Northern Territory Environment Protection Authority

TERMS OF REFERENCE FOR THE PREPARATION OF AN ENVIRONMENTAL IMPACT STATEMENT

REHABILITATION OF THE FORMER RUM JUNGLE MINE SITE

DEPARTMENT OF PRIMARY INDUSTRY AND RESOURCES

March 2017

1 Introduction

The Department of Primary Industry and Resources, the Proponent, proposes the Rehabilitation of the Former Rum Jungle Mine Site (the Project), located 6 km north of Batchelor, Northern Territory. The Project aims to address long-term environmental legacy issues within the Rum Jungle area, including the satellite sites Mount Fitch and Mount Burton.

The Project would involve backfilling a former mine pit at the Project site with material from the existing waste rock dumps and consolidating the remaining waste rock, and any residual contaminated soil, to a new purpose-built waste rock dump. Waste rock from Mount Burton would be relocated to the purpose built facility at the Project site. The Mount Fitch pit would be backfilled with material from the existing waste rock dump. Leading practice landform and cover designs would be developed and implemented for the infilled pits and the new waste rock dump. Cover materials would be sourced from an offsite borrow pit.

Ancillary activities include dewatering, treating and discharging contaminated water, native vegetation clearing for new borrow pit areas and road and bridge construction, and landform re-design and rehabilitation of the remnant mine features, including the waste rock dumps, tailing dams, borrow pits and haul roads.

The Proponent submitted a Notice of Intent for the Project to the Northern Territory Environment Protection Authority (NT EPA) on 30 June 2016, for consideration under the *Environmental Assessment Act* (EA Act). On 30 August 2016, 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 was based on the following issues:

- Potential ongoing contamination of downstream waters and groundwater associated with acid-metalliferous drainage (AMD), should the site rehabilitation be inadequately designed and/or implemented.
- Disturbance of significant areas of native vegetation, which could result in significant erosion on site if appropriate erosion and sediment control measures are not appropriately designed and/or implemented, which may result in downstream water quality impacts (i.e. turbidity, sedimentation) and failure to meet rehabilitation objectives (e.g. non-polluting, long-term stable landforms).
- Risk to humans and/or biota if radioactive materials are not appropriately managed during rehabilitation and/or disposed of appropriately (i.e. isolated in long-term stable landforms).
- Risks to biodiversity and threatened species listed under the *Environment Protection and Biodiversity Conservation Act 1999* (EPBC Act) and the *Territory Parks and Wildlife Conservation Act* (TPWC Act).
- Potential social, cultural and economic impacts, including the risks of the Project not realising its rehabilitation objectives.

The Former Rum Jungle Mine Rehabilitation Project (EPBC 2016/7730) was referred to the Australian Government Minister for Environment and Energy (the Australian Government Minister) for consideration under the EPBC Act. On 4 August 2016, the delegate of the Australian Government Minister decided the proposed action is a controlled action and requires assessment and approval under the EPBC Act before it can proceed. The controlling provisions protected under Part 3 of the EPBC Act are:

- Listed threatened species and communities (sections 18 & 18A)
- Protection of the environment from nuclear actions (sections 21 & 22A).

The Project is being assessed under the bilateral agreement between the Australian and Territory Governments made under section 45 of the EPBC Act.

This Terms of Reference has been developed by the NT EPA as written matters relating to the environment which it considers necessary to be dealt with in the EIS, in accordance with clause 8(3) of the Environmental Assessment Administrative Procedures and to satisfy the requirements outlined in the bilateral agreement.

2 Description of the project

2.1 General information

The EIS should identify all the processes and activities intended for the Project and associated ancillary activities, during the life of the Project. The EIS should establish the context of the Project, including, but not limited to, the following information:

- the title of the Project
- the full name, contact details and postal address of the Proponent
- the current status of the Project
- a clear outline of the objective of the Project
- the location of the Project in the region and its proximity to:
    - landmark features
    - sites of cultural significance
    - sites of social significance
    - regional community centres
    - areas on the National Reserve System
    - police, fire and emergency services infrastructure
    - sensitive environments, such as major waterways, significant groundwater resources, significant natural features and conservation reserves
- the location of the Project infrastructure (both existing and proposed) to existing nearby public and private infrastructure, such as roads, power supply, landfills, airstrips, bores, dams etc.
- the background to the Project, including discussion of previous or other environmental impact assessment(s)
- an overview of associated / historic mining, exploration and rehabilitation activities
- 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
- the consequence of not proceeding with the Project.

2.2 Project components

The EIS should provide an overview of the Project and describe all components and relevant activities at each phase of the Project. Aspects to be covered include, but are not limited to:

- a detailed schedule or timetable of all relevant aspects of the Project
- any land acquisitions required, be it in-full or as easements, leases etc.
- the preferred layout, precise locations (with GPS coordinates), surface area and physical details of Project facilities, temporary and permanent, including:
    - all areas to be cleared or disturbed, including any previously disturbed/rehabilitated areas
    - borrow pits
    - roads, and other related infrastructure
    - on-site accommodation/office facilities
    - hard stands
    - temporary stockpiles
    - permanent waste storage facilities
    - water-related infrastructure (e.g. storage/treatment facilities, extraction/discharge points)
    - technologies considered for the treatment of AMD
    - any other rehabilitation or ancillary infrastructure.

2.2.1 Rehabilitation strategy

The EIS should provide a detailed description of the methods and processes for the Project, including but not limited to:

- design and construction methods of the proposed rehabilitated landforms, including the final landform, cover and waste rock dump designs; and any temporary measures to manage materials that may become a source of contamination during construction
- clearing and preparation of the proposed borrow areas and new waste storage facility, including handling/stockpiling/disposal of vegetation and topsoil
- sources and volumes of materials required for construction, such as fill, clays and consumables (e.g. neutralising agents)
- dewatering, treatment and backfilling requirements associated with the Project
- revegetation and rehabilitations methodologies for the rehabilitated landforms and disturbed areas
- rehabilitation objectives for the Project and for the Project area for the longer-term use.

2.2.2 Water

The EIS should provide information on the quantity, quality, source (groundwater), storage, and infrastructure requirements for water use for the Project, considering:

- dust suppression
- drinking water, ablutions and sewage treatment for on-site accommodation/office facilities (if required)
- road construction
- wetting of rehabilitation materials
- pit dewatering activities.

The EIS should describe the details of any proposed groundwater extraction and/or surface water diversions, including treatment, storage, reuse and disposal options and changes to the existing water balance. Anticipated extraction rates, usage and volumes of water should be provided, where relevant.

2.2.3 Transport logistics network

The EIS should provide relevant information in respect of the transport logistic networks, haul road construction and transport requirements, including:

- locations (appropriately scaled maps) of existing and new road infrastructure that will be used during Project activities
- maximum width of new road corridors required for construction and operation
- plant and machinery required
- vegetation clearing methods and disposal of plant matter following clearing
- access and haul road construction and upgrade requirements
- methods for crossing sensitive areas, such as waterways and/or land units with poor soil recovery potential
- methods for intersecting linear infrastructure and major roads, where relevant
- source of construction inputs and materials for bulk earth works
- ongoing provisions for road maintenance, including source and extraction of maintenance inputs and materials.

Provide details of the transport logistic networks associated with the Project, including:

- type, size and number of mobile plant and 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 Project site(s)
- routes for transport, including details of proposed routes for over-dimension or very heavy loads
- hazardous or dangerous materials which may be transported (e.g. heavy machinery, equipment, fuel, hazardous materials)
- operational details of any laydown areas proposed to be used
- peak user times for vehicular movements by staff / contractors

- hours of operation
- additional transport infrastructure works required, including site access and signage.

2.2.4 Workforce and accommodation

The EIS should provide details of the predicted workforce and accommodation requirements, including but not limited to, including:

- the number of people to be employed, skills base required, and likely sources (local, regional, overseas) for all phases of the Project
- 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 mine site rehabilitation or other related activities
- the arrangements for transport of workers to and from Project areas, including proposed use of air services in and out of regional airports and utilisation of regular public transport or charter services
- utilising existing short-term commercial accommodation in Batchelor and, if so, the anticipated timeframe and room volumes
- layout of the construction camp (if applicable) with respect to the work areas, including site establishment requirements, including access restriction measures and expected size, source and control of the construction workforce accommodation, services (water, sewage, communication, power, recreation) and safety requirements.

Information on the workforce and accommodation in the EIS should be consistent with and make appropriate reference to the Environmental Health Fact Sheet 700 Requirements for Mining and Construction Projects.[1]

2.3 Approvals, conditions and agreements

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:

- details of any local or State/Territory Government planning scheme, plan or policy under any local or State/Territory Government planning system that deals with the Project, including:
    - what environmental assessment of the Project has been, or is being, carried out under the scheme, plan or policy
    - how the scheme provides for the prevention, minimisation and management of any relevant impacts.
- a description of any approvals that have been obtained and those that will be required from State, Territory or Commonwealth agencies and/or authorities, including any conditions that apply to the Project

[1] Northern Territory Department of Health, 2014. *Environmental Health Fact Sheet 700 Requirements for Mining and Construction Projects*. Available at: http://www.health.nt.gov.au/environmental_health/health_risk_assessment/index.aspx#EnvironmentalImpactAssessment

- a summary of current agreements between the Proponent and the Australian Government, and/or other stakeholders, including Traditional Owners and/or land managers
- details of the monitoring, enforcement and review procedures that apply, or are likely to apply, to the Project.

When describing the individual approvals, certificates, permits etc. that will be required the Proponent must include details of any conditions likely or expected to be imposed. Consideration should be given, but not limited to, the following legislation:

- *Aboriginal and Torres Strait Island Heritage Protection Act 1984*
- *Aboriginal Land Rights Act 1976*
- *Australian Radiation Protection and Nuclear Safety Act 1998*
- *Environment Protection and Biodiversity Conservation Act 1999*
- *Native Title Act 1993*
- *Environmental Assessment Act* & Administrative Procedures
- *Fire and Emergency Act* & Regulations
- *Heritage Act*
- *Mining Management Act*
- *Mineral Titles Act*
- *Northern Territory Aboriginal Sacred Sites Act*
- *Planning Act*
- *Public and Environmental Health Act* & Regulations
- *Radiation Protection Act*
- *Territory Parks and Wildlife Conservation Act*
- *Waste Management and Pollution Control Act*
- *Water Act*
- *Work Health and Safety (National Uniform Legislation) Act.*

2.4 Environmental history

The EIS must include details of the environmental record of the Proponent, and person proposing to take the action, including:

- details of any proceedings under Commonwealth, State or Territory law for the protection of the environment or the conservation and sustainable use of natural resources against the Proponent, and person proposing to take the action, and details of systems and processes that have been subsequently upgraded
- any international or national accreditations (e.g. ISO 14001), environmental awards or other recognition for environmental performance.

2.5 Alternatives and justification

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

Discussion of alternatives should include, but not be limited to:

- not proceeding with the Project
- site selection, including alternative layouts and alternative locations that improve Project outcomes
- alternative designs and construction methods for Project components
- management of wastes
- water management
- options to optimise ecological sustainability for the Project, such as alternatives to reduce / offset the Project's environmental footprint (e.g. land clearing of up to 541 ha to accommodate the Project)
- technologies and treatment methods to address AMD and other legacy issues
- alternative rehabilitation method
- consideration of alternative environmental management measures for key potential impacts and 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, State / Territory, regional and local levels and their distributional impact
- a comparative description of the impacts of each alternative on matters of national environmental significance protected by controlling provisions of Part 3 of the EPBC Act for the action
- a comparison of short, medium and long-term advantages and disadvantages of the options.

Sufficient details should be provided to justify the preferred Project scope and components, including the benefits of the rehabilitation strategy chosen as opposed to other alternatives considered.

2.6 Ecologically sustainable development

When considering the matters to be addressed in the EIS, the NT EPA, under the *Northern Territory Environment Protection Authority Act,* may have regard to its object, to:

(a) promote ecologically sustainable development (ESD)

(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 EPBC Act and the *National Strategy for Ecologically Sustainable Development*.[2] The Proponent will therefore need to demonstrate how it complies with and contributes to the principles and objectives of ESD in the relevant section(s) of the EIS.

3 Existing environment

Studies used to describe the existing environment of the Project and its surrounds should be of a scope and standard sufficient to serve as a benchmark (or baseline) against which the impacts of the Project over time may be assessed. The level of detail in the EIS should reflect the scale and nature of the studies required to clearly define the potential for impacts from the Project.

Existing environments, and their components, to be discussed must include:

- weather and climate (e.g. rainfall patterns [magnitude and seasonality], temperature, humidity, wind, climate extremes, and any seasonal conditions (e.g. floods or dust storms), which may influence timing and/or rehabilitation methods, etc.).
- regional and significant topography and geomorphology
- regional geology (e.g. major units, geotechnical surveys, seismic stability, significant geological properties that may influence stability, occupational health and safety, etc.)
- soil types and land unit(s) , including details of any limiting properties of soil and substrate types (e.g. susceptibility to erosion, waterlogging) and land units in the Project footprint
- surface water, including:
    - major and minor drainage lines (permanent and ephemeral)
    - catchment boundaries
    - surface water flow directions and rates
    - water reservoirs (natural and artificial)
    - wetlands
    - areas of periodic inundation
    - beneficial uses
    - surface water quality, including temporal variations.
- groundwater aquifers and hydrogeological properties, including:
    - surface connections via springs or recharge zones
    - local and regional aquifers
    - depth to water tables, including existing temporal variations

[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

- groundwater quality.

- air quality, noise and vibration (e.g. receptors sensitive to air quality, dust, noise and vibration adjacent to the Project and relevant ancillary activities, typical background noise levels, etc.)

- existing infrastructure and service networks (e.g. roads, railways, telecommunications, electricity, water supply, etc.).

The EIS should describe fauna, flora and vegetation communities of the Project area and local region. The EIS should include details of the scope, survey/program timing (survey season/s), locations and methodology, to demonstrate appropriate and sufficient survey designs. At a minimum, surveys should be in accordance with the Territory[3] and Australian Government[4] Guidelines. Include details of:

- how the Australian Government best practice survey guidelines are applied

- how they are consistent with (or a justification for divergence from) published Australian Government guidelines and policy statements.

The EIS should describe and map, where relevant:

- significant or sensitive vegetation types and/or ecosystems within the Project area, including areas already cleared or disturbed (if any)

- the presence or likely presence of species listed under the EPBC Act and/or the TPWC Act within the Project area and in any areas that may be impacted by the Project

- suitable habitat for listed species, including the locations of historic records and consideration of habitat suitable for breeding, foraging, aggregation or roosting

- aquatic ecosystems or groundwater dependent ecosystems likely to be affected by the Project

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

The EIS should include the results of a comprehensive baseline fauna and flora survey of areas identified for disturbance. Any areas of vegetation adjacent to the project disturbance footprint that may be at risk of indirect impacts should be included in the surveys. The fauna surveys should be undertaken by a suitably qualified and experienced person that has demonstrated experience in the surveying for and the identification of species in the Northern Territory.

3.1 Environmental legacy

The Project site is highly disturbed from past mining activities and unsuccessful rehabilitations efforts. There is both physical and chemical degradation of current landforms on the site from weathering of waste materials and mobilisation via surface and groundwater pathways (i.e. AMD). Poor management practices have resulted in issues with fire, weeds, feral animals and site access. The EIS should include details of the current state of the Project site, including but not limited to:

[3] Northern Territory Environment Protection Authority, 2013. *Guidelines for Assessment of Impacts on Terrestrial Biodiversity*. Available at: https://ntepa.nt.gov.au/__data/assets/pdf_file/0004/287428/guideline_assessment_terrestrial_biodiversity.pdf.

[4] Department of the Environment, 2011. *Survey Guidelines for Nationally Threatened Species*. Available at: http://www.environment.gov.au/epbc/policy-statements.

- locations (i.e. source and destination), types/classes (e.g. tailings, waste rock), volumes and associated geochemical/geotechnical properties of materials to be rehabilitated in-situ or re-located to other area(s) on site
- information on point and diffuse sources of AMD, and current physical and geochemical impacts on water resources and sediments, including groundwater and the Finniss River
- locations of contaminated soils, include the nature of the contaminants
- the extent of introduced and invasive species (both flora and fauna) within and adjacent to the Project area, including weed species declared under the *Weeds Management Act*
- information on the fire regime, including factors that influence the fire frequency and intensity, such as the presence and extent of high fuel load weeds.

Sufficient information should be provided to allow the NT EPA and the general reader to understand the existing legacy conditions, how the previous mining, exploration and rehabilitation activities have altered the natural environment and the extent to which the existing environment differs from natural conditions. A hydrogeological model, incorporating the existing sources, pathways, receptors, and fate of any contaminated waters (e.g. AMD), would help facilitate an understanding of the source(s) of contaminants, the mechanism(s) of their release, the pathway(s) for transport, and the potential for human and ecological exposure to these contaminants.

3.2 Socio-economic aspects

The EIS should include a balanced summary of the social and economic value (positive and negative) of the Project on a regional, state and national scale. A description of the current population, demography and socio-economic aspects of the project should be provided. The following are suggestions that may assist with highlighting the social and economic value of the Project and are not intended to result in the inappropriate disclosure of confidential or sensitive information:

- key stakeholders
- community structures and vitality (e.g. demography, health, education and social well-being, access to services, housing, etc.)
- the availability and capacity of existing human services to support the rehabilitation work force:
    - skills audit of affected communities
    - workforce characteristics
    - accommodation.
- social amenity and use of the Project area and adjacent areas for other purposes, including tourism, industrial, traditional land use, and/or other purposes
- laws, customs and/or culture of the Native Title Holders to establish a baseline for aspects of traditional Aboriginal culture (also see section 3.3)
- details of the financial capacity to implement the Project, the significance of potential risks to project implementation and associated proposed mitigation measures, including the capacity to cost for rehabilitation and ongoing monitoring/maintenance activities

- opportunities available to regional centres based on the activity generated by the Project (rehabilitation and ongoing monitoring/maintenance)
- estimated capital and annual operational expenditure
- community and economic value of any infrastructure, such as roads, following the life of the Project
- other contributions to local communities, including Traditional Owners.

The net economic benefits of the Project should be estimated and presented separately, where relevant.

3.3 Historic and cultural heritage

The EIS should outline the cultural and heritage significance of sites located during archaeological investigations on or near the Project area or that could be impacted by the Project activities. 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
- areas listed on Commonwealth and Northern Territory registers of historic and/or cultural heritage
- provision of evidence of an Authority Certificate under the *Northern Territory Aboriginal Sacred Sites Act* or an application under the Act.
- an assessment of archaeological potential, including landscape assessment and predictive modelling for Aboriginal archaeological sites, and archival research on historical occupation and land use activities, to provide an understanding of any previously unidentified cultural heritage sites and/or objects encountered during rehabilitation works.

Archaeological assessment and surveys for sites of historic or cultural heritage value must be undertaken by a suitably qualified person with demonstrated experience in archaeological assessment.

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 utilisation of Project areas, and spiritual/cultural significance of potentially affected areas.

4 Impact assessment

The EIS should be undertaken with specific emphasis on the identification, analysis and mitigation of potentially significant environmental impacts and risks through a whole-of-project impact and risk assessment. In general, through this process, the EIS will:

- identify potential direct, indirect and cumulative environmental impacts
- transparently identify any inherent environmental risks associated with the Project
- evaluate the significance of the potential impacts and risks in a local and regional context
- identify monitoring and management measures to avoid and mitigate potentially significant environmental impacts and risks to achieve predicted outcomes

- identify levels of uncertainty about the assessment and the effectiveness of controls in minimising/mitigating potential impacts
- explicitly identify those members of the community expected to accept residual significant impacts and their consequences, providing a better understanding of equity issues
- demonstrate that the Project represents best practicable technology.

A number of potential impacts and risks have been identified through a preliminary assessment of the Project and additional potential impacts and risks may be identified through the completion of studies to inform the EIS. These should be addressed and appropriate management measures developed to demonstrate that the:

- Proponent is fully aware of the potential impacts and risks associated with all predictable aspects of the Project
- avoidance and mitigation of potential impacts and risks are properly addressed in the design specifications
- potential impacts and risks can and will be managed effectively during Project works and post-rehabilitation phases of the Project.

Each potential impact and risk should be addressed by the Proponent and measures to avoid and mitigate potentially significant impacts and risks identified. The significance of the potential residual impacts should be justified so as to provide sufficient information to facilitate evaluation of the overall acceptability of the action. A comparison can be made with similar ventures in Australia and internationally. Assumptions used in the analyses should be explained and risk assessments should be based on national/international best practice.

Information provided should permit the NT EPA and the general reader to understand the potential environmental impacts and risks of the Project and their significance, and any uncertainty about those potential impacts and risks and the effectiveness of controls. Levels of uncertainty should be clearly acknowledged.

4.1 Cumulative impacts

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. The impact assessment should consider and discuss cumulative assessment, where relevant, and account for impacts on an appropriate scale, recognising that:

- 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 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, a description of how long it will take before recovery from any impacts and identify how soon restoration of habitat could be achieved to reinstate ecosystem function.

4.2 Information requirements

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

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

The Guidelines are available on the NT EPA webpage at: https://ntepa.nt.gov.au/environmental-assessments/assessment-guidelines.

4.3 Rehabilitation success

4.3.1 Environmental objective

Rehabilitation will achieve a landform that is:

- compatible with the surrounding landscape and other environmental values
- physically safe for humans, flora and fauna
- geotechnically stable
- geochemically non-polluting/non-contaminating
- capable of sustaining an agreed land use by traditional owners, without unacceptable liability to the Northern Territory and/or Commonwealth and/or traditional owners.

4.3.2 Impact assessment

Rehabilitation 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. Identify risks and potential impacts to the successful rehabilitation Project, including risks and potential impacts associated with:

- each activity associated with the Project
- not implementing the Project

- rehabilitation completion timeframes, objectives and the Project not realising its projected outcomes (i.e. delays, funding issues, etc.)
- the possibility that the Project may create an ongoing environmental, social and/or economic legacy if rehabilitation objectives are not met.

The assessment should include a discussion of the effects of:

- changes in the assumptions used as a basis for the impact assessment
- natural events, including earthquakes, rainfall events, fire and flood.

The EIS will need to clarify how the differences between traditional owner aspirations and technical priorities would be addressed. Appropriate discussion on this issue should be considered in in relation to rehabilitation success, project justification and alternatives (Section 2.5) and socio-economic impacts and future benefits (Section 4.9).

4.3.3 Mitigation and monitoring

The EIS should include a Rehabilitation Management Plan to describe:

- proposed rehabilitation objectives and completion criteria, with measurable performance indicators to demonstrate that rehabilitation criteria have been met
- how risks and potential impacts identified in Section 4.3.2 will be avoided, mitigated or managed
- monitoring programs to be implemented for each completion criteria, including:
    - use of recognised or acceptable monitoring methodologies and standards
    - monitoring that takes into account the wider receiving environments, receptors and exposure pathways
    - monitoring using appropriate quality control systems and procedures in sampling, analysis and reporting of results
    - predicted timeframe for each monitoring program to demonstrate that completion criteria have been met
    - planned maintenance programs (e.g. weed and fire management, revegetation, minor remedial earthworks, etc.)
    - contingency strategies, should monitoring data indicate key environmental indicators have moved outside agreed completion criteria
- responsibilities and funding arrangements for post-rehabilitation monitoring and maintenance programs
- systems and processes for the retention of rehabilitation and monitoring data records
- reporting program for site monitoring and maintenance activities
- regulatory requirements, including any licences and associated reporting requirements.

4.4 Biodiversity

4.4.1 Environmental objective

Maintain and/or improve the conservation status, diversity, geographic distribution and productivity of flora and fauna at species and ecosystem levels through the avoidance or management of adverse impacts (on the Project area and on adjacent areas that may be impacted).

4.4.2 Impact assessment

The EIS should include a detailed assessment outlining the risks and potential impacts to biodiversity as a result of the Project. In particular, the assessment should include consideration of the following construction and post-rehabilitation aspects of the Project:

- road traffic impacts on wildlife associated with transportation of personnel, machinery and materials during rehabilitation operations
- clearance and disturbance activities associated with access/haul roads, borrow areas and waste storage facilities
- impacts to water quality and consequent effects on aquatic biota
- ongoing post-rehabilitation maintenance activities (e.g. weed and fire management, remedial earthworks, etc.)

The impact assessment should specifically consider, where relevant:

- significant or sensitive vegetation types and/or ecosystems
- the presence or likely presence of species listed under the EPBC Act and/or the TPWC Act, including but not limited to:
    - suitable habitat for listed threatened species
    - the presence, or likely occurrence, of introduced and invasive species
    - listed threatened communities.

The EIS should specifically include the following for threatened species:

- a description of the relevant direct, indirect and consequential impacts of the Project on listed threatened species, including the total clearance amount of suitable habitat for each relevant listed threatened species
- details of the impacts on listed threatened species specific to each of the construction and post-rehabilitation aspects of the Project outlined above
- a detailed assessment of the nature and extent of the likely direct, indirect and consequential impacts, including likely short-term and long-term impacts
- a statement of whether any relevant impacts are likely to be unknown, unpredictable or irreversible
- an analysis of the significance of the relevant impacts
- any technical data and other information used or needed to make a detailed assessment of the relevant impacts.

Specific information requirements to satisfy the requirements of EPBC Act are also provided in Section 4.11.1.

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 (e.g. statutory Weed Management Plans). Where a risk has been identified, the EIS should include an analysis of the risks to individuals and populations. Relevant consideration and reference should be made to the Department of the Environment and Energy reference material for significant impact.[5]

In addition to the impact assessment, the EIS should include an analysis of the potential impacts to sensitive vegetation communities at a local and regional scale. Consideration should be given to the potential for ongoing indirect impacts resulting from edge effects, increased dispersal of invasive plants/animals, fragmentation of habitat, etc.

4.4.3 Mitigation and monitoring

The EIS should contain a Biodiversity Management Plan (BMP) that outlines clear and concise methods to mitigate likely impacts to biodiversity. All mitigation and monitoring measures should be substantiated and in accordance with best practice advice from relevant Australian and Territory Government advisory agencies focusing on:

- potentially significant impacts to the biodiversity as a whole
- mitigating the impacts to vegetation, rare or threatened species at risk of being adversely impacted
- impacts of weeds and fire.

All mitigation and monitoring measures proposed to be undertaken to prevent, minimise or compensate for the relevant impacts of the Project on threatened species must include:

- a description of proposed mitigation measures to deal with relevant impacts of the Project
- assessment of the expected or predicted effectiveness of the mitigation measures, including the scale and intensity of the impacts of the Project and the on-ground benefits to be gained from each of these measures
- any statutory or policy basis for the mitigation measures, including:
    - taking into account relevant approved conservation advice
    - how the measures are not inconsistent with any relevant threat abatement plans and recovery plans
- the cost of the mitigation and monitoring measures
- the name of the agency responsible for endorsing or approving each mitigation measure or monitoring program
- a consolidated list of mitigation measures proposed to be undertaken to prevent, minimise or compensate for the relevant impacts of the Project, including mitigation measures proposed to be taken by State/Territory Governments, local governments or the Proponent.

The goals of the measures should be to avoid, mitigate/manage and monitor impacts to biodiversity. Management measures should be prepared by a suitably qualified expert

[5] Department of the Environment, 2013. *Matters of National Environmental Significance - Significant impact guidelines 1.1 Environment Protection and Biodiversity Conservation Act 1999*. Australian Government, Canberra, Australia. Available at: https://www.environment.gov.au/system/files/resources/42f84df4-720b-4dcf-b262-48679a3aba58/files/nes-guidelines_1.pdf

that has demonstrated experience in the mitigation and monitoring of impacts to biodiversity and threatened species.

4.5 Water

4.5.1 Environmental objective

Ensure that historical impacts to surface water and groundwater resources are remediated, such that the ecological health and land uses, and the health, welfare and amenity of people are protected both now and in the future.

Available water supplies will be sufficient to fulfil the Project needs, without causing environmental or social impacts.

4.5.2 Impact assessment

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

- to existing surface and groundwater quality and quantity as a result of the Project, with specific reference to the Project components
- of potential discharge (i.e. controlled/uncontrolled release, passive seepage) of contaminants (e.g. hydrocarbons, wastewater, seepage from rehabilitated landforms, etc.) to surface and/or groundwater resources as a result of the Project components
- if groundwater extraction is proposed, outline potential impacts to vegetation and surface waterways (including any groundwater-dependent ecosystems) from the drawdown of groundwater as a result of proposed extraction rates
- of impact of major weather events (e.g. 5 to 100 year average recurrence interval [ARI]) and extreme weather events (e.g. 100 year ARI) on water management and rehabilitated landforms, both during construction and post-rehabilitation
- associated with proposed infrastructure and disturbance of soils that may alter the hydrology, rates of erosion and sedimentation of surface waterways.

The influence of seasonality should be discussed, where relevant. The impact assessment should give consideration to the short, medium and long term timeframes of the Project.

A conceptual site model describing potential sources, pathways, receptors, and fate of any potentially contaminated waters from the Project, and Project components, 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 model should be presented in a way that clearly depicts the models in both a pre- and post-rehabilitation manner.

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

- relevant laboratory and field testing to characterise the potential physicochemical properties of products of the former mine to be rehabilitated (e.g. waste rock, tailings, etc.)
- material volume and mass of potential contaminant sources (e.g. waste classes and volumes)

- 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
- biological receptors and their habitats
- other complementary technical studies, at an appropriate temporal and spatial scale, used to develop the model, such as:
    - geology
    - hydrology
    - hydrogeology
    - geochemistry
    - biology
    - meteorology
    - 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 how uncertainty is accounted for, the number of samples, sampling site selection procedures and quality assurance and quality control protocols to support the development of the model should be provided and justified.

4.5.3 Mitigation and monitoring

The EIS should describe proposed management of water for the Project for both rehabilitation operations and post-rehabilitation, according to its source, quality, volume, end use and/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 provide a Water Management Plan (WMP) that outlines clear and concise measures to mitigate identified risks and potential impacts of the Project to water resources. All mitigation measures in the WMP should be adequately detailed to demonstrate best practicable management and that environmental values of receiving waters will be maintained or improved. The WMP should 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 and future users of bores and/or surface waterways, including the potable supplies

- avoid the exposure of sensitive biological receptors to contaminants or water of a poor quality which may be harmful
- ensure treatment / neutralisation of hazardous materials to identified safe levels, before any controlled environmental release is considered
- treat and manage domestic wastewater and sewage.

The WMP should be closely related to but separate from an Erosion and Sediment Control Plan (ESCP) for the Project. ESCP preparation should be undertaken by a suitably qualified and experienced professional in erosion and sediment control planning and in accordance with the International Erosion Control Association[6] (IECA) Best Practice Erosion and Sediment Control booklets (2008), or higher standard.

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. It is essential that appropriate consideration of all potential contaminant sources and their 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 monitoring programs should include relevant water quality target values, based on appropriate guidelines and/or standards and ideally be based on local ambient conditions. 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.

The monitoring programs should include:

- methods to monitor the impacts of the Project on surface and groundwater quality and quantity during rehabilitation operations and post-rehabilitation
- provisions to notify and respond to environmental and human health risks associated with water quality, or other water related emergency
- contingency plans to be implemented should monitoring identify an unacceptable impact.

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.

4.5.4 Acid metalliferous drainage

The EIS will need to provide sufficient characterisation of the existing extent of AMD or other contaminants or materials that present risks to the environment or public health. The NT EPA has prepared a Guideline to define the information requirements of an EIS relating to assessment of AMD.[7] The EIS will need to demonstrate that the information provided in the EIS to inform impact assessment regarding AMD conforms to this Guideline and best practice guidance to characterise AMD.

The successful encapsulation and management of materials to prevent, mitigate or manage potential ongoing AMD is critical to the Project and for the protection of the

[6] International Erosion Control Association, 2008. *Best Practice Erosion & Sediment Control*. International Erosion Control Association, Australasia Chapter, Picton, Australia.

[7] Northern Territory Environment Protection Authority, 2013. *Environmental Assessment Guidelines - Acid and metalliferous drainage*. Available at: https://ntepa.nt.gov.au/__data/assets/pdf_file/0011/287426/guideline_assessment_acid_metalliferous_drainage.pdf

environment, more broadly. It is essential that sufficient information is provided in the EIS that demonstrates that strategies to mitigate and manage the long-term AMD are targeted, supported by site specific information and the design and integrity of the strategies represent best practicable technologies. Proposed management strategies should not be considered in isolation and should be discussed in consideration of the rehabilitation success objectives identified in Section 4.3.

4.6 Historic and cultural heritage

4.6.1 Environmental objective

To identify, protect and restore items or places which have historic and/or cultural heritage values.

4.6.2 Impact assessment

The EIS should include an assessment of potential impacts and risks to heritage undertaken by a qualified expert who has experience with heritage items and places. The EIS should consider the risks and potential impacts associated with the Project to the following places and items:

- the heritage values of places listed on the National Heritage list
- the heritage values of places listed as a Commonwealth Heritage place
- heritage places and items protected under the NT *Heritage Act*
- areas and objects protected or registered for protection under the Commonwealth *Aboriginal and Torres Strait Islander Heritage Protection Act* 1984
- sacred sites protected under the NT *Aboriginal Sacred Sites Act*.

The identification of any impacts to Indigenous cultural heritage is to take place in consultation with relevant Indigenous groups, the Aboriginal Areas Protection Authority (AAPA) and the Heritage Branch of the Department of Tourism and Culture. Provide an assessment of the Project's potential direct and indirect effects on sacred sites, heritage places, and any potential impacts on Indigenous culture generally or traditional use of the area and demonstrate required consultation on potential impacts to sacred sites through the application of an AAPA Authority Certificate.

4.6.3 Mitigation and monitoring

Where a place(s) or item(s) has been identified to be at risk from the Project, the Proponent should prepare a Cultural Heritage Management Plan (CHMP) which outlines clear and prescriptive mitigation and management measures for protecting the values of those places/items. The CHMP should include:

- measures that encourage ongoing protection and management of cultural values
- procedures to avoid significant sites
- protection of key sites during Project works
- measures to enable 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

- details of any applications to and/or approval conditions from relevant agencies/authorities with respect to the disturbance, degradation or visitation of any listed/protected heritage places and/or items.

When preparing the CHMP, it is recommended that consideration be given to the *Burra Charter*[8] and guideline.

4.7 Human health and safety

4.7.1 Environmental objective

Ensure that the risks to human health and safety are identified, understood and adequately avoided and/or mitigated.

4.7.2 Impact assessment

The EIS should include an assessment of the potential impacts and risks to people, the environment and nearby facilities associated with the construction and post-rehabilitation phases of the Project, and the storage and transport of materials to and from the work sites so as to demonstrate that:

- the Proponent is fully aware of the potential impacts and risks to human health and safety associated with all aspects of the Project
- the prevention and mitigation of potential impacts and risks to human health and safety are properly addressed in the design specifications
- the potential impacts and risks can and will be managed effectively during the construction and post-rehabilitation phases of the Project, including safety risks associated with:
    - fire, including combustible materials and wildfire
    - emergency situations and exclusions/evacuation zones
    - increased traffic and use of existing road networks
    - hazardous materials exposure (including radiation), including hazardous process inputs/outputs
    - hazards associated with the transportation of personnel, construction materials, consumables and dangerous goods.

When assessing the potential impacts and risks to human health and safety, it is recommended that consideration be given to a recognised human health impact and risk assessment (e.g. enHealth[9]).

4.7.3 Mitigation and monitoring

Detail preventative, management, treatment and monitoring strategies used to minimise the impacts of the Project on human health and safety. Describe the emergency plans and response procedures developed as a contingency in the event of an emergency or accident (e.g. chemical spillages, leaks, fire and explosions, traffic accident, etc.), including management of all emergencies that may impact on the Project area, its

[8] The Australian National Committee of International Council on Monuments and Sites, 2013. *The Burra Charter: The Australia ICOMOS Charter for Places of Cultural Significance*. Available at: http://australia.icomos.org/publications/charters/

[9] enHealth, 2012. *Australian Exposure Factor Guidance – Guidelines for assessing human health risks from environmental hazards*. Australian Department of Health. Available at: http://www.health.gov.au/internet/main/publishing.nsf/content/A12B57E41EC9F326CA257BF0001F9E7D/$File/Aust-Exposure-Factor-Guide.pdf

surrounds, personnel or the public. Responsibilities and liabilities in such an event should be specified.

4.8 Radiation

4.8.1 Environmental objective

Ensure there is no adverse effect on environmental health or the health of members of the public, including Traditional Owners from radiation exposure. Radiation exposure to personnel undertaking rehabilitation activities ('construction workers') is as low as reasonably achievable.

4.8.2 Impact assessment

The EIS should identify and assess radiation hazards presented by the Project, including:

- details of radiation dose potential from Project elements to construction workers, the public and the environment, including consideration of exposure due to all pathways:
    - radon and its decay products
    - radioactive particles in dust
    - alpha and gamma radiation.
- assessment of potential radiation dose delivered via the consumption of local commonly-utilised bush foods and/or livestock where applicable
- potential for radioactive elements to concentrate and partition in waste rock disposal facilities and waste rock disposal facility seepage / discharges.

The EIS should demonstrate the following with respect to radiation aspects of the Project:

- the Proponent will implement a system to control the radiation exposure to people and the environment arising from the excavation, transport, storage and disposal activities
- the system and the dose limits applied must comply with relevant Australian law, taking into account the most recently published and relevant Australian standards, codes of practice, and guidelines
- radiation doses to construction workers or any other personnel involved in site rehabilitation activities must be kept as low as reasonably achievable and must always remain below the appropriate dose limit
- the Project will not result in any significant deleterious radiation impacts on surrounding ecosystems.

4.8.3 Mitigation and monitoring

The EIS should provide a Radiation Management Plan for the Project describing proposed measures to identify, avoid, mitigate and monitor for radiation impacts from the Project, including, but not limited to:

- a radiation-monitoring program that includes radiation monitoring for a critical group. The radiation dose to the critical group is estimated from modelling that requires a discharge-source term.
- a detailed Radioactive Waste Management Plan

- a monitoring and reporting program to determine the effectiveness of mitigation measures, including identification of when further action is required and outline contingency measures should the proposed mitigation measures not meet outcomes expected and identified by the Proponent
- a systematic hazard and risk review process to assess the effectiveness of proposed measures in meeting objectives of the plan.

4.9 Socio-economic

4.9.1 Environmental objective

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

4.9.2 Impact assessment

The EIS should include an Economic and Social Impact Assessment (ESIA). The ESIA should:

- document the economic and social impacts of the Project on the region and more broadly, where relevant
- assess the risks of the Project not realising its projected economic and social benefits
- assess the risks of the Project, related infrastructure and associated workforce negatively impacting on identified economic and social issues in the region.

4.9.3 Mitigation and monitoring

A Social Impact Management Plan (SIMP) should be prepared that addresses any risks identified through the ESIA. At a minimum, the SIMP should:

- describe how the Proponent proposes to manage any identified economic, social, or relevant cultural potential impacts (e.g. impacts to Aboriginal culture, etc.) 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.

4.10 Other risks

4.10.1 Non-mineral waste

Disposal of non-mineral waste should be conducted in such a way as to avoid potential public health nuisances and environmental pollution. The EIS should discuss the

management and disposal of waste for construction and post-rehabilitation phases, including:

- predicted waste streams, both industrial and domestic, including solid wastes at the Project site
- any hazardous wastes requiring management during the Project
- methods for the storage, handling, containment and emergency management of chemicals and other hazardous substances (including fuel)
- waste management strategies for storage, transport and disposal of waste taking into account the waste hierarchy.

4.10.2 Air

The EIS should assess the impacts of the Project on air quality, including ambient air quality (e.g. PM_{10} fraction), dust and odour/gases, where relevant. Potential impacts to air quality may arise from emissions of chemicals, particulates or biological materials from:

- movements of mobile plant and vehicles
- wind erosion mobilising dust from exposed surfaces, such as from laydown areas, access/haul roads and sites of vegetation clearing.

The assessment should be informed by meteorological information applicable to air quality in the Project area. The sources and projected quantities of greenhouse gases emitted by the Project should be described, including from land clearing.

The EIS should outline measures for managing and monitoring the impacts of air quality, including dust suppression strategies and monitoring of dust impacts. Details of the proposed air monitoring, including technique, location, frequency and details of laboratory undertaking analysis, target parameters, and proposed reactive management that are tied to monitoring thresholds should be provided.

4.10.3 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. The development of a Fire Management Plan should be in consultation with Bushfires NT (Department of Environment and Natural Resources), Traditional Owners, and relevant local/land Councils that have specialist knowledge in fire management.

4.10.4 Noise and vibration

The EIS should outline proposed management to mitigate any identified potential impacts from the Project with regard to noise and vibration emissions, including but not limited to transport logistic network, blasting and rock hammering. If relevant, the EIS should describe proposed communication with any residents and communities predicted to be impacted by noise and vibration from the project.

4.10.5 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.

4.11 *Environment Protection and Biodiversity Conservation Act*

The following identifies the matters that will need to be considered and assessed in the draft EIS to satisfy the requirements of the EPBC Act. For completeness, the objects and

principles of the EPBC Act are at Attachment A and a copy of Schedule 4 of the EPBC Regulations (matters that must be addressed in an EIS) is at Attachment B.

4.11.1 Impact assessment to listed threatened species and communities

The EIS must provide a detailed assessment of the likely presence of listed threatened species and their habitat within the vicinity of the Project area. Species assessed must include, but not be limited to:

- Partridge pigeon (eastern) (*Geophaps smithii smithii*)
- Black-footed tree-rat (*Mesembriomys gouldii gouldii*).

This assessment should be based on targeted surveys for these species within the Project area and include discussions on the quality and quantity of available habitat. Where relevant, details on the scope, timing (survey season/s) and methodology of the studies or surveys undertaken should be provided.

The EIS must include an assessment of the potential impacts, if any, to listed threatened species and their habitat from any potential source of impact arising from the Project, including, but not limited to:

- Clearing of known and potential habitat for each of the listed threatened species identified above. The type, importance, quality and quantity of habitat to be cleared should be discussed for each species.
- Vehicle strike as a result of increased day and night time traffic, including during construction and throughout the operation of the proposed Project. The number of vehicle movements during construction and operations should be estimated and proposed vehicle speed limits should be identified.
- Increase in feral fauna species, particularly cats and cane toads (e.g. impacts of increased predation and competition).
- Introduction and increase spread of weeds (e.g. impacts by modification of important habitat; altered fire regimes).
- Barrier effects caused by the borrow pit and associated infrastructure, and the impacts of habitat and population fragmentation.
- Transportation and/or disposal of hazardous material (including NORMs) or wastes.
- Altered hydrology and water quality impacts, including erosion/sedimentation and radiological contamination of water resources.
- Water drawdown from groundwater extraction impacting on dependent ecological communities.
- Radionuclide exposure from dust emissions, contaminated water resources or other sources of exposure.

4.11.2 Impact assessment to the environment (protection of the environment from nuclear action)

Under the EPBC Act, the environment is defined as including:

(a) ecosystems and their constituent parts, including people and communities

(b) natural and physical resources

(c) the qualities and characteristics of locations, places and areas

(d) heritage values of places

(e) the social, economic and cultural aspects of a thing mentioned in paragraph (a), (b) (c) or (d).

This Terms of Reference require the preparation of an environmental baseline, an assessment of risk and potential impacts, and proposed mitigation measures to address issues associated with Biodiversity (Section 4.4), Water (Section 4.5), Human Health and Safety (Section 4.6), Radiation (Section 4.8), Socio-economic (Section 4.9), Historic and Cultural Heritage (Section 4.6), Rehabilitation Success (Section 4.3) and other risks (Section 4.10). In the preparation of the EIS, it is important to consider that these information requirements will also to be considered as part of the assessment of impacts to the environment under the EPBC Act (see Attachments A and B).

4.11.3 Mitigation and monitoring

For all impacts listed above, and any additional impacts identified, the EIS must propose appropriate safeguards and mitigation measures to reduce the level of impact to listed threatened species and the environment from Project activities. The proposed safeguards and mitigation measures must be described in detail, be based on best available practices and must include an assessment of the expected or predicted efficacy of the mitigation measures.

Provide details of reporting and monitoring programs that will be used to evaluate and report on the effectiveness of the mitigation measures. Where relevant, outline contingency measures to be implemented in the event that monitoring indicates that mitigation measures are ineffective in protecting listed threatened species or the environment. Provide explicit thresholds / trigger-points for intervention.

4.11.4 Relevant plans and guidelines

Relevant consideration and reference should be made to the Department of the Environment and Energy threat abatement plans, recovery plans, survey guidelines and reference material for significant impact.

4.11.5 Residual significant impacts and offsets

In the event that significant residual impacts remain for listed threatened species and/or the environment following application of the proposed mitigation measures, offsets should be proposed. Should this be required, the Proponent must include details of a proposed offset package to be implemented to compensate for the residual significant impact of the Project and an analysis of how the offset meets the requirements of the Department of the Environment and Energy EPBC Act Offset Policy.[10]

5 Environmental management

The specific safeguards and controls proposed to be employed to minimise or remedy environmental impacts identified in the impact assessment process are to be included in an Environmental Management Plan (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 impact 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.

[10] Department of Sustainability, Environment, Water, Population and Communities, 2012. *Environment Protection and Biodiversity Conservation Act 1999 Environmental Offsets Policy.* Australian Government, Canberra, Australia. Available at: http://www.environment.gov.au/epbc/publications/epbc-act-environmental-offsets-policy

The EMP should include specialised management plans where it is necessary to provide a high level of operational detail (e.g. water management, erosion and sediment control, weeds, fire, biodiversity). 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 (e.g. rehabilitation operations and post-rehabilitation) separately. It must state the environmental objectives, performance criteria, monitoring, reporting, corrective action, necessary resourcing, responsibility and timing for each environmental issue. When preparing performance criteria it should follow the SMART principle: Specific, Measurable, Attainable, Realistic and Timely.

The NT EPA has requirements[11] for the minimum information required for the development of an EMP.

6 Conclusion

Provide an overall conclusion as to the acceptability of impacts of the Project on matters relevant to the EPBC Act, including:

- A discussion on the consideration with the requirements of the EPBC Act, including the objects of the EPBC Act, the principles of ecologically sustainable development and the precautionary principle.
- Reasons justifying undertaking the Project in the manner proposed, including the acceptability of the avoidance and mitigation measures.
- Measures proposed or required by way of offset for any residual significant impacts on protected matters, and the relative degree of compensation, should be restated here.

In consideration of the bilateral agreement, the conclusion should include concluding statements regarding:

- the assessment of all impacts that the action has, will have or is likely to have on each matter protection by a provision of Part 3 of the EPBC Act
- contain enough information about the controlled action and its relevant impacts to allow the Australian Government Minister to make an informed decision whether or not to approve the controlled action under the EPBC Act
- address the matters outlined in Schedule 4 of the *Environment Protection and Biodiversity Conservation Regulations 2000.*

7 General advice on the Environmental Impact Statement

7.1 General content

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

The EIS should enable interested stakeholders, the Australian Government Minister and the NT EPA to understand the environmental consequences of the Project. Information provided in the EIS should be objective, clear, succinct, and easily understood by the general reader. Maps (using an appropriate scale, resolution and clarity), plans, diagrams and other descriptive detail should be included. Technical jargon should be

[11] Northern Territory Environment Protection Authority, 2015. *Guideline for the Preparation of an Environmental Management Plan.* Available at: https://ntepa.nt.gov.au/__data/assets/pdf_file/0006/284883/guideline_prep_emp.pdf

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. Consideration of appropriate spatial, temporal and analytical scales should be used to clearly communicate the potential impacts to the environment.

Information materials summarising and highlighting risks and potential impacts of the Project should be provided in a culturally appropriate format and language, accompanied by graphics and illustrations that assist with interpretation, where relevant.

7.2 Structure, format and style

The EIS should comprise 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 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, abbreviations, and colloquialisms. The document should consist of a series of chapters detailing the level of significance and management 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. The appendices will be made publicly available and should include:

- 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 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
- 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.

Reliability of the data and an explanation of the sampling criteria and approach should be provided where data are used to support statements, studies and claims in the EIS. Sufficient discussion should accompany the data to demonstrate that the data and results of quality control and quality assurance testing are suitable and fit for purpose. The NT EPA has requirements[12] for the minimum information required for the presentation of data from studies, investigation, monitoring and remediation of land and water contain to enable efficient review.

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
- processes and timelines for consultation
- 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 Project as a result of consultation. Details of any ongoing liaison should also be discussed.

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. Information of a confidential nature should not be disclosed in the EIS if disclosure of the information might:

- prejudice inter-governmental relations between an Australian body politic and a body politic overseas or between two (2) or more bodies politic in Australia or in the Territory
- be an interference with a person's privacy
- disclose information about an Aboriginal sacred site or Aboriginal tradition

[12] Northern Territory Environment Protection Authority, 2013. *Guideline for Consultants Reporting on Environmental Issues.* Available at: https://ntepa.nt.gov.au/__data/assets/pdf_file/0003/284682/guidelines_consultants_reporting_environmental_issues.pdf.

- disclose information obtained by a public sector organisation from a business, commercial or financial undertaking that is:
    - a trade secret
    - other information of a business, commercial or financial nature and the disclosure is likely to expose the undertaking unreasonably to disadvantage.

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.

7.4 Administration

The Proponent should lodge three bound hard copies and electronic versions (Adobe PDF and Microsoft Word format) 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.

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.

Data should be provided to the NT EPA as importable GIS shape files with relevant features and areas marked as polygons, lines and points, and any relevant geospatially referenced underlays. Figures and 3D modelling to support the EIS should be provided as high resolution images in separate files. The selection of figures and imagery should be sufficient to enable the general reader to understand the contextual detail of the landscape, environment and surrounds.

The Proponent is to advertise that the draft EIS is available for review and comment, in:

- The NT News
- The Australian.

At a minimum, the advertisement should be published in the Saturday edition of the NT News at the commencement of the public exhibition period.

The following information should be published in the advertisement:

- a brief summary of the Project and the environmental assessment process
- clear notice that the draft EIS is available for public comment and for how long
- the locations the draft EIS will be available for viewing
- the method and contact details for interested groups or persons wishing to make comment, including an address (postal and electronic) to which interested persons may send or deliver their written comments.

The NT EPA requires a draft of the advertisement at least one week prior to advertising the draft EIS to comment on advertising text.

7.5 Public exhibition

The public exhibition period for the draft EIS will be six weeks. The 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. The NT EPA will direct the

Proponent to extend the EIS exhibition period if the EIS exhibition overlaps late December or January periods.

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

- NT EPA, Level 1, Arnhemica House, 16 Parap Road, Parap
- Department of Primary Industry and Resources Information Centre, Department of Primary Industry and Resources, 3rd Floor, Paspalis Centrepoint, 48 Smith Street Mall, Darwin
- Coomalie Community Government Council, 141 Cameron Road, Batchelor
- Northern Territory Library, Parliament House, Darwin
- Northern Land Council, 45 Mitchell St, Darwin
- Environment Centre Northern Territory, Unit 3, 98 Woods St, Darwin.

It is the Proponent's responsibility to ensure that the hard copies are supplied to the aforementioned locations in a timely manner.

Attachment A - The objects and principles of the *Environment Protection and Biodiversity Conservation Act 1999*

3 Objects of the Act

(a) to provide for the protection of the environment, especially those aspects of the environment that are matters of national environmental significance;

(b) to promote ecologically sustainable development through the conservation and ecologically sustainable use of natural resources;

(c) to promote the conservation of biodiversity;

(d) to promote a co-operative approach to the protection and management of the environment involving governments, the community, land-holders and indigenous peoples;

(e) to assist in the co-operative implementation of Australia's international environmental responsibilities;

(f) to recognise the role of indigenous people in the conservation and ecologically sustainable use of Australia's biodiversity; and

(g) to promote the use of indigenous peoples' knowledge of biodiversity with the involvement of, and in co-operation with, the owners of the knowledge.

3A Principles of Ecologically Sustainable Development

The following principles are principles of ecologically sustainable development.

(a) Decision-making processes should effectively integrate both long-term and short-term economic, environmental, social and equitable considerations.

(b) If there are threats of serious or irreversible environmental damage, lack of full scientific certainty should not be used as a reason for postponing measures to prevent environmental degradation.

(c) The principle of inter-generational equity – that the present generation should ensure that the health, diversity and productivity of the environment is maintained or enhanced for the benefit of future generations.

(d) The conservation of biological diversity and ecological integrity should be a fundamental consideration in decision-making.

(e) Improved valuation, pricing and incentive mechanisms should be promoted.

Attachment B – Matters that must be address in a Public Environment Report and Environmental Impact Statement (Schedule 4 of the Environment Protection and Biodiversity Conservation Regulations 1999)

1 General information

1.01 The background of the action including:

(a) the title of the action;

(b) the full name and postal address of the designated Proponent;

(c) a clear outline of the objective of the action;

(d) the location of the action;

(e) the background to the development of the action;

(f) how the action relates to any other actions (of which the Proponent should reasonably be aware) that have been, or are being, taken or that have been approved in the region affected by the action;

(g) the current status of the action; and

(h) the consequences of not proceeding with the action.

2 Description

2.01 A description of the action, including:

(a) all the components of the action;

(b) the precise location of any works to be undertaken, structures to be built or elements of the action that may have relevant impacts;

(c) how the works are to be undertaken and design parameters for those aspects of the structures or elements of the action that may have relevant impacts;

(d) relevant impacts of the action;

(e) proposed safeguards and mitigation measures to deal with relevant impacts of the action;

(f) any other requirements for approval or conditions that apply, or that the Proponent reasonably believes are likely to apply, to the proposed action;

(g) to the extent reasonably practicable, any feasible alternatives to the action, including:

i. if relevant, the alternative of taking no action;

ii. a comparative description of the impacts of each alternative on the matters protected by the controlling provisions for the action; and

iii. sufficient detail to make clear why any alternative is preferred to another;

(h) any consultation about the action, including:

i. any consultation that has already taken place;

ii. proposed consultation about relevant impacts of the action; and

iii. if there has been consultation about the proposed action — any documented response to, or result of, the consultation; and

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

3 Relevant impacts

3.01 Information given under paragraph 2.01(d) must include

(a) a description of the relevant impacts of the action;

(b) a detailed assessment of the nature and extent of the likely short term and long term relevant impacts;

(c) a statement whether any relevant impacts are likely to be unknown, unpredictable or irreversible;

(d) analysis of the significance of the relevant impacts; and

(e) any technical data and other information used or needed to make a detailed assessment of the relevant impacts.

4 Proposed safeguards and mitigation measures

4.01 Information given under paragraph 2.01(e) must include:

(a) a description, and an assessment of the expected or predicted effectiveness of, the mitigation measures;

(b) any statutory or policy basis for the mitigation measures;

(c) the cost of the mitigation measures;

(d) an outline of an environmental management plan that sets out the framework for continuing management, mitigation and monitoring programs for the relevant impacts of the action, including any provisions for independent environmental auditing;

(e) the name of the agency responsible for endorsing or approving each mitigation measure or monitoring program; and

(f) a consolidated list of mitigation measures proposed to be undertaken to prevent, minimise or compensate for the relevant impacts of the action, including mitigation measures proposed to be taken by State governments, local governments or the Proponent.

5 Other Approvals and Conditions

5.01 Information given under paragraph 2.01(f) must include:

(a) details of any local or State government planning scheme, or plan or policy under any local or State government planning system that deals with the proposed action, including:

i. what environmental assessment of the proposed action has been, or is being carried out under the scheme, plan or policy; and

ii. how the scheme provides for the prevention, minimisation and management of any relevant impacts;

(b) a description of any approval that has been obtained from a State, Territory or Commonwealth agency or authority (other than an approval under the Act), including any conditions that apply to the action;

(c) a statement identifying any additional approval that is required; and

(d) a description of the monitoring, enforcement and review procedures that apply, or are proposed to apply, to the action.

6 Environmental record of person proposing to take the action

6.01 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:

(a) the person proposing to take the action; and

(b) for an action for which a person has applied for a permit, the person making the application.

6.02 If the person proposing to take the action is a corporation — details of the corporation's environmental policy and planning framework.

7 Information sources

7.01 For information given the PER/EIS must state:

(a) the source of the information; and

(b) how recent the information is; and

(c) how the reliability of the information was tested; and

(d) what uncertainties (if any) are in the information.