)	Rehabilitation Action Plan.	Progressive rehabilitation of available areas.	Annual	Rehabilitated area meeting objectives of the Rehabilitation Action Plan.	
Monitoring progress of rehabilitation success.	Conduct inspections of NTMO rehabilitated areas.	To establish progress of NTMO rehabilitation.	Environment Officer (or delegated person)	Documented site inspections. Photographic monitoring.	Continued inspections. Annual field inspection/ checklist.	Annual	Visual improvement of vegetation in areas of rehabilitation. No remedial works required.	
Manage access on the site.	Restrict vehicles access to existing roads and tracks by utilising up to date maps of the site as required.	To minimise disturbance, introduction of weeds and increase the success of revegetation.	Environment Officer (or delegated person)	Documented site inspections. Signs in place to keep off rehabilitated sites identify areas that are sensitive to disturbance.	No adverse impact to rehabilitated sites from unauthorised vehicle access.	Annual	No unauthorised tracks identified. Visual improvement of vegetation in areas of rehabilitation.	Item to remain on Environment meeting agenda list until appropriate action items are identified and implemented. Any new access tracks required by NTMO will be updated on maps of the site.

4.9 Tailings Management Plan

4.9.1 Purpose and Objectives

The purpose of the Tailings Management Plan is to ensure safe and responsible management of the tailings storage facility (TSF). Through implementation of this EMP, NTMO aims to meet the following objectives:

- Minimise and manage Union Reefs Crosscourse Pit (URCP) TSF surface water inventory;
- Understand the volume of tailings produced by the Processing Plant and estimate contained volumes of tailings and water to determine the remaining life of the URCP TSF; and
- Ensure the integrity of the tailings pipelines.

4.9.2 Legal and Other Requirements

Legal requirements applicable to the Tailings Management Plan include:

- *Mining Management Act* - MMPs require technical studies, data and management plans based on the risk assessment of proposed activities.

NTMO SOPs applicable to the Tailings Management Plan include:

- NTMO ES – SOP001 Surface Water Sampling Procedure;
- NTMO ES – SOP003 Water Sampling, Packaging and Delivery Procedure;
- NTMO ES – SOP007 YSI Quatro Meter;
- NTMO ES – SOP021 Spill Response; and
- NTMO ES – SOP031 Incident and Complaint Notification and Reporting.

4.9.3 Management and Mitigation Strategies

The following tailings mitigation and management measures will be implemented as applicable:

- Maximise recycling of process water from the URCP TSF in the Processing Plant to reduce the use of fresh water resources, reuse residual process chemicals and minimise the contaminated water inventory;
- Maintain surface water drains and bunding directing uncontaminated surface water away from entering the URCP TSF to minimise the contaminated water inventory;
- Survey surface water levels of the URCP TSF and develop long term plans to effectively manage URCP TSF surface water inventory and tailings deposition;
- Daily inspections of URCP TSF pipelines during deposition. Should a leak be identified, deposition will cease immediately and maintenance undertaken to repair or replace the pipeline. Any tailings spills outside of the Plant area will be reported, cleaned up within 24 hours and material disposed into the URCP TSF; and
- Maintain bunding, sumps, pumps and secondary containment ponds designed to recover Processing Plant tailings, slurry and chemical spills or water runoff.

4.9.4 Monitoring and Measurement

The specific strategies and actions designed to achieve the Tailings Management Plan objectives and targets are outlined in Table 11.

TABLE 11: TAILINGS MANAGEMENT STRATEGIES

Specific			Measurable		Achievable	Timely	Relevant	
Objective (What)	Actions (How)	Explanation (Why)	Responsibility (Who)	Deliverable (Outcome)	Targets (When)	Time frame (When)	Key Performance Indicators	Non-Conformance and Corrective Action
Minimise and manage Crosscourse Pit (URCP) TSF surface water inventory.	Maintain bunding to direct uncontaminated surface water away from entering the URCP TSF.	To minimise URCP TSF water inventory.	Processing Manager (or delegated person)	Established containment bunding around the URCP TSF.	Maintain site surface water drainage directed away from entering the URCP TSF.	Annual	Minimal surface water runoff contributing to water volume of URCP TSF established via water balance.	Investigate the opportunities to further reduce surface water infiltration to URCP TSF from the local catchment
Understand the volume of tailings produced by the Processing Plant, estimate contained volume of tailings and water and determine the remaining life of the URCP TSF.	Survey surface water levels of the URCP TSF.	To enable informed and timely estimation of the life of the URCP TSF.	Environmental Officer, Site Surveyor (or delegated person)	Annual surface water level survey and water balance.	Effectively manage URCP TSF surface water.	Annual	Surface water levels of URCP TSF are monitored. No uncontrolled release of URCP TSF surface water.	Review company resources and operating requirements to determine why action wasn't completed. Develop and implement an action plan to ensure the action is achieved.
	Determine water quantity and quality within URCP TSF.	To improve management of water levels in URCP TSF.	Environment Officer (or delegated person)	Monitored long-term trends of URCP TSF water quantity and quality.	Improved understanding of long-term trends of URCP TSF water quantity and quality.	In accordance with the URPA Water Management Plan	Water quantity and quality in URCP TSF recorded in accordance with Water Management Plan sampling schedule.	
Ensure the integrity of the tailings pipelines.	Inspections of the tailings pipelines.	To proactively manage pipeline repairs if required and to prevent potential pipeline failures.	Processing Manager (or delegated person)	Documented site inspections.	No incidents of tailings leaks from pipelines.	Daily	No incidents of tailings leaks from pipelines.	If pipeline fails, report and investigate causes. Any actions identified to reduce the likelihood of reoccurrence will be implemented.

4.10 Waste Management Plan

4.10.1 Purpose and Objectives

The purpose of the Waste Management Plan is to ensure the safe and responsible segregation and disposal of non-mineral waste materials generated at NTMO sites. Through implementation of this EMP, NTMO aims to meet the following objectives:

- Ensure appropriate waste disposal and identify opportunities to reduce volumes or improve management practices; and
- Manage and maintain a functional on-site landfill facility.

4.10.2 Legal and Other Requirements

Legal requirements applicable to the Waste Management Plan include:

- *Litter Act* - Establishes offences for depositing litter or dead animals on public places or Crown land.
- *Mining Management Act* - MMPs require technical studies, data and management plans based on the risk assessment of proposed activities.
- *Waste Management and Pollution Control Act* – Provides a general framework for protecting the environment from pollution and waste, including offence provisions and enforcement tools; and licensing and approvals for specified activities. In general terms, for mining activities the Act does not apply to any contaminants and wastes that are confined on mining tenure.

Guidelines applicable to the Waste Management Plan include:

- *Local Government Association of the NT (LGANT) Waste Management Guidelines for Small Communities in the Northern Territory* – Developed to improve the delivery of waste management services of communities with less than 1,000 people.
- *NT EPA Guidelines for the Siting, Design and Management of Solid Waste Disposal Sites in the Northern Territory* - Provides recommendations for visual amenity, nuisance control, fire prevention, water management, landfill gas, closure and monitoring.

NTMO SOPs applicable to the Waste Management Plan include:

- NTMO ES – SOP016 General Recycling;
- NTMO ES – SOP017 General Waste Disposal;
- NTMO ES – SOP 18 Bioremediation;
- NTMO ES – SOP020 Waste Oil and Grease Disposal;
- NTMO ES – SOP021 Spill Response;
- NTMO ES – SOP022 Chemical and Hydrocarbon Management;
- NTMO ES – SOP031 Incident and Complaint Notification and Reporting; and
- NTMO ES – SOP048 Landfill Burn.

4.10.3 Management and Mitigation Strategies

The following waste mitigation and management measures will be implemented as applicable:

- Maintain good housekeeping practices, minimise waste generation and recycling and reuse of materials is encouraged where possible;

- Provision of the appropriate number and types of bins on site for each of the different types of waste. Bins will be clearly marked and monitored for cross-contamination of wastes. Domestic waste bins have lids to minimise litter and vermin attraction;
- Employees and Contractors are educated in waste management during inductions;
- Wastes which cannot be reused/recycled onsite and not appropriate for on-site disposal are segregated and transported off-site for appropriate disposal by a licensed waste facility;
    - Receptacles or processes for recycling of aluminium cans, bottles, plastics, cardboard, mobile phones, batteries and fluorescent lighting tubes;
    - Conveyor belt rubber, tyres, chemical wastes, scrap steel and batteries segregated;
    - All hydrocarbon wastes (oils, filters and rags) are collected and stored in labelled 205 L drums or 1000 IBC pods at the waste oil storage area; and
    - Vegetation waste (weed free) managed on site through reuse for ground surface stabilisation and rehabilitation.
- Licensed waste contractors are used for collection and recycling/disposal of wastes. Records will be maintained of the type and volume of wastes sent off-site for treatment, recycling, storage and disposal; and
- Putrescible and domestic waste will be collected and disposed of at designated site landfill. Site landfills are utilised for non-hazardous waste burial (i.e. plastics and other materials considered dangerous to burn) and a designated fire pit for general waste (food scraps, wood pallets and boxes). Landfills are managed in accordance with the following procedures;
    - Constructed as open trenches approximately 20 m long, 5 m wide and 4 m deep;
    - Small regular controlled burns of designated fire pit to reduce the volume and vermin;
    - Maintain firebreaks and to control potential spread of fire to the surrounding area;
    - Waste is deposited by end dumping over the face into the trench;
    - Inspection and litter sweep of the landfill to collect any windblown waste;
    - At least one week of cover material stored at the landfill at any one time;
    - The burial landfill cell will be progressively covered to minimise litter; and
    - Landfill cells will have at least 1 m of cover material at the end of life of the cell, with the material heaped to allow for subsidence. Subsidence of cover material will be monitored and additional cover material added as required.

4.10.4 Monitoring and Measurement

The specific strategies and actions designed to achieve the Waste Management Plan objectives and targets are outlined in Table 12.

TABLE 12: WASTE MANAGEMENT STRATEGIES

Specific			Measurable		Achievable	Timely	Relevant	
Objective (What)	**Actions (How)**	**Explanation (Why)**	**Responsibility (Who)**	**Deliverable (Outcome)**	**Targets (When)**	**Time frame (When)**	**Key Performance Indicators**	**Non-Conformance and Corrective Action**
Appropriate waste disposal and identify opportunities to reduce volumes or improve management practices.	Segregate waste materials, recycle or reuse wastes where possible. Off-site disposal by licence waste disposal contractors.	Minimise waste generation ensure appropriate disposal and reduce the attraction of vermin to site.	Environment Officer (or delegated person)	Documented inspection notes. Site awareness through inductions and meetings.	No observations of litter or waste materials stored or disposed of inappropriately on-site.	Ongoing	Wastes disposed, stored and segregated appropriately on-site. No incidents of inappropriate disposal of wastes to landfill.	Review company resources and operating requirements to determine why action wasn't completed. Further educate the workforce on waste management practices. Develop and implement an action plan to ensure the action is achieved. Assess if any negative impact has occurred.
	Identify amounts / volumes of waste materials generated.	To establish baseline conditions for future waste reduction targets.	Environment Officer (or delegated person)	Waste inventory and amounts / volumes.	Establish amounts / volumes of waste materials generated annually.	Annual	Waste inventory and amounts / volumes recorded.	
	Conduct internal site inspections of waste management practices.	To identify areas for improvement in waste management practices.	Environment Officer (or delegated person)	Documented inspection notes.	No observations of litter or waste materials stored or disposed of inappropriately on-site.	Quarterly	Wastes disposed, stored and segregated appropriately on-site.	
Manage and maintain a functional on-site landfill facility.	Controlled burns of active landfill cell for general wastes.	To prevent exposure of wastes and waste potentially leaving site and attraction of vermin.	Senior Environment Officer (or delegated person)	Controlled burns of landfill cells completed.	Controlled burns of landfill cells completed.	Monthly	Controlled burns of landfill cells completed.	Review company resources and operating requirements to determine why action wasn't completed. Develop and implement an action plan to ensure the action is achieved. Assess if any negative impact has occurred.
	Construction of landfill cells; cover and rehabilitate once filled.	To maintain an appropriate facility for waste disposal.	Senior Environment Officer (or delegated person)	Operational landfill cells available for disposal. Filled cells, closed and rehabilitated.	Active landfill cells available for waste disposal and filled cells covered and rehabilitated.	Ongoing	Operational landfill cells available for disposal. Filled cells, closed and rehabilitated.	
	Conduct inspections of landfill facility.	To prevent exposure of wastes and waste potentially leaving site and attraction of vermin.	Environment Officer (or delegated person)	Documented inspection notes.	Inspections of landfill facility to check appropriate disposal in current cells and adequate cover of completed cells.	Quarterly	Documented notes from inspections and follow up risk assessments and actions required from team meetings.	

4.11 Waste Rock Management Plan

4.11.1 Purpose and Objectives

The purpose of the Waste Rock Management Plan is to effectively control and manage of waste rock to ensure the ongoing protection of land and waterways from waste rock extracted during NTMO operations. Through implementation of this EMP, NTMO aims to meet the following objectives:

- Assess the acid and metalliferous drainage (AMD) potential of mined waste rock; and
- Effectively manage AMD seepage from ore or waste stockpiles.

4.11.2 Legal and Other Requirements

Legal requirements applicable to the Waste Rock Management Plan include:

- *Mining Management Act* - MMPs require technical studies, data and management plans based on the risk assessment of proposed activities.
- *Waste Management and Pollution Control Act* – Provides a general framework for protecting the environment from pollution and waste, including offence provisions and enforcement tools; and licensing and approvals for specified activities. In general terms, for mining activities the Act does not apply to any contaminants and wastes that are confined on mining tenure.
- *Water Act* - Any person conducting an activity that includes a discharge to water must apply for a Waste Discharge Licence (WDL) noting that it is an offence under the Act to allow waste to come into contact with water or to pollute water without authorisation. A WDL is an authorisation that allows waste to be discharged or come in contact with water.

Guidelines applicable to the Waste Rock Management Plan include:

- *NT EPA Environmental Assessment Guidelines: Acid and Metalliferous* Drainage - Defines the information requirements of an Environmental Impact Statement (EIS) relating to assessment of potential AMD from mining and mineral processing materials.
- *NT DPIR MMP Structure Guide - Mining Operations* – Outlines the requirements for the assessment and management of waste rock, in the context of the potential for AMD to be generated.
- *WA DMP Draft Guidance Materials Characterisation Baseline Data Requirements for Mining Proposals* – Provides guidance for materials characterisation sampling, data collection and analysis programs.

NTMO SOPs applicable to the Waste Rock Management Plan include:

- NTMO ES – SOP 25 Waste Rock Characterisation (in-situ);
- NTMO ES – SOP028 Ground Disturbances;
- NTMO ES – SOP031 Incidents and Notification Reporting; and
- NTMO ES – SOP 55 NAF-PAF Field Testing and Sampling.

4.11.3 Management and Mitigation Strategies

The following waste rock mitigation and management measures will be implemented as applicable:

- Placement of waste rock within landforms so that long-term generation of potential AMD is controlled to a level that does not adversely impact on downstream water quality;
- Ongoing waste rock geochemical characterisation and investigation programme for future and current mining operations;

- Identification and marking out geochemical waste rock types to be mined including - Non Acid Forming (NAF), Potentially Acid Forming (PAF), NAF-High Arsenic (As) or NAF-Low As; to enable appropriate segregation and management;
- Segregation and selective placement of potential AMD or NAF-High As waste rock types to minimise the exposure of PAF rock to atmospheric oxygen and leaching;
- Where practicable, backfill any PAF characterised waste rock material into underground or open pit voids;
- In the case where new waste rock dumps (WRDs) are being constructed, place oxidised NAF-High As waste rock within the unsaturated zone under the final top surface of WRDs where possible;
- Exclude PAF and NAF-High As from the base of constructed WRDs and fill zones under final outer slopes. Noting that exclusion of problematic materials from under slopes eliminates the need for engineered covers on slopes and significantly reduces rehabilitation, water management and post-closure costs;
- WRDs constructed from the bottom up in small lift heights to minimise the development of convective/advective gas movement within the WRD, the exposure time of reactive PAF rock and facilitate selective placement of AMD rock types;
- Traffic and machine compaction of the surface of each WRD lift to reduce permeability and control diffusive transfer of oxygen into the WRD;
- Cover all inactive PAF fill zones with in the WRD with a compacted NAF layer prior to the commencement of the wet season;
- Active PAF fill zones progressively covered with fresh NAF within the identified lag period (lag times will be estimated as part of the geochemical programme utilising column leach and kinetic Net Acid Generation (NAG) tests). Pending the results of these tests, a lag of not more than 3 months is assumed;
- WRDs are designed to maximise surface runoff and minimise infiltration;
- Diversion of clean upstream catchments or installation of underdrainage system to convey upstream run-on, storm water runoff and dump seepage;
- Selective placement of NAF-Low As waste rock (<100mg/kg - this figure may be revised based on column leach tests) on final WRD surfaces and slopes to ensure good quality surface runoff, erosion control and promotion of vegetation cover;
- Only NAF-Low As waste rock will be used for general construction fill, engineering works or road base. Pending the findings of the geochemical investigations only NAF materials with less than 100mg/kg As should be used for these purposes;
- For existing non-rehabilitated WRDs, conduct further site investigations to better define the distribution of AMD rock types, residual acid potential, oxidation status and mechanisms and any further mitigation and closure measures; and
- Poor quality AMD seepage from oxidation of PAF materials has been assessed as a major closure risk from some WRDs. AMD is expected to occur until the pathways for oxidation are limited/removed, i.e. infiltration of water and oxygen into the dump. Options for closure will be investigated to limit these pathways and develop long term management strategies as part of the site specific Closure Plans.

4.11.4 Monitoring and Measurement

The specific strategies and actions designed to achieve the Waste Rock Management Plan objectives and targets are outlined in Table 13.

TABLE 13: WASTE ROCK MANAGEMENT STRATEGIES

Specific			Measurable		Achievable	Timely	Relevant	
Objective (What)	Actions (How)	Explanation (Why)	Responsibility (Who)	Deliverable (Outcome)	Targets (When)	Time frame (When)	Key Performance Indicators	Non-Conformance and Corrective Action
Assess the AMD potential of mined waste rock.	Geochemical characterisation of waste rock material prior to mining.	To determine the risk of AMD generation from mined waste rock.	Geology Manager (or delegated person)	Laboratory analytical results.	Geochemical characterisation of waste rock during exploration drilling.	As Required	Laboratory analytical results received for drill holes identified for testwork.	Review company resources and operating requirements to determine why action wasn't completed. Develop and implement an action plan to ensure the action is achieved. Inspections or report outcomes documented and discussed at Environment Department team meetings. A risk assessment will be conducted where required to determine the level of significance and action required. Assess the need for the action to be included in the budget.
	Engage a specialist consultant to assess geochemical characterisation data of waste rock and advice regarding management.	To assess AMD risks and implement appropriate waste rock management strategies.	Environment and Manager (or delegated person)	Waste Rock Characterisation Report.	Complete waste characterisation prior to new mining, any planned reuse of waste rock and/or to develop appropriate WRD rehabilitation designs.	As Required	Documented review and interpretation of waste rock material characterisation incorporation of recommendations into Operational and/or Mine Closure Plans.	
Effectively manage AMD seepage from ore or waste stockpiles.	Conduct inspections and record any erosion and potential seepage areas from ore or waste stockpiles.	To identify and understand any potential AMD sources influencing surface or groundwater quality.	Environment Officer (or delegated person)	Recorded locations of potentially problematic areas on the ore or waste stockpiles.	Documented inspection records of any erosion and potential seepage areas from ore or waste stockpiles.	Annual	Follow up risk assessments and priorities for any required actions.	
	Surface and groundwater quality monitoring around and downstream of ore or waste stockpiles.	To detect whether discharges from the ore or waste stockpiles are impacting on surface and groundwater quality.	Environment Officer (or delegated person)	Field and laboratory analytical results.	Water quality monitoring data and interpretation around and downstream of ore or waste stockpiles.	In accordance with site specific Water Management Plans	Water monitoring completed as per the approved Water Management Plans.	
	Develop final closure / rehabilitation designs of WRDs.	Ensure appropriate final WRD landform designs are developed to minimise any potential long term surface and groundwater quality impacts.	Environment and Community Manager (or delegated person)	Site Specific Mine Closure Plans	Final landform designs for WRDs developed.	As Required	Final landform designs for WRDs developed and incorporated into Rehabilitation and Mine Closure Plans.	

4.12 Water Management Plan

4.12.1 Purpose and Objectives

NTMO has specific Water Management Plans developed for each site considering the existing environment, activities and risks as part of the MMP. The purpose of the Water Management Plans are to protect the beneficial use of water ecosystems from the release of low quality mine impacted water from NTMO Sites. Through implementation of the Water Management Plans, NTMO aims to meet the following objectives:

- Implement management systems to reduce the generation of low quality mine impacted water;
- Reduce the risk of uncontrolled discharges of low quality mine impacted water from NTMO sites; and
- Reuse, recycle, treat and discharge (if necessary) mine impacted water to control the onsite water inventory.

The NTMO Environment Department can be contacted to discuss any site water management strategies and provide access to these MMPs as required.

4.12.2 Legal and Other Requirements

Legal requirements applicable to the Water Management Plan include:

- *Mining Management Act* - MMPs require technical studies, data and management plans based on the risk assessment of proposed activities.
- *Waste Management and Pollution Control Act* – Provides a general framework for protecting the environment from pollution and waste, including offence provisions and enforcement tools; and licensing and approvals for specified activities. In general terms, for mining activities the Act does not apply to any contaminants and wastes that are confined on mining tenure.
- *Water Act* - Any person conducting an activity that includes a discharge to water must apply for a Waste Discharge Licence (WDL) noting that it is an offence under the Act to allow waste to come into contact with water or to pollute water without authorisation. A WDL is an authorisation that allows waste to be discharged or come in contact with water.

Guidelines applicable to the Water Management Plan include:

- *Australian and New Zealand Environmental and Conservation Council (ANZECC) Water Quality Guidelines 2000* - Provide authoritative guidance on fresh and marine water quality management issues.

NTMO SOPs applicable to the Water Management Plan include:

- NTMO ES – SOP001 Surface Water Sampling;
- NTMO ES – SOP002 Groundwater Sampling;
- NTMO ES – SOP003 Water Sampling, Packaging and Delivery;
- NTMO ES – SOP007 YSI Quatro Meter;
- NTMO ES – SOP021 Spill Response;
- NTMO ES – SOP031 Incident and Complaint Notification and Reporting; and
- NTMO ES – SOP052 Discharge Management.

4.12.3 Management and Mitigation Strategies

NTMO water management and mitigation strategies are outlined in Site Specific MMPs.

4.12.4 Monitoring and Measurement

NTMO water monitoring and measurement strategies are outlined in Site Specific MMPs.

4.13 Weeds and Pests Management Plan

4.13.1 Purpose and Objectives

The purpose of the Weeds and Pests Management Plan is to limit and reduce the spread of weed and pest populations; to minimise adverse impacts to native flora and fauna; and to manage weed growth to reduce the risk of wildfires. Through implementation of this EMP, NTMO aims to meet the following objectives:

- Monitor the occurrence of weed species;
- Prevent the accidental introduction of weeds;
- Implement effective weed management control methods; and
- Effective management of pest species populations.

4.13.2 Legal and Other Requirements

Legal requirements applicable to the Weeds and Pests Management Plan include:

- *Environment Protection and Biodiversity Conservation Act 1999* - Protects natural, Indigenous and historic places that are of outstanding heritage value to the nation or are owned or controlled by the Australian Government.
- *Biological Control Act* - Protects the agricultural industry from pests and diseases.
- *Bushfires Management Act* – Requires the prevention and control of bushfires including fire breaks, fire management plans and permits for lighting fires (Permit to Burn).
- *Heritage Act* - Provides protection to nominated areas, places, sites, buildings, and heritage objects on the NT Heritage Register from accidental and deliberate damage or harm.
- *Mining Management Act* - MMPs require technical studies, data and management plans based on the risk assessment of proposed activities.
- *Soil Conservation and Land Utilisation Act* - Areas of land that are subject to soil erosion or that are likely to become subject to soil erosion may be declared Areas of Erosion Hazard.
- *Territory Parks and Wildlife Conservation Act* - Lists plants and animals that are protected in the NT and requires management plans for impacts on protected species.
- *Weed Management Act* - Duties of land owners to manage and prevent the spread of weeds into and out of the NT in accordance with a Weed Management Plan.

Guidelines applicable to the Weeds and Pests Management Plan include:

- *DENR Northern Territory Weed Management Handbook* - Provides information on strategic and planned approaches to weed management, including integrated weed control methods.
- *DENR Weed Data Collection Field Guide* - Provides step-by-step instructions on how to collect weed data in the field and then process it for use in weed management.

NTMO SOPs applicable to the Weeds and Pests Management Plan include:

- NTMO ES – SOP015 Weed Spraying;
- NTMO ES – SOP030 Weed Control;
- NTMO ES – SOP031 Incident and Complaint Notification and Reporting; and
- NTMO ES – SOP 32 Pest and Vector Management;
- NTMO ES – SOP 34 Feral Animal Management; and
- NTMO ES – SOP 35 Controlled Burning.

4.13.3 Management and Mitigation Strategies

The following weeds and pest mitigation and management measures will be implemented as applicable:

- Monitor and map sites with declared weeds and weeds of concern;
- Liaison with Key Stakeholders regarding weed or pest control;
- Weed controls implemented according to site-specific Weed Control Action Plans;
- All vehicles and mobile machinery restricted to designated access tracks;
- Mobile equipment entering site will be inspected as required to ensure it is clean of high-risk indicators such as caked dirt and residual vegetative materials;
- Plant and/or equipment and vehicles are to be washed prior to vacating areas known to contain Weeds of National Significance (WONS) or Class A, B or C weeds;
- Imported fill to be certified weed-free prior to being utilised on site;
- Implement the NTMO Ground Disturbance SOP, which includes a weeds check, prior to undertaking any ground disturbance activities and issue of a NTMO Clearing/Ground Disturbance Permit;
- Weeds are removed as required prior to vegetation clearing so that vegetative material would be clean and able to be mulched and reused directly on site;
- Vegetation and soil stockpiled from clearing activities will be monitored and chemical control undertaken should weeds be identified; and
- Employees and Contractors are educated in weed and pest management during inductions.

4.13.4 Monitoring and Measurement

The specific strategies and actions designed to achieve the Weeds and Pests Management Plan objectives and targets are outlined in Table 14.

TABLE 14: WEEDS AND PESTS MANAGEMENT STRATEGIES

Specific			Measurable		Achievable	Timely	Relevant	
Objective (What)	Actions (How)	Explanation (Why)	Responsibility (Who)	Deliverable (Outcome)	Targets (When)	Time frame (When)	Key Performance Indicators	Non-Conformance and Corrective Action
Monitor occurrences of weed species.	Map weed infestations by density and spatial surveys.	To establish weed locations to target control strategies.	Environment Officer (or delegated person)	Weed Map and details logged in database.	Undertake weed mapping.	Annual	Documented weed maps and database entries.	Review company resources and operating requirements to determine why action wasn't completed. Develop and implement an action plan to ensure the action is achieved.
Prevent accidental introduction of weeds.	Prohibit off-road driving in vegetated areas and in any off-road areas during the wet season.	To prevent seed transfer by vehicles.	Environment Officer (or delegated person)	Site awareness through inductions and meetings.	Site awareness through inductions and meetings. No new tracks identified.	Annual	Document meetings.	
	Mobile equipment entering site will be inspected as required to ensure it is clean of high-risk indicators such as caked dirt and residual vegetative materials.	To prevent seed transfer and introduction by vehicles.	Environment Officer (or delegated person)	Vehicles are clean prior to entering / exiting site. Inspection checklists completed prior to equipment entering site.	Vehicles are inspected and clean prior to entering / exiting site.	As Required	Document meetings. Inspection checklists.	
	All site vehicles will be washed down upon leaving a site with known WONS or Class A, B or C weed infestations.	To prevent seed transfer by vehicles.	Environment Officer (or delegated person)	Site awareness through inductions and meetings. Vehicles to be inspected following cleaning.	Vehicles to be inspected following cleaning.	Annual	Document meetings.	

Specific			Measurable		Achievable	Timely	Relevant	
Objective (What)	**Actions (How)**	**Explanation (Why)**	**Responsibility (Who)**	**Deliverable (Outcome)**	**Targets (When)**	**Time frame (When)**	**Key Performance Indicators**	**Non-Conformance and Corrective Action**
Implement effective weed management control methods.	Meetings or discussions with the DENR Weed Management Branch.	To work with the Weeds Management Branch and to continuously improve weed management practices.	Senior Environment Officer (or delegated person)	A Weed Management Action Plan to include all the actions required for the upcoming season.	Maintain open communication with the Weeds Branch NT to ensure an efficient flow of information and support.	Annual	Documented consultation log and follow up and actions required.	Investigate reasoning as to why consultation was not conducted and re-schedule a meeting to improve relations through an open line of communication. Conduct more frequent contact to build relationships.
	Liaison with Pastoral Lease Managers and adjacent landowners regarding weed or pest control.	To inform of site weed or pest issues, NTMO control methods and timeframes.	Environment Manager (or delegated person)	Agreed weed and pest management projects that benefit the Pastoral Lease and meet NTMO commitments.	Liaison with the Pastoral Lease Managers and adjacent landowners regarding weed and pest control.	Annual Prior to weed control actions	Pastoral leases owners and adjacent landowners aware of NTMO weed and pest control programs and activities.	
	Develop and implement a Weed Action Plan.	To minimise adverse impacts to flora and fauna and manage weeds to reduce the risk of wildfire	Environment Officer (or delegated person)	Weed Action Plan.	Weed Action Plan details site problematic weeds and appropriate treatment or control.	Annual	Weed Action Plan.	Ensure Weed Action Plan remains on Environment and Community Department meeting agenda items list until complete.
	Undertake burning or spraying of weeds.	To contain and minimise spread of weeds and to reduce potential impacts from wildfire.	Environment Officer (or delegated person)	Record of weed control actions undertaken.	Undertake burning or spraying of weeds.	Annual	Record of weed control actions undertaken.	
Effective management of pest species populations.	Register and review pest sightings.	To obtain information regarding pest species at NTMO sites.	Environment Officer (or delegated person)	Pest sightings recorded and review of register.	Undertake a review of the register and ensure pest sightings are recorded.	Annual	Pest sightings recorded and review of register.	Conduct a retrospective review of pest sightings register to identify any trends or changes in pest populations.
	Implement waste management strategies to remove all waste to approved landfill sites.	To minimise animals foraging for food scraps / being injured by waste products.	Environment Officer (or delegated person)	Site awareness through inductions and meetings.	Remove waste to designated landfill.	Annual Remove waste daily.	Document meetings.	Review company resources and operating requirements to determine why action wasn't completed. Develop and implement an action plan to ensure the action is achieved.

5 Social Responsibility Management Plans

NTMO is committed to fostering mutually beneficial partnerships with its communities through effective stakeholder consultation and engagement, business and community support, workforce behaviour and cultural heritage management. All Employees and Contractors must support NTMO in meeting these commitments.

The NTMO Environment Department can be contacted for any stakeholder enquiries or complaints during office hours on 08 8978 1736 or after hours on 0457 300 519.

Social responsibility aspects covered under the NTMO EMPs include the following:

- Consultation and Socio-Economic; and
- Cultural Heritage.

5.1 Consultation and Socio-Economic Management Plan

5.1.1 Purpose and Objectives

The purpose of the Consultation and Socio-Economic Management Plan is to maintain engagement with key stakeholders and to support local employees, businesses, contractors and community groups, to benefit the local community and surrounding region. Through implementation of this EMP, NTMO aims to meet the following objectives:

- Ensure appropriate and ongoing stakeholder consultation is undertaken;
- Employ locally where a local or regional workforce has the required skills or has the ability to acquire the required skills;
- Buy locally where a local or regional business has the required goods or has the ability to acquire the required goods at a competitive price; and
- Provide support to local schools and non-profit community groups.

5.1.2 Legal and Other Requirements

Legal requirements applicable to the Consultation and Socio-Economic Management Plan include:

- *Bushfires Management Act* - Neighbours must be notified at least 48 hours before applying for a Permit to Burn;
- *Water Act* - Waste Discharge Licence conditions require:
    - Public signage of WDL number and 24 hour contact details;
    - The Licence be available for inspection by any person in hard copy form;
    - A Consultation and Communication Plan; and
    - A community feedback number and complaints log.
- *Mineral Title Act* - When applying for a mineral title the NT Minister must be satisfied that the applicant is actively negotiating with Traditional Owners in good faith in accordance with the *Aboriginal Land Rights (Northern Territory) Act 1976* or the *Native Title Act 1993.*
- *Mining Management Act* – Exploration MMPs available to the public following approval.

NTMO SOPs applicable to the Consultation and Socio-Economic Management Plan include:

- NTMO ES – SOP031 Incident and Complaint Notification and Reporting; and
- NTMO ES – SOP 35 Controlled Burning.

5.1.3 Management and Mitigation Strategies

The following consultation and socio-economic mitigation and management measures will be implemented as applicable:

- Undertake ongoing and regular consultation with Pastoral Station Representatives in regards to land management (rehabilitation, weed and pest control, fencing and fire protection strategies);
- Maintain open communication relevant Government Departments through formal reports, written communications and informal contact;
- Undertake appropriate Native Title negotiations with Traditional Owners (or representatives) for any additional or changes to mining tenure and ensure that appropriate access agreements are properly recorded and validated;
- Undertake consultation with Traditional Owners regarding cultural heritage surveys and management;
- Record and appropriately respond to any complaints about NTMO activities;
- Employ locally when the opportunity and local workforce has the required skills or has the ability to acquire the required skills;
- Support local business, business initiatives and availability by:
    - Communicating supply and procurement needs and intent with local businesses on a regular basis;
    - Collating and regularly updating a local business register of local suppliers and services;
    - Providing the opportunity to local and regional businesses to tender or offer supply and procurement services; and
    - Ensuring that supply and procurement assessment processes include a criteria related to locality of the potential supplier.
- Support local schools and non-profit community groups; and
- Employees and Contractors are educated in appropriate workforce behaviour within the local communities during inductions.

5.1.4 Monitoring and Measurement

The specific strategies and actions designed to achieve the Consultation and Socio-Economic Management Plan objectives and targets are outlined in Table 15.

TABLE 15: CONSULTATION AND SOCIO-ECONOMIC MANAGEMENT STRATEGIES

Specific			Measurable		Achievable	Timely	Relevant	
Objective (What)	Actions (How)	Explanation (Why)	Responsibility (Who)	Deliverable (Outcome)	Targets (When)	Time frame (When)	Key Performance Indicators	Non-Conformance and Corrective Action
Consultation with key stakeholders.	Meetings or discussions with relevant Pastoral Lease Managers.	To maintain consultation and cooperation with neighbouring Pastoral Leases and implement land management activities.	Project Director, Environment Manager (or delegated person)	A formal or informal agreement of sharing land management projects that benefit the Pastoral Lease and meet NTMO commitments.	Maintain open communication with the Pastoral Lease that assist NTMO meet their commitments.	As Required	Documented consultation log including issues discussed and outcomes. Implement agreed land management activities.	Consultation outcomes documented and discussed at the Environment Department team meetings. A risk assessment will be conducted where required to determine the level of significance and action required. Assess the need for the action to be included in the budget. A review of field and reporting systems and process will be undertaken. Items not addressed will be re- evaluated for their priority status. Investigate reasoning as to why consultation was not conducted and re-schedule a meeting to improve relations through an open line of communication. Conduct more frequent contact to build relationships. Consultation outcomes documented and discussed at
	Meetings or discussions with Bushfires NT.	To work with Bushfires NT so they are familiar and provide input with NTMO fire management plans.	Senior Environment Officer (or delegated person)	A Fire Management Action Plan to include all the actions required for the upcoming fire season.	Maintain open communication with Bushfires NT to ensure an efficient flow of information and support.	Annual	Obtain Permit to Burn. Documented consultation log and follow up risk assessments and actions required from meetings.	
	Meetings or discussions with the DENR Weed Management Branch.	To work with the Weeds Management Branch and to continuously improve weed management practices.	Senior Environment Officer (or delegated person)	A Weed Management Action Plan to include all the actions required for the upcoming season.	Maintain open communication with the Weeds Branch NT to ensure an efficient flow of information and support.	Annual	Documented consultation log and follow up and actions required.	
	Meetings, discussions or reports to the DENR Environmental Authorisations Branch.	To work with the DENR and to continuously improve offsite water discharge quality.	Project Director, Environment Manager (or delegated person)	A Water Treatment and Discharge Management Plan to include all the actions required for the upcoming wet season.	Maintain open communication with DENR to ensure Waste Discharge Licence (WDL) requirements are understood and met.	As Required or defined by WDL Conditions	Obtain WDL as required for active discharge off site. Reports submitted as required by WDL.	

Specific			Measurable		Achievable	Timely	Relevant	
Objective (What)	**Actions (How)**	**Explanation (Why)**	**Responsibility (Who)**	**Deliverable (Outcome)**	**Targets (When)**	**Time frame (When)**	**Key Performance Indicators**	**Non-Conformance and Corrective Action**
	Meetings, discussions or reports to the DPIR Mines Division.	To work with the DPIR and to continuously improve site environmental management.	Project Director, Environment and Community Manager (or delegated person)	A Mining Management Plan to include all mining activities, actions to protect the environment and monitoring and management performance.	Maintain open communication with DPIR to ensure Mine Management Plan (MMP) requirements are understood and met.	As Required or defined by Authorisation Conditions	Authorisation Issued. MMP Approved.	the Environment Department team meetings. A risk assessment will be conducted where required to determine the level of significance and action required. Assess the need for the action to be included in the budget. 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. Investigate reasoning as to why consultation was not conducted and re-schedule a meeting to improve relations through an open line of communication. Conduct more frequent contact to build relationships.
	Meetings or discussions with Traditional Owners.	To maintain consultation and cooperation with traditional landowners.	Project Director, Environment and Community Manager (or delegated person)	Validated Native Title agreements for additional or changes to mining tenure. Archaeological and Heritage Report.	Establish and maintain open communication with Traditional Owners to ensure cultural requirements are understood and met.	As Required	Mineral Titles Granted. Cultural Heritage sites identified and protected. Documented consultation log including issues discussed and outcomes.	
Support local employees, contractors and business.	Establish number of locally employed personnel.	To establish a baseline numbers of locally employed personnel and identify areas to increase resourcing of local personnel.	Human Resources Superintendent (or delegated person)	Record and track number of locally employed personnel.	Employ locally where a local or regional workforce has the required skills or has the ability to acquire the required skills.	Annual	Number of locally employed personnel tracked and compared annually and any improvement opportunities identified.	
	Establish number of contractors, purchases and services sourced locally.	To establish a baseline numbers of utilised local contracts, purchases and suppliers and identify potential areas to increase local sourcing.	Finance Superintendent (or delegated person)	Record and track number of local contracts, purchases and suppliers.	Buy locally where a local or regional business has the required goods or has the ability to acquire the required goods at a competitive price.	Annual	Number of local contracts, purchases and suppliers tracked and compared annually and any improvement opportunities identified.	
Supporting local community groups and schools.	Investigate any community requests and support local schools and non-profit community groups.	To identify and provide measurable benefits to local community groups.	Environment = Manager (or delegated person)	To continue supporting initiatives with local schools or community groups.	Provide appropriate support to local schools and non-profit community groups.	Annual	Register of donations or in/ kind support provided to community groups.	

5.2 Cultural Heritage Management Plan

5.2.1 Purpose and Objectives

The purpose of the Cultural Heritage Management Plan is to prevent impacts to cultural heritage sites from NTMO activities. Through implementation of this EMP, NTMO aims to meet the following objectives:

- Protect and avoid unauthorised impact to known cultural heritage sites; and
- Undertake cultural heritage surveys on any previously undisturbed areas prior to disturbance activities.

5.2.2 Legal and Other Requirements

Legal requirements applicable to the Cultural Heritage Management Plan include:

- *Aboriginal and Torres Strait Islander Heritage Protection Act 1984* - Protects areas of land in Australia and in Australian waters that have particular significance in accordance with Aboriginal tradition. Used to protect sites only if the NT processes (i.e. *Northern Territory Aboriginal Sacred Sites Act*) have failed to do so
- *Environment Protection and Biodiversity Conservation Act 1999* - Protects natural, Indigenous and historic places that are of outstanding heritage value to the nation or are owned or controlled by the Australian Government.
- *Northern Territory Aboriginal Sacred Sites Act* – Protects sacred sites in the NT whether the location of the sites are known or not, and is administered by the Aboriginal Areas Protection Authority (AAPA), which is responsible for issuing Authority Certificates. The Certificates set out conditions for carrying out proposed works or using land in the vicinity of sacred sites within the subject land.
- *Heritage Act* - Provides protection to nominated areas, places, sites, buildings, and heritage objects on the NT Heritage Register from accidental and deliberate damage or harm. Discovery of any significant cultural heritage sites to be reported to the Department of Tourism, Sport and Culture (DTSC) Heritage Branch. Enables a Work Approval Permit to carry out work on a heritage place or object.
- *Mining Management Act* - MMPs require technical studies, data and management plans based on the risk assessment of proposed activities.

Guidelines applicable to the Cultural Heritage Management Plan include:

- *The Australia ICOMOS Charter for Places of Cultural Significance, 2013* – The Burra Charter and the associated series of Practice Notes provide a best practice standard for managing cultural heritage places in Australia.

NTMO SOPs applicable to the Cultural Heritage Management Plan include:

- NTMO ES – SOP014 Archaeological Chance Find;
- NTMO ES – SOP028 Ground Disturbance; and
- NTMO ES – SOP031 Incident and Complaint Notification and Reporting.

5.2.3 Management and Mitigation Strategies

The following cultural heritage mitigation and management measures will be implemented as applicable:

- Implement the NTMO Ground Disturbance SOP, which includes a cultural heritage check, prior to undertaking any ground disturbance activities and issue of a NTMO Clearing/Ground Disturbance Permit;
- Ensure that AAPA Certificates cover proposed activities, are current and all conditions met;
- Conduct cultural heritage awareness as part of the Induction so that Employees and Contractors comply with the conditions of the AAPA certificate;

- Fencing of cultural heritage sites of moderate or higher significance in the vicinity of operations. Consultation with Traditional Owners during the process of developing and installing appropriate fencing and signage. Quarterly inspections to check on any fencing protecting sites;
- Off-road driving is restricted or prohibited to avoid accidental disturbance to identified and unidentified cultural heritage sites;
- Appropriate approvals from the Minister for Heritage will be obtained prior to the disturbance of any cultural heritage site as a result of NTMO operations;
- Conduct cultural heritage surveys prior to activities within previously undisturbed areas;
- The NTMO Archaeological Chance Find SOP will be implemented in the event that archaeological material is uncovered unexpectedly during mine operation or construction and:
    - All work will cease;
    - The area will be demarcated;
    - The Environment Manager (or delegate) will contact the DTSC Heritage Branch for advice on how to proceed; and
    - Works will not recommence in that area until advice has been received and implemented as required.

5.2.4 Monitoring and Measurement

The specific strategies and actions designed to achieve the Cultural Heritage Management Plan objectives and targets are outlined in Table 16.

TABLE 16: CULTURAL HERITAGE MANAGEMENT STRATEGIES

Specific			Measurable		Achievable	Timely	Relevant	
Objective (What)	Actions (How)	Explanation (Why)	Responsibility (Who)	Deliverable (Outcome)	Targets (When)	Time frame (When)	Key Performance Indicators	Non-Conformance and Corrective Action
Protect and avoid unauthorised impact to known cultural heritage sites.	Obtain NTMO Clearing/Ground Disturbance Permit approval prior to any ground disturbance activities.	To prevent potential for damage to cultural heritage sites of significance.	Environment Officer (or delegated person)	Approved Clearing/Ground Disturbance Permits.	No unauthorised impacts to cultural heritage sites.	Ongoing As Required	Clearing/Ground Disturbance Permits approval obtained. No incidents of unauthorised impact to cultural heritage sites.	Review company resources and operating requirements to determine why action wasn't completed. Further educate the workforce on Ground Disturbance procedures. Develop and implement an action plan to ensure the action is achieved. Assess if any negative impact has occurred.
	Obtain AAPA Certificate prior to any ground disturbance activities.	To prevent potential for damage to cultural heritage sites of significance.	Environment Manager (or delegated person)	AAPA Certificate issued.	AAPA Certificate issued prior to any ground disturbance activities.	As Required	AAPA Certificate issued.	
	Erect fencing to protect priority cultural heritage sites in close proximity to ongoing operations.	To prevent inadvertent access and damage.	Environment Manager (or delegated person)	Fencing installed around designated cultural heritage sites.	Fence cultural heritage sites of moderate or higher significance in the vicinity of ongoing operations.	Ongoing As Identified	Fencing installed as identified. No incidents of unauthorised impact to cultural heritage sites.	
	Regularly inspect condition of moderate or higher significance cultural heritage sites.	To identify condition of sites and determine if maintenance is required (i.e. fencing).	Environment Officer (or delegated person)	Site Inspection Record.	Regular inspections of moderate or higher significance cultural heritage sites.	Quarterly	Inspections undertaken and documented.	
Undertake cultural heritage surveys on any previously undisturbed areas prior to activities.	Engage a specialist consultant to undertake cultural heritage surveys in any new areas prior to any disturbance.	To identify and prevent potential damage to cultural historical sites of significance.	Environment Officer (or delegated person)	Archaeological and Heritage Report.	Complete cultural heritage surveys prior to activities within previously undisturbed areas.	As Required	Completed heritage report prior to new disturbance.	If a heritage site is damaged or destroyed, an incident will be logged and reported to the appropriate authority (AAPA, DPIR and/or DTSC) will be notified. Investigation will be undertaken with root causes and corrective actions identified.

6 ABBREVIATIONS

Acronym	Description
AAPA	Aboriginal Areas Protection Authority
AMD	Acid and Metalliferous Drainage
ANZECC	Australian and New Zealand Environmental and Conservation Council
BCPA	Brocks Creek Project Area
BoM	Bureau of Meteorology
BPESC	Best Practice Erosion and Sediment Control
CHPA	Cosmo Howley Project Area
DENR	Department of Environment and Natural Resources
DPIR	Department of Primary Industry and Resources
DTSC	Department of Tourism, Sport and Culture
EIS	Environmental Impact Statement
EMP	Environmental Management Plan
NT EPA	NT Environmental Protection Authority
ERP	Emergency Response Plan
ERT	Emergency Response Team
ESR	Environment and Social Responsibility
FHTHPA	Fountain Head / Tally Ho Project Area
H&S	Health and Safety
IECA	International Erosion Control Association
JSEA	Job Safety and Environmental Analysis
KPI	Key Performance Indicator
LGANT	Local Government Association of the NT
MCPA	Maud Creek Project Area
MMP	Mining Management Plan
MOPA	Moline Project Area
MPPA	Mount Paqualin Project Area
MSP	Medical Service Provider
NAF	Non Acid Forming
NAFI	Northern Australian Fire Information
NGER	National Greenhouse Energy Reporting
NPI	National Pollutant Inventory
NPPLPA	North Point / Princess Louise Project Area
NT	Northern Territory
NTMO	NT Mining Operations Pty Ltd
PAF	Potentially Acid Forming
PCPA	Pine Creek Project Area

Acronym	Description
ROM	Run of Mine
RWA	Restricted Works Area
SDS	Safety Data Sheet
SMART	Specific, Measurable, Achievable, Relevant and Timely
SOP	Standard Operating Procedure
TSF	Tailings Storage Facility
URCP	Union Reefs Crosscourse Pit
URPA	Union Reefs Project Area
WDL	Waste Discharge Licence
WONS	Weeds of National Significance
WRD	Waste Rock Dump

Date: 12 February 2019
To: Sally Horsnell
Environment Manager
Kirkland Lake Gold
From: Paul Barden, Kyle Armstrong and
Nicola Hanrahan

Bat Monitoring Union Reefs, 12 February 2019

Dear Sally

This memo details the results of sound data collected for the period from the 15th January – 5th February 2019 (22 nights) and a site visit conducted on 30-31 January 2019.

Adit Monitoring Union Reefs

- On the 30th January, a 20-metre microphone extension cable was attached to the sound recorder at Prospect adit, allowing the microphone to be placed within the portal of the adit. This allows more targeted monitoring of the adit and reduces the recording of incidental bats flying past outside. Ghost bats (*Macroderma gigas*) were recorded at Prospect on eight nights (16 echolocation and 22 social call detections) within the monitored period. The timing of detections indicate that a small number of ghost bats are using Prospect adit as an occasional diurnal roost. Diamond-faced bats (*Rhinonicteris aurantia*) were not detected. During the site visit (30 January 2019) a single ghost bat was observed circling the entrance to the Prospect adit after ghost bats had left their main diurnal roost location at the OK adit (approximately 9 pm).
- Ghost bat activity at OK adit was high during the monitoring period with detections on every night except for 23 - 29 January, and on the 4th February when no ghost bats were recorded. A total of 1240 detections (mean = 83 detections per night) (699 echolocation and 541 social call detections) of ghost bats were recorded over the monitoring period, showing that OK adit is an important roost for this colony, particularly in the wet season. Diamond-faced bats were detected at OK adit on 13 nights. Activity levels were generally low with a total of 167 detections and an average of 13 detections per night.
- Data was recorded at Union North on all nights except from the 20th - 24th January as the SD card was full. Ghost bat activity at Union North adit was low over the monitoring period with 21 detections over 11 days (mean = 2 detections per night). This is

consistent with previous data that suggests that the colony is moving between Union North and Ok adit. Diamond-faced bat activity was high with 4803 detections (mean = 253 detections per night). This species was detected on all nights monitored.

- The Northern Leaf-nosed bat (*Hipposideros stenotis*) was not detected at any site during the monitored period.

Site Visit and Monitoring Training, January 2019

A site visit to the Union Reefs and Pine Creek leases was undertaken on the 30 - 31 January 2019 (Paul Barden, Nicola Hanrahan and Dr. Kyle Armstrong). The aims of the site visit were to:

- Assess the status of several additional adits identified by KLG environment staff at Union Reefs and Pine Creek.
- Assess and improve the set-up of monitoring equipment at the Union Reefs adits.
- Conduct an informal workshop/training session for KLG environment team in relation to servicing and operating monitoring equipment.
- Inspect the internal structure of the Union North and OK Adits

Adit Assessment - Pine Creek Lease

An inspection of an adit located at the Pine Creek lease was conducted by the EMS with members of the KLG environment team (30/01/2019). The adit in question was found to be a shallow excavation with no potential for supporting a ghost bat roost. External investigation indicated that the excavation extended no more than 1-2 meters from the surface (Figure 1).

Adit Assessment - Union Reefs

An inspection of an adit located within an existing pit at Union Reefs was conducted on the 31/01/2019. The adit was flooded to the entrance and did not support suitable access or roost locations for bats (Figure 2). Other potential roost sites were not observed in this area.

Figure 1. Shallow working at the Pine Creek lease. Inspections found that this location is unsuitable as a roost site for bats.

Figure 2. Flooded excavation within an existing mine pit at the Union Reefs site. This location did not support roosting opportunities for bats during the site inspection.

Inspection of Union Reefs Adits – OK and Union North

During the January site visit, an attempt was made to assess the depth and structure of the OK and Union North Adits in order to determine the potential location of underground bat roost sites in relation to proposed drilling pads. Prospect adit was not inspected, as the entire length of this adit can be viewed from the entrance using an inspection camera. A Rovion pipe inspection camera system was used to enter the OK and Union North adits remotely. The equipment was set up on site prior to dark approximately 20 m from the OK adit entrance on the 30/01/2019 with the investigation of the adits delayed until roosting ghost bats had left to forage for the night based on acoustic and video monitoring data (after 2100 hours CST). Unfortunately, a large storm delivered significant rainfall prior to the inspection and the lower levels of the Union North adit was flooded, preventing access for the inspection camera.

The OK adit was successfully inspected, the camera system revealing a short drive to the south from the main adit at approximately 10 m from the main entrance and extending approximately 15 m (Figure 3). Based on observations of bats from the adit entrance and evidence obtained using the inspection camera system, the rear end of the southern drive is the main roost location for bats at OK adit. The inspection camera also revealed the presence of several skeletons on the adit floor, considered likely to be euro or common wallaroo (*Macropus robustus*). This species is common in the hill country around Union Reefs and tracks indicating that this species regularly enters historical adits have been observed at several locations. KLG has indicated that further investigations may be undertaken.

The failure to inspect the structure of the Union North adit due to low level flooding indicates that additional work may be required to determine the internal structure of this adit and location of roost sites in relation to drilling locations. KLG has indicated that options for additional inspections are being considered.

Acoustic Bat Call Monitoring Equipment

During the January site inspection, all audio monitoring systems were updated with extension leads to connect microphones to the recording units, reducing the requirement to closely approach the adit entrances while servicing equipment. This will improve safety for KLG staff while reducing potential disturbance to bats in the roosts. An extension cable also enabled placement of the microphone within the Prospect Adit without requiring staff to scale a steep and loose shale slope at the adit entrance.

Figure 3. The southern drive of the OK adit, showing the area where the diurnal ghost bat roost is located.

Figure 4. Skeletal material in the OK adit, likely to be common wallaroo (*Macropus robustus*).

Video Monitoring

To make counts of the colony size of ghost bats, a custom infrared video recording system was developed in consultation with KLG so that effort for attending the start/stop of recording sessions, as well as servicing batteries and memory downloads by KLG staff was minimised. The micro-computer (Raspberry Pi) infrared video recording system has evolved over the past weeks since its first deployment in early December. Issues with electrical current variation within a power bank model were solved by exchanging electronic componentry on the Raspberry Pi board, and an issue with video file truncation was resolved by replacing damaged camera cables and updating the programming. The housing of the camera system has been improved to prevent water ingress, and the need for a more convenient power supply for infrared spotlights has been discussed. Given that approval to drill nearby is likely to be given the end of February 2019, there should still be adequate time to collect baseline (pre-drilling) data on colony size. A secondary back-up system (FLIR Tau thermal camera connected to a sportDV digital video recorder) has been available since the first deployment of the Raspberry Pi video recorders, in case of issues with the newly developed system. To date, this thermal-based backup system has not been deployed by KLG. The site visit by P. Barden, N. Hanrahan and K Armstrong in January 2019 was undertaken to demonstrate use of the equipment to KLG staff and troubleshoot any issues.

Sincerely,

Paul Barden
Director
Ecological Management Services Pty Ltd

EMS | ECOLOGICAL MANAGEMENT SERVICES
ENVIRONMENTAL CONSULTANTS

EMS | ECOLOGICAL MANAGEMENT SERVICES
ENVIRONMENTAL CONSULTANTS

KIRKLAND LAKE GOLD

ACN 136-525-990

WEED ACTION PLAN FOR

PINE CREEK PROJECT AREA

[2020-2021]

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1. Objective and Targets

This Plan forms part of NT Mining Operations (NTMO) Weed and Pest Environmental Management Plan in the Environmental Management System (EMS) for the Pine Creek Project Area (PCPA).

The objective of this Weed Action Plan is to limit and reduce the spread of weed populations to minimise adverse impacts to native flora and fauna and to manage weed growth to reduce risk of uncontrolled wildfire impacts.

The specific objectives of this Weed Action Plans to guide the management of weeds throughout the Life of Mine (LOM), locate all weed species and implement a plan that identifies areas of priority for management and control.

2. Legislation

Northern Territory Mining Operation (NTMO) has identified weeds which have been declared and are of national significance onsite at PCPA. NTMO complies with the following relevant legislation to actively manage identified declared weed species.

- *Weed Management Act*
- *Mining Management Act*
- *Environment Protection and Biodiversity Conservation Act 1999*
- *Territory Parks and Wildlife Conservation Act 2006*
- *Biological Control Act*
- *Soil Conservation and Land Utilisation Act*

2.1 Statutory Weeds

This weed action plan was developed by assessing weed mapping data to determine priority areas and site specific target weeds. **Error! Reference source not found.** below shows a summary of the declared weeds that have been identified at PCPA followed by other weed species. A total of 14 weed species have been identified with 6 being listed as declared and 2 Weed of National Significance (WoNS). The aim of the weed action plan is to prioritise management and control efforts in relation to statutory status of weeds in Table 1 below. Figure 1 shows the location of these weeds.

TABLE 1 LISTED AND COMMON WEEDS FOUND AT PCPA

Common Name	Scientific Name	Declared	WoNS
Gamba grass	*Andropogon gayanus*	Class B/C	Yes
Hyptis	*Hyptis suaveolens*	Class B/C	No
Mission grass	*Cenchrus* sp.	Class B/C	No
Neem	*Azadirachta indica*	Class B/C	No
Olive hymenachne*	*Hymenachne amplexicaulis*	Class B/C	Yes
Rubber bush	*Calotropis procera*	Class B/C	No
Chinese Lantern	*Physalis angulata*	No	No
Gambia Pea	*Crotalaria goreensis*	No	No
Hairy merrimia	*Merremia aegyptia*	No	No
Morning glory	*Triloba ssp*	No	No
Rosella	*Hibiscus sabdariffa*	No	No
Snake vine	*Stephania japonica*	No	No
Stylos	*Stylosanthes* spp	No	No
Wild passionfruit	*Passiflora foetida*	No	No

** Weed identified in surrounding properties not found onsite*

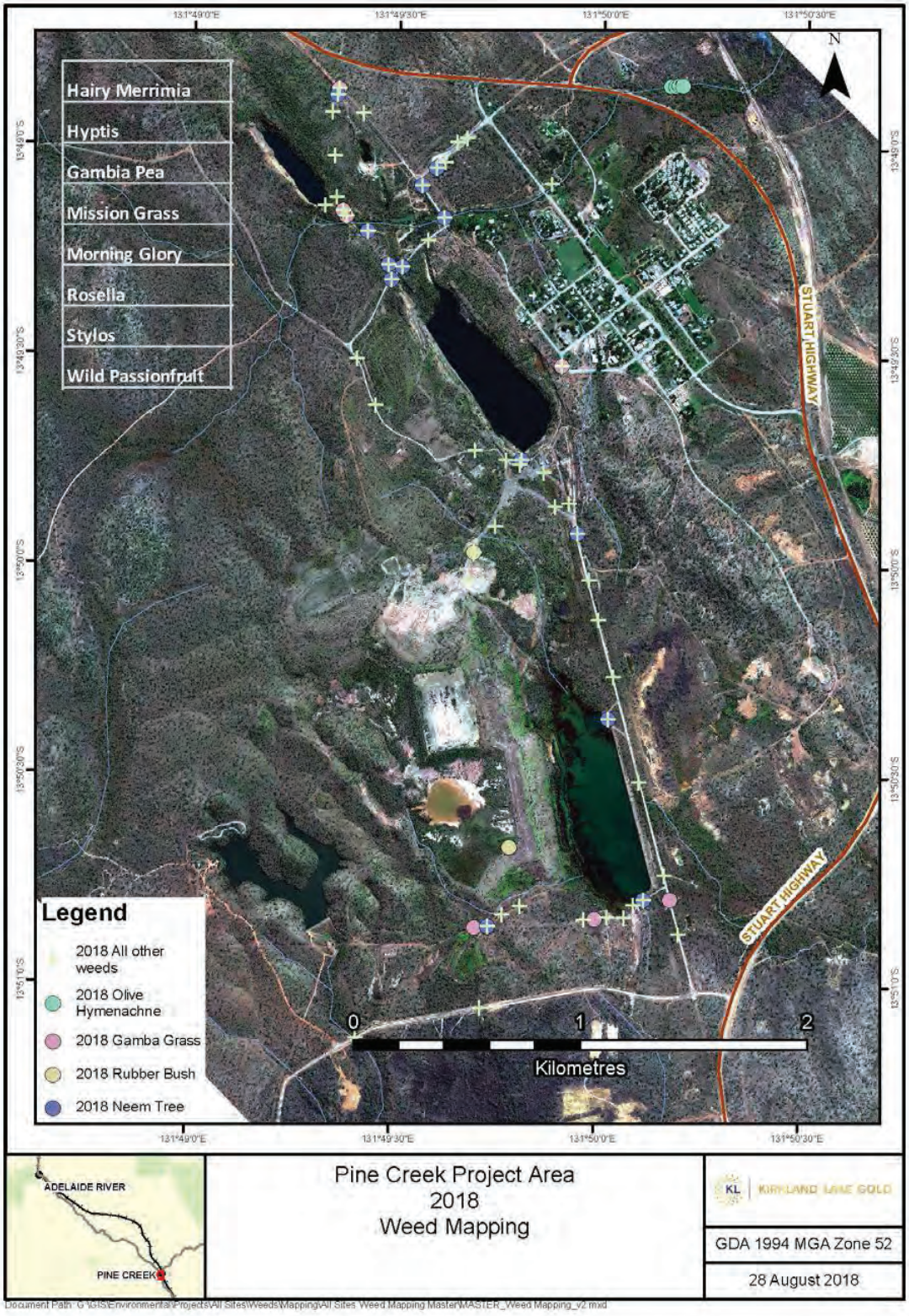

FIGURE 1 MAPPED WEEDS 2018

3. CONTROL METHODS

3.1 Chemical

The main control method for weeds species is herbicide application. A list of herbicides and their uses are listed in **Error! Reference source not found.**.

3.2 Fire

Whilst fire is incorporated into NTMO's land management strategies, it is a useful tool to manage weed biomass. Gamba grass densities are reduced by wet season and dry season control burns which requires less volumes of poison and exposes inaccessible foliage.

3.3 Containment

Prevention of weed expansion and infestations will be managed by a number of physical control measures as shown in Table 2 below. Physical containment will reduce the rate and spatial scale of spread; this has been implemented and will continue to be practiced in the field.

3.4 Physical removal

PCPA has recorded *Olive hymenachne* in a surface water monitoring location outside of its Mineral Lease. Physical removal of flowers as shown in **Error! Reference source not found.**, were to prevent the plant from seeding.

FIGURE 2 Hand Picked *Olive hymenachne* seeds

TABLE 2 CONTAINMENT OF WEEDS

Vector for Dispersal	Potential of Spread	Containment and Management
Rivers	There are a number of ephemeral rivers stemming from PCPA, where seeds can be stored and flushed downstream during flows. This has been evident with small isolated weed patches establishing along river courses.	Map changes of existing and newly formed populations. Implement this into future action plans whilst manageable
Wind	Sections of vegetation that have not already been burnt will be subject to seed spread by wind. Southerly wind conditions during seeding periods will distribute airborne seeds into gullies and new areas.	Conducting control burns at PCPA prior to seeding will prevent spread. This in line with herbicide spraying will target isolated populations.
Wildlife	Wildlife passing through the property such as buffalo and wild pigs distribute seeds across the site. This is evident by tracks found through native and infested vegetation	Perimeter fencing to restrict cattle and buffalo accessing site.
Hygiene - Vehicles	Another vector for dispersal is vehicles passing through infestations and spread weeds over a larger scale.	Minimising this will be done by wash down of vehicles before leaving CHPA, monitoring heavily infested areas last and recognising seeding times particularly in areas of prolific seeders. Vehicles should remain on established tracks and avoid off road travel.
Hygiene - Machinery	Machinery coming onto site has the potential to bring new weeds and spread weeds whilst clearing already existing infestations. Fire breaks will be used as a barrier from seed dispersal.	Any machinery used for clearing fire breaks / earthworks, will also be washed before leaving and entering site. Fire breaks can be used to contain weed densities within site and spot spray new isolated populations that have dispersed across the track. Weed and Seed Inspections will be completed by Environmental Officers.

4. Risk Ranking Methodology

Each weed species can be ranked to determine the level of management required on NTMO tenements. The risk classification (**Error! Reference source not found.**) is based on varying levels of management required for the control of weed species and categorises these into four levels of ranking. These rankings specify the following method for management actions:

- Managed as part of a broad scale weed control program – A number of species can be controlled when found in dense infestations. General Glyphosate is a good example of this where it will reduce grasses and non woody weeds that are found in the same areas.
- Targeted program for control – a specific program developed to target selected persistent species for control. This is done by identifying smaller and manageable areas for control and managing newly established isolated weed species.
- Targeted program for eradication- a specific program developed to target selected individual species for eradication.

TABLE 3 Species Risk Classification Matrix

Feasibility Rankings / Risk classification	Low	Medium	High	Very High
No classification	Managed as part of broad scale control	Managed as part of broad scale control	Managed as part of broad scale control	Managed as part of broad scale control
No classification but regulated for management	Managed as part of broad scale control	Managed as part of broad scale control	Targeted program for control	Targeted program for control
Class B/C (Growth and Spread to be controlled)	Managed as part of broad scale weed control	Targeted program for control	Targeted program for control	Targeted program for control
WoNS listed, Class A (To be eradicated)	Targeted program for eradication	Targeted program for eradication	Targeted program for control	**PRIORITY** Targeted program for control

4.1 MANAGEMENT AND MITIGATION

NTMO have proposed the following management strategies for the upcoming reporting period in Table 4. Rubberbush and *Olive hymenachne* will become part of a control program where weed spraying will be incorporated into wet season management. Rubber Bush will be controlled across the site by a weed management contractor and has been targeted for control in the previous three years. A follow-up program will also be implemented to further capture seeds remaining in the seed bank. Prioritising weed species can be difficult given the nature and density of some high priority weed species onsite. This plan is updated annually, and whilst the table below indicates short term strategies (12 months) the targeted programs identified may change in coming years.

Olive hymenachne has been located along the Pine Creek (creek line) and can be seen in the top right corner of Figure 1. This weed is not located on the Mining Lease (ML); however, NTMO will assist in the management of this WoNS listed weed over the coming years.

Table 4 Identified Weeds in PCPA With Statutory Status And Control Method

Species name	Statutory status	January	February	March	Apr	May	June	July	Aug	Sep	October	November	December
Gamba grass	B and C, WoNS	Glyphosate	Glyphosate	Glyphosate									Glyphosate
Olive Hymenachne	B and C, WoNS											Glyphosate	Glyphosate
Flannel Weed	B and C	Glyphosate	Glyphosate	Glyphosate									
Hyptis	B and C	Glyphosate	Glyphosate	Glyphosate									Glyphosate
Mission grass	B and C	Glyphosate	Glyphosate	Glyphosate									Glyphosate
Neem	B and C	Triclopyr	Triclopyr	Triclopyr									Triclopyr
Rubber bush	B and C	Aminopyralid + Triclopyr + Picloram	Aminopyralid + Triclopyr + Picloram	Aminopyralid + Triclopyr + Picloram							Aminopyralid + Triclopyr + Picloram	Aminopyralid + Triclopyr + Picloram	Aminopyralid + Triclopyr + Picloram
Snake Weed	B and C	2, 4-D amine	2, 4-D amine	2, 4-D amine									2, 4-D amine
African Mahogany		Aminopyralid + Triclopyr + Picloram	Aminopyralid + Triclopyr + Picloram	Aminopyralid + Triclopyr + Picloram								Aminopyralid + Triclopyr + Picloram	Aminopyralid + Triclopyr + Picloram
Gambia pea		Glyphosate	Glyphosate	Glyphosate									Glyphosate
Pinnacle Joint Vetch		Acifluorfen, bentazone, fluroxypyr, imazethapyr and dicamba	Acifluorfen, bentazone, fluroxypyr, imazethapyr and dicamba	Acifluorfen, bentazone, fluroxypyr, imazethapyr and dicamba									Acifluorfen, bentazone, fluroxypyr, imazethapyr and dicamba
Phasey Bean		2, 4-D amine	2, 4-D amine	2, 4-D amine									2, 4-D amine
Rosella		Glyphosate	Glyphosate	Glyphosate									Glyphosate
Snake Vine		2, 4-D amine	2, 4-D amine	2, 4-D amine									2, 4-D amine
Stylo		Glyphosate	Glyphosate	Glyphosate									Glyphosate
Wild passionfruit		2, 4- D amine	2, 4- D amine	2, 4- D amine									2, 4- D amine

	Part of target program for control
	Part of a target program for eradication
	Part of a target program by contractor
	Part of broad scale control program
	Assistance in management of weed

5. ROLES AND RESPONSIBILITIES

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

Table 5 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 weed management.	R				I	A
Report any non-compliance with the weed and pest management requirements through the event/incident reporting system.	R	C	C		I	A
Undertake inspections, reviews and monitoring as required.		R	A			
Ensure all employees and contractors are aware of all required procedures and systems for weed and pest 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 weed management related training.	I	C	R		A	
Undertake annual review of the Weed and Pest Management Plan and Action Plan.		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

6. REVIEW

- As part of an onsite environmental workplace inspection program NTMO will continue to conduct environmental workplace inspections on its and subcontractor work areas to assess environment performance in which weed management will be part of the assessment;
- Records and related documents will be audited periodically to ensure that work that has been laid out in this plan and has been undertaken and captured.
- Management of documentation, for example plans and procedures, will be reviewed periodically to ensure that they remain applicable to current operations and compliant with NTMO's requirements and that of the regulatory authorities;
- Updates in relation to weed management on site will be provided in NTMO's reporting as required; and
- This Weed Action Plan 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 weed management.

7. REFERENCES AND DOCUMENTS

The following internal procedures and reference documents can be sourced for further information and have been utilized to ensure the most applicable control measures are applied:

NTMO PCPA Fire Prevention EMP;

NTMO PCPA Weed and Pest EMP;

NTMO ES-SOP35 Controlled Burning;

NTMO ES–SOP 15 Weed Spraying;

NTMO ES–SOP 30 Weed Control;

Department of Land Resource Management (DLRM) (2014), Northern Territory Weed Management Handbook, Weed Management Branch DLRM, Palmerston. https://nt.gov.au/__data/assets/pdf_file/0004/233833/nt-weed-management-handbook.pdf.

Department of Land Resource Management (2015) *Katherine Regional Weed Management Plan 2015- 2020*. Northern Territory Government

Fuller, M. 2017. Rubberbush (*Calotropis procera*) control on Cosmo, Howley, Brocks Creek, Union Reef, Fountainhead, Pine Creek and Maude Creek mine sites. Report to Newmarket Gold.

Northern Territory Government. 2014. *Weed ID Deck.* Department of Land Resource Management, Northern Territory.

Department of Natural Resources, Environment, The Arts and Sport (2010) *Weed Management Plan for Adropogon* gayanus (Gamba Grass). Northern Territory Government

Northern Territory Government (2016) *Declared Weeds in the Northern Territory*

Northern Territory Government (2017) *How to Manage Weeds*. Land Management Methods.

NRETAS (2007), *Land management control methods*, Department of Natural Resources, Environment and The Arts, Northern Territory Government.

Sainty and Associates Pty Ltd and National Weeds Strategy Executive Committee. 2001. *Weed Deck*. Sainty and associates Pty Ltd.

Smith, N. 2011. *Weeds of Northern Australia: A Field Guide*. Environment Center Northern Territory.

Winderlich, S. (ed) 2010. Kakadu National Park Landscape Symposia Series 2007–2009. Symposium 2: Weeds management. 27–28 November 2007, Jabiru Field Station, Supervising Scientist Division, Kakadu National Park. Internal Report 565, January, Supervising Scientist, Darwin.

KIRKLAND LAKE GOLD

Clearing/Ground Disturbance Permit

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

☐ Auger Holes ☐ Excavation ☐ Trenching	**Excavation information:** Length/depth/width: _____ Utilities present (YES/NO): _____ _____		
☐ Topsoil stripping	Volume (approx..) (m^3):		
☐ Vegetation removal			
☐ Surface water flow alteration	☐ Yes	☐ No	*If yes, provide details here:*
☐ Regulatory approval required	☐ Yes	☐ No	Approval date:

SECTION 4: Safety Considerations

Aspect	**Addressed?**			**Details** *If yes, provide details and attach supporting documents* *If no, provide details why.*
	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 *If yes, provide details and attach supporting documents* *If no, provide details why.*
	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 *If yes, provide details and attach supporting documents. If no, provide details why.*
	Yes	No	N/A	
Compulsory 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

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

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

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

* 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		