GENERIC GUIDELINES FOR AN ENVIRONMENTAL IMPACT STATEMENT

PROJECTS & ASSESSMENTS DIVISION
SOUTH AUSTRALIAN DEPARTMENT FOR THE ENVIRONMENT

JANUARY 1980

PREFACE

The South Australian Government requires Environmental Impact Assessment for environmentally significant proposals for both the public and private sector. This process must be completed prior to requisite approvals being given by Government.

Each proposal is considered on its merits, and the information that is required to make the assessment will vary with the scope of the proposal and its likely impact.

The proponent, i.e. the person, company or authority responsible for the development, is responsible for providing the relevent information. The particular requirements for a project will be determined in consultation between the proponent and the Department for the Environment.

For major projects and projects with significant potential environmental impacts an Environmental Impact Statement may be required.

An Environmental Impact Statement is a document which formalizes the description of the decision making processes that considered the environmental effects of the project.

To assist developers in considering the environmental impacts of a proposal and to describe this process in an acceptable form where an Environmental Impact Statement is required, these draft guidelines have been prepared and published. *They are aimed to provide both a checklist of possible environmental factors and a suggested format for the document.*

These guidelines are generic in form, and of necessity, the degree of detail and emphasis required will be project specific. Hence this document is produced as a basis for negotiation with individual proponents on the extent of work required. This agreed interpretation, ratified where necessary by the Commonwealth Government when required by the Environmental Protection (Impact of Proposals) Act 1974-1975, will be given to the proponent in the form of a "letter of intent". For all proposals, that letter of intent will be made public, either prior to the production of the Environmental Impact Statement or as an Annex to the Draft Environmental Impact Statement.

Environmental Impact Statements should be prepared during as early a stage in the decision making procedure for a proposal as possible. This ensures that maximum cogniscance of environmental factors is taken in conjunction with economic and technical considerations.

A draft environmental impact statement will be required to be made available for public comment for a period not less than six weeks. On receipt of public comment, at the completion of this display period, the proponent will be required to produce the final environmental impact statement. This should include public comment and show adequate consideration of the points raised.

The final environmental impact statement will be assessed by the South Australian Department for the Environment, Assessment Division and where appropriate by the Commonwealth Department of Science and the Environment. The assessment will be completed within four weeks of receipt.

Both the Final Environmental Impact Statement and the Assessment will be published. The Final Environmental Impact Statement may be either a completely seperate document to the draft provided for public comment or the draft with an addenda including public comment, and such answers as considered appropriate.

It should be noted that the "Environment" as considered in these Guidelines is not exclusively the natural system of flora, fauna and physical features but also encompasses the full range of human, social and cultural factors.

1. INTRODUCTION

The main text of an environmental impact statement should be a straightforward document treating its subject in terms which are clear and readily intelligible to the general reader. Technical detail should be included in an appendix so that the environmental impact statement forms a complete and self-contained entity.

The discussion should focus attention on the salient features of the proposed operation, and the environmental considerations associated with them. Alternatives should be discussed where they offer a practical and potentially acceptable way of achieving the principal objectives; alternatives should be treated in sufficient detail to make clear the reasons for selection of a particular option, the less clearcut the decision the more supporting detail should be provided.

The document should include references to the sources of technical data and to organisations and individuals consulted so that interested parties can examine the basis for environmental decisions. Relevant diagrams, figures and maps should be included but the presentation should be such as to minimise, as far as convenient, the cost of preparation or of obtaining the environmental impact statement, and of making it available to the public.

The following guidelines indicate the areas which should be considered in the preparation of an impact statement. They should however be dealt with only to the extent considered appropriate to the development under consideration with a view to concentrating on the more significant environmental impacts.

2. CONTENTS OF ENVIRONMENTAL IMPACT STATEMENT

1. Title of Proposed Development.
2. Name of Proponent.
3. Summary.

The environmental impact statement should include a concise summary of relevant information to enable the reader to obtain a quick but thorough understanding of the proposal and the resulting environmental impact.

The summary E.I.S. could be based on the following sub-titles:

(a) Objective of Proposal
(b) Background of the proposed development
(c) Existing Environment
(d) Description of Proposal
(e) Description of alternatives both to and within the proposal
(f) Environmental Impact
(g) Environmental Safeguards Proposed
(h) Monitoring and review
(i) Map(s) showing Location, Boundary, and Access.

4. Broad Objectives of the Proposed Development

The E.I.S. should be introduced with a statement of the objectives of the proposed development.

5. Substantiation of the Proposed Development

The E.I.S. should fully disclose the decision-making process that led to the objectives and to the preferred project. As a result, consideration must be given to any known alternatives to the proposal which could feasibly attain the basic objectives, and why they were rejected in favour of the ultimate choice. The specific alternative of 'no project' must also be evaluated. Attention should be paid to alternatives that would substantially impede the attainment of the project objectives or add significantly to cost,
but would reduce the environmental impact of the proposed development.

This section should contain the following sub-sections:

(a) Analysis of the need for the proposal with an evaluation of the advantages and disadvantages of all reasonable alternatives to the proposed development (including both proceeding at different rates and not proceeding at all).
(b) Background to the proposal including:

- anticipated cost;
- time-scale of implementation and project life;
- alternatives available;
- reasons for selection of preferred option;

(c) Resource requirements for the proposal:

- resource consumption expected (energy, water, etc);
- options available for supply of resources;
- reasons for selection of preferred option;
- infrastructure requirements and public facilities required.

(d) Locational considerations for the proposal and its elements, including:

- route/location proposed;
- total area required;
- land tenure, surrounding land use;
- land form, (geology, pedology, seismicity, hydrology, etc.);
- alternatives available;
- reasons for selection of preferred option;
- workforce requirements: proximity, number skills.

6. Description of the Existing Environment

A description of the existing environment, on both a local and regional basis, is required to gain a knowledge for baseline environmental data required for process development, an evaluation of the impact of the proposal and the subsequent monitoring programme.

The factors to be considered are listed in Appendix A.

7. Description of Proposed Development

The E.I.S. should describe the proposed development. The social technical and broad economic characteristics of the project and associated facilities, both public and private, should be discussed. Adequate information and technical data, including maps, flowsheets, diagrams, photographs, etc., should be presented to allow a careful evaluation and review of the proposed action. Reference should be made to any further documents which describe the proposal in more detail.

Specific aspects on which information should be included are listed in Appendix B.

8. Environmental Impact

There should be an assessment of the direct and indirect impacts of the total development, based upon the description of the existing environment. Due consideration should be given to both the short-term and long-term effects of construction, operation, transportation of materials and disposal of wastes, and of associated developments like township or camp establishment and operation and power supply. A summmary of factors requiring study and a description of the scope of such a review is given in Appendix C.

Such an assessment of the environmental impact will also enable the proponent to instigate design changes at an early stage to minimize the impact of the proposal.

9. Safeguards and Standards

The safeguards and/or standards proposed to minimize the environmental effects of the proposed action should be discussed. Reference should be made to existing environment legislation (both State and Federal), and relevant codes of practice.

Reference should also be made to international safeguards and standards which are appropriate to the proposals.

10. Monitoring and Review

Proposed monitoring programmes should be described in this section. Monitoring is a systematic study of environmental factors which may reasonably be expected to be affected by the project. These programmes will therefore provide a means of gauging the effectiveness of proposed safeguards and standards. Factors requiring monitoring should be based on the previously described existing environment and the predicted effects of the project on that environment. These studies should be made over a time span long enough to obtain information on any seasonal or long term changes, commenced prior to operations and continue until long term impacts are fully documented.

Monitoring is required during construction and over the operational and post operational phases of the work to cover all those areas likely to be affected by the operation, and associated activities. If monitoring gives an indication of environmental degradation, there must be provision in design to allow for remedial action and tightening of the initial standards.

11. Public Participation

The level of public involvement in the planning and decision making process leading to the compilation of the environmental impact statement should be described.

12. Sources of Information

The sources of information (e.g. reference documents, literature sources, research projects, authorities consulted) should be cited.

13. Appendices

Additional information relevant to the E.I.S. that is not included in the text should be included in the appendices. (maps, graphs, tables, photographs, reports, etc.).

APPENDIX A

The description of the existing environment should be considered in conjunction with Appendix C, (studies required to determine potential environmental impacts). Where published information is available, this may be briefly summarized with reference to the source documents. Emphasis required for specific projects will be agreed with individual proponents.

The Existing Environment

The description of the existing environment falls into three groupings:

(i) Abiotic characteristics
(ii) Biotic characteristics
(iii) Human environment characteristics

(i) Abiotic characteristics

A. Terrestrial

1. Geomorphology
   - land form
   - elevation (include contour map of site)
   - unique physical features.
2. Soils
   - profile of soil type and extent of each, with emphasis on land potentially affected by erosion.
   - physical, chemical and biological characteristics of soils afffected by development.
   - productive capacity.
3. Geology
   - general description of geology of site.
   - seismicity (i.e. probability of earth-quakes.
   - mass movements, including erosion and sedimentation.

4. Hydrology
   - description of surface and underground water system with reference to geological extent, flow capacity, water quality storage capacity, recharge areas;
   - incidence of flooding which could affect site.

5. Resources
   - sources of construction materials on both a local and regional basis.
   - sources of other mineral resources in the vicinity of the proposal.

B. Aquatic

- description of aquatic system (i.e. watercourses, gulf, sea, lakes etc.)
- incidence of flooding, storm surges etc. which could affect development site.
- water quality. (physical, chemical, bacteriological).
- circulation.
- stratification.

C. Atmospheric

- climatic characteristics (rainfall/intensity, temperature, wind, evaporation).
- incidence of inversions, storms, fogs.
- air quality - particulates, gases, odours.

(ii) Biotic Characteristics

A. Terrestrial

1. Biological characteristics
   - plant species and recognizable vegetation communities, charactertistics and associations.
   - condition of vegetation
   - delineation of faunal habitats (including breeding gounds) and description of species supported.
   - significance of vegetation associations, faunal habitats or any individual species on a regional basis; including usual, unique, rare or endangered associations habitats or species.

B. Intertidal

1. Biological characteristics
   - plant species and recognizable vegetation associations.
   - delineation of faunal habitats (including breeding ground) and a description of species on a regional basis; including commercially important; unique, rare or endangered associations, habitats or species.

C. Sub-tidal

1. Biological characteristics
   - vetebrate, invertebrate, benthic and planktonic associations (including breeding areas).
   - delineation of the areal extent of sea grass communities including distribution and density of identified species.
   - endemic, endangered, commerciallyimportant species

2. Resources - significance of area for commercial fishing industry.

(iii) Characteristics of the Human Environment

1. Population - distribution, occupation and employment characteristics, structure and description of existing population and any trends that are evident;

2. Land Use -

- existing land uses and developments in the location of the proposal or in its vicinity; including open space, recreational, rural, residential, commercial, industrial, mining and quarrying;
- features and sites of cultural and scientific interest; particular emphasis should be placed on sites, and relics of Aboriginal and archaeological significance;
- barriers (fenced and restricted areas).
- access, utility and transportation network;
- service corridors (road, rail, powerlines, pipelines etc.).

3.	Facilities and infrastructure	- existing infrastructure and facilities in the region including education, health, social services, water supply, telephone electricity, gas, transport, recreation and leisure, shopping facilities; - infrastructure; negotiations with appropriate authorities.
4.	Activities	- existing levels of human acitivity in relation to (1), and (2) above; - existing levels and nature of wastes generated in the region and the methods and locations of disposal and these;

APPENDIX B

Description of Proposed Development

This appendix will inherently be completely project specific; however the following aspects may have significance to a wide range of proposals. Where appropriate, information will be required on these aspects.

a) Location of sites/route - in reference to readily determined datum.

b) Additional infrastructure required - pipelines; access; airstrips; roads; housing; marine facilities; power; sewerage, hospitals; schools, etc.

c) Construction - schedule; volume, nature and source of construction wastes; visual appearance; employment, etc.

d) Processing -

(1) Raw materials

- source of supply of raw materials used in processing and alternative sources.
- Mode of transport of raw materials.
- On site storage; location; controls to prevent release to environment; quantities etc.

(2) Engineering

- description of major plant required for each unit process.
- pollution control measures.

(3) Process chemistry and physics

- description of the chemical and physical processes involved in each unit process.

(4) Final products

- description of final products
- on-site storage; controls to prevent release to environment; quantities etc.
- mode of shipment of final products.

(5) Waste Products

. heat, include sources and quantity of heat transferred to the environment via process cooling and mode of heat transfer
. solids, include source, quantity and composition of particulate emissions. Description of process sludges, solid wastes and method of disposal
. gases. Include source, volume and chemical composition; ground-level concentration and total emission
. liquids. Include sources, volume and analysis, treatment schemes and procedures
. noise. In-plant noise and boundary noise

(f) Visual Appearance (use photographs, sketches)

(g) Safety

. postulated on-site accidents that could have an environmental impact
. worker exposure to toxic, carcinogenic or other hazardous substances
. postulated transportation accidents that may have an environmental impact

(h) Employment

. number
. source of personnel
. skills
. income range

(i) Water Supply Requirements including quantity and quality for human consumption, construction, processing, domestic consumption (non potable).

Alternative sources should be discussed.

(j) Energy requirements: quantity of energy required (e.g. kW per annum) and types of energy which can be utilized (e.g. coal, oil, electricity, gas etc.)

(k) Economic Analysis a broad analysis of the viability of the proposal is required.

APPENDIX C

Environmental Studies

1. Introduction

To assess the environmental impact of a proposal, various studies may be required, to determine the significance of existing environmental factors and the influence of the proposal on these factors. Such studies may require revision as further information on the proposal becomes available.

Where published studies are directly applicable, brief summaries may be used with reference to the original study, or a copy of the original study may be included as an appendix.

The studies required will be dependent on the exact nature of the proposal and its location, but examples of the type of study that may be required, for a wide range of proposals, follows.

2. Examples of Studies

2.1 Geomorphology, pedology, geology, seismicity

A description of the major geolocial aspects of the area potentially affected by a proposal may be required. This should include the preparation of landform or contour maps, evaluation of erosion susceptibility of soils, and permeability of geological formations above underground water systems. Particular emphasis should be placed on unique geological systems, and on impacts resulting from the establishment of access: tracks, roads, airstrips etc.

2.2 Hydrology

The significance of surface and underground water systems should be discussed and the impact of development on these assessed.

2.3 Ecology

A study of the effects of a site preparation, fencing, roads, and other barriers, alterations of natural drainage, noise etc., should be carried out to determine its probable effects on wildlife habitat including territories, food chains and migration patterns, particularly on endangered and endemic species. Changes to the structure and function of ecosystems both locally and regionally as a result of additional development should be reviewed.

2.4 Land Use

The effect of the proposal on existing land use should be discussed, and in the case of proposals having a finite life span, the ultimate potential land use options available at the completion of the project.

2.5 Historical and Archaeological Features

A study of the extent of Aboriginal relics and sites of Aboriginal cultural significance in the area should be undertaken to a standard acceptable to the Heritage Unit of the Department for the Environment.

3. Associated Developments and Associated Impacts

3.1 Facilities

A study of the effects of any additional airstrips, roads, pipelines, jetties and additional camps or townships on landform, erosion, flora and fauna, existing land use and visual amenity should be undertaken excluding facilities for which a seperate E.I.S. is being undertaken.

3.2 Population

An assessment of the impact of the project on the regional, local and introduced population of the proposal, during the construction and operational periods, including requirements for facilities, services, infrastructure and for employment is required.

3.3 Resource commitment

The effects of the proposal on options for future resources utilization in the area and region should be reviewed. Energy is a significant resource in this context.