

Mining Management Plan Structure Guide for Extractive Operations

The primary purpose of a Mining Management Plan (MMP) is to formalise the actions to be taken and strategies to be implemented, that, when combined, will manage possible impacts to the environment to acceptable and sustainable limits over both the short and long-term. This is achieved by operators demonstrating that they fully understand the physical and social environment that they will be operating in and have clearly identified and understood all potential risks posed by their operation through a robust risk assessment process.

Operators must be aware that they have statutory requirements under legislation other than the *Mining Management Act*, *Mineral Titles Act* and *Mining Management Regulations*. Operators must make themselves aware of all relevant legislation and requirements.

How to Use this Document:

An Authorisation for Extractive Activities can only be issued on the completion and acceptance of a Mining Management Plan (MMP).

An MMP is required for new projects, on an annual (or as agreed) basis for existing projects, when operations or activities change or when changes are made to the environmental management systems. This document provides general guidance for preparing an MMP to meet obligations under the [Mining Management Act](#) (MMA). This document can also be used as a template to prepare the MMP.

The document contains instructions and some examples of environmental management issues for consideration. The operator must assess environmental issues relevant to the site and develop appropriate controls to manage the actual and potential impacts.

While this document attempts to provide a framework for the operator to capture the majority of information required for an acceptable MMP an operator may be required to provide additional information to the Department of Primary Industry and Resources (DPIR) for the purpose of assessment of compliance against the MMP.

- A person must not knowingly provide information to the DPIR that is false or misleading (Part 9, Section 72, MMA).
- All commitments must be specific and auditable with measurable outcomes and clear timeframes.
- Use the terms 'will' and 'must', rather than 'should' or 'may' when committing to carry out management actions.
- Do not use ambiguous terminology such as 'where possible', 'as required', 'to the greatest extent possible' without further explanation.
- Clearly explain any technical terms or acronyms used, and/or define them in a glossary.
- The commitments to continuous improvement should have a defined objective and completion date placed on them so that there is a measurable time frame.

Extractive Operations Mining Management Plan

Include the following details on the title page:

- Operator Name
- Project Name
- Authorisation Number
- MMP Reporting Year
- Date
- Document Distribution List.

The MMP must be endorsed by a senior representative of the company who has the appropriate level of delegation.

	Author	Reviewed by	Approved by
Date			
Name			
Signature			

I (*name of approving person*) (*position title*) declare that to the best of my knowledge the information contained in this Mining Management Plan is true and correct and commit to undertake the works detailed in this plan in accordance with all the relevant Local, Northern Territory and Commonwealth Government legislation.

SIGNATURE:

DATE:.....

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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. These changes must be outlined in a table, including relevant page numbers, as per the example below.

Section	Amendment
Section 1.1 – Organisational Structure / Chart	Change in organisational structure (p. 1)
Section 2.0 - Project Details	Additional title to be included in Authorisation (p. 2).
Section 4.6 – Identification of Environmental Aspects and Impacts	A new potential impact identified, as a result of change in procedure/process (pp. 25-30).

NOTE: If the MMP does not clearly identify the amendments made as per the above table, the MMP will be declared “Deficient” and returned to the operator without any further review.

1.0 Operator Details

This section must provide operator details including:

- Name of operator or company (as per Australian Securities and Investment Commission (ASIC) if applicable)
- Company ABN or ACN
- Key contacts (ie senior on site personnel, site manager)
- Postal and street address
- Phone/fax/email contact details.

1.1 Organisational Structure

This section must include an organisational structure chart or particulars of the organisations structure, as per Section 40(2)(d) of the *Mining Management Act*. See example below. Indicate who is responsible for environmental management of the extractive site.



Figure 1: Sample organisational chart.

1.2 Workforce

The following information must be provided:

- Number in workforce
- Details of contractors engaged to work on site
- Any relevant socio-economic aspects, eg source of labour, contractors/employees
- Work descriptions.

2.0 Identified Stakeholders and Consultation

This section must include the following:

- A list of all interested parties and stakeholders that have been consulted in relation to the project. This may include, but is not limited to:
 - Lease owner
 - Land owner
 - Land/pastoral Manager
 - Land claimants (Native Title)
 - Land Council representing the Traditional Owners for the country
 - Neighbours and communities
 - Tenement manager
 - Government Departments
 - Shareholders.
- Name and title of persons consulted and issues discussed. Include any specific concerns raised during consultation, actions taken to address them and the current status of these matters.
- An outline of the ongoing arrangements and consultation process undertaken with the underlying landowners and managers, and other interested stakeholders, to ensure they are informed and their concerns are taken into account.
- Evidence of two-way communication with other relevant stakeholders has been carried out as required must be provided (may be included as an appendix).
- Where extractive mining is proposed on parks and reserves and land managed by the Parks and Wildlife Commission (PWC) NT, evidence of two-way communication with PWCNT must be provided (may be included as an appendix).
- Details of the agreed arrangements for maintaining the communications process throughout the life of the MMP.

Notification to and responses from stakeholders will be considered before the MMP is accepted by the Department.

Mining on Aboriginal Freehold Land is subject to the *Aboriginal Land Rights (Northern Territory) Act (1976)*. The dates and locations of Land Council facilitated consultation meetings with the Traditional Owners and outcomes of the meeting(s) must be provided.

3.0 Project Details

This section must provide details of the proposed extractive project including:

- Authorisation Number (if previously issued)
- Project name
- Location in context of distance to nearest town/major features/roads
- Zoning/land tenure and ownership of surrounding and underlying areas
- Mining interest/s (ie titles)
- Title holder/s
- Access routes from nearest main road or town
- Expected number of heavy vehicle and light movements per day
- Details of any social and economic benefits relating to the project
- Hours of operation
- Details of types, volumes and storage of hazardous materials and hydrocarbons used on site
- Details of water and power sources
- Expected life of mine.

NOTE: If the operator is not the title holder, a Nomination of Operator form must be completed by the title holder, appointing the operator for the site, as per requirement under section 10 of the *Mining Management Act*.

Details of how to access the site must be provided. If track files exist, these must also be provided.

Location maps and site plans:

Legible and detailed maps and site diagrams must be provided which show the location and access to the proposed activities and must also include the following information:

- Background imagery of 1:250K topography or satellite image
- Labelled mining title boundaries and pastoral lease boundaries
- Townships and communities
- Major and minor roads and site access
- Easements – above and below ground electrical cables, gas pipelines, water pipelines, telephone cables, any future proposed road and service corridors
- Major and minor waterways
- Environmentally sensitive areas (Sites of Conservation Significance)
- Protected Areas (National Parks and Reserves)
- Sites of Cultural and Heritage significance (AAPA restricted areas and No-Go zones).

Project layout:

- Operational areas to be cleared, internal tracks and haul roads (including proposed)
- Undisturbed areas/areas of existing vegetation, buffer zones and No-Go areas
- Topographic and other geographic features of the site including major waterways (ie rivers, creeks, wetlands etc.), minor waterways (ie drainage lines, swamps etc.)
- Infrastructure (site office, workshops, laydown areas, hydrocarbon/hazardous chemical storage areas, drill holes and costeans, test pit locations, magazines, plant, dams and bores) locations
- Proposed and existing pit locations
- Rehabilitated areas.

NOTE: All maps must include a scale, date of drawing, orientation (ie North point), contours and be able to be overlaid on the previous plans.

3.1 Previous Activities and Current Status

The MMP is a backward and forward looking document for ongoing operations and must provide details of previous extractive activities carried out in the last twelve (12) months under the current Authorisation. A brief outline of any historical mining or exploration carried out in the area must also be provided. This information may be included in the form of a table and must as a minimum include:

- Total area disturbed (reported in hectares or square meters) on each title in the project area
- Total amount (reported in tonnes and cubic meters) extracted from each title during the last twelve months
- Total amount proposed for extraction (reported in tonnes and cubic meters) from each title in the last MMP
- Total area disturbed/cleared (reported in hectares or square meters) on each title during the last twelve months
- Total area proposed for disturbance/clearing (reported in hectares or square meters) on each title in the last MMP.

A summary of the size, number and types of disturbances and site infrastructure must be reported in this section to assist in the calculation of security (ie pit area (ha), stockpile areas (ha & M³), fuel storage area (m²), laydown areas, areas of haul roads and tracks (length x width), location, size and number of test pits.) This information can be presented as a Disturbance Inventory. An example of a Disturbance Inventory is provided in **Attachment A**.

NOTE: The DPIR will require these disturbance areas be provided in an appropriate spatial dataset (ie gpx, kmz or kml files, MapInfo tab files or ARC GIS files).

3.2 Proposed Activities

This section must detail the proposed activities for the next twelve months and must also include details of the expected duration of mining activities on the site. This may include, but is not limited to:

- Target material/material reserves (if unknown provide an estimate of reserves based on current knowledge of the site)
- Amount proposed for extraction
- Details of the extractive program (ie clearing, stripping, excavation)
- Methods for processing materials to be used (eg screening, crushing, washing)
- Method of excavation/machinery to be used
- Size and number of disturbances (eg costeans, pits, stockpile areas, etc.)
- Depth of pits
- Details of exploration activities if applicable (ie drilling, test pits or costeans)
- Length and width of tracks and haul roads
- Construction details of tracks and haul roads
- Size and description of camp areas and lay down areas
- Water usage requirements for the reporting period; this must include estimates of extraction rates and volumes of water required for the reporting period, location of water sources and details of other users of the water
- Description of how water discharge from the site is managed; details must include the source of discharge water (eg production, wash down, storm water), estimated volume and rate of discharge, details of potential contaminants, impacts and proposed mitigation measures, details and location of discharge points and receiving waters.

This information may be included in the form of a table.

Maps showing the existing and proposed tracks, extraction areas, camp sites etc. and any other relevant information must be included.

NOTE: The DPIR will require these disturbance areas be provided in an appropriate spatial dataset (ie gpx, kmz or kml files, MapInfo tab files or ArcGIS files).

4.0 Current Project Site Conditions

This information is required to allow the DPIR to gain an understanding of the **current site conditions**, to accurately assess risks and have confidence that the operator understands the potential impacts that the proposed activities may have on the existing environment. Maps at appropriate scales may also be used to illustrate current site conditions.

Information that must be provided in this section includes:

- Local and Regional Geology (ie outline of ore resource, soil description and geological characterisation of the area)
- Hydrology (ie surface water flows onto and out of the site area, surface and groundwater quality, groundwater occurrence locally, and location of bores)
- Flora and Fauna:
 - Potential for and identification of any State and or Commonwealth listed threatened species
 - Description of any feral animals and weed species at the site
 - Outline of flora and fauna native to the area
 - Any flora and fauna of cultural significance.
- Information may be sourced from the NT Department of Land Resource Management (<http://www.ntinfonet.org.au/infonet2/>) or from the Commonwealth Department of the Environment for matters of national significance in the Protected Matters Search Tool (www.environment.gov.au/epbc/protect/index.html)
- Land use (eg pastoral, traditional Aboriginal ownership, parks and reserves, mining, communities and townships)
- Aboriginal and Heritage sites (ie identification of Aboriginal, and/or heritage sites that may be impacted by the exploration activities); this information can be supported by documentation such as results of an inspection of the:
 - Register of Sacred Sites maintained by the Aboriginal Areas Protection Authority (AAPA)
 - Northern Territory Heritage Register maintained by the Department of Lands Planning and the Environment (DLPE).

The results of desktop studies must be summarised and referenced in relevant sections of the MMP to demonstrate understanding of the material. The reports may be attached as appendices to the MMP as supporting documentation.

If information is not available for the project area the operator may be required to commission a suitably qualified person to perform specialised surveys (ie Geological, Hydrological, Fauna/Flora, Aboriginal and or Heritage Surveys). If unsure, please contact the DPIR for advice.

NOTE: Specialised surveys may be required if information is not available.

NOTE: It is essential that persons undertaking ecological studies/specialised surveys for environmental assessment have the appropriate skills, knowledge and experience to ensure that reported outcomes are adequate, accurate and robust. This would include the capability to:

- Design and undertake sampling that is suited to the target environment and species in terms of methods, timing and sample intensity
- Accurately identify relevant flora and fauna (including reliably distinguishing closely related species), refer to relevant subject experts when appropriate, and if necessary collect

voucher specimens, photographs, genetic samples or other evidence to support identifications

- Sensibly interpret local data in a regional context, including through access to relevant, current spatial environmental datasets hosted by government agencies
- Clearly report on methods, results, interpretation and relevance to environmental risks and their management and mitigation.

Typically persons undertaking ecological studies for environmental assessment would have a tertiary qualification in environmental science (or multiple years of relevant work experience equivalent to such a qualification), familiarity with regional ecosystems and biota, and demonstrated experience and competence in undertaking the relevant sampling methods (Dr Alaric Fisher [Executive Director, Flora and Fauna Division, Department of Land Resource Management] 2016, pers. comm., 23 August).

5.0 Environmental Management System

Companies with a structured and documented Environmental Management System (EMS) may attach the relevant documents as appendices to the MMP as supporting documentation. Provide a reference to the relevant section of the EMS in the corresponding section of the MMP where appropriate.

The Environmental Management System must be specific to the project.

5.1 Environmental Policy and Responsibilities

The company's environmental policies and commitments must be outlined in this section.

- Provide a copy of the company's Environmental Policy. The policy must be signed by the appropriate authority to demonstrate a top-down approach to environmental management onsite.

5.2 Identification of Environmental Aspects and Impacts

This section must identify environmental aspects and impacts associated with the site and proposed activities, as defined by ISO14001:2015:

- **Environmental aspects** are the elements of an organisation's activities or products or services that interact or can interact with the environment (ie drilling, clearing, mining, stockpiling, groundwater extraction, fuel storage, vehicles and machinery, etc.)
- **Environmental impacts** are any change to the environment, whether adverse or beneficial, wholly or partially resulting from an organisation's environmental aspects.

A risk assessment of the potential and actual impacts must be conducted and control measures identified which **prevent and mitigate** impacts (including monitoring and inspections) associated with the various environmental aspects. As a minimum, this section must address the management of:

- Soil and Land Management
- Water Management
- Flora and Fauna Management
- Introduced Pest and Weed Management
- Air Quality Management
- Waste and Hazardous Materials Management
- Cultural and Heritage Management.

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The risk rating for the identified impacts is of the initial risk, prior to application of control measures.

KEY		CONSEQUENCE (C)		
Critical Risk				
High Risk				
Moderate Risk				
Low Risk		Low □ Little to no impact	Medium Medium term -ve impact	High Irreversible or long term -ve impact
LIKELIHOOD (L)	High >75% Chance event will occur in life of plan	4	7	9
	Medium 25% <=> 75% Chance event will occur in life of plan	2	5	8
	Low <25% Chance event will occur in life of plan	1	3	6

Sample risk matrix and key

Outline the procedures in place for identifying impacts, ie workplace inspections, frequency based monitoring, risk assessment etc.

A table may be developed to assist with this process as per **Table 1** below.

Table 1. Example of an environmental aspects and impacts related to extractives activities.

NOTE: Use the definition of ‘aspects’ and ‘impacts’ above to develop this table.

Aspect	Impact	Risk Rating
For example: Clearing of extraction areas / tracks / camp	Erosion	Likelihood: High Consequence: Medium Risk Rating: 7 (High)
For example: Clearing of extraction areas / tracks / camp	Fire	Each impact must be rated individually.
For example: Clearing of extraction areas / tracks / camp	Poor water quality at creek downstream from site	Each impact must be rated individually.
For example: Driving between sites/tenements	Introduction/spread of weeds/pests	Likelihood: Medium Consequence: Medium Risk Rating: 5 (Moderate)

NOTE: This table is an example only and must not be incorporated into the MMP.

5.3 Management of Identified Environmental Impacts

Extractive operators must be able to demonstrate that the environmental impacts of their activities can be managed in a way that prevents or minimises the contamination and degradation of the surrounding environment. This may involve developing Environmental Management Plans (EMPs) that address any or all of the following as identified in Section 5.2 above:

- Soil and Land Management
- Water Management
- Flora and Fauna Management
- Introduced Pest and Weed Management
- Air Quality Management
- Waste and Hazardous Materials Management
- Cultural and Heritage Management.

EMPs may replace some of the following sections. Provide a reference to the relevant EMP in the corresponding section of the MMP. EMPs that are referenced in the MMP must be attached as appendices to the MMP as supporting documentation.

All EMPs must be specific to the project.

To demonstrate that the actual and potential environmental impacts of the extractive mining activities are being appropriately managed, the following must be addressed:

- a) Objectives and targets must be set
- b) Preventative and mitigating control measures must be developed and implemented
- c) Monitoring and measurement programs must be adopted and triggers for corrective actions identified
- e) Corrective actions must be developed and implemented when necessary
- d) Regular reviews relating to the effectiveness of preventative and mitigating control measures must be undertaken.

For the actual and potential environmental impacts identified in Section 5.2, the operator must demonstrate that adequate and appropriate control measures for both the prevention and mitigation of those impacts have been developed and implemented.

5.3.1 Soil and Land Management

This section relates to the management of soil and land degraded by extractive mining activities. Operators have both a legislative requirement and an environmental responsibility to effectively manage soil and water resources and minimise the risk of erosion on their mining titles.

An Erosion and Sediment Control Plan (ESCP) must be developed which includes the key principles of effective erosion and sediment control (ESC):

- Appropriate integration of mining activities into the site
- Integration of ESC issues into site development planning
- Developing an effective and flexible ESCP based on site specific soil, weather and mining conditions
- Minimising the extent and duration of soil disturbance
- Controlling water movement through the site
- Minimising erosion
- Promptly stabilising disturbed areas
- Maximising sediment retention on site
- Maintaining all ESC measures in proper working order at all times

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- Monitoring the site and adjust ESC practices if necessary to maintain the required performance standard.

An ESCP is essential for those extractive mining activities that involve the clearing of vegetation or the modification of natural surface flows and drainage lines (or both) and the operator does not plan to rehabilitate and revegetate or protect the disturbed areas prior to the onset of the wet season.

The ESCP must be site specific, must identify actual and potential areas at risk of erosion, including but not limited to, exposed soil surfaces, areas of dispersive soils, dams, stock piles, batter faces, roads and tracks, fence lines and drains etc. and include specific preventative and mitigating erosion and sediment control measures. The ESCP must demonstrate that adequate and appropriate erosion and sediment control measures can be implemented onsite to effectively protect downstream environmental values.

The ESCP must comprise of a schematic plan based on the development of the site, showing the location and technical specifications for all proposed erosion or sediment controls. Contours and surface water flow paths must also be shown on the plan. An ESCP must be usable in the field as an instruction manual for operators and contractors, providing clear directions and quick reference to methodology or standard drawings for the construction and location of erosion and sediment control structures.

ESCP's must be developed by a suitably qualified person. The ESCP must follow the IECA *Best Practice Erosion and Sediment Control Guidelines 2008*. Further information on erosion and sediment control can be found at the Department of Land Resource Management (DLRM) Soil Management Webpage: <https://nt.gov.au/environment/soil-land-vegetation/soil-management-erosion-sediment-control>.

5.3.2 Water Management

This section must provide details of water management actions to be undertaken during operations. This must include monitoring program details for both surface and groundwater, including sampling methodology, frequency, field and laboratory parameters, quality control, and a map of sampling points, including GPS coordinates. Water quality results must also be provided for the previous 12 months, as well as an interpretation and discussion of those results. Sources of water contamination must be identified and specific control measures must be developed to minimise and mitigate environmental impacts.

5.3.3 Flora and Fauna Management

This section must include an assesment of the flora and fauna present in the project area, including a review of the proximity to Sites of Conservation Significance (SOCS) and detail the specific preventative and mitigating control measures that have been implemented to protect native flora and fauna (eg, safety bunding, exclusion/buffer zones or fencing around sensitive areas etc.).

For areas that are proposed to be cleared, the operator must engage a suitably qualified person(s) to interpret the available data for the area and provide the following for inclusion in the MMP:

- Assessment of potential for and identification of any State and or Commonwealth listed threatened species
- Description of any feral animals and weed species at the site
- Outline of flora and fauna native to the area
- Any flora and fauna of cultural significance.

NOTE: It is essential that persons undertaking ecological studies/specialised surveys for environmental assessment have the appropriate skills, knowledge and experience to ensure that reported outcomes are adequate, accurate and robust. This would include the capability to:

- Design and undertake sampling that is suited to the target environment and species in terms of methods, timing and sample intensity
- Accurately identify relevant flora and fauna (including reliably distinguishing closely related species); refer to relevant subject experts when appropriate, and if necessary collect voucher specimens, photographs, genetic samples or other evidence to support identifications
- Sensibly interpret local data in a regional context, including through access to relevant, current spatial environmental datasets hosted by government agencies
- Clearly report on methods, results, interpretation and relevance to environmental risks and their management and mitigation.

Typically persons undertaking ecological studies for environmental assessment would have a tertiary qualification in environmental science (or multiple years of relevant work experience equivalent to such a qualification), familiarity with regional ecosystems and biota, and demonstrated experience and competence in undertaking the relevant sampling methods (Dr Alaric Fisher [Executive Director, Flora and Fauna Division, Department of Land Resource Management] 2016, pers. comm., 23 August).

5.3.4 Introduced Pest and Weed Management

This section must describe the current status and classes of weeds and feral animals and their management both on the site and adjacent to the operational areas.

Feral animals can cause soil disturbance, dispersal of weeds and general land degradation, as well as damage to fences, mine site infrastructure and water sources. A Feral Animal Management Plan must be detailed in the MMP and as a minimum must include:

- **Current feral animal status on site:** Feral animal species identification, location and abundance on site.
- **Feral animal management activities planned for the next 12 months:** Describe any proposed feral animal control activities on site including time schedules.
- **Review of feral animal management activities undertaken in the previous 12 months:** A review of feral animal management activities completed during the previous year. Include details of control methods and the effectiveness of control methods used.

Further details of feral animal management can be found at the following website: <https://nt.gov.au/environment/animals/feral-animals>.

Weeds

Environments impacted by mining activities are highly susceptible to invasion by weeds, as disturbances to soils caused by mining operations provide an ideal habitat where weeds can readily colonise and quickly become the dominant vegetation. The movement of weeds through contaminated soils and vehicles associated with mining activities also contribute to their spread along road sides and the landscape, resulting in weeds being spread sometimes many kilometres from their source.

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Extractive mining operators have both a legislative requirement and an environmental responsibility to effectively manage weeds on their leases. Under the *Weeds Management Act*, declared weeds are divided into the following classes:

- Class A:** To be eradicated
- Class B:** Growth and spread to be controlled
- Class C:** Not to be introduced

Operators must detail the specific preventative and mitigating control measures that have been implemented to control both declared weeds and other environmental weeds on their site to prevent their spread.

A Weed Management Plan consistent with DLRM guidelines must be developed and included in the MMP if weeds on the site have been identified as either a current or potential threat to the environment. The Weed Management Plan must include as a minimum:

- **Current weed status on site:** Weed species location and abundance on site including weed class category and location maps.
- **Weed management activities planned for the next 12 months:** Weed control activities must be prioritised to maximise the use of the resources allocated. Weeds control method - chemical (ie herbicide), physical (eg hand pulling), fire and/or biological (eg biological control agents). A calendar of weed control activities for the year must be provided.
- **Review of weed management activities undertaken in the previous 12 months:** A review of weed management activities completed during the previous year including weed species, control method and effectiveness of control method.

Further details of weed management can be found at the following website: <https://nt.gov.au/environment/weeds>.

5.3.5 Air Quality Management

Dust, noise and other airborne emissions generated from mining and mining related activities has the potential to adversely impact flora and fauna and nearby residents. This section must describe the potential for airborne emissions resulting from the proposed mining and mining related activities and the specific preventative and mitigating control measures that have been implemented to minimise their impacts. This section must include as minimum, information on:

- Potential sources and types of emissions to air
- Estimated volume and rate of identified emissions
- Expected contaminants
- Monitoring programs
- Mitigation strategies.

5.3.6 Waste and Hazardous Materials Management

This section must detail the site procedures associated with the management of waste generated on site including the collection and storage, transportation and disposal of hazardous and non-hazardous waste. This section must include:

- An updated hazardous materials and hazardous waste inventory
- Management of risks to the environment caused by these materials
- Description of methods for their storage, handling, use, transport and disposal
- Spill and clean up response procedures.

Domestic and industrial waste must be regularly removed from site. Industrial waste must be categorised and disposed of or recycled appropriately at an approved waste disposal facility.

5.3.7 Cultural and Heritage Management

Outline the measures in place to identify, manage, protect and monitor sites of cultural and heritage value under the *Heritage Conservation Act* and the *NT Aboriginal Sacred Sites Act*.

Further information on heritage site management can be found at the following website:
<https://nt.gov.au/leisure/arts-culture-heritage>.

5.4 Environmental Audits, Inspections and Monitoring

Environmental audits, inspections and monitoring are required to be carried out at regular intervals to assess the company's environmental performance at the site.

Describe what audits or inspections are carried out and timeframes.

Describe all ongoing monitoring programs for the site and schedules for undertaking these programs. As a minimum the following must be monitored at the site:

- Surface water
- Groundwater (ie where there is potential impact(s) to groundwater, eg quarry operations)
- Invasive species
- Flora and fauna
- Hydrocarbons and hazardous materials
- Waste
- Noise and air quality
- Cultural and heritage sites (if applicable)
- Erosion and sediment control.

This section must include:

- A description of monitoring technique and frequency of the monitoring program
- The audit and inspection methodology and frequency where appropriate
- Copies of Audit and inspection reports.

5.5 Environmental Performance

5.5.1 Objectives and Targets

This section must describe **site specific environmental performance objectives** and how the environmental performance objectives will be achieved.

Performance objectives are a list of goals, targets or proposed improvements to environmental management on site. The objectives must include a measurable outcome (ie meeting a specific level), the time frame in which it will be completed (ie by when) and the person responsible for ensuring it is completed (ie a specific person).

Objectives and targets must be site specific and must be **SMART** that is, they must be:

Specific and unambiguous, with explicit targets

Measurable, so that performance can be measured against targets

Achievable, does the company have the resources or the capability to meet targets?

Realistic, so not trying to achieve the impossible

Time-based, so targets can be met within a certain time frame

5.5.2 Performance Reporting

This section must include the **findings of all monitoring and audit/inspection programs undertaken** during the reporting period and progress made against objectives and targets identified in Section 5.5.1 above. A discussion of any results must be included and corrective actions proposed where relevant. Corrective actions must be measurable and include a completion time.

Factors for consideration:

- Results and findings of all monitoring and audits/inspections completed during the reporting period (including findings provided by DPIR) and associated corrective and preventative actions.
- Pollution and waste management and minimisation progress.
- Environmental targets.
- Rehabilitation targets.
- Progress made against environmental and rehabilitation targets.
- Progress made towards achieving revegetation and closure objectives.
- What were the findings of any reviews?
- How are issues / problems identified?

This information will assist in determining the effectiveness of the environmental management systems implemented for the site.

Describe any changes made to management systems as a result of audit, inspection or monitoring findings.

5.6 Emergency Procedures and Incident Reporting

Outline the procedures followed in the event of an environmental incident or emergency and how incidents are reported. Specifically:

- Detail any environmental emergency procedures that have been developed (eg hydrocarbon and hazardous material spills, fires, pollution incidents, unauthorised clearing etc.).
- Provide an overview of management for environmental incidents and identified hazards. Formal procedures may be attached as an appendix to the MMP as supporting documentation.
- Describe the company's internal and external incident reporting procedure.
- **All environmental incidents must be reported in accordance with Section 29 of the Mining Management Act.**

6.0 Rehabilitation and Closure

Rehabilitation is the process used to repair the impacts of mining on the environment. The long-term objectives of rehabilitation can vary depending on the identified post mining land use. Rehabilitation objectives could range from simply converting an area to a safe and stable condition to restoring the site as closely as possible to its pre-mining condition.

The post-mining land use for an area must be defined in consultation with relevant stakeholders including government departments, local government councils, non-government organisations, traditional owners and landholders.

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Rehabilitation objectives consistent with the identified post mining land use must be defined and detailed in the MMP. The operator must be able to demonstrate they are working towards achieving a final land form which is suitable and consistent with the required outcomes for the intended end land use. Refer to the 'Rehabilitation and Closure Requirements for the Extractive Industry' Advisory Note for further details on the Department's minimum rehabilitation and closure requirements for the extractive industry.

Describe the rehabilitation methods used (eg describe how extraction areas, stockpiles, tracks and test pits etc. were rehabilitated).

For each disturbance type for the site:

- Detail the rehabilitation activities for each disturbance type to be conducted including infilling, landscaping and drainage works, replacement of topsoil, revegetation techniques, re-contouring, ripping/scarification etc.
- A schedule of proposed works for the next 12 months
- Closure objectives/targets which reflect the identified post mining land use objectives and agreements made with stakeholders must be provided to ensure the operator has considered the appropriate measures required to close out the sites within the stated timeframes
- Detail how rehabilitation success will be monitored in subsequent years, eg in terms of water, erosion, vegetation, weeds, public safety and stability. Describe what criteria will be used to assess and measure the success of rehabilitation. How will the operator demonstrate that the rehabilitation has been successful and that it is self- sustainable?

NOTE: The DPIR Advisory Notes are available online for general guidance however these are not statutory requirements and must be assessed for appropriateness to individual sites. Advisory Notes are reviewed regularly and may change from time to time. If using the Advisory Notes, the practices to be implemented must be summarised and the Advisory Note must be referenced.

6.1 Rehabilitation Register

A Rehabilitation Register summarising the rehabilitation status of all previous and current disturbances (eg pits, laydown and processing areas, costeans or test pits, stockpiles, access tracks and haul roads etc.), all outstanding rehabilitation and proposed rehabilitation activities planned for the next 12 months must be provided as an appendix to the MMP as supporting documentation. The register must include, per tenement, the site ID, the MMP reference for when the activity was proposed, site co-ordinates, extraction or completed extraction date, and details of the rehabilitation undertaken at the site, evidence of rehabilitation (before site disturbance and after rehabilitation photographs) and include any monitoring of the sites in subsequent years.

Before site disturbance and after rehabilitation photographs are required and may be included as appendices to demonstrate that rehabilitation activities have been carried out. Photographs must be labelled with site and tenement name/number; include the date when the photograph was taken; and be taken from the same point, being consistent in orientation and include an identifying feature or reference point for comparison.

Photographs must be taken of all extraction sites and tenements and a selection of these that represent the general standard of rehabilitation is to be included in the MMP to adequately demonstrate rehabilitation success. Photographs are not be required to be submitted for extractive site, as this is not always practical for larger extractive programs, but must be available on request from the DPIR.

Ongoing monitoring and photographs of the sites must be undertaken at least one year and in subsequent years following closure of the site to ensure vegetation is regenerating successfully and to follow-up on any failed rehabilitation.

Any failures in rehabilitation, eg vegetation regrowth or site erosion must be discussed, with corrective actions and a timeframe for remediation included.

This information will assist with demonstrating successful rehabilitation and reducing the amount of security held by the DPIR where relevant.

An example of a Rehabilitation Register is provided in Attachment B.

6.2 Costing of Closure Activities

Determine a cost for closure activities as per the DPIR's Security Calculation spreadsheet – *Extractive Operations Security Calculation Tool* which is available on the website at: <https://nt.gov.au/minerals-energy>.

Costing must cover issues such as:

- Removal of infrastructure and contamination (ie contaminated soils)
- Earthmoving (may include removal of stockpiles), ripping and scarifying
- Revegetation and/or direct seeding, including costs of materials
- Drainage works (ie erosion and sediment control)
- Infilling of test pits
- Track rehabilitation inclusive of respreading windrows and ripping
- Rehabilitation and monitoring of any other disturbance.

Details of calculations, including units of measure and cost per unit of measure used, must be included, eg ripping (ha) at \$/ha. The completed security calculation spreadsheet must be appended to the MMP.

Ensure that the current Security Calculation Tool from the website is used as the tool may be updated with relevant DPIR requirements, which may change from time to time.

Appendices

Any other document(s) referred to in the MMP must be included as an Appendix, which may include items such as:

- Copies of approvals.
- Copies of all monitoring reports to meet statutory requirements.
- Copies of rehabilitation agreements.
- Copies of any specialist surveys.
- Copies of AAPA and NT Heritage Register search results.
- Copies of Land holder and Manager communications and agreements.
- Weeds, Fire, Flora and Fauna etc. Management Plans.
- Rehabilitation register and photographs

Attachment A – Example of Disturbance inventory

Extractives Activities Cumulative Disturbance Inventory										
Reporting Period	Tenement	Undisturbed Area of Title (Ha)	Disturbed Area (Ha)	Extractive Area (Ha)	Pits (Number and size, Length m, Width m Depth m)	Infrastructure Description & Area m ²	Track/Haul Road Width(m) & Length(m)	Stock piles Volume m ³	Dams (Number and size, Length m, Width m Depth m)	Fuel/Hazardous Goods Storage Areas m ²
		TOTAL								

Attachment B – Example of a Rehabilitation Register Table

Rehabilitation Status

Summarise the rehabilitation status of all extractive sites during the current and previous reporting periods.

Extractives Activities Rehabilitation Summary (Cumulative)										
Reporting period	Tenement	Undisturbed Area of Title (Ha)	Extractive Area (Ha)	Pits (Number and size, Length m, Width m, Depth m)	Infrastructure Description & Area m ²	Track/Haul Road Width(m) & Length(m)	Stock piles (report in m ³ if removed or spread Surface area in m ² if shaped and seeded)	Dams (Number and size, Length m, Width m, Depth m)	Fuel/Hazardous Goods Storage Areas m2	Other (Provide a Brief Description of the area and its size)