

APPENDIX 11

ENVIRONMENTAL IMPACT ASSESSMENT

- (a) Parameters to be included in an Environmental Impact Statement (EIS)**
- (b) Diagram of the EIA Process**
- (c) Suggested Table of Contents for an EIS for a Mining Project**
- (d) *Aide-Mémoire* for the Preparation of Environmental Management Programme Reports for Prospecting and Mining**
(Prepared by the South African Department of Minerals and Energy in conjunction with the country's mining industry and the South African Agricultural Union.)
- (e) New South Wales Environmental Management Plans and Guidelines for Annual Reporting for Coal Leases**
- (f) India's Environmental Impact Assessment Regulations**

APPENDIX 11(a)

PARAMETERS TO BE INCLUDED IN AN ENVIRONMENTAL IMPACT STATEMENT

This appendix has been drafted by UN staff members and consultants over several years.

In addition to the details of the proposed mining development the following environmental data should be collected in detail:

Land Ownership

Details of land ownership, tenure and existing land use are an important basis of the EIS. It is important that the ownership of traditional land by indigenous people and archaeological sites of significance be reviewed as soon as an area is identified for mineral exploration.

Projects planned and implemented in co-operation with indigenous people can result in fewer adverse social impacts and can be expected to provide equitable benefits to local communities. There is a greater likelihood that mining projects will be permitted to proceed without costly delays and interruptions when all parties are encouraged to negotiate in a constructive and positive role. Such co-operation can increase both the returns to mining companies and the long-term enhancement of the social well being of traditional people.

Two areas which will require particular identification and investigation are:

- i) Anthropological land ownership regions.
- ii) Archaeological sites of significance.

Climatic Data

A climatic profile for the locality should be constructed by collecting the following data:

- Rainfall (data collected at 9:00 AM and 3:00 PM daily);
- Evaporation (data collected at 9:00 AM and 3:00 PM daily);
- Wind speed and direction (continuous collection of data);
- Relative humidity (data collected at 9:00 AM and 3:00 PM daily);
- Temperature maximum/minimum (data collected at 9:00 AM daily);
- Barometric pressure (data collected at 9:00 AM and 3:00 PM daily).

Flora (Vegetation)

A comprehensive flora study should include :

- An inventory of terrestrial and aquatic flora;
- Population and density data for vegetation species;
- Identification of valued populations (e.g. where vegetation/trees are scarce);
- Identification of any rare or endangered species.

Fauna (Animals)

A comprehensive fauna study should include:

- An inventory of terrestrial, aquatic and avifauna and bats;
- Population and density of animal species;
- Permanent/migratory populations (with identification of trans-migratory routes);
- Habitat;
- Identification of any rare or endangered species.

Terrain Analysis

This study should address:

- Geology;
- Geomorphology;
- Drainage;
- Hydrogeology;
- Soil classification;
- Erosion potential.

Air Quality

Air quality studies draw on climatic data coupled with projected emission data from the mining or mineral processing activity to forecast expected levels of:

- Total background particulate;
- Dusts containing biologically-significant silica/silicates;
- Noxious fumes;
- Sulphur dioxide concentration;
- Other gases.

Water Quality

Water quality studies draw on hydrology/receiving water and hydrogeology information coupled with projected discharge data from the mining or mineral processing operation to develop profiles for:

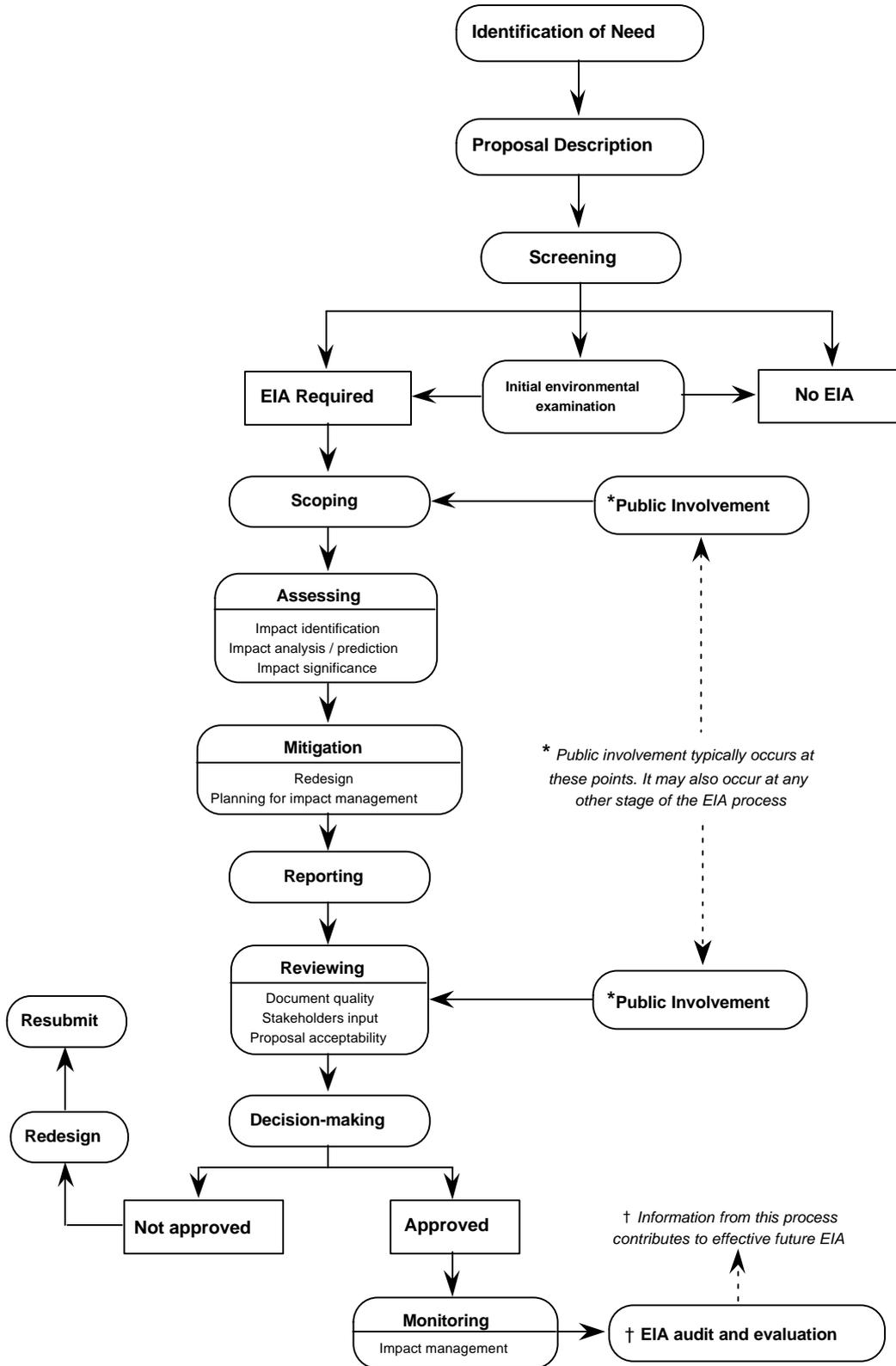
- Surface water quality;
- Groundwater quality.

Waste Disposal and Chemical Safety

Identification of anticipated chemicals that will be used on the site, a possible inventory, proposed storage and handling procedures, emergency planning procedures and waste disposal arrangements should be considered from an early stage.

A suggested table of contents for an EIS for a major mine is included in *Appendix 11(c)*.

APPENDIX 11(b)



APPENDIX 11(c)

SUGGESTED TABLE OF CONTENTS OF AN ENVIRONMENTAL IMPACT STATEMENT (EIS) FOR A MINE DEVELOPMENT PROGRAMME

The following table of contents for an EIS for a mine development programme is a very detailed guide to the headings and sub-headings that may be relevant to a new mining operation. It is based on the table of contents for an EIS that was produced by Epps & Associates (now EMC International) which won an award from the Royal Australian Planning Institute. The EIS was for the Camberwell Coal Project, New South Wales, Australia. The table has been generalised to accommodate metalliferous mining.

For this generic Table of Contents major impacts and issues which could arise at some stage of the project have been shown. In practice, the specific characteristics of the project will determine which items may be actual risk elements that should be addressed by the EIS and which items are irrelevant. In some circumstances additional elements may be required.

The list is not intended to be definitive. It is a guide only.

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 - Concentrates
 - Dusts
 - Fumes
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 - Other Process-related Wastes
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APPENDIX 11(d)

***AIDE-MEMOIRE FOR THE PREPARATION OF ENVIRONMENTAL
MANAGEMENT PROGRAMME REPORTS FOR PROSPECTING AND MINING***

Prepared by the South African Department of Mineral & Energy Affairs (now the Department of Minerals and Energy) in conjunction with the country's mining industry and the South African Agricultural Union.

Note: At the time of printing (August 1998), the *Aide-Mémoire* was under review. It is expected that a new version will be available during 1999.

Further information is available from:

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PREFACE

The holder of the right to any mineral in respect of land has the right to enter upon such land and to disturb the surface thereof in order to search for and win his mineral and so to establish a mine on the land concerned. While such right must in all respects be exercised in a responsible manner, the mining entrepreneur has a grave responsibility to manage the effects of the mining activity on the environment in such a way as to mitigate the negative impact whilst maximising the positive features.

In order to enforce this responsibility the Minerals Act, 1991, requires the owner of every mine to submit and obtain approval for an environmental management programme before mining operations may commence.

Various Government Departments have an interest, under different laws, in protecting the environment affected by mining. In an effort to simplify compliance with the legal provisions, these departments have adopted a holistic, co-ordinated approach in order to achieve a common goal.

This Aide-mémoire is the result of negotiations, co-operation and consensus between the departments in question, the mining industry and organised agriculture. It is intended to assist and guide entrepreneurs and mine owners to compile environmental management programmes in accordance with procedures and norms acceptable to all concerned with a view to leaving a useful heritage to future generations after the mineral resources have been extracted.

It is trusted that the Aide-mémoire will provide simple, practical guide-lines for compiling environmental management programmes, promote the speedy and effective evaluation of such programmes, enhance dedicated management strategies following mining-related effects on the environment and state clearly the responsibilities of all concerned.

DR. P.J. HUGO
DIRECTOR GENERAL
MINERAL AND ENERGY AFFAIRS

ACKNOWLEDGEMENTS

This Aide-mémoire is the result of a team effort by representatives of the undermentioned institutions involving many hours of hard work by the participants on the steering committees and various project committees. Their valuable assistance and contributions are sincerely appreciated.

Chamber of Mines of South Africa
Aggregate and Sand Producers' Association of SA
South African Agricultural Union
Department of Water Affairs and Forestry
Department of Environment Affairs
Department of National Health and Population Development
Department of Finance

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AIDE-MEMOIRE FOR ENVIRONMENTAL MANAGEMENT PROGRAMME REPORTS FOR PROPOSED PROSPECTING AND MINING

INTRODUCTION

Purpose of the Aide-mémoire

The Aide-mémoire has been compiled to assist applicants for, and holders of, prospecting permits or mining authorizations to draw up environmental management programme reports in accordance within an established approach which is acceptable to all the regulating authorities concerned and to secure the approval thereof.

What is an Environmental Management Programme Report (or EMPR)?

It is a document that aims to achieve the following overall objectives:

- To meet the environmental requirements and directives under the Minerals Act, No. 50 of 1991, and its regulations.
- To provide a single document that will satisfy the various authorities concerned with the regulation of the environmental impacts of mining.
- To give reasons for the need for, and the overall benefits of, the proposed project.
- To describe the relevant baseline environmental conditions at and around the proposed site.
- To describe briefly the prospecting or mining method and associated activities so that an assessment can be made of the significant impacts that the project is likely to have on the environment during and after mining.
- To describe how the negative environmental impacts will be managed and how the positive impacts will be maximised.
- To set out the environmental management criteria that will be used during the life of the project so that the stated and agreed land capability and closure objectives can be achieved and a closure certificate can be issued.
- To indicate that resources will be made available to implement the environmental management programme set out in Part 6 of this document.

The EMPR document is not intended to be an exhaustive description of the project. Rather, it is a document containing sufficient information to make the reader aware of the overall character of the site and its surroundings, the mining method, the likely impacts and how these are to be managed. Back-up reports should be kept on file by the mine for inspection should they be required.

The document should be as simple, yet as comprehensive as possible in order to accommodate a prospecting or mining operation of any size or complexity; flexible, so that the environmental management programme can be tailored to the site-specific mine and environmental conditions; and, finally, adaptable, so that with judicious pruning it can be used for the smallest and simplest prospecting or mining operation.

An EMPR is prepared on the strength of facts pertaining at the time of preparation. It must, however, be seen as a dynamic document which may require updating during the life of the project. In appropriate circumstances, e.g. where the programme as set out in Part 6 is altered, application for approval for updating the programme should be made to the Regional Director.

It should be noted that the environmental management programme outlined in Part 6 will result in site-specific legal obligations on the part of the proponent. Once approval of the programme outlined in Part 6 has been granted, the programme is binding and therefore if it is adhered to, closure will be granted.

Apart from Part 6, the remaining sections of the document do not constitute part of the environmental management programme envisaged in section 39 and in the other provisions of the Minerals Act and will accordingly not give rise to legally binding obligations on the part of the developer.

Where changes that may have a significant impact on the environment are initiated by a third party, consultations between the mine management, the third party and the relevant Government authorities should, where appropriate, be initiated through the Regional Director, to ensure that mining and the validity of the approved programme as outlined in Part 6 of this document are not prejudiced. Should this occur, the programme may be revised with the approval of the Regional Director.

It is likely that the proponent may wish to keep portions of the EMPR confidential. These portions should be identified and the confidential matter extracted and located in a separate section of the EMPR to facilitate distribution of the non-confidential portion. In this regard it must be emphasized that confidentiality relates only to information on proposals or decisions having an impact on the business and financial affairs or the technical processes of the proponent.

In terms of the Minerals Act, the Regional Director may, on receipt of an application in writing and subject to such conditions as he may determine, exempt the applicant for, or holder of, any prospecting permit or mining authorization from the obligation to submit an EMPR.

How to use this Aide-mémoire

The Aide-mémoire provides a LIST OF ITEMS TO BE CONSIDERED when drawing up an EMPR. all items should be considered and IF A PARTICULAR ITEM DOES NOT APPLY TO THE PROJECT, THAT ITEM SHOULD BE MARKED "NOT APPLICABLE" IN THE EMPR DOCUMENT and where practicable a brief reason should be given as to why it is not applicable.

If an item has been considered, **BUT ITS IMPACT IS INSIGNIFICANT, THAT ITEM SHOULD BE MARKED "NO SIGNIFICANT IMPACT" IN PART 5 OF THE EMPR** and where practicable a brief reason should be given as to why there is no significant impact. Consequently, the item need not be considered further in Part 6.

It is advisable to consult with the Regional Director concerned before starting to compile the EMPR so as to examine with him which items listed in the Aide-mémoire need to be completed and what in format. Since he will understand the requirements of the other authorities, this pre-planning briefing can assist in avoiding unnecessary work.

The items that are applicable should be written up as concisely as possible so that non-specialists can understand the nature of the EMPR.

New projects

For proposed prospecting projects, it is necessary to address only the environmental issues that may be affected by the exploration activities themselves, not issues that may be affected by any subsequent mining projects.

Much of the information required to describe the pre-mining environment in Part 2 is available from Government departments and local authorities.

The plans required for the EMPR must be on scales appropriate to show the level of detail required for the particular project or aspect described. As a guide, 1:50 000 scale plans would be suitable for regional and catchment descriptions and 1:10 000 scale plans would be suitable, if available, for surface infrastructure layouts, mining layouts, pre-mining environmental conditions, water and waste management facilities and the plans for the environmental management programme. However, larger scale plans (at a scale of 1:2 000 or even 1:1 000) may be needed to show the details of river diversion and water reticulation aspects such as pollution control dams, return water dams, seepage collection and clean water diversion works and evaporation facilities.

Operating mines

For operating mines the emphasis changed from an assessment of the potential impacts of a project on the pre-mining environment to establishing the actual impacts of an operating mine on an environment in which development has already taken place.

It should be noted that baseline information relating to a pre-mining environment may be difficult or impossible to obtain.

Rehabilitation plans approved under the Mines and Works Act of 1956 will be accepted in lieu of an EMP for existing mines, subject to amendment where required.

EMPRs for operating mines may be drawn up by using the Aide-mémoire in the following ways:

1. Complete the Executive Summary.
2. Complete Part 1, changing paragraph 1.6 to describe the mine and its actual operating parameters.
3. Complete Part 2. Describe the existing environment. Exclude paragraph 2.17 as no new parties will be affected.
4. Exclude Part 3.
5. Complete the relevant paragraph of Part 4 for an operating mine.
6. Complete the relevant sections of Part 5 with a description of actual impact and with due consideration to the information contained in Part 2, if available and applicable.
7. Complete all the remaining Parts of the Aide-mémoire where applicable.

GLOSSARY OF TERMS

BATNEEC Best (Proven) Available Technology Not Entailing Excessive Cost.

The term implies that the technology being proposed is proven by practical application which is appropriate to the particular problem and is cost-effective and is established and generally acceptable nationally at the time that the proposal is made.

Closure

Closure, in the case of mining operations discontinued or abandoned prior to the coming into force of the Minerals Act, 1991, means that a closure certificate has been issued in terms of Regulation 2.11 under the Mines and Works Act, 1956, or in any other case, that a closure certificate has been issued in terms of section 12 of the Minerals Act, 1991 or in terms of Regulation 2.11 thereunder, and that a closure certificate provided for in section 32(2) of the Atmospheric Pollution Prevention Act, 1965, has been issued.

Decommissioning

The activity or process that begins after cessation of prospecting activities or mineral production (including metallurgical plant production) and ends with closure. It involves, inter alia, the removal of unwanted infrastructure, the making safe of dangerous excavations and surface rehabilitation with a view to minimising the adverse environmental impacts of mining activities remaining after cessation of mineral production. It includes the after-care or maintenance that may be needed until closure.

Partial closure

The closure of a part, section or portion of a mine. The environmental management issues that need to be addressed for partial closure are the same as those required for closure of the whole mine.

Significant impact

An impact can be deemed significant if consultation with the relevant authorities and other interested and affected parties on the context and intensity of its effects provides reasonable grounds for mitigating measures to be included in the environmental management report.

The onus shall be on the proponent to include the relevant authorities and other interested and affected parties in the consultation process. Present, and potential future, cumulative and synergistic effects should all be taken into account.

THE AIDE-MEMOIRE

A. EXECUTIVE SUMMARY OF THE EMPR

The Executive Summary should summarise the overall benefits of the project, highlight the major environmental findings and how these will be managed to prevent, reduce or rehabilitate adverse impacts. The overall closure and post-mining land capability objectives should be stated clearly.

B. TABLE OF CONTENTS OF THE EMPR

PART 1 BRIEF PROJECT DESCRIPTION

- 1.1 Name, address, telephone and fax numbers of mine, mine owner and mine manager/responsible person.**
- 1.2 Name and address of the mineral rights holder.**
- 1.3 Name, address, telephone and fax numbers of the applicant for, or holder of, the prospecting permit or mining authorization.**
- 1.4 Name and address of the owner of the land and the title deed description.**
- 1.5 Regional setting (plan or aerial photograph required).**
 - 1.5.1 Magisterial district and relevant Regional Services Council authority.
 - 1.5.2 Direction of and distance to neighbouring towns.
 - 1.5.3 Surface infrastructure (such as roads, railway lines and power lines in the vicinity).
 - 1.5.4 Presence of servitudes.
 - 1.5.5 Land tenure and use of immediately adjacent land (Plan required. Provide a list of names and addresses of these landowners where available.)
 - 1.5.6 The name of the river catchment in which the mine is situated.
- 1.6 Description of the proposed project.**

A very brief description of the proposed project is required.

 - 1.6.1 Mineral deposit.
 - 1.6.2 Mine products(s) or prospecting target mineral(s).
 - 1.6.3 Estimated reserves or extent of target area.
 - 1.6.4 Proposed prospecting or mining method(s) (e.g. opencast, underground, longwall, extensions to existing mine, etc.).
 - 1.6.5 Planned production rate.
 - 1.6.6 Planned life of mine or duration of prospecting.

PART 2 DESCRIPTION OF THE PRE-MINING ENVIRONMENT

- 2.1 Geology**

For prospecting, give an indication only of what is known of the geology.

 - 2.1.1 Geology. (Include where appropriate representative borehole logs, a section through the ore body and surface mapping. Identify and characterise overburden material that will be disturbed and which, once disturbed may give rise to a deterioration in water quality.)
 - 2.1.2 Presence of dykes, sills and faults that extend beyond the property boundary. (Plan required.)
- 2.2. Climate**
 - 2.2.1 A brief description of the regional climate.
 - 2.2.2 Mean monthly and annual rainfall for the site and number of days per month with measurable precipitation.
 - 2.2.3 Maximum rainfall intensities per month - 60 min, 24 hrs, 24 hrs/50 yr and 24 hrs/100 yr storm events.
 - 2.2.4 Mean monthly maximum and minimum temperatures.

2.2.5 Mean monthly wind direction and speed - where appropriate (such as in urban areas and if such information is freely available). The hourly wind direction and speed, with the maximum one minute speed in each hour, may be required.

2.2.6 Mean monthly evaporation.

2.2.7 Incidence of extreme weather conditions - frost, hail, drought, high winds. Since it is unusual to have a weather station on a proposed mine site, data for the site may have to be deduced from Stations around the site.

2.3 Topography (plan required)

The topographical plan is the base plan on an appropriate scale with surface contours at appropriate intervals which, for areas in which significant topographical disturbance is expected, will give a clear indication of the topography.

2.4 Soil (plan required)

A description of the soil types to be disturbed, their fertility, erodibility and depth should be provided and the soil should be mapped according to a recognised soil classification system. The dryland production potential and the irrigation potential of these soils should also be described.

2.5 Pre-mining land capability (plan required)

The land to be disturbed should be classified and mapped into the following pre-mining land capability classes according to the definitions of these classes in the Chamber of Mines Rehabilitation Guidelines:

Arable land;

Grazing land;

Wetland;

Wilderness land.

A table should be presented with the area and percentage of each land capability class that will be disturbed by mining and its associated infrastructure.

2.6 Land use (plan required)

2.6.1 Pre-mining land use.

2.6.2 Historical agricultural production.

2.6.3 Evidence of misuse.

2.6.4 Existing structures.

2.7 Natural vegetation/plant life

2.7.1 Dominant species.

2.7.2 Endangered or rare species.

2.7.3 Invader or exotic species.

Note: In an undisturbed area, a vegetation map should be prepared.

2.8 Animal life

2.8.1 Commonly occurring species.

2.8.2 Endangered or rare species.

2.9 Surface water (plan required)

The presence of water courses, streams rivers, dams and pans should be indicated in blue. The position of the estimated maximum flood-line for the 1:50-year flood event should be indicated in red lines on the plan.

2.9.1 Surface water quantity

The catchment in which the mine is to be located should be described up to the point where the affected catchment discharges into the receiving water body. This description should include the following information:

- 2.9.1.1 A map on an appropriate scale indicating the catchment boundaries, the boundaries of the subcatchment occupied by the mine and the water course which would be followed by water emanating from the mine (the affected water course).
- 2.9.1.2 The mean annual run-off from the catchment upstream of the point of discharge to the receiving water body and from the subcatchment upstream of the mine.
- 2.9.1.3 Normal dry weather flow in the affected water course.
- 2.9.1.4 Flood peaks and volumes for recurrence intervals of 1:20, 1:50 and 1:100 years and the regional maximum flood.
- 2.9.1.5 For river diversions only. An estimate of the contribution of the mean annual run-off normally entering the river over the affected section and the total mean annual run-off entering upstream of the proposed diversion.

2.9.2 Surface water quality

An analysis of surface water samples in sufficient detail to characterise the water quality in the affected water course(s).

2.9.3 Drainage density of areas to be disturbed

Record as kilometres of drainage path per square kilometre of land area.

2.9.4 Surface water use

Identify, where possible, who uses the surface water along the route of the affected water course(s) down to the receiving water body, for what purpose and how much in cubic metres per day.

2.9.5 Water authority

Identify the authority concerned, if any.

2.9.6 Wetlands

Location of wetlands on the property, the extent thereof and an indication of the significance and the biological diversity of the wetland.

2.10 Ground-water

2.10.1 Depth of water-table(s).

2.10.2 Presence of water boreholes and springs and their estimated yields (plan required).

2.10.3 Ground-water quality

Analyse water in boreholes and springs in the affected zone so as to characterise the water quality.

2.10.4 Ground-water use

Identify, where possible, ground-water and spring-water users in the study area and the quantity used.

2.10.5 Ground-water zone

The ground-water zone that is likely to be affected by the mining operation (the affected zone) should be identified. Its importance as regional resource should be described. If available, maps on appropriate scales should be provided indicating the ground-water zone boundaries. Stratigraphic sections, in sufficient detail to indicate the conceptual ground-water model, the nature and location of significant aquifers and aquicludes and relevant physical properties, should be provided.

Note: These sections may not be required for deep mines.

2.10.6 For river diversions only

An estimate of the contribution of the stream or river to ground- water recharge and an estimate of the contribution of ground- water to surface water over the diverted section should be made.

2.11 Air quality

A survey should be made of the air quality and existing sources of air pollution in the area, including fallout dust, suspended dust and gaseous emissions (only if the project includes a schedules process, as defined in the Atmospheric Pollution Prevention Act of 1965). Potential impact sites should be identified (within 3 km from the mine boundary for fallout dust and as far as the ambient air quality may deteriorate for suspended dust and gas, if appropriate to the project).

2.12 Noise

Existing noise levels on and around the property should be identified, as should potential noise impact sites. If the potential impacts warrant it, pre-mining noise monitoring may be required.

2.13 Sites of archaeological and cultural interest (plan required)

Sites of recognised archaeological and cultural interest should be noted.

2.14 Sensitive landscapes

If specially sensitive landscapes under statutory protection occur on the site, they should be described and shown on the plan.

2.15 Visual aspects

Describe the visibility of the project site from scenic views, tourist routes and existing residential areas. This should include the visibility of dust and other atmospheric pollution currently generated.

2.16 Regional socio-economic structure (does not apply to prospecting)

Local, provincial or national regions may be considered, depending on the nature of the project.

2.16.1 Population density, growth and location.

2.16.2 Major economic activities and sources of employment.

2.16.3 Unemployment estimate for the area.

2.16.4 Housing - demand, availability.

2.16.5 Social infrastructure - schools, hospitals, sports and recreation facilities, shops, police, civil administration.

2.16.6 Water supply.

2.16.7 Power supply.

2.17 Interested and affected parties

Identify and list known bodies representing interested and affected parties. This may be done in consultation with the relevant authorities.

PART 3 MOTIVATION FOR THE PROPOSED PROJECT

3.1 Benefits of the project

A brief indication of the following is required for the project:

3.1.1 Where it is intended that the product(s) will be sold.

3.1.2 An estimate of the expenditure required to bring the project into production.

3.1.3 An estimate of the total annual expenditure at full production.

3.1.4 An estimate of the labour force at full production.

3.1.5 An estimate of the multiplier effect on the local, regional and national economy.

Note: Since some of the benefits will be unknown before prospecting, only items 3.1.2, 3.1.3 and 3.1.5 may be relevant for a prospecting EMPR.

3.2 Consideration of project alternatives

The major project alternatives and their impact on the environment that were considered prior to the compilation of the EMPR should be recorded. Such alternatives may include the following:

3.2.1 Mining method.

3.2.2 Mineral processing method.

3.2.3 Transport, power and water supply routes.

3.2.4 Sources of water.

3.2.5 Mine infrastructure sites.

3.2.6 Mine residue disposal sites.

3.2.7 Domestic and industrial waste disposal sites.

3.2.8 Housing sites.

3.2.9 Land use options after rehabilitation.

3.2.10 Alternatives to river diversions.

3.2.11 The "No project" option.

PART 4 DETAILED DESCRIPTION OF THE PROPOSED PROJECT

4.1 Surface infrastructure (plan required)

The proposed major surface infrastructure required for the mine should be described briefly and shown on a topographical plan. This should include the following:

4.1.1 Roads, railways and power-lines.

4.1.2 Solid waste management facilities.

4.1.2.1 Industrial and domestic waste disposal sites.

4.1.2.2 Mine residue disposal sites. State or show on the plan, the type of residue, final extent of the dumps, construction method and water reticulation layout.

4.1.3 Water pollution management facilities.

4.1.3.1 Sewage plant location, its design capacity and the process to be used.

4.1.3.2 Pollution control dams, paddocks and evaporation dams.

Indicate whether these are to be lined or not.

4.1.3.3 Polluted water treatment facility, its design capacity and the process to be used.

4.1.4 Potable water plant location, its design capacity and the process to be used.

4.1.5 Process water supply system, its design capacity and the process to be used.

4.1.6 Mineral processing plant.

4.1.7 Workshops, administration and other buildings.

4.1.8 Housing, recreation and other employee facilities.

4.1.9 Transport

4.1.10 Water balance diagram A schematic diagram linking up the flow of water to and from the facilities described in 4.1.2 to 4.1.9 above and the mine is required. The diagram should also show the water supply source(s), the water discharge points(s), the evaporation areas and potential seepage points. Each step in the diagram should indicate the estimated flow, in m³/day, into and out of the facility, whether it is pumped or gravity fed, piped or an open channel flow,

clean or dirty water and, where appropriate, e.g. in the case of dams, the storage capacity.

4.1.11 Disturbances of water courses

Give details of any of the facilities described in to 4.1.9 and mining layouts that are proposed within or beneath an area defined by the 1:50-year flood-lines for any water course - unless the facility or mine layout is unlikely to disturb the natural flow or alignment of the water course in any (e.g. deep level mining).

4.1.12 Storm-water

Indicate on the plan the storm water diversion measures designed to separate clean from contaminated water. The items described above may require more than one plan.

4.2 Construction phase

A brief description of the activities during this period is required, including a plan if necessary.

4.3 Operational phase

4.3.1 Soil utilisation guide (plan if necessary).

Based on the soil map, this should show the depths of usable soil in disturbed areas which will be utilised mining. It should also show soil stockpile positions.

4.3.2 The proposed mine surface layout (plan required).

This section requires a brief, illustrated description of the items below. Using the topographical plan as a base, this should depict the following:

4.3.2.1 Access to the workings (vertical and inclined shaft positions or adits, ramps and haul roads). For working sites should be indicated if possible.

4.3.2.2 All structures that may be affected by blasting vibrations.

4.3.2.3 Expected location, extent and depth of surface subsidence.

4.3.2.4 All structures and drainage paths that may be affected by surface subsidence.

Note: The above points apply to all mines.

4.3.2.5 The mining plan, box cut and final void positions.

Note: This point applies to opencast and shallow underground mines.

4.3.3 Mineral processing

A brief description of the mineral processing method is required. This description should highlight areas in the plant that could generate air, water and noise pollution.

4.3.4 Plant residue disposal

A brief description of the disposal method(s) giving tons disposed of per day at full production for each type of residue.

4.3.5 Transport

A brief description of how the raw material and final products will be transported (to their point of sale inland or port of export) is required.

4.3.6 Proposed river diversions

A permit in terms of section 20 of the Water Act, 1956, to alter the course of a public stream may be required before the environmental management programme is approved. Depending on the importance and timing of the diversion and its potential impact on the environment, the following information may be requested. This information must relate to the final situation upon closure since approval for temporary diversions, not showing the final situation, will not be given.

- 4.3.6.1 Topographical plans covering the original alignment, the new alignment and sufficient of the areas upstream and downstream of the proposed diversion so as to extend beyond the area of influence of the diversion.
- 4.3.6.2 Plans, cross-sections and long-sections showing the full scheme and nearby infrastructure.
- 4.3.6.3 Details of any linings, armouring or erosion control measures.
- 4.3.6.4 Details of any linings, armouring or erosion control measures.
- 4.3.6.5 Details of hydraulic structures forming part of the diversion.
- 4.3.6.6 Details of the beginning and end of the diversion showing the transition to the original natural water course.
- 4.3.6.7 Details of points where storm water is expected to enter the diversion and the associated erosion control measures.
- 4.3.6.8 A detailed description, including plans at the same level of detail as for the final diversion, of any intermediate or temporary steps which may be necessary to achieve the final aim.
- 4.3.6.9 Measures for maintaining the long-term alignment (such as may be required where a diversion is located on unstable ground).
- 4.3.6.10 Stratigraphic sections and engineering properties of the materials through which the diversion is to be constructed.
- 4.3.6.11 Flood lines for recurrence intervals of 1:20, 1:50, 1:100 years and the regional maximum flood for both the pre- diversion and the post-diversion situation.

PART 5 ENVIRONMENTAL IMPACT ASSESSMENT

The mining proponent will be expected to demonstrate that he has considered and understood the potential or expected impacts of the project on the environmental components described in Part 2. An estimate of the nature of these impacts should therefore be given for the construction, operational and decommissioning phases. When describing the impacts, an estimate of magnitude, timing and duration of the impacts is required, e.g. very significant, immediate, temporary impact; and low probability, delayed, long-term impact.

5.1 Construction phase

Describe the impacts on the environment to be expected during the construction phase, using the checklist of items set out in 5.2.1 to 5.2.16 for the operational phase. It is not necessary to given details of any particular point if it is to be set out fully under the operational phase. For prospecting projects, site establishment may be considered as the construction phase.

5.2 Operational phase

Describe the environmental impact of the project on items 5.2.1 to 5.2.16 during the phase when the mine is producing (or prospecting is under way) up until when decommissioning activities begin.

5.2.1 Geology.

5.2.2 Topography.

5.2.3 Soils.

5.2.4 Land capability.

5.2.5 Land use - include an assessment of likely impact on existing structures.

5.2.6 Natural vegetation/plant life - for river diversions, emphasise impacts on aquatic vegetation.

5.2.7 Animal life - for river diversions, emphasise impacts on aquatic wildlife.

5.2.8 Surface water - when assessing surface water and groundwater impacts, two overriding questions must be asked: Will the project significantly change either

the catchment yield or the water quality in the catchment? If the answer to one of the questions or both is yes, an effort must be made to determine the magnitude and nature of the impact.

- 5.2.8.1 Include an estimate of all dewatering volumes and discharges of polluted water and the impact of these on the receiving body of water.
- 5.2.8.2 Describe the consequences on the mine and associated works of floods exceeding the design flood in magnitude, and in particular, the consequences of the regional maximum flood.
- 5.2.8.3 For river diversions only.
Estimate the long and short-term watertightness and structural stability of, and the quality and quantity of water seeping into and out of the diversion and the consequences of failure particularly where the proponent intends to mine, or has already mined, under the diversion or where the diversion is to be constructed on unstable ground and/or where the water table is likely to change its position after the closure of the mine.
- 5.2.9 Ground-water - include an assessment of the impacts of mining activities on ground-water in the affected zone the impact on boreholes and the impact on ground-water users.
- 5.2.10 Air quality - assess the likelihood of air pollution from the plant, dumps, materials handling facilities, vehicles or blasting and the effects this could have on the potential impact sites described in 2.11.
- 5.2.11 Noise - the noise that the project may potentially generate should be assessed against existing noise levels at possible noise impact sites.
- 5.2.12 Sites of archaeological and cultural interest.
- 5.2.13 Sensitive landscapes.
- 5.2.14 Visual aspects - describe the impact the project will have when viewed from scenic views, tourist routes and existing residential areas.
- 5.2.15 Regional socio-economic structure.
- 5.2.16 Interested and affected parties.

5.3 Decommissioning phase

When a mine, or part of a mine, ceases production (or prospecting activities cease) decommissioning activities start. This phase continues until closure. If the environmental management programme for the construction and operational phases, described in Part 6 has been implemented successfully, there should be only a few outstanding impacts left to manage. The possible nature of these impacts should be assessed and the potentially significant impacts should be described, using the list of headings in 4.1 and 4.3 and the environmental impacts described in 5.2 to assist in their identification.

- 5.3.1 Partial closure - if the intention is to apply for a closure certificate in respect of a portion, part or section of a mine, the environmental impact assessment should describe the impacts associated with only that portion, part or section of the mine likely to be the subject of such an application. Furthermore, the assessment should concentrate on those matters that may have significant impacts on, or be affected by, the remainder of the mine, so that measures to mitigate such impacts can be identified and described in Part 6. Note: The Department of Water Affairs and Forestry will consider closure of part of a mine only if it can be demonstrated that parts separate from the remainder of the mine, with respect to water.

5.4 Residual impacts after closure

There may be some significant residual impacts resulting from the construction, operational or decommissioning phases that persist after these activities have ceased and a closure certificate has been issued. Where possible, these impacts should be identified at least

qualitatively so that they can be accommodated when the closure objectives are being defined and when the environmental management programme, described in Part 6, is being devised. The environmental impact assessments done in accordance with paragraphs 5.1 to 5.3 of Part 5 will have highlighted the major issues on which to focus. However, the potential impacts resulting from the closed operation, listed below, should be considered in any event. It is nevertheless recognised that quantification of these impacts could be imprecise, or even unfeasible.

- 5.4.1 The potential for acid mine drainage or poor quality leachates emanating from the mine or residue deposits.
- 5.4.2 The long-term impacts on ground-water.
- 5.4.3 The long-term stability of rehabilitated ground and residue deposits.
- 5.4.4 The long-term impacts arising from river diversions.

PART 6 ENVIRONMENTAL MANAGEMENT PROGRAMME

Whenever a significant impact has been identified in Part 5, the proponent must describe how the impact will be managed.

Once approved, the environmental management programme set out in this Part will be legally binding in terms of the Minerals Act and its Regulations. Once the approved programme has been complied with a closure certificate will be issued.

The impact management activities described in this Part should, in general, be based on the concept of Best (Proven) Available Technology Not Entailing Excessive Cost (BATNEEC)

6.1 Construction Phase

Using the checklist of items set out in paragraphs 6.2.1 to 6.2.17, describe how each significant impact identified in paragraph 5.1 will be managed. It is not necessary to detail any particular point if it is to be detailed fully under the operational phase. For prospecting projects, the management of impacts during site establishment should be considered here.

6.2 Operational phase

- 6.2.1 Geology.
- 6.2.2 Topography - plan required of expected post-mining topography. Include what slopes will be created during rehabilitation and dump construction.
- 6.2.3 Soils - include depths of soil that will be used and how fertility and erosion will be managed.
- 6.2.4 Land capability - plan required of expected post-mining land capability.
- 6.2.5 Land use - include what type of land use is planned.
- 6.2.6 Natural vegetation/plant life - for river diversions emphasise aquatic plant life. If possible, include a description of the plant life that will be used during rehabilitation and how the vegetation will be managed.
- 6.2.7 Animal life - for river diversions, emphasise aquatic animal life.
- 6.2.8 Surface water - indicate the strategies for managing the following:
 - 6.2.8.1 The water balance described in 4.1.10.
 - 6.2.8.2 Storm-water.
 - 6.2.8.3 Surface rehabilitation (in so far as this affects surface water).
 - 6.2.8.4 The legitimate requirement of surface water users on the affected water course.
 - 6.2.8.5 For river diversions only - indicate how the significant impacts identified in 5.2.8.3 will be managed, paying particular attention to erosion control, structural stability and surface drainage into and out of the diverted section.

- 6.2.9 Groundwater - indicate the strategies for the following:
 - 6.2.9.1 Optimising surface rehabilitation in order to minimise adverse groundwater impacts.
 - 6.2.9.2 Meeting the requirements of legitimate groundwater users in the affected zone.
 - 6.2.9.3 For river diversions only - the control of seepage into and out of the diverted section of the river.
- 6.2.10 Air quality - include an air pollution control plan if the assessment reveals significant potential impacts on air quality at potential impact sites.
- 6.2.11 Noise - include an air pollution control plan if the assessment reveals significant potential impacts on air quality at potential impact sites.
- 6.2.12 Sensitive landscapes.
- 6.2.13 Visual aspects.
- 6.2.14 Regional socio-economic structure.
- 6.2.15 Interested and affected parties.
- 6.2.16 Submission of information - the proponent will have to establish the extent to which information on measurements, taken to comply with statutory requirements, requires to be submitted.
- 6.2.17 Maintenance - some of the measure described in this Part will require maintenance after they have been implemented until the time decommissioning activities begin. Again, this will be site- specific, but the proponent should consider, where appropriate, the maintenance of at least the following:
 - 6.2.17.1 Rehabilitated land.
 - 6.2.17.2 Water pollution control structures.
 - 6.2.17.3 Rehabilitated residue deposits.

6.3 Decommissioning phase and closure

Every effort should be made during the life of the project to minimise the cost and amount of the work required for this phase. This Part should describe briefly how the project will be decommissioned and closed. It should address the management of the potentially significant impacts identified in paragraph 5.3 and 5.4 of Part 5, the conceptual outline of the planned decommissioning strategy and the closure objectives.

- 6.3.1 Closure objectives.
- 6.3.2 Infrastructure areas - demolition or disposal of structures and buildings, removal of foundations and debris and rehabilitation of the surface subject to section 40 of the Minerals Act.
- 6.3.3 Mine residue deposits.
 - 6.3.3.1 Disposal facilities (pipes, solution trenches, return water dams, etc.).
 - 6.3.3.2 Ongoing seepage, control of rain-water.
 - 6.3.3.3 Long-term stability.
 - 6.3.3.4 Final rehabilitation in respect of erosion and dust control.
- 6.3.4 Sealing of underground workings and rehabilitation of dangerous excavations.
- 6.3.5 Final rehabilitation of open cast mine haul ramps and roads and final voids.
- 6.3.6 Submission of information - the proponent's obligation in this regard, for the period after decommissioning activities have ceased, until the time closure is approved, is described in paragraph 6.2.16.
- 6.3.7 Maintenance - if aspects of the decommissioned site required maintenance until the time that closure is approved, these should be described. The aspects to consider are those listed in 6.2.17.1 to 6.2.17.3

6.4 Proposed timetable, duration and sequence.

These dates are estimates and are dependant on the economic conditions pertaining from time to time during the life of the project.

6.4.1 Prospecting projects.

6.4.1.1 Submission of prospecting EMP, where appropriate, and prospecting application.

6.4.1.2 Proposed starting, duration and completion dates for prospecting.

6.4.1.3 Proposed rehabilitation programme and rehabilitation completion date.

6.4.2 Mining projects.

6.4.2.1 Submission of mining EMPR and applications for mining permissions.

6.4.2.2 Start and duration of construction period.

6.4.2.3 Proposed start of mining, full production and cessation of production dates.

6.4.2.4 Proposed rehabilitation programme.

6.4.2.5 Proposed dates for progressive or partial closure applications.

6.4.2.6 Proposed decommissioning and aftercare programme.

6.4.2.7 Proposed date for closure application.

6.5 Financial provision

Particulars should be given of the proponent's ability to make the necessary financial provision to implement the measures described in Part 6.

Part 7 CONCLUSION

Assuming that the closure objectives are met, give the general overall net impact of the project on the environment.

Part 8 STATUTORY REQUIREMENTS

A list of permissions already granted under other statutes concerning the environment should be provided, indicating the permit or registration number, date and place of issue. If applications have been made but not yet granted, these should be included.

PART 9 AMENDMENTS TO EMPR

This part is intended to accommodate amendments to the document so that it remains dynamic and complete.

PART 10 REFERENCES AND SUPPORTING DOCUMENTATION

References to back-up information/reports.

PART 11 CONFIDENTIAL MATERIAL

Should the proponent wish to keep certain business (including technical innovations and/or processes) or financial information confidential and to exclude this from the EMPR document, reference to this should be made in this Part.

APPENDIX 11(e)

NEW SOUTH WALES ENVIRONMENTAL MANAGEMENT PLANS AND GUIDELINES FOR ANNUAL REPORTING FOR COAL LEASES

1.0 INTRODUCTION

1.1 The community of New South Wales has an enhanced awareness of the environment and has developed a keen expectation for the environmental performance of its industries.

1.2 A range of environmental legislation is applicable to coal mining in New South Wales. In this context, government is obliged to provide consistent direction and to reduce duplication of effort as far as possible to achieve the desired goals.

1.3 It is the Department's mission to promote the responsible development of the State's mineral and coal resources for the community's benefit. The Department therefore is concerned to ensure that any adverse effects of mining and processing are minimized, and that a consistent high standard of environmental protection, pollution control and rehabilitation is practised at each mine site in the State. Mining companies are expected to give adequate consideration to the environment from the design stage, through the operational phase, to mine closure.

1.4 Consideration of environmental factors in the planning and management of a mining programme is an essential procedure for preventing adverse effects and reducing rehabilitation costs. Much can be done in pre-development design to prevent impacts that can bring the industry into disrepute, and that would cost more money to rectify than if pollution controls or rehabilitation had been cost-effectively planned from the outset.

1.5 The Department of Mineral Resources is empowered by Sections 238 and 239 of the Mining Act 1992 to include in a lease appropriate conditions for protection of the environment and rehabilitation of areas disturbed by mining.

1.6 All lease holders are required, as a condition of lease, to report annually to the Department of Mineral Resources against an environmental management plan. All future granted leases will similarly contain such a condition to achieve appropriate mining, rehabilitation and environmental management reporting.

2.0 THE ENVIRONMENTAL MANAGEMENT PLAN

2.1 Activities within the majority of coal leases in NSW have been carried out under a system of prescribed environmental and rehabilitation control procedures. These procedures may have been variously prescribed according to the conditions of:

- the Coal Lease (and Open Cut Approval for open cut mines);
- a Pollution Control Approval (through licences under the Clean Air; Clean Waters, Noise Control Acts);
- a Development Consent.

These statutory approvals therefore form the basis for the environmental management plan of a coal mining operation.

2.2 Since the implementation of the coal lease consolidation process, all coal lease holders in NSW are now required to submit an Annual Environmental Management Report on performance against the plan. This thereby provides:

1. A management tool for the entire operation within the coal lease;
2. A means of identifying and concentrating on the significant mining, rehabilitation and environmental aspects of the operation; and
3. A basis for more efficient and systematic interaction with government, which can then form a basis for agreement on the objectives over time, and irrespective of personnel changes.

2.3 The Department of Mineral Resources will be responsible for overseeing the environmental management plan under the coal lease and for ensuring the rehabilitation and environmental performance is in accordance with the lease conditions.

2.4 These guidelines are provided to assist in the preparation of the Annual Environmental Management Report. The overall aim is to provide a format which:

- i) is consistent for all coal mining operations in N.S.W. (which may involve open cut and/or underground mining within the coal lease area), and
- ii) facilitates a single system of reporting to all levels of government separately but using the same basic report and applicable to an agreed annual reporting date for each particular coal mining operation and
- iii) is comprehensive in scope to address the range of environmental reporting requirements of government, yet
- iv) is sufficiently flexible to accommodate to varying scale of operations and the resources available to prepare such a report.

3.0 THE REVIEW PROCESS

3.1 It is expected that rehabilitation and environmental management at each mine site will be subject to annual review by means of:

- i) The Annual Environmental Management Report submitted by the Company which will be reviewed by relevant government authorities; and
- ii) An environmental inspection at least annually of the operation by Inspectors of the Department of Mineral Resources.

3.2 The report and inspection will provide a means of measuring progress and the attainment of environmental objectives. The report should also specify the environmental and rehabilitation targets to be achieved in the following 12 month period.

3.3 Modification or amendment of mining development or operation procedures may be required to take into account a range of circumstances including changed mining conditions and external circumstances, such as operational requirements, or impacts on the surrounding

community. Changes to approvals or licenses undertaken during the preceding twelve months or forecast for the following twelve months are to be addressed in the annual report.

3.4 The Annual Environmental Management Report will provide an opportunity to consolidate into one document all annual government reporting requirements which pertain to environmental management. Separate appendices would accompany the annual report. Such appendices would facilitate reporting separately to specific government authorities any environmental information or data which pertains to an established approval format. In the case of Open Cut Coal Mines, the Department's standard Annual Rehabilitation Report would remain in its existing format, as an Appendix. The annual reporting of environmental monitoring data pursuant to the EPA's Pollution Control Approval and Licence(s) shall also appear as a separate Appendix.

3.5 The rehabilitation and environmental management of a coal mine is dynamic. Where the operation's environmental management plan is amended by statutory approval (development consent, coal lease, EPA licence) within the reporting period, such changes are to appear in the proceeding Annual Environmental Management Report.

4.0 A SUGGESTED MODEL FOR ANNUAL ENVIRONMENTAL MANAGEMENT REPORTING.

4.1 All matters to be addressed should be discussed in relation to the government requirements, standards and conditions that have been applied to the operations within the Coal Lease.

The Annual Environmental Management Report for operations within a Coal Lease shall, unless otherwise previously agreed to by the Department's District Inspector, be prepared according to the model in Appendix 1 of this guideline.

In general terms, reporting should be presented under the following section headings:

SECTION 1: INTRODUCTION AND GENERAL OBJECTIVES

(Summarizes the status of leases, licences and approvals for the operation; identifies principal modifications and amendments within the reporting period; introduces the mining company and mine personnel responsible for ongoing environmental management and rehabilitation; outlines the employment status and any relevant socio-economic aspects.)

SECTION 2: SUMMARY OF OPERATIONS

(Outlines the status of mining constraints, ROM coal production, coal washing, coal handling and transport; identifies a mine development programme; provides a review of operations infrastructure and equipment and any construction works within the reporting period.)

SECTION 3: ENVIRONMENTAL MANAGEMENT

(Addresses the controls used for protection of the environment with respect to water, air, noise and blast; reviews trends in environmental and meteorological monitoring data; addresses waste management procedures; and addresses any other environmental reporting requirements of the operation.)

SECTION 4: REHABILITATION

(Describes land use management within the coal lease area including land use objectives, treatment of final voids, landscaping and visual screening of operations; presents a review of progressive rehabilitation performance for mining areas, infrastructure areas, coal washery rejects emplacements.)

PLANS

- i) Site Plan - surface facilities and current mine development.
- ii) A Synoptic Rehabilitation Plan.
- iii) A Surface Water Management Plan.
- iv) A Plan of Environmental Monitoring Sites.

(All plans are to be "synoptic" in presentation to show an overview at A4 or A3 size and contained within the text of the document.)

- v) Colour aerial photograph (optional).

APPENDICES

- I. Compilation of Approvals and Licence Conditions.
(Once off, which were granted during the annual reporting period.)
- II. Environmental Monitoring Data.
(Submitted to EPA only, pursuant to licence reporting.)
- III. Annual Rehabilitation Report For Open Cut Mines.
(Submitted to Department of Mineral Resources only, pursuant to Open Cut Mining Approval.)
- IV. (Any specific report requirements to other government authorities only.)

Prepared by the New South Wales Department of Mineral Resources, Australia, January 1994.

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APPENDIX 11 (f)

INDIA'S ENVIRONMENTAL IMPACT ASSESSMENT

MINISTRY OF ENVIRONMENT & FORESTS

NOTIFICATION

ON

Environmental Impact Assessment of Development Projects

New Delhi, the 27th January, 1994.
(as amended on 04/05/1994)

1. S.O.60(E) Whereas a notification under clause (a) sub-rule (3) of rule 5 of the Environment (Protection) Rules, 1986 inviting objections from the public within sixty days from the date of publication of the said notification, against the intention of the Central Government to impose restrictions and prohibitions on the expansion and modernization of any activity or new projects being undertaken in any part of India unless environmental clearance has been accorded by the Central Government or the State Government in accordance with the procedure specified in that notification was published as S.O. No. 80(E) dated 28th January, 1993;

And whereas all objections received have been duly considered;

Now, therefore, in exercise of the powers conferred sub-section (1) and clause (v) of sub-section (2) of section 3 of the Environment (Protection) Act, 1986 (29 of 1986) read clause (d) of sub-rule (3) of rule 5 of the Environment (Protection) Rules, 1986, the Central Government hereby directs that on 3 and from the date of publication of this notification in the Official Gazette expansion or modernization of any activity (if pollution load is to exceed the existing one) or new project listed in Schedule I of this notification shall not be undertaken in any part of India unless it has been accorded environmental clearance by the Central Government in accordance with the procedure hereinafter specified in this notification.

2. Requirements and procedure for seeking environmental clearance of projects:

I.(a) Any person who desires to undertake any new project or the expansion or modernisation of any existing industry or project listed in Schedule I shall submit an application to the Secretary, Ministry of Environment and Forests, New Delhi.

The application shall be made in the proforma specified in Schedule II of this notification and shall be accompanied by a project report which shall, inter alia, include an Environmental Impact Assessment Report/Environment Management Plan prepared in accordance with the guidelines issued by the Central Government in the Ministry of Environment and Forests from time to time.

(b) Cases rejected due to submission of insufficient or inadequate data and plans may be reviewed as and when submitted with complete data and plans. Submission of incomplete data or plans for the second time would itself be a sufficient reason for the Impact Assessment Agency to reject the case summarily.

II. In case of the following site specific projects:

- (a) mining;
- (b) pit-head thermal power stations;
- (c) hydro-power, major irrigation projects and/or their combination, including flood control;
- (d) ports and harbours (excluding minor ports);
- (e) prospecting and exploration of major minerals in areas above 500 ha.,

The project authorities will intimate the location of the project site to the Central Government in the Ministry of Environment and Forests while initiating any investigation and surveys. The Central Government in the Ministry of Environment and Forests will convey a decision regarding suitability or otherwise of the proposed site within a maximum period of thirty days. The said site clearance shall be granted for a sanctioned capacity and shall be valid for a period of five years for commencing the construction, operation or mining.

III. (a) The reports submitted with the application shall be evaluated and assessed by the Impact Assessment Agency, and if deemed necessary it may consult a Committee of Experts, having a composition as specified in Schedule III of this Notification. The Impact Assessment Agency (IAA) would be the Union Ministry of Environment and Forests. The Committee of Experts mentioned above shall be constituted by the IAA or such other body under the Central Government authorised by the IAA in this regard.

(b) The said Committee of Experts shall have full right of entry and inspection of the site or, as the case may be, factory premises at any time prior to, during or after the commencement of the operations relating to the project.

(c) The Impact Assessment Agency shall prepare a set of recommendations based on technical assessment of documents and data, furnished by the project authorities, supplemented by data collected during visits to sites or factories, if undertaken, and interaction with affected population and environmental groups, if necessary. Summary of the reports, the recommendation and the conditions, subject to which environmental clearance is given, shall be made available subject to the public interest to the concerned parties or environmental groups on request. Comments of the public may be solicited, if so decided by Impact Assessment Agency within thirty days of receipt of proposal, in public hearings arranged for the purpose after giving thirty days notice of such hearings in at least two newspapers. Public shall be provided access, subject to the public interest, to the summary of the reports/Environmental Management Plans at the Headquarters of the Impact Assessment Agency.

The assessment shall be completed within a period of ninety days from receipt of the requisite documents and data from the project authorities and completion of public hearing, where required, and decision conveyed within thirty days thereafter.

The clearance granted shall be valid for a period of five years for commencement of the construction or operation.

No construction work, preliminary or otherwise, relating to the setting up of the project may be undertaken till the environmental and/or site clearance is obtained.

IV. In order to enable the Impact Assessment Agency to monitor effectively the implementation of the recommendations and conditions subject to which the environmental clearance has been given, the project authorities concerned shall submit a half-yearly report to the Impact

Assessment Agency. Subject to the public interest, the Impact Assessment Agency, shall make compliance reports publicly available.

V. If no comments from the Impact Assessment Agency are received within the time limit, the project would be deemed to have been approved as proposed by project authorities.

3. Nothing contained in this notification shall apply to:

(a) any item falling under entry nos. 3,18 and 20 of the Schedule-I to be located or proposed to be located in the areas covered by the Notifications S.O. No. 102(E) dated 1st February, 1989; S.O. 114(E) dated 20th February, 1991 S.O. No. 416(E) dated 20th June 1991 and S.O. No. 319(E) dated 7th May, 1992.

(b) any item falling under entry Nos. 1, 2, 3,4,5,7, 9, 10, 12, 13, 14, 16, 17, 19, 21, 25 and 27 of Schedule I if the investment is less than Rs. 50 crores.

(c) any item reserved for Small Scale Industrial sector with investments less than Rs. 1 crore.

4. Concealing factual data or submission of false, misleading data/reports, decisions or recommendations would lead to the project being rejected. Approval, if granted earlier on the basis of false data would also be to be revoked. Misleading and wrong information will cover the following:

- False information.
- False data.
- Engineered reports.
- Concealing of factual data.
- False recommendations or decisions.

(No. Z-12013/4/89-IA-I)

R. RAJAMANI, Secy.

SCHEDULE I

(See paras 1 and 2)

LIST OF PROJECTS REQUIRING ENVIRONMENTAL CLEARANCE FROM THE CENTRAL GOVERNMENT

1. Nuclear Power and related projects such as Heavy Water Plants, nuclear fuel complex, rare earths.
2. River Valley projects including hydro power, major irrigation and their combination including flood control.
3. Ports, Harbours, Airports (except minor ports and harbours).
4. Petroleum Refineries including crude and product pipelines.
5. Chemical Fertilizers (Nitrogenous and Phosphatic other than single superphosphate).
6. Pesticides (Technical).
7. Petrochemical complexes (Both Olefinic and Aromatic) and Petro-chemical intermediates such as DMT, Caprolactam, LAB, etc. and production of basic plastics such as LDPE, HDPE, PP, PVC.
8. Bulk drugs and pharmaceuticals.

9. Exploration for oil and gas and their production, transportation and storage.
10. Synthetic Rubber.
11. Asbestos and Asbestos products.
12. Hydrocyanic acid and its derivatives.
13. (a) Primary metallurgical industries (such as production of Iron and Steel, Aluminium, Copper, Zinc, Lead and Ferro Alloys).
(b) Electric arc furnaces (Mini Steel Plants).
14. Chlor-alkali industry.
15. Integrated paint complex including manufacture of resins a basic raw materials required in the manufacture of paints.
16. Viscose Staple fibre and filament yarn.
17. Storage batteries integrated with manufacture of oxides of and lead antimony alloy.
18. All tourism projects between 200m-500 meters of High tide Line or at locations with an elevation of more than 1000 meters with investment of more than Rs. 5 crores.
19. Thermal Power plants.
20. Mining projects (major minerals) with leases more than 5 hectares.
21. Highway Projects.
22. Tarred Roads in Himalayas and/or Forest areas.
23. Distilleries.
24. Raw Skins and Hides.
25. Pulp paper and newsprint.
26. Dyes.
27. Cement.
28. Foundries (individual).
29. Electroplating.

SCHEDULE II

(See Sub-para I(a) of Para 2)

APPLICATION FORM

1. (a) Name and Address of the project proposed:

(b) Location of the project:
Name of the place:
District, Tehsil:
Latitude/Longitude:
Nearest Airport/Railway Station:

(c) Alternate sites examined and the reasons for selecting the proposed site:

(d) Does the site conform to stipulated land use as per local land use plan:
2. Objectives of the project:

(a) Land Requirement:
Agriculture Land:
Forest land and Density of vegetation:
Other (specify):

- (b) (i) Land use in the Catchment/within 10 kms. radius of the proposed site:
 - (ii) Topography of the area indicating gradient, aspects and altitude:
 - (iii) Erodibility classification of the proposed land:
 - (c) Pollution sources existing in 10 km. radius and their impact on quality of air, water & land:
 - (d) Distance of the nearest National Park/Sanctuary Biosphere Reserve/Monuments/heritage site/Reserve Forest:
 - (e) Rehabilitation plan for quarries/borrow areas:
 - (f) Green belt plan:
 - (g) Compensatory of forestation plan:
4. Climate and Air Quality:
- (a) Windrose at site:
 - (b) Max./Min./Mean annual temperature:
 - (c) Frequency of inversion:
 - (d) Frequency of cyclones/tornadoes/cloud burst:
 - (e) Ambient air quality data:
 - (f) Nature & concentration of emission of SPM, Gas (CO, CO₂., NO, CH_n etc.) from the project:
5. Water balance:
- (a) Water balance at site:
 - (b) Lean season water availability:
 - (c) Source to be tapped with competing users (River, Lake, Ground, Public supply):
 - (d) Water quality:
 - (e) Changes observed in quality and quantity of ground water in the last 15 years and present charging and extraction details:
 - (f) (i) Quantum of waste water to be released with treatment details:
 - (ii) Quantum of quality of water in the receiving body before and after disposal of solid waste:
 - (iii) Quantum of waste water to be released on land and type of land
 - (g) (i) Details of reservoir water quality with necessary Catchment Treatment Plan;
 - (ii) Command Area Development Plan:
6. Solid wastes:
- (a) Nature and quantity of solid wastes generated;
 - (b) Solid waste disposal method:
7. Noise and Vibrations:
- (a) Sources of noise and vibrations:
 - (b) Ambient noise level:
 - (c) Noise and vibration control measures proposed:
 - (d) Subsidence problem if any with control measures.

8. Power requirement indicating source of supply: Complete environmental details to be furnished separately, if captive power unit proposed.
9. Peak labour force to be deployed giving details of:
 - Endemic health problems in the area due to vast water/air/soil borne diseases;
 - Health care system existing and proposed.
10. (a) Number of village and population to be displaced:
(b) Rehabilitation Master Plan:
11. Risk Assessment Report and Disaster Management Plan:
12. (a) Environmental Impact Assessment
(b) Environment Management Plan: Report prepared as per guidelines
(c) Detailed Feasibility Report: of MOEF issued from time to time
(d) Duly filled in questionnaire
13. Details of Environmental Management Cell:

I hereby give an undertaking that the data and information given above are true to the best of my knowledge and belief and I am aware that if any part of the data/information submitted is found to be false or misleading at any stage, the project be rejected and the clearance given, if any, to the project is likely to be revoked at our risk and cost.

Signature of the applicant
with name and full address

Date:
Place:

Given under the seal of organisation on behalf of whom the applicant is signing

In respect to item for which data are not required or is not available as per the declaration of project proponent, the project would be considered on that basis.

SCHEDULE III

(See sub-para III (a) of Para 2)

COMPOSITION OF THE EXPERT COMMITTEES FOR ENVIRONMENTAL IMPACT ASSESSMENT

1. The Committees will consist of experts in the following disciplines:
 - (i) Eco-System Management
 - (ii) Air/Water Pollution Control
 - (iii) Water Resource Management
 - (iv) Flora/Fauna Conservation and Management
 - (v) Land Use Planning
 - (vi) Social Sciences/Rehabilitation
 - (vii) Project Appraisal

- (viii) Ecology
- (ix) Environmental Health
- (x) Subject Area Specialists
- (xi) Representatives of NGOs/Persons Concerned with Environmental Issues

2. The Chairman will be an outstanding and experienced ecologist or environmentalist or technical professional with wide managerial experience.
3. The representative of IAA will act as Member - Secretary.
4. Chairman and members will serve in their individual capacities except those specifically nominated as representatives.
5. The membership of a Committee shall not exceed 15.

EXPLANATORY NOTE REGARDING THE IMPACT ASSESSMENT NOTIFICATION

DATED 27TH JANUARY, 1994

1. Expansion and modernisation of existing projects

A project proponent is required to seek environmental clearance for a proposed expansion modernisation activity if the resultant pollution load is to exceed the existing levels. The words "pollution Load" will in this context cover emissions, liquid effluents and solid or semi-solid wastes generated. A project proponent may approach the concerned State Pollution Control Board (SPCB) for certifying whether the proposed modernisation/expansion activity as listed in Schedule I to the notification is likely to exceed the existing pollution load or not. If it is certified that no increase is likely to occur in the existing pollution load due to the proposed expansion or modernisation, the project proponent will not be required to seek environmental clearance, but a copy of such certificate issued by the SPCB will have to be submitted to the Impact Assessment Agency (IAA) for information. The IAA will however, reserve the right to review such cases in the public interest if material facts justifying the need for such review come to light.

2. Availability of Summary Feasibility Report, EIA/EMP Report etc. to concerned parties or groups

The project proponent will have to submit an executive summary incorporating in brief the essence of project details and findings of environmental impact assessment study which could be made available to concerned parties or environmental groups on request.

3. Clarification about concerned parties or environmental groups

The concerned parties or environmental groups will be the bona fide residents located at or around the project site or site of displacement or site of alleged adverse environmental impact.

Public Hearing

4. Public hearings could be called for in case of projects involving large displacement or having severe environmental ramifications.

5. Requisite information required for site clearance/project clearance

(a) Site Clearance:

Site clearance will be given for site specific projects as mentioned in para-2(ii) of the notification. Project proponents will be required to furnish information according to the environmental appraisal questionnaires for site clearance, as may be prescribed by the IAA from time to time. Additional information whenever required by the IAA will be communicated immediately to the project proponents who will then be required to furnish the same within the time frame specified.

(b) Project clearance:

In addition to the application form as mentioned in Schedule II to the notification, project proponents are required to furnish the following information for environmental appraisal:

- (i) EIA/EMP report (20 copies);
- (ii) Risk Analysis report (20 copies): however, such reports if normally not required for a particular category of project, project proponents can state so accordingly, but the IAA's decision in this regard will be final;
- (iii) NOC from the State Pollution Control Board;
- (iv) Commitment regarding availability of water and electricity from the competent authority;
- (v) Summary of Project report/feasibility report (one copy);
- (vi) Filled in questionnaire (as prescribed by the IAA from time to time) for environmental appraisal of the project;
- (vii) Comprehensive rehabilitation plan, if more than 1000 people are likely to be displaced, otherwise a summary plan would be adequate.

As a Comprehensive EIA report will normally take at least one year for its preparation, project proponents may furnish Rapid EIA report to the IAA based on one season data (other than monsoon), for examination of the project. Comprehensive EIA report may be submitted later, if so asked for by the IAA.

The requirement of EIA can be dispensed with by the IAA, in case of projects which are unlikely to cause significant impacts on the environment. In such cases, project proponent may be asked to furnish such additional information as may be required.

6. Submission of insufficient or inadequate data

Regarding cases liable to be rejected due to inadequacy of data, it is clarified that the IAA will make such rejection within 30 days from the date of submission of the proposal. While rejecting a proposal due to insufficient or inadequate data after the first evaluation, the IAA may also stipulate additional requirement of information/clarification for impact assessment purposes if deemed essential due to the specific nature of location of the proposed project whose data as prescribed is not available, the IAA can examine the project on the basis of available data.

7. Application Form

(i) In order to remove any hardship to the project proponent in providing any information, the project proponent may, where some information is not available or would cause inordinate delay, mention this in their application form. The IAA may consider the project proposal based on the information available.

(ii) Quality and quantity of ground water

If 15 years data on the quantity and quality variation of groundwater is not available with the concerned Department or Authorities, the project proponent may mention this accordingly in the application form prescribed in Schedule II to the notification. Further, in case of projects where ground water is not to be used, and effluents are not to be discharged on the

land, the requirement of ground water variation data for the previous 15 years will be dispensed with.

(iii) A project proponent may write the words "Not Applicable" while filling the application form as mentioned in Schedule II to the notification in respect of items which are not relevant for the purposes of the proposed project.

8. Exemption for projects already initiated

For projects listed in Schedule I to the notification in respect of which the required land has been acquired and all relevant clearances of the State Government including NOC from the respective State Pollution Control Boards have been obtained before 27th January, 1994, a project proponent will not be required to seek environmental clearance from the IAA. However those units who have not as yet commenced production will inform the IAA.

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