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MAKING THE GRADE



**Video produced by Channel 5 Pty Ltd
Booklet text and photos by Channel 5 Pty Ltd
Design and Production by Bonser & Associates Pty Ltd**

This booklet is a companion to the video

MAKING THE GRADE

“Making the Grade” shows how explorers can evaluate mineral potential without harming the environment. It highlights the importance of good communication throughout each stage of the project and suggests a range of techniques to minimise environmental impact.

The programme is designed to be viewed by all personnel engaged in the mineral exploration industry, and those who are interested in its operations.

Produced for:
Chamber of Mines and Energy of WA Inc
Department of Mines WA
Environmental Protection Authority WA
Department of Conservation and Land
Management WA
Australian Mining Industry Council

A contribution to the
State Conservation Strategy.



Roll vegetation with dozer blade up to preserve top soil and root systems.

A NEW APPROACH TO EXPLORATION

***“Exploration,
unlike mining,
is basically an
assessment process.
It’s not usually
considered a land
use in itself.”***

Exploration involves the collection of geological, geophysical and geochemical data to determine the mineral potential of an area. It’s an assessment process and, if managed correctly, is a temporary land use.

Explorers have a responsibility to ensure that the impact of their operations is minimised. A tenement allows the holder certain rights, but the rights of other land users and the natural value of the land must be considered at all times.

New technology has reduced the environmental impact of exploration. Remote sensing equipment, such as satellite surveillance, radiometric and gravimetric surveys and aerial photography, enable large areas of land to be evaluated without ground disturbance.

Once a specific target has been identified, however, detailed investigation of the anomaly will take place. At this stage of the exploration programme the potential for significant impact exists. An environmental management plan therefore needs to be developed before field studies commence.

LONG ODDS

Exploration rarely leads to mining. For every one thousand prospects about one hundred are examined on the ground. Of those, about ten will require drilling or large scale sampling. Perhaps one will lead to a productive mine.



Minimise impact of all operations.

RECOGNISING THE RIGHTS OF OTHER LAND USERS

Good environmental management is an important part of any exploration programme, regardless of land type or category. The rights and responsibilities of the explorer, however, do vary from one tenement to another, reflecting different environmental values and different land uses.

The main land types are:

Vacant Crown Land

Pastoral Land

Private Land

Conservation and Heritage Reserves

State Forest

Aboriginal Reserves

All of these various classes of land have special provisions under the Mining Act. A number of other Acts may also apply to exploration activities. These include:

Environmental Protection Act

Aboriginal Heritage Act

Explosive and Dangerous Goods Act

Noise Abatement Act

Wildlife Conservation Act

Waterways Conservation Act

Rights in Water and Irrigation Act

Bushfires Act

Soil and Land Conservation Act

Explorers need to be familiar with all the relevant requirements of these Acts before embarking on an exploration programme. If in doubt contact the Department of Mines for further advice.

CODES OF PRACTICE

Recognising the rights of other land users has not always been a high priority for some explorers. The Chamber of Mines and Energy is continuing to develop Codes of Practice for various categories of land.

A good track record in environmental management will assist explorers in gaining access in the future.

***“Every exploration
licence granted
has environmental
conditions attached.***

***And those
conditions may vary
according to the
nature of the land
you’re working on.”***



Cap drill holes for safety

DEVELOPING A MANAGEMENT PLAN

When developing an environmental management plan for an exploration programme a number of factors need to be considered. For example:

- What are the tenement conditions?
- How is the land currently being used?
- What is the current land tenure?
- Who is the current land user/landholder?
- What is the land's conservation value?
- Are there any rare flora or fauna on the tenement?
- What aspects of the site are of particular significance? (eg water supplies, vegetation, crops, livestock, wetlands, Aboriginal sites).
- Do other people or animals use the area?
- Are there any major plant or animal diseases in the region? (e.g. Jarrah Dieback)
- What access routes are currently available?
- What fire precautions are necessary?
- What watercourses and drainage lines are present?

To understand how the land can best be managed during the exploration programme good communication is essential in three areas:

Communication with the other land users or land managers.

Communication with the people working on site.

Communication with relevant government departments, agencies and industry associations.

OTHER LAND USERS/LAND MANAGERS

Talking to the landholder at an early stage is vital.

By finding out what his/her management priorities are, the exploration programme can be designed to minimise interference.

The landholder can advise on:

- Location of dams, creeks, waterholes, pipes, troughs, stock bores etc.
- Location of crops, pastures, livestock
- Location of rare flora/fauna
- Property improvements
- Mustering, lambing or calving times
- Current access routes
- Preferred location for new access tracks
- Preferred location for campsites

The landholder should be contacted before entering the property, at the commencement of major operations, and at the completion of the exploration programme.

On leaving, the explorer should inspect the operational site with the landholder to ensure that it has been left in an acceptable condition.

“Communication is the key to successful environmental management.”

**GOVERNMENT DEPARTMENTS,
AGENCIES AND INDUSTRY
ASSOCIATIONS**

Depending on the conditions attached to the tenement, the explorer will need to liaise with a number of government departments, agencies and local councils. The sooner contact is made the better.

A list of the relevant organisations is available on the back page.

PEOPLE WORKING ON SITE

All employees working on site, including contractors and subcontractors, need to be aware of good environmental practice. They should be familiar with company policy, the tenement conditions and any special arrangements which may have been reached with the landholder.

When using subcontractors the conditions should be stipulated in the contract,

with penalties if the required standards are not achieved.

The tenement holder, however, is ultimately responsible for conditions being met even if contractors do the work.

FIELD SUPERVISOR

To ensure good communication at all stages it's best to nominate one senior person to liaise with the different parties and be responsible for the environmental performance of staff in the field. The contact person should be aware of any legal requirements, local regulations (such as disease control) or special circumstances which may be relevant to the exploration programme.

In fire doubt...seek advice.



Maintain as much vegetation as possible.

A COMMONSENSE APPROACH TO LAND MANAGEMENT

Environmental management starts well before the geologist sets foot on the site and continues through each stage of the assessment process.

The primary aim of the explorer should be to minimise disruption to landholders, livestock, vegetation and land. In general, the more detailed and intensive the exploration programme becomes, the more detailed the required level of environmental management.

GOOD HOUSEKEEPING

During the early stages of exploration the impact on the land is minimal, and a commonsense approach to environmental management is generally all that's required.

- Inform the landholder/manager when and where the exploration activities will be taking place
- Minimise noise and dust when working near homesteads or other occupied areas
- Prevent unnecessary disturbance to stock
- Advise the landholder on location of marker pegs. Use wooden pegs rather than metal ones
- Leave gates and fences as they are found
- Keep the campsite clean and tidy
- Remove all rubbish and avoid littering
- Be aware of any rare plants and animals in the area and restrictions pertaining to these
- Observe local fire regulations
- Avoid spreading animal and plant diseases and noxious weeds. Wash

down vehicles and remove all seeds, soil and vegetative material before moving to a new area.

ACCESS

Keep clearing to an absolute minimum. Even common vegetation is important to protect the land from erosion, provide feed for stock and habitats for animals.

- Minimise the number and size of vehicles, particularly heavy plant items such as bulldozers and drill rigs
- Use existing tracks wherever possible
- Design new tracks to go around significant trees
- Roll vegetation, where possible, with the dozer blade up to maintain topsoil and root systems
- Prevent public access to the site (e.g. disguising the entrance to the track by doglegging)
- Avoid environmentally sensitive locations such as creek banks and areas subject to erosion.

“The primary objective is to leave the land as close as possible to its condition prior to exploration.”

SAFETY

The exploration site should at no time be a danger to human or animal life.

- Temporary markers should be removed
- All fuel, sewage and chemicals should be stored properly to avoid contamination of water or soil
- Drill holes, sumps, and costeans no longer required are to be back filled. Drill holes to be retained must be capped
- Fence any excavations left open for future use
- Observe all worker safety precautions as required. For example, safety footwear, hard hats, safety glasses, dust masks, equipment maintenance.

REHABILITATION

If managed correctly, very few exploration sites require extensive rehabilitation.

- Maintain as much vegetation as possible

- Do not discharge saline water into bush
- Avoid unnecessary disturbance to soil surface to prevent erosion
- Avoid the creation of windrows in clearing access tracks and survey lines
- When vegetation has to be cleared save the topsoil in a separate stockpile
- Topsoil should be replaced on disturbed areas and, if appropriate, seeded and fertilised
- All disturbed areas should be ripped to aid revegetation. A broken surface will help trap native seeds and improve rainfall infiltration.

COST SAVINGS

The cost of environmental management is in most cases very low, and if planned correctly from the start, will save time and money.



Rip the soil surface to aid vegetation.

FURTHER INFORMATION

For further information on environmental management contact:

**CHAMBER OF MINES AND ENERGY
OF WA INC**

Executive Officer, Technical Services
12 St George's Terrace, Perth 6000
Tel: (09) 325 2955

DEPARTMENT OF MINES WA

Environmental Officer
100 Plain Street, East Perth 6004
Tel: (09) 222 3333
(or Regional Offices, Karratha and
Kalgoorlie)

**DEPARTMENT OF CONSERVATION AND
LAND MANAGEMENT WA**

Environmental Protection Branch
50 Hayman Road, Como, Perth 6152
Tel: (09) 367 0333
(or Regional Offices)

**ENVIRONMENTAL PROTECTION
AUTHORITY WA**

Evaluation Division
1 Mount Street, Perth 6000
Tel: (09) 222 7000
(or Regional Offices, Karratha and
Bunbury)

USEFUL REFERENCES

Exploration Guidelines For Field Personnel (Chamber of Mines WA)

Code of Environmental Practice (Onshore/Offshore) (APEA)

Mine Rehabilitation Handbook (AMIC)

Dozer Manual (SANTOS)

Arid Zone Field Environmental Handbook (SANTOS/DELHI)

Note: The Chamber of Mines and Energy is currently developing a series of comprehensive Codes of Practice for various land types. These will be available from mid 1991.

This booklet is printed on recycled paper.

DEPARTMENT OF AGRICULTURE WA

Rangeland Management Branch
Baron-Hay Court, South Perth 6151
Tel: (09) 368 3333
(or Regional Offices)

**AUSTRALIAN MINING INDUSTRY
COUNCIL (AMIC)**

Executive Officer
PO Box 363 Dickson, ACT 2602

**ASSOCIATION OF MINING AND
EXPLORATION COMPANIES INC (AMEC)**

Executive Officer
9 Bowman Street, South Perth 6151
Tel: (09) 474 2121