Government of **Western Australia**
Department of **Mines, Industry Regulation and Safety**

**GUIDELINES**

# DRAFT
# Exploration and Prospecting Rehabilitation Guidance

For Programmes of Work approved under the *Mining Act 1978*

**Version 0.1**

**December 2022**

### Document Hierarchy for mine closure plans under the *Mining Act 1978*

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| Legislation | *Mining Act 1978* |
| Statutory Documents | |
| Policy | Environmental Regulatory Strategy<br>Environmental Objectives Policy for Mining |
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### Version History

| Version | Date | Changes |
|---|---|---|
| 0.1 | 2022 | Draft for consultation |

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## PURPOSE

The purpose of this guideline is to provide information to assist in environmental management and rehabilitation of mineral exploration and prospecting activities in Western Australia.

## OBJECTIVE

The Department of Mines, Industry Regulation and Safety (DMIRS) is responsible for regulating mineral exploration and development activities in Western Australia (WA) under the *Mining Act 1978* (Mining Act).

The objective of this Guidance document is to clearly identify DMIRS' expectations for rehabilitation of mineral exploration and prospecting activities.

## SCOPE

This guidance relates to rehabilitation of exploration disturbances.

## LEGISLATIVE CONTEXT

Sections 46, 63, 70H, and 82 of the Mining Act requires a tenement holder to submit a programme of work in the prescribed manner, and obtain written approval from a prescribed official, prior to using ground disturbing equipment when exploring for minerals.

The Mining Act also requires tenement holders to fill in or otherwise make safe to the satisfaction of a prescribed official all holes, pits, trenches and other disturbances to the surface of the land made while exploring for minerals and in the opinion of the prescribed official, likely to endanger the safety of any person or animal.

## 1. INTRODUCTION

Exploration and prospecting are considered to be short term, transient activities which should not result in a lasting impact to the environment. Due to the scale of exploration and prospecting activities occurring in Western Australia, it is particularly important that environmental impacts are appropriately managed to reduce the cumulative impacts of the industry.

The overarching principle of this guidance is that the minimisation of clearing and/or disturbance and proactive rehabilitation should be some of the highest priorities for explorers and prospectors. Early identification and management of the potential environmental impacts of an exploration or prospecting operation can also provide cost benefits when meeting rehabilitation obligations.

## 2. REHABILITATION OBJECTIVES

DMIRS' objective for exploration rehabilitation is that all disturbances are temporary, and are rehabilitated as much as practicable to pre-disturbance conditions, being safe to humans and animals, non-polluting, and no permanent alteration of ecological function.

## 3. REHABILITATION TIMEFRAMES

Tenement conditions imposed on all Mining Act tenements require that rehabilitation be completed within timeframes specified in tenement conditions or otherwise approved in writing by DMIRS. Failure to complete rehabilitation within specified timeframes constitutes a breach in tenement conditions and may result in forfeiture action.

DMIRS has prepared revised standard tenement conditions to be imposed on all mining tenements, clarifying its expectations for rehabilitation timeframes (see section 7.3).

In certain circumstances an extension to these timeframes may be permissible. To obtain an extension to undertake rehabilitation, a written request must be sent to DMIRS prior to the rehabilitation due date. This written request must include:

- The relevant PoW Registration ID number(s);
- A revised timeframe in which the rehabilitation will be completed (e.g. an extension from six months to twelve months, or an extension until a specific date); and
- A sufficient justification for the extension.

Additional information to support rehabilitation extension requests may include, but is not limited to:

- Confirmation that all drill holes have been temporarily plugged (if applicable);
- Clear description of the rehabilitation procedures to which the extension applies (e.g. leaving access open, delay in plugging of drill holes below surface, drill pads to remain open, etc.);
- Procedures to be implemented to ensure the area is appropriately managed during the extension (e.g. procedures to ensure holes remain plugged at the surface, regular inspections of disturbances, etc.);
- Maps which clearly show the location and total area of disturbance to which the extension request applies; and
- A commitment to rehabilitate all other disturbed areas.

# 4. REHABILITATION PRACTICES

Timely and progressive rehabilitation, particularly the direct return of topsoil and cleared vegetation, is likely to result in more successful rehabilitation and should be undertaken as a priority.

## 4.1 GENERAL REHABILITATION REQUIREMENTS

During clearing activities, topsoil and vegetation should be managed as a resource to be used during rehabilitation.

Topsoil and vegetation should be respread over disturbed areas in order to aid in regrowth and habitat establishment. Fresh topsoil has been shown to produce significantly better rehabilitation outcomes than stockpiled topsoil.

In areas of high seasonal rainfall, rehabilitation should be prioritised and undertaken prior to seasonal rainfall in order to restore natural surface water flows, prevent concentration of water and minimise erosion risks.

As per standard tenement conditions imposed on all Mining Act tenements, all rubbish, plastic sample bags, abandoned equipment, and temporary buildings must be removed from the tenement prior to or at the termination of exploration program.

As per standard tenement conditions, all reasonable measures must be taken to ensure hydrocarbons, environmentally hazardous chemicals, process water, and other environmentally hazardous substances or waste are stored and managed in a manner to prevent discharges to the environment. Any spills must be contained and cleaned up within a timely manner, and disposed of appropriately.

## 4.2 EXPLORATION DRILLING

Immediately upon completion of drilling, it is often possible to rehabilitate most disturbed areas leaving only vehicle access to the plugged drill collar.

### 4.2.1 DRILL HOLE REHABILITATION

Appropriate rehabilitation of drill holes is crucial in managing the risk posed to fauna by open drill holes and to prevent contamination of groundwater resources. Drill holes must be temporarily plugged immediately after drilling is completed and remain as such until they are permanently plugged below ground.

Drill holes must be permanently plugged and fully rehabilitated within the approved rehabilitation timeframe. To meet the Department's expectations, the plugging of drill holes needs to ensure the area is safe and does not subside or collapse. The recommended process involves:

1. Identify the drill hole to be rehabilitated;
2. Cutting the drill collar to a minimum depth of 400mm below the surface;
3. Remove the collar;
4. Inserting a conical plug so that it has a tight fit with the collar; and
5. Backfilling the remaining void to the surface with low permeability material and mound over the backfilled hole to facilitate water shedding away from the drill hole with low permeability material (approximately 250mm high by 800mm wide) and then covering with topsoil.

See Figure 1 for a demonstration of the above procedure.

Mounding of drill holes (Figure 2) following permanent plugging is considered important to prevent water ponding at the location of the hole and causing subsidence.

More complex permanent plugging procedures may be required if the hole has intersected complex groundwater

and/or hydrogeological systems. See Guidelines for the Protection of Surface and Groundwater Resources During Exploration Drilling for further details.

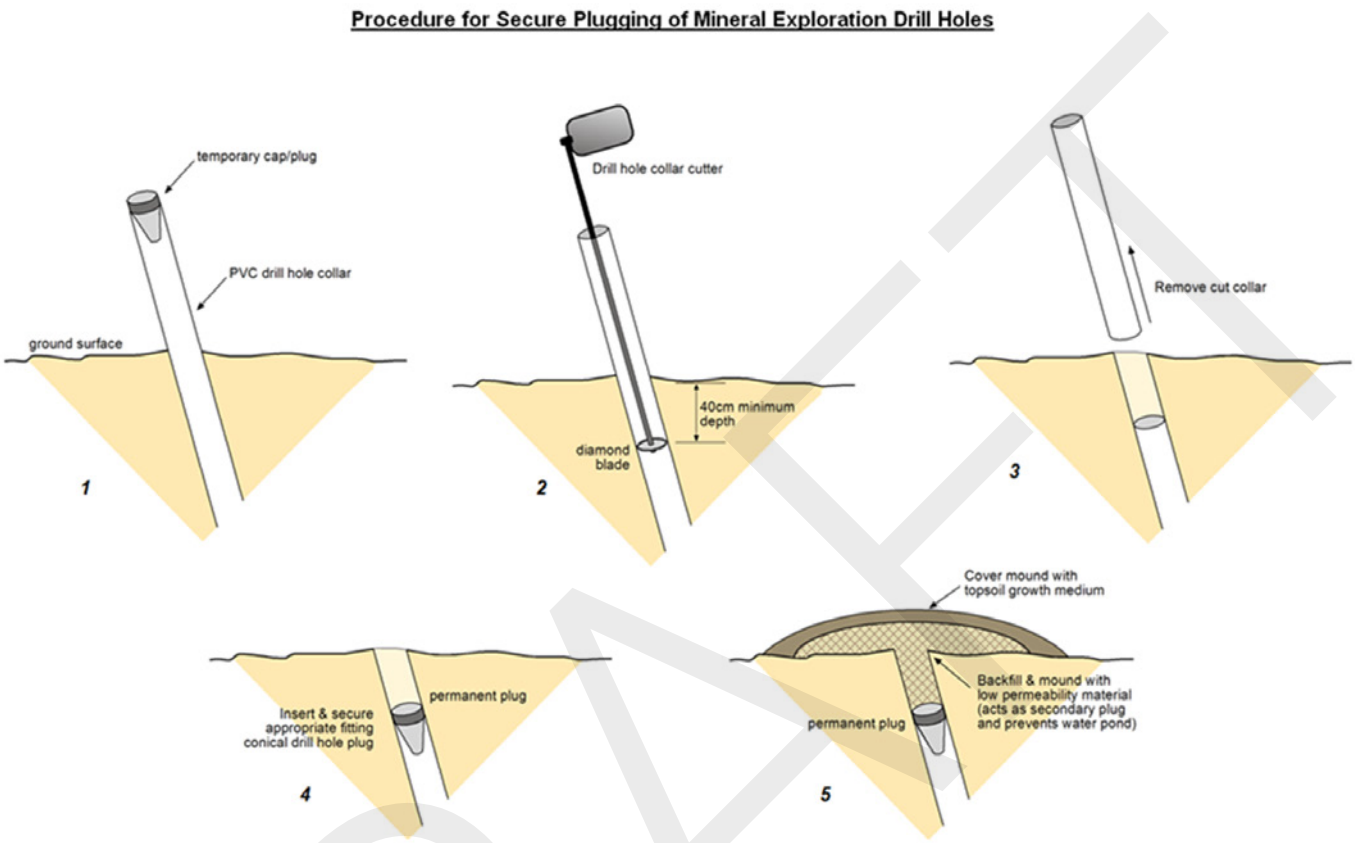


*Figure 1: Securely plugging a drill hole*

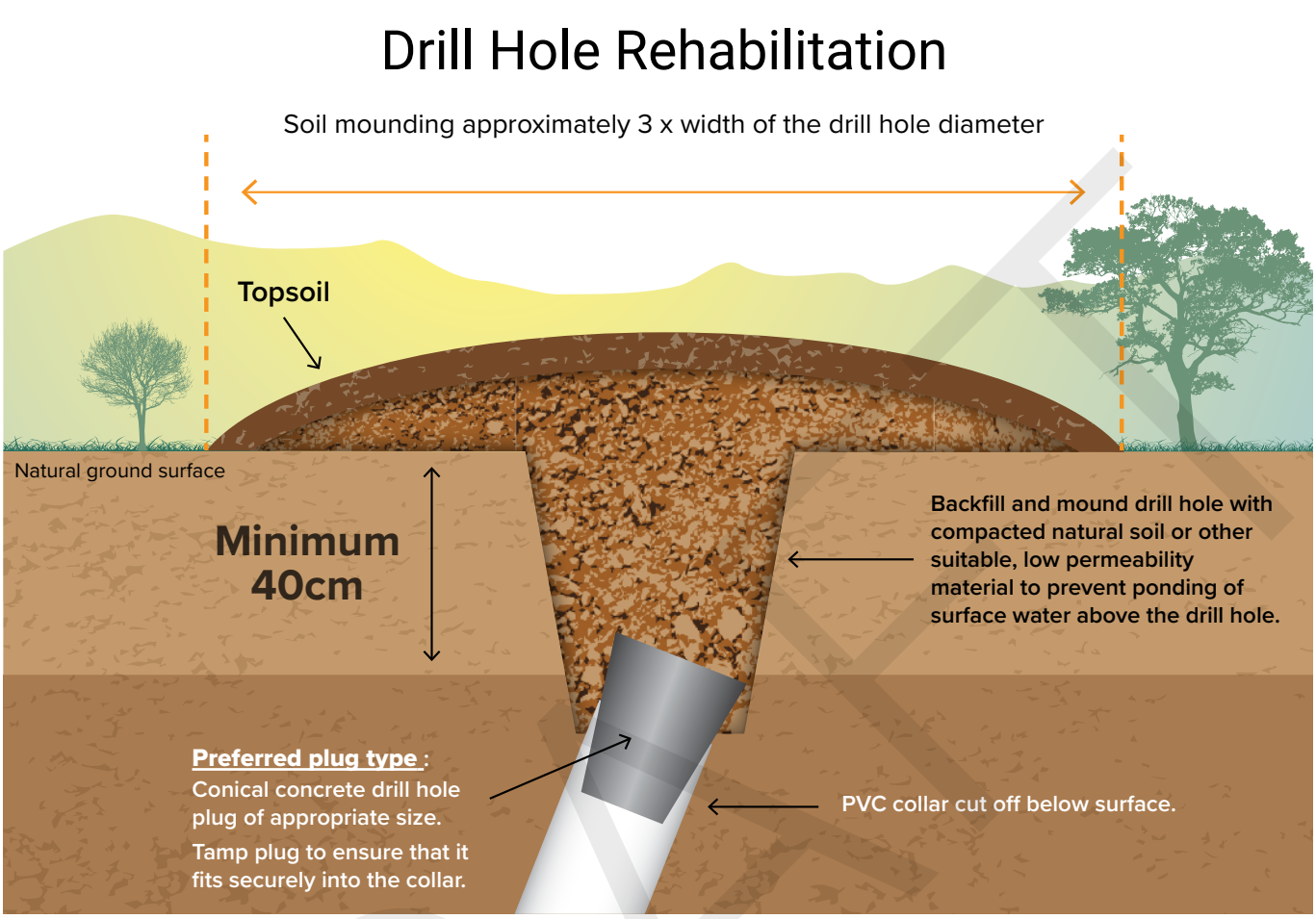


*Figure 2: Rehabilitating a drill hole*

### 4.2.2 LARGE DIAMETER DRILL HOLES

Water management and adequate rehabilitation are particularly important for larger diameter drill holes which can pose a major safety hazard (e.g. bauer or mud rotary drilling).

Recommended practice for large diameter drill holes is to backfill to the surface and mound to a height of approximately 2m above the natural surface. Backfill material should be free flowing so backfilling occurs from the base of the hole, not the water level. Further measures, such as small drainage diversion bunds can be installed around the hole if necessary. Temporary signage should also be erected to advise of the presence of large diameter holes in the area. If additional fill material is required to backfill and mound the holes, approval will need to be sought from DMIRS.

### 4.2.3 HILLSIDE DRILLING

Pads and tracks constructed through cut and fill methods should be re-profiled back to a state similar to the original slope. Erosion control measures such as ripping on the contour should also be implemented to prevent erosion and loss of rehabilitation material.

### 4.2.4 MANAGEMENT OF DRILL SPOIL & SAMPLES

Samples should be emptied out of sample bags, preferably back down the drill hole, or into sumps or other approved excavations before backfilling, or be removed from site and disposed of at appropriately licensed facilities. Sample bags must be removed from site and disposed of appropriately.

### 4.2.5 SUMPS

As per standard tenement conditions imposed on all Mining Act tenements, at completion of drilling activities, sumps must be backfilled and all liners must be removed. This should occur as soon as possible, with sumps being rehabilitated by replacing the material in the reverse order to which it was extracted (i.e. topsoil should be respread last).

### 4.2.6 DRILL PADS

At the completion of drilling, drill pads should be gently scarified to reintegrate topsoil, promote seed recruitment, and reduce water erosion. Deeper ripping may also be carried out for more significantly compacted areas to alleviate compaction and allow for the re-establishment of vegetation. Operators need to ensure however, that the scarifying/ripping of drill pads does not impact upon rehabilitated drill holes.

It is important that scarifying and/or ripping of sloping landscapes is conducted carefully and strictly on the contour to ensure that rip lines do not contribute to erosion gullying.

## 4.3 EXCAVATIONS

At completion of activities, excavations (e.g. costeans, test pits, etc.) must be backfilled as soon as possible by replacing the material in the reverse order to which it was extracted (i.e. topsoil should be respread last). Topsoil must be respread over the excavation to a depth similar to the surrounding environment. Where possible, topsoil should be directly returned rather than stockpiled, as fresh topsoil has been shown to produce significantly better rehabilitation outcomes than stockpiled topsoil.

### 4.3.1 BULK SAMPLES

If a bulk sample (removing material from the tenement) has been taken, it may not be possible to backfill the excavation to the natural surface as the excavated material has been removed from the area and/or utilised elsewhere. It is, however, unacceptable to leave behind an un-rehabilitated void.

DMIRS therefore requires that excavations are battered down during rehabilitation to achieve a gentle slope which is consistent with the surrounding natural landscape and provides for successful revegetation and fauna egress. Excavations must also be designed and rehabilitated to be free-draining as ponding water can attract and promote the establishment of feral animals and generally alter the dynamics of local ecosystems.

Topsoil must be respread over the area to a depth similar to the surrounding environment. Where possible, topsoil should be directly returned rather than stockpiled, as fresh topsoil has been shown to produce significantly better rehabilitation outcomes than stockpiled topsoil.

## 4.4 SCRAPE & DETECT

Immediately upon completion of scrape and detecting, it is often possible to rehabilitate most, if not all disturbed areas. Progressive rehabilitation can achieve better rehabilitation outcomes and avoids the cost of re-mobilising machinery at a later date.

Scrape and detect areas should be gently scarified to reintegrate topsoil, promote seed recruitment, and reduce water erosion. Deeper ripping may also be carried out for more significantly compacted areas to alleviate compaction and allow for the re-establishment of vegetation.

It is important that scarifying and/or ripping of sloping landscapes is conducted carefully in order to prevent erosion caused by surface water flows.

## 4.5 CAMPSITES

Campsite rehabilitation involves the removal of all infrastructure followed by standard rehabilitation works (e.g. respreading of topsoil and vegetation, and ripping of compacted areas). If concrete pads have been used, these must be broken up and buried or removed from site. Buried infrastructure, such as pipelines or cables, must also be removed. Any hydrocarbon contaminated material and soil must be removed from site and disposed of at appropriately licensed facilities.

### 4.6 TRACKS

Compacted areas should be contour ripped or scarified to relieve compaction and promote revegetation, and if topsoil was stripped during construction of the track, it must be re-spread.

Once tracks have been rehabilitated, they should be blocked to prevent their use by other vehicles and to allow vegetation to establish. Over time, revegetation should succeed in blocking access to rehabilitated areas, however in the immediate term it is generally necessary to physically block the entrance to exploration tracks with cleared vegetation or other suitable material.

If access tracks will be used in the near future to support further exploration or prospecting activities, proponents can apply to defer the requirement to rehabilitate these areas for a reasonable period of time. Refer to section 3 for further information on the extension request process.

## 5. REHABILITATION DATABASE OR REGISTER

Failing to rehabilitate within required timeframes constitutes a breach of tenement conditions, therefore, DMIRS recommends that companies establish a register or system to track approvals and progress towards meeting rehabilitation requirements, as well as maintain spatial data set tracking disturbed and rehabilitated areas. DMIRS has proposed a new standard tenement condition requiring tenement holders to maintain records of all rehabilitation activities that have been conducted, to be provided to DMIRS upon request (see section 7.1).

Useful rehabilitation data to track includes:

- Tenement
- PoW number
- Date of approval
- PoW purpose (e.g. tracks, drill pads, sumps)
- Date disturbance commenced
- Disturbance date (most recent)
- Disturbance area approved (ha)
- Area disturbed (ha).
- # drill holes approved
- # drill holes completed
- Date rehabilitation commenced
- Rehabilitation completed (ha)
- Date rehabilitation completed
- Rehabilitation activities undertaken e.g. holes plugged, collars cut, scarifying and topsoil respread
- Shape files of actual disturbance
- Shape files of rehabilitation

A rehabilitation register should also record historical disturbance on the tenement and results of the regular post-rehabilitation monitoring.

## 6. POST-REHABILITATION

### 6.1 FOLLOW UP INSPECTIONS AND MONITORING OF REHABILITATION

Monitoring of rehabilitated areas is also beneficial to determine the success of rehabilitation to inform future works.

Rehabilitated areas should be revisited to demonstrate that rehabilitation is progressing successfully and complying with tenement conditions. It is particularly important to ensure that plugged drill holes, and large diameter drill holes have not subsided and rehabilitated hillside areas remain stable. In some instances remedial actions may be required. It is important that any subsided drill holes are remediated and backfilled sufficiently to prevent further erosion.

Exploration and prospecting occurring in sensitive environments (e.g. Environmentally Sensitive Areas,, Threatened Ecological Communities, DBCA managed land, etc.) or involving more extensive or higher risk activities (e.g. cut & fill, large diameter holes, large costeans, extensive exploration programs, etc.) may be required to conduct more detailed monitoring programs.

### 6.2 REHABILITATION REPORTS

A rehabilitation report should be submitted to DMIRS when rehabilitation works have been completed, or otherwise upon request by DMIRS. If required by a tenement condition, a rehabilitation report must be provided to DMIRS upon request. Progressive rehabilitation reports can also be submitted to DMIRS when relevant.

When completing a Mining Rehabilitation Fund (MRF) report, in order to report exploration as under rehabilitation, a rehabilitation report must be provided as evidence.

A rehabilitation report can be completed using the template provided on DMIRS website here. Useful attachments to a rehabilitation report include a map or shapefiles of activities and rehabilitation conducted, photographic evidence of rehabilitation, and photos of the rehabilitated area pre-disturbance.

On occasion DMIRS may request a more detailed rehabilitation report. Examples of information that may be requested include:

- Tenement;
- Tenement holder;
- PoW registration ID;
- Hole ID/drill collar ID;
- Program name/code;
- Drilling type (e.g. RC, DD, AC, etc.);
- GPS coordinates/spatial data;
- Disturbance start date;
- Disturbance end date;
- Rehabilitation completed (Y/N);
- Drill collar cut (Y/N);
- Rehabilitation earthworks complete (Y/N);
- Rehabilitation completion date;
- Comments (including rehabilitation activities undertaken, evidence demonstrating rehabilitation has been undertaken).

## 7. PROPOSED NEW TENEMENT CONDITIONS

To clarify DMIRS' expectations for rehabilitation timing and practises, DMIRS has prepared the following new standard tenement conditions to be imposed on all mining tenements.

### 7.1 STANDARD CONDITION REQUIRING AN EXPLORATION REHABILITATION REPORT UPON REQUEST

The tenement holder must maintain records of exploration activities and associated rehabilitation, to be provided to DMIRS upon request.

### 7.2 STANDARD CONDITION REQUIRING COMPLIANCE WITH APPROVED POW

All exploration and prospecting operations to comply with the relevant approved Programme of Work, with no alteration or expansion beyond the activities described therein, and all environmental management and rehabilitation practice commitments undertaken.

## 7.3 STANDARD CONDITIONS CLARIFYING REHABILITATION TIMEFRAMES

- All supporting infrastructure for exploration including core yards, laydowns, camps, and main access tracks, being rehabilitated to the satisfaction of the Environmental Officer, Department of Mines, Industry Regulation and Safety. Rehabilitation being required by the earlier of 6 months from the infrastructure being no longer required to support exploration, or 6 months from the relevant programme of work expiring, unless otherwise approved in writing by the Environmental Officer, Department of Mines, Industry Regulation and Safety.

- Exploration disturbances, excluding supporting infrastructure, being backfilled and rehabilitated to the satisfaction of the Environmental Officer, Department of Mines, Industry Regulation and Safety. Backfilling and rehabilitation being required no later than 6 months after completion of the activity unless otherwise approved in writing by the Environmental Officer, Department of Mines, Industry Regulation and Safety.

Government of Western Australia

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8.30am – 4.30pm

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