Northern Territory Environment Protection Authority

TERMS OF REFERENCE FOR THE PREPARATION OF AN ENVIRONMENTAL IMPACT STATEMENT

TOMS GULLY MINE PROJECT

PRIMARY GOLD LIMITED

November 2014

Abbreviation	Acronym Description
AAPA	Aboriginal Areas Protection Authority
AHD	Australian Height Datum
AMD	Acidic and/or Metalliferous Drainage
AMD/NMD/SD	AMD, NMD and/or SD, i.e. Acidic and/or Metalliferous Drainage, Neutral Mine Drainage, and/or Saline Drainage
ARD	Acid Rock Drainage
CHMP	Culture and Heritage Management Plan
EA Act	NT *Environmental Assessment Act*
EIS	Environmental Impact Statement
EMP	Environmental Management Plan
EPBC Act	*Environment Protection and Biodiversity Conservation Act 1999*
ESIA	Economic and Social Impact Assessment
ESIMP	Economic and Social Impact Management Plan
GL	Gigalitre = $1x10^9$ litres = $1x10^6$ m^3
g/t	Grams per tonne (metric)
kg	kilogram
ktpa	kilotonnes per annum (metric) = $1x10^3$ tonnes per annum
L	Litres
m^3	Cubic metres = $1x10^3$ litres
MCP	Mine Closure Plan
ML	Megalitre = $1x10^6$ litres or $1x10^3$ m^3
ML/yr	megalitres per year
NAF	Non Acid Forming
NMD	Neutral Mine Drainage
NT	Northern Territory
NT EPA	Northern Territory Environment Protection Authority
pH	pH is a measure of the acidity or basicity of an aqueous solution.
The Project	Toms Gully Mine Project
QA/QC	Quality Assurance / Quality Control
SD	Saline Drainage
TPWC Act	*Territory Parks and Wildlife Conservation Act 2000*
TSF	Tailings Storage Facility
WMP	Water Management Plan
yr	year

1 Introduction

The Toms Gully Mine is located within Old Mount Bundey Station, approximately 90 km south-west of Darwin, beside the Arnhem Highway.

The original Toms Gully Gold Mine proposal underwent a formal environmental assessment process in 1988, prior to commencement of operations. Between 1988 and the present, the mine has undergone intermittent periods of open pit and underground mining, development / refurbishment, flooding / dewatering, exploratory drilling and 'Care and Maintenance', under a series of owners. The most recent mining was carried out by Crocodile Gold Australia Operations between January 2010 and September 2010, with continuing haulage of stockpiled ore to Union Reefs Mill for processing until January 2011. The Mine has been in Care and Maintenance since November 2010.

In 2013, Primary Gold Ltd (the Proponent) acquired the Toms Gully Project Area from Crocodile Gold Australia. A feasibility study completed for recommencement of gold production at Toms Gully indicated a maiden Probable Ore Reserve of 775,000 tonnes at 6.9 g/t for 175,000 ounces, or 5443 kg of gold.

The Proponent proposes to recommence underground mining and ore processing at the Toms Gully Mine. To achieve this, the proposal includes:

- construction of a new 2.6 GL process water dam
- dewatering of the currently flooded pit and decline
- upgrade of a tailings storage facility with two wall-lifts over two years
- refurbishment and upgrade of the processing circuit to increase throughput capacity from 250 ktpa up to 350 ktpa
- potential 3 m wall-raise to evaporation ponds.

The Toms Gully Mine Project (the Project) proposes a five year operation, based upon exploration to date. However mineralisation has not been 'closed off', and potential may exist for a longer mine life.

Project documentation to date has not identified potential for significant impacts on matters of National Environmental Significance. The Project has thus not been referred for assessment under the under the *Environment Protection and Biodiversity Conservation Act 1999* (EPBC Act).

The *Mining Management Plan - Toms Gully Project Area 2013-2014* (MMP) and associated documents were referred by the Department of Mines and Energy to the Northern Territory Environment Protection Authority (NT EPA) on 28 February 2014, for consideration under the NT *Environmental Assessment Act* (EA Act). On 23 April 2014, the NT EPA decided that the Project requires assessment under the EA Act at the level of an Environmental Impact Statement (EIS).

The NT EPA decision to require an EIS for the Project was based on risks detailed in the *Statement of Reasons*[1] for the decision. These included risks to:

- ground and surface water quality
- downstream aquatic ecosystems in Mt Bundey Creek and Mary River National Park
- terrestrial biodiversity
- human health and safety.

[1] NT EPA *Statement of Reasons – Primary Gold Limited-Toms Gully Mine Project*, issued to the Proponent on 23 April 2014. at: http://www.ntepa.nt.gov.au/__data/assets/pdf_file/0004/355243/statement_reasons_toms_gully_mine.pdf

Identified risks were associated with factors including:

- proposed management of water quality and quantities
- management of waste rock and other material with potential to produce acidic and/or metalliferous drainage (AMD), neutral mine drainage (NMD) and/or saline drainage (SD)
- infrastructure designs and construction
- weeds
- erosion and sedimentation
- rehabilitation and closure methods
- socio-economic factors.

These Terms of Reference have been developed to assist the Proponent in preparing an EIS for the Project, in accordance with clause 8 of the Environmental Assessment Administrative Procedures. The following sections describe information requirements, to be presented in the EIS.

2 Regulatory Context

2.1 Approvals and Conditions

The EIS should 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:

- approvals required by State, Territory or Commonwealth agencies or authorities
- 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
- any additional approvals required
- description of the regulatory 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 should include details of the approvals, certificates, permits etc., including any conditions imposed. Consideration should be given, but not limited to, the following legislation:

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

Identify National, State and/or Territory standards, codes of practice and guidelines relevant to the Project.

2.2 Environmental History

The EIS should 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 the Proponent's environmental management systems and processes subsequently upgraded as a result of those proceedings
- 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
- any international or national accreditations (e.g. ISO 14001 etc.), environmental awards or other recognition for environmental performance.

2.3 Ecologically Sustainable Development

When considering the matters to be addressed in the EIS, the NT EPA are required under the *Northern Territory Environment Protection Authority Act 2012* to:

(a) Promote ecologically sustainable development (ESD); and

(b) Protect the environment, having regard to the need to enable ESD.

Accordingly, the assessment of the Project, its potential impacts (positive and negative) and the management measures used to enhance positive and reduce negative impacts will be taken in the context of ESD principles, consistent with the *National Strategy for Ecologically Sustainable Development*.[2] Therefore, it is essential that the Proponent demonstrate how it complies with and contributes to the principles and objectives of ESD in the relevant section(s) of the EIS.

3 Project Description

3.1 Overview

Provide general information and context for the Project including the following:

- title and brief summary of the Project
- full name and postal address of the Proponent
- current status of the Project
- background to the development of the Project, including outcomes of previous environmental impact assessment and overview of historic mining activities
- explanation and outline of the objectives, benefits and justification for the Project
- the target commodity and extent of the mineral resource
- an overview of the Project schedule through all Project life stages
- exploration activities, areas that may be mined in future, or any other potential future activities being planned

[2] Ecologically Sustainable Development Steering Committee, 1992. *National Strategy for Ecologically Sustainable Development* . Department of the Environment and Water Resources, Canberra, Australia. Available at: http://www.environment.gov.au/resource/national-strategy-ecologically-sustainable-development

- explanation of 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.

3.2 Project Details

3.2.1 Location and Infrastructure

Describe the location of the Project in the region and its proximity to:

- major roads, rivers and landmark features
- regional community centres
- sites of cultural or social significance.

Describe Project infrastructure requirements, including:

- existing infrastructure to be utilised, and/or upgraded for use
- proposed new infrastructure
- ancillary infrastructure requirements, such as telecommunications, power supply and potable water supplies.

Delineate the Project footprint using detailed maps and diagrams to show:

- location of the mineral resources to be mined/developed and/or explored
- locations of existing and proposed infrastructure and mine components
- location /extent of any other works to be undertaken, structures to be built or other elements of the Project, such as rehabilitation / closure activities.

3.2.2 Mine Construction and Operation

Describe proposed mine construction and operations, including, but not limited to:

- proposed mining methods
- equipment requirements
- energy (power, fuel) requirements
- proposed staging of the Project, and ramping-up of production
- sources and volumes of materials required to support construction of mine infrastructure, such as fill, clays and consumables.

Describe types / categories, quantities and characterisation of materials to be mined annually (e.g. ore, top soil, waste rock etc.). Detail proposed cut-off grades. Describe processing, storage and management methods for each category.

3.2.3 Processing

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

- processing methods and major components of the processing operation
- processing circuit inputs, outputs and volumes of materials required
- water requirements, treatments, sources and storages
- transport of materials to / from the processing circuit.

3.2.4 Tailings Management

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

- methods for the disposal and management of tailings
- discussion of planned or potential-for reprocessing of tailings
- anticipated quantities of tailings that would be produced and managed by the Project
- geochemical characterisation of the tailings, indicating potential to contaminate seepage / stormwater runoff
- analysis of potential complexing of tails, such as with cyanide, and of physicochemical mobility of contaminants under expected environmental conditions.

3.2.5 Water Management

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

- stormwater
- dust suppression
- drinking water
- ablutions and sewage treatment
- process water
- processing circuit
- any other uses.

The EIS should describe the details of proposed groundwater extraction and mine dewatering, including treatment, storage, reuse and disposal options. Anticipated extraction rates, water quality, usage and volumes of water should be provided, where relevant.

3.2.6 Wastes and Hazardous Materials

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

- descriptions of predicted waste streams, both industrial and domestic, including solid and liquid wastes at/from 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
- legislation, guidelines, and standards applicable to any Project landfill, sewage treatment and waste disposal facility, and how such requirements will be fulfilled
- descriptions of proposed waste management strategies, including reduction, reuse, recycling, storage, transport and disposal of waste.

3.2.7 Workforce and Accommodation

Provide details of the predicted workforce requirements during all phases of the Project, 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
- accommodation arrangements proposed for mine workers
- any catering premises proposed at the mine.

3.2.8 Transport

Provide details of road use during all phases of the Project, including:

- type, size and number of vehicles required, hours of operation and peak times
- estimated frequency of Project vehicle use on public infrastructure
- details of the method of truck loading and load constraint
- hazardous or dangerous material which may be transported
- additional transport infrastructure works required, including site access and signage.

3.3 Decommissioning, Rehabilitation and Closure

3.3.1 Rehabilitation and Closure

Provide details of proposed rehabilitation and closure planning for the Project, including:

- an outline of final rehabilitation, revegetation and closure plans for all aspects of the Project on completion of mining on site
- final topographic and drainage morphology, including design concepts and methodology used
- proposed staging and timing of rehabilitation and closure
- removal of plant, equipment, structures, hardstand and concrete footings, buildings, water storages, and methods proposed for stabilisation of affected areas
- protocols for the safe and stable securing of the mine
- rehabilitation techniques to be used
- ancillary preparations for rehabilitation/closure, such as: establishment of an on-site nursery, local native species selection/collection/grow-out and revegetation trails
- closure criteria and future land tenure and land-use arrangements.

3.3.2 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.

3.4 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
- site selection for all Project components
- mining and processing methods

- management of clean, dirty or contaminated water
- management of site water surpluses
- prevention and remediation of acid and/or metalliferous drainage, neutral mine drainage and/or saline drainage (AMD/NMD/SD)
- management of wastes
- rehabilitation methods
- methods of product treatment, storage, transport and export
- energy sources for power generation, including renewable energy sources
- designs and construction methods of infrastructure
- 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
- the comparison of short (whilst operational), medium (post closure) and relevant long term advantages and disadvantages of the options.

4 Existing Environment

The EIS should outline the environmental context of the Project area. Description should include:

- climate and atmospheric characteristics relevant to the Project, such as temperatures, rainfall / evaporation, winds, extreme events
- regional landscape characteristics / features
- proximity / downstream connection to sites of ecological, social or cultural significance or sensitivity, surface / groundwater resources, conservation reserves.

The EIS is required to describe baseline (i.e. current) environmental conditions, to the extent of potential environmental impacts from the Project in a worst case scenario.

This section should identify and reference any relevant studies undertaken in the area which will assist in describing patterns and trends in the environment.

4.1 Topography and Geology

The EIS should describe and map geology, topography, soils and significant landscape features of the project area and surrounding areas.

Discuss geological factors relevant to Project construction, operation, closure and/or the stability of any final landforms or infrastructure, e.g. geological faults, erodible soils.

4.2 Water

The EIS should describe pre-mining (if available) and existing water resource conditions, to provide baseline data suitable to serve as a benchmark for comparison with future monitoring data, and to detect Project influences on ground and surface waters.

Details should be provided, including discussion and data, relating to:

- surface and ground waters locally, regionally and seasonally, including extent, connectivity, catchments, flow-paths, and areas of recharge and expression

(include Toms Gully Mine water storages and mine-related surface / sub-surface flowpaths)

- seasonal water quality and flows in local and regional aquifers, surface waterways and mine water storages
- hydrogeological features relevant to ground and surface water flows and potential pollution pathways from the Project
- hydrological features relevant to biodiversity, such as natural water bodies, swamps or waterholes within the in the Project area or potential environmental footprint of the Project
- environmental values, uses and third party users of the surface waterways and groundwater aquifers potentially affected by the Project
- recreational fisheries downstream of the Project area, such as Hardies Billabong, Corroboree Billabong and the Mary River System. Describe and map downstream areas, waters and recreational fisheries downstream to the Project area, and analyse their importance to the NT
- identified changes to surface and groundwater systems (hydrology, quality and quantity) as a result of previous exploration, mining and/or mining-related activities.

4.3 Biodiversity

The following information should be provided with regard to biodiversity in the Project area or potential environmental footprint of the Project (i.e. to the spatial extent of potential environmental impacts from the Project):

- Describe fauna, flora, vegetation communities and aquatic ecosystems of the Project area and impact footprint. Description of aquatic fauna should, as a minimum include fish, frog and macroinvertebrate communities.
  Surveys should be in accordance with the NT EPA *Guidelines for Assessment of Impacts on Terrestrial Biodiversity*[3] and/or Australian Government Guidelines for the surveying of threatened species[4]. Describe survey/program timing, locations and methodology, to demonstrate appropriate and statistically sufficient survey designs.

- Identify and discuss potential for presence in and around the Project area and footprint of species listed under the *Territory Parks and Wildlife Conservation Act* (TPWC Act) and/or EPBC Act, and other un-listed species of conservation significance.

- Identify and map habitat within and adjacent to the Project area and footprint suitable for species of conservation significance potentially present, including consideration of habitat suitable for breeding, foraging, aggregation or roosting.

Describe and map:

- any areas that have already been subject to clearing activities or disturbance previously
- areas of vegetation that are proposed to be cleared for the life-of-mine
- any significant or sensitive vegetation types

[3] NT EPA *Guidelines for Assessment of Impacts on Terrestrial Biodiversity* at: http://www.ntepa.nt.gov.au/__data/assets/pdf_file/0003/349941/guideline_assessment_terrestrial_biodiversity.pdf

[4] http://www.environment.gov.au/epbc/policy-statements

- the presence, or likely occurrence, of introduced and invasive species (both flora and fauna) within the Project area and footprint, and regionally, including weed species declared under the NT *Weeds Management Act.*

4.4 Indigenous and Cultural Heritage

The EIS should outline the cultural and heritage significance of any sites or objects located on the Project area or that could be impacted by 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*
- *Northern Territory Aboriginal Sacred Sites Act.*

Description is required of:

- indigenous and non-Indigenous sites, places or objects of historic or cultural heritage significance
- surveys used to identify sites or objects of historic or cultural heritage significance, with outline of survey location and effort
- current status of any approvals, permits or clearances under the above legislation.

The EIS should outline consultations with Indigenous stakeholders and Traditional Owners for all areas potentially affected by the Project. Determination and details should be provided of any current Traditional Owner utilisation of Project areas, and spiritual/cultural significance of potentially affected areas.

5 Risk Assessment

5.1 Risk Assessment Approach

The EIS should be based upon a comprehensive risk assessment process to 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, to provide a better understanding of equity issues
- demonstrate that the Project represents best practicable technology.

A number of key risks for the current Proposal have been identified through a preliminary assessment of the Project[1], and in reports from previous operations in Toms Gully Project Area. Previously identified risks relevant to the current Project and protection of the existing environment should be included and addressed by the Proponent in the

current risk assessment and management process. It is expected that further risks will be identified through the comprehensive risk assessment process required for the EIS. Risks 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
- 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 should be demonstrated.

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

5.2 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 detailed in this Terms of Reference document. Environmental Assessment Guidelines, current at the time of publication of these Terms of Reference, include:

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

The above Guidelines are available from the NT EPA website at: http://www.ntepa.nt.gov.au/environmental-assessments/factsheets-and-guidelines, and

* *http://www.ntepa.nt.gov.au/waste-pollution/guidelines/guidelines*

5.3 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. Considerations include:

- Landscape change originates 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.

- 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.

An assessment of cumulative environmental impacts should be undertaken that considers the potential impact of the Project in the context of previous, existing 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. The risk assessment should consider and discuss cumulative assessment, where relevant, and account for impacts on an appropriate scale.

Impacts on the general environment, ecosystems and matters of national environmental significance could be permanent. If the impacts are not permanent, describe how long recovery from any impacts is anticipated to take, and identify how soon restoration of habitat could be achieved to reinstate ecosystem function.

5.4 Water

5.4.1 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 AMD/NMD/SD and sediment discharge to prevent on and off-site environmental impacts during mine operations and beyond mine closure.

5.4.2 Assessment of Risks

The EIS should assess identified risks to existing surface and groundwater quality as a result of, or associated with the Project. Description is to be provided, at an appropriate spatial scale, of proposed management to avoid, minimise and mitigate identified risks.

The EIS should include consideration of risks arising from:

- passive discharge or seepage of AMD/NMD/SD from the mine into surface and/or groundwater resources
- mine-site erosion, and sedimentation of waterways
- loss of control / containment of poor quality mine waters, such as associated with extreme weather events
- need for the Project to dewater the flooded pit and underground mine
- need for the Project to discharge surplus contaminated waters to local creeks (particularly at times of low creek flow)
- increasing contaminant concentrations in evaporation ponds, reflecting in water quality in pond seepage and evaporation fan plumes
- ‘first flush’ or early Wet season flushing of stored oxidation products (AMD/NMD/SD) generated over the Dry season in mine storage facilities
- effects of loading (lifts) to tailings and evaporation ponds on seepage rates

- potential hydraulic connections between the proposed process water dam site and fault zones (Crabb, Williams), preferential groundwater flow pathways, springs, creeks and/or the underground mine.

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

Risk exists of AMD/NMD/SD from mine infrastructure, impacting water quality and dependent ecosystems. Minimum requirements to address Project risks of AMD/NMD/SD are detailed in the NT EPA *Environmental Assessment Guidelines, Acid and Metalliferous Drainage*[5].

The EIS should also provide the following information:

- Identify occurrence and risks of AMD/NMD/SD from existing and proposed infrastructure and the Project, and demonstrate how future development of AMD/NMD/SD will be prevented by design.
- Describe proposed methods to characterise currently stored and future mine waste materials, including tailings, in terms of their potential to generate AMD/NMD/SD.
- Detail proposed management (and contingency management) that identifies, systematically addresses, remedies and monitors any occurrence of AMD/NMD/SD, to prevent environmental impacts during mine operations and beyond mine closure.
- Provide results of AMD/NMD/SD characterisation already undertaken on existing stored waste rock and tailings, and future waste rock and tailings (i.e. based on drill core samples).
- Site-wide AMD/NMD/SD management should be summarised in an AMD/NMD/SD Management Plan for the Project.
- Demonstrate that sufficient quantities of suitable-standard clays, and non-acid forming (NAF) rock without AMD/NMD/SD potential, are available to fulfil construction requirements for all proposed infrastructure builds and upgrades. Include:
  - clay / NAF-rock sources
  - amounts of clay / NAF-rock needed, and available
  - suitability (i.e. chemistry, permeability, etc.) of the available clays and NAF-rock.
  - demonstration of appropriate identification and management of Arsenic levels, and other contaminants in NAF waste rock streams.
- provide a detailed conceptual site model[6] describing potential sources, pathways, receptors, and fate of any contaminated waters, and products, from the Project, and

[5] NT EPA *Environmental Assessment Guidelines, Acid and Metalliferous Drainage* at: http://www.ntepa.nt.gov.au/__data/assets/pdf_file/0005/349934/guideline_assessment_acid_metalliferous_drainage.pdf.

[6] See: NT EPA *Guidelines on Conceptual Site Models* at: http://www.ntepa.nt.gov.au/__data/assets/pdf_file/0005/349943/guideline_pollution_conceptual_site_models.pdf, and
Global Acid Rock Drainage (GARD) Guide. International Network for Acid Prevention (INAP). at: http://www.gardguide.com …Conceptual Site Models: http://www.gardguide.com/index.php?title=Chapter_4#4.2.3_Conceptual_Site_Model_Development

Including Figure 4-4:- *Sources and Pathways of ARD, NMD, and SD in Underground Workings during Operation and Closure*)

Project components. The model should be of sufficient detail for the general reader to understand the sources of potential contaminants, mechanisms of their release, pathways for transport, and potential for human and ecological exposure to these potential contaminants.

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

- laboratory and field testing data required in section 5.4.2, to characterise AMD/NMD/SD potential and acid neutralisation potential of mine products and infrastructure.
- permeability and depths of geological strata across the mine site and underlying mine water storage facilities, with identification of preferential flow pathways/strata, such as paleochannels and faults
- hydrogeological characterisation from Section 4.2, and flow modelling where appropriate
- physicochemical mobility of contaminants
- baseline water quality (i.e. prior to commencement of the current Project) of receiving waters (from sections 4.2)
- contaminant transport modelling of current and future seepage plumes
- modelling of contaminant plumes, transport and fate originating from Project's use of evaporation fans
- biological receptors, vectors and their habitats
- other complementary technical studies, at appropriate temporal and spatial scales.

An appropriately qualified and experienced person should be involved with the supervision and interpretation of test results and the development of the conceptual site 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.

Estimate the quality and quantities of seepage discharging to aquifers and creeks from existing and proposed mine components through all mine phases, including post closure (long term).

Summarise how water quality and flows in local creeks and aquifers will potentially be impacted by the Project in the short and long term.

Describe and assess the significance of residual risks to sensitive receptors from mine-induced water quality impacts. Include consideration of downstream ecosystems and stakeholders, in the short and long terms.

5.4.3 Mitigation

The EIS should describe proposed management of water for the Project for all mine-life stages and seasons, according to its source, quality, volume, end use or other parameters, including:

- proposed management to contain contaminants onsite
- water quality thresholds triggering management actions
- description of site surplus water volumes, and proposed management
- management of stormwater, erosion and sediment loads during seasonal and extreme rainfall events.

The EIS should contain a draft Water Management Plan (WMP) that outlines clear and concise measures to mitigate likely impacts of the Project on water resources. All mitigation and monitoring measures in the WMP should be adequately detailed to demonstrate best practice management and that environmental values of receiving waters will be maintained. The WMP should include but not be limited to measures that:

- avoid and remedy Project 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 waterways
- avoid the exposure of sensitive biological receptors to contaminants or water of a poor quality that may be harmful
- treat and manage domestic wastewater and sewage.

The WMP should be related to, but separate from Management Plans for:

- Erosion and Sediment Control
- AMD/NMD/SD.

The WMP should undergo a process of peer review by an independent, appropriately qualified expert. Feedback should be included as an attachment to the WMP.

5.4.4 Monitoring

The WMP and related management plans should outline details of monitoring programs to be implemented throughout the life of the Project to determine effectiveness of the mitigation measures (Section 5.4.3), and to monitor for risks to water resources from the Project.

The monitoring programs should include relevant water quality target values based on appropriate guidelines and/or standards. The monitoring program should outline reporting procedures and contingencies that will be implemented in the event that monitoring activities identify that any performance indicators have been triggered, or other water related hazard or emergency.

5.5 Infrastructure Integrity and Suitability

5.5.1 Environmental Objectives

Designs, construction methods and available materials for proposed and existing infrastructure will be sufficient to ensure infrastructure integrity, and protection of the environment for the short and very long term.

5.5.2 Assessment of Risks

The EIS should assess identified environmental risks associated with proposed new and upgraded infrastructure for the Project, and demonstration of optimised risk reduction and environmental protection for the short and very long term.

Consideration is to be included of risks of the proposed new process water dam, or lifts to the new tailings dam or evaporation ponds, being unable to adequately isolate poor quality mine water from the environment, including from:

- inadequate engineering or construction methods or having insufficient suitable construction materials available
- dam wall leakage or failure
- extreme rainfall events and overtopping
- presence of underlying high permeability geological faults and/or strata.

Hydrological modelling should be undertaken and results presented to demonstrate resilience of the objectives for the Project site, proposed infrastructure and management measures through 100 year average recurrence interval (ARI) climatic and earthquake events.

5.5.3 Mitigation, Monitoring

Describe proposed avoidance, minimisation, mitigation, reactive management and monitoring of risks identified above, to infrastructure integrity and suitability.

5.6 Biodiversity

5.6.1 Environmental Objectives

The Project will 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.

5.6.2 Assessment of Risk

The EIS should assess identified risks to biodiversity values, particularly threatened species, as a result of the Project[7]. The EIS should include references to relevant research and statutory plans, such as action plans, recovery plans and threat abatement plans, when assessing the risks.

The EIS should include analysis of the potential for Project impacts (direct, indirect, short-term and ongoing) to:

- terrestrial and aquatic ecosystems at a local and regional scale
- downstream recreational fisheries
- flora and fauna species of conservation significance. Where a risk has been identified, the EIS should include discussion of the severity of those risks to individuals and regional populations.

Consideration, where relevant, should include potential for impacts from discharge or seepage of poor quality water, ground/surface water contamination, groundwater drawdown, contaminant deposition by evaporative fans, vegetation clearance, habitat fragmentation, edge effects, erosion and sedimentation, soil compaction, inappropriate/ineffective rehabilitation, waste material, transport / storage of hazardous chemicals, noise / vibration, dust / air quality impacts or other processes exacerbated through construction or operation of the Project.

Detailed assessment is required of the potential of the Project to introduce and/or increase the presence of introduced and invasive species (both flora and fauna) in the region, and the potential impacts of such species. Show consideration of relevant Threat Abatement Plans[8], such as:

- *Threat Abatement Plan for Predation by Feral Cats*
- *Threat Abatement Plan for Predation, Habitat Degradation, Competition and Disease Transmission by Feral Pigs*
- *Threat Abatement Plan for the Biological Effects, including Lethal Toxic Ingestion, caused by Cane Toads*

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[7] In accordance with: NT EPA *Guidelines for Assessment of Impacts on Terrestrial Biodiversity* at: http://www.ntepa.nt.gov.au/__data/assets/pdf_file/0003/349941/guideline_assessment_terrestrial_biodiversity.pdf

[8] http://www.environment.gov.au/biodiversity/threatened/tap-approved.html

- *Threat Abatement Plan to reduce the Impacts on Northern Australia's Biodiversity by the Five Listed Grasses.*

5.6.3 Mitigation

The EIS should contain a detailed Biodiversity Management Plan that outlines clear and concise methods to mitigate likely impacts to biodiversity. All mitigation and monitoring measures should be in accordance with best practice advice from relevant Northern Territory agencies and focus on:

- potentially significant impacts to the biodiversity on-site and off-site/downstream, including aquatic ecosystems
- mitigating the impacts to vegetation
- rare or threatened species at risk of being adversely impacted
- weed control measures and hygiene protocols as required under the *Weeds Management Act.*

The draft EIS should include management measures in relation to:

- procedures to be adopted during vegetation clearing, including wildlife rescue procedures
- weed, feral animal and livestock management.

Management measures 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.

Proposed mitigation measures should be incorporated in relevant sections of the Environmental Management Plan (see Section 6).

5.6.4 Monitoring

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

Flora and Fauna monitoring should be undertaken using Guidelines as described in Section 4.3.

5.7 Human Health and Safety

5.7.1 Environmental Objectives

The Project will ensure protection of human health and safety from Project-generated impacts, now and in the future.

5.7.2 Assessment of Risks

The EIS should assess risks to human health and safety associated with all stages and components of the Project. Aspects to be considered include risks to human health and safety from:

- materials storage, and transport of materials and personnel on public roads, including interaction of Project traffic with tourist traffic and other road users on the Arnhem Highway
- fire, including combustible materials

- worker or public inhalation of mists from evaporative fans. Any identified risks from fan mists should be included in the conceptual site model required for section 5.4.2
- Project impacts on downstream ecosystems including fish caught for human consumption
- Project impacts on downstream potable water supplies
- underground mine collapse or flooding
- hazardous materials exposure, and proposed management of hazardous process inputs and outputs, such as cyanide
- other direct and indirect health and safety risks for the workforce and the general public.

5.7.3 Mitigation and Monitoring

Detail strategies to prevent, manage, treat and monitor identified risks of the Project to 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 Environmental Management Plan (Section 6).

Describe the emergency planning procedures for the project, including management of all emergencies that may impact on the facility, its surrounds, personnel or the public, and responsibilities and liabilities in the event of an emergency.

A hazard and risk analysis should identify critical areas that need to be addressed in management plans, monitoring programs, and contingency and emergency plans and should include as a minimum:

- mitigation measures to address safety risks identified in Section 5.7.2
- safeguards for minimising the likelihood of bushfire, and fire response plans
- safeguards, management and monitoring strategies to be implemented to minimise potential transport impacts
- an emergency plan defining responses to road accidents and exposure / spills of hazardous materials, drafted in consultation with the Northern Territory Fire and Rescue Service
- safeguards to protect downstream potable water sources utilised for human consumption
- compliance with *Environmental Health Fact Sheet No. 700. Requirements for Mining and Construction Projects*[9] with respect to use of septic tanks when reinstating office blocks
- compliance with applicable licensing requirements associated with food preparation and storage if catering premises are proposed at the mine
- contingency emergency, health and safety management procedures to be applied if proposed protective measures fail.

[9] *Environmental Health Fact Sheet No. 700. Requirements For Mining And Construction Projects*. Department of Health, Northern Territory Government July 2013 via http://www.health.nt.gov.au/environmental_health/health_risk_assessment/index.aspx

5.8 Socio-Economic Risks

5.8.1 Environmental Objectives

To analyse, monitor and manage the Project's intended and unintended social and economic consequences, both positive and negative, such that outcomes are optimised.

5.8.2 Assessment of Risks

An Economic and Social Impact Assessment (ESIA) should be conducted in accordance with the NT EPA *Guidelines for the Preparation of an Economic and Social Impact Assessment*[10] considering social and economic risks from operation of the Project.

The ESIA should include analysis of the current and projected financial capacity of the Proponent to allocate sufficient resources to:

- implement the Project, mitigation measures, and contingency management measures
- maintain its environmental obligations should the Project be temporarily closed or suspended
- meet all stabilisation, rehabilitation and closure requirements, once operations have ceased.

The ESIA should also consider contributions to local communities, including Traditional Owners.

5.8.3 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
- 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.

5.9 Historic and Cultural Heritage

5.9.1 Environmental Objectives

Places and items with historic and/or cultural heritage values protected under the *Heritage Act* and/or *Northern Territory Aboriginal Sacred Sites Act* will be identified and those values protected.

[10] Available at: http://www.ntepa.nt.gov.au/__data/assets/pdf_file/0007/349936/guideline_assessment_economic_social_impact.pdf

5.9.2 Assessment of Risks

The EIS should include:

- assessment of risks of the Project's potential to impact on sites / objects of sacred, heritage, cultural or indigenous cultural significance
- detail any requirements to disturb or destroy a prescribed archaeological place and/or object under the *Heritage Act*.

5.9.3 Mitigation

The EIS should describe the proposed prevention and mitigation of any identified risks to existing sacred sites, or sites or items of historic and cultural heritage in a Culture and Heritage Management Plan (CHMP). The CHMP 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
- procedures for the discovery of surface or sub-surface items during the course of the Project.

5.9.4 Monitoring

The CHMP should include details of a monitoring and reporting program to determine the effectiveness of mitigation measures (Section 5.9.3). 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.

5.10 Rehabilitation and Closure

5.10.1 Environmental Objectives

Rehabilitation and closure planning will ensure that:

- Rehabilitation will achieve a stable and functioning landform, consistent with the surrounding landscape and other environmental values, and will remove potential for long term or post closure impacts on downstream water quality, beneficial uses or environmental values.
- Closure (and Care and Maintenance) planning will effectively achieve containment of all mine–related environmental contaminants on-site, for the very long term, without need for ongoing management, intervention or expenditure, and allow for post-closure return to agreed land uses on the site.

5.10.2 Assessment of Risks

Rehabilitation and closure planning, and contingency planning for periods of *Care and Maintenance*, should take 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 assessment of risks to successful rehabilitation and closure including:

- the Project not realising its projected outcomes (i.e. delays, unexpected or forced closure, falling gold prices, etc.)
- inadequate identification and management of materials with AMD/NMD/SD potential

- changes in the assumptions used as a basis for the post-closure risk assessment
- natural extreme events, including earthquakes, cyclones, rain depressions, fire and flood.

The EIS should identify and assess environmental risks associated with a potential short and long term period of Care and Maintenance for the Project and site. Assessment and planning should consider all potential Project development stages, and plan to fulfil all relevant environmental objectives and obligations.

5.10.3 Mitigation

Demonstrate that identified risks associated with rehabilitation, revegetation, closure and periods of care and maintenance for the Project will be avoided, mitigated or otherwise minimised to a low level.

A draft Mine Closure Plan (MCP), specific to the Project, should be prepared to address identified risks. The MCP should provide an outline of the risks 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 include:

- mitigation measures to address identified risks
- measures required to prevent contamination of surface and groundwater resources
- measures to ensure that tailings and overburden with AMD/NMD/SD potential, and poor quality mine waters, will be physically isolated from the environment, and not result in any short (whilst operational), medium (post closure and under institutional control) or long term (post-institutional control) detrimental ecological impacts
- 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
- assessment of the void geochemistry, including modelling to predict the likely post mining water quality in the open pit once it is left to accumulate water
- measures to ensure the environmental sustainability and full containment of contaminated mine and pit-water post-closure
- measures to ensure the stabilisation of erosion, to a level similar to comparable landforms in surrounding undisturbed areas
- contingencies to make landforms and mine components secure and non-polluting in the event of unexpected or temporary closure, or failure of rehabilitation, revegetation or closure actions

The MCP should include a Care and Maintenance Plan, which will identify how risks from the site will be managed should the Project be temporarily closed or suspended at any stage of the mine operation and development. The Plans should outline how the Proponent will fulfil its environmental obligations, objectives and commitments.

5.10.4 Monitoring

The EIS should describe proposed:

- post-mining monitoring and reporting to be used to evaluate and report on the effectiveness and performance of the mitigation measures (Section 5.10.3).

- contingency measures to be implemented in the event that monitoring demonstrates that management measures have not been effective.
- 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.

5.11 Other Risks

Other risks not assessed in the preceding sections (5.4 - 5.10) should be identified and management strategies proposed that detail avoidance, minimisation, mitigation and monitoring for the risks. The following risks and advice should also be addressed as a minimum:

5.11.1 Bushfires, Fires

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 a Fire Management Plan for the Project. The Plan should be in consultation with Bushfires NT, traditional owners, pastoralists and their representative organisations, including the Northern Land Council, where appropriate, that have specialist knowledge in fire management. The Fire Management Plan should be incorporated into the Environmental Management Plan (Section 6) for the Project.

All buildings on site should comply with Australian Standards and Fire Safety regulations. Any on-site accommodation must include photoelectric smoke alarms.

5.11.2 Noise and Vibration

Risk assessment should occur with respect to noise and vibrations from Project components. Communication with local residents and communities should be part of the risk assessment. Potential sensitive receptors, sensitivity of receptors, expected impacts and proposed management should be identified with regard to Project-generated noise and vibrations.

The EIS should outline proposed management to mitigate any identified risks from the Project with regard to noise and vibration emissions. If relevant, the EIS should describe proposed communication with any residents and communities predicted to be impacted by noise and vibration from the project.

5.11.3 Air

The potential nuisance and health issues for sensitive receptors associated with air quality, including evaporative fan mists, and dust, and mitigation measures should be discussed in Sections 5.6 and 5.7 as appropriate. Consideration should be given to the acute and chronic exposure pathways, such as inhalation, ingestion and dermal contact, if relevant. The potential sensitivity of receptors to air quality, including dust, and mitigation measures should be discussed. Any identified risks and contaminant pathways should also be included in the conceptual site model for the Project (section 5.4.2).

5.11.4 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.

5.11.5 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.

A Baseline Biting Insect Assessment was completed for the Tom's Gully Mine Project in 2001. Applicable recommendations should be considered with the current Project. The Project should also conform to *'Guidelines for Preventing Mosquito Breeding Associated with Mining Sites'* [11]

Wetlands Oxbow should be managed to minimise mosquito breeding. Potential management measures for wetland filters are outlined in the above mentioned guideline.

Measures to prevent mosquito breeding should be outlined in a biting insect management section in the Environmental Management Plan (Section 6). Information on personal protection can be found in '*Personal protection from mosquitoes and biting midges in the Northern Territory*' [12]

6 Environmental Management

Specific safeguards and controls proposed to be employed to avoid, minimise or remedy environmental impacts identified in previous sections are to be included in an EMP.

The EMP should be strategic, describing a framework for continuing management, mitigation and monitoring programs for the relevant impacts of the Project, including any provisions for independent environmental auditing of the Project. As much detail as is practicable should be provided to enable adequate assessment of the Project, proposed environmental management practices and procedures, during the public exhibition phase. Specific management practices and procedures should be included in the EMP, where possible.

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

The EMP should include:

- 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
- 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
- proposed reporting procedures consistent with Territory and Australian Government legislative requirements

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[11] *Guidelines for Preventing Mosquito Breeding Sites Associated with Mining Sites*. http://www.health.nt.gov.au/library/scripts/objectifyMedia.aspx?file=pdf/32/40.pdf&siteID=1&str_title=Guidelines for preventing mosquito breeding sites associated with mining sites.pdf

[12] *Personal protection from mosquitoes and biting midges in the Northern Territory* http://digitallibrary.health.nt.gov.au/prodjspui/bitstream/10137/264/3/Personal protection from mosquitoes and biting midges in the NT 25 OCT 2011_5_doc.pdf

- 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
- 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
- contingency and reactive management for when interpretation of the monitoring data or other observations detect potential for impact or actual adverse trends in performance. Detail should be provided of when 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;
- 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
    - any other environmental training or education requirements.
- provision for the periodic review of the EMP
- provision for independent environmental auditing of the Project.

The EMP would continue to be developed and refined following the conclusion of the assessment process, taking into consideration the proposed timing of development activities, comments on the EIS and incorporating the Assessment Report recommendations and conclusions.

7 General Advice on the EIS

7.1 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 draft 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 should 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.

7.2 Format and Style

The EIS should comprise three elements:

1. Executive summary

   The executive summary should 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 should 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 should 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
   - 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.

7.3 Referencing and Information Sources

All sources should 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 should be available upon request. For information given in the EIS, the EIS should state:

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

All known and unknown variables or assumptions made in the EIS should be clearly stated and discussed. Confidence levels should 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 assurance / quality control (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.

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.

Topography / contours should be detailed at appropriate intervals with respect to Australian Height Datum (AHD).

The reporting of exploration results, ore reserve and mineral resource estimates in the EIS should be consistent with the *Australasian Code for Reporting of Exploration Results, Mineral Resources and Ore Reserves*, of the Joint Ore Reserves Committee of The Australasian Institute of Mining and Metallurgy, Australian Institute of Geoscientists and Minerals Council of Australia (JORC), 2012. Available at: http://www.jorc.org/docs/JORC_code_2012.pdf.

The EIS should 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
- 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.

7.4 Administration

The Proponent should lodge ten bound, hard copies and an electronic copy (Adobe PDF format) copy of the draft 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. The Proponent should discuss potential requirements with NT EPA.

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

The NT EPA requires the complete draft EIS document and a draft of the advertisement at least one week prior to advertising the draft 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.

7.5 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
- A nearby Government office to be determined, such as the local Legislative Assembly member's office at Coolalinga (Shop 4, Coolalinga (Woolworths Shopping Centre), Stuart Highway, NT 0835. E:mail: electorate.goyder@nt.gov.au)
- Environment Centre Northern Territory, Unit 3, 98 Woods St, Darwin.

The public exhibition period for the draft EIS will be six 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.