Northern Territory Environment Protection Authority

TERMS OF REFERENCE FOR THE PREPARATION OF AN ENVIRONMENTAL IMPACT STATEMENT

FRANCES CREEK MINE (ELIZABETH MARION AREA)

TERRITORY IRON PTY LTD

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1 Introduction

The Proponent, Territory Iron Resources (Territory Iron) proposes to develop and operate the Elizabeth Marion Area at the existing Frances Creek Iron Ore Mine. The site is located 25km north of Pine Creek, Northern Territory. The Elizabeth Marion Area is located adjacent to the existing Frances Creek Mine which operated from 1967 to 1974. The site was reopened by Territory Iron in 2006 following an assessment under the *Environmental Assessment Act* (EA Act). The Frances Creek Iron Ore Mine involved the cutting back of three existing open pits and development of two additional mining pits. Waste rock stockpiles, a crushing/screening plant and workshops and offices were constructed on-site. Ore from the Mine was transported along existing roads where it was transported by rail to Darwin for export at East Arm Wharf.

The Elizabeth Marion Area proposal is related to but separate from the Frances Creek Iron Ore Mine. Mining activities in the Elizabeth Marion Area will involve the development of three new open pits, waste rock landforms, road networks and run of mine stockpile areas. Territory Iron is proposing to transport ore from the Elizabeth Marion Area to the existing processing plant at the Frances Creek Iron Ore Mine site. The Proponent predicts that the Project would have a mine life of approximately 15 months.

The Notice of Intent for the Elizabeth Marion Area was referred from the Department of Mines and Energy to the Northern Territory Environment Protection Authority (NT EPA) on 13 March 2014 for consideration under the EA Act. On 20 May 2014, the NT EPA decided that the Project required assessment under the EA Act at the level of an Environmental Impact Statement (EIS). The NT EPA decision was based on the following potential environmental risks and potential impacts:

- uncertainties regarding the extraction and processing of the ore and associated management of water, tailings and waste streams, including potentially acid and metalliferous generating material;
- risks to surface water and groundwater, and related ecological processes, from the development, operation and closure of the Project, including mining activities and/or components, such as waste rock dumps or tailings storage facility;
- potential to introduce and/or exacerbate the spread of weeds;
- potential impacts on biodiversity from land clearing and mining activities proposed for the Project. Risks and mitigation measures have yet to be adequately addressed, especially in relation to the identification and protection of species of conservation significance, including the gouldian finch (*Erythrura gouldiae*), the pale field rat (*Rattus tunneyi*), the bare-rumped sheathtail bat (*Saccolaimus saccolaimus nudicluniatus*) and the fawn antechinus (*Antechinus bellus*);
- risks to the vulnerable Armstrong's Cycad (*Cycas armstrongii*) protected under the *Territory Parks and Wildlife Conservation Act* (TPWC Act); and
- potential social, cultural and economic impacts, including the risks of the Project not realising its projected economic and social benefits.

2 Scope of the Proposed Action

2.1 General Information

Effective scoping of the Proposal will assist with the preparation of the EIS as well as clearly defining the footprint and operational details of the activity. Provide the background and context of the Project, including:

- the title of the project;
- the full name and postal address of the Proponent;
- the current status of the Project;
- an overview of the life-of-mine schedule for the Project phases;
- the location of the Project in the region;
- the location of all infrastructure (both proposed and existing) related to any aspect of the construction, operation and decommissioning/rehabilitation of the action;
- the background to the development of the Project, including discussion of previous environmental impact assessment and overview of historic mining activities;
- identification of areas under exploration that may be mined in future, or any other potential future activities being planned;
- how the Project relates to any other proposals or actions, of which the Proponent should reasonably be aware, that have been or are being taken, or that have been approved in the region;
- National, State and/or Territory standards, codes of practice and guidelines relevant to the Project; and
- the consequences, both positive and negative, of not proceeding with the Project.

2.2 Approvals and Conditions

The EIS must provide information on requirements for approval or conditions that apply, or that the Proponent reasonably believes are likely to apply, to the Project, including, but not limited to:

- a description of any approval that has been obtained from a State, Territory or Commonwealth agency or authority;
- a summary of current agreements between the Proponent and the Northern Territory Government, and/or the Australian Government, and/or other stakeholders, including Traditional Owners and/or land managers;
- a statement identifying additional approvals that are required; and
- a description of the monitoring, enforcement and review procedures that apply, or are proposed to apply, to the Project.

When identifying the individual approvals, certificates, permits etc. the Proponent must include details of the approvals, certificates, permits etc., including any conditions imposed. Consideration should be given, but limited to, the following legislation:

- *Environment Protection and Biodiversity Conservation Act 1999*;
- *Territory Parks and Wildlife Conservation Act*;
- *Heritage Act*;
- *Water Act*;
- *Waste Management and Pollution Control Act*;
- *Mining Management Act*; and
- *Public and Environmental Health Act* & Regulations.

2.3 Environmental History

The EIS must include details of the environmental record of the Proponent, including:

- 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 Proponent, and details of systems and processes that have been subsequently upgraded;
- obligations, non-compliances or incidents under the *Mining Management Act*, which includes the history in relation to environmental matters, compliance or non-compliance with the requirements of the Mining Management Plan and other relevant management plan; and
- any international or national accreditations (e.g. ISO 14001), environmental awards or other recognition for environmental performance.

2.4 Project Components

The EIS should identify all the processes and activities intended for the Project and associated ancillary activities, during the life of the Project. As background to discussion of specific components, the following should be included:

- the current status of the Project;
- an overview of the life-of-mine schedule for the Project phases:
  - project development;
  - operations;
  - decommissioning and closure; and
  - rehabilitation.

2.5 Development

2.5.1 Built structures and infrastructure

The EIS should provide detailed designs and construction methods for the following structures:

- the proposed design and methods of construction of any open pits;

- structures to be built (if any);
- Waste Rock Landform(s) (if relevant);
- Run of Mine Stockpile;
- construction methods and a description of the purpose of the proposed pipeline;
- structures used to contain/store/treat and or manage Acid and Metalliferous Drainage (AMD) generating material; and
- any other mining related infrastructure required to undertake activities in the Elizabeth Marion Area.

2.5.2 Roads

Provide relevant information with respect to the road network and any access track construction or upgrade, including:

- precise locations (including maps) of existing and new road infrastructure;
- vegetation clearing methods and disposal of plant matter following clearing;
- the results of surface water investigations in and around proposed road structures;
- sources of construction inputs and materials, including water;
- methods and crossing techniques that will be used when bisecting creeks, linear infrastructure (provide cross section diagram/s) or sensitive areas such as waterways and/or land units with poor soil recovery potential;
- maximum width of road corridors required for construction and operation;
- plant and machinery required; and
- ongoing provisions for road and access track maintenance, including source and extraction of maintenance inputs and materials.

2.6 Operation

2.6.1 Mining activities

Provide specific details of the following aspects of mine operation:

- mining types and methods, including the major equipment to be used in the various components of the operation;
- type (e.g. cut-off grades), storage and management of the stockpiled materials (e.g. top soil, waste rock etc.);
- quantity of material to be mined annually, including any proposed ramping up of production or staging of development;
- sources and volumes of materials required to support the operation of the mine, including, but not limited to, waste rock dump capping, such as clays, and, consumables, such as bulk chemicals and fuel.

2.6.2 Processing

Provide relevant information with respect to the processing circuit, including but not limited to:

- transport of materials to the processing circuit;
- processing methods, including the major equipment to be used in the various components of the processing operation;
- volumes of materials required; and
- water requirements, treatment and sources.

2.6.3 Waste Management

Provide relevant information with respect to waste management, including but not limited to:

- descriptions of predicted waste streams, both industrial and domestic, including solid and liquid wastes at the mine site, accommodation facilities and other relevant locations;
- information on potentially hazardous materials to be used or produced and methods for storage, transport, handling, containment, disposal and emergency management of these materials (including fuel);
- the proposed size and construction details for landfill, and a list of wastes likely to be deposited in landfill;
- legislation, guidelines, and standards applicable to the Project's landfill, sewage treatment and waste disposal facility; and
- an inventory of any waste streams requiring management during the Project.

A brief discussion of proposed waste management strategies, including reduction, reuse, recycling, storage, transport and disposal of waste should be included in a relevant section of the EIS.

2.6.4 Tailings Management

Provide relevant information with respect to tailings management, including but not limited to:

- methods for the disposal and management of tailings and associated process water, including volumes;
- geochemical characterisation of the tailings indicating its potential to produce AMD (Acid and/or metalliferous and/or saline drainage);
- the design and capacity of the tailings storage facility that will be used for the Elizabeth Marion Area and its long term stability; and
- where pre-existing infrastructure will be used (e.g. to dispose of/or contain AMD generating material), including the following detail:
    - as built information;
    - remaining capacity to accept Elizabeth Marion outputs; and
    - performance to date (e.g. seepage, stability).

2.6.5 Workforce and Accommodation

Provide details of the predicted workforce requirements, including accommodation should be provided, including:

- the number of people to be employed, skills base required, and likely sources (local, regional, overseas);
- the number of people that may be employed to manage or undertake environmental duties on the site, including the specific qualifications and the level of experience with mining or other related activities;
- the arrangements for transport of workers to and from project areas, including air services required; and
- compliance with the provisions detailed in the NT Department of Health's fact sheet 700 - *Requirements for Mining and Construction Projects*.

For the mine camp that will be used to accommodate staff, provide brief information on aspects of the facility such as:

- Proximity to the town of Pine Creek, work sites and mining operations;
- requirements for licensing, food preparation and storage; and
- whether the premises will be licensed and include alcohol storage facilities.

2.6.6 Water

Provide information on the quantity, quality, source (groundwater and/or surface water), storage, and infrastructure requirements for water use, including a water balance, for both construction and operation phases of the Project, considering:

- dust suppression;
- drinking water;
- ablutions and sewage treatment;
- waterway diversion works; and
- processing circuit.

The EIS should describe the details of any proposed groundwater extraction, including treatment, storage, reuse and disposal options and changes to the existing mine water balance. Anticipated extraction rates, usage and volumes of water should be provided, where relevant. Specific methods for dewatering should be provided, should any proposed pits fill or intersect possible water holding or transferring geological structures.

2.6.7 Transport and Laydown Areas

Details of Project related traffic should be provided, including:

- type, size and number of vehicles required during all phases of the Project;
- estimated frequency and times of Project vehicle use on public infrastructure, including rail and roads;
- methods to convey all site traffic (including materials, workers and product) to and from the site;

- routes for transport, including details of proposed routes for over-dimension or very heavy loads;
- operational details of any laydown areas proposed to be used;
- details of the method of truck loading;
- peak user times for vehicular movements by staff/contractors;
- hazardous or dangerous material which may be transported;
- additional transport infrastructure works required, including site access and signage; and
- hours of operation.

2.7 Decommissioning, Rehabilitation and Closure

2.7.1 Rehabilitation

Provide relevant information with respect to the rehabilitation of the site, in particular:

- proposed staging and timing;
- outline the rehabilitation techniques to be used and the final topographic and drainage morphology;
- availability, sources and volumes of materials required for rehabilitation, revegetation and mine closure (e.g. clay, capping materials);
- discuss the current and projected financial situation of the Proponent including the ability to allocate sufficient resources to meet all closure, stabilisation and rehabilitation requirements once operations have ceased;
- the proposed revegetation program, with selection and collection of local native species (e.g. native grasses and other vegetation); and
- other preparations required for successful rehabilitation (seed harvesting, seedling generation, etc.).

2.7.2 Care and Maintenance

The EIS should include details of a Care and Maintenance Plan based on the Mine Closure Plan. This Care and Maintenance Plan should include measures outlining how the Proponent will maintain its environmental obligations and commitments should the Project be temporarily closed.

2.7.3 Landform stability

Provide relevant information with respect to the decommissioning and closure of the Proposal, in particular:

- final landform design, including the design approach and methodology used, and any voids or landscape depressions to be left at cessation of mining;
- closure criteria and proposed land use arrangements;
- protocols for the safe and stable securing of the mine;
- details of voids or landscape depressions to be left at cessation of mining;
- removal of plant, equipment, structures, hardstand and concrete footings, buildings, water storages, and methods proposed for stabilisation of affected areas; and

- outline final rehabilitation, revegetation and closure plans for all aspects of the Project on completion of mining on site.

2.8 Alternatives

The EIS should describe any feasible alternatives to carrying out the Project. The choice of the preferred option(s) should be clearly explained, including how it complies with the principles and objectives of ecologically sustainable development.

Alternatives should include:

- not proceeding with the Project;
- deferral of the project or delay;
- the potential consequences / benefits from waiting for project certainty;
- site selection for all Project components;
- mining and processing methods;
- management of waste rock;
- water management;
- rehabilitation methods;
- methods of product treatment, storage, transport and export;
- energy sources for power generation, including renewable energy sources; and
- consideration of alternative environmental management measures for key risks.

Discussion should include:

- sufficient detail to make clear why a particular alternative is preferred to another;
- adverse and beneficial effects (direct and indirect) of alternatives at national, Territory, regional and local levels and their distributional impact; and
- the comparison of short (whilst operational), medium (post closure) and relevant long term advantages and disadvantages of the options.

3 Existing Environment

The EIS must provide a description of the project area including baseline condition of terrestrial environments, including hydrology, geography, flora and fauna, cultural and heritage values, and all relevant socio-economic considerations. This section must link to the Scope of the action, potential avoidance, mitigation and management measures that are to be implemented throughout the life of the project, including construction, operation decommissioning and rehabilitation activities. This section is to identify and reference any relevant (published and unpublished) studies undertaken in the area which will assist in describing patterns and trends in the environment.

3.1.1 Local Topography and Regional Geology

Maps should be provided locating the project and its environs in terms of regional and local contexts. The topography should be detailed with contours at suitable increments, shown with respect to Australian Height Datum (AHD). Significant features of the landscape should be included on the maps. Commentary on the maps should be provided highlighting the significant topographical features.

The EIS should provide a description, including maps, of the geology of the project area, with particular reference to the physical and chemical properties of surface and sub-surface materials and geological structures within the proposed areas of disturbance. that may influence Project development, operation, closure and/or the stability of any final landforms (i.e. geological faults, erosion potential, dust, soils etc.);

3.1.2 Biodiversity

The following information should be included in the EIS in relation to the Project's risk to biodiversity:

- the results of surveys and past monitoring for species listed as threatened under the *Environment Protection and Biodiversity Conservation Act 1999* (EPBC Act) and *Territory Parks and Wildlife Conservation Act* (TPWC Act) in and around the Project area. The EIS must outline the survey and past monitoring effort, timing, locations and methodology to demonstrate appropriate and statistically sufficient survey design. All targeted surveys and past monitoring for threatened species must be undertaken by a person that has demonstrated experience surveying for the species targeted. The person undertaking the surveys must be approved by the NT EPA. The survey methods must be consistent with the current Northern Territory and Australian Government Guidelines for the surveying of threatened species (Available online at: http://www.environment.gov.au/about-us/legislation/environment-protection-and-biodiversity-conservation-act-1999/policy and http://www.ntepa.nt.gov.au/environmental-assessments/factsheets-and-guidelines).

- the EIS should include detailed mapping of the Project footprint overlain with the following information:

    - vegetation mapping all areas of remnant vegetation within the Project site including any areas already cleared or disturbed (if any). Areas to be disturbed should be identified;

    - mapping at an appropriate scale identifying suitable habitat for listed threatened and/or migratory species. The maps should include the locations of historic records within and around the Project area; and

    - mapping at an appropriate scale identifying suitable habitat for species of conservation significance. Consideration should be given to the presence of habitat used for breeding, foraging, aggregating or roosting.

  The maps provided in the EIS should give full reference to the descriptions of suitable habitat and vegetation types identified in scientific literature, published policy documents and relevant guidelines, including the Northern Territory Guidelines for assessment of impacts on terrestrial biodiversity (available online at:http://www.ntepa.nt.gov.au/__data/assets/pdf_file/0003/349941/guideline_assessment_terrestrial_biodiversity.pdf).

3.1.3 Surface Water

The EIS should provide a detailed description of the regional surface water catchments, waterways in the vicinity of the Project area and along access roads. Information provided in the EIS should include, but not be limited to:

- a description of the beneficial uses of the surface waterways on-site and regionally;
- a description of the water quality and flows, and existing water users potentially impacted by the Project; and
- existing and historic surface water quality should be described in terms of physical, chemical and biological characteristics within and around the Proposal, upstream and downstream of the area and in waterways (ephemeral and permanent) crossed by any infrastructure utilised for the Proposal (i.e. haul roads, pipeline, rail loading facility, etc.), including consideration of seasonal or flow variations where applicable.

3.1.4 Groundwater

The EIS should describe the existing environment for hydrogeology and groundwater that may be affected by construction, operation and/or closure/decommissioning of the Proposal. Details relating to existing ground water resource conditions and monitoring should be provided, including information relating to:

- local and regional aquifer properties;
- connectivity between groundwater and surface water;
- results from baseline water quality and hydrology monitoring programs;
- a detailed and comprehensive hydrogeological model and a complete and detailed site water model for the whole site (including the Elizabeth Marion Area); and
- changes to groundwater systems (hydrology, quality and quantity), as a result of previous mining and mining-related activities.

The description of the site and regional hydrogeology should provide sufficient information to enable the prediction of potential impacts of the Project on groundwater resources within and adjacent to the mining areas, including drawdown cones and pollution pathways.

3.1.5 Indigenous and Cultural Heritage

The EIS should outline the cultural and heritage significance of any sites located during archaeological investigations on or near the Project area or that could be impacted on the Project activities. The EIS should include the results of searches on the Northern Territory Government database and identify any sites or places protected or nominated for protection under the following legislations:

- *Aboriginal and Torres Strait Island Heritage Protection Act 1984*;
- *Environment Protection and Biodiversity Conservation Act 1999*;
- *Heritage Act*; and
- *Northern Territory Aboriginal Sacred Sites Act*.

Baseline information should be provided regarding historic or cultural heritage in the region, including:

- a description and location of Indigenous and non-Indigenous sites, places or objects of historic or cultural heritage significance;
- surveys(s) used to identify sites, places or objects of historic or cultural heritage significance. The surveys should identify but not be limited to, landmark features, sites of cultural and social significance, etc.;
- areas nominated for listing or listed on Commonwealth and/or Northern Territory Heritage registers and Commonwealth and/or Northern Territory registers for the protection of Indigenous heritage; and
- provision of evidence of an Aboriginal Areas Protection Authority (AAPA) Authority Certificate under the *Northern Territory Aboriginal Sacred Sites Act.*

The EIS should provide a summary outlining the survey effort and level of confidence that all items of heritage or cultural significance at risk have been identified.

The EIS must outline consultations with Indigenous stakeholders and traditional owners for all areas potentially affected by the Project. Determination and details should be provided of current traditional owner use of Project areas, and spiritual/cultural significance of potentially affected areas.

4 Risk Assessment

4.1 Risk Assessment Approach

The EIS should be undertaken with specific emphasis on the identification, analysis and treatment of risks through a whole-of-project risk assessment. Through this process, the EIS will:

- identify and discuss the full range of risks presented by the Project, including those of special concern to the public;
- identify relevant impacts;
- quantify and rank risks so that the reasons for proposed management responses are clear;
- identify levels of any uncertainty about estimates of risk and the effectiveness of risk controls in mitigating risk;
- explicitly identify those members of the community expected to accept residual risks and their consequences, providing better understanding of equity issues; and
- demonstrate that the Project represents best practicable technology.

A number of key risks have been identified through a preliminary assessment of the Project. Each of the identified risks should be addressed by the Proponent in the risk assessment and management process. It is expected that further risks will be identified through the comprehensive risk assessment process required for the EIS. These should be addressed and appropriate management initiatives developed to demonstrate that:

- the Proponent is fully aware of risks associated with all predictable aspects of the Project;

- the prevention and mitigation of risks are properly addressed in the design specifications; and
- the risks can and will be managed effectively during the construction, operation, decommissioning, closure and post-closure phase of the Project.

Information provided should permit the reader to understand the likelihood and potential severity of each risk presented by the Project, and any uncertainty around these risks, as well as any uncertainty about the effectiveness of controls. Levels of uncertainty that preclude robust quantification of risk should be clearly acknowledged.

Risk rankings assigned should be fully justified. Where a risk score associated with the likelihood or consequence of an impact is reduced as a result of proposed mitigation measures, clear justification should be provided for the reduction in score. The adequacy and feasibility of mitigation measures must be demonstrable.

Sufficient quantitative analysis should be provided to indicate whether risks are likely to be acceptable or tolerable. A comparison can be made with similar ventures in Australia and internationally. Assumptions used in the analyses should be explained.

4.1.1 Information Requirements

The NT EPA has prepared a series of Environmental Assessment Guidelines to assist in the preparation of EIS documents. Environmental Assessment Guidelines are developed and updated periodically, and should be referenced and referred to when addressing the information requirements in an appropriate section of EIS. Environmental Assessment Guidelines, current at the time of publication of these Terms of Reference, include:

- *Environmental Assessment Guidelines on Acid and Metalliferous Drainage;*
- *Guidelines for Assessment of Impacts on Terrestrial Biodiversity;*
- *Guidelines for the Preparation of an Economic and Social Impact Assessment; and*
- *Guidelines on Environmental Offsets and Associated Approval.*

4.1.2 Cumulative Impacts

Cumulative impacts can arise from compounding activities of a single operation or multiple mining and processing operations, as well as the aggregation and interaction of mining impacts with other past, current and future activities that may not be related to mining.

An assessment of cumulative environmental impacts should be undertaken that considers the potential impact of the Project in the context of existing developments, and reasonably foreseeable future developments, to ensure that any potential environmental impacts are not considered in isolation. The extent of cumulative impacts to be considered depends on the nature of the environmental issue and on ecosystem resilience. The risk assessment in the EIS should discuss the relevant cumulative impacts of this and other Proposals at an appropriate scale. In preparing the cumulative impact section, consideration should be given to the following:

- landscape changes that originate not only from single projects and management actions, but also from complex and dynamic interactions of multiple past, present and future management actions;
- biophysical, social and economic change accumulates through additive or interactive (or synergistic) processes. The aggregate impact of multiple actions on the environment can be complex and may result in impacts that are more significant because of interactive processes; and

- any given action does not operate in isolation. The most significant changes are often not the result of the direct effects of an individual action, but from the combination of multiple minor effects over the accumulation of time.

The EIS should include appropriate consideration of the impacts on the general environment, ecosystems and matters of national environmental significance and discuss whether those impacts could be permanent. If the impacts are not permanent, the EIS should describe how long it will take before recovery from any impacts and identify how soon rehabilitation of habitat could be achieved to reinstate ecosystem function.

4.2 Risks to Surface and Groundwater Resources

4.2.1 Environmental Objectives

To ensure that surface water and groundwater resources are protected both now and in the future, such that ecological health and land uses, and the health, welfare and amenity of people are maintained.

To prevent, mitigate or manage Acid Mine Drainage (AMD), Neutral Mine Drainage (NMD) and / or Saline Drainage (SD) so that it does not create on and off-site environmental impacts during mine operations and beyond mine closure.

4.2.2 Characterisation of Potential Contaminant Sources, Pathways and Sinks

A detailed conceptual site model describing potential sources, pathways, receptors, and fate of any potentially contaminated waters, and products, from the Project, and Project components (section 2.4), is to be provided in the EIS. The model should be of sufficient detail for the general reader to understand the source(s) of potential contaminants, the mechanism(s) of their release, the pathway(s) for transport, and the potential for human and ecological exposure to these potential contaminants.

The minimum data required to support the model should include, but should not be limited to:

- laboratory and field testing, at an appropriate survey effort, to characterise the acid generation, acid neutralisation and metal leaching potential of mine products and infrastructure (e.g. pit faces, ore, waste, etc.), including:
    - static tests;
        - chemical composition (whole rock and elemental analysis);
        - mineralogy;
        - acid base accounting; and
        - net acid generation.
    - kinetics tests;
        - column leach testing.

The actual and potential reactivity (i.e., rate of oxidation or dissolution, etc.) and physical properties of the testing materials (e.g., grain size, grain morphology, porosity, disseminated, fracture coatings, surface area, particle size distribution, etc.) should be described, where relevant.

- material volume and mass of potential contaminant sources;

- hydrogeological characterisation (e.g. groundwater occurrence, direction and rate of flow, etc.);
- hydrologic characterisation (e.g. surface water flow, seasonality etc.);
- baseline water quality (i.e., major cations and anions, metals, metalloids, acidity/alkalinity, etc.) of receiving waters;
- soil and sediment occurrence, quality and potential physicochemical mobility of contaminants;
- biological receptors and their habitats; and
- other complementary technical studies, at an appropriate temporal and spatial scale, used to develop the model, such as:
    - geology;
    - hydrology;
    - hydrogeology;
    - geochemistry;
    - biology;
    - meteorology; and
    - engineering/geotechnical.

An appropriately qualified and experienced person should be involved with the supervision and interpretation of test results and the development of the model. Appropriate statistical design details including the number of samples, sampling site selection procedures and QA/QC protocols to support the development of the model should be provided and justified.

4.2.3 Assessment of Risks

The EIS should include an assessment of risks to surface and/or groundwater resources at an appropriate spatial scale as a result of the Project. In particular, the EIS should identify and assess the risks:

- to existing surface and groundwater quality and quantity as a result of the Project, with specific reference to information provided in Sections 3.1.3 and 3.1.4;
- of potential uncontrolled release or passive discharge of contaminants, such as acid and/or metalliferous drainage and hydrocarbons, to surface and/or groundwater resources as a result of the Project components identified in Section 2.4;
- of potential impacts to adjacent areas and vegetation, including surface waterways, from the drawdown of groundwater, including the volume of groundwater expected to be intercepted and/or extracted during the Project;
- of potential impacts to surface and/or groundwater quality from the unsuccessful rehabilitation of tailings, waste rock or other rehabilitation and containment works;
- associated with the new infrastructure or disturbance of soils altering the hydrology and rates of erosion and sedimentation of waterways;

- of groundwater inflow to mining works when the flow is of a large quantity and/or poor quality;
- of impact of extreme weather events on water management;
- of any additional impacts to surface and/or groundwater resulting from changes to the Project; and
- of sediment and iron ore dust entering ephemeral and permanent waterways / creeklines along transport routes (haul roads, rail alignments etc.). Given that the Project will utilise existing haul roads, the EIS should discuss the potential risks associated with the mobilisation of quantities of sediment and iron ore dust during flushing flows immediately after long dry periods (i.e. Dry season).

The influence of seasonality should be discussed, where relevant. The risk assessment should give consideration to the short (whilst operational), medium (post closure and under institutional control) and long term (post-institutional control) timeframes of the Project.

4.2.4 Mitigation and management

The EIS should contain a detailed Water Management Plan (WMP) and Erosion and Sediment Control Plan (ESCP) that outline clear and concise measures to mitigate likely impacts of the Project on water resources. All mitigation and monitoring measures in the WMP and ESCP should be adequately detailed to demonstrate best practice management and that environmental values of receiving environments will be maintained.

The WMP must include but not be limited to measures that:

- avoid contamination of surface or groundwater resources;
- ensure the protection and resilience of water dependent ecosystems;
- protect water quality and levels for existing users of bores and/or surface waters; and
- treat and manage domestic wastewater and sewage.

The WMP should be closely related to but separate from an ESCP for the Project. Measures to be addressed in both the WMP and the ESCP should include options for minimising water use, management and treatment of clean and contaminated water, including site stormwater, erosion and sediment control measures, and appropriate management of any potentially AMD forming material excavated or exposed through mining. It is essential that appropriate consideration of potential contaminant sources and the management is provided, such that the environment is protected from pollution in short (whilst operational), medium (post closure and under institutional control) or long term (post-institutional control).

The ESCP should be undertaken by a suitably qualified and experienced professional in erosion and sediment control planning and it should be consistent with the International Erosion Control Association's Best Practice Erosion and Sediment Control.

The EIS should outline any environmental management strategies necessary for water resources, and describe how these strategies will be incorporated into existing operational management plans. Strategies should be adequately detailed to demonstrate best practice management and that environmental values of receiving waters will be maintained.

4.2.5 Monitoring

The WMP and ESCP should outline details of monitoring programs that will be implemented throughout the life of the Project to determine the effectiveness of the mitigation measures. The monitoring programs should identify clear thresholds and contingency measures should operational activities affect water resources.

A summary of the surface and groundwater quantity and quality reporting requirements and monitoring programs used to evaluate and report on the effectiveness of the mitigation measures (Section 4.2.4) should consider:

- methods to monitor the impacts of the Project on surface and groundwater quality; and
- monitoring for leaks or spills of materials from, storage facilities (including tailings storage facilities) and transport operations to ensure protection of local soils, aquifers, environments, and the general public.

The EIS should include details of a monitoring program that will be implemented to identify potential hazards associated with the disturbance, handling and storage of potentially AMD forming material, hazardous material and other contaminants. The monitoring program must include prescriptive performance indicators and thresholds that have been derived using baseline information, ANZECC Guidelines[1] and Australian Standards. The monitoring program should outline the reporting procedures for notifying and responding to environmental and human health risks associated with water quality, or other water related emergency. Include details of potential threshold/triggers, notification process and contingency measures to be implemented.

Any discharge of wastewater from the Project area into groundwater or waterways may require licensing under the NT *Water Act*. Guidance and application forms can be found at: http://www.ntepa.nt.gov.au/waste-pollution/approvals-licences

4.3 Risks to Biodiversity and Threatened Species

4.3.1 Environmental Objectives

To maintain the conservation status, diversity, geographic distribution and productivity of flora and fauna species and ecosystem levels through the avoidance or management of adverse impacts.

4.3.2 Assessment of Risk

The EIS should include a discussion of the potential risks to any rare, endemic or iconic species, subspecies or isolated or genetically distinct populations. When identifying the risks to these species, the EIS should discuss (but not be limited to) the likely impacts from vegetation clearance, habitat fragmentation, edge effects, changed hydrology, water quality impacts and deposition of dust. When assessing the risk of impact to biodiversity and threatened species, the EIS should refer to relevant research as well as statutory plans, including action plans, recovery plans and threat abatement plans.

[1] See Australian and New Zealand Guidelines for Fresh and Marine Water Quality (Australian and New Zealand Environment and Conservation Council & Agriculture and Resource Management Council of Australian and New Zealand, 2000)

The EIS should provide a detailed risk assessment of the Project's impacts on species listed as threatened under the EPBC Act and TPWC Act. At a minimum, the EIS must discuss the risks to the following species:

- gouldian finch (*Erythrura gouldiae*);
- bare-rumped sheathtail bat (*Saccolaimus saccolaimus nudicluniatus*);
- fawn antechinus (*Antechinus bellus*); and
- pale-field rat (*Rattus tunneyi*).

The information provided in the EIS should include an estimate of the extent (in hectares) of suitable habitat that will be removed or modified for the Project. The area identified should include an estimate of the additional areas impacted as a result of edge effects, fragmentation, dust/vibration, etc.

The EIS should include a risk assessment of the potential impacts on breeding habitat quality for the gouldian finch (*Eucalyptus tintinnans* woodland) from both direct impacts such as clearing of habitat, and indirect disturbance through dust and noise.

Surveys for the former Frances Creek Open Cut Iron Ore Mine identified an isolated patch of the vulnerable Armstrong's cycad (*Cycas armstrongii*) in the vicinity near the footprint of the Elizabeth Marion Area (Map1A, Appendix 7A of the Frances Creek Open Cut Iron Ore Mine Public Environmental Report). The EIS should include the results of surveys to identify the number of plants on the patch and discuss the potential for the individuals to be impacted by the Project. Consideration should be given to indirect impacts resulting from dust, edge effects and clearing activities from other areas related to the action (i.e. haul road, transport facilities etc.).

The EIS should identify and discuss the potential impacts and conservation status to vegetation at the local and regional scale, including the potential for ongoing indirect impacts as a result of edge effects, weed incursions or other processes exacerbated through clearing activities.

The EIS should identify and discuss the potential for the Project to introduce or increase the spread of weed species on-site. In particular, the EIS should discuss any species identified as Weeds of National Significance and/or declared under the *Weeds Management Act*.

4.3.3 Mitigation

The EIS should contain a detailed Biodiversity Management Plan which outlines clear and concise measures for mitigating likely impacts to biodiversity. All mitigation and monitoring measures should be consistent with best practice advice from relevant Northern Territory advisory agencies, experts and focus on:

- potentially significant impacts to the biodiversity on-site as a whole;
- mitigating the impacts to vegetation;
- rare or threatened species at risk of being adversely impacted; and
- addressing the Proponent's obligation and previous commitment to prepare and implement a Weed Management Plan for the Frances Creek Open Cut Iron Ore Mine.

The EIS should include the following plans and procedures that set out the measures that will be implemented to mitigate and monitor impacts to biodiversity and threatened species:

- Vegetation Clearing Management Procedure;
- Wildlife Rescue Procedure;
- Gouldian finch monitoring program and management plan; and
- Weed Management Plan.

The plans and procedures should be prepared by a suitably qualified expert that has demonstrated experience in the mitigation and monitoring of adverse impacts to biodiversity and threatened species.

4.3.4 Monitoring

The Biodiversity Management Plan should include details of a Fauna and Flora Monitoring Program which is designed to monitor the effectiveness of the mitigation measures proposed. The Flora and Fauna Monitoring Program should identify the methodology for monitoring the impacts to biodiversity and identify clear thresholds and contingency measures that will be implemented in the event that the mitigation measures appear ineffective.

The Biological Management Plan should set out the details of an ongoing monitoring program for threatened species including identifying the extent of the closest gouldian finch breeding population. The monitoring program should explicitly define thresholds at which intervention is required, and the associated mitigating actions.

The Biodiversity Management Plan should set out explicit targets and thresholds for floristic composition and vegetation structure for successful revegetation and restoration of ecological values on mined areas. This may include how ecological values will be assessed, monitored and compared following mining operations cease and additional measures around the persistence of significant species in revegetated areas.

4.4 Risks Associated with Rehabilitation and Closure

4.4.1 Environmental Objectives

The EIS should include a detailed assessment of the risks to demonstrate that:

- As far as practicable, that rehabilitation achieves a stable and functioning landform which is consistent with the surrounding landscape and other environmental values; and
- The prevention and mitigation of risks associated with closure and rehabilitation of the underground mine and the potential impact on the closure of the existing operation is adequately addressed.

4.4.2 Assessment of Risks

Closure planning should be risk-based taking into account results of materials characterisation, data on the local environmental and climatic conditions, and consideration of potential impacts through contaminant pathways and environmental receptors. The EIS should include an assessment of the risks associated with the planned closure of the Project as well as discussing the following:

- The method for closing and the location of the placement tailings and waste rocks areas;
- closure timeframes and objectives including those for the Project not realising its projected outcomes (i.e. delays, unexpected or forced closure, etc.);

- proposed closure and / or rehabilitation of potentially acid and metalliferous forming materials and/or alkaline materials; and
- the post-closure risk assessment should include a discussion of the effects of:
    - Changes in the assumptions used as a basis for the assessment; and
    - natural events, including earthquakes, rain depressions, cyclones, fire and flood.

4.4.3 Mitigation

A draft Mine Closure Plan (MCP), specific to the Project, should be prepared to address identified risks associated with rehabilitation, decommissioning and closure. The MCP must provide an outline of the issues that require management at closure and demonstrate that all relevant issues and appropriate management measures have been identified. The MCP should demonstrate that ecologically sustainable mine closure can be achieved consistent with agreed post-mining outcomes and land uses, and without unacceptable liability to the Territory.

The MCP should highlight any changes to the existing Frances Creek Open Cut Iron Ore Mine, should it be updated to include the Project.

The MCP should include:

- Mitigation measures to address risks associated with rehabilitation, decommissioning and closure;
- measures required to prevent contamination of surface and groundwater resources post closure, including cross contamination of aquifers, if required;
- measures to ensure that placement of tailings and waste rock will be physically isolated from the environment and that any contaminants arising from the tailings will not result in any short (whilst operational), medium (post closure and under institutional control) or long term (post-institutional control) detrimental environmental impacts;
- contingencies to make landforms secure and non-polluting in the event of unexpected or temporary closure;
- measures to minimise the long term introduction and control of weeds;
- revegetation strategies for disturbed sites to utilise local native plant species similar in type, density and abundance to those existing in adjacent areas;
- the assessment should include modelling to predict the likely post mining water quality in any open pits that are left to accumulate water; and
- measures to ensure the stabilisation of erosion, to a level similar to comparable landforms in surrounding undisturbed areas.

The EIS should include details of a Care and Maintenance Plan referred to in section 2.7.2 which is to outline for how the Proponent will maintain its environmental obligations should the Project be temporarily closed or suspended.

4.4.4 Monitoring

- describe the post-mining monitoring and reporting to be used to evaluate and report on the effectiveness and performance of the mitigation measures (Section 4.4.3);

- describe the contingency measures to be implemented in the event that monitoring demonstrates that management measures have not been effective; and
- provide outcome and assessment criteria that will give early warning that management and mitigation measures are not achieving the outcomes and benefits expected and identified by the Proponent.

4.5 Risks to Historic and Cultural Heritage

4.5.1 Environmental Objectives

To identify, understand and mitigate the potential impacts of the project on items or places which have historic and/or cultural heritage values and are protected under the *Heritage Act* and/or *Northern Territory Aboriginal Sacred Sites Act.*

4.5.2 Assessment of Risks

- an assessment of the Project's potential impacts on sacred sites, heritage places, cultural sites and any potential impacts on Indigenous culture generally;
- details of the Project's requirements to apply to, or applications already made to, the NT Minister for Lands, Planning and the Environment to disturb or destroy a prescribed archaeological place and/or object under the *Heritage Act*; and
- an assessment of risk to significant cultural sites from vibration and dust.

4.5.3 Mitigation

The Proponent should describe the prevention and mitigation of potential risks to existing sites or items of historic and cultural heritage in a Heritage Management Plan (HMP). The HMP should include:

- procedures to avoid significant sites;
- protection of key sites during construction, operation and decommissioning work;
- measures to enable the Proponent, or contractor to the Proponent, to meet its duty of care to protect the cultural and heritage values of any places or items of significance; and
- procedures for the discovery of surface or sub-surface items during the course of the Project.

4.5.4 Monitoring

The HMP should include details of a monitoring and reporting program to determine the effectiveness of mitigation measures (Section 4.5.3). The monitoring and reporting program should identify when further action is required and outline contingency measures should the proposed mitigation measures result in degradation to the values of items with heritage or cultural significance.

4.6 Risks to Human Health and Safety

4.6.1 Environmental Objectives

The EIS should include a detailed assessment of the risks to demonstrate that the potential risks to human health and safety are identified, understood and adequately mitigated.

4.6.2 Information Requirements

- identify all hazards, including physical hazards, natural hazards (i.e. arsenic), noise, emissions and radiation, as a consequence of the Project. The EIS should discuss potential pathways for these hazards that may be facilitated by the Project; and
- identify workers and any members of the general public, including their location and patterns of activity and occupation, with the potential for exposure to these hazards as a consequence of the Project.

4.6.3 Assessment of Risks

Aspects to be discussed include:

- health and safety risks for the workforce and the general public for the duration of the Project including post-closure;
- safety risks associated with fire, including combustible materials;
- potential risks relating to the environment and public safety from the transportation of concentrate, explosives (bulk emulsion) and consumables, including dangerous goods, on public roads; and
- general health and safety risks associated with the Project including, but not limited to:
    - open pit collapse; and
    - hazardous materials exposure.

4.6.4 Mitigation and Monitoring

Detailed emergency plans and response procedures will need to be developed as a contingency in the event of an emergency or accident (e.g. chemical spillages, leaks, fire and explosions etc.), incorporating management of all emergencies that may impact on the facility, its surrounds, personnel or the public. Responsibilities and liabilities in such an event should be included, and an Emergency Management Plan provided in the Environmental Management Plan (EMP) (Section 5).

Detail preventative, management, treatment and monitoring strategies used to minimise the impacts of the Project on human health and safety. Outline environmental (including health and safety) management strategies necessary for human health and safety, and describe how these strategies will be incorporated into the EMP (Section 5). In particular, the EMP should include:

- mitigation measures to address safety risks identified in Section 4.6.3;
- measures to prevent third party interference with the project;
- safeguards for minimising the likelihood of wildfire, and fire response plans;
- safeguards, management and monitoring strategies to be implemented to minimise potential transport impacts:
    - safety measures to be used to reduce transport risks (e.g. driver fatigue, traffic management, safety awareness measures);
    - methods for complying with any relevant road vehicle axle limits;
    - methods for securing loads;

- consultation with local communities affected by transport impacts; and
- measures to reduce any road traffic nuisance impacts (e.g. noise, dust, light).

The EMP should outline provisions to conduct additional studies should operations result in discharges to ground or surface water that are in excess of that prescribed by any waste discharge license. The studies should focus (but not be limited to) the potential risks to public health including impacts on drinking water supplies, bioaccumulation of metals as well as other identified parameters in fish.

4.7 Socio-economic Risks

4.7.1 Environmental Objectives

To analyse, monitor and manage the intended and unintended social consequences, both positive and negative, of the Project and any social change processes.

4.7.2 Assessment of Risks

An Economic and Social Impact Assessment (ESIA) should be conducted. The ESIA should:

- assess the economic and social impacts of the Project on the region and more broadly, where relevant;
- encourage development of new and/or expansion of existing businesses in the locality;
- assess the risk of not achieving the documented outputs from the Project;
- foster sustainable development and community wellbeing; and
- discuss the risks of the Project, related infrastructure and associated workforce negatively impacting on identified economic and social issues in the region.

4.7.3 Mitigation and Monitoring

An Economic and Social Impact Management Plan (ESIMP) should be prepared to address any risks identified in the ESIA. The ESIMP should:

- describe how the Proponent proposes to manage any identified economic, social, cultural or tourism risks from the Project, or its associated workforce;
- describe how potential local and regional business and employment opportunities related to the Project will be identified and managed;
- include a mechanism for monitoring and reporting any identified potential socio-economic and cultural impacts;
- include measures to mitigate negative economic and social impacts on the locality and region;
- provide outcome and assessment criteria that will give early warning that management and mitigation measures are not achieving the outcomes and benefits expected and identified by the Proponent; and
- provide a stakeholder communications strategy including identification of, and ongoing consultation and negotiations with, all relevant stakeholders, ensuring the full range of community viewpoints are sought and included in the EIS.

4.8 Other Risks

Other environmental risks should be identified and management strategies proposed, including, but not limited to:

4.8.1 Bushfires

The Proponent should be aware of sections of the *Bushfires Act* and Regulations that apply to the Project and address risk and management of bushfires in relation to Sections 4.3 and 4.6. The development of the Fire Management Plan should be in consultation with traditional owners, pastoralists and their representative organisations, including the Northern Land Council, that have specialist knowledge in fire management.

4.8.2 Transport and Traffic

The EIS should identify any potential risks relating to the environment and public safety from the transportation of concentrate, explosives (bulk emulsion) and consumables, including dangerous goods on public roads. The EIS should outline the safety procedures and protocols that will be, or are already in place to avoid or mitigate risks to the environment and public roads.

4.8.3 Noise and Vibration

The potential sensitivity of receptors to noise and vibration and mitigation measures should be discussed in a relevant section of the EIS. The Proponent should address the impact of noise and vibration resulting from the project on residents and the community in a relevant section of the EIS. A Noise Management Plan should outline methods for communicating with, and reducing the impact on, residents within the vicinity of the Project who may be affected by the project.

Risk assessment for the Project should occur with respect to noise and vibrations from Project components. Potential sensitive receptors, expected impacts and proposed management should be identified with regard to Project-generated noise and vibrations.

A Noise Management and Monitoring Plan should outline proposed management to mitigate identified risks from the Project with regard to noise and vibration emissions. Cross reference should be made with a Project Public Consultation Plan facilitating communication with, and reducing the impact on, residents and communities who may be affected by the Project.

4.8.4 Air

The potential nuisance and health issues for sensitive receptors associated with air quality, including dust, and mitigation measures should be discussed in Section 4.3 and 4.6. Consideration should be given to the acute and chronic exposure and pathways, such as inhalation, ingestion and dermal contact. The potential sensitivity of receptors to air quality, including dust, and mitigation measures should be discussed in relevant sections of the EIS.

Risks to air quality may arise from emissions of chemicals, particulates or biological materials from:

- drilling, blasting and materials handling (including transportation from the pit to export facilities);
- crushing and processing;
- chemical and mechanical processing;
- general site movements over unsealed surfaces;

- haulage and transport of material along the haul road between the stockpiling site and export facilities; and
- wind erosion mobilising dust from exposed surfaces, such as from waste dumps, laydown areas, stockpiles, and sites of vegetation clearing.

A discussion of existing variability in air quality target parameters, such as the impact of seasonal smoke haze, should be included in a relevant section of the EIS. Details of the proposed air monitoring, including technique, location, frequency and details of laboratory undertaking analysis, and target parameters, and proposed reactive management that are tied to monitoring thresholds, should be provided.

4.8.5 Visual Amenity

The extent and significance of the changed landscape on visual amenity during all stages of the Project should be discussed in a relevant section of the EIS. Aspects of the project that would be visible from key vantage points, publicly accessible areas and areas of significance, should be discussed.

4.8.6 Mosquito Breeding

There is potential for mine sites to create mosquito breeding sites. The Proponent should be aware of sections of the *Public and Environmental Health Act* that apply to the Project and address risk and management of biting insects in a relevant section of the EIS. In particular, the EIS should identify:

- measures to ensure water pond (i.e. sediment pond) is designed with minimal mosquito breeding potential (i.e. steep sides, deep open water); and
- information on appropriate personal protection measures that could be utilised by workers during periods of elevated mosquito abundance.

Further information on mitigating and managing mosquito breeding is available in the Department of Health Guideline: *Guidelines for preventing mosquito breeding sites associated with mining sits in the Northern Territory*.[2]

5 Environmental Management

The specific safeguards and controls proposed to be employed to minimise or remedy environmental impacts identified in the risk assessment process are to be included in an EMP. The EMP should be strategic, describing a framework for continuing management, mitigation and monitoring programs for the significant environmental impacts of the Project.

The scope, content and structure of the EMP will be a function of the outcomes of the environmental risk assessment and determined by the significance of the environmental impacts. The EMP should not be prepared in isolation but should be consistent and integrated with the principles of an environmental management system. The EMP should include specialised management plans where it is necessary to provide a high level of operational detail (e.g. Water Management Plan, Erosion and Sediment Control Plan, etc.). As much detail as is practicable should be provided to enable adequate assessment of the proposed environmental management practices and procedures

The EMP needs to address the Project phases (development, operation, decommissioning, closure and post-closure) separately. It must state the environmental objectives, performance criteria, monitoring, reporting, corrective action, necessary resourcing, responsibility and timing for each environmental issue.

[2] Department of Health and Families, 2005 *Guidelines for preventing mosquito breeding sites associated with mining sites* Available at: http://www.health.nt.gov.au/Medical_Entomology/Publications/Development_Guidelines/index.aspx

The EMP should include:

- The proposed management structure of the Project and its relationship to the environmental management of the site, including personnel responsible for maintaining and approving the EMP;
- A description of the main elements of the environmental management system and reference to related documents determined by the Proponent to be necessary to ensure the effective planning, operation and control processes that relate to the environmental management system;
- A register of ownership for the mining interests associated with the Project, including the title numbers, title holders and status;
- The name of the agency responsible for endorsing, approving and/or overseeing each mitigation measure or monitoring program;
- Proposed reporting procedures consistent with Territory and Australian Government legislative requirements;
- A summary table listing the commitments made in the EIS, including clear timelines for key commitments and performance indicators, with cross-references to the text of the EIS;
- Management targets and objectives for relevant environmental impacts and/or factors;
- Performance indicators by which all anticipated and potential impacts can be measured;
- Proposed monitoring programs to allow early detection of adverse impacts;
- Sampling procedures and frequency, where relevant:
    - how results will be recorded;
    - laboratory techniques and methods of data analysis;
    - equipment and instruments calibrated or verified at specified intervals; and
    - sample preservation techniques.
- Contingencies for emergency events, such as hydrocarbon and other hazardous chemical spills or natural disasters;
- Procedures for dealing with failure to meet performance criteria and targets, non-compliance with environmental management controls, environmental incidents and emergencies;
- Where interpretation of the monitoring data or other observations have detected the potential for or actual adverse trends in performance or impacts, detail what remedial/corrective strategies and actions will be implemented. Include scopes of work where appropriate together with a commitment to an implementation timetable and any modifications to the monitoring program required in order to assess the performance of the actions;
- An overview of the environmental awareness training and education process regarding responsibilities, including:

- the induction program (e.g. general, site, department);
- communication of the requirements of the EMP to all employees and contractors;
- environmental emergency response training;
- particular training requirements for targeted personnel; and
- any other environmental training or education requirements.

- Provision for the periodic review of the EMP; and
- Provision for independent environmental auditing of the Project.

The EMP would continue to be developed and refined following the conclusion of the assessment process and would form part of the Mining Management Plan, taking into consideration the proposed timing of development activities, comments on the EIS and incorporating the Assessment Report recommendations (if any) and conclusions.

6 General Advice on EIS

6.1 General Content

The EIS should be a stand-alone document and should contain sufficient information to avoid the need to search out previous or additional, unattached reports.

The EIS should enable interested stakeholders and the Minister to understand the environmental consequences of the proposed action. Information provided in the EIS should be objective, clear, and succinct and, where appropriate, be supported by maps, plans, diagrams or other descriptive detail. The body of the EIS is to be written in a clear and concise style that is easily understood by the general reader. Technical jargon should be avoided wherever possible. Cross-referencing should be used to avoid unnecessary duplication of text.

The level of analysis and detail in the EIS should reflect the level of significance of the expected and potential impacts on the environment, as determined through adequate technical studies. Any and all unknown variables or assumptions made in the assessment must be clearly stated and discussed. The extent to which the limitation, if any, of available information may influence the conclusions of the environmental assessment should also be discussed.

Information materials summarising and highlighting risks of the Project should be provided in a culturally appropriate format and language, where relevant.

It is an offence under the *Northern Territory Environment Protection Authority Act* to give information to the NT EPA that the person knows is misleading or contains misleading information.

6.2 Format and Style

The EIS should comprise of three elements:

1. Executive summary

The executive summary must include a brief outline of the Project and each chapter of the EIS, allowing the reader to obtain a clear understanding of the proposed Project, its environmental implications and management objectives. It must be written as a stand-alone document, able to be reproduced on request by interested parties who may not wish to read the EIS as a whole.

2. Main text of the document

The main text of the EIS should include a list of abbreviations, a glossary to define technical terms, acronyms and abbreviations, and colloquialisms. The document should consist of a series of chapters detailing the level of significance of the expected and potential impacts on the environment from the Project.

3. Appendices

The appendices must include detailed technical information, studies or investigations necessary to support the main text that can be made publicly available, including:

- a table listing how these Terms of Reference have been addressed in the EIS, cross-referenced to chapters, page numbers and/or appendices;
- the name of, work done by and the qualifications and experience of the persons involved in preparing the EIS;
- a table listing commitments made by the Proponent; and
- detailed technical information, studies or investigations necessary to support the main text.

The EIS should be produced on A4 size paper capable of being photocopied, with any maps, diagrams or plans on A4 or A3 size paper, and in colour, if possible.

6.3 Referencing and Information Sources

All sources must be appropriately referenced using the Harvard Standard. The reference list should include the address of any internet pages used as data sources. All referenced supporting documentation and data, or documents cited in the EIS must be available upon request. For information given in the EIS, the EIS must state:

- the source of the information;
- how recent the information is;
- how the reliability of the information was tested; and
- what uncertainties (if any) are in the information.

All known and unknown variables or assumptions made in the EIS must be clearly stated and discussed. Confidence levels must be specific, as well as the sources from which they were obtained. The extent to which a limitation, if any, of available information may influence the conclusions of the environmental assessment should be discussed.

The results of quality control and quality assurance (QA/QC) testing are to be provided where data are used to support statements or findings in the EIS. Sufficient discussion should accompany the data to demonstrate that the QA/QC and data are suitable and fit for purpose.

The EIS must include information on any consultation about the Project, including:

- any consultation that has already taken place;
- a list of persons and agencies consulted during the EIS;
- if there has been consultation about the Project, any documented response to, or result of, the consultation;
- proposed consultation about relevant impacts of the Project; and

- identification of affected parties, including a statement mentioning any communities that may be affected and describing their views.

The EIS has an important role in informing the public about this Project. It is essential that the Proponent demonstrates how any public concerns were identified and will influence the design and delivery of the Project. Public involvement and the role of government organisations should be clearly identified. The outcomes of any surveys, public meetings and liaison with interested groups should be discussed including any changes made to the proposal as a result of consultation. Details of any ongoing liaison should also be discussed.

6.4 Administration

The Proponent should lodge ten bound, hard copies and an electronic copy (Adobe PDF format) copy of the EIS with the NT EPA. The electronic copies should be provided both as a single file of the entire document and separate files of the document components. Additionally, a Microsoft Word copy of the EIS should be provided to facilitate the production of the Assessment Report.

The Proponent should consider the file size, the number of files, format and style of the document appropriate for publication on the NT EPA website. The capacity of the website to store data and display the material may have some bearing on how the documents are constructed.

At a minimum, the Proponent is to advertise that the EIS is available for review and comment in The NT News and Katherine Times.

The NT EPA requires the complete EIS document and a draft of the advertisement at least one week prior to advertising the EIS, to arrange web upload of the document, and review and comment on advertising text.

If it is necessary to make use of material that is considered to be of a confidential nature, the Proponent should consult with the NT EPA on the preferred presentation of that material, before submitting it to the NT EPA for consideration.

Spatial data should be provided to the NT EPA as importable Geographic Information System shape files, with relevant features and areas geospatially referenced and marked as polygons, lines and points.

6.5 Public Exhibition

Sufficient copies of the EIS should be provided to and be made available for public exhibition at:

- NT EPA, 2nd Floor, Darwin Plaza, 41 Smith Street Mall, Darwin;
- Mines and Energy Information Centre, Department of Mines and Energy, 3rd Floor, Paspalis Centrepoint, 48 Smith Street Mall, Darwin;
- Northern Territory Library, Parliament House, Darwin;
- Katherine Town Council, Stuart Highway, Katherine; and
- Environment Centre Northern Territory, Unit 3, 98 Woods St, Darwin.

The public exhibition period for the EIS will be six (6) weeks. The EIS exhibition period should not occur in late December or January in any year to ensure optimal opportunity for public and Government viewing of the EIS document. Additional time will be added to the EIS exhibition period if the EIS exhibition overlaps any Christmas and January periods.