

*Guidelines for the preparation of a*

Development Proposal and  
Environmental Management Plan

*for*

**Venture Minerals Limited**  
**Proposed Tin-Tungsten-Magnetite Mine**  
Mt Lindsay, off Pieman Road, West Coast, Tasmania

**Board of the Environment Protection Authority**  
**April 2012**



ENVIRONMENT PROTECTION AUTHORITY

**Please note that this document combines both General Guidelines and Project Specific Guidelines.**

**TABLE OF CONTENTS**

**TABLE OF CONTENTS .....2**

**GENERAL INFORMATION FOR THE PROPONENT .....4**

*General* ..... 4

*Objectives and content* ..... 4

*Commonwealth environmental approval* ..... 5

*Consultation and submission of draft document* ..... 5

*Submission* ..... 6

*Structure and content* ..... 6

**CONTENTS OF THE DPEMP .....6**

FOREWORD ..... 6

TABLE OF CONTENTS ..... 6

EXECUTIVE SUMMARY ..... 6

1. INTRODUCTION ..... 7

2. PROPOSAL DESCRIPTION ..... 7

    2.1 *Proposal outline* ..... 7

    2.2 *Site plan* ..... 8

    2.3 *General location map* ..... 9

    2.4 *Off-site infrastructure* ..... 9

    2.5 *Technical and management alternatives* ..... 10

3. THE EXISTING ENVIRONMENT ..... 10

    3.1 *Planning aspects* ..... 10

    3.2 *Environmental aspects* ..... 10

    3.3 *Socio-economic aspects* ..... 11

    3.4 *Alternative sites* ..... 11

4. POTENTIAL EFFECTS AND THEIR MANAGEMENT ..... 12

*Key issues* ..... 12

*Survey and study requirements in relation to key issues* ..... 12

    4.0 *Guidance for preparation of this section* ..... 13

    4.1 *Air emissions* ..... 16

    4.2 *Liquid waste* ..... 16

    4.3 *Groundwater* ..... 17

    4.4 *Noise emissions* ..... 18

    4.5 *Solid and controlled waste management* ..... 18

    4.6 *Dangerous goods and environmentally hazardous materials* ..... 18

    4.7 *Biodiversity and natural values* ..... 19

    4.8 *Marine and coastal* ..... 21

    4.9 *Greenhouse gases and ozone depleting substances* ..... 21

    4.10 *Heritage* ..... 22

    4.11 *Land use and development* ..... 23

    4.12 *Visual effects* ..... 23

    4.13 *Socio-economic issues* ..... 24

    4.14 *Health and safety issues* ..... 24

    4.15 *Hazard analysis and risk assessment* ..... 24

    4.16 *Fire risk* ..... 25

    4.17 *Infrastructure and off-site ancillary facilities* ..... 25

    4.18 *Environmental management systems* ..... 25

    4.19 *Cumulative and interactive effects* ..... 26

    4.20 *Traffic impacts* ..... 26

5.	EPBC ACT REQUIREMENTS.....	26
6.	MONITORING AND REVIEW .....	27
7.	DECOMMISSIONING AND REHABILITATION .....	28
8.	COMMITMENTS .....	28
9.	CONCLUSION .....	29
10.	REFERENCES.....	29
11.	APPENDICES.....	29
	<b>GLOSSARY .....</b>	<b>29</b>

## GENERAL INFORMATION FOR THE PROPONENT

### General

The *Environmental Management and Pollution Control Act 1994* (EMPC Act) requires the Board of the Environment Protection Authority ('the Board') to provide guidance to the proponent about what should be included in the case for assessment.

These guidelines provide general and specific information on preparing a Development Proposal and Environmental Management Plan (DPEMP) for the proposed activity being assessed by the Board under the EMPC Act, and under the *Environment Protection and Biodiversity Conservation Act 1999* (EPBC Act), through a bilateral agreement with the Australian Government.

Not all issues nominated in these guidelines will have the same degree of relevance to all proposed activities. Some of the issues may be more relevant than others, while others will not be applicable at all. The level of detail provided on other issues should be appropriate to the level of significance of that issue for the proposal. These guidelines identify the key issues related to this proposed activity. It is essential that the DPEMP be focussed on the key issues for the proposal.

These guidelines should not be interpreted as excluding from consideration other matters that emerge as significant from environmental studies, public comments or otherwise during the course of the preparation of the DPEMP.

### Objectives and content

The DPEMP should aim to provide:

- a) A source of information from which individuals, government and groups can gain an understanding of the proposed activity including: the current status; the background to the project; the need for action; alternative actions; the consequence of not proceeding with the action; a clear outline of the objective of the action; how the action relates to other actions in the region; the potential or actual impact the action will have on the environment; and safeguards and mitigation measures to deal with relevant adverse impacts, including specific management commitments (see below).
- b) A basis for public consultation and informed comment on the proposal.
- c) A framework against which decision makers (and in particular the Board, Council and the Australian Government Minister for Sustainability, Environment, Water, Population and Communities) can consider the proposal and determine the conditions under which any approval would be given.

The DPEMP should provide details of the proposal, describe the existing environment in the vicinity of the proposal site, identify all significant environmental, social, health and economic effects associated with the proposal, detail proposed measures to avoid or reduce potential adverse effects and identify opportunities for protection and enhancement of the environment.

While it is recognised that many construction and operational details may not have been finalised at the time the DPEMP is submitted for assessment, the information presented in the document should be as up to date as possible. Where information is unavailable or details have not yet been finalised, estimates and the range of alternative options should be provided. It should be noted, however, that sufficient technical detail must be provided to enable an appropriate level of assessment to be undertaken.

The main text of the DPEMP should be written in a clear and concise style that is easily understood by the general reader. Technical terminology should be avoided as far as possible. The detailed technical data and supplementary reports necessary to support the main text should be included in appendices. All sources of information should be referenced. An indication should also be given of the currency of the information used and how the reliability of the information was

tested. In particular, the degree of confidence attached to any predictions should be indicated and any uncertainties in the information identified. It is recommended that information be presented on maps, diagrams and site plans to enhance the level of understanding.

Where sensitive information needs to be provided (e.g. information on production processes, or sites or areas of conservation, scientific, archaeological and cultural heritage or other special significance), this information should be provided in a separate, confidential appendix. A comment should be provided in the DPEMP to the effect that the information has been so provided.

Specific management commitments must be clearly identified in the text and included in the commitments table referred to in Section 8 of these guidelines.

Where appropriate, refer to information provided in other sections to minimise duplication.

The DPEMP should contain a summary table showing compliance with these guidelines.

The DPEMP must also comply with Schedule 4 of the *Environment Protection and Biodiversity Conservation Regulations 2000* (as attached).

### **Commonwealth environmental approval**

In addition to Tasmanian requirements, the Australian Government has a role in the environmental assessment and approval of this proposal.

Under the EPBC Act, Australian Government assessment and approval is required for an action that is determined a controlled action because it is likely to have a significant impact on a matter of national environmental significance. Matters of national environmental significance include World Heritage properties, National Heritage Places, wetlands of international importance (Ramsar wetlands), nationally listed threatened species and communities, nationally listed migratory species, Commonwealth marine areas, and nuclear actions. This proposal has been determined to be a controlled action under the EPBC Act as it is likely to have a significant impact on:

- Listed Threatened Species and Communities (sections 18 and 18A); and
- Listed Migratory Species (sections 20 and 20A)

The Australian and Tasmanian Governments have signed a bilateral agreement relating to impact assessment under section 45 of the EPBC Act which effectively accredits the State assessment process. The proposal will be assessed in accordance with the bilateral agreement. The DPEMP must therefore specifically describe the impacts of the proposal on the relevant EPBC Act controlling provisions, as listed above, including a separate chapter that exclusively and fully addresses the matters specified in Schedule 4 of the Commonwealth *Environment Protection and Biodiversity Conservation Regulations 2000* as attached (see Section 5 EPBC Act requirements).

### **Consultation and submission of draft document**

Environmental aspects of the proposal will be assessed by the Board (in discussion where relevant with the Department of Sustainability, Environment, Water, Population and Communities (DSEWPaC)), while planning aspects of the proposal will be assessed by the West Coast Council (Council). The Board has authorised the EPA Division to undertake the administrative tasks and establish the information base to inform its decision making on its behalf. As such, close consultation with the EPA Division, Council and DSEWPaC during the preparation of the DPEMP is therefore recommended. It is recommended that the proponent submit a draft DPEMP to Council, and the EPA Division for review prior to its finalisation. Please note that draft documents may be rejected without detailed review if they are incomplete, contain significant formatting or typographical errors or do not comply with these guidelines. More than one draft may be necessary before the document is considered suitable for public release.

Following the public consultation phase, the DPEMP may require amendment as a result of consideration of public and government agency submissions. This generally takes the form of a supplement to the DPEMP.

### **Submission**

The DPEMP is to be submitted in a printed format and in electronic format for use with a word processor (such as Microsoft Word), and suitable for publishing on the internet (preferably PDF format). The Board will inform the proponent of the number of copies (and format) required

Copies are to be made available to the public upon request at no charge or for a nominal fee, in either printed or electronic format (CD ROM). Arrangements to display the DPEMP on the internet (whether on the proponent's or the Department's web site) will also need to be put into place.

Documents should be able to be downloaded over slower internet connections. Images within the document should be optimised for the internet and font choices should be restricted to those most commonly used. Being judicious about the number of images and/or design elements can avoid unnecessarily adding to the file size. Large files should be broken into multiple documents.

### **Structure and content**

The following sections have been set out in a manner which may be adopted as the structure for the DPEMP. The proposed structure of the DPEMP must focus on the key issues for the proposal as outlined in section 4.0.

Any significant departure from the requirements and intent of the relevant sections of these general guidelines must be approved by the assessing agencies.

## **CONTENTS OF THE DPEMP**

### **FOREWORD**

This section should briefly outline the assessment and approvals process and explain the function of the DPEMP in this process.

### **TABLE OF CONTENTS**

This section should contain a table of the contents of the report with reference to the relevant page numbers. It should also contain a list of figures and tables.

### **EXECUTIVE SUMMARY**

This section should provide an executive summary of the DPEMP to give a clear and concise overview of the proposal and its environmental implications. It should contain headings corresponding to the main section headings of the DPEMP.

For larger DPEMPs, it is recommended that the executive summary be written as a stand alone document, able to be provided on request to interested parties who may not wish to read or purchase the full DPEMP.

## 1. INTRODUCTION

This section should provide information on the following:

- a) Title of the proposal.
- b) Name and address of the proponent and general background, such as relevant development or operational experience. Where the proponent is a registered company, its Australian Company Number and Registered Office address should be included.
- c) A description of any approval that has been obtained from a State, Territory or Commonwealth agency or authority in respect of this proposal. If appropriate a statement identifying any additional approvals that may be required.
- d) Relevant background information on the proposal, including the current status of the proposal, a general overview of the principal components of the proposal and the proposal location, the rationale and need for the proposal, anticipated establishment costs, likely markets for the product, and the possibilities for future expansion.
- e) An examination of how the proposal relates to any other proposals that have been or are being developed or that have been approved in the region affected by the proposal.
- f) Environmental legislation, standards and guidelines that will be applicable (such as policies, regulations and industry codes of practice). Use separate headings to convey relevant Commonwealth, State and Local government policies. For example: local/regional, state and national. Details of the nature and results of public consultation undertaken (if any) by the proponent during project planning and preparation of the DPEMP, as well as any proposals for further public consultation during and beyond project implementation.

## 2. PROPOSAL DESCRIPTION

This section should provide a full description of the proposal, including the construction, commissioning, operational and decommissioning phases, as well as any infrastructure and off-site ancillary facilities required for the proposal.

### 2.1 Proposal outline

This section should provide a detailed description of key physical components of the proposal, including their function, composition, size, capacity, operational life, technical and performance requirements, inter-relationships and method of construction, operation and maintenance.

This section should also include how the works will be undertaken and design parameters for aspects of the structures or elements of the action that may have relevant impacts.

The following information should typically be provided.

#### 2.1.1 General

- a) The major items of equipment (including pollution control equipment) and on-site facilities should be described. Detailed technical information on major items of equipment may be included in appendices.
- b) The process should be described in a step-by-step manner using explanatory diagrams and flow charts where appropriate to augment text.
- c) The raw materials required for the proposal (including water and clay) should be specified. Quantities, characteristics and options for alternative materials should be listed.

- d) Energy requirements for the proposal should be outlined and the means of meeting this demand described.
- e) All sources of waste (liquid, atmospheric or solid) including by-products from the various stages of the process should be identified and the wastes characterised and quantified. Any foreseeable variations in waste generated during the start-up and operational phases should be identified and any temporary storage requirements specified.
- f) Facilities to collect and treat wastes should be described together with the resultant concentrations and mass loads of pollutants to be emitted after treatment. Acknowledgement of the dynamic performance of waste treatment systems and estimates of performance ranges are required. Maintenance requirements should be included.
- g) Any proposed new point source wastewater discharge points must be identified.
- h) Any proposed new point source atmospheric discharge points must be identified.
- i) All major sources of noise must be identified.
- j) Details of production capacity and production rates for relevant processes including both peak rates and daily average rates. Include proposed annual production rates.
- k) The hours of operation for the proposal (hours per day and specific days per week) including any seasonal variations.
- l) The volume, composition, origin, destination and route for vehicle movements (including road, rail, shipping and air) likely to be generated during the operational phase, including a break-down for over-dimension and heavy road vehicles.

### **2.1.2 Construction**

- a) A step-by-step description and timetable for significant activities during the construction phase of the proposal. Indicative timeframes for the completion of major steps, and the likely sequencing of steps
- b) Measures designed to prevent the introduction or spread of introduced plant species, weeds, pests and diseases (such as *Phytophthora cinnamomi*) during construction works.
- c) Management of land clearing including the removal of timber, stockpiling of vegetation, erosion control measures and the transport of pollutants (eg suspended solids) from areas of disturbance.
- d) Forest harvesting management arrangements to recover timber determined in consultation with the Parks and Wildlife Service.

### **2.1.3 Commissioning**

- a) A step-by-step description of major commissioning activities (if any) following installation of equipment. Indicative timeframes for the completion of major steps, and the likely sequencing of steps.

## **2.2 Site plan**

Site plans are required which identify the proposal site and which include the following<sup>1</sup> (where relevant).

- a) The boundary of the proposal site (mining lease boundaries)
- b) The position of buildings and significant structures on the site (existing and proposed).

---

<sup>1</sup> When providing maps or referring to spatial databases, the coordinate reference system being used should be specified (ie. Australian Geodetic Datum (AGD) or GDA (Geocentric Datum of Australia))

- c) A floor plan of the mill showing the location of all major items of equipment and facilities and their position relative to property boundaries.
- d) Existing vegetation and type.
- e) The location of all point sources of atmospheric emissions.
- f) The location of all major sources of noise.
- g) The location of all point sources of liquid emissions (including stormwater).
- h) The route of any pipelines, tracks, conveyors or similar means of transporting on-site materials.
- i) Location of borrow pits, site office, change rooms, workshop, explosives, hydrocarbon and other hazardous materials stores.
- j) Plans and description of any proposed stream diversions, drainage works, discharge controls (eg. runoff collection sumps), energy and water supply, description of proposed sanitary facilities and sewage treatment requirements.
- k) Location of waste rock/overburden dumps (PAF and NAF), ore/product storage areas, topsoil stockpiles, crushing machinery, open cut pits, loading and unloading areas.
- l) Location of tailings storage facility.
- m) Location of water supply dams.
- n) Staged mine plan including details of all significant stages and descriptions of waste rock dump and tailings storage facility filling.
- o) Details of any screening vegetation
- p) The location of all monitoring sites.
- q) Location of proposed mixing zones and groundwater attenuation zone (if the establishment of such zones is to be requested of the Board).

### **2.3 General location map**

A general location map (e.g. 1:25,000 scale) which identifies the following is required

- a) The location of the proposal site.
- b) Topographical features, aspect and direction of drainage.
- c) Road access to and from the site.
- d) Location of waterways and drains (including ephemeral).
- e) The distance(s) to any nearby sensitive uses (such as residences).
- f) Electricity transmission lines.
- g) Boundaries of the property on which the proposal is located.
- h) Surrounding land tenure.
- i) Surrounding land use (identify areas of conservation or recreational significance).

### **2.4 Off-site infrastructure**

Any new infrastructure or off-site ancillary facilities required to allow the proposal to proceed should be described (for example water supply, electricity supply, roads or other transport infrastructure including any new rail siding).

## 2.5 Technical and management alternatives

A critique of other available technologies and the reason for the selection of the preferred technology from an environmental perspective should be included where relevant.

For any part of the proposal where alternative technologies, design options or management practices with different environmental consequences may exist, the alternatives should be identified, their environmental performance evaluated and the reason for the proposed choice justified.

## 3. THE EXISTING ENVIRONMENT

This section should describe the proposal site location and provide an overview of the existing environment which may be affected by the construction and operation of the proposal, including areas associated with any ancillary activities and off-site infrastructure.

It should include details of salient features of the existing environment and, where appropriate, include maps, plans, photographs, diagrams or other descriptive detail.

The following details should be included.

### 3.1 Planning aspects

- a) The location of the proposal site and the associated infrastructure.
- b) Information on land tenure and property boundaries of the proposal site, with title details.
- c) Land zonings for the proposal site and surrounding areas, and any by-laws or special planning controls that may apply to the site and surrounding areas.
- d) Any rights of way, easements and covenants affecting the proposal site.
- e) Land use and planning history of the proposal site, including the potential for site contamination<sup>2</sup>, the present use of the site and any existing buildings and significant structures.
- f) A description of land use and ownership in the vicinity of the proposal site and those areas which may be affected by the proposal. The location and nature of industrial facilities, the location of individual residences, schools, hospitals, caravan parks and similar sensitive uses, and the location of any tourist or recreation facilities or routes (such as camping areas, picnic areas, walking tracks, historic routes) within 2000 metres of the proposal site and off-site infrastructure should be included. Any proposed or potential sensitive users within this distance of the proposal site, which have been or are likely to be granted approval under the local planning scheme, should also be considered.
- g) Any potential effect of water usage on Lake Pieman inflows and water quality and identification of water allocation stakeholders (eg Hydro Tasmania) and approvals required.

### 3.2 Environmental aspects

- a) A description of the general physical characteristics of the proposal site and surrounding area, including topography, geology, geomorphology, soils (including erodibility), vegetation, fauna, groundwater and surface drainage (including waterways, lakes, wetlands, coastal areas etc.).
- b) Identification of the environmental values to be protected

---

<sup>2</sup> Information on potentially contaminating activities and contaminated site assessment can be found online at [www.epa.tas.gov.au](http://www.epa.tas.gov.au) under 'Land Contamination'.

- c) Results from an ambient surface water quality survey including identification of key indicators e.g. pollutants of interest or stressors produced. A summary of all available water monitoring data including baseline monitoring to data should be provided.
- d) Estimates of stream and catchment seasonal flow rates.
- e) Results from an ambient groundwater monitoring survey and presentation of a conceptual hydrogeological model of the site.
- f) A description of natural processes of particular importance for the maintenance of the existing environment (e.g. fire, flooding, etc).
- g) Any existing conservation reserves located on or within 500 metres of the proposal site
- h) Any high quality wilderness areas identified in the *Tasmanian Regional Forest Agreement* located on or within twenty kilometres of the proposal site.
- i) Information on species, sites or areas of landscape, aesthetic, wilderness, scientific or otherwise special conservation significance which may be affected by the proposal. Relevant information resources include the LIST ([www.thelist.tas.gov.au](http://www.thelist.tas.gov.au)) and the Natural Values Atlas ([www.naturalvaluesatlas.dpiw.tas.gov.au](http://www.naturalvaluesatlas.dpiw.tas.gov.au)). Particular reference should be made to the values of the Mews Creek and Stanley River catchments.
- j) Locations of known or potential habitat for listed threatened species and communities and migratory species, overlaid with development plans.
- k) An assessment of the vulnerability of the site to natural hazards (e.g. flooding, seismic activity, fire, landslips or strong winds).

### **3.3 Socio-economic aspects**

This section should describe the existing social and economic environment that may be affected by the proposal, including information on the following:

- a) A summary of the social/demographic characteristics of the population living in the vicinity of the proposal site, identifying any special characteristics which may make people more sensitive to effects from the proposal than might otherwise be expected.
- b) A summary of the characteristics of the local and regional economy (e.g. existing employment trends, land values).

### **3.4 Alternative sites**

This section should describe the site selection process, including site selection criteria, alternative sites considered and an assessment of those alternatives. The assessment should compare alternatives according to clearly defined environmental, social, economic and technical criteria, and provide a justification for the preferred site. Any community consultation undertaken and the effect it had on the selection process should be detailed.

## 4. POTENTIAL EFFECTS AND THEIR MANAGEMENT

### Key issues

The key issues that have been identified for consideration in relation to the project, and which should be the principal focus of the DPEMP, are as follows.

1. Potential impacts on surface water and groundwater quality.
2. Waste rock management including measures to prevent or mitigate the formation of acid rock drainage.
3. Impacts on aquatic and terrestrial flora and fauna.
4. Closure strategy.

### Survey and study requirements in relation to key issues

The following surveys and studies will be required as part of the DPEMP in relation to the key issues identified above. It is strongly recommended that the advice of the EPA is sought on the acceptability of survey techniques prior to the work being undertaken. It is also strongly recommended that the advice of DSEWPaC is sought, where required, in respect of the acceptability of survey techniques for matters of national environmental significance. Relevant EPBC Act survey guidelines (e.g. DSEWPaC's Survey Guidelines for Listed Threatened Birds) must be complied with unless satisfactory justification is provided.

Key Issue	Survey requirements for DPEMP	Other studies for DPEMP
1	<ul style="list-style-type: none"> <li>• Ambient water quality survey of the pre-existing receiving environment with particular reference to identified key indicators/stressors.</li> <li>• Ambient groundwater quality survey.</li> </ul>	<ul style="list-style-type: none"> <li>• Identify all PEVs and Key Indicators</li> <li>• Estimates of seasonal stream and catchment flows and an assessment of the effects on the operation of flow rate especially stream flow diversions, and process water offtake.</li> <li>• The development of a hydrogeological model for the site.</li> <li>• Assessment of the potential impact of the proposal on surface and groundwater quality</li> </ul>

2	<ul style="list-style-type: none"> <li>• Geochemical test work (acid-base accounting) and modelling to quantify the acid generating potential of waste rock and distribution of potential acid forming rock types / zones within areas to be mined.</li> <li>• Quantify the potentially acid forming waste rock (PAF), non acid forming waste rock (NAF), and if present, acid consuming waste rock (ACM) production rates including variability over time.</li> <li>• Quantify the acid generating potential of ore and tailings.</li> <li>• Assess the potential for leaching of elements to the receiving environment from waste rock and tailings</li> </ul>	<ul style="list-style-type: none"> <li>• Kinetic studies of PAF rock and estimation of exposure times of rock to oxidation</li> <li>• Identify metals and other chemical elements or ions of environmental concern</li> </ul>
3	<ul style="list-style-type: none"> <li>• Flora and fauna survey of all potentially impacted areas.</li> <li>• Baseline aquatic ecosystem survey of the downstream environment likely to be impacted by the proposal and upstream environment as a reference condition site unaffected by the discharge.</li> </ul>	<ul style="list-style-type: none"> <li>• Assessment of the potential impact of the proposal on aquatic ecosystems as a result of flow rate and water quality changes.</li> </ul>
4	<ul style="list-style-type: none"> <li>• Through geochemical test work and modelling, assess the long term acid generating capacity of the mine site after closure.</li> </ul>	<ul style="list-style-type: none"> <li>• Provide details of expected levels (and volumes) of contaminated material to be managed at closure.</li> </ul>

#### 4.0 Guidance for preparation of this section

This section should identify baseline conditions, evaluate the potential effects related to the proposal and describe measures to avoid or mitigate adverse effects. For each sub-section (4.1 and following) the evaluation should be presented in the following format:

- a) **Existing conditions** – where relevant, an outline of the existing conditions relevant to that effect (with cross referencing where appropriate to other sections).
- c) **Performance requirements** – define the environmental performance requirements to be achieved for that effect. See below for further information.
- d) **Potential effects** – an outline of all potential environmental effects of the proposal (positive and negative) through all stages, including construction, operation and closure, in the absence of special control measures.
- e) **Avoidance and mitigation measures** – a description and list of the measures proposed to avoid or mitigate potential adverse effects in order to achieve the environmental performance requirements (such as through pollution control technology or management practices). Any compensatory actions proposed for unavoidable residual adverse effects should be identified.

In relation to mitigation measures for matters of national environmental significance listed as controlling provisions for the proposal under the EPBC Act, information must be provided on whether the mitigation measures have any statutory or policy basis and indicate how much the mitigation measures are expected to cost.

- f) **Assessment of effects** – an assessment of the overall effects of the development on the environment after allowing for the implementation of proposed avoidance and mitigation measures. This should include an evaluation of the significance of effects and comparison with state, national and international regulations and standards. Any net benefits likely to result from the proposal should be identified.

#### 4.0.1 Identification and evaluation of effects

It is essential that the DPEMP be focused on the key issues for the proposal identified in these guidelines. The level of detail provided on other issues should be appropriate to the level of significance of that issue for the proposal. The assessing agencies may be able to provide further advice on the significance of each sub-section to the proposal.

Depending on the nature of the proposed activity and its location, some of the issues listed below (see section 4.1 and following) may be more relevant than others, while others will not be applicable at all.

The evaluation of potential effects should identify likely short and long term impacts (including indirect impacts), **plausible worst case consequences**, the vulnerability of the affected environment to the potential effects, and the reversibility of the effects. Potential cumulative effects also need to be addressed. Interactions between biophysical, socio-economic and cultural effects should be identified. The representation of the above information on maps, diagrams, site plans and photographs is recommended.

Predictions and evaluations of effects should be based on scientifically supportable data. The methodologies used or relied on should be referenced, together with the relevant research and investigations supporting them. Assumptions, simplifications and scientific judgements should be stated clearly, and the nature and magnitude of uncertainties should be clearly defined. Where relevant, the choice of a particular methodology over alternative methodologies should be explained. Where effects are not quantifiable, they should be adequately described.

#### 4.0.2 Consideration of alternatives

Where there are clear, alternative avoidance or mitigation measures for a particular adverse environmental effect, the alternatives should be reviewed and the preferred option justified.

#### 4.0.3 Performance requirements

Performance requirements should be identified for each environmental effect and evidence provided to demonstrate that these can be complied with. These may be standards or requirements specified in legislation, codes of practice, state policies, national guidelines or as determined by agreement with the assessing agencies. Industry best practice standards should be referred to where appropriate. **Unsupported assertions that performance requirements will be achieved will not be considered adequate.**

#### 4.0.4 Sustainable development objectives

Attention should be paid to demonstrating that the proposal is consistent with objectives as required by the relevant Commonwealth and Tasmanian statutes and policies, including the National Strategy for Ecologically Sustainable Development, the Tasmanian Resource Management and Planning System, the Environmental Management and Pollution Control System and the principles of ecological sustainable development as described in section 3A of the EPBC Act.

#### 4.0.5 Waste management hierarchy

For each waste (gas, liquid and solid) it should be demonstrated that all reasonable and practicable measures have been taken to avoid producing that waste and to reduce the amount of waste requiring disposal, having regard to best practice environmental management. The measures must be in accordance with the following hierarchy of waste management, arranged in decreasing order of desirability:

- a) waste avoidance;
- b) waste recycling/reclamation;
- c) waste re-use;
- d) waste treatment to reduce potentially adverse effects; and
- e) waste disposal.

#### 4.0.6 Mitigating adverse effects

Where adverse environmental effects are unavoidable, the proposed measures to reduce the effects (e.g. pollution control equipment, treatment processes, management practices) should be described in detail. The extent to which they will overcome the anticipated effects should be specified.

Where pollution control equipment and/or treatment processes are key factors in achieving satisfactory environmental performance, contingencies in the event of breakdown or malfunction of the equipment or processes should be discussed. It should be demonstrated that the maintenance of pollution control equipment can be provided for without causing performance requirements to be exceeded.

Where measures to control environmental effects are necessary, but will not be undertaken by the proponent, the means by which the proponent will ensure that the necessary measures are implemented should be identified (e.g. lease conditions, trade waste agreement, contractual arrangement or other binding third party commitment). **Mitigation measures over which the proponent has no control will generally not be considered adequate.**

#### 4.0.7 Offsetting unavoidable adverse effects

If adverse residual environmental effects from the proposal are considered unavoidable despite the adoption of best practice environmental management avoidance and mitigation measures, then proposals to offset such effects should be detailed. For example, if the loss of conservation values, community assets or amenities is considered unavoidable, measures to compensate for those losses should be proposed in proportion to the loss. Any offset actions proposed must be demonstrated to be 'real' actions. That is, **the offset actions must have a measurable and relevant benefit which would otherwise not have occurred.**

Any proposed offsets for matters of national environmental significance listed as controlling provisions for the project should comply (unless satisfactory justification is provided) with the most recent Commonwealth offset policy (currently the *'Environmental Offsets Policy – Consultation Draft'*, found at [www.environment.gov.au/epbc/publications/consultation-draft-environmental-offsets-policy.html](http://www.environment.gov.au/epbc/publications/consultation-draft-environmental-offsets-policy.html)).

#### 4.0.8 Public Consultation

The public consultation undertaken should be described. This should include the identification of affected parties and communities and a summary of their views.

## **4.1 Air emissions**

This section should identify existing conditions, identify performance requirements to be achieved, identify any potential effects of the proposal on the local, regional and global air environment, identify measures to avoid and mitigate any possible adverse effects and assess the overall effects on the air environment following implementation of the proposed avoidance and mitigation measures.

### **4.1.1 Legislative and policy requirements**

Consideration should be given to the requirements of the Tasmanian *Environment Protection Policy (Air Quality)* (see [www.epa.tas.gov.au/Documents/EPP\\_Air\\_Quality\\_2004.pdf](http://www.epa.tas.gov.au/Documents/EPP_Air_Quality_2004.pdf)).

### **4.1.2 Other issues**

The following issues should be addressed (where relevant).

- a) The location of all emission points should be specified and mapped.
- b) Potential sources of fugitive emissions (including odour and dust that may arise from loading, unloading and transport) should be described.
- c) The potential for emissions to cause environmental and health effects should be evaluated and proposed mitigation measures should be described.

## **4.2 Liquid waste**

This section should identify existing conditions including Protected Environmental Values of the receiving waters, detail the performance requirements to be achieved, identify potential effects of the proposal on the receiving environment (including surface water, groundwater and soil), identify measures to avoid and mitigate potential adverse effects and assess the overall effects on the receiving environment following the implementation of the proposed avoidance and mitigation measures.

This section should demonstrate that all reasonable and practicable measures have been taken (having regard to best practice environmental management as defined in the EMPC Act) to avoid producing liquid waste, or to reduce the amount of liquid waste to be discharged consistent with the waste management hierarchy.

### **4.2.1 Legislative and policy requirements**

It must be demonstrated that the proposal is consistent with the objectives and requirements of relevant water management policies and legislation, including the *Water Management Act 1999*, *State Policy on Water Quality Management 1997* (Water Policy), the *Inland Fisheries Act 1995*, the *Living Marine Resources Management Act 1995* and the *Tasmanian State Coastal Policy 1996*.

In particular, it must be demonstrated that the proposal will not prejudice the achievement of any water quality objectives (WQOs) set for water bodies under the State Policy on Water Quality Management (see [www.epa.tas.gov.au/policy/water-quality-policy](http://www.epa.tas.gov.au/policy/water-quality-policy)). Where WQOs have not yet been set, the EPA Division should be consulted to identify the baseline water quality data required to enable the water quality objectives to be determined.

### **4.2.2 Discharge of wastewater to the environment**

A detailed consideration of the nature of discharges to the receiving environment and of the receiving environment must be presented. Any proposed treatment processes should be described and the potential impacts upon the receiving environment must be assessed under typical and plausible worst case conditions.

In particular the following must be addressed:

- a) A description, including map, and quantitative analysis of the water balance, including details of all storage facilities, water requirements for each mine element, freshwater input requirements, water transfer routes, discharge/decant points (storm related or otherwise), and receiving drainage/fluvial features. The analysis should consider variations in precipitation and natural flow, accounting for extended dry periods and periods of excessive rainfall.
- b) An assessment of the potential for sediment to enter and impact on natural drainage lines and water courses through storm water run-off during both the construction and operational phases of the mine. Include details of mitigation measures and management strategies to prevent the sourcing and mobilisation of sediment (e.g. erosion control measures), and transport of sediment off-site.
- c) Assessment of the potential impact of hardstand stormwater run-off (e.g. car park, workshop etc), and sewage and domestic wastewater effluent on receiving waters, including a description of mitigation measures and management strategies to prevent, mitigate or reduce pollution potential.
- d) Discussion of the potential for acid mine drainage formation, including potential sources (e.g. waste rock dump, tailings dam, mine pit), pathways off site (e.g. seepage, decant water, pumping discharge) and volumes.
- e) The discussion must provide an assessment of the expected emission levels and quality of all emitted water, including seepage and decant, and the expected impact on the receiving environment, with attention given to the Stanley River, Lake Pieman and tributaries likely to be impacted by the mine. The discussion should consider variations in precipitation and flow, accounting for extended dry periods and periods of excessive rainfall.
- f) Acid mine drainage best practice environmental management mitigation measures and management strategies, including those; 1) to prevent and mitigate the formation of acid mine drainage, and 2) for the collection and treatment of acid mine drainage which cannot be prevented from occurring, to ensure the protection of the region's water resources.
- g) Details of requested mixing zones where the WQOs (or ambient background water quality target levels for key indicators) will not be achieved at the point of discharge.

A summary of the Dam Safety Report for any tailings storage facility (TSF) should also be included

### **4.3 Groundwater**

A conceptual hydrogeological model is required. The following should be detailed with reference to the model:

- a) Existing groundwater conditions.
- b) Performance requirements to be achieved.
- c) The potential effect of the proposal in groundwater quality or quantity.
- d) Measures to avoid and mitigate any possible adverse effects on groundwater and surface water receiving environments.
- e) An assessment of the overall effect of the proposal on groundwater and surface water receiving environments following implementation of the proposed avoidance and mitigation measures.

It must be demonstrated that the proposal is consistent with the objectives and requirements of all relevant water management policies and legislation, including the *Water Management Act 1999* and the *State Policy on Water Quality Management 1997* particularly identifying groundwater attenuation zones which maybe requested of the Board as part of the proposed activity.

#### 4.4 Noise emissions

This section should identify existing conditions, identify performance requirements to be achieved, identify any potential effects of the proposal on ambient (surrounding) noise levels (during both the construction and operational phases), identify measures to avoid and mitigate any possible adverse effects, and assess the overall effects on ambient noise levels following implementation of the proposed avoidance and mitigation measures.

The following issues should be addressed:

- a) All major sources of noise must be identified and described.
- b) The potential for noise emissions (during both the construction and operational phases) to cause nuisance for nearby land users should be considered and any proposed measures to mitigate noise impacts should be described.
- c) The potential for noise emissions to affect terrestrial, marine and freshwater wildlife and livestock.

#### 4.5 Solid and controlled waste management

This section should demonstrate that all reasonable and practicable measures have been taken to avoid producing each type of solid waste or controlled waste and in particular to reduce the amount of waste requiring disposal, having regard to best practice environmental management. The measures must be in accordance with the hierarchy of waste management.

Controlled waste is defined in the EMPC Act and associated regulations. A non-exhaustive listing of categories of Controlled waste can be found on the internet at [www.epa.tas.gov.au/regulation/controlled-waste-category-codes](http://www.epa.tas.gov.au/regulation/controlled-waste-category-codes).

The following issues must be addressed in particular in relation to waste rock:

- a) Waste rock types and their mineralogy, grain sizes and geochemical characteristics, including an assessment of their acid generating (or neutralising) potential and estimated quantities and production rates of potentially acid forming (PAF) waste rock, non-acid forming (NAF) waste rock and acid consuming (ACM) waste rock.
- b) Waste rock disposal practices including segregation, blending, capping and best practice environmental management measures to minimise acid mine drainage formation and ensure long term geotechnical stability of any dump slopes.
- c) Proposed storage and reuse of non-acid forming waste rock types for civil construction or other purposes.

Issues to be addressed for all solid waste other than waste rock include:

- a) The source, nature and quantities of the wastes likely to be generated, including general refuse.
- b) Methods proposed to collect, store, reuse, treat or dispose of each solid waste stream.
- c) Any controlled waste that will be generated should be identified. The source, nature, quantity, and method of treatment, storage and disposal for each controlled waste should be described.

#### 4.6 Dangerous goods and environmentally hazardous materials

This section should identify any potential effects from the transport, storage and usage of dangerous goods and environmentally hazardous materials associated with the proposal, identify measures to avoid and mitigate any possible adverse effects and assess the overall effects following implementation of the proposed avoidance and mitigation measures.

A determination of whether the site would be considered a Major Hazard Facility under the *Dangerous Goods (Safe Handling) Act 2005* must be made. Approval and management requirements under that Act must be identified.

The following issues should be addressed (where relevant).

- a) The nature, quantity and storage location of all environmentally hazardous materials including fuels, oils and chemical reagents and Dangerous Goods (as defined in the *Australian Code for the Transport of Dangerous Goods by Road and Rail*) that will be used during the construction and operation of the proposal.
- b) The measures (such as storage of such materials within bunded areas or spill trays) to be adopted to prevent or control any accidental releases of dangerous goods and environmentally hazardous materials.
- c) Contingency plans for when control measures/equipment breakdowns or accidental releases to the environment occur, including proposed emergency and clean-up measures and notification procedures.
- d) Identify any safety management requirements for the protection of human health and safety affecting the community.
- e) Particular reference should be made to the management of fuels and lubricants required for equipment during construction, operational and maintenance activities and any bulk hazardous materials used for ore processing.

#### **4.7 Biodiversity and natural values**

This section should identify existing conditions, identify performance requirements to be achieved, identify any potential effects of the proposal, including the development of infrastructure directly related to the proposal, on biodiversity and nature conservation values (including matters of national environmental significance listed as controlling provisions for the proposal under the EPBC Act). It should identify measures to avoid and mitigate any possible adverse effects and assess the overall effects on biodiversity and nature conservation values following implementation of the proposed avoidance and mitigation measures. It should address these issues in the context of the terrestrial and aquatic environment as appropriate.

##### **4.7.1 Key legislative and policy requirements**

Regard should be given to the *National Strategy for the Conservation of Australia's Biological Diversity*, the draft *Tasmania's Nature Conservation Strategy* and the *Threatened Species Strategy for Tasmania*.

##### **4.7.2 Other biodiversity and natural values issues**

The following issues should be addressed (where relevant).

- a) Effects on flora, vegetation communities and habitat, with particular reference to rare and threatened species, communities and habitats, including those listed under the Commonwealth EPBC Act and the Tasmanian *Threatened Species Protection Act 1995*. Impacts must include the potential for indirect, facilitated and cumulative impacts.
- b) Effects on fauna, including effects on species, communities and habitats, with particular reference to rare and threatened species, migratory species, communities and habitats, including those listed under the Commonwealth EPBC Act and the Tasmanian *Threatened Species Protection Act 1995*.
- c) Effects on identified areas or habitats of conservation significance, including designated conservation areas, areas relating to the requirements of international treaties (e.g. Japan-Australia and China-Australia Migratory Bird Agreements (JAMBA/CAMBA) and Ramsar (wetlands) Convention), or wetlands listed in *A Directory of Important Wetlands in Australia*.

- d) Identify any freshwater ecosystems of high conservation management priority using the Conservation of Freshwater Ecosystem Values (CFEV) database (accessible on the internet under [water.dpiw.tas.gov.au/wist/](http://water.dpiw.tas.gov.au/wist/)). The scope of investigation should encompass the vicinity of the proposed development where there is likelihood of alteration to the existing environment. The specific CFEV information used for DPEMPs should be Conservation Management Priority\_Potential which is appropriate for Development Proposals.
- e) Effects on sites of geoconservation significance or natural processes (such as fluvial or coastal features), including sites of geoconservation significance listed on the Tasmanian Geoconservation Database.
- f) Effects on existing conservation reserves which may be affected by the proposal, with reference to the management objectives of the reserve(s) and the reserve management plan(s) (if any).
- g) Effects on any high quality wilderness areas identified in the *Tasmanian Regional Forest Agreement* (Tasmanian RFA) which may be affected by the proposal.
- h) Effects on other species, sites or areas of landscape, aesthetic, wilderness, scientific, geodiversity or otherwise special conservation significance.
- i) Clearing of native vegetation and habitat associated with the construction and maintenance of the proposal and the impact of any clearing on sites, species or ecological communities of special conservation significance, including any impact on the comprehensive, adequate and representative reserve system identified as part of the Tasmanian RFA, on wildlife habitat strips under the *Tasmanian Forest Practices Code 1995* and on non-forest bioregional forest communities.
- j) Where impacts cannot be avoided, proposed measures to mitigate and/or compensate adverse effects on biodiversity and nature conservation values should be presented.
- k) The potential for migration and/or introduction of pests, weeds and plant and animal diseases as a result of the proposal.
- l) The effect of roading on the spread of Tasmanian Devil facial tumor disease through the movement of diseased Devils (*Sarcophilus harrisii*) along roads and roading design to mitigate devil movement into areas free of disease.
- m) Rehabilitation of disturbed areas following the completion of construction activities and cessation of the activity, including any proposed seed collection and progressive rehabilitation programme.
- n) Reference should be made to potential effects of vehicle movements on wildlife as a result of the proposal, and to proposed mitigation measures for any wildlife priority.

#### **4.7.3 Requirements for surveys**

Flora and fauna survey of all land likely to be impacted and ecosystem surveys of the downstream receiving environment are required.

Flora and fauna surveys must, as a minimum, comply with the requirements of the document *Guidelines for Natural Values Assessments* published by the Department of Primary Industries, Parks, Water and Environment (DPIPWE). The methodology for surveys should be developed in consultation with the Department.

Ecosystem surveys should be carried out using methodology agreed in Consultation with the EPA Division water specialists. Surveys for matters of national environmental significance listed as controlling provisions for the project under the EPBC Act must demonstrate how they comply with relevant Commonwealth survey guidelines (where they apply). These can be found at <http://www.environment.gov.au/epbc/guidelines-policies.html#threatened>.

## **4.8 Marine and coastal**

Where relevant, this section should identify any potential effects of the proposal on marine and coastal areas not addressed in other sections. It should identify measures to avoid and mitigate any possible adverse effects and assess the overall effects on marine and coastal areas following implementation of the proposed avoidance and mitigation measures. Cross referencing should be made to other relevant sections dealing with conservation values (marine flora and fauna, geoconservation) and coastal effects.

### **4.8.1 Legislative and policy requirements**

It must be demonstrated that the proposal is consistent with the objectives and requirements of all relevant marine and coastal policies and legislation, including the *Living Marine Resources Management Act 1995*, *State Policy on Water Quality Management 1997* and the *Tasmanian State Coastal Policy 1996*.

## **4.9 Greenhouse gases and ozone depleting substances**

This section should contain an assessment of the proposal in terms of the evolving national response to climate change and greenhouse gas emissions<sup>3</sup> and the Tasmanian Framework for Action on Climate Change 2008 (available at [www.climatechange.tas.gov.au](http://www.climatechange.tas.gov.au)). The direct and indirect effects of the proposal on greenhouse gas production and ozone depleting substances should be described.

Proponents will need to determine whether they are required to report to the Commonwealth under the *National Greenhouse and Energy Reporting Act 2007*.

### **4.9.1 Estimate of greenhouse gas emissions**

An estimate of annual emissions of greenhouse gases generated on site should be presented in terms of carbon dioxide mass equivalents. Estimations should be compatible with the national framework for the reporting and dissemination of information about the greenhouse gas emissions (refer to [www.climatechange.gov.au](http://www.climatechange.gov.au) for further information).

### **4.9.2 Implementing greenhouse best practice**

It should be demonstrated that the development will implement cost-effective greenhouse best practice measures to achieve ongoing minimisation of greenhouse gas emissions.

Details of any feasible alternative ways of providing energy for the proposal, transporting materials to and from the proposal, design and construction of components or otherwise implementing the proposal so as to have a lesser carbon footprint should be provided. Where less greenhouse gas intensive alternatives are not adopted, justification should be provided and/or mechanisms to offset greenhouse gas emissions should be put forward.

### **4.9.3 Ozone depleting substances**

Any generation or use of ozone depleting substances in the proposal (such as in refrigeration or firefighting) must be identified and justified.

---

<sup>3</sup> Information about the national approach to greenhouse gas emissions is available on the internet at: [www.climatechange.gov.au](http://www.climatechange.gov.au)

## 4.10 Heritage

This section should identify potential effects of the proposal, including the development of infrastructure directly related to the proposal, on Aboriginal and non-Aboriginal cultural heritage sites and areas. It should identify recommended measures to avoid or mitigate any potential adverse effects on cultural heritage sites and assess the overall effects of the proposal on cultural heritage sites following implementation of the proposed avoidance and mitigation measures.

### 4.10.1 General

Potential effects on the following should be addressed (where relevant).

- a) Declared World Heritage Area properties and values.
- b) Any places listed on the National Heritage List and values.
- c) Any places listed or interim listed on the Register of the National Estate and values.
- d) Any places listed on the Tasmanian Heritage Register (maintained by the Tasmanian Heritage Council), including consideration of cultural landscapes.
- e) Any places on the Tasmanian Historic Places Inventory (maintained by the Tasmanian Heritage Office).
- f) Any places on the Tasmanian Aboriginal Site Index (maintained by the Tasmanian Heritage Office), including consideration of cultural landscapes.
- g) Local government planning scheme heritage schedules.
- h) Any other places of heritage significance.

### 4.10.2 Aboriginal heritage

The advice of the Aboriginal Heritage Tasmania should be sought to establish regulatory requirements for Aboriginal heritage values, places and landscapes. Any Aboriginal heritage material identified must be reported to the Director of National Parks and Wildlife and dealt with in accordance with the *Aboriginal Relics Act 1975*. Where a request is made to seek to disturb, destroy or otherwise deal with an Aboriginal relic as per Section 14 (1) of the *Aboriginal Relics Act 1975*, information relevant to a permit under that Act will be required. The status of existing or pending permit applications should be provided in the DPEMP.

An assessment of Aboriginal heritage by an appropriately qualified person is commonly required prior to project approval. Different types of Aboriginal heritage assessment may be required depending upon the nature of the site. Before engaging a consultant, Aboriginal Heritage Tasmania should be contacted for advice.

The standards and guidelines packages that apply to Aboriginal Heritage Officers and Consulting Archaeologists are available at <http://www.aboriginalheritage.tas.gov.au/>.

**Note:** Information about the precise location of Aboriginal sites may be confidential. Confidentiality requirements should be discussed with Aboriginal Heritage Tasmania and confidentiality information should not be included in the DPEMP.

### 4.10.3 Historic heritage

The advice of the Heritage Tasmania should be sought with regard to effects on places listed on the Tasmanian Heritage Register and to establish regulatory requirements for heritage values, places and landscapes. Any approvals required under the *Historic Cultural Heritage Act 1995* should be identified. Guidelines for assessing historic heritage sites can be found at [www.heritage.tas.gov.au/guidelines.html](http://www.heritage.tas.gov.au/guidelines.html).

#### **4.10.4 Consultation**

Consultation with the Tasmanian Aboriginal Lands Council, Tasmanian Office of Aboriginal Affairs, Aboriginal Heritage Tasmania, as well as with Aboriginal communities, should occur prior to any survey of potential sites to establish regulatory requirements for heritage values, places and landscapes.

#### **4.10.5 Commonwealth Government requirements**

The requirements of the Commonwealth *Aboriginal and Torres Strait Islander Heritage Protection Act 1984* should also be considered where there is a threat of injury or desecration to an area which is significant as part of Aboriginal tradition, and potential impacts identified, assessed and managed in consultation with the traditional owners, Native Title claimants and any other indigenous people with rights and interests in the area.

The Australian Heritage Office can provide advice on places listed in the National Heritage List and Register of the National Estate.

#### **4.11 Land use and development**

This section should identify any potential effects of the proposal in terms of constraints or benefits it may place on the current or future use of land within the proposal site and surrounding area. It should identify measures to avoid, mitigate and compensate for any possible adverse effects.

The following issues should be addressed (where relevant).

- a) Effects on existing or proposed tourist or recreation activities, such as camping areas, picnic areas, walking tracks, horse riding tracks, heritage trails etc.
- b) Effects on residential activities.
- c) Effects on industrial activities.
- d) Effects on agricultural activities, including any requirement of the interim *State Policy for the Protection of Agricultural Land (2007)* - (see [www.rpdc.tas.gov.au/stpol](http://www.rpdc.tas.gov.au/stpol))
- e) Effects on local and regional tourism.
- f) Effects on other commercial activities.

#### **4.12 Visual effects**

This section should outline the existing visual setting within which the proposal infrastructure will be located and assess the capacity of the landscape to absorb any visual changes to the landscape as a result of the proposal. The assessment should also take account of the appearance of the proposal from significant vantage points. These should include points both inside and outside the site and should include viewpoints likely to be visited by tourists or recreational users. Presentation of 'artists impressions', photomontages or visual modelling is recommended. The methodology used and assumptions made in the assessment should be clearly identified.

Measures to avoid and mitigate potential adverse visual effects should be identified, such as minimising vegetation clearance, facility height, size, design, colour, separation and post-construction revegetation.

#### **4.13 Socio-economic issues**

This section should contain information on the social and economic effects of the proposal during the construction, operation and decommissioning phases.

The following issues should be addressed (where relevant).

- a) An estimate of total capital investment for the proposal.
- b) The effects on local and State labour markets for both the construction and operational phases of the proposal. Skills and training opportunities should also be discussed.
- c) The effects on upstream/downstream industries, both locally and for the State.
- d) The extent to which raw materials and services will be sourced locally.
- e) A qualitative assessment of community infrastructure effects, including recreational, cultural, health and sporting facilities and services. Any proposals to enhance or provide additional community services or facilities should be described.
- f) Community demographic effects (changes to cultural background, occupation, incomes).
- g) Effects on land values, and demand for land and housing.
- h) Effects on the local, regional, state and national economies.

#### **4.14 Health and safety issues**

This section should review any health and safety issues relating to employees, site visitors and the public which have not been addressed in other sections.

It must be demonstrated that occupational health and safety issues have been taken into account during the planning of the proposal, including an analysis of alternatives. It should be demonstrated that compliance with the *Workplace Health and Safety Act 1995* (WHS Act) and the *Workplace Health and Safety Regulations 1998* will be achieved. Safety management systems to be used during construction and operational phases should be described. Approvals, plans and operational procedures required to ensure compliance with the WHS Act and regulations should be identified.

The following issues should be addressed:

- a) Construction phase safety issues.
- b) Security arrangements to prevent unauthorised access to the proposal site during construction.
- c) Operations, maintenance and inspection safety issues.
- d) Operational compliance with Part 5A of the WHS Act should be addressed in particular.

#### **4.15 Hazard analysis and risk assessment**

A risk assessment incorporating the requirements of Australian/New Zealand Standard AS/NZS 4360:1995 Risk Management, or equivalent, must be conducted, to identify all credible risks associated with specific major hazard events identified through hazard analysis. The risk assessment should identify measures to avoid and mitigate potential adverse effects.

The risk assessment methodology should also address relevant provisions under the *Dangerous Goods (Safe Handling) Act 2005*.

The following issues should be addressed by the risk assessment (where relevant):

- a) Identify hazard events with the potential to cause a major accident or significant impact on people or the environment. This should include consideration of the risks associated with malfunctions, accidents or fires, in addition to those posed by natural disasters such as storms, bushfires, and floods, including the impact of extreme rainfall events or flooding on the acid mine drainage management system. For each hazard event, estimate the frequency and consequence of such an event occurring.
- b) Identify high risk locations and facilities.
- c) Describe technical and management safeguards to be employed to assess and minimise the likelihood of occurrence and the consequences of identified hazard events.
- d) Define the objectives and management principles to be adopted for the preparation of a detailed emergency plan (including emergency response, recovery/cleanup procedures and consultation with relevant emergency services).

#### **4.16 Fire risk**

This section should identify the potential fire risk associated with the proposal. This should include consideration of fire within the site, fire escaping from the site and the effect of wildfire originating outside the development. Measures to avoid and mitigate potential adverse effects should be outlined, including the objectives and management principles to be adopted for the preparation of a fire response plan. The proponent should demonstrate compliance with the relevant requirements of the *Fire Services Act 1979* and the *Workplace Health and Safety Act 1995*.

Where relevant, a fire response plan should be fully integrated with other relevant documents, such as a Tasmania Fire Service Local Area Fire Management Plan, a Forestry Tasmania Fire Management Plan and a Parks and Wildlife Service Fire Action Plan for relevant districts.

#### **4.17 Infrastructure and off-site ancillary facilities**

This section should identify potential effects on any significant off-site or infrastructure facilities (including increased use of existing infrastructure, such as roads, ports and quarries), identify measures to avoid and mitigate any possible adverse effects and assess the overall effects following implementation of the proposed avoidance and mitigation measures. For example, upgrading or re-routing of roads, rail or other services required as a result of the proposal, should be detailed.

This Section should identify roads and other infrastructure to be used by vehicles for the proposal (during both construction and operation). Potential environmental impacts associated with construction and use of such infrastructure should be assessed.

#### **4.18 Environmental management systems**

This section should provide information on strategic matters relating to environmental management of the proposal, including.

- a) Any environmental management systems or environmental policies implemented or proposed by the proponent, which are relevant to the environmental management of the proposal.
- b) Organisational structure and environmental responsibility within that structure for the proposal.
- c) Procedures and instructions to employees (including contractors) on minimising adverse environmental effects of activities, as well as employee induction and education programs to ensure an appropriate response to operational environmental concerns should be included in relevant sections.

#### **4.19 Cumulative and interactive effects**

Where relevant, this section should contain an assessment of the potential cumulative effects of the proposal, based on existing and other formally proposed developments in the region, which have not been addressed in previous sections. Interactions between biophysical, socio-economic and cultural effects of the proposal should be discussed.

#### **4.20 Traffic impacts**

This Section should identify roads to be used by vehicles associated with the proposal (both during construction and operation) and the likely volume and nature of traffic and timing of traffic flows, including details of the current usage of these roads. Impacts associated with altered traffic flows should be discussed (such as impacts on other roads users and residences adjacent to roads).

### **5. EPBC ACT REQUIREMENTS**

The DPEMP must contain enough information to allow the Australian Government Minister for Sustainability, Environment, Water, Population and Communities to make an informed decision on whether or not to approve, under Part 9 of the EPBC Act, the taking of the proposed action for the purposes of each controlling provision. The DPEMP must address the matters specified in Schedule 4 of the *Commonwealth Environment Protection and Biodiversity Conservation Regulations 2000* and include a separate chapter that exclusively and fully addresses impacts on matters of national environmental significance. When discussing impacts on individual matters of national environmental significance (in the separate chapter or report) the following format is recommended:

- discuss the individual matter of national environmental significance in respect of known threats and those threats posed by the proposed action;
- quantify and discuss likely direct, indirect, cumulative and facilitated impacts from the proposed action);
- describe and assess effectiveness of mitigation measures to deal with relevant impacts, providing supporting information;
- quantify and discuss residual impacts;
- make a determination on the level of impact and its acceptability, and provide a rationale for this determination; and
- discuss any proposed offsets where there is a residual impact, or provide a rational why residual impacts will not be offset.

Impacts during both the construction, operation and (if relevant) the decommissioning phases of the project must be addressed, including but not limited to:

- (a) a summary table detailing the amount of habitat to be impacted for each matter of national environmental significance from the proposed action (before and after mitigation measures).
- (b) for relevant listed threatened species, definitions of important habitat and critical habitat and rationale for any conclusions of absence of such habitat; and
- (c) a statement whether any relevant impacts are likely to be unknown, unpredictable or irreversible.

At least the following listed threatened species and communities and migratory species must be addressed for this project. If any of these species or communities are believed not likely to be impacted by the proposed action, but suitable habitat is present and could be impacted by the proposed action, detailed information must be included to demonstrate that a relevant impact on

the species will not occur. If suitable habitat is not present for a species and a significant impact is not likely this needs to be explained.

Listed communities:

- Alpine Sphagnum Bogs and Associated Fens (Endangered)

Listed threatened species:

- Tasmanian Devil, *Sarcophilus harrisii* (Endangered)
- Wedge-tailed Eagle (Tasmanian), *Aquila audax fleayi* (Endangered)
- Spotted-tail Quoll, *Dasyurus maculatus* (Tasmanian Population) (Vulnerable)
- Australian Grayling, *Prototroctes maraena* (Vulnerable)
- Tasmanian Azure Kingfisher, *Ceyx azureus* subsp. *diemensis* (Endangered)

Migratory species:

- White-bellied Sea-eagle, *Haliaeetus leucogaster*
- Great Egret, White Egret *Ardea alba* & Latham's Snipe, Japanese Snipe *Gallinago hardwickii*.

It would be useful to present information on impacts to matters of national environmental significance in a table.

Any information that is required under Schedule 4 of the EPBC regulations, that is not provided elsewhere in the DPEMP, must also be provided here, for example:

- Details of any proceedings under a Commonwealth, State or Territory law for the protection of the environment or the conservation and sustainable use of natural resources against:
  - The person proposing to take the action; and
  - For an action for which a person has applied for a permit, the person making the application.
- Details of the corporation's environmental policy and planning framework which must be provided if the person proposing to take the action is a corporation.

## 6. MONITORING AND REVIEW

This section should provide an outline of a monitoring, review and reporting programme for each sector of the proposal. The programme should be designed to meet the following objectives:

- Monitoring of compliance with emission standards and other performance requirements identified in the DPEMP.
- Assessing the effectiveness of the performance requirements and environmental safeguards in achieving environmental quality objectives.
- Assessing the extent to which the predictions of environmental effects in the DPEMP have eventuated.
- Assessing compliance with commitments made in the DPEMP.

Particular preconstruction, commissioning and operational monitoring programs required include

- a) Monitoring of background reference environment, discharge point source (when operating) and receiving environment water quality;
- b) Biological condition monitoring of back reference and receiving environments; and
- c) Groundwater monitoring.

NB: Preconstruction water quality and biological condition monitoring will be required to establish reference condition sites and test areas that may potentially be affected by the proposal.

## 7. DECOMMISSIONING AND REHABILITATION

Due to the finite nature of mining operations and their susceptibility to external economic influences, mine closure planning should commence before the operation commences. The DPEMP should contain sufficient detail to enable a bond to be established to protect the Crown from future liabilities in the event of unforeseen mine closure or company failure.

The DPEMP must contain the following:

- a) A mine closure plan for end-of-mine life and/or premature mine closure with a framework for regular review/development of these concepts as development of the mine occurs. This should consider, as a minimum, the following:
  - Consideration of long term stability (*i.e.* post-mine closure);
  - Potential for acid mine drainage (AMD), including sources, pathways to water environment and volumes in the long term (including subsequent to the life of project);
  - Tailings dam, waste rock dump and mine pit closure plans;
  - Ongoing AMD mitigation measures, including maintenance requirements;
  - The proposed method of rehabilitation of disturbed areas, including the replacement of stockpiled topsoil and revegetation techniques (*i.e.* use of local provenance species) to be applied and contingencies to achieve satisfactory rehabilitation, should the operation cease during the life of the DPEMP for Project;
  - Post closure monitoring programs; and
  - Management strategies for decontamination.
- b) Determination of a cost estimate, based on the closure (decommissioning and rehabilitation) concepts correlated to the proposed level of development/disturbance associated with the project. It is envisaged that with future revisions of the closure plan, revision of the closure cost estimate will also be undertaken to more accurately reflect the true cost of decommissioning and rehabilitation of the site.

NB: Rehabilitation plans must as far as practicable return the site to the vegetation type similar to the surrounding vegetation. Plans must satisfy any requirements the Parks and Wildlife Service has.

## 8. COMMITMENTS

This section should contain a consolidated commitments table listing all of the commitments made throughout the DPEMP. Commitments must be sequentially numbered, unambiguous statements of intent. For each commitment, the table must specify when the commitment is to be implemented, specify who is responsible for the undertaking of the commitment, and refer to the section of the DPEMP where the commitment is detailed.

The commitments will provide a basis for the preparation of conditions of approval, should approval be granted.

## **9. CONCLUSION**

This section should briefly describe the proposal and draw together the critical environmental impacts of the proposal, both positive and negative (including impacts on matters of national environmental significance listed as controlling provisions for the proposal under the EPBC Act). It should present a balanced overview of the net environmental effects of the proposal, and the extent to which any adverse effects on the environment can be satisfactorily avoided, mitigated, remediated or compensated. The conclusion should also describe how the proposal meets the objectives of relevant Commonwealth and State assessment and planning policies and legislation.

## **10. REFERENCES**

This section should provide details of authorities consulted, reference documents etc.

## **11. APPENDICES**

As a means of improving readability of the DPEMP document, detailed technical information which supports the DPEMP should be included in appendices. The salient features of the appendices should be included in the main body of the DPEMP. Care should be taken to avoid inconsistencies between technical content of Appendices and the DPEMP itself, unless carefully explained.

<b>GLOSSARY</b>
-----------------

DPEMP – Development Proposal and Environmental Management Plan

EPBC Act - Environment Protection and Biodiversity Conservation Act 1999 (Cth)

JAMBA/CAMBA - Japan-Australia and China-Australia Migratory Bird Agreements

Tasmanian RFA - Tasmanian Regional Forest Agreement