Northern Territory Government
Department of Infrastructure, Planning and Environment

GUIDELINES

DRAFT GUIDELINES FOR PREPARATION OF A PUBLIC ENVIRONMENTAL REPORT ON THE BOOTU CREEK RESOURCES PTY LTD OPEN CAST MANGANESE MINE

MAY 2004

Public Comment period: 15th May 2004 to 28th May 2004.

Written submissions should be addressed to:

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PROJECT DESCRIPTION

Bootu Creek Resources Pty Ltd intends to mine 400 thousand tonnes of manganese ore a year from a proven resource of 10 million tonnes of ore in the Bootu Creek locality on Banka Banka Station.

The ore will be processed near the extractive area by crushing, screening, washing and separation into lump manganese and fine manganese.

The two kinds of manganese product will be trucked by road to the Adelaide to Darwin Railway approximately 50 kilometres away. A railway siding will be constructed so that railway containers can be loaded and the product conveyed to the Port of Darwin and from there exported to southern China.

The proposal has been referred to the Commonwealth Government to determine whether the proposed activities will be a controlled action under the Commonwealth *Environment Protection and Biodiversisty Conservation Act* (*EPBC Act*). The Commonwealth Government has decided that it is not a controlled action under the Act.

The Public Environmental Report (PER) should include the following sections, but need not be limited to these sections or inferred structure.

1 EXECUTIVE SUMMARY

The Executive Summary should include a brief outline of the project and each chapter of the PER, allowing the reader to obtain a clear understanding of the proposed project, its environmental implications and management objectives. The Executive Summary should be written as a stand-alone document, able to be reproduced on request by interested parties who may not wish to read or purchase the PER as a whole.

2 INTRODUCTION

The PER must provide detail of the mining proposal, including all ancillary activities and associated water, transport and infrastructure requirements. As a minimum, it should:

1. Identify and describe the key characteristics and phases of the proposal, and the nature and extent of proposed works likely, or with the potential, to impact on the environment. An explanation of the objectives, benefits and justifications for the project should also be included. The purpose of this is to place the proposal in the local and regional context.

2. For all phases (construction, operational, rehabilitation and decommissioning) and components of the project, the proposal description should consider, as a minimum, the following:

- Provide a description of the project's location indicating distance from Darwin and Tennant Creek.
- Provide maps and diagrams displaying the above information.
- Provide maps showing the project in relation to Banka Banka Station homestead, the Stuart and Barkly Highways and the Adelaide to Darwin Railway.
- Provide overall layout of the proposed mine site including pits, processing facilities, waste dumps, tailings storage facilities, power station, other infrastructure, rivers, access and transport routes and existing features of interest.
- Comprehensive map(s) showing topography and all project components and land tenure.
- Project schedule.
- Location and design criteria for each component of the project including design limitations imposed by site characteristics.
- Land requirements, land tenure, acquisition requirements (permits, rezoning and native title tenure/agreements - e.g. ILUAS), and the tenures under which the project would be held including details of relevant legislative processes required to grant proposed tenure.
- Infrastructure requirements and specifications (permanent and temporary) and ancillary activities (e.g. storage areas, waste dump areas etc).
- Transport systems, location, methods and routes for delivering construction and maintenance materials and processed product (temporary or permanent), including consideration of any interruption to other land activities.
- Water requirements, usage, source, storage, treatment and disposal.
- Employment and business opportunities (direct and indirect) including sources of workforce, skill levels required and opportunities for Aboriginal people and businesses.
- Methods for storage, handling, containment and emergency management of chemicals and other hazardous substances (including fuel and tails).
- Anticipated energy usage.
- Proposed environmental, safety and emergency management arrangements including risk assessments, contingency and response plans.

3. For the Construction Phase the proposal description should consider, as a minimum, the following:

    - Construction timing, methods, equipment and materials (types, sources and quantities).
    - Footprint for construction compared with operation.

    (Note - For further guidance refer to Western Australia's Guidelines for mining in semi-arid/arid areas)

4. For the Operational Phase the proposed description should consider, as a minimum, the following:

Mine

- Outline design of pits and their dimensions (including maps, plans and geological cross-sections).
- Describe on-site and off-site borrow material requirements, extraction methods and uses.
- Describe mining methods, scale of operations and timetable for ore extraction and open cut operations.
- Detail drilling and blasting requirements (including frequency).
- Outline possible future extensions to the mine operation, and discuss the probability of mining satellite ore bodies.

Ore Processing

- Detail options for processing the ore. Include flow diagrams.
- Indicate all input products (solids, gases and liquids) and pathways for each item in the process.
- Indicate all output products (solids, gases and liquids) and pathways for each item in the process.

Tailings

- Characterise the tailings, including mineralogy, base metal content, sulphide content including results of net acid potential (NAP)/ net acid generation (NAG) testing and neutralising capacity.
- Describe proposed tailings storage facility location and catchment details.
- Describe tailings disposal and impoundment principles, surface configurations, wall designs and construction, estimated flood heights, erosion protection, spillway design and location, subdrainage and collection sumps. Ensure current geotechnical engineering principles/practices and ANCOLD guidelines are met.
- Outline geotechnical details of dam (specifically seepage potential and expected chemistry of leachate).

5. For the Rehabilitation/ Decommissioning Phase the proposed description should consider, as a minimum, the following:

- Rehabilitation commitments and timetables (for both temporary and permanent facilities) including waste management, pollution control and stabilisation and rehabilitation plans for mined areas.
- Identify decommissioning and rehabilitation objectives.
- Include a commitment to submit a security bond in case of failure of the project.
- Identify post mining land use.

- Integration of the rehabilitation program with mine design and operation.
- Design of rehabilitated landforms.
- Describe progressive and final rehabilitation plans for pits, waste rock dumps and tailings storage facilities; specifically collection and selection strategy for native species, e.g. native grasses and other vegetation to be used for runoff and erosion control, final topographic and drainage morphology, maintenance of water quality, prevention of leaching and revegetation procedures.
- Arrangements for any materials with the potential to form acid.

3 OBJECTIVES AND BENEFITS OF THE PROPOSED PROJECT

Discuss the social, environmental and financial objectives and benefits of the project. This should include:

- socio-economic objectives and benefits, including reference to local and global markets, other economic activities in the affected area (e.g. tourism, pastoral etc), foreign trade objectives, occupational health and safety objectives, and benefit to the local workforce, land users and indigenous people;
- commercial objectives (e.g. predicted volume of product and proportion of market demand to be met by output); and
- local, regional and global environmental objectives (e.g. reference to the company's environmental policies and the implications of the project with respect to the National Greenhouse Strategy).

4 ALTERNATIVES

Alternative proposals, which may still allow the objectives of the project to be met, should be discussed, detailing reasons for the selection and rejection of particular options. The selection criteria should be discussed, and the advantages and disadvantages of preferred options and alternatives detailed. The potential impacts of the alternatives should be described.

Alternatives to be discussed should include:

- not proceeding with the project;
- alternative locations, including power station and process plant;
- alternative sources of raw materials for the project, including water supply;
- alternative extraction and processing technologies considered;
- alternative environmental management technologies considered, such as treatment and disposal of byproducts and waste products, co-generation etc;
- alternative workforce accommodation; and
- alternative power supply options and service corridors.

5 EXISTING ENVIRONMENT, POTENTIAL IMPACTS OF THE PROJECT AND MANAGEMENT

Studies to describe the existing environment should be of a scope and standard sufficient to serve as a benchmark against which the impacts of the project may be assessed over an extended period. Control areas not impacted by the project should be included in studies and long term monitoring locations established.

This section of the PER should also clearly identify, qualify and quantify, where appropriate, the potential environmental impacts expected to result from the project and from any feasible alternatives.

The section should also include an assessment of the level of significance of the impact, be it global, regional or local (e.g. global and national implications of greenhouse gases and the localised impact of service roads or artificial water bodies).

The possibility of remediation should also be discussed. Performance indicators for all potential impacts and remediation efforts should be identified. Environmental Management Plans will need to be developed in order to minimise and manage impacts associated with the project.

Cumulative impacts should also be discussed. The reliability and validity of forecasts and predictions, confidence limits and margins of error should be indicated as appropriate.

Description of those areas potentially impacted by the project should, as a minimum, include:

5.1 Air Quality and Noise

Baseline

- Provide background dust, air quality, noise and dispersion levels.

- List all meteorological conditions including but not limited to:
  - prevailing wind directions and strengths;
  - maximum wind gusts;
  - precipitation data (maximum, minimum, average, design rainfall intensities);
  - temperature data; and
  - evaporation data.

Impacts

Describe how the project will or has the potential to impact on each element with particular consideration given to the following:

- Potential air emissions
- Dust.
- Noise, including levels, timing and duration and comparison to current levels (with respect to any nearby receivers).

Management

Detail the safeguards, management and monitoring strategies that will be used to minimise impacts of construction and operation phases, including:

- Dust suppression and monitoring. Will fine product be covered during transportation to siding.
- Noise mitigation.

5.2 Landform

Baseline

- Provide maps and an interpretation of the regional geology and geomorphology of the site.
- Discuss the soil types and land units.
- Provide specific information for the region.
- Detail the existing level of soil erosion and other disturbances.

Impacts

Describe how the project will or has the potential to impact on each element with particular consideration given to the following:

- Discuss limiting properties of landform considering erosion, rehabilitation etc.
- Detail impacts of mining to landform.

Management

Detail the safeguards, management and monitoring strategies that will be used to minimise impacts of construction and operation phases, including:

- Measures to avoid or minimise impacts.
- Erosion and sediment control procedures and associated erosion and sediment control management plan.

5.3 Hydrology/Hydrogeology

Baseline

- Describe the site and regional surface water systems including:
  - rivers;
  - creeks; and
  - streamlines.

- Describe the site and regional ground water systems including:
  - confined aquifers;
  - unconfined aquifers; and
  - ground soaks, expressions etc.

- For both ground water and surface water systems, discuss;
  - their significance;
  - current uses;
  - beneficial uses;
  - flows (including flood contours) and discharge rates;
  - water quality; and
  - release or seepage of heavy metals.

Impacts

Describe how the project will or has the potential to impact on each element with particular consideration given to the following:

- Impacts on surface and groundwater from mining, ancillary activities and associated infrastructure requirements, including impacts on:
  - water quality;
  - changes to/ diversion of surface waters (Bootu Creek and associated watercourses and drainage); and
  - aquatic flora and fauna.
- Impacts associated with dewatering of the pits.
- Possible chemical constituents in drainage, specifying test methods (provide all test information).
- Site water requirements and sources.
- Site water balance (all inputs and outputs) based on long term modelling using rainfall/runoff data for a period equivalent to the expected mine life, including rehabilitation and no more than monthly time steps.

Management

Detail the safeguards, management and monitoring strategies that will be used to minimise impacts of construction and operation phases, including:

- Treatment, storage and disposal of waste water, including stormwater run off;
- management of clean, dirty and contaminated water;
- management of high/ extreme rainfall events;
- management of process waters and acid drainage waters;
- protection of beds and banks of watercourses;
- means of interception and management of potential acid mine drainage;
- continued water monitoring and discharge requirements following decommissioning; and

Include a map of water management system showing all structures and routes.

5.4 Ecology

Baseline

- Specify the extent of clearing.
- Survey flora and fauna species (including migratory species) and biological communities.

- Survey methodology should:
  - follow best practice and advice from relevant agencies;
  - consider seasonality, species rarity, potential for occurrence of significant species and sensitivity of species to disturbance;
  - be included in appendices; and
  - identify rare, threatened and endangered species against NT and Commonwealth legislation, and species with indigenous conservation values.
- Special consideration should be given to the following:
  - ecologically outstanding areas;
  - vegetation that is the habitat of rare, threatened or endangered species or has outstanding diversity;
  - communities that are exceptional examples of their type; and
  - vegetation outside its normal distribution or of other biogeographical significance.
- Timeline to obtain permits and meet other statutory obligations under NT legislation (IDCO No12. – *Planning Act 1999* and *s.38 Pastoral Land Act 1992*) for vegetation clearing.

Impacts

Describe how the project will or has the potential to impact on each element with particular consideration given to the following:

- Impacts of clearing.
- Impacts on species or communities or habitats of local or regional or national significance. Detail this with reference to the inputs and outputs from the mining and processing operations.
- Rate the risk and seriousness of each impact.
- Identify noxious weeds that may result from the project activity.

Management

Detail the safeguards, management and monitoring strategies that will be used to minimise impacts of construction and operation phases, including:

- Minimisation of disturbance.
- Rehabilitation methods including revegetation strategies.
- Weed management plan to be included in EMP and to follow best practice and advice from advisory agencies (NT *Weeds Management Act 2001*).
- Vegetation Clearing Plan to be developed as part of EMP.
- Actions to prevent the development of mosquito and other biting insect breeding habitats.

5.5 Cultural Environment

Baseline

This section should describe the anthropological, archaeological and heritage values of the development area, including sites and objects of Aboriginal significance.

As a minimum, information should be provided on the following:

- Historical uses of the site (Aboriginal and non-Aboriginal).
- Current use by Aboriginal people.
- Descriptions of the cultural values that could be impacted by the project. These should include:
    - areas nominated for listing or listed on the Register of the National Estate or the Interim list of the Register of the National Estate;
    - nominated, proposed and declared heritage places and objects under the NT *Heritage Conservation Act 1991*;
    - prescribed archaeological and heritage places and objects (Aboriginal) under the NT *Heritage Conservation Act 1991*;
    - areas with special values to indigenous and non-indigenous people, e.g. traditional land use, landscape, visual environment, recreational, commercial, tourism, scientific and educational;
    - areas of significance to the Aboriginal population and culture, including sacred sites within the meaning of the *Aboriginal Land Rights Act* and the *Northern Territory Aboriginal Sacred Sites Act*;
    - National Parks, conservation reserves or any other category of Territory Park or Reserve; and
    - consultation arrangements and any agreements with Local Aboriginal Groups or the Northern Land Council (NLC) under the *Native Title Act*.

For each of these cultural values, indicate: importance, conservation status, national and international treaty obligations, and clearance permits required or obtained.

The methodology by which these sites and areas were identified, and their importance assessed, should include survey details such as dates, consultants, survey area and methods.

In relation to prescribed archaeological places and objects protected under the *Heritage Conservation Act*, the proponent should seek advice from an archaeologist and document the precise location of such places and objects in relation to the proposal.

The archaeologist should undertake a further survey to ensure that other unrecorded sites, which are also protected by the Act, are not included in the development area. Contact Heritage Conservation Services for advice regarding an appropriate scope of works.

The protocol to be followed in the event of discovery of new archaeological or heritage sites or objects during the construction phase should be documented and included in the EMP (see section 6). The proponent should seek advice on this from the Heritage Conservation Services Branch of the Department of Infrastructure Planning and Environment.

The proponent should describe the significance of the places and objects which are to be impacted by the proposal; and options for mitigation of loss of heritage value of places and objects that lie within the area of impact.

This section of the PER should also include:

- results of the inspection of the Register of Sacred Sites maintained by the Aboriginal Areas Protection Authority;

- details of the application lodged with the Aboriginal Areas Protection Authority for an Authority Certificate within the meaning of Part 3, Division 1 of the *Northern Territory Aboriginal Sacred Sites Act*;

- a copy of the Certificate issued by the Authority as a result of that application containing conditions, if any, relating to the protection of sacred sites on, or in the vicinity of, the project area; and

- results of any negotiations with native title claimants/NLC or other requirements under the *Native Title Act*.

Impacts

This section should describe the anticipated or potential impacts the project will have on each cultural value indicated in the previous section.

5.6 Waste Management

Baseline

- Characterise waste rock in terms of net acid generation and net acid potential from drill core samples and in-situ assessments (kinetic tests and field trials).

Impacts

Describe how the project will or has the potential to impact on each element with particular consideration given to the following:

- Identify and describe all sources of waste.

- Outline proposed waste dump locations (discuss alternatives), dimensions.
- Describe in detail the methods for waste rock disposal and dump construction; including sample selection methodology and characterisation to direct different waste rock types to appropriate locations for disposal, and cross sections for the design of the waste rock dumps. Problematic waste will require strategic positioning and management.

Management

Detail the safeguards, management and monitoring strategies that will be used to minimise impacts of construction and operation phases, including:

- Waste management program including reuse, recycling, storage, transport and disposal.
- Details of any pollutants that are likely to be released into the environment and measures to prevent or minimise this release of pollutants.

5.7 Fire

Detail the safeguards and management that will be used to prevent fires and the actions required in case of a fire.

5.8 Hazards and Risks to Humans and Facilities

The PER should include a preliminary hazard analysis and assessment of the risks to people, the environment and nearby facilities from potential accidents associated with the construction, operation and maintenance of the various components of the proposal, storage and transport of materials to and from the complex.

The preliminary hazard analysis and risk assessment should outline and take into account emergency plans that detail strategies, response procedures and staff responsibilities in the event of an emergency or accident. Issues such as floods, bush fires, lightning strikes, mine collapse and landslip should be considered. Contingency plans for dealing with spillage of any hazardous materials should be detailed. The risks in relation to open pit rescue should also be discussed.

The hazard and risk analysis will identify the critical areas that need to be addressed in management plans, monitoring programs, contingency and emergency plans.

5.9 Summary

A summary table listing undertakings and commitments made in the PER, including performance indicators, with cross-references to the text of the report should be provided.

6 ENVIRONMENTAL MANAGEMENT PLAN

A draft Environmental Management Plan (EMP) should be provided in a form suitable for inclusion in a Mining Management Plan as required under the *Mining Management Act*. The draft EMP should be strategic, describing a framework for environmental management. Where possible specific management policies, practices and procedures should be included in the draft EMP. A final EMP would be prepared at the conclusion of the assessment, taking into consideration comments on the PER and on the Supplement and incorporating the Assessment Report recommendations.

The draft EMP should:

- define the management structure of both the construction and operational phases and the relationship to the environmental management of the site;
- describe the proposed measures to minimise adverse impacts and the effectiveness of these safeguards (e.g. provide performance indicators by which all anticipated and potential impacts can be measured);
- describe monitoring to allow early detection of adverse impacts;
- describe remedial action for any impacts that were not originally predicted;
- detail how monitoring will be able to determine the differences between predicted and actual impacts; and
- provide for the periodic review of the management plan itself.

Reference should be made to relevant legislation and standards, and proposed arrangements for necessary approvals and permits should be noted. The agencies responsible for implementing and overseeing the management plan should be identified. Proposed reporting procedures on the implementation of the management plan, independent auditing or self auditing and reporting of accidents should also be described.

7 PUBLIC INVOLVEMENT AND CONSULTATION

Public involvement and the role of government organisations should be clearly identified. The outcomes of surveys, public meetings and liaison with interested groups should be discussed, and any resulting changes made to the proposal clearly identified. Details of any ongoing liaison should also be discussed including any negotiations with native title claimants.

Negotiations and discussions with local and community government, the Territory Government and the Commonwealth Government should be detailed, and any outcomes referenced. Details of any ongoing negotiations and discussion should also be presented.

8 INFORMATION SOURCES, REFERENCE LIST, BIBLIOGRAPHY

The PER should contain a comprehensive reference list or bibliography. Any source of information such as studies, research, maps and personal communications used in the preparation of the PER should be clearly identified, cited in the text and referenced in the bibliography.

9 APPENDICES, GLOSSARY

Information and data related to the PER, but unsuitable for inclusion in the main body of the statement, should be included as appendices. This may include detailed analyses, monitoring studies, baseline surveys, raw data. Where necessary, specific guidance should be provided on the most appropriate means of accessing information not appended to the PER.

A glossary should be provided, defining the meaning of technical terms, abbreviations and colloquialisms. (Note: throughout the PER, technical terms and jargon should be minimised).

10 ADMINISTRATION

The Project Officer is Peter Bannister, Department of Infrastructure, Planning and Environment. The contact number is (08) 8951 9201 and facsimile (08) 8951 9222, e-mail peter.bannister@nt.gov.au