# ROX RESOURCES LIMITED

# BONYA COPPER PROJECT

# 2017 MINING MANAGEMENT PLAN

# EXPLORATION LICENCE 29701 and 29599

# Authorisation #: 0801-01

**W. Belbin**

**November 2017**

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**This report is endorsed by Ian Mulholland, Managing Director, on behalf of Rox Resources Limited.**

**24 October 2017**

## 1.0 OPERATOR DETAILS

| | |
|---|---|
| **Operator Name:** | Rox Resources Limited |
| **Key Contact Person/s:** | Will Belbin, Exploration Manager |
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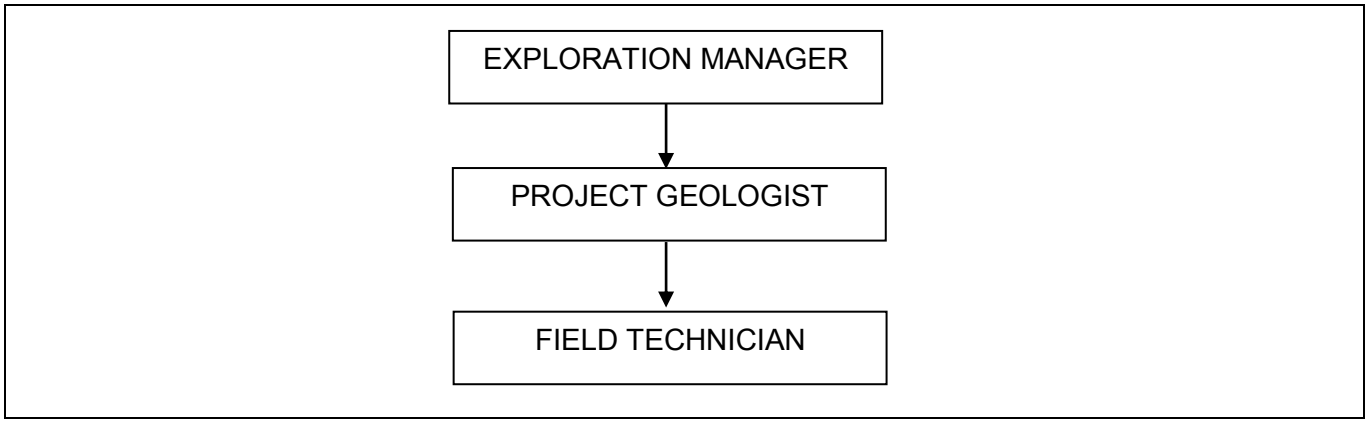
## 1.1 ORGANISATIONAL STRUCTURE / CHART




## 1.2 WORKFORCE

The Exploration Manager - Will Belbin (the responsible person for the project), Project Geologist – Gregor Bennett, Field Technician, Drill Crew (2-4)

## 2.0 PROJECT DETAILS

| | |
|---|---|
| **Project Name:** | Bonya |
| **Location:** | Jervois Station via Alice Springs |
| **Site Access:** | Via the Stuart and Plenty Highway to Jervois Station then station tracks. Signs are always erected at drilling sites to warn of drilling operations |
| **Mining Interest/s:** | EL29701, EL29599 |
| **Title holder/s:** | EL29599 - Rox Resources Limited 100%<br>EL29701 – Arafura Resources Limited 100% |

## 2.1 MAP OF SITE LOCATION AND LAYOUT


***Figure 1. Bonya Project Location***

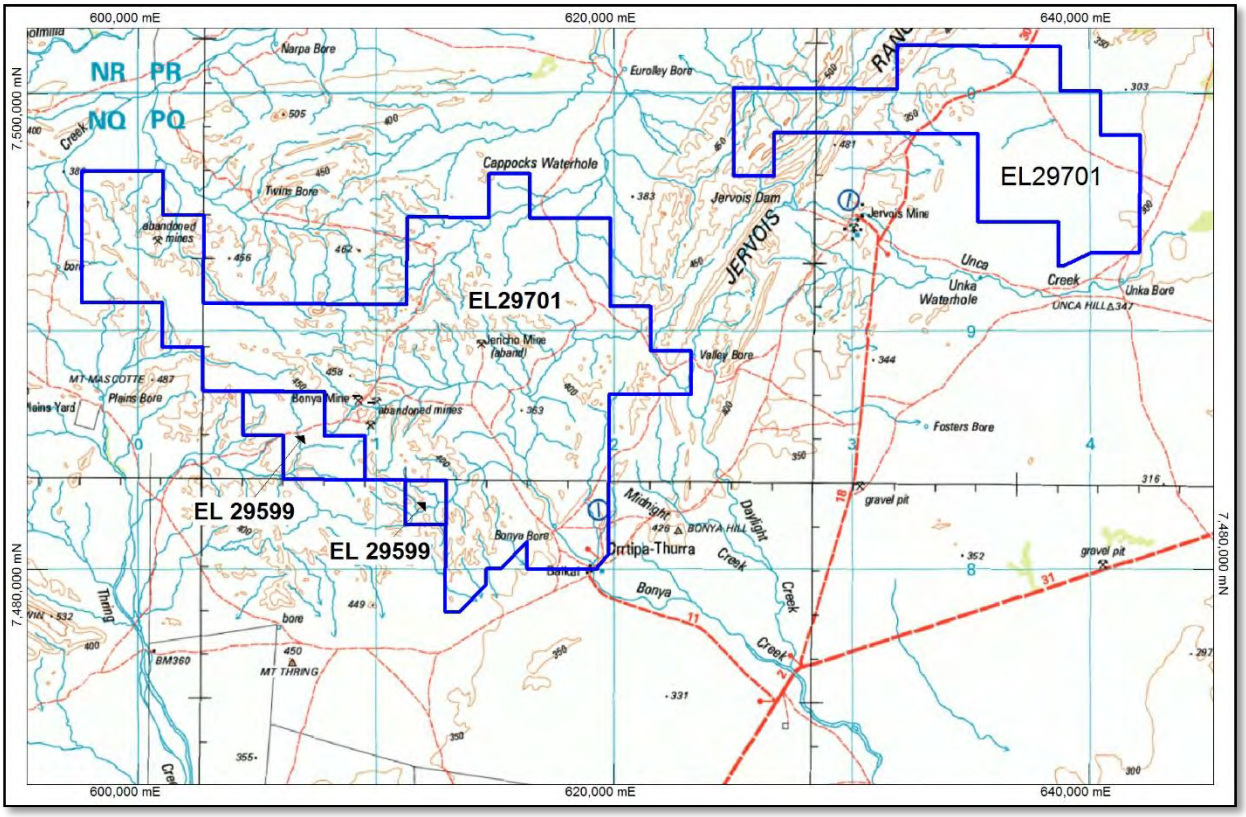



***Figure 2. Bonya Tenement Plan***

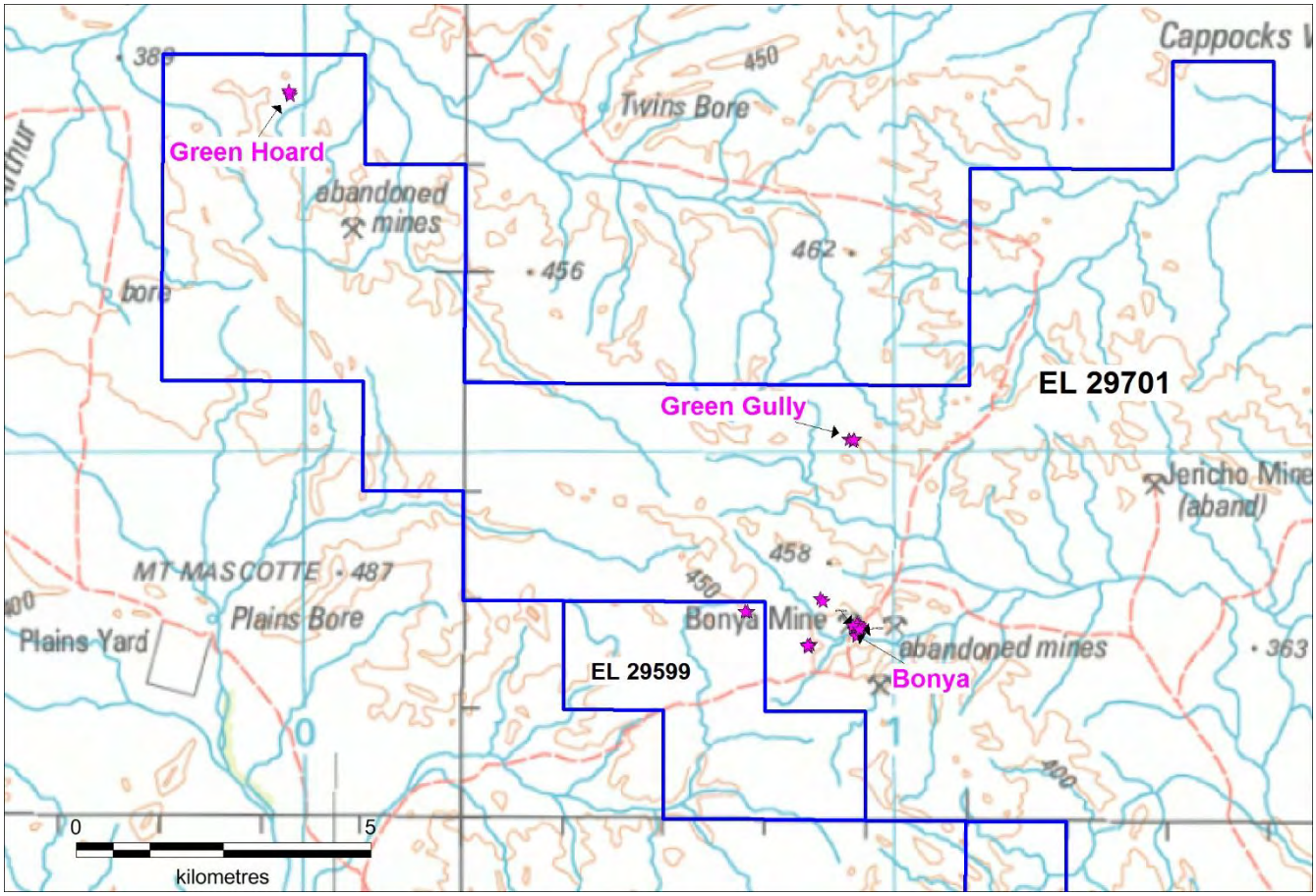



***Figure 3. Bonya Project showing drill prospects***

The camp location for the Bonya exploration work is at the Jervois Station campground, located immediately south of the project area. This is an established campground; therefore no clearing for a camp is required for any field work. Alternatively, accommodation can be available at the KGL Resources' Jervois camp.

## 2.2 HISTORY OF DEVELOPMENT AND CURRENT STATUS

### 2.2.1 Historical Mining/Exploration

The Bonya project tenements have only had limited exploration for base metals. The majority of previous explorers have done little more than prospecting and surface geochemistry. All the occurrences of known Cu mineralisation are outcropping and have been identified by early prospectors.

In November 2012 Rox conducted Soil Sampling and Field Mapping. Only pre-existing tracks were used and no ground disturbance was made.

No previous drilling had been carried out by Rox on the project prior to 2014.

### 2.2.2 Recent and Current Exploration by Rox Resources

***2015***

RC drilling was completed in November 2015 at the Bonya mine, Green Gully (previously named Fat Cow) and Green Hoard prospects (Table 1 below). A total of 8 holes were drilled for 694m.

## ***2014***

In 2014 Rox drilled18 RC holes for 1879m, and two diamond drillholes were completed for 489.7m.

***Table 1. Bonya Project – All Drilling completed by Rox Resources 2014-2015***

| Hole_ID | Prospect | Tenement | Depth | MGA_east | MGA_north | Azimuth | Dip | RL | Date |
|---|---|---|---|---|---|---|---|---|---|
| BYRC001 | VTEM04 | EL29701 | 120 | 608766 | 7487527 | 50 | -60 | 425 | 24/09/2014 |
| BYRC002 | VTEM04 | EL29701 | 108 | 608805 | 7487484 | 50 | -60 | 423 | 25/09/2014 |
| BYRC003 | VTEM03 | EL29599 | 115 | 607531 | 7487304 | 185 | -60 | 449 | 27/09/2014 |
| BYRC004 | VTEM03 | EL29599 | 115 | 607483 | 7487304 | 185 | -60 | 450 | 28/09/2014 |
| BYRC005 | VTEM05 | EL29701 | 80 | 608586 | 7486745 | 135 | -60 | 414 | 28/09/2014 |
| BYRC006 | VTEM05 | EL29701 | 84 | 608554 | 7486707 | 135 | -60 | 416 | 29/09/2014 |
| BYRC007 | VTEM05 | EL29701 | 120 | 608541 | 7486741 | 135 | -60 | 416 | 29/09/2014 |
| BYRC008 | Bonya | EL29701 | 60 | 609379 | 7486978 | 15 | -60 | 405 | 30/09/2014 |
| BYRC009 | Bonya | EL29701 | 98 | 609379 | 7486962 | 15 | -60 | 405 | 30/09/2014 |
| BYRC010 | Bonya | EL29701 | 78 | 609347 | 7487000 | 65 | -60 | 405 | 1/10/2014 |
| BYRC011 | Bonya | EL29701 | 41 | 609423 | 7487005 | 200 | -55 | 407 | 1/10/2014 |
| BYRC012 | Bonya | EL29701 | 114 | 609402 | 7487033 | 200 | -60 | 407 | 1/10/2014 |
| BYRC013 | Bonya | EL29701 | 102 | 609357 | 7487014 | 185 | -60 | 405 | 30/10/2014 |
| BYRC014 | Bonya | EL29701 | 150 | 609399 | 7487063 | 185 | -60 | 407 | 31/10/2014 |
| BYRC015 | Bonya | EL29701 | 143 | 609420 | 7487083 | 185 | -45 | 408 | 01/11/2014 |
| BYRC016 | Bonya | EL29701 | 72 | 609419 | 7487017 | 185 | -60 | 407 | 01/11/2014 |
| BYRC017 | Bonya | EL29701 | 102 | 609445 | 7487053 | 187 | -45 | 409 | 02/11/2014 |
| BYRC018 | Bonya | EL29701 | 177 | 609380 | 7486915 | 5 | -50 | 406 | 03/11/2014 |
| BYD001 | Bonya | EL29701 | 260 | 609380 | 7486895 | 10 | -50 | 406 | 10/12/2014 |
| BYD002 | Bonya | EL29701 | 240.5 | 609388 | 7487096 | 174 | -60 | 407 | 15/12/2014 |
| BYRC019 | Bonya | EL29701 | 123 | 609313 | 7487071 | 150 | -60 | 405 | 28/11/2015 |
| BYRC020 | Bonya | EL29701 | 150 | 609430 | 7487005 | 261 | -65 | 407 | 29/11/2015 |
| GHRC001 | Green Hoard | EL29701 | 60 | 599762 | 7496104 | 69 | -60 | 400 | 26/11/2015 |
| GHRC002 | Green Hoard | EL29701 | 54 | 599773 | 7496068 | 69 | -60 | 400 | 26/11/2015 |
| GHRC003 | Green Hoard | EL29701 | 54 | 599750 | 7496136 | 69 | -60 | 400 | 26/11/2015 |
| GGRC001 | Green Gully | EL29701 | 60 | 609252 | 7490227 | 144 | -55 | 424 | 26/11/2015 |
| GGRC002 | Green Gully | EL29701 | 113 | 609310 | 7490193 | 334 | -55 | 416 | 27/11/2015 |
| GGRC003 | Green Gully | EL29701 | 80 | 609331 | 7490229 | 334 | -55 | 414 | 28/11/2015 |

## ***Rehabilitation***

Rehabilitation activities are now all but complete, and ongoing monitoring will be conducted whenever possible (see Table 6 in section 5.0). Good summer rainfall has helped progress natural revegetation and effective rehabilitation.

The remaining 5x sumps (at Bonya and Green Gully prospects) have been backfilled (October 2017) and all drill sites have now been rehabilitated. The only outstanding rehabilitation required is several of the collars at the Bonya Mine prospect which are capped but have not been cut and buried yet due to the possibility of re-entry for down-hole geophysics. These collars are BYRC011-020 and BYD001. A decision will be made shortly whether or not to carry out this down-hole surveying and it is anticipated that these collars will be cut and buried this year.

No drilling is proposed for the next 12 months.

*Table 2. Rox Drilling completed and Disturbance on Bonya tenements*

| Mining Interests (i.e. titles) | EL29701 | EL29599 |
|---|---|---|
| **Number of holes drilled** | 26 | 2 |
| **Maximum depth of holes** | 260m | 115m |
| **Number of drill pads cleared (Length: 20x Width: 10m)** | 26 (0.52ha) | 2 |
| **Number of sumps cleared (Length: x 5 Width: x 2 Depth: x1 m)** | 13 (0.013ha) | 2 |
| **Length of line / track cleared (Kilometres: 3.0 km x Width: 4 m)** | 1.08ha | 0.12ha |
| **Number of costeans excavated (Length: x Width: x Depth: m)** | 0 | |
| **Total bulk sample pits excavated (Length: x Width: x Depth: m)** | 0 | |
| **Camp area/s cleared** | 0 | 0 |
| **Total area disturbed (hectares)** | 1.65 ha | 0.16 |
| **Drill holes capped / plugged** | 24 | 2 |
| **Total area rehabilitated (hectares)** | 1.65 ha | 0.16 ha |

## 2.3 PROPOSED ACTIVITIES

The next stage of exploration includes prospecting and regional geophysics (non-ground disturbing activities).

## 3.0 CURRENT PROJECT SITE CONDITIONS

*Table 3. Project Site Conditions*

| Site Conditions | Description |
|---|---|
| **Geology** | The project area covers mainly outcrop and sub-crop of Bonya Schist which is the host unit of the copper mineralisation at Jervois and Bonya. Freeman describes the Bonya Schist as follows.<br><br>*"The Bonya Schist, which occurs within the Bonya Hills and E of the Jervois Range in the Bonya and Jervois structural blocks, overlies the Mascotte Gneiss Complex with a transitional contact.* |

| | |
|---|---|
| | *The formation, defined in Shaw, Warren and Freeman (1985), is divided into five informal units and one formal member, the Kings Legend Amphibolite Member.*<br><br>*The Bonya Schist consists mainly of muscovite schist and two-mica schist with local occurrences of cordierite, sillimanite, garnet and andalusite (Dobos, 1975). Amphibolite is common as thick sequences, such as the Kings Legend Amphibolite Member, or as smaller lenses. Calc-silicate rock is widespread. Metaquartzite beds which occur mainly in the upper part of the formation are locally cross-bedded. Tourmaline is very common and layered quartz-tourmalinite occurs as concordant layers up to 0.3m wide. In the Jervois area Cu-Pb-Zn-Ag mineralisation is associated with magnetite-bearing layers which range in thickness upwards from millimetre scale (Morgan, 1959).* |
| **Hydrology** | The project area climate is arid with median rainfall of 150-200mm. Most falls in the summer months, but can vary from year to year. The project area is transected by a number of non-perennial creeks/rivers such as Bonya Creek and Thring Creek, which both feed into the Plenty River.<br><br>There are no known accurate records of ground hydrology, however numerous station bores provide evidence that the water table is within reach of shallow drill holes.<br><br>Surface water is non-perennial. |
| **Flora & Fauna** | Investigation of the Northern Territory Natural Resource Management Database for this project area is detailed in Appendix 7.1 and lists the vulnerable and endangered flora and fauna within the region. |
| **Land Use** | The land on which the proposed work will be carried out wholly comprises the Jervois Pastoral Lease upon which normal grazing activities are carried out. The pastoral lessee has been contacted regarding the proposed work to be carried out.<br><br>There are no parks, reserves, communities, town sites or aboriginal land within the boundaries of the exploration licences, and there are no extractive mining activities taking place. |
| **Historical, Aboriginal, Heritage Sites** | No recorded sites impact on Rox's planned exploration activities. |

# 4.0 ENVIRONMENTAL MANAGEMENT SYSTEM / PLAN

The Rox Resources Environmental Management Plan is included in the Appendices.

## 4.0.1 WATER MANAGEMENT

If an aquifer is intercepted during drilling, the hole will be plugged, and both the DME and the Department of Land Resource Management will be notified. No knowledge exists to suggest such an aquifer will be intersected on the project area.

Water for drilling and camping (if required) is to be sourced from bores located at Jervois station. Normal camp usage would be about 200 litres per day. Camp water is available at the Jervois station.

A meeting has been held with the pastoralist regarding this water source and this does not constitute a large usage. He did not identify any restrictions on the use of this water.

Any storm water would be allowed to run off naturally, however, if excessive rainfall occurs or there is the threat of unsafe working conditions (e.g. lightning or excessively wet conditions), then drilling operations would be stopped. Field work is usually planned to occur before any late season storms.

No soil erosion is anticipated except by natural means. Any water intercepted during drilling is to be directed into the drill sump where it will eventually evaporate.

Drilling muds which may be used will be directed into the sump with the drill run-off water. Any other water soluble drilling fluids will also be directed to the sump. After evaporation of the water, the sump will be back-filled.

## 4.0.2 INVASIVE SPECIES MANAGEMENT

Weeds that may need to be controlled in the area are listed in Appendix 7.1. The weed control procedure is as follows:

To prevent introduced plant and animal species from occurring in the work program area, vehicles are washed down in Alice Springs and driven only on gazetted roads to the work program areas. Vehicles are inspected and signed off at the hire depot. After arrival vehicles are washed down regularly (once per week) at the camp site (allowing 20-40 litres per vehicle). Generally the vehicles do not leave the project area during this time.

If a weed species is discovered in the area, a pit will be dug and wash-down water drained into the pit which will then be allowed to soak away. The pit will be back-filled and any seeds will be buried at least 1 metre below the surface so will not germinate. The location of the pit would depend on the location of the weeds and the location of the exploration activities taking place, but would be located at a relatively flat part of terrain away from any drainage. If a pit was required it would be monitored as regularly as practically possible. Potential weeds in the area are shown in Figure 4 below.


***Figure 4. Potential weed threats***

All vehicles and machinery will be similarly washed down upon leaving the work program areas.

Vegetation clearing is kept to a minimum and only undergrowth is cleared, not large trees. Clearing is undertaken by running the backhoe blade along the surface without disturbing the top soil (as per DME procedure, Appendix 7.2). This removes larger branches etc., but leaves most roots systems intact (except if there is a large root protruding that may damage a vehicle tyre).

Common feral animals identified on the project area include dogs, rabbits and cats. These animals do not interfere with exploration operations, and no interaction with these animals is undertaken by the company. Food scraps are to be securely placed in bins for disposal or in a rubbish pit for burial to remove the risk of attracting feral pests. A complete list of pest and potential pest animals can be seen in Appendix 7.1.

### 4.0.3 FLORA AND FAUNA MANAGEMENT

Endangered or vulnerable species identified in the area are listed in Appendix 7.1. The listed endangered species in Appendix 7.1 are the Hooded Robin and the Night Parrot (both critically endangered), Caldwells Clubrush (flora), the Golden Bandicoot and the Common Brushtail Possum (southern). None of these fauna have been observed by company personnel in the project area. Since no significant disturbance to waterways or trees will occur, the habitat of flora and fauna should not be adversely affected.

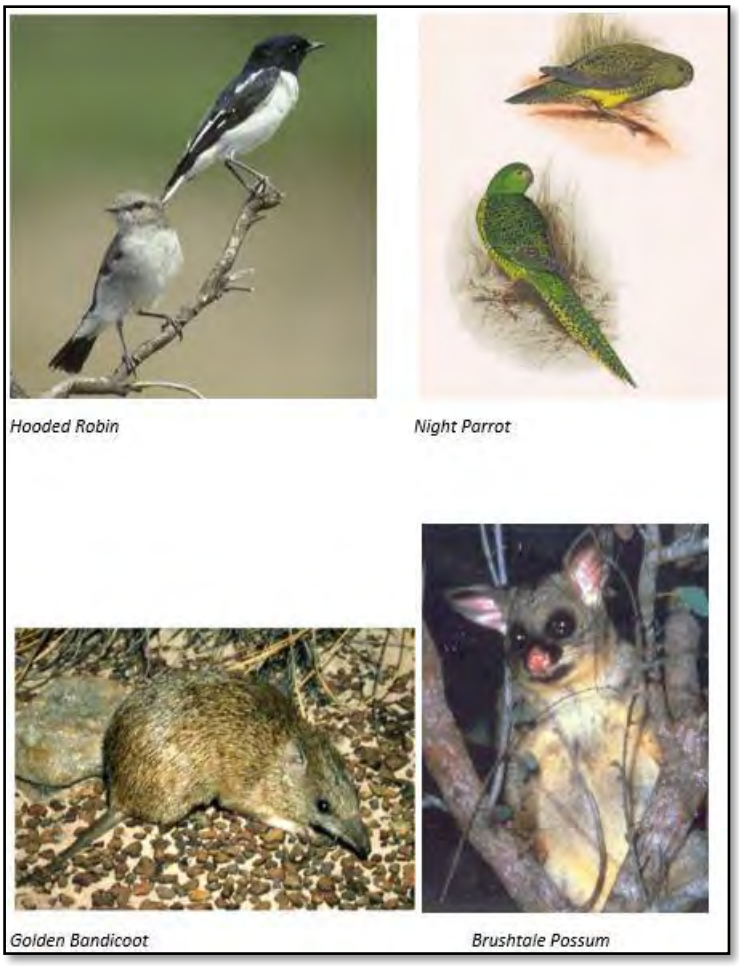



***Figure 5. Endangered fauna***

There is no practical way to monitor the effect on flora and fauna except by avoiding disturbance in the first place. Visual inspections of the work area for any of the listed species will be conducted every day prior to commencing exploration activities. No baseline studies have been undertaken, nor are warranted at this early stage of exploration.

### 4.0.4 WASTE MANAGEMENT

All personnel are responsible for clearing waste.

All waste will be separated into categories of recyclable, non-recyclable and hydrocarbon, and cleared from the site on a daily basis by the field crew to the waste pit at Jervois station. Appropriate disposal of hydrocarbon waste will occur subsequently to the Alice Springs tip and waste processing centre. Any recyclable materials will also be taken there.

Any oil or grease waste (and affected cloth) generated during the drilling component of this program will be removed from the site to the Alice Springs tip. Any spills will be cleaned up in accordance with Rox's environmental policy. Any hydrocarbon contaminated soil will be removed to the Alice Springs tip.

### 4.0.5 HAZARDOUS MATERIALS AND HYDROCARBON MANAGEMENT

There will be no radioactive or hazardous substances used on site except for hydrocarbons. Hydrocarbons will always be stored in the appropriate (and approved) containers. Diesel fuel will be transported to the site in approved fuel tanks. These tanks are checked daily for leaks.

Fuel is kept in a designated fuel truck provided as part of the drilling equipment. Any spills are cleaned up in accordance with standard hydrocarbon cleanup procedures (see Appendix 7.3). On site at the drilling rig, spill kits and spill mats are used, and any accidental spills are to be cleaned up immediately as per the procedure.

A record of all hazardous materials or fuel on site and their MSD's will be kept by the project leader on site and stored in accordance with the MSD.

The risk of hydrocarbon spills is considered low. However, all vehicles exceeding 10 tonnes in gross weight will be required to carry hydrocarbon spill cleanup kits. The procedure for cleanup of hydrocarbon spills will be followed as per these kits. The most likely hydrocarbon spill is diesel, since this is the primary fuel used in all vehicles, trucks and drilling equipment. The most likely scenario is a spill onto the ground, where the diesel will soak into the soil. In this form it does not present a danger to personnel. The cleanup procedure is as follows:

1. Ensure that there is no danger from the spill (e.g. the fuel is not on fire).
2. Ensure that any fumes are not dangerous for breathing.
3. Ensure that there is no potential source of ignition for the fuel (i.e. switch off all engines etc.).
4. Collect any diesel-soaked soil and place it into a puncture proof plastic bag or other suitable container and remove from site to the Alice Springs hydrocarbon waste disposal facility.
5. Otherwise follow the instructions contained in the hydrocarbon spill cleanup kit.
6. Dispose of any other contaminated materials (e.g. clothing etc.) In the same manner.
7. Wash hands thoroughly with soap and water.

Further instructions for hydrocarbon spill response are given in Appendix 7.3.

### 4.0.6 NOISE AND AIR QUALITY MANAGEMENT

All personnel will be instructed during induction as to the dangers associated with noise from a drilling rig and compressors. Hearing protection in the vicinity of an 'air' rig is mandatory and ear plugs or muffs will be part of each crew members PPE.

Dust suppression will be actively pursued via the use of cyclones and where possible wet drilling. Appropriate dust masks / respirators will be available with their use mandatory.

Prior monitoring of noise generated by the drill rig will have been undertaken as part of the drilling company's compliance documentation. Excessively noisy regions around the rig will be off limits to personnel without appropriate hearing protection. Generally personnel operate at the rear of the drilling rig where noise levels are lowest.

It is not practical to measure dust emissions however, simple observation (through breathing) will monitor whether dust levels are too high. Personnel are not required to work in excessive dust.

The drilling contract for this work program will be awarded to companies with satisfactory compliance regimes to issues associated with both dust and noise. These will be provided to the company beforehand and will have compiled with the appropriate government requirements.

### 4.0.7 CULTURE AND HERITAGE MANAGEMENT

The company maintains a strict policy on the preservation of cultural and heritage sites, and operates under the various acts that apply. The documented procedure is that no-go zones are constructed around known cultural and heritage sites, and any unknown sites discovered during the company's activities are cordoned off (by flagging tape) and referred to the relevant authorities for examination.

## 4.1 ENVIRONMENTAL POLICY AND RESPONSIBILITIES

The Rox Resources Environmental Management document is attached (Appendix 7.4). The Exploration Manager is responsible for ensuring every Rox resources employee observes this policy, and is also responsible for reviewing and updating the Environmental Policy document.

The company is also bound by the terms of the grant of the exploration licences.

## 4.2 STATUTORY REQUIREMENTS

Exploration activities including RC and diamond drilling, soil sampling, mapping and geophysical surveys will be carried out under the terms of the granted exploration licences.

Exploration will be conducted in compliance with the conditions of the authorisation and the NT Mining Management Act, NT Mineral Titles Act and Regulations, Bushfires Act, Weeds Management Act, NT Aboriginal Sacred Sites Act, Heritage Conservation Act, NT Workplace Health and Safety Act and Regulations, Soil Conservation and Land Utilization Act, Territory Parks and Wildlife Conservation Act and all other acts that could be affected by the activities on an operating exploration site.

Rox has had MMP's for other exploration sites in the Northern Territory approved in 2008, 2009, 2010 and 2011.

## 4.3 NON-STATUTORY REQUIREMENTS

Rox Resources will carry out work on this area in accordance with best industry practices and the code of conduct issued by the NT Resources Council. There are not any current such agreements in place.

## 4.4 IDENTIFIED STAKEHOLDERS AND CONSULTATION

Identified stakeholders are:

Central Land Council (CLC)
Jervois Pastoral Lease
Department of Land Resource Management
Department Of Mines and Energy (DME)
Department of Infrastructure
Bushfires Council NT
NT WorkSafe
Arafura Resources Limited

The work program area falls on part of Jervois perpetual pastoral lease. The pastoral lessee has been contacted regarding the proposed work. A land Access Agreement between Rox Resources and Jervois Pastoral Company Pty Ltd was signed in June 2016.

Exploration license EL29701 is held by Arafura Resources. Rox Resources Limited has a farm in agreement with Arafura Resources to earn up to 70% of the Copper, Lead, zinc, Silver, Gold, Bismuth and PGE mineral rights on EL29701.

Exploration EL29599 is held by Rox Resources Limited.

As per the conditions attached to the exploration licenses the company is required to:

- Prior to the commencement of exploration activities other than reconnaissance, convene a meeting on the licence area with registered native title claimants or holders to explain the exploration activities. The operator will also invite the relevant pastoral lessees or landholders to this meeting.

- Notice of the meeting will be posted to the registered native title claimants or holders and the representative body not less than 17 days before the meeting and shall nominate a date, time and place for the meeting.

- The operator will have regard to representations made to it at the meeting regarding any aspect of the exploration activities which raises concerns. These representations may deal with the avoidance access procedures of particular areas of land within the licence areas.

- Rox Resources has conducted a search of the AAPA register and carefully noted the location of existing recorded sites.

There are no registered native title claimants or holders.

Since the company complies with departmental guidelines and its own environmental policy, there is no documented stakeholder consultation procedure in place. However, at their request, any stakeholder is welcome to visit the company's operations as stated above.

Rox proposes to consult with the landholder regarding the company's intended exploration program for each current year. That consultation also involves a review of the previous activities and rehabilitation. There is no documented procedure for this.

## 4.5 INDUCTION AND TRAINING

All aspects of this MMP and Rox Resource's environmental policy will be covered by the project geologist during initial and follow-up inductions for all staff and contractors, with particular attention paid to environmental issues during the daily "toolbox" environment and safety review. These would include any fuel/oil spills, water discharges etc. Any issues raised during these meetings will be formally noted in the weekly site report and actioned promptly.

Inductions will include list and images of critically endangered fauna species (Figure 5) and potential weed threats (Figure 4).

Rox and/or the drilling company involved will record the names of participants in each induction process.

## 4.6 IDENTIFICATION OF ENVIRONMENTAL ASPECTS AND IMPACTS

Rox Resources takes responsibility for environmental matters as per the attached Environmental Management Policy (Appendix 7.4) and all crew leaders (geologists and field managers) are charged with implementing sound environmental practices. As a baseline, the conditions associated with the grant of the exploration licences are the minimum standard to be adhered to.

Identification of actual and potential environmental impact is undertaken by an analysis of the task/work to be undertaken. With exploration, significant environmental impacts are usually associated with the use of machinery as per the table below.

***Table 4. Environmental Impacts***

| **Aspect** | **Impact** | **Risk Rating** | **Management measures (prevention)** | **Management measures (remediation)** |
|---|---|---|---|---|
| Vehicles | Damage To Vegetation | Medium | Vehicles should normally stay on constructed tracks. | If to be driven across country then care should be given to avoiding trees and bushes, and only driven in grassy areas. |
| Vehicles | Spreading of weeds/pests | low | Vehicles should normally stay on constructed tracks. | vehicles should be checked and washed down in designated areas if contamination is likely |
| Drilling Rigs | Damage To Vegetation | Medium | Drilling rigs would always stay on constructed tracks and drill pads. | Regular monitoring will be carried out to ensure that all traffic follows this requirement. |
| Clearing Activities | Damage To Vegetation | Medium | Track clearing and drill pad construction would follow the protocols outlined in Appendix 7.2. | Rehabilitation of tracks and drill pads would follow the guidelines outlined in Appendix 7.2. These protocols have been very successful in minimising environment impacts at other projects. |
| Water Discharges | Damage To Vegetation | Low | Uncontrolled or unexpected discharges can cause erosion. | Regular checking of pipelines during pumping operations and having sumps available at drill sites should mitigate against unnecessary water erosion. |

| | | | | |
|---|---|---|---|---|
| Clearing Activities | Threatened species incidents | low | minimal clearing of vegetation | recognition of species and any interference, blocking and /or flagging of work areas |
| clearing and vehicle movement | erosion | low | minimal clearing of vegetation and use of track-mounted drilling rigs | rehabilitation of tracks and disturbance |
| vehicles and machinery | contamination of soil, surface and /or groundwater, due to hydrocarbon leak/spill | medium | drill rigs should be checked and liners placed below machinery where possible | contaminated material to be collected and disposed of at a licensed waste facility |
| all exploration activities | waste | low | worksites should be kept clean and tidy | waste should be removed from work areas and disposed of correctly |

## 4.7 EMERGENCY PROCEDURES AND INCIDENT REPORTING

Emergency procedures in place for this MMP are initially preventative in nature. Emergencies of an environmental nature will be dealt with in accordance with section 4.2 herein, and also Rox's Environmental Policy document attached as Appendix 7.4.

Any incidents will be reported to the Responsible Person. All reporting of incidents will be carried out in accordance with the terms of the Mineral Titles Act and the Mining Management Act and other applicable acts of the Northern Territory. Depending on the severity of the incident/accident, the Responsible Person must then report the incident/accident to DME as soon as practicable after the occurrence in accordance with section 29 of the *Mining Management Act.* A copy of the Section 29 MMA Reporting Guideline detailing the reporting requirements for an environmental incident is attached in Appendix 7.5.

## 4.8 ENVIRONMENTAL AUDITS AND INSPECTIONS

A field inspection was made by DME personnel in November 2016. A number of issues were reported and these have now been rectified;

- All drill holes have been capped
- Drill spoils have been backfilled into sumps and covered with topsoil
- Track erosion and drill sites were remediated with a backhoe
- The Bonya mine shaft has been covered securely

The company aims to carry out its own environmental inspections at the start and the end of each field season and these are reported in the MMP for the next year (see section 5 and Appendix 7.4). Previous site trips for rehabilitation have been made in March 2015, November 2015 and May 2016. Because the project area is very remote and is only visited on occasion, regular on-site audits are not always possible.

In October 2017 rehabilitation of all remaining tracks, sites and sumps from RC drilling was completed. Additionally, the Bonya Mine shaft was covered.

Current status of drill sites is shown below in Table 6.

## 4.9 ENVIRONMENTAL PERFORMANCE REPORTING

The company's Environment Management Policy is attached (see Appendix 7.4). As stated in section 4.1.1 the Exploration Manager is responsible for implementation and review/updating of the documentation which is held on site and in the company's head office in Perth.

Monitoring of rehabilitation is conducted on every Bonya site trip since drilling occurred. Rehabilitation and revegetation is ongoing and summer rain has assisted in vegetation regrowth at all drill sites.

The most recent photographs are shown in Appendix 7.6.

Additional photographs will be taken on the next site trip.

## 5.0 EXPLORATION REHABILITATION

*Table 5. Exploration Rehabilitation*

| Disturbance | Rehabilitation Activities | Schedule (Timing) | Closure Objectives / Targets | Monitoring Techniques |
|---|---|---|---|---|
| **Drill holes** | Remove PVC collar and plug with plastic hole cap and as per DME guidelines (cut below surface and mound over) | Within 6 months of hole completion | Completely remove PVC collar, regrowth of vegetation | Rehabilitated drillholes will be monitored yearly for erosion or collapse. |
| **Drill pads** | Scour or rip as appropriate to promote regrowth of vegetation | Within 6 months of hole completion unless drill pad required for other purposes | Regrowth of vegetation | Photographic evidence collected on a yearly basis |
| **Sumps** | Push in and cover. Scour or rip as appropriate to promote regrowth of vegetation | Within 6 months of hole completion | Regrowth of vegetation | Photographic evidence collected on a yearly basis |
| **Costeans** | Not applicable | | | |
| **Bulk sample pits** | Not applicable | | | |
| **Tracks / Gridlines** | Rehabilitate as required | Within 6 months of program completion unless some are needed to be kept open for future access | Regrowth of vegetation | Photographic evidence collected on a yearly basis |
| **Sample bags** | Remove from drill site. Dispose of samples and bags | Within 6 months of program completion unless some are required for future access | Complete removal of sample bags. Sample bags will be disposed of at a rubbish dump. | Not required |
| **Camp** | Not applicable | | | |

***Table 6. Drillhole Rehabilitation Status***

| | | Rehabilitation | | | | | | | | Post closure Monitoring | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| hole id | year drilled | drill holes plugged/capped | samples removed/ backfilled | sample bags removed | topsoil/revegetation replaced | drill pad rehabilitated | sumps backfilled | access track rehabilitated | rubbish removed | Is the site revegetated? | Are there signs of erosion? | Are there weeds? | rehabilitation complete | comments |
| BYRC001 | 2014 | y | y | y | y | y | Y | y | y | y | n | n | y | rehabilitation complete |
| BYRC002 | 2014 | y | y | y | y | y | Y | y | y | y | n | n | y | rehabilitation complete |
| BYRC003 | 2014 | y | y | y | y | y | Y | y | y | y | n | n | y | rehabilitation complete |
| BYRC004 | 2014 | y | y | y | y | y | Y | y | y | y | n | n | y | rehabilitation complete |
| BYRC005 | 2014 | y | y | y | y | y | Y | y | y | y | n | n | y | rehabilitation complete |
| BYRC006 | 2014 | y | y | y | y | y | Y | y | y | y | n | n | y | rehabilitation complete |
| BYRC007 | 2014 | y | y | y | y | y | Y | y | y | y | n | n | y | rehabilitation complete |
| BYRC008 | 2014 | y | y | y | y | y | Y | y | y | y | n | n | y | rehabilitation complete |
| BYRC009 | 2014 | y | y | y | y | y | Y | y | y | y | n | n | y | rehabilitation complete |
| BYRC010 | 2014 | y | y | y | y | y | Y | y | y | y | n | n | n | ongoing site assessment |
| BYRC011 | 2014 | C | y | y | y | y | Y | y | y | y | n | n | n | ongoing site assessment |
| BYRC012 | 2014 | C | y | y | y | y | Y | y | y | y | n | n | n | ongoing site assessment |
| BYRC013 | 2014 | C | y | y | y | y | Y | y | y | y | n | n | n | ongoing site assessment |
| BYRC014 | 2014 | C | y | y | y | y | Y | y | y | y | n | n | n | ongoing site assessment |
| BYRC015 | 2014 | C | y | y | y | y | Y | y | y | y | n | n | n | ongoing site assessment |
| BYRC016 | 2014 | C | y | y | y | y | Y | y | y | y | n | n | n | ongoing site assessment |
| BYRC017 | 2014 | C | y | y | y | y | Y | y | y | y | n | n | n | ongoing site assessment |
| BYRC018 | 2014 | C | y | y | y | y | Y | y | y | y | n | n | n | ongoing site assessment |
| BYD001 | 2014 | C | y | y | y | y | Y | y | y | y | n | n | n | ongoing site assessment |
| BYD002 | 2014 | Y | y | y | y | y | Y | y | y | y | n | n | y | rehabilitation complete |
| BYRC019 | 2015 | C | Y | y | Y | y | Y | y | y | n | n | n | n | ongoing site assessment |
| BYRC020 | 2015 | C | Y | y | Y | y | Y | y | y | n | n | n | n | ongoing site assessment |
| GGRC001 | 2015 | y | Y | y | Y | y | Y | y | y | n | n | n | y | ongoing site assessment |
| GGRC002 | 2015 | y | Y | y | Y | y | Y | y | y | n | n | n | y | ongoing site assessment |
| GGRC003 | 2015 | y | Y | y | Y | y | Y | y | y | n | n | n | y | ongoing site assessment |
| GHRC001 | 2015 | y | Y | y | Y | y | NA | y | y | y | n | n | Y | rehabilitation complete |
| GHRC002 | 2015 | y | Y | y | Y | y | NA | y | y | y | n | n | Y | rehabilitation complete |
| GHRC003 | 2015 | y | Y | y | Y | y | NA | y | y | y | n | n | Y | rehabilitation complete |

*C = capped (but not buried and plugged)

## 6.0 PERFORMANCE OBJECTIVES

The company aims to comply with all statutory regulations, and minimize its environmental disturbance. Objectives and targets are reviewed at the end of each field season for continual improvement/implementation.

During the period of the work program covered by this MMP the following environmental objectives are to be met:

1. Removal of all waste from the work program area.

2. Capping and rehabilitation of drill holes to DME approved standards (see Appendix 7.2).

3. Rehabilitation of all drill access tracks and drill pads to DME approved standards as appropriate (i.e. if they won't be re-used). See Appendix 7.2.

4. No transport of imported species of flora and fauna to or from work program areas.

5. Completion of statutory rehabilitation reports.

6. Compliance with OHS and environmental guidelines with regards to noise and dust emissions.

7. Monitoring and recording of environmental effect of work program for incorporation in future MMP's.

# 7.0 APPENDICES

## 7.1 NT NATURAL RESOURCE MANAGEMENT DATABASE EXTRACT

Territory Natural Resource Management

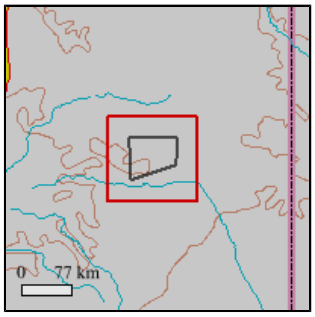
Northern Territory Government

CHARLES DARWIN UNIVERSITY

# Rox Resources Bonya Project

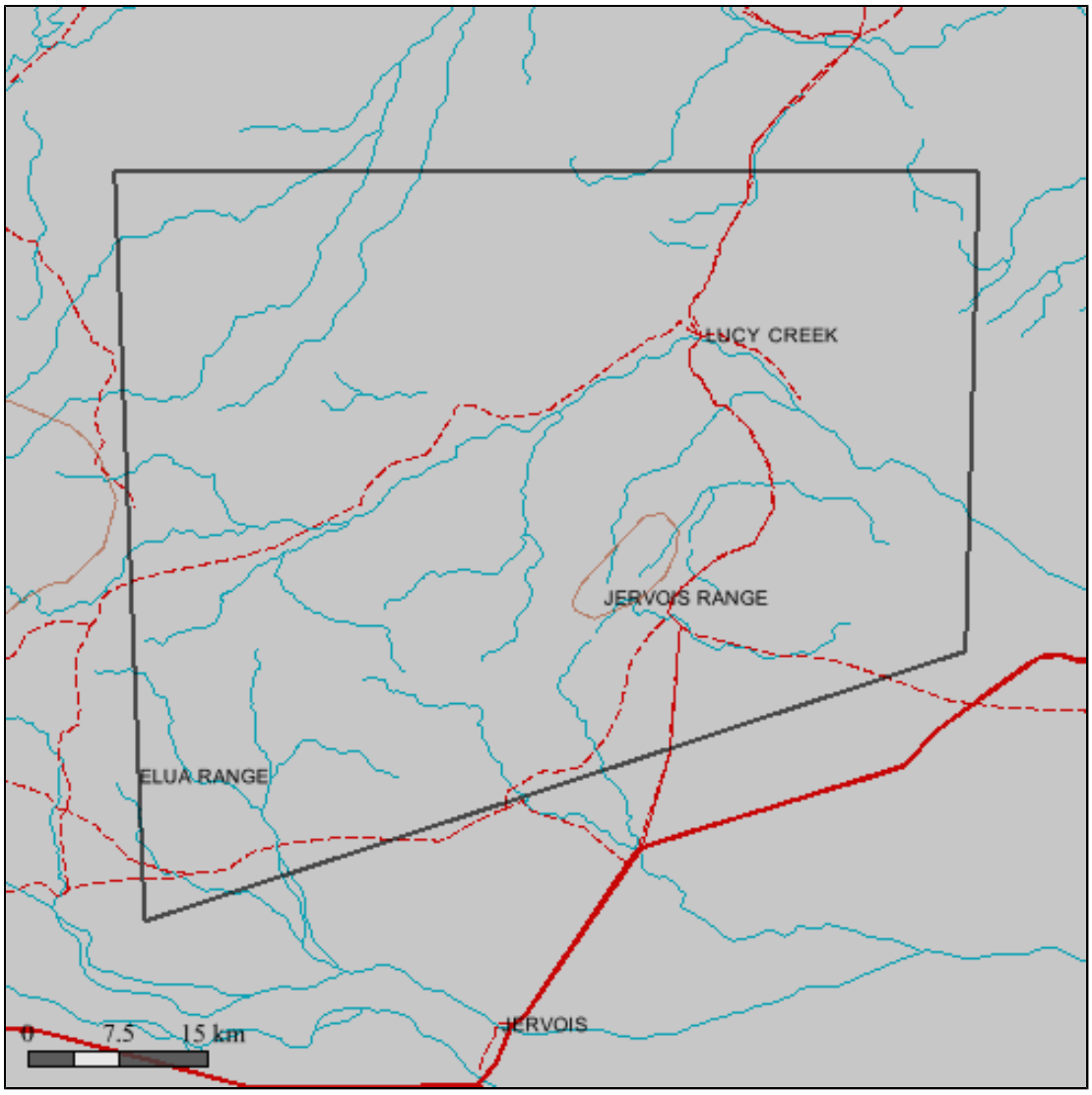
## NT NRM Snapshot

# Rox Resources Bonya Project




Rox Resources Bonya Project encompasses an area of 3242.26 sq km extending from 22 deg 19.0 min to 22 deg 52.0 min S and 135 deg 51.0 min to 136 deg 29.0 min E.
Rox Resources Bonya Project is located in the Simpson Strzelecki Dunefields, Burt Plain, Channel Country, bioregion(s)

Location of Rox Resources Bonya Project

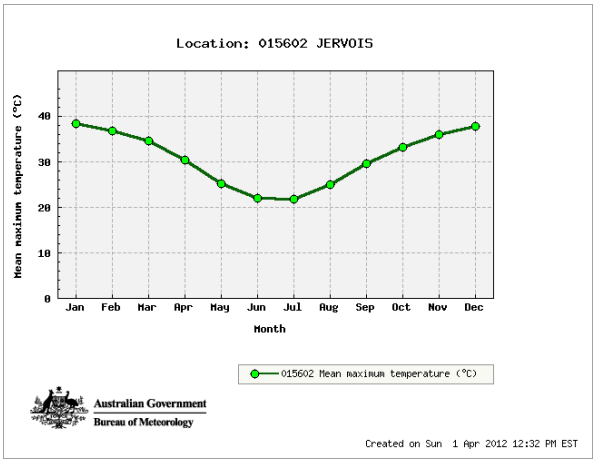


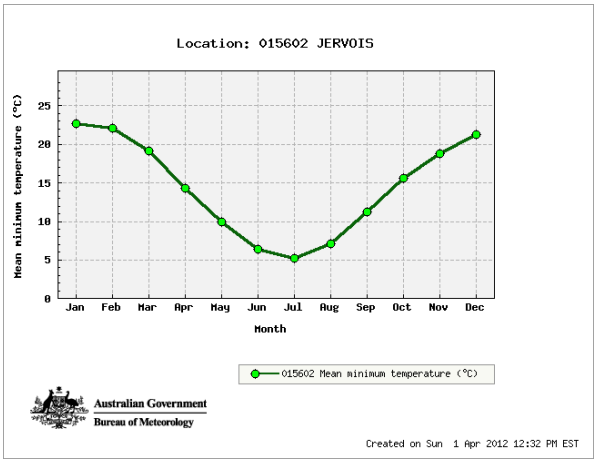
# Rox Resources Bonya Project  Climate

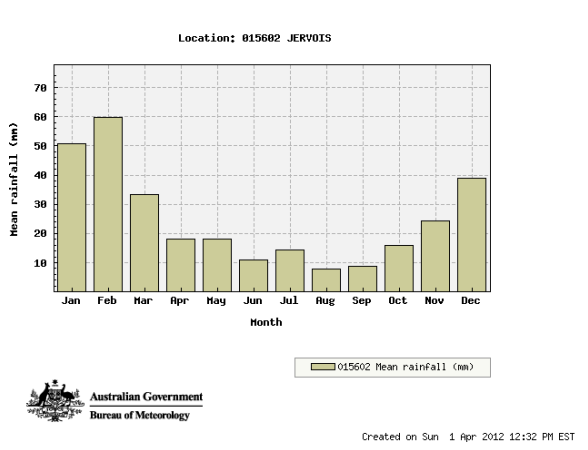
The closest long-term weather station is JERVOIS (22 deg 57.0 min S, 136.1444E)
39 km S of the center of selected area

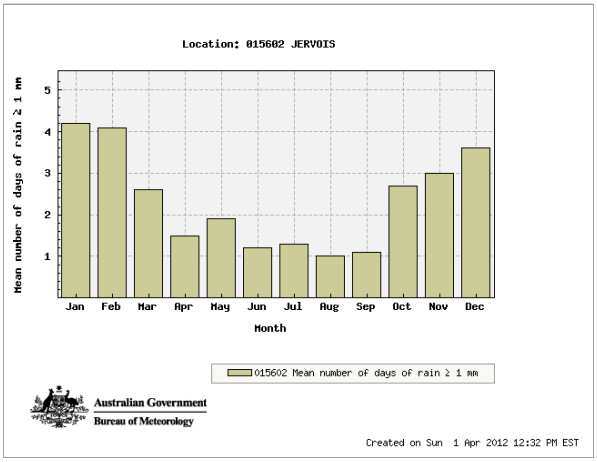
| Statistics | Annual Values | Years of record |
|---|---|---|
| Mean max temp (deg C) | 30.9 | 44 |
| Mean min temp (deg C) | 14.5 | 44 |
| Average rainfall (mm) | 302.6 | 46 |
| Average days of rain | 28.2 | 46 |

Climate summaries from Bureau of Meteorology (www.bom.gov.au)



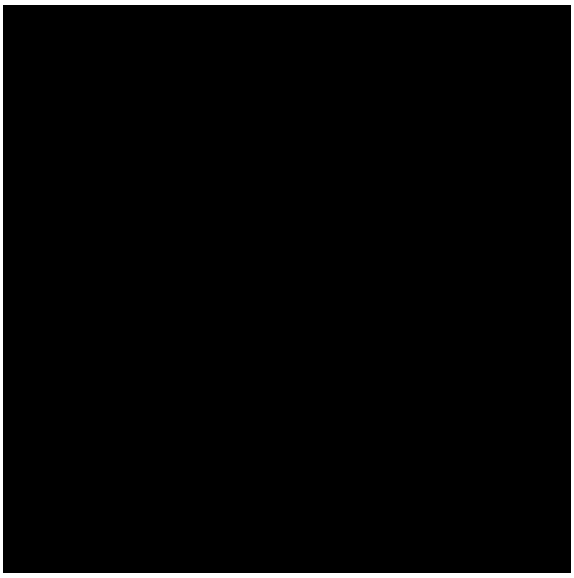



# Rox Resources Bonya Project  Soils

## Soil Types



## Area of soil types (Northcote Factual Key)

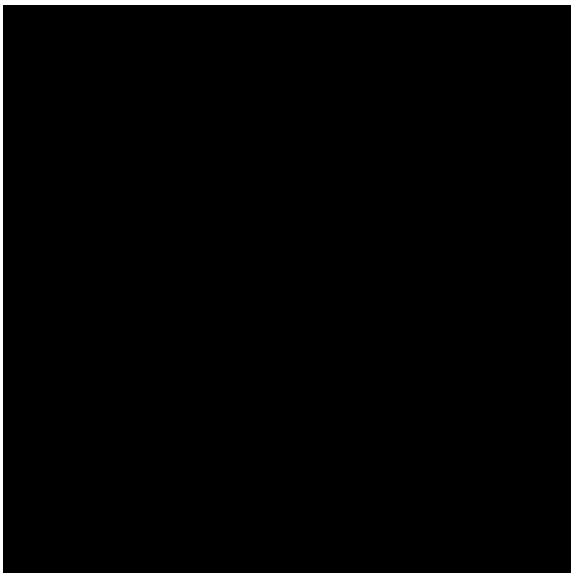
| Category | Area sq km | Area% |
|---|---|---|
| No records available | No records available | No records available |

## Soil Types


Soils 1:2M Layer is a copy of the NT portion (1:2,000,000 scale dataset) of the CSIRO Atlas of Australian Soils - K.H. Northcote et al. Data scale: 1:2,000,000 ANZLIC Identifier: 2DBCB771205D06B6E040CD9B0F274EFE
More details: Go to www.lrm.nt.gov.au/nrmapsnt/ and enter the ANZLIC identifier in the Spatial Data Search

# Rox Resources Bonya Project  Vegetation

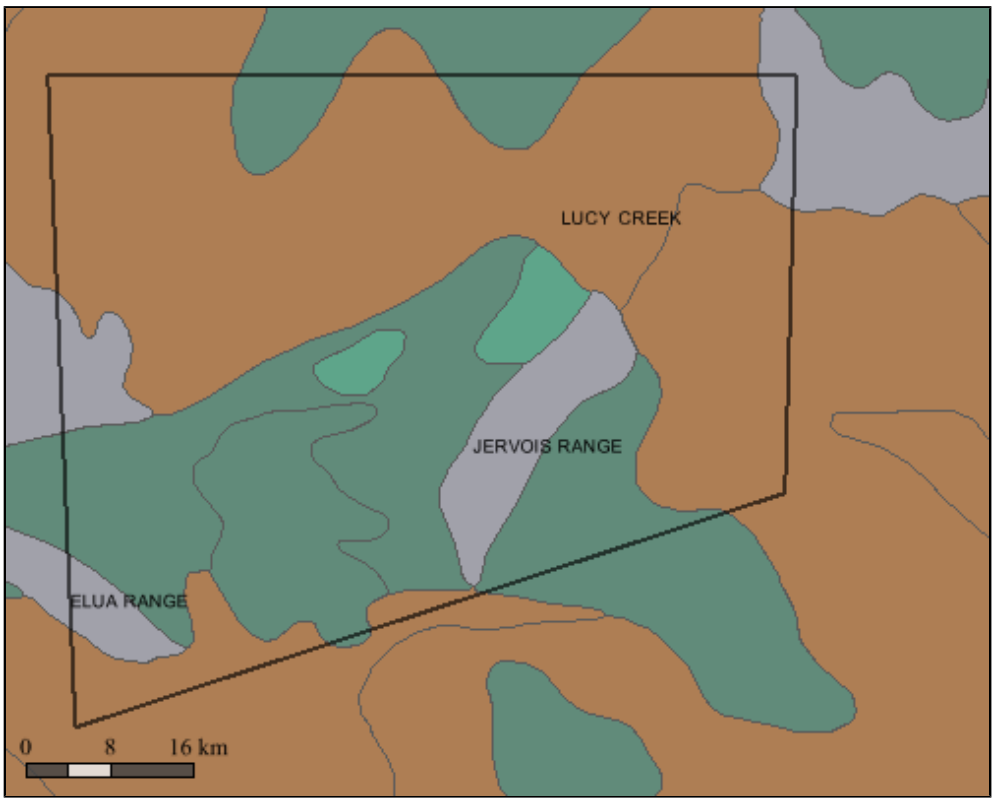
## Vegetation Communities



## Area of vegetation communities

| Category | Area sq km | Area% |
|---|---|---|
| No records available | No records available | No records available |

## Vegetation Communities

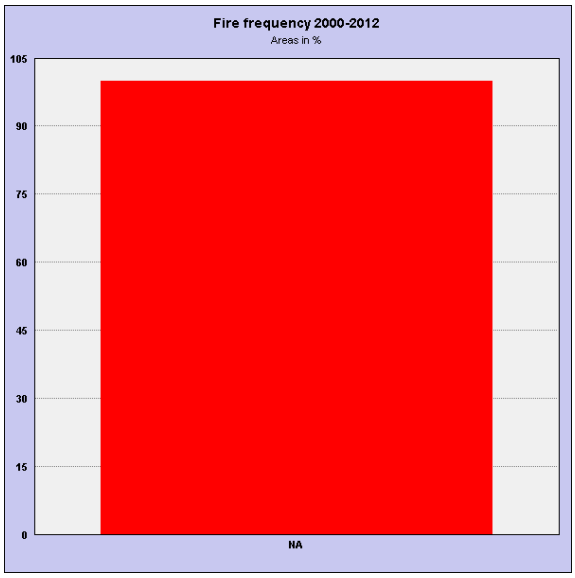



The NVIS 2005 Layer is compiled from a number of vegetation and land unit survey maps that were recoded and re-attributed for the National Vegetation Information System (NVIS)
Data scale variable depending on location. ANZLIC Identifier:2DBCB771207006B6E040CD9B0F274EFE
More details:Go to www.lrm.nt.gov.au/nrmapsnt/ and enter the ANZLIC identifier in the Spatial Data Search

# Rox Resources Bonya Project  Fire History

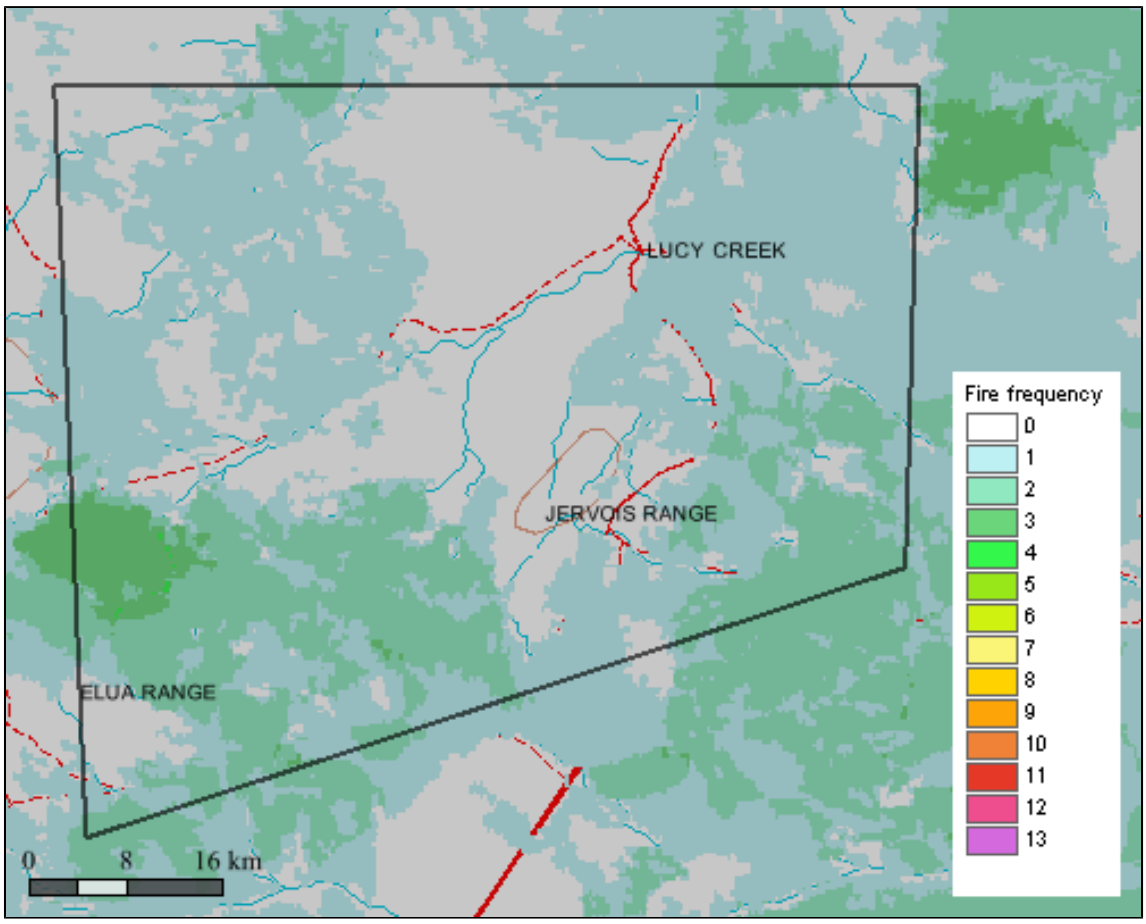
Years burnt 2000-2012

and area burnt in each category




| Category | Area sq km | Area% |
|---|---|---|
| No records available | No records available | No records available |

Years burnt 2000-2012



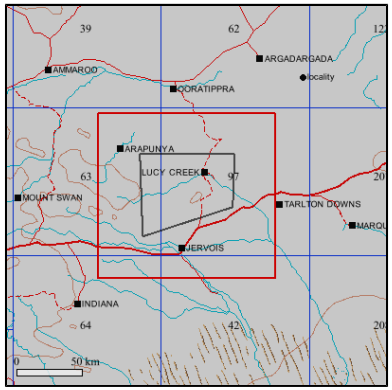

The fire frequency(250m) Layer is derived from satellite imagery sourced from the Moderate Resolution Imaging Spectroradiometer (MODIS) on the NASA Terra satellite
Spatial Resolution: 250m x 250m pixels (at Nadir).

# Rox Resources Bonya Project  Threatened Species

Threatened species recorded in the grid cell(s) in which  Rox Resources Bonya Project  occurs

| Group | Common Name | Scientific Name | NT Status | National Status | ID | #Observations (Latest) | #Specimens (Latest) | #Surveys (Latest) |
|---|---|---|---|---|---|---|---|---|
| Flowering Plants | Caldwells Clubrush | *Bolboschoenus caldwellii* | EN | . | 351005 | 0 (Unknown) | 0 (Unknown) | 0 (Unknown) |
| Snails | Land Snail | *Semotrachia huckittana* | VU | . | 352015 | 0 (Unknown) | 0 (Unknown) | 0 (Unknown) |
| Snails | Land Snail | *Semotrachia jinkana* | VU | . | 352045 | 0 (Unknown) | 0 (Unknown) | 0 (Unknown) |
| Birds | Grey Falcon | *Falco hypoleucos* | VU | . | . | 154 (2002) | 5 (1969) | 11 (2005) |
| Birds | Night Parrot | *Pezoporus occidentalis* | CR | EN | 247103 | 8 (2000) | 1 (1983) | 6 (1982) |
| Birds | Hooded Robin | *Melanodryas cucullata* | CR/- | EN/- | 597046 | 5 (2007) | 6 (1952) | 2 (2008) |
| Birds | Horsfield's Bushlark | *Mirafra javanica* | VU/- | . | . | 584 (2008) | 43 (2003) | 447 (2008) |
| Mammals | Brush-tailed Mulgara | *Dasycercus blythi* | VU | VU | 351695 | 385 (2008) | 103 (1996) | 440 (2008) |
| Mammals | Golden Bandicoot | *Isoodon auratus* | EN | VU | 176421 | 91 (1996) | 17 (2007) | 56 (2005) |
| Mammals | Greater Bilby | *Macrotis lagotis* | VU | VU | 177125 | 844 (2004) | 80 (2003) | 102 (2006) |
| Mammals | Common Brushtail Possum (southern) | *Trichosurus vulpecula vulpecula* | EN | . | 177146 | 184 (2008) | 48 (1991) | 219 (2004) |
| Mammals | Black-footed Rock-wallaby | *Petrogale lateralis* | . | VU | 351635 | 234 (2008) | 96 (1991) | 559 (2006) |

Species listed in the table above were recorded from all the grid cells shown below (red/blue line) that overlap  Rox Resources Bonya Project

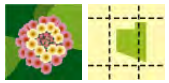



EX = Extinct
EW = Extinct in the Wild
ER = Extinct in the NT
EN = Endangered
EN/VU = One Endangered subspecies/One Vulnerable subspecies
VU=Vulnerable
VU/- = One or more subspecies vulnerable EN/- = One or more subspecies endangered

Survey = this category refers to data collected using systematic survey methodology
Specimen = this category refers to museum or other records where a specimen has been collected and lodged
Observation = this category refers to all other incidental recordings where systematic methodology may not have been used consistently.

More species info: Go to www.landmanager.org.au/view/index.aspx?id=####
where #### is the ID number from the tables above for the species of interest.

# Rox Resources Bonya Project  Weeds and Potential Weeds



Introduced plants recorded in the grid cell(s) in which  Rox Resources Bonya Project  occurs and that have been identified as problem weeds in one or more locations in northern Australia. Occurence based on Department of Natural Resources, Environment and The Arts databases.

| Common Name | Scientific Name | NT Status | National Status | Other Status | ID | #Surveys (Latest) |
|---|---|---|---|---|---|---|
| Gallon`s Curse | *Cenchrus biflorus* | . | . | *NSW* | 289104 | 4 (2001) |
| Buffel Grass | *Cenchrus ciliaris* | . | . | *MP Gr G&M DEU* | 643089 | 0 (Unknown) |
| Mossman River Grass | *Cenchrus echinatus* | *B C* | . | *NSW* | 289124 | 36 (2002) |
| Feathertop Rhodes Grass | *Chloris virgata* | . | . | *DEU* | 289354 | 13 (2006) |
| Camel Melon | *Citrullus lanatus* | . | . | *G&M* | 289444 | 75 (2008) |
| Fierce Thornapple | *Datura ferox* | *A C* | . | *WA1 WA3 WA4 G&M* | 289904 | 0 (Unknown) |
| Native Thornapple | *Datura leichhardtii* | *C* | . | *WA1 WA3 WA4* | 289904 | 28 (2005) |
| Spiked Malvastrum | *Malvastrum americanum* | . | . | *DEU* | 291084 | 497 (2010) |
| Parkinsonia | *Parkinsonia aculeata* | *B C* | *WONS* | *MP K2 WA1 WA4 Q2 G&M CYP DEU NSW SA* | 114160 | 110 (2008) |
| Coffee Senna | *Senna occidentalis* | *B C* | . | *G&M DEU* | 292474 | 64 (2008) |
| Flannel Weed | *Sida cordifolia* | *B C* | . | *WA1 G&M DEU* | 292594 | 145 (2010) |
| Caltrop | *Tribulus terrestris* | *B C* | . | *CYP SA* | 361555 | 136 (2007) |
| Sweet Acacia | *Vachellia farnesiana* | . | . | *DEU* | 288164 | 493 (2010) |

Status Codes:
1. NATIONAL STATUS CODES
Alert, Alert List for Environmental Weeds (Please call Exotic Plant Pest Hotline 1800 084 881 if you think you have seen this weed)
Sleeper, National Sleeper Weed
Target,Targeted for eradication. (www.landmanager.com.au/view/index.aspx?id=449837)
WONS, Weeds of National Significance

2. NT STATUS CODES
A, NT Class A Weed (to be eradicated)
B, NT Class B Weed (growth & spread to be controlled)
C, NT Class C Weed (not to be introduced) (www.landmanager.com.au/view/index.aspx?id=449869)

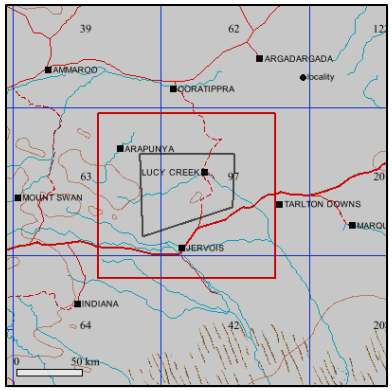
3. OTHER STATUS CODES
C&E, Csurhes, S. & Edwards, R. (1998) Potential Environmental Weeds in Australia. Candidate Species for Preventative Control. Environment Australia, Canberra (www.landmanager.com.au/view/index.aspx?id=394504)
CYP, Draft Cape York Peninsula Pest Management Plan 2006-2011 (www.landmanager.com.au/view/index.aspx?id=371200)
DEU, Plants listed as environmental weeds by the Desert Uplands Strategic Land Resource
Assessment (www.landmanager.com.au/view/index.aspx?id=332123)
G&M, Grice AC, Martin TG. 2005. The Management of Weeds and Their Impact on Biodiversity in the Rangelands. Cooperative Research Centre (CRC) for Australian Weed Management and CSIRO Sustainable Ecosystems. Commonwealth Australia (www.landmanager.com.au/view/index.aspx?id=163572)
Gr, Groves et al. 2003. Weed categories for natural and agricultural ecosystem management. Bureau of
Rural Sciences (www.landmanager.com.au/view/index.aspx?id=388018)
K0, High Priority Weeds not yet established in the Katherine region
K1, High Priority Weeds posing environmental threats in the Katherine region
K2, High Priority Weeds posing existing threats in the Katherine region, as described in the Katherine Regional Weed Management Strategy 2005-2010 (www.landmanager.com.au/view/index.aspx?id=130286)
MP, Northern Territory Parks & Conservation Masterplan (www.landmanager.com.au/view/index.aspx?id=144141)
NAQS, North Australian Quarantine Strategy Target List (www.landmanager.com.au/view/index.aspx?id=449416)
NSW, Declared Noxious Weed in NSW (www.landmanager.com.au/view/index.aspx?id=449983)
Q1, QLD Class 1 Weed (not to be introduced, kept or supplied-

Q2, Class 2 Weed (eradicate where possible, not to be introduced, kept or supplied)
Q3, Qld Class 3 Weed (to be controlled near environmentally sensitive areas- not to be supplied/sold without a permit) (www.landmanager.com.au/view/index.aspx?id=190714)
SA, Declared Plant in South Australia (www.landmanager.com.au/view/index.aspx?id=449996)
WeedsAus, Listed as a significant weed by Weeds Australia (www.landmanager.com.au/view/index.aspx?id=14576)
WA1, WA Weed Class P1 (movement prohibited)
WA2, WA Weed Class P2 (aim to eradicate)
WA3, WA Weed Class P3 (control infestations)
WA4, WA Weed Class P4 (prevent spread)
WA5, WA Weed Class P3 (control infestations on public land) (www.landmanager.com.au/view/index.aspx?id=449884).

Survey = this category refers to data collected using systematic survey methodology
Specimen = this category refers to museum or other records where a specimen has been collected and lodged
Observation = this category refers to all other incidental recordings where systematic methodology may not have been used consistently.

More species info: Go to www.landmanager.org.au/view/index.aspx?id=####
where #### is the ID number from the tables above for the species of interest.

Plants listed in the table above were recorded from all the grid cells shown below (red/blue line) that overlap Rox Resources Bonya Project



# Rox Resources Bonya Project  Pest and Potential Pest Animals


Animals with pest potential recorded in the bioregion(s) in which  Rox Resources Bonya Project  occurs. Occurence based on Department of Natural Resources, Environment and The Arts databases.

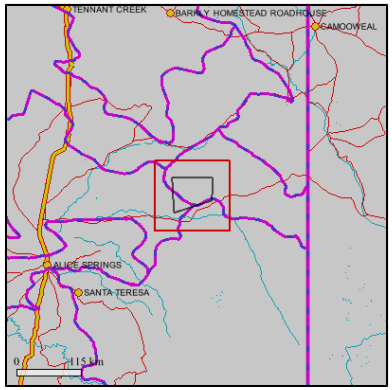
| Common Name | Scientific Name | NT Status | National Status | ID | #Observations (Latest) | #Specimens (Latest) | #Surveys (Latest) |
|---|---|---|---|---|---|---|---|
| Red-tailed Black-Cockatoo | *Calyptorhynchus banksii* | N | . | 223765 | 33 (2009) | 12 (1909) | 77 (2009) |
| Red-tailed Black-cockatoo | *Calyptorhynchus banksii samueli* | N | . | 223765 | 1002 (2008) | 15 (1996) | 54 (2006) |
| House Mouse | *Mus musculus* | P | . | 187720 | 1368 (2008) | 571 (2001) | 448 (2007) |
| Dingo / Wild dog | *Canis lupus* | N | . | 183280 | 737 (2008) | 1569 (2007) | 815 (2009) |
| Fox | *Vulpes vulpes* | P | . | 183294 | 53 (2004) | 39 (1985) | 22 (2005) |
| Cat | *Felis catus* | P | . | 183259 | 501 (2008) | 86 (2005) | 217 (2009) |
| Rabbit | *Oryctolagus cuniculus* | P | . | 187331 | 407 (2008) | 47 (1987) | 9364 (2006) |
| Donkey | *Equus asinus* | P | . | 183287 | 104 (2008) | 0 (Unknown) | 207 (2008) |
| Horse | *Equus caballus* | P | . | 183315 | 305 (2008) | 7 (1991) | 503 (2009) |
| Camel | *Camelus dromedarius* | P | . | 183210 | 278 (2008) | 27 (1994) | 1525 (2005) |
| Cattle | *Bos taurus* | P | . | 183266 | 530 (2008) | 22 (1991) | 771 (2009) |
| Goat | *Capra hircus* | P | . | 183301 | 21 (2006) | 2 (1987) | 6 (2006) |

NT STATUS CODES:
Int, Introduced species (all non-prohibited vertebrates, and all other exotic species (www.landmanager.com.au/view/index.aspx?id=280771)
N, Native species with pest potential.
P, Prohibited species (all exotic vertebrates except those listed as non-prohibited (www.landmanager.com.au/view/index.aspx?id=450509)

Survey = this category refers to data collected using systematic survey methodology
Specimen = this category refers to museum or other records where a specimen has been collected and lodged
Observation = this category refers to all other incidental recordings where systematic methodology may not have been used consistently.

More species info: Go to www.landmanager.org.au/view/index.aspx?id=####
where #### is the ID number from the tables above for the species of interest.

Potential pest animals listed in the table above were recorded from the bioregions shown below (red/blue line) that overlap  Rox Resources Bonya Project



Soils and vegetation graphs and tables refer to area of soils and vegetation only. Fire graphs and tables refer to entire selected area including sea if present. Calculations are derived from map images or vector data, and should be taken as a guide only. Accuracy cannot be guaranteed. For small areas, figures should be rounded to the nearest whole number.

## 7.2 DEPARTMENT OF MINES AND ENERGY PROCEDURES

**ADVISORY NOTE**

# SUBSTANTIAL DISTURBANCE IN EXPLORATION

***This advisory note outlines the definition of the term "Substantial Disturbance"***

## INTRODUCTION

There is considerable public concern for the protection of the environment from the adverse effects of the activities associated with mining and other industries. Under the *Mining Management Act,* miners and explorers are required to establish and implement appropriate environment protection management systems. It is necessary to ensure that appropriate environment protection measures are understood and established by explorers and miners when their activities may cause significant or substantial disturbance to the environment.

## LEGISLATION

Pursuant to section 35 of the *Mining Management Act,* any exploration activity that involves "**substantial disturbance**" of the surface of the site requires the operator to have applied for and been granted an Authorisation by the "Minister".

Exploration activities cover exploration for minerals, including all modes of searching for or evaluating deposits of minerals.

Actions that do not constitute mining activities include:

- remote sensing including geophysical surveying; and
- non-intrusive actions such as fossicking, rock chipping and soil sampling by non-mechanical means in accordance with Section 130D of the *Mining Act*.

As "**substantial disturbance**" is not defined within the relevant sections of the legislation, this information sheet sets out advice on interpreting the term, and indicates those actions which must not be carried out without an Authorisation.

## SUBSTANTIAL DISTURBANCE

Although an activity on its own may not appear to disturb an area significantly, the collective effect of several adjacent activities may well result in substantial disturbance.

The following activities, either individually or in combination, cause or have the potential to cause significant or substantial disturbance:

- land clearing
- earthworks: cutting, filling, excavating, trenching etc.
- above-ground works: roadways, buildings, bridges, railways, pipelines, telephone and power lines, conveyors, airstrips etc.

- underground works: tunnels, wells, pipelines, conduits, cables, etc.
- water works: dams, impoundments, canals, drainage works; alternation of river/creek banks, water courses and shore lines
- extraction of resources: surface, underground, river-bed or under-sea mining/quarrying
- stockpiling of materials: ore, overburden, waste materials, by-products
- exploration works: seismic lines, drill pads, drill holes including vacuum, auger and RAB, grids, tracks, costeans, camp establishment etc.
- blasting.

If one or a number of the above actions are to be undertaken then there is the potential for substantial disturbance and a requirement for the operator to seek an Authorisation under the Mining Management Act.

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**ADVISORY NOTE**

# CAPPING AND PLUGGING OF EXPLORATION DRILLHOLES AND ABANDONMENT OF BORES

***This advisory note outlines the approach for capping of collared holes and the plugging of uncollared holes, below ground level. It also provides advice for adequate closure of bores used in mining operations.***

## INTRODUCTION

Explorers are required under the *Mining Management Act 2001* to rehabilitate areas impacted by their activities. The main goal in environmental management of exploration activities is to minimise or prevent unnecessary impacts and rehabilitate sites where disturbance cannot be avoided.

Exploration drilling has the potential to impact on the environment in a variety of ways including groundwater aquifers, waterways and wetlands. In addition, open holes pose a danger to people, wildlife, livestock and future exploration and pastoral vehicles traversing the area.

Likewise, bores used to access groundwater for mining and exploration processing and camp consumption purposes can similarly constitute a hazard to public health and safety, and can adversely affect the quality and flow of groundwater resources if abandoned without due concern. It is therefore imperative that bores are adequately prepared for abandonment when they are no longer required.

## REQUIREMENTS

Drill and bore holes should be abandoned to restore as close as possible the controlling geological conditions that existed prior to drilling and so prevent contamination of aquifers, interconnection between aquifers and the physical and environmental hazards resulting from open holes.

Drill and bore holes shall be closed and the closure shall be permanent. The requirements can be minimised by planning capping and plugging or back filling as part of the routine of drilling operations.

It is recognised “best practice” in the Northern Territory for exploration drill holes to be backfilled to the surface with a suitable medium (eg. concrete or cuttings) however holes as a minimum should be plugged in the manner described in the diagrams below. The use of octo or “occy” plugs is not endorsed.

Special consideration for the protection of groundwater may be required where an exploration drill hole intersects an aquifer. These issues are outlined below.

## *1. Drill holes intersecting an undetectable or single unconfined aquifer (water table)*

### a. Collared Holes

- PVC collars may be readily cut below ground level to a minimum depth of 0.3m using a powered brush cutter modified with a diamond masonry blade or an internal pipe cutter. The cut section of collar may be removed from the hole using chain tongs or an oil filter remover if necessary
- A non-degradable plug, bridge (metal plate) or casing cap should be installed above the cut off casing at a minimum of 0.3 metres below ground level. The plug may be fitted with a length of wire rope and a tag as an indicator, if required. **Figure 1** demonstrates how the hole above the plug should be back filled with compacted earth or cuttings.
- Alternately, holes may be either backfilled with drill cuttings, clean fill or cement, allowing for settlement.
- The soil backfill should be compacted and mounded over the hole to allow for subsidence and prevent ponding of surface water

### b. Uncollared Holes

- Holes should be plugged at least 1 metre below ground level with a non-degradable plug or bridge. The plug is to be at least 50 millimetres larger than the diameter of the drill hole but depending on the nature of the ground, must be of sufficient size as to remain firmly in position.
- To enable the placement of the plug the hole may be reamed-out to 1m depth with hand tools or counter-bored by the drill rig with a larger drill bit. **Figure 2** indicates how the hole above the plug should be backfilled with compacted earth and mounded over at the surface.
- Alternately, holes may be either backfilled with drill cuttings, clean fill or cement, allowing for settlement.
- The intention is that water shall not ingress the hole and cause it to erode and reopen, and particular care is required to ensure the long term effectiveness of the plugging procedure.

## *2. Drill holes which intersect a single confined aquifer*

- The main objective in sealing holes in single confined aquifers is to contain water in the aquifer.
- **Figure 3** shows how holes should be plugged across the aquifer confining bed interface for a thickness of about 4m (2m above the interface and 2m below); then backfill or plug as above.

## *3. Drill holes which intersect multiple aquifers*

- Major aquifers should be sealed to prevent inter-aquifer flow.

- Grout plugs should be positioned at the interfaces between aquifers and the overlying confining beds. The grout should be at least 4m thick, with 2m above and 2m below the interface. **Figure 4** shows some possible methods of sealing drill holes in multiple aquifer systems.
- Shallow holes can be backfilled from the bottom back to the surface with grout.

## 4. *Bore decommissioning*

- All bores that are to be permanently decommissioned must be completely sealed and filled in a manner that prevents vertical movement of water within the bore.
- The sealing material must not pose any potential health risk and should be more impervious than the material through which the bore was drilled. Concrete, cement grout or bentonite grout shall be used as primary sealing materials and shall be placed from hole-bottom upwards.
- Fill material should consist of clean or disinfected sand, coarse stone, clay or drill cuttings.
- Flowing bores with high flows and pressure shall be sealed exclusively with cement grout to a depth of at least 20 meters (unless the flow originates from less than 20 meters).
- All bores shall be sealed with approved sealing materials from a depth of 5 meters to around 30cm below the surface. Topsoil shall be placed above this to assist in full rehabilitation. Surface casings may be left in place if they have been pressure cemented or if they have been determined to be sound, in which case they must be bridged with cement grout.
- Grout bridges may be used where it is not practicable to fully grout a bore. A minimum of 10 meters is required for a bridge (20 meters for a flowing bore). These will be set in impermeable strata immediately above and below each aquifer formation in the bore.
- Records shall be complete and accurate regarding the location of abandoned bores and the procedure used for decommissioning.

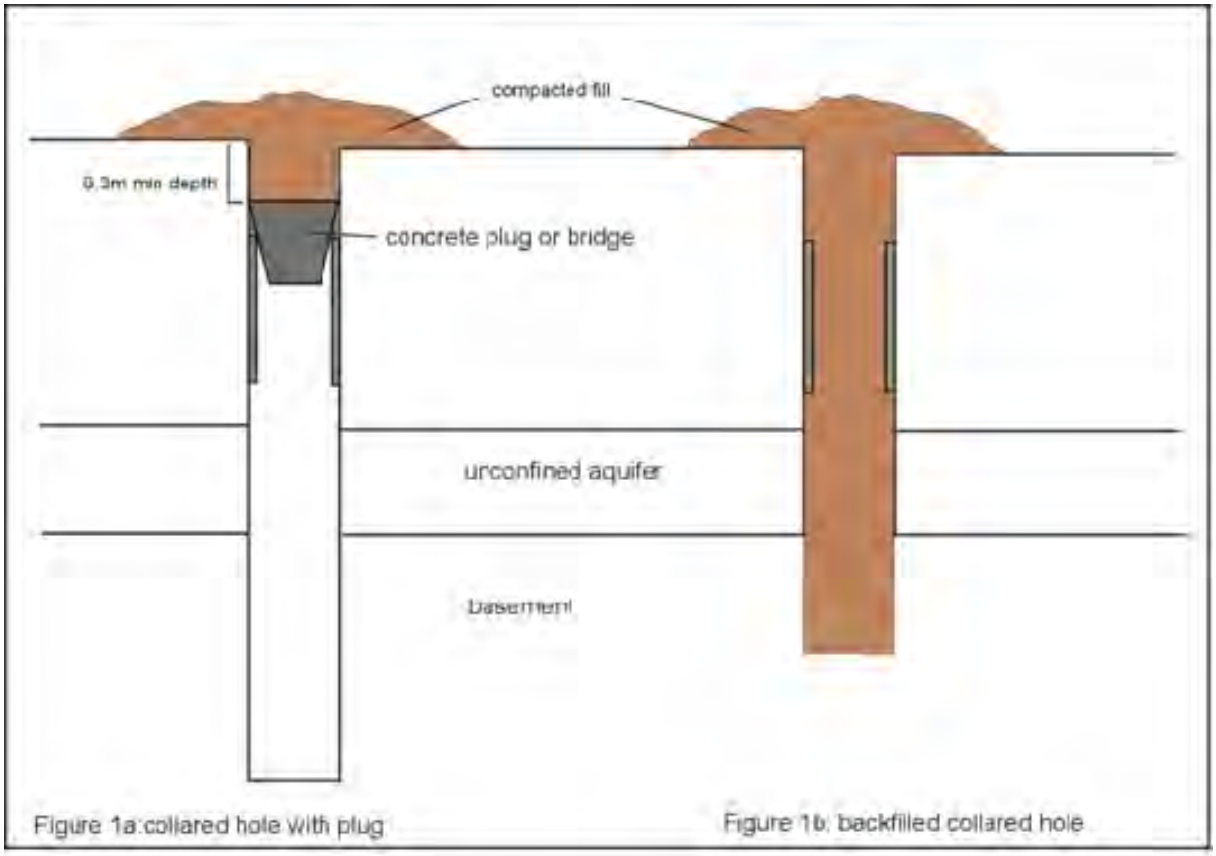


Figure 1a:collared hole with plug

Figure 1b: backfilled collared hole

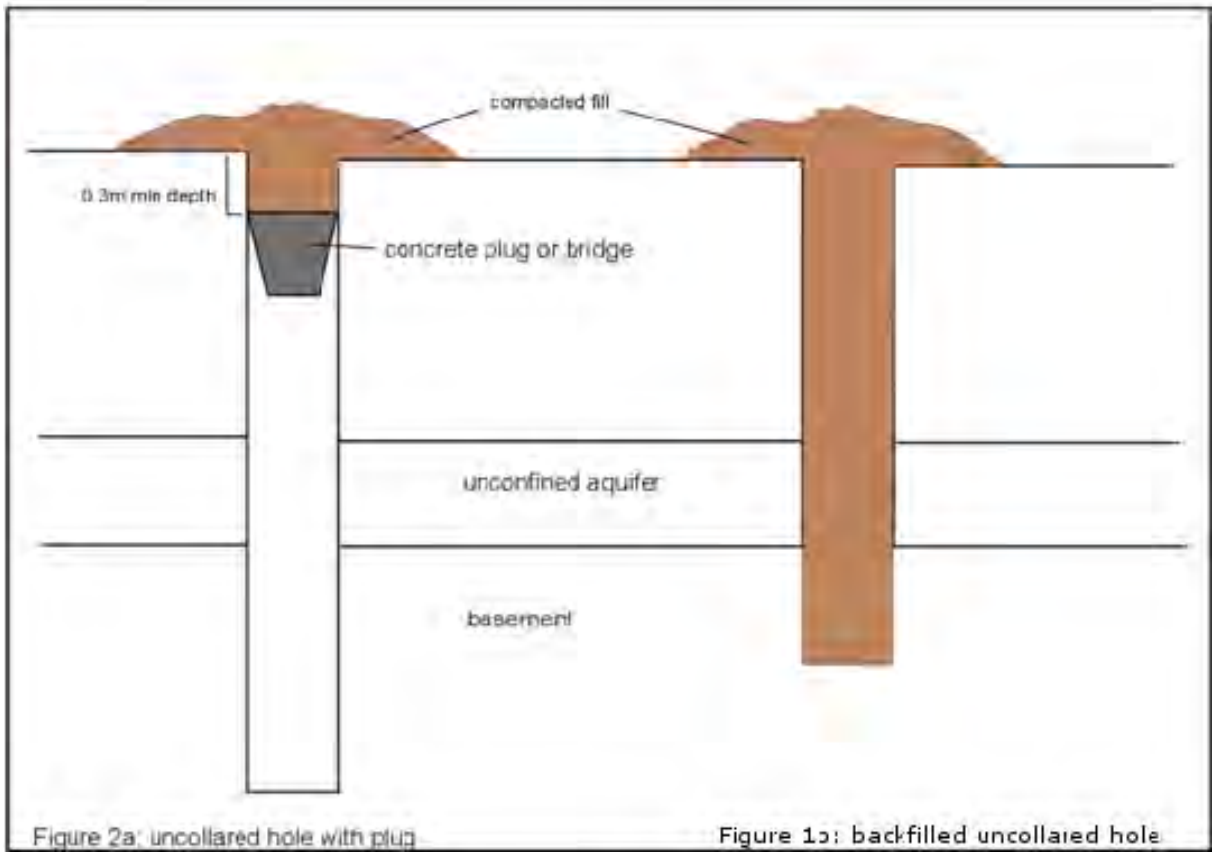


Figure 2a: uncollared hole with plug

Figure 2b: backfilled uncollared hole

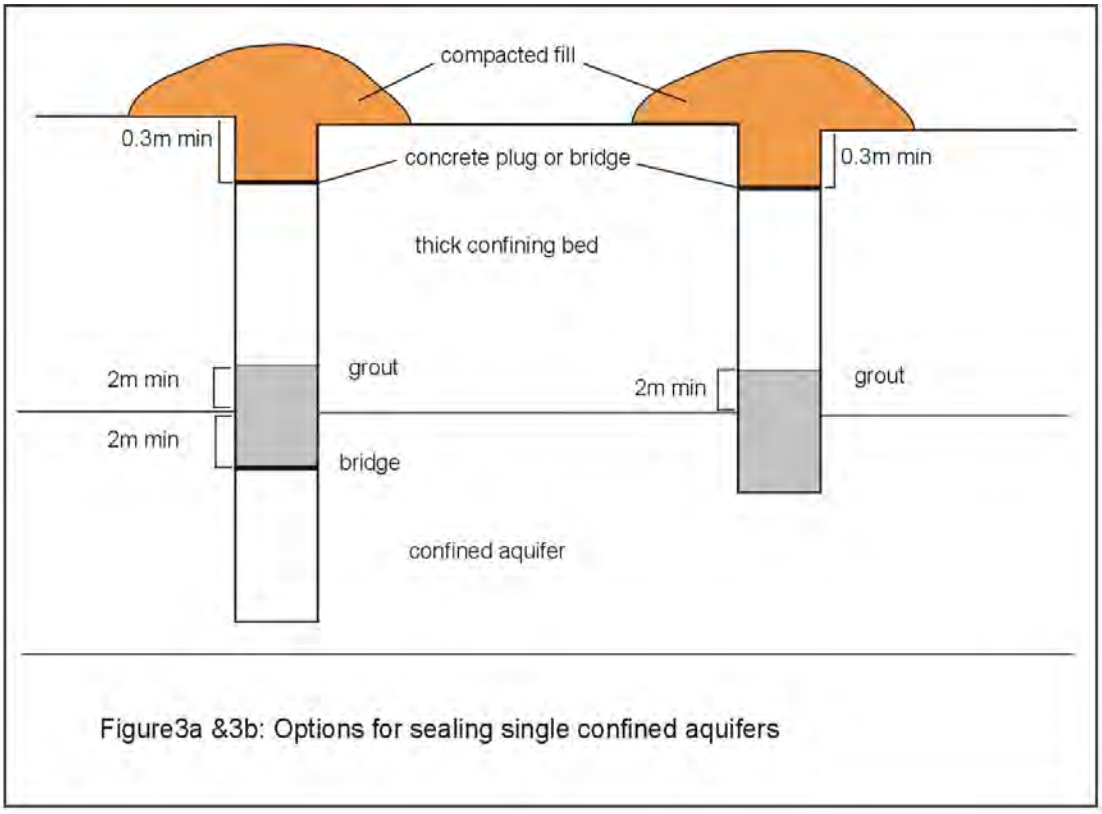


Figure3a &3b: Options for sealing single confined aquifers

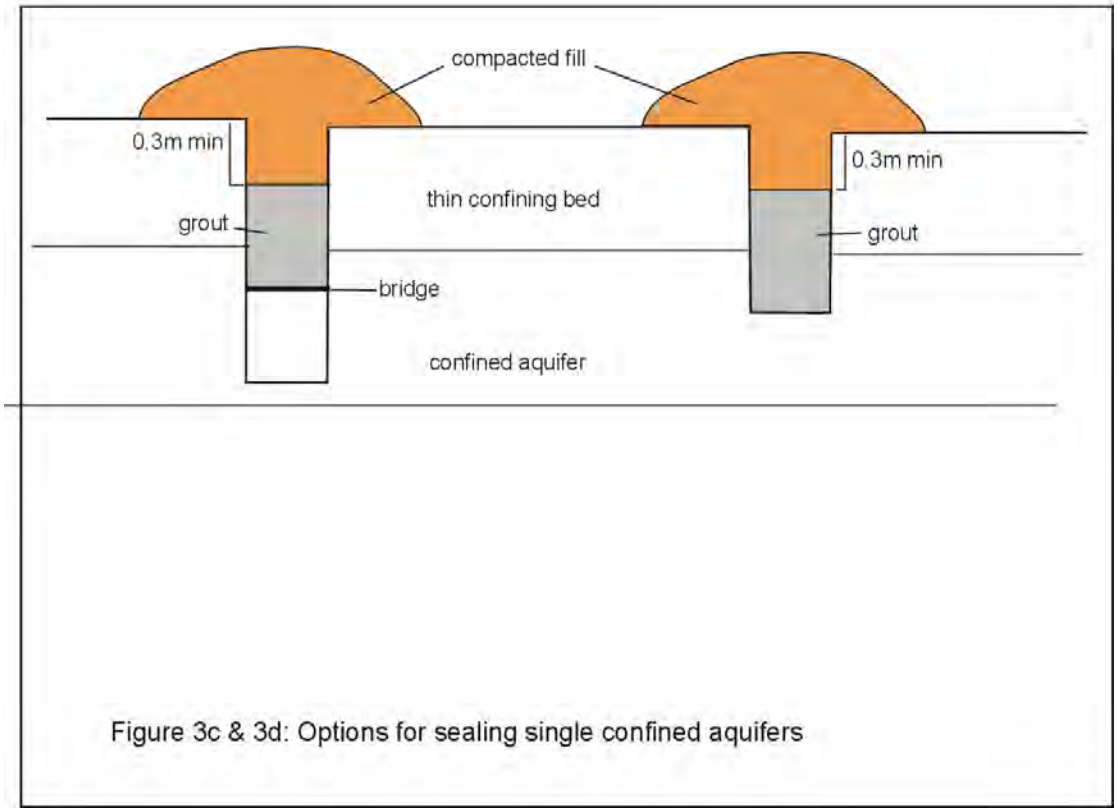


Figure 3c & 3d: Options for sealing single confined aquifers

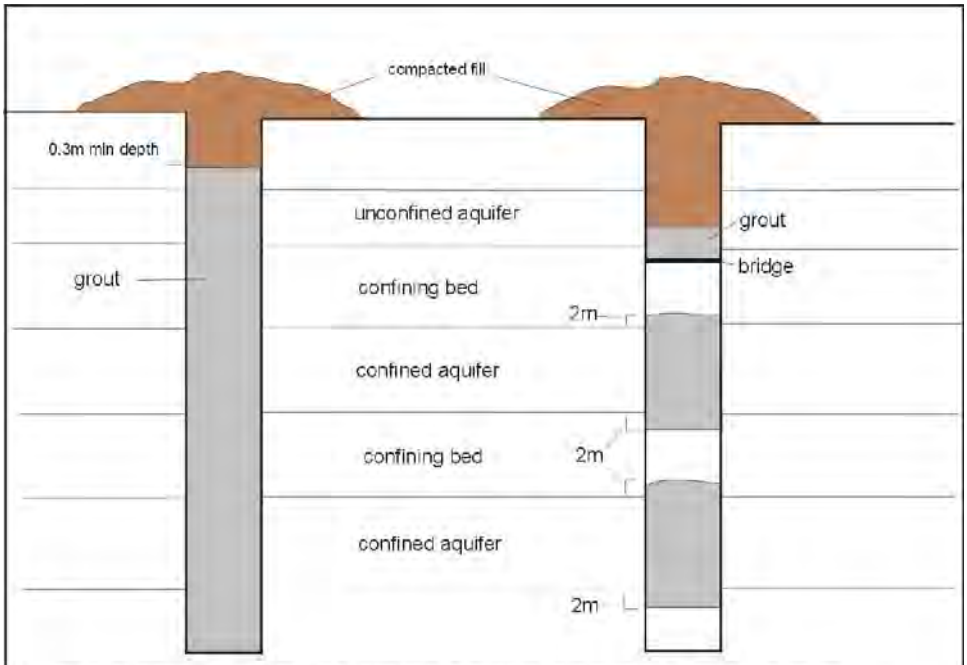


Figure 4: Possible methods of sealing drillholes in a multiple aquifer system

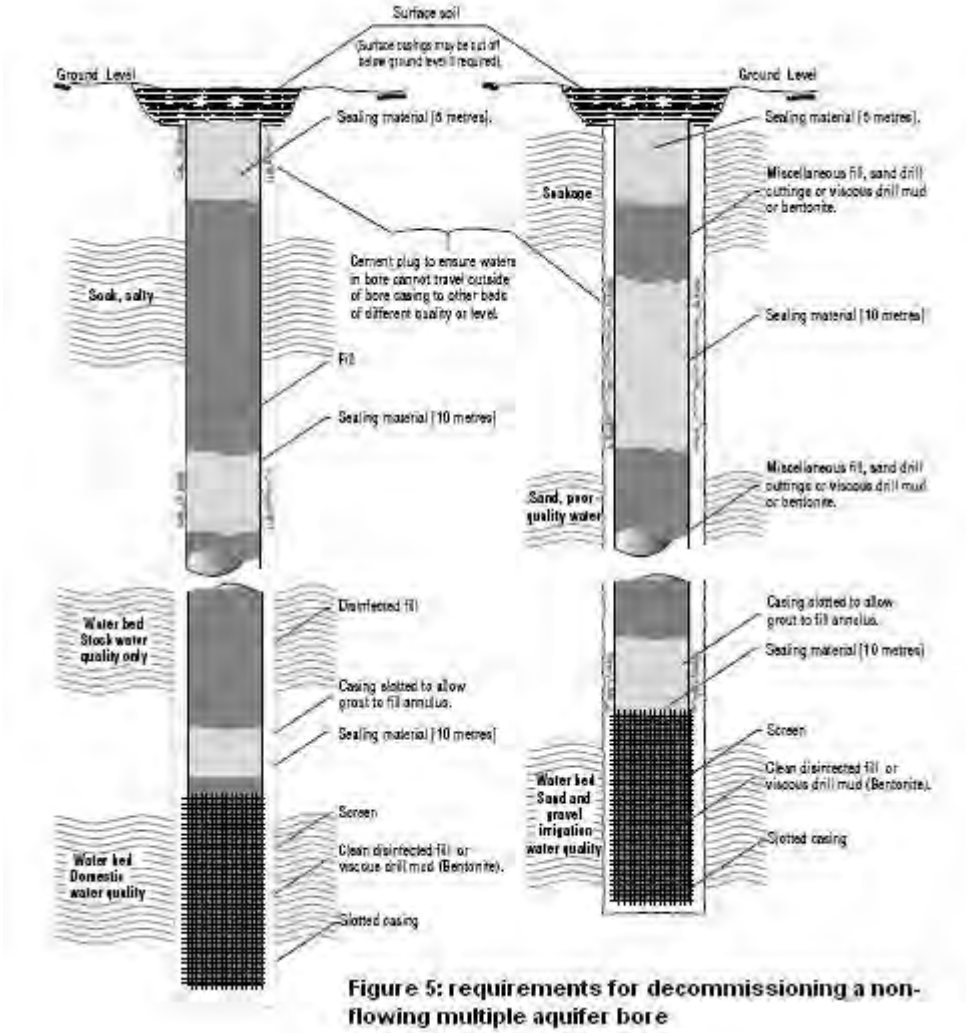


**Figure 5: requirements for decommissioning a non-flowing multiple aquifer bore**

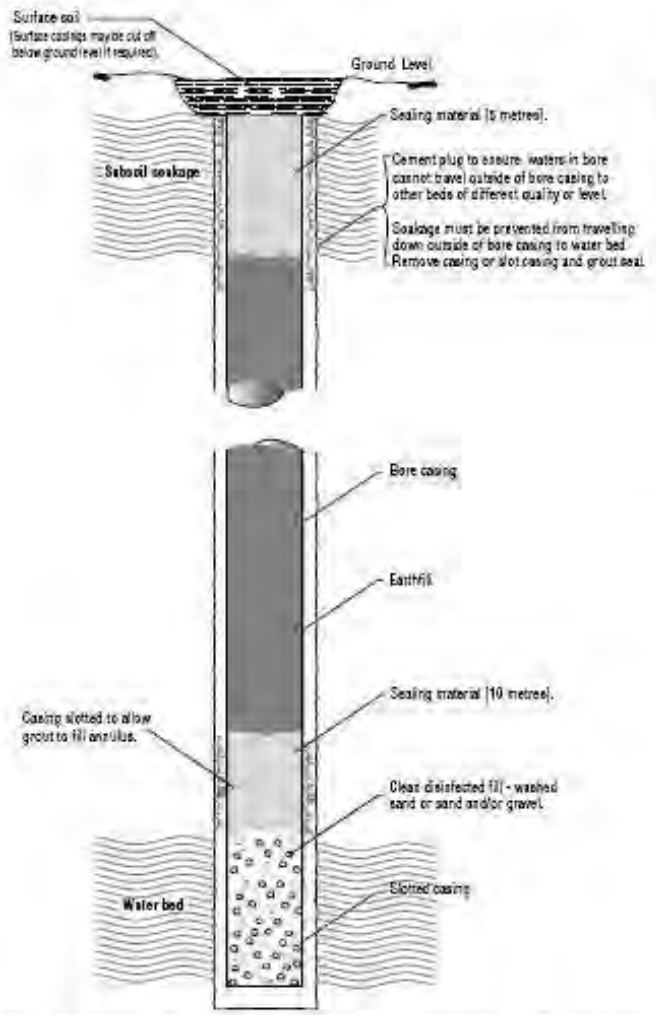


**Figure 6: requirements for decommissioning a single aquifer non-flowing bore**

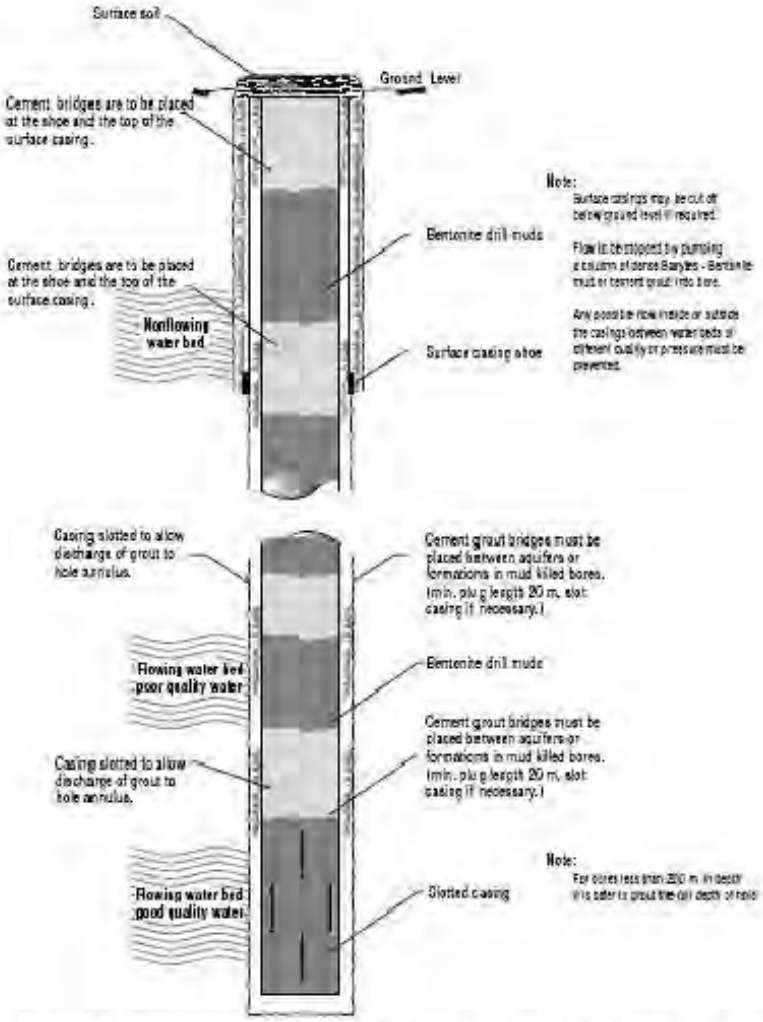


**Figure 7: requirements for decommissioning a multiple aquifer flowing bore**

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**ADVISORY NOTE**

# CONSTRUCTION AND REHABILITATION OF DRILL PADS AND BENCHES

***This advisory note outlines the approach for constructing drill pads and benches and their rehabilitation.***

## INTRODUCTION

Explorers are required under the *Mining Management Act 2001* to rehabilitate areas impacted by their activities. The main goal in environmental management of exploration activities is to minimise or prevent unnecessary impacts and rehabilitate sites where disturbance cannot be avoided.

Drill pads and benches are often the most visible evidence of mineral exploration activity. If allowed to remain unrehabilitated, they remain as scars on the landscape and have the potential to initiate erosion.

Drill pads and benches are to be constructed with a minimum of disturbance to the environment and rehabilitated in such a way as to promote revegetation and prevent the initiation of erosion. They should be constructed with prior planning so as to minimise the cost of rehabilitation and to reduce negative impacts on the environment.

## REQUIREMENTS

### 1. Construction

- Drill pads and benches should be prepared with a minimum of disturbance and earthworks.
- Minimise vegetation removal by avoiding large trees and leave rootstock in ground to assist with stabilisation and regeneration.
- Clear and level the minimum area necessary for the work to be carried out safely.
- The dozing of earth and excavated material down steep slopes from which it cannot be readily recovered and the creation of hard bare rock areas which cannot support vegetation, should be avoided.
- If excavations are required, remove topsoil and stockpile for re-spreading on completion of the drilling program.
- The use of an excavator to assist in the construction of the pads is recommended on steep slopes to minimise earthworks and enable the storage of subsoil and top layer for later rehabilitation operations.
- The use of tracked drill rigs is strongly recommended at sites on steep terrain.

## 2. Rehabilitation

- Dependent on site condition and surrounding landscape, it may be necessary to conduct earthworks to stabilise and reshape the site. The site should be rehabilitated to as near original condition after completion of drilling operations.
- Ground which has become compacted by the use of heavy machinery and traffic should be ripped along contour (not downslope) to loosen soil to aid revegetation and minimise erosion.
- As much as is possible of the earth and overburden that was excavated from the pads and benches should be pushed, raked or pulled back over. The stockpiled topsoil and vegetation should be re-spread over the site.
- **All sample bags, waste materials and pollutants must be removed from site and disposed of in an appropriate manner.**
- The drill cuttings should be dispersed around the site or returned to the drill hole or sump.
- Drill sumps should be backfilled with the excavated material and respread with stored topsoil.
- Permanent survey markers should be kept to a minimum and wooden pegs should be used in preference to steel pegs.
- Tracks constructed to access the drill site should be rehabilitated as per the Department's advisory note for the Rehabilitation of Grid Lines and Tracks.

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**ADVISORY NOTE**

# CONSTRUCTION AND RESTORATION OF COSTEANS AND BULK SAMPLE PITS

***This advisory note outlines methods for the construction and rehabilitation of exploration costeans and bulk sample pits.***

## INTRODUCTION

Explorers are required under the *Mining Management Act 2001* to rehabilitate areas impacted by their activities. The main goal in environmental management of exploration activities is to minimise or prevent unnecessary impacts and rehabilitate sites where disturbances have been made.

Costeans and bulk sample pits should be excavated with a minimum of disturbance to the environment and be rehabilitated in such a way as to promote revegetation and prevent erosion.

## REQUIREMENTS

### 1. Costeans

- Locate costeans to minimise vegetation clearance and avoid large trees.
- Use appropriate equipment such as backhoes and excavators. The use of bulldozers will not be supported.
- Excavation of costeans in steep terrain is discouraged. Internal bunding may be required on sloping ground to minimise erosion within the costean.
- Topsoil and subsoil should be stockpiled separately on either side of the costean (figure 1).
- Costeans should have a slope at either end to allow the escape of native fauna and stock.
- Suitable drainage structures should be put in place to minimise surface flow into the costean and help prevent erosion.
- Costeans should be backfilled with the stockpiled subsoil and topsoil as soon as sampling/mapping has been completed and before the onset of the next wet season.
- For safety purposes avoid deep narrow trenches. If necessary cut back the sides of the excavation to 45 degrees or shore up with suitable supports.

### 2. Bulk Sample Pits

- Stockpile topsoil and subsoil separately for later rehabilitation if not required for sampling purposes.

- At least one side of the pit should have a slope to allow the escape of native fauna and stock.
- At the time of rehabilitation the pit should be backfilled as fully as possible with stockpiled subsoil and rock. Sides should be battered and re-contoured and the stockpiled topsoil respread to aid revegetation.
- On sloping ground, drainage structures may need to be established to control erosion.

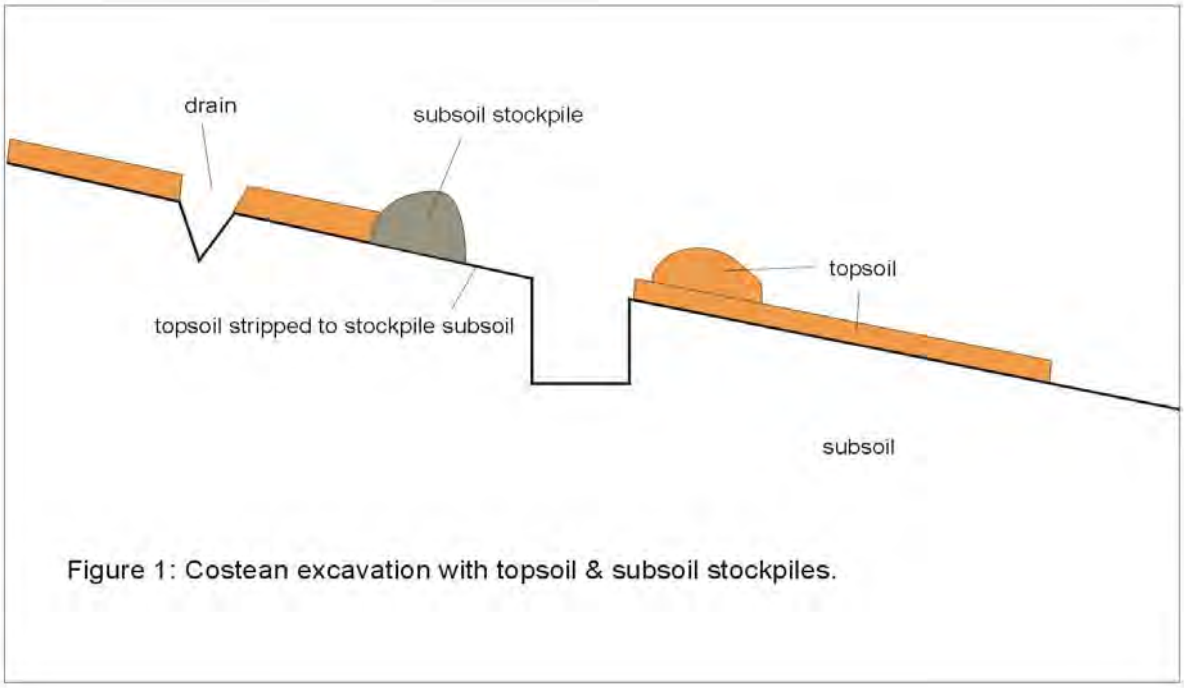


Figure 1: Costean excavation with topsoil & subsoil stockpiles.

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**ADVISORY NOTE**

# CLEARING AND REHABILITATION OF GRID LINES AND TRACKS

***This advisory note outlines the approach for clearing of grid lines and tracks and their rehabilitation.***

## INTRODUCTION

Explorers are required under the *Mining Management Act 2001* to rehabilitate areas impacted by their activities. The main goal in environmental management of exploration activities is to minimise or prevent unnecessary impacts and rehabilitate sites where disturbance cannot be avoided.

Grid lines and tracks should be prepared and cleared with a minimum of disturbance to the environment and should be rehabilitated in such a way as to promote rapid revegetation and prevent the initiation of erosion.

## GRID LINES

- Blade work should be kept to a minimum and where possible the 'blade up' method should be used. This method is sufficient to remove vegetation whilst retaining the rootstock, topsoil and seed to encourage rapid regeneration.
- Windrows should not be formed at the sides of the grid lines particularly on sloping ground as this will channel surface flow and cause significant erosion gullies. Any windrows which are formed should be pulled back over the grid line at the time of rehabilitation.
- Natural drainage lines should not be blocked.
- At the time of rehabilitation, if the surface of the grid line has become compacted or degraded or in areas where the topsoil has been substantially disturbed, the grid line should be scarified or contour ripped to promote revegetation.
- Remove all grid pegs and survey markers prior to relinquishment of the exploration licence or at completion of exploration activities for the site.

## ACCESS TRACKS

- The location of access tracks should be planned to avoid environmentally sensitive areas and heritage sites and in consultation with the landholder.
- Land clearance should be kept to a minimum by considering routes which minimise tree clearing.
- Blade work should be kept to a minimum and where possible the 'blade up' method should be used. Wherever possible vehicles should be driven across unprepared terrain.

- If vehicles are to traverse unprepared terrain more than once the same wheel tracks should be used each time.
- Keep the width of tracks to the minimum required to safely meet the needs of the largest vehicle.
- Natural drainage lines should not be blocked. Creek crossings should maintain the natural bed of the creek and the creation of a crossing by filling the creek bed with a “gully plug’ of material should be avoided.
- The formation of windrows at the sides of tracks should be avoided. These have the potential to channel surface flows can which cause significant gully erosion.
- Care should be taken in the planning and placement of tracks on sloping ground as they are subject to severe erosion. Erosion control structures such as spur drains, spoon drains or contour banks should be placed at suitable intervals.
- Rehabilitation of access tracks should be carried out prior to relinquishment of the exploration licence unless requested otherwise by the landholder.
- Back-grade windrows on access tracks.
- Remove any obstructions from creek beds.
- Ripping of tracks may be required if they have become compacted or deeply rutted and topsoil significantly disturbed. On sloping tracks avoid ripping down-slope.

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## 7.3 HYDROCARBON SPILL PROCEDURES

# HYDROCARBON SPILL RESPONSE

| Hazards | Personal Protective Equipment | Tools & Equipment |
|---|---|---|
| Fumes. | Closed footwear. | Material Safety Data Sheet. |
| Ignition. | Safety glasses. | Absorbent booms and pads. |
| Asphyxiation. | Gloves. | Sand. |
| Burns. | | Drums / Robust plastic bags. |
| Water Contamination. | | Shovel / Broom. |
| Soil Contamination. | | Safety cones and floor signs. |

**Control**

1. If safe to do so, immediately control the source of the spill. For example, upright the drum or stop the pump.
2. Safeguard human life and property by eliminating all ignition sources, including cigarettes, open flames, naked lights, pilot lights, mobile phones and radios.
3. Where a spill cannot be contained with existing resources evacuate the area and contact Emergency Services.
4. Do not inhale vapours. Flammable/explosive vapours may accumulate in poorly ventilated areas.
5. If the source of the spill is unknown immediately contact your Supervisor and refer to the Hazardous Substance Control Procedure.

**Contain**

6. Prevent the spill from entering drains or unsealed areas.
7. Surround the spill with absorbent booms or banks of sand to prevent the spill from further impacting the environment.
8. Commence spill clean up as soon as practicable after containment. For advice contact **Environmental Services on 1800 095 646**.

**Clean up**

9. Soak up as much of the spill as practicable:
   - For spills on sealed surfaces (e.g. concrete) it is recommended that absorbent pads, and/or sand be used.
   - For spills on unsealed surfaces (e.g. soil) that have pooled it is recommended that appropriate absorbent materials are used (e.g. sand or spill kit materials).
   - For spills on water it is recommended that absorbent booms and a skimmer be used.
10. Place clean up materials in a robust plastic bag or drum.
11. Remove material protecting drains or unsealed areas once spill has been cleaned up. If this material has been contaminated, place in a robust plastic bag or drum.
12. Wipe any excess spill from the outside of the bags or drums, placing rags etc inside the bag/drum before sealing.
13. Dispose of bags and/or drums containing hydrocarbon waste via a waste disposal company where the service is available, or to the local landfill in remote communities.

**Report**

14. Any spill in a workshop or bunded area which is less than 10 litres, that has not entered a drain or unsealed area, and has been contained and cleaned up does **not** need to be reported.
15. Report all other spills to the Exploration Manager **as soon as possible**.

Before the end of your shift, document the reported spill by completing an Incident Notification form.

## 7.4 ROX RESOURCES ENVIRONMENTAL MANAGEMENT PLAN


**Rox Resources Limited**

**Exploration**

# ENVIRONMENTAL MANAGEMENT DOCUMENT

# Environmental Policy Statement

"To ensure that each of its employees and contractors **implement the company's mineral exploration and associated activities in an environmentally responsible fashion"**

TO ACHIEVE THIS ROX RESOURCES WILL:

- Ensure compliance with statutory regulations, and maintain constant awareness of new and changing regulations with respect to the Environment.

- Clearly define and identify Environmental responsibilities for all its employees and contractors, and provide relevant information and training to all personnel.

- Ensure contracting companies, while engaged in work on site, adopt the Rox Resources Environmental standards and maintain those standards for their employees and sub-contractors.

- Establish a set of environmental commitments, policies and objectives for all its activities and plan all its operations so that they have the least environmental impact

- Implement an Environmental Management Plan that, amongst other aspects, identifies environmental responsibilities for all its employees and contactors, and conduct regular departmental safety meetings to provide an open forum for input from employees.

- Design and implement a system of work procedures, and an induction program, that will allow its employees and contactors to know exactly how they are to achieve their Environmental objectives and responsibilities.

- Implement a monitoring system that will ascertain which of the company's Environmental commitments and objectives are being achieved.

"We in the Mining Industry believe that there is a balance between development and conservation. Recovery from environmental damage is a slow process, so it is our responsibility to minimise this damage at every stage of our operations. Care for the environment is both individual and shared responsibilities. The success of an Environmental program ultimately rests on the willingness of everyone to cooperate and work collectively with team spirit."

**IAN MULHOLLAND**
Managing Director

# Environmental Policy Document

## ENVIRONMENTAL PRINCIPLES

The aim of this reinforces and stresses that the policy can be achieved by "self regulation". This means that every person employed on a Rox Resources operation has to be conscious of how they are affecting the environment in which they work and do their best to minimise their impact.

**Basically every person on a Rox Resources site is expected to be responsible for their actions and to take care of the environment.**

The ways that you affect the environment depend on the type of work you carry out at the Project. Your responsibility is to reduce your impact as much as possible.

## GENERAL PRINCIPLES

- To avoid unnecessary damage to the environment and any pastoral or farming improvements.
- To minimise disturbance to flora and fauna, whether natural or introduced (such as crops and livestock).
- To minimise disturbance to other users of the land, in this case the property owners.
- To avoid specific sites requiring preservation such as National Parks and reserved or unreserved historic, heritage, Aboriginal or archaeological areas.
- To protect the health and safety of the employees and other people in the area.
- To rehabilitate unavoidable disturbances to soil, water and vegetation.
- To ensure work force awareness of environmental management responsibilities.

## IMPLEMENTATIONS OF GUIDELINES: PRIOR TO EXPLORING

Plan to minimise disruption to the environment and identify the problems before going into the field.

The Site Manager in charge must contact any property owners to discuss the exploration program eg. area of farm affected, duration, type of operations, equipment to be used and proposed rehabilitation.

Ascertain from the property owner any areas to be avoided such as:

- areas undergoing regeneration
- water pipe lines (whether buried or on the surface)
- tanks, troughs
- contour banks
- fragile land areas
- young tree plantings
- shade clumps
- rangeland monitoring sites
- area of noxious weeds, or other declared plants
- seasonal areas needed for lambing, affected by drought etc.

Where a property owner has concerns which seem unreasonable and likely to impact on our planned program, the Site Manager must resolve these issues, if necessary in writing, so as to avoid misunderstandings, costly damages claims, and poor relations.

## ACCESS

- All vehicles are to be restricted to established roads or approved tracks.
- All access construction using mechanised equipment requires the permission of the Farmer.
- During the access preparation the objective should be to preserve the complete soil profile wherever possible. The "A" horizon contains nutrients and seed for regrowth. Use uncleared access where possible; regeneration will generally occur quickly and naturally. If clearing is essential the dozer blade should be held above the soil, such that trees and stakes are removed but soil, grass and low shrubs are retained.
- Access tracks will be kept to a minimum and constructed so as to minimise alteration to nature surface drainage and minimise future erosion.
- Disturbance of water courses should not be done or only if absolutely necessary, because of the likely extreme costs and difficulty of effective rehabilitation.
- Vehicle movement in wet weather should be minimised to avoid undue damage to road. Any damage caused by wet weather movement will be repaired as soon as possible.
- All gates are to be left as found.
- Fences should not be opened or pushed over without the knowledge of the land owner.
- Extra caution should be taken when driving near homesteads, water points and dams, and any areas where people are working to reduce dust nuisance and disturbance of livestock.

## IMPLEMENTATION OF GUIDELINES: DURING EXPLORATION

- No domestic animals or firearms are to be brought onto any project area.
- Vegetation clearing and surface disturbance will be kept to the minimum required to conduct exploration. Remember all mechanised clearing requires the written permission of the Farmer.
- All refuse will be taken from the work sites and disposed of in a proper manner (taken to a designated rubbish dump).
- Contractors will maintain work sites in clean orderly condition and ensure such sites are cleaned up on completion of the program or before extended breaks (and any refuse or cast off materials disposed of by suitable means to the satisfaction of the Company's representative on site).
- Minimise disturbance of the soil.
- Water courses, dams and ground waters must not be polluted through any means such as drilling fluids, fuel, non bio-degradable oils, rubbish or detergents.
- **Report all spills to your Supervisor. Spillages are to be considered an incident and are to be reported to your Supervisor.**
- Slurry discharges and water spills from drill sites must be contained and prevented from entering storage dams or watercourses, by use of sumps, trenches or other appropriate methods.
- All sumps and trenches must be completely filled/rehabilitated/drilling fluids removed.
- All drill holes to be plugged after completion of drilling, as required by the applicable State Department responsible for implementation of its relevant Mining Act.
- Liaison with the Landowner is essential, inform the Landowner of the type of work and what area on their land the work is to be carried out.
- Minimise disturbance to wildlife. Stock disturbance should be kept to a minimum, particularly when watering, lambing, calving or mustering is in progress (liaison with the Farmer essential).
- Avoid spreading declared plants and noxious weeds.
- Permanent marker pegs should be not less than one metre high and be positioned where they are not likely to cause injury to stock or hinder machine movement. All temporary markers should be removed as soon as possible if the Farmer wishes.
- Use wooden rather than steel survey pegs, and ensure they are clearly visible. Steel pegs of less than 1 m height above the ground must not be used.

- Bulldozing of grid lines and access lines should be carried out only when necessary. The type of vegetation, the soil type and the ground hydrology characteristics should be considered.
- If it is necessary to leave excavations open, and if they are potentially hazardous to people, wildlife or livestock, they must be fenced.

## ABORIGINAL SITES

There is one known aboriginal site located within the project area. If working in the area any known sites will be flagged off. If working around the sites do not sabotage/remove or disturb any artefacts in any way. If you see any one doing so, report this immediately to your Supervisor.

## IMPLEMENTATION OF GUIDELINES: POST EXPLORATION

- Comply with any statutory regulations or special conditions applying to the tenement.
- Rehabilitation practices should include liaison with the pastoralist.
- Access roads of no further value will be left in such a way as to promote natural rehabilitation:

    - lightly tyne to relieve compaction;
    - any stockpiled surface soil re-spread;
    - any windrows removed;
    - any gully plugs removed; and
    - natural surface drainage restored.

- Drill pads of no further value shall be contour tyned so as to promote natural rehabilitation.
- Costeans and trenches must be completely back-filled (with adequate compaction) and the stockpiled surface layer of soil re-spread so as to promote natural rehabilitation.
- Topsoil should be replaced on disturbed areas, seeding with local species carried out where appropriate, and surface left in a condition such that erosion will be minimal.
- Sample bags should be removed at the completion of a program. It may be desirable to establish a "sample bag farm" progressively during a program.
- Drill holes must be rehabilitated. This is best completed as the drill program progresses.
- If the land holder requests, make a final joint inspection of all relevant sites, to ensure that they have been left in a reasonable condition. Any disputes must be documented in writing.

## TEAMWORK – ENVIRONMENT

Rox Resources will welcome ideas that help make the company more effective in protecting the local environment. Any process or idea that reduces waste, cleans up work processes and improves operating efficiency makes the company more effective in protecting the environment.

Good environmental care pays dividends to all, its up to you to take care and reap the benefits.

# Environmental Checklist

**BEFORE EXPLORATION**

- Document and/or photograph all previous activities in the region.
- Consult EMP/MMP when constructing a campsite, that is, fuel storage, waste disposal and recycling, site selection etc.
- Communicate with all interested parties ensuring them that Rox takes their environmental responsibilities very seriously.
- Ensure all relevant approvals are obtained.
- Prepare a plan for minimisation of environmental impacts.

**DURING EXPLORATION**

- All disturbance to the environment must be kept to an absolute minimum, in particular clearing, tracks and hydrocarbon spills.
- When constructing drill pads avoid large trees & thick bushes, and keep dozer/loader blade above the surface where possible.
- Avoid placing drill pads on environmentally sensitive areas, for example, creek banks and steep slopes, as often the exact location of a drill hole can be slightly altered (check with geologist).
- Take precautions to avoid the spread of weed species.
- Ensure that mixing of chemically different aquifers is prevented.
- If surfacing ground water is highly saline, construct sumps to prevent its spread.
- If groundwater supply is limited, minimise its usage.
- Maintain communication with all interested parties.

**ENVIRONMENTAL CLEANUP (DIRECTLY AFTER EXCAVATION OR DRILLING)**

- Remove all litter and machinery from the exploration site.
- Remove or treat all soil contaminated by hydrocarbon spills.
- Ensure all drill holes are adequately capped.
- Backfill sumps, pits or costeans *if required* by land user.
- Re-contour slopes if erosion is a problem.
- Maintain communication with all interested parties.

**REHABILITATION (NO LATER THAN 6 MONTHS AFTER EXCAVATION OR DRILLING)**

- Either remove by loader or manually empty all sample bags, ensuring no plastic or calico remains on site (dependent on current land use).
- Backfill or bury all drilling sumps, costeans and drill holes, replacing topsoil last (allow for subsidence).
- Rip or scarify all disturbed areas.
- Spread fallen vegetation over all rehabilitated areas.
- Seed and fertilise rehabilitated area if necessary.
- Block off entrance to rehabilitated tracks.
- Invite landowner to view rehabilitation.

## 7.5 MMA Reporting Guideline

Northern Territory Government

# DRAFT GUIDELINE

Environmental incident reporting under Section 29 of the *Mining Management Act*
**Department of RESOURCES**

In accordance with section 29 of the *Mining Management Act* (MMA) operators are required to report an environmental incident or serious environmental incident:

*(1) As soon as practicable after the operator for a mining site becomes aware of the occurrence of an environmental incident or serious environmental incident on the site, the operator must notify the Chief Executive Officer of the occurrence.*

*Maximum penalty: 200 penalty units.*

Section 29 of the Act also states:

*(2) An operator who gives notice orally must, as soon as practicable after doing so, give a written notice to the Chief Executive Officer.*

*Maximum penalty: 200 penalty units.*

*(3) An offence against subsection (1) or (2) is an offence of strict liability.*

In order to assist operators in meeting their incident reporting obligations under section 29, the Department of Resources has developed this draft guideline set out on the following pages. The draft guideline may be formally issued by the Minister under section 47 of the MMA at some time in the future.

Operators should also be aware of section 33 of the MMA, which will apply from 1 July 2012, which states:

*(1) A person commits an offence if:*

*(a) the person releases waste or a contaminant that is from a mining site; and*

*(b) the release is not authorised by the mining management plan for the site.*

*Maximum penalty: 200 penalty units.*

*(2) An offence against subsection (1) is an offence of strict liability.*

*(3) It is a defence to a prosecution for an offence against subsection (1) if the defendant establishes a reasonable excuse.*

*(4) Subsection (1) applies regardless of whether the release:*

*(a) occurs on or outside the mining site; or*

*(b) causes, or has the potential to cause, environmental harm.*

"Environment" is defined under section 4 of the MMA as follows:

*land, air, water, organisms and ecosystems on a mining site and includes:*

*(a) the well-being of humans;*

*(b) structures made or modified by humans;*

*(c) the amenity values of the site; and*

*(d) economic, cultural and social conditions.*

When assessing an incident and making decisions about reporting on an environmental incident or serious environmental incident an operator should have regard to the definition of “environment” in the MMA.

Operators should conduct an appropriate assessment of the incident in order to determine the severity of the incident and whether the operator will be required to report the incident to the Chief Executive Officer of the Department of Resources.

For the purpose of classifying the severity of an incident and determining whether a report is required an operator may be **guided** by the following assessment matrix.

If it is possible to identify any one or more of the aspects of an incident set out within a severity class the operator should consider taking the appropriate actions for that class.

If an incident fits within the descriptions contained in different classes of severity, the operator should classify the incident by the highest level observed.

The following matrix is provided as a guide only. Operators should also have regard to the obligations set out in section 16 of the MMA, the conditions of authorisation, the permitted activities and the relevant procedures contained in the operator’s own management plan, including its associated systems.

If an operator is in doubt about whether a report is required then the operator should contact the Director of Mining Performance for further guidance on this procedure.

**SECTION 29 REPORTING – GUIDE TO SEVERITY CLASSIFICATION**

| Severity Class | Physical Environmental Consequence | Social/Cultural Environmental Consequence | Appropriate Actions |
|---|---|---|---|
| 1 | Unplanned low level impact on the physical environment, health of humans, structures or amenity of site, which was of short duration with no enduring actual or potential harm to the environment<br>No lasting effect observed or measured.<br>For example:<br>Minimal and reversible impact on any aspect of the environment.<br>No impact on well-being of humans.<br>All products of incident capable of being immediately retrieved or neutralised.<br>No risk of further escape, contamination or injury. | Unplanned low-level impact on social, cultural, heritage conditions or amenity of community, which was of short duration with no enduring actual or potential harm to the environment;<br>For example:<br>Minimal disturbance to heritage items or structures;<br>Minimal disturbance to local community, social or cultural conditions.<br>No lasting effect observed or measured. | Obligation to inspect, assess, monitor for ongoing impact, rehabilitate physical damage, mitigate any damage.<br>Obligation to record in register of incidents and include in annual report to DoR..<br>Unlikely to require investigation by Regulator. |
| 2 | Unplanned minor environmental impact with some minor actual or potential harm to the environment.<br>For example:<br>A discernible but reversible impact on non-threatened species and their environment, the duration of which is likely to be < 1 month.<br>Minor impact on the well-being of humans which may be left untreated or require only minor short term treatment.<br>All products of incident capable of being safely contained, retrieved or | Unplanned minor impact on social, cultural, heritage conditions or amenity of community, which was of short to medium duration with some enduring actual or potential harm to the environment.<br>For example:<br>People affected by minor loss of amenity or minor reduction of usual conditions;<br>Minor repairable damage to cultural or heritage sites, structures, property and items.<br>Minor disturbance to community, social, cultural conditions, where it is possible to restore conditions | Identify non-compliance with MMA, authorisation, MMP, or operators own management system.<br>Identify procedures to be followed, take appropriate action to contain/minimise impact or harm resulting from incident<br>Obligation to inspect and assess impact of incident, monitor for ongoing impact, rehabilitate physical damage, mitigate any damage.<br>Obligation to record in register of incidents and include in annual report to DoR.<br>Obligation to report |

| | | | |
|---|---|---|---|
| | neutralised in short term.<br>Low risk of further escape, contamination or injury. | in short term.<br>Short term effect observed or measured. | incident to CEO of DoR.<br>Possibility that an Investigation by Regulator will be required. |
| 3 | Unplanned moderate environmental impact >1 month duration to non-threatened species in their natural environment.<br>Unplanned moderate impact on the well-being of humans.<br>For example:<br>A moderate impact on non-threatened species and the environment, the duration of which is likely to be > 1 month.<br>A moderate impact on the well-being of humans which requires treatment.<br>All products of incident capable of being safely contained, retrieved or neutralised in medium term.<br>Moderate risk of further escape, contamination or injury. | Unplanned moderate impact on social, cultural, heritage conditions or amenity of community, which was of medium duration with some enduring actual or potential harm to the environment.<br>For example:<br>People affected by moderate loss of amenity or moderate reduction of usual conditions;<br>Moderate repairable damage to cultural or heritage sites, structures, property and items.<br>Moderate disturbance to community, social, cultural conditions, where it is possible to restore conditions in medium term.<br>Medium term effect observed or measured. | Identify non-compliance with MMA, authorisation, MMP, or operators own management system.<br>Identify procedures to be followed, take appropriate action to contain/minimise impact or harm resulting from incident.<br>Obligation on operator to investigate incident, including inspection and assessment of impact of incident.<br>Obligation to rehabilitate physical damage to environment, mitigate any other damage, including by provision of treatment/services.<br>Obligation to provide continued monitoring for ongoing impact.<br>Obligation to record in register of incidents and include in annual report to DoR<br>Obligation to report incident to CEO of DoR.<br>Investigation by Regulator will be required. |
| 4 | Unplanned major impact on environment > 1 year duration on ecosystem<br>Unplanned impact on a threatened species or its habitat.<br>Possible, irreversible damage to ecosystem.<br>Unplanned major impact on well-being of humans.<br>For example: | Unplanned major impact on social, cultural, heritage conditions or amenity of community, with some enduring actual or potential harm to the environment.<br>For example:<br>People affected by significant loss of amenity or significant reduction of usual conditions;<br>Significant repairable or irreparable damage to | Identify non-compliance with MMA, authorisation, MMP, or operators own management system.<br>Identify procedures to be followed, take appropriate action to contain/minimise impact or harm resulting from incident.<br>Obligation on operator to investigate incident, including inspection and assessment of impact of |

| | | | |
|---|---|---|---|
| | A major impact on non-threatened species and the environment, the duration of which is likely to be > 1 month.<br><br>Any impact on a threatened species or its habitat whether reversible or not.<br><br>A serious impact on the well-being of humans which requires urgent or long-term treatment.<br><br>Likelihood of safely containing, retrieving or neutralising products of incident is limited or will require long term action.<br><br>High risk of further escape, contamination or injury. | cultural or heritage sites, structures, property and items.<br><br>Significant disturbance to community, social, cultural conditions, where it is possible to restore conditions in the longer term, or where it may not be possible to restore conditions.<br><br>Long term effect observed or measured. | incident.<br><br>Obligation to rehabilitate physical damage to environment, mitigate any other damage, including by provision of treatment/services.<br><br>Obligation to provide continued monitoring for ongoing impact.<br><br>Obligation to record in register of incidents and include in annual report to DoR<br><br>Obligation to report incident to CEO of DoR.<br><br>Investigation by Regulator will be required. |

**Section 29 reporting is required for all incidents identified as being within severity class 2, 3 or 4.**

An environmental incident is an event where the following conditions are met:

- it is unplanned i.e. an activity or procedure not contained in or contemplated by the approved Mining Management Plan (and is therefore not an authorised activity); and
- it's impact is harmful to the environment.

Incidents likely to be the subject of a section 29 incident report may include, but are not limited to, the following:

(a) Escape (by any means such as a spill or leak) of a fuel, chemical, product or residue in solid, liquid or gaseous form including fumes, smoke, vapours, contaminated water, or dust;

(b) Emissions of noise (beyond reasonable permitted levels);

(c) Uncontrolled or accidental fire on any land, structure or infrastructure;

(d) Unauthorised, uncontrolled, or both, discharge of controlled waters to surface or ground waters;

(e) Damage to a Sacred Site, Aboriginal Protected Area, other protected area, archaeological or heritage site;

(f) Unauthorised mining, whether the activity is undertaken on or off an authorised mining site;

(g) Unauthorised clearing of vegetation or disturbance of the ground on or off an authorised mining site; and,

(h) Harm to human well-being.

It is not always necessary for there to have been an environmental impact for the requirement to report an incident to be triggered. The *potential* for any incident to have an impact on the

environment should also be taken into account when considering whether to make a report to the Chief Executive Officer. The definition of “environment” is broad and careful consideration should be given to each aspect of the environment before a determination is made.

**REGISTER OF INCIDENTS**

All environmental incidents that occur on the mining site should be recorded in a register located on site. Environmental incidents that are not reported to the Chief Executive Officer under section 29 of the MMA (e.g. an event that had the potential to cause serious environmental harm even if actual material harm was not observed at the time of the incident) should be recorded by the operator in the register. The Register must be submitted annually with the Mining Management Plan.

The register should be available at all times for inspection by Mining Officers.

All written reports to the Chief Executive Officer of DoR should include clear descriptions (and where appropriate diagrams or maps) of the incident and affected area of the mining site. In the case of any unauthorised mining activities including land clearing (on or off site) the report should include details of the affected area including all dimensions, and should include a site plan showing the approximate location of the area concerned in relation to the boundaries of the mining site.

The initial report to the Chief Executive Officer should be made as soon as possible after the incident has come to the attention of the operator (including any person employed or contracted by the operator) and can be made by telephone, facsimile or email.

Where the initial report is provided to the Chief Executive Officer of DoR by oral communications the operator is also required to provide written notification of the incident on the approved form as soon as practicable after the initial report. Preferably this should be provided within 48 hours of the initial notification.

Written reports should be submitted by email to **mineral.info@nt.gov.au**

The following revised form should now be used to report environmental incidents.

***Minerals and Energy***

*Notification of an Environmental Incident*

*Section 29 of the Mining Management Act*

**Forward completed form to: Mining Environmental Compliance Group, Department of Resources**

**Email: mineral.info@nt.gov.au (preferred) or Fax: (08) 89996527**

**PLEASE TYPE OR PRINT CLEARLY**

| | | |
|---|---|---|
| NAME OF MINING SITE | | |
| NAME OF OPERATOR | | |
| DATE & TIME OF INCIDENT | | |
| NAME OF PERSON NOTIFYING | | |
| POSITION/TITLE | | |
| CONTACT PERSON | | |
| CONTACT DETAILS | Business: | Mobile: |
| | Fax: | E-mail: |
| INCIDENT LOCATION (use GPS co-ordinates, attach map, etc as appropriate) | | |
| EMERGENCY & REMEDIAL ACTIONS TAKEN | | |

**ENVIRONMENTAL DETAILS**

| | |
|---|---|
| NATURE OF IMPACT AND SEVERITY<br>(Volume/ of spillage, area impacted, wildlife/vegetation/ erosion, etc)<br>DoR severity classification:<br>1 2 3 4 | |

| | |
|---|---|
| CURRENT SITUATION<br>(Potential / ongoing / ceased / etc) | |
| DETAILS OF ANY SAMPLES TAKEN<br>(when / where / type / number / time for results /etc) | |

**OPERATOR INTERNAL REPORTING**

| | |
|---|---|
| Has the incident been reported internally?<br>**YES / NO**<br>If so, to whom | Name:<br>Position: |
| Operator reference number (where applicable/available) | |

| | | |
|---|---|---|
| HAS THE DEPARTMENT BEEN NOTIFIED EARLIER? | | **YES / NO** |
| WHO WAS NOTIFIED | | |
| HOW (phone/email/fax) | | |
| WHEN (date & time) | | |
| BY WHOM | | |

Signed: _____ Date: _____

NAME _____

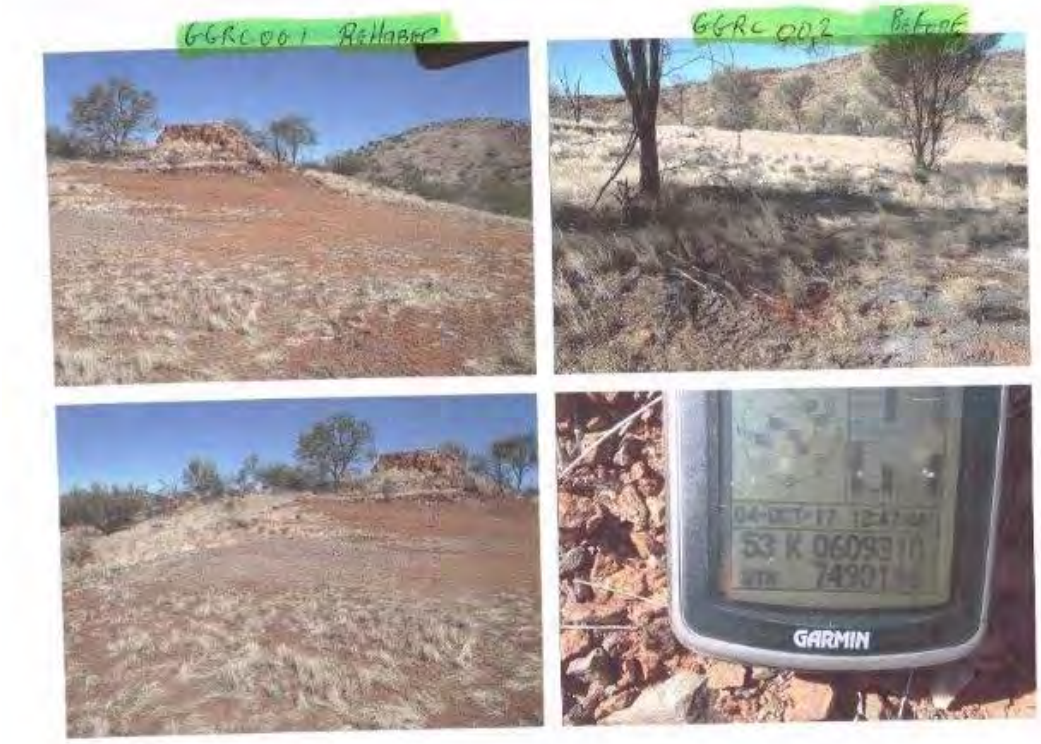
POSITION _____

| **OFFICE USE ONLY** | |
|---|---|
| RECEIVED BY | |
| DATE | TIME |

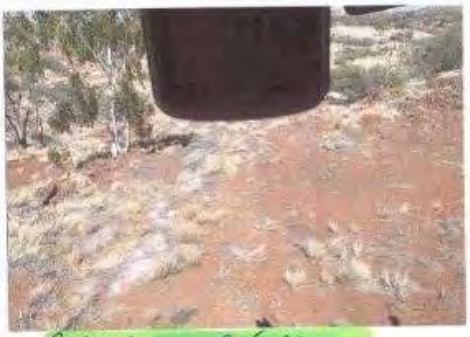
## 7.6 Bonya Rehabilitation Photographs – before and after

**Bonya Rehabilitation Photos October 2017;**

The following images show the securing of the old Bonya Mne shaft and completed rehab for drilling at Green Gully (GGRC001 to 003) and Bonya RC drilling (BYRC019 and BYRC020).







ByRC020 BEFORE

ByRC020 FINISHED

ByRC019 FINISHED


GGRC001 BEFORE



GGRC019 completed

GGRC002


GGRC002 BEFORE

GGRC002

GGRC00

GGRC003 BEFORE


GGRC002

GGRC003 REHABED

GGRC003 BEFORE

GGRC003 REHABED

## Bonya Rehabilitation Photos May 2016

*Figure 1. BYD001 and BYRC018 – under rehabilitation*

*Figure 2. BYRC003 - rehabilitated*

*Figure 3. BYRC004 – rehabilitated*

*Figure 4. BYRC005 – rehabilitated*

*Figure 5. BYRC006 – rehabilitated*

*Figure 6. BYRC007 – rehabilitated*

*Figure 7. BYRC012 – under rehabilitation, collar remains*

*Figure 8. BYRC014 – under rehabilitation*

*Figure 9. BYRC015 – under rehabilitation (collar remains uncut)*

*Figure 10. BYRC017 – under rehabilitation (collar remains uncut)*

*Figure 11. BYRC019 – under rehabilitation (collar remains uncut)*

*Figure 12. GHRC001 - under rehabilitation*

*Figure 13. GGRC03 - under rehabilitation*

# Bonya Rehabilitation Photos November 2015;

The following photographs were taken following backhoe work;

*Figure 1. BYD001 under rehabilitation*

*Figure 2. BYRC003 under rehabilitation*

*Figure 3. BYRC004 under rehabilitation*

*Figure 4. BYRC005 under rehabilitiation*

*Figure 5. BYRC006 under rehabilitation*

*Figure 6. BYRC007 under rehabilitation*

*Figure 7. BYRC012 under rehabilitation*

*Figure 8. BYRC014 under rehabilitation*

*Figure 9. BYRC015 under rehabilitation*

*Figure 10. BYRC017 under rehabilitation*

*Figure 11. BYRC018 under rehabilitation*

*Figure 12. Bonya Mine shaft*

The following photos (Figures 13 to 25) show 2015 drill sites;

*Figure 13. BYRC019 drill site before drilling*

*Figure 14. BYRC020 drill site before site preparation*

*Figure 15. BYRC020 drill pad*

*Figure 16. BYRC020 drill site following drilling – rehab required. Note; water flow into old shaft*

*Figure 17. GGRC001 drill site before site preparation*

*Figure 18. GGRC001 drill site after – rehab required*

*Figure 19. GGRC002 – before site preparation*

*Figure 20. GGRC002 – rehab required*

*Figure 21. GGRC003 before site preparation*

*Figure 22. GGRC003 – rehab required*

*Figure 23. GHRC001 – rehab required*

*Figure 24. GHRC002 – rehab required*

*Figure 25. GHRC003 – rehab required*