



**BEST PRACTICE
ENVIRONMENTAL
MANAGEMENT
IN MINING**

Environmental Impact
Assessment



Environment
Protection Agency

4. THE BASIC ELEMENTS OF EIA DOCUMENTS

EIA documents must look at all environmental issues identified by government authorities, the company and the community during the scoping process. The detail generally depends on the significance of each issue and the assessment level set for the proposal.

4.1 INTRODUCTION TO THE PROJECT

The introduction provides the overall context of the project. This usually gives details of the company or joint venture, the location with regional and local maps, the regional environment, and the project background and objectives.

It should set out the benefits and implications for the region, including the implications of the project not going ahead. It should describe alternatives to the project.

The introduction should give a timetable for development and operation, and outline laws and government policies affecting the project.

It should summarise the scope, purpose and structure of the EIA document.

4.2 DESCRIPTION OF THE ENVIRONMENT

This section gives a comprehensive description of the environment before development. It looks at physical, biological and social aspects of the environment which the project is most likely to affect.

The section should include the regional setting, and adjacent and nearby land uses and tenures.

The climate, geology, landforms and soils, surface and groundwater quality and hydrology are among the natural features it should cover.

It should look at background dust and noise levels, and pollutants and other contaminants in the area.

It should examine the vegetation and animal life and whether any species is rare or

	endangered. This section should also indicate the conservation importance and regional distribution of vegetation and animal communities.	Details of how the company plans to handle and store reagents should be covered. It should look at fuel and energy sources and quantity, delivery and storage proposals, information on electricity supply and transmission corridors, water supply and management, and project infrastructure including workforce and accommodation.
EARLY	For vegetation it should look at threats such as plant diseases, clearance programs and weeds.	
PLANNING	It should describe the habitats and mobility of terrestrial and aquatic animals in the area, and threats including feral animals.	An important factor is the extent and location of liquid effluent discharges and gas emissions, and the disposal of wastes including oils, sewage and rubbish.
WILL IDENTIFY	It should describe the community infrastructure, the ethnography and archaeology of the area and regional and local demography.	Plans for tailings and materials with acid generating potential should be covered.
MOST		
ENVIRONMENTAL		

ISSUES

4 . 3 PROJECT DESCRIPTION

This section will go through each phase of the project's life including site preparation, construction, operations, proposed expansions, decommissioning, rehabilitation and site closure.

Under best practice EIA the document will describe each stage clearly and concisely, using plans and diagrams to help the reader. Artists' impressions might help illustrate how a project would look.

One obvious inclusion is a detailed map of the site including mine pits, processing facilities, infrastructure, tailings, overburden placement and services, and transport corridors.

The documents should describe the exploration program, delineate the orebody and discuss reasons for the site selection.

It should detail the stages of mining development and operations, including rehabilitation, and any plans for on-site mineral processing and the potential for further downstream processing.

This section should look at the transportation of materials and the mine product, and at haul road construction.

It should cover disposal of waste rock and overburden, final pit stability and decommissioning options.

4 . 4 IDENTIFICATION OF ISSUES

Mining operations can have significant impacts on the environment and the community.

Early planning will identify most environmental issues. A major development usually looks at effects on physical, biological and social environments through the life of the project.

The company's engineers work with environmental scientists and technical advisers to select what they believe is the optimum proposal for both the project and the environment, and describe this in the EIA. A separate module on the issue of Mine Planning for Environmental Protection is included in this series.

The EIS will include an evaluation of the overall effect on the total ecosystem and surroundings of the area.

The developer must look at impacts on individual components of the ecosystem before making an overall analysis. The criteria used to assess the impacts should be clearly stated and, wherever possible, effects should be quantified. Not all environmental impacts are detrimental — some may be beneficial.

The assessment should identify areas where information is incomplete or there is scientific uncertainty.

Best practice EIA requires an evaluation of the risks and hazards associated with the proposal. The developer should consider long and short term effects of development and operation of the project for the various locations where environmental impact might be significant.

Possible impacts of mining operations include:

Physical

- Significant land disturbance.
- Erosion, subsidence and instability.
- Alteration of water courses.
- Effects on quality, quantity or availability of surface water or groundwater.
- Salination of water or land.
- Acid drainage.
- Heavy metal contamination.
- Impact on coastal processes.

Ecological

- Direct impacts on vegetation, for example through clearing.
- Loss of habitat.
- Displacement of fauna.
- Impact on ecological processes or the maintenance of them.

- Loss of biodiversity by impacts on rare or endangered flora and fauna.
- Potential for spreading plant diseases and noxious weeds.
- Impact of toxic or hazardous materials.
- Creation of new habitats.

Land use

- Major changes of land use.
- Compatibility of development with surrounding land uses, for example residential and industrial areas.
- Preclusion of alternative land uses such as conservation or recreation.
- Increased demand on scarce natural resources such as water.
- Creation of new water storage and supplies.
- Creation of opportunities for alternative beneficial land uses.

Social

- Large influx of population to area — variable over differing stages of development.
- Potential effects on the health, safety, welfare or quality of life of individuals and communities through effects of traffic, odour, noise and dust, or dislocation or relocation of people.
- Possible significant change in the level or nature of community resources, such as cultural character, distribution of jobs and income and community identity.
- Creation of substantial employment opportunities and increased revenue to the local community.

Infrastructure

- Significant load on services and infrastructure such as roads, power supply, water supply, housing, hospitals, education and social services.

Camberwell coal joint venture, New South Wales

The Camberwell coal project is about 10km northwest of Singleton, near Camberwell Village, in the Hunter Valley of NSW. The open cut mine is in open grazing land and currently produces about two million tonnes of coal a year. The coal goes by rail to Newcastle for export.

An environmental impact statement (EIS) covered the planning, scientific and engineering aspects of the project. Key issues in the EIS included the following.

Noise and dust impacts

The project, a large open pit mine, is near a village and a number of rural properties. The company had to assess noise and dust and put practical controls into the project design. As well, it defined a *Zone of Affection* based on projected noise and dust fallout effect contours. The company adopted a policy of buying properties or paying compensation to owners in the mapped *Zone of Affection*.

Water management

To minimise the effects of water extraction and potentially contaminated discharge on watercourses, the company designed the project to capture and recycle all the water on the site. To do this it built a series of substantial interconnected water storages in the creek line.

Rehabilitation

The rehabilitation strategy for this grazing country was aimed at establishing optimum post-mining land use incorporating re-establishment of the original landscape character, surface stability of any land with higher erosion potential and enhancement of the natural timbered areas. Post-mining land uses include grazing, recreation on larger storage dams, and natural timbered areas on the steeper slopes.

Community awareness and public relations

Many new large coal mines were proposed or being developed in the area and community concern about mine development in the area was high.

Community awareness and consultation measures were seen as a most important part of the EIA process. Initiatives included:

- the production of a three dimensional model of the district showing the project in relation to nearby existing and proposed mines, residences, transport routes and the nearest villages and town;

- presentations and site inspections for the community and council at three open days, to which affected residents were invited personally;
- two days of group presentations to representatives of affected government departments to ensure the EIS addressed all these agencies' concerns.

The Camberwell Coal Project Environmental Impact Statement won the Royal Australian Planning Institute's 1990 Award for Excellence in Rural Planning. This was largely attributed to both the excellent technical approach and the effective interaction between the joint venture, the community and government throughout the assessment process.

The judges noted that 'all critical issues are presented clearly, there is a carefully controlled balance in the treatment of the wide-ranging technical components, and the information is presented in a form that can be readily understood by readers without technical knowledge'.

They also noted that 'the process to be followed was planned and executed meticulously with the result that all approvals were obtained and potential conflicts resolved without a public hearing and its attendant public expenditure'.

Heritage

- Disturbance of or distraction from the amenity of both Aboriginal and European heritage sites.
- Disturbance of areas of designated natural heritage or conservation significance.

4.5 MANAGEMENT OF IMPACTS

A critical part of best practice EIA is the inclusion of an environment management plan (EMP) detailing how the mining company intends to manage and reduce impacts. This plan forms the basis of an environmental management system (EMS) for the life of the project.

An EMP is just that — a plan to manage environmental impacts. The EMS is a broader strategy which takes in the EMP and sets up a total system to set targets and objectives, monitor performance, consult the community, and make sure that the management plan is effective. The EMS system, described more fully in section 6, is the subject of another module in this series.

In many cases environment management plans evolve through the life of a project as site-specific factors or new processes influence them.

The effects of these new factors might require monitoring and research to determine the best approach, such as rehabilitation trials for native species.

Mount Todd Goldmine, Northern Territory

The Mount Todd gold mine, near Katherine in the Northern Territory, is operated by Zapopan NL. The project underwent a comprehensive EIA to satisfy the Northern Territory and Commonwealth governments.

Considerable research and monitoring provided information for environment management plans to mitigate adverse impacts. The company is closely watching the effectiveness of those plans as mining proceeds.

A number of the complex issues in the EIA process are briefly discussed:

Conservation of the endangered Gouldian finch

The Mt Todd project area was identified as an important habitat for the endangered Gouldian finch.

Although the orebody and thus the minepit were within the finch's habitat, the company took considerable care in planning and design to locate elsewhere all activities that would result in disturbance to the habitat.

Extensive research resulted in a monitoring program to provide rapid detection of possible mine-induced effects on the finch.

The company devised ways to stop the finches drinking process water containing cyanide. These included seasonal management of the process water circuit, netting all open ponds containing cyanide and constructing bird watering facilities throughout the finch's local woodland habitat.

*Mt Todd, Northern Territory.
The Gouldian Finch.*

Control of acid mine drainage

As part of the EIA the company made a detailed investigation of the potential for acid mine drainage. Information from leach column tests is being used to manage waste retention facilities.

Aboriginal cultural heritage

Archaeological surveys of the Mt Todd lease identified Aboriginal sacred sites and a large number of archaeological sites, including camp and quarry areas, of importance to the local Aboriginal people. Considerable work to characterise sites and artefacts enabled important sites to be protected or salvaged. The project located its facilities to avoid all sacred sites and to minimise disturbance to archaeological sites. The company negotiated a good neighbour agreement with the traditional Aboriginal owners.

Water management plan

Natural run-off waters were diverted around project facilities, through a series of silt traps to the natural drainage. Comprehensive monitoring of surface and groundwaters warns of chemical seepage. A lined storage facility treats water of unacceptable quality before it is released.

As new issues are identified the operator must introduce a monitoring and research program and develop contingency plans. Mechanisms to amend environment management plans in response to monitoring and research are an important feature of best practice.

4.6 EVALUATION OF ALTERNATIVES

Mines are not moveable objects. They must be built where the orebody is located.

However, the company can look at alternative sites for many mine facilities. Transport corridors, processing facilities, waste disposal and administrative centres have different impacts on the environment. An evaluation of sites will include risk assessment and cost benefit analysis.

The alternatives can be presented so that the most appropriate or preferred option is generally obvious. A matrix which rates the differing environmental impacts and economic constraints can help.

The 'no project' or 'nil option' is important in the evaluation process. This allows the community and government to appreciate the consequences of the project not going ahead.

4.7 ASSESSMENT, MONITORING AND REVIEW

Best practice includes programs to monitor the project's impacts. These must be focussed, they have to produce quantitative data, their results must be interpreted and reported, and the changes they indicate have to be put into practice.

Monitoring and performance assessment programs help show whether environment management plans are working and if early predictions are correct. These programs should be designed specifically for individual management plans and should include performance criteria.

Where the monitoring program shows that performance criteria are not being met management practices must change.

The developer has to let the community and government authorities know how the project is performing.

The monitoring reports should compare predicted and actual results, and they should identify new issues. A commitment to regular reviews and environmental audits is another element of best practice.

4.8 COMMITMENTS

As part of best practice, the company should list the commitments it made during the environmental impact assessment process.

The list of commitments should describe the work and name the person or group responsible, set out a timetable, set standards for assessment, and name the person or group who must be satisfied by the work.

5. IMMEDIATE AND LONG TERM IMPACTS

Many mining companies in Australia have realised that a *whole of mine life* focus, from mine concept to mine closure, is the most cost-effective approach to managing environmental impacts.

Some effects can be predicted easily because they will occur with or straight after certain activities. Direct ground surface disturbances, noise from machinery and blasting, most dust and gas emissions, and disturbance to vegetation are all immediately obvious.

Other effects happen over a longer period are more difficult to predict and measure. Sometimes the response to remedial measures is slow.

Best practice should include steps to identify these long term effects and include them in the management plan.

Longer-term impacts include:

- gradual effect of gases such as sulphur dioxide on vegetation;

- generation of acid from the oxidation of pyrites in mine waste dumps;
- salination of groundwater by evaporation from abandoned mine pits;
- siltation of water courses and water bodies from unstabilised areas;
- instability of post-mining landforms after mine closure; and
- vegetation changes caused by altered water tables.

Monitoring programs must measure long term impacts. Environmental management programs must be flexible enough to adapt to minimise these effects.

The developer also has to be alert to cumulative effects. While individual impacts might be acceptable, a combination of individual impacts might have an unacceptable cumulative effect over time.

Ranger uranium mine, Northern Territory

The Ranger uranium mine, operated by Energy Resources of Australia Ltd (ERA), began operations in 1980. The mine is on Aboriginal land in the Alligator Rivers Region of the Northern Territory and is surrounded by the Kakadu National Park.

Considerable public interest in the issue of uranium mining in Australia ensured that the Ranger mine was the subject of a wide ranging public inquiry in the 1970s under the Commonwealth's EIA legislation. The inquiry canvassed many issues including the nuclear fuel cycle, uranium mining in other countries, environmental and socio-economic matters, radiation, and health and safety.

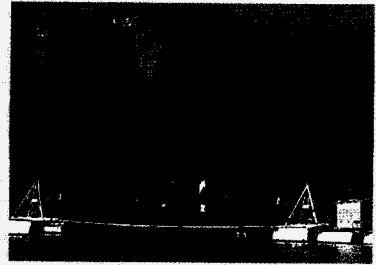


PHOTO: ERA RANGER

● Retention pond. Mt Brockman in background.

This inquiry, the Ranger Uranium Environment Inquiry, commonly known as the Fox Inquiry, recommended that the project proceed subject to strict environmental controls and supervision by the Commonwealth. A dedicated unit, the Office of the Supervising Scientist, was set up to monitor the mine.

ERA is committed to best practice environmental management at its operations. This recognises that EIA does not end with the project approval. It is a continuing process which includes research on longer term environmental and other impacts. Studies at Ranger are an integral part of managing such impacts.

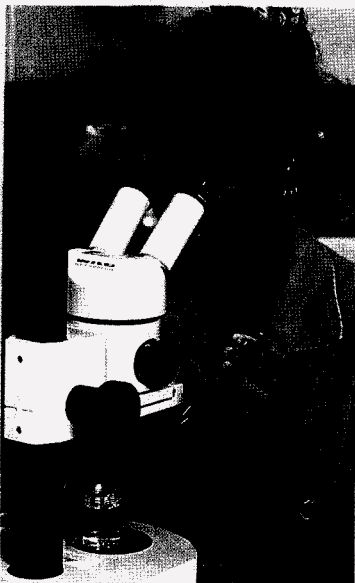


PHOTO: ERA RANGER

The research program looks at short and long term maintenance of ecosystems, stability of final landforms in the mined areas, and the sustained viability of reconstructed ecosystems.

The design and deployment of monitoring systems are important parts of the research. These are designed to check the performance of the mining operations, the movement of contaminants and any short term effects. The information helps planning, amelioration in the medium term and the effectiveness of rehabilitation in the long term.

In the wider context, environmental research on non-mining issues important to the region will help minimise external effects, such as weed invasion and feral animal damage on the rehabilitated minesites. It will also produce detailed information on land use options including commercial uses.

Biological toxicity testing with microscopic aquatic organisms to determine appropriate dilution for pond water release.

6. MAKING SURE IT WORKS

EIA identifies likely impacts at the project planning stage, and the environmental management system (EMS) helps the company to make the environment management plan work and to check that it is working.

Australian mining companies are progressively developing EMS to provide an integrated framework for action throughout the life of a mining operation.

An EMS encompasses the organisational structure, responsibilities, practices, procedures, processes and resources for effective environmental management. An outline of EMS is covered in a separate module in this series.

An EMS helps to anticipate and meet growing performance expectations and ensure compliance with regulations and commitments.

It is a systematic approach to developing policies and strategies. It provides ways to assess the effectiveness of management procedures and work practices. It sets objectives and targets, and a key element is a focus on continual improvement.

To achieve continual improvement, the EMS must include measurable indicators which enable people to assess their own performance. The EMS also encompasses the use of outside inspectors and auditors.

The continual improvement culture of best practice means a project operator can take corrective action and modify work practices to meet emerging difficulties.

The effectiveness of both EIA and EMS depends on the following principles:

- a strong commitment by all levels of management and the workforce to best practice environmental management;
- open consultation with anyone who has a stake in the project or its effects, including people within the company, the community and government authorities;
- a clear understanding of regulatory requirements and obligations;
- establishment of clear targets and objectives for environmental performance;
- a whole-of-mine-life strategy for the environment;
- the right resources in the right quantity, including training, to achieve targets and objectives;
- a system of assessing and monitoring performance against measurable indicators; and
- a mechanism for continuous improvement.

CONCLUSION

EIA has been widely used as a part of the approval process for mining projects in Australia for 20 years. It has evolved and developed significantly in that time. From being an 'add on' at the end of the engineering studies it has become an integral part of project development as community concern for the environment has increased.

The case studies on the Mt Todd gold mine and the Camberwell coal mine are contemporary examples of best practice EIA in Australia.

The complementary module on mine planning for environmental protection

(MPEP) contains other case studies, including the Hunter Valley coal mine and the mineral sands operation at Swan Bay in NSW, which are useful examples of the iterative process involved in developing projects while minimising adverse environmental impacts.

The benchmark for best practice EIA will continue to improve as practitioners try out new approaches. Currently EIA is the best way to predict potential impacts. It highlights the importance of continuing effective management to minimise, control or mitigate adverse environmental impacts and a commitment to good environmental results.

FURTHER READING

Environmental Protection Authority 1993, *Environmental Reviews — Guidelines for Proponents*, EPA, Western Australia.

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Environmental Protection Agency 1994, *Review of Commonwealth Environmental Impact Assessment — An Analysis of EIA Practices and Procedures in Australian States and Territories*, EPA, Canberra.

AMIC 1975-1994, *Proceedings of AMIC Annual Environmental Workshops*, Annual Publications, Australian Mining Industry Council, Canberra.

Mining Project Environmental Impact Statements.

Queensland Department of Minerals and Energy 1995, *Technical Guidelines for the Environmental Management of Exploration and Mining in Queensland*.

FURTHER MODULES PLANNED FOR THIS SERIES INCLUDE

Overview of best practice environmental management in mining
Community consultation and involvement
Mine planning for environment protection
Tailings containment
Rehabilitation and revegetation
Onshore exploration for minerals
Onshore exploration and development for oil and gas
Planning a workforce environmental awareness training program
Prevention and control of acid mine drainage
Environmental management systems
Environmental auditing
Water management
Environmental incident and emergency/contingency procedures
Offshore oil and gas exploration and development
Decommissioning and planning for mine closure
Post-mining and land use management
Contaminated site clean up
Use of artificial wetlands for treatment of contaminated water
Noise, vibration, dust control, atmospheric emissions and air quality
Waste management through cleaner production
Landform design and construction

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The series illustration of the Koalas by Christer Erikson was commissioned by BHP Transport in 1988. Reproduced courtesy of BHP Transport.

Front cover Photo: Mt Todd, Northern Territory. An important habitat for the endangered Gouldian Finch was identified in the EIA process.

Photo: Babs & Bert Wells, Nature Focus

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Environmental Impact Assessment

One module in a series on

**BEST PRACTICE
ENVIRONMENTAL
MANAGEMENT
IN MINING**

Environment Protection Agency

June 1995

FOREWORD

Environment protection is a significant priority for our society. For government a major role is setting environment standards and ensuring individuals and organisations meet them. Also government, industry and community organisations are working increasingly as partners in protecting our environment for present and future generations.

Representatives of the mining industry in Australia and the Environment Protection Agency, an agency of the Australian Department of the Environment, have worked together to collect and present information on a variety of topics that illustrate and explain best practice environmental management in Australia's mining industry. This publication is one of a series of modules aimed at assisting all sectors of the mining industry — minerals, coal, oil and gas — to protect the environment and to reduce the impacts of mining by following the principles of ecologically sustainable development.

These modules include examples of current best practice in environmental management in mining from some of the recognised leaders in the Australian industry. They are practical, cost-effective approaches to environment protection that exceed the requirements set by regulation.

Australia's better-performing mining companies have achieved environmental protection of world standard for effectiveness and efficiency — a standard we want to encourage throughout the industry in Australia and internationally.

These best practice modules integrate environmental issues and community concerns through all phases of mining from exploration through construction, operation and eventual closure. The concept of best practice is simply the best way of doing things.

The case studies included in these modules demonstrate how best practice can be applied in diverse environments across Australia, while allowing flexibility for specific sites. They achieve this through including practical techniques, recommendations, guidance and advice from Australia's leading mining practitioners.

I encourage mine managers and environmental officers to take up the challenge to lift performance in environment protection and resource management and to apply the principles in these modules to their mines.



Barry Carbon
Executive Director,
Environment Protection Agency,
and Supervising Scientist

EXECUTIVE SUMMARY

Environmental impact assessment (EIA) is one of the first steps towards getting a mining project up and running in Australia.

Australian companies have evolved ways to use the environmental assessment process to enhance their environmental planning and management to get the best results for their project and the community.

A company planning a resource development must, in most cases, have the environmental impacts assessed by a government authority — local, State or Federal — and win approval before it can proceed.

Applying best practice principles to EIA produces optimum results for everyone. Mining companies find their projects are more efficient, and the community and the environment benefit.

EIA is the best way to assess potential effects on the environment. It enables the developer, community and government authorities to work together in dealing with those impacts.

Best practice EIA includes early and comprehensive community and government consultation, cooperation with assessing

authorities on EIS guidelines and levels of assessment, and the preparation of an environmental impact statement (EIS) by the company.

From this process will flow the company's environmental management plan, which will be part of an overall environment management system (EMS). This system will set environmental objectives, outline how they will be achieved, and check progress towards that achievement. The system builds in measures for continual performance improvement.

EIA has been widely used as a part of the approval process for mining projects in Australia for 20 years. It has evolved and developed significantly. From being an 'add on' at the end of the engineering studies it has become an integral part of project development as community concern for the environment has increased.

The benchmark for best practice EIA will continue to improve as practitioners try out new approaches.

ABBREVIATIONS

Abbreviations used for common environment expressions in this text are:

EIA	Environmental Impact Assessment
EIS	Environmental Impact Statement
EMP	Environmental Management Plan
EMS	Environment Management System
MPEP	Mine Planning for Environment Protection
NOI	Notice of Intention
PER	Public Environmental Report

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INTRODUCTION

This module gives an overview of best practice in environmental impact assessment in the mining industry. The aim is to foster best practice principles throughout the industry. The module draws on the experience of companies in Australia which already aspire to and use best practice.

Environmental impact assessment, or EIA, is the process in which environmental factors are integrated into project planning and decision making in a way that is consistent with ecologically sustainable development.

EIA helps to protect the environment by looking at the likely environmental effects of projects. It helps the developer to minimise these in project construction, operation and decommissioning.

EIA is commonly applied to new mining and oil and gas developments in Australia. Most projects require development approvals, of which EIA is an integral part.

The mining industry has played an important role in establishing best practice in EIA in Australia. The best practitioners have worked closely with government agencies and the community to develop ways to ensure that projects are carefully planned, reviewed, managed and monitored to minimise their effect on the environment.

1. WHAT IS EIA?

The community expects its governments and industry to protect the environment and wants to know what the effects of proposed developments will be. EIA can identify what will happen and help ensure that the developers will consider these effects when they are planning their projects.

1.1 BEST PRACTICE EIA

Best practice EIA is the delivery of high quality information. It provides information to the developer and advice to the community, to government and to decision makers.

It requires the developer to describe the proposal in its particular environment, to identify the potential impact on the environment and to describe how the developing company plans to manage those effects.

It helps the developer to look at alternatives which are prudent and feasible. Where it appears that environmental or social values cannot be fully protected, EIA encourages the developer to find ways to lessen the consequences.

Best practice EIA identifies environmental risks, lessens conflict by promoting community participation, minimises adverse environmental effects, informs decision makers and helps lay the base for environmentally sound projects.

Early improvements in the environmental performance of industry throughout Australia were largely driven by government authorities, which set minimum standards for compliance.

In its early form EIA was an exercise in gaining approval for a project by making commitments to prescribed standards. Companies often treated it as an 'add-on' formality after they had completed engineering design and project planning.

The mining industry now recognises the benefits of integrating EIA in all stages of a project, from exploration and planning, through construction, operations, decommissioning and beyond site closure. EIA is now one of the first, rather than the last, elements in the planning process.

It entails a process that is continually applied to defining the environment, identifying issues and trying to achieve the safest, most efficient and most environmentally sound operation possible for the project operators and the community.

It relies heavily on effective mine planning for environment protection (MPEP), which is the subject of a separate module in this series.

Many companies which have adopted best practice environmental management have recognised that this can bring significant savings and competitive advantage through operational and production efficiencies and increased community acceptance.

Best practice EIA helps companies choose the most suitable economic and environmental options. This in turn reduces environmental effects and long term costs to the community and the company.

It also ensures that the developer has consulted and listened to the community and that the community is generally satisfied.

1.2 WHO REQUIRES EIA IN AUSTRALIA?

Any of the three tiers of government in Australia can require an EIA. In some circumstances more than one tier — local, State or Commonwealth government — might be involved, possibly in a joint assessment process.

THE MINING
INDUSTRY HAS
PLAYED AN
IMPORTANT
ROLE IN
ESTABLISHING
BEST PRACTICE
IN EIA IN
AUSTRALIA

Steps are under way, through the Intergovernmental Agreement on the Environment, to improve EIA in Australia and to reduce administrative duplication.

1.3 THE LEVELS OF EIA

In Australia an EIA can be at several levels of assessment. Some involve public review and some do not.

For projects that are to undergo major environmental assessment the proponent produces an initial document called an environmental impact statement (EIS).

Minor assessments may require a lesser document known as a public environmental report (PER).

The level of EIA depends upon the nature of the proposal, its complexity, the local environment, its expected effects and the degree of controversy it has generated.

The assessing body, whether it be local, State or Commonwealth government, will tell the developer the assessment level required. This generally follows the developer's initial advice to the assessing authority, often through a document known as a notice of intention (NOI) or initial advice statement.

The assessing authority might require public review or community consultation for complex or larger proposals.

Where the initial information clearly demonstrates that the developer has considered the environment and plans acceptable safeguards, the authority might not require public review if it believes the environment is protected and the impacts are within acceptable limits.

1.4 THE COMMON FEATURES

Commonly an EIA will identify the issues that the developer has to consider.

The assessing authority will draw up guidelines for the EIA. Sometimes it will seek community advice or review.

EIA documents, such as the EIS, the PER and the NOI, will:

- outline the objectives and describe the proposal;
- analyse the need for the project;
- indicate the consequences of not proceeding;
- include enough information and technical data for assessment of the impact on the environment;
- look at alternatives to the proposal or aspects of it;
- describe the environment likely to be affected by the project or alternatives;
- evaluate and assess the potential impacts of the proposal and alternatives;
- outline the reasons for the preferred options;
- describe and evaluate the likely effectiveness of proposed environmental standards or safeguards and describe how these will be implemented and monitored; and
- cite information sources and consultations during the preparation of the environmental documentation.

Poseidon Bow River Diamond Mines, Western Australia

Poseidon Bow River Diamond Limited (Poseidon) operates an alluvial diamond mine on Lissadell Station, at the southern end of Lake Argyle in the Kimberley Region of Western Australia. The mine has been operating since 1988 covering an area of over 550 hectares.

The original mining proposal was not subject to formal EIA procedures under the Western Australian Environmental Protection Act, however, environmental conditions were applied under the Mining Act and pollution control licensing. This is a fairly standard approach in Western Australia for smaller mining operations where environmental impacts are well known and easily managed.

The water level in Lake Argyle has subsided since the mine commenced and new reserves of diamonds have been discovered in low lying areas. Poseidon developed a proposal to mine this area which was assessed by the Western Australian Environmental Protection Authority in 1990 as a Consultative Environmental Review (similar to a PER in other States) and has been approved subject to a number of conditions. The Consultative Environmental Review (CER) is the lowest level of public review available in Western Australia and is used where a proposal is of local or regional public interest and potential environmental impacts are easily managed.

A further proposal to extend mining operations to even lower lying areas was developed in 1993 as the water level continued to subside. This proposal was also assessed via a CER process which included discussions with local interests. It involved mining in areas subject to creek flows during the wet season. The main issues addressed included:

- mining along a creek;
- reinstating the creek; and
- rehabilitating wooded areas to a standard comparable with the original.

These impacts were managed by restricting mining operations in the creek to the dry season whilst allowing sufficient time for full reconstruction of the creek section prior to the onset of the wet season. During the reconstruction the creek bed was used as a haul road to aid compaction. Rehabilitation of the creek was successful, resulting in the reinstatement of a stable waterway.

The rehabilitation objective for the operation is to restore the stable landforms and vegetative cover of the land's pre-mining condition, so that pastoral activity can resume.

Recent favourable field inspections of previously mined and rehabilitated areas have satisfied the Western Australian Environmental Protection Authority that the most recent extensions to mining can be carried out with minimal environmental impact and that mined areas can be left in a suitable form for future pastoral use.

2. EIA METHODOLOGY

In achieving best practice mining companies and government agencies have developed common methodology.

2.1 EARLY INFORMATION COLLECTION

In best practice EIA the developer begins research early in the life of the project. This usually includes the collection of baseline data on the local environment.

Many mining companies see benefit in beginning environmental studies before they formally decide to proceed with project evaluation and EIA. They often begin in the exploration stage, knowing they will use the information in the EIA documents.

Understanding the characteristics of the site is essential to developing effective management strategies.

Sometimes site characteristics can take a long time to evaluate, particularly if the site is affected by periodic events. For example, climatic conditions such as rainfall may be erratic in any one year. Recordings over several years provide greater certainty. Streamflow events, groundwater levels and temperature ranges are other examples of parameters which should be evaluated over time, particularly if a project is in a remote area where information is not available.

Many species of plants can be identified only at particular times of the year, when they are flowering. Some animal species may be present only in certain seasons.

Geological and climatic conditions make acid mine drainage a critical issue at many mining operations in Australia. Early identification of a potential problem can help

the developer minimise the impact by taking it into account in planning, in materials handling and in site layout.

Some mines have faced costly delays when they have realised, as they were seeking environmental approvals, that they needed an extra annual cycle of information on an important environmental aspect. Best practice EIA should identify the period over which data must be collected.

As well as helping prepare the EIA, much of the data collected for mining operations in remote areas of Australia is often the primary source of environmental information on the region.

2.2 SCOPING AND CONSULTATION

Companies planning major projects recognise that scoping — a process of identifying all of the relevant issues that must be considered for the EIA and community consultation — is fundamental to best practice in environmental impact assessment. Experience has shown that it is best to consult government authorities and the community as early as possible.

Scoping

Scoping is essential in identifying key environmental issues and setting priorities. It also helps a developer recognise issues that are not significant or which earlier environmental reviews have covered.

Early community involvement makes the EIA process more transparent and enables the developer to look at alternatives before committing substantial time and money to a proposal or a site.

Government agencies

Consultation usually begins with informal discussions with government agencies responsible for EIA and project approval. They may include:

- an environment protection authority with responsibilities for EIA;
- mines or resources departments which approve, oversee or grant tenements;
- departments responsible for infrastructure and utilities;
- local government which gives local planning approvals and provides services;
- planning departments;
- government decision makers such as ministers for mines, for the environment, for planning, and others.

The objective of early informal discussions is to give the agencies an overview of the proposal and to get advice on assessment processes. These talks can raise early warning signals of possible problems.

The talks help establish a timetable for research, for managing the assessment and approval processes and, ultimately, for gaining approval.

In many cases government officers, using their experience, are able to advise on environmental sensitivities and community concerns which the project might face.

Close liaison between companies and authorities before the formal assessment process is vital to ensure that everyone has a clear understanding of:

- approval processes;
- the nature of the proposal;
- the developer's constraints in financing, timing and marketing;
- the likelihood of presently unknown environmental impacts occurring at some time in the future (environmental risk assessment); and
- the environmental assessment options.

For most Australian mining projects local, State and Territory Governments undertake the EIA. The Commonwealth becomes involved if the project is on Commonwealth land, if export approval is required or if the Foreign Investment Review Board, which regulates foreign investment, has to give its approval.

Community consultation

Community consultation gives the developer and governments an opportunity to hear public concerns and seek advice early in the planning process. It also helps the company to tell the public about itself and its plans.

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Community consultation programs are best developed before the company officially announces the project. Successful consultation programs include initiatives ranging from informal forums or regular briefings to the establishment of community consultative groups or liaison committees.

Best practice community consultation and involvement is outlined in a separate module in this series, but the main principles are repeated here.

The participation of key community representatives and groups is essential.

As a rule, consultation should begin as early as possible.

The community's first impressions of a development proposal and company staff are always important. If people lose confidence in the company and oppose the project from the outset the situation is very difficult to turn around. However, a company that involves the community early usually gets greater community acceptance and better environmental results.

The company's credibility depends largely on the person it nominates to represent it. The lead figure must be a key decision maker in the company, able to present the proposal in simple and understandable language and to make commitments which bind the company. Most importantly, people must know that the company is listening to them and considering their views in planning the project.

Beenup Heavy Minerals Mine, Western Australia

The Beenup titanium minerals deposit is located on farmland near the town of Augusta in the southwest corner of Western Australia. Mineral Deposits Pty Ltd plans to mine the deposit for ilmenite, zircon and rutile. The project will separate an estimated annual production of 600 000 tonnes of heavy minerals on site and transport the product by road to the port of Bunbury for export.

Community consultation was a critical part of the EIA process and helped the company look at key environmental issues associated with the project.

Before the project was confirmed the company had informal talks with the local council to set up a framework for community advice to project planning and review.

The resulting consultation group included representatives of the local council, landowners, the Leeuwin Conservation Group, the WA Farmers' Federation, the Augusta Ratepayers' Association, the Augusta Businessmen's Association, the WA Fishermen's Association, the South-West Development Authority, the Department of Conservation and Land Management and Mineral Deposits Pty Ltd.

One of the major roles was to look at transport arrangements for mineral products. This resulted in a major new sealed road from the minesite to Bunbury, by-passing several small towns.

The company also sought community advice on rehabilitation planning, land use options, workforce, environmental studies, social impacts and regional economic development.

The consultative group visited Mineral Deposits Pty Ltd's mining and separation operations in New South Wales and similar titanium mineral operations in Western Australia. The group's report on the visit went into the environmental review and management program (an EIS document), required by the Western Australian Environment Protection Authority.

The company sent group meeting reports to the local media, set up shopping centre information displays, arranged open days at the site, gave talks to community groups and service clubs, and mailed information direct to everyone living in the Augusta-Margaret River area.

A survey in November 1989 identified the main community concerns. The environmental review and management program dealt with those concerns. The company sees a continuing role for community consultation in the construction and operational stages.

3 . LEGISLATIVE REQUIREMENTS

Australia's States and Territories all have their own legislative requirements for EIA.

3 . 1 GOVERNMENT ASSESSMENT

Most new mining projects in Australia must, by law, undergo some degree of formal EIA and approval process. The law and the process vary from State to State but the basic elements are similar and provide a logical framework for identifying, planning and managing likely environmental impacts.

The main steps are:

- referral of the project to the government authority (the company itself, another government agency or minister, or any person can refer the project for consideration for environmental assessment);
- government authority decision on whether assessment is necessary, and the level of environmental assessment;
- scoping of the issues and community reaction;
- issue of the EIA guidelines by the assessing authority;
- preparation by the proponent of the environmental document — the EIS or PER;
- public review of the environmental document;
- proponent response to issues identified in the public review;
- report and recommendations by the assessing authority;
- consideration of the recommendations by the minister or deciding authority;
- environmental approval and setting of conditions;
- monitoring and reporting; and
- continuing liaison with the community and government agencies.

3 . 2 PROJECT REFERRAL

The assessing authority will have to decide how it will deal with the proposal. To help, mining companies usually have to provide basic information such as location details, a brief description of the project and its duration, the infrastructure it will need, perceived environmental issues and their significance, and the proposed community consultation program.

This is presented in a document commonly known as a Notice of Intention (NOI).

Many mining companies use it both to trigger the approvals process and to inform the community.

3 . 3 LEVELS OF ASSESSMENT

Most EIA processes have several alternative levels of assessment, appropriate to the environmental significance and complexity of the proposal.

The following four levels are common in most States and Territories. They are based on factors such as the location, size, complexity, range, duration, and the manageability of environmental issues.

Notice of Intention (NOI) or Initial Advice Statement

Where it is clear from the notice of intention that the company has adequately addressed environmental concerns and will be using sound management practices, the government authority might not need further EIA.

The department with overall regulatory responsibility for the project, advised by the environmental agency, will make the judgment.

Public Environmental Report (PER)

This level of assessment is generally used for proposals which are likely to be of only local or regional public interest and where potential environmental impacts are few or easily managed.

A public environmental report (PER) may typically be available for public comment from four to six weeks. The document provides details of the proposal including potential environmental impacts and proposed management techniques.

Environmental Impact Statement (EIS)

This level of assessment is generally very comprehensive and is used for major projects which attract wide public interest and deal with complex issues of environmental significance.

An EIS is usually required for proposals with significant potential impacts. These impacts will require detailed evaluation, be the subject of extensive community advice and review, and will need comprehensive environmental management programs.

The public review period is usually eight to 12 weeks.

Public inquiries

A public inquiry is an official process of investigation. In very controversial projects it involves hearings and submissions by supporters and opponents.

A public inquiry can help people understand complex scientific information and social impacts, and can be a channel for independent advice to decision makers.

Inquiries are particularly useful where many different public interests are involved, where new technologies or developments have been proposed, or where a significant change in land use is proposed.

While Commonwealth Government environment impact assessment procedures are only obligatory in particular cases, the procedures illustrated in the following flowchart can be applied generally.

COMMONWEALTH ENVIRONMENT PROTECTION PROCEDURES

