

**TERMS OF REFERENCE FOR THE PREPARATION
OF AN ENVIRONMENTAL IMPACT STATEMENT**

**Chandler Facility
Tellus Holdings Ltd**

September 2016

1	Introduction.....	1
2	Description of the proposed action.....	3
2.1	General information.....	3
2.2	Project components.....	3
2.3	Approvals, conditions and agreements.....	9
2.4	Environmental history	10
2.5	Alternatives	10
2.6	Ecologically Sustainable Development	10
3	Existing environment	11
3.1	Physical and biological	11
3.2	Historic and cultural heritage	13
3.3	Socio-economic aspects	14
4	Risk assessment.....	15
4.1	Approach.....	15
4.2	Cumulative impacts	16
4.3	Information requirements.....	16
4.4	Biodiversity.....	17
4.5	Water	19
4.6	Historic and cultural heritage	22
4.7	Human health and safety.....	23
4.8	Socio-economic.....	24
4.9	Closure and rehabilitation.....	25
4.10	Other risks.....	26
5	Environmental offsets	28
6	Environmental management.....	29
7	General advice on the Environmental Impact Statement.....	29
7.1	General content.....	29
7.2	Structure, format and style	29
7.3	Referencing and Information Sources	30
7.4	Administration	31
7.5	Public exhibition	32

1 Introduction

Tellus Holdings Limited (the Proponent) is proposing to develop and operate the Chandler Facility (Charlotte North Site) and waste storage facilities within the Maryvale Station Pastoral Lease. The site of the proposed development is located approximately 120 km south of Alice Springs and 15 km from the Titjikala community. Previous exploration activity on the site identified a substantial resource comprising between 200 to 500 Mt of halite (NaCl) occurring within the Charlotte North Site.

The Proponent is proposing to access the resource by constructing a decline down to an approximate depth of 750 m. Upon reaching the resource, mechanical excavation will be undertaken to create a series of chambers within the deposit from which rock salt will be extracted. Product and supplies will be transported to and from the site using existing and new access roads and rail lines. The transport of product will initially be undertaken by road train along the proposed haul road between the mine and the rail siding. Product will then be transferred to train and transported along the Adelaide to Darwin rail line with movements being to Darwin and/or Adelaide. The Chandler Facility will have an export capacity of 750 000 tonnes per annum which may require up to nine train movements per month.

The Project proposal was referred on 23 November 2012 to the NT Environment Protection Authority (NT EPA) for environmental assessment. On 7 March 2013, the NT EPA determined that the Project required formal assessment under the NT *Environmental Assessment Act* (EA Act) at the level of an Environmental Impact Statement (EIS). EIS Guidelines (now called 'Terms of Reference') were subsequently issued on 19 July 2013.

On 21 April 2016, the NT EPA received a notification to alter the Project in accordance with clause 14A of the Environmental Assessment Administrative Procedures. The NT EPA reviewed the proposed alterations to the project and on 10 May 2016, decided that the environmental significance of the proposed action had not changed and that an Environmental Impact Statement was (still) necessary with respect to the proposed action.

The Proponent has stated in its Notice of Intent (NOI) and subsequent alteration that the action involves the construction and operation of the following components:

- construction of an underground rock salt mine using cut and blast mining techniques
- surface processing and packaging plant with a capacity of 750 000 tonnes per annum of edible and industrial salts and associated magnesium rich minerals
- mining site infrastructure, including buildings, accommodation, stockpiles, utilities, borefield and helicopter pad
- construction of a 26 km haulage road from the mine to the Adelaide to Darwin railway line and a 60 km private access road from the railway line to the Stuart Highway
- construction of a mine rail siding (2 km) linking the haulage road to the Adelaide-Darwin railway line
- construction of an underground waste storage facility that involves emplacement of a variety of non-mining wastes (both solid and liquid) in mined-out voids. Products to be stored include retrievable bulk commodities, equipment, archives and licensed storage (retrievable and non-retrievable). Emplacement of wastes would include the use of 'hydraulic backfilling' as a method for some liquid wastes
- construction of an above-ground waste storage and transfer facility (approx. 30ha) adjacent to the proposed rail siding, with a maximum storage capacity of 400,000

tonnes of bulk waste (including hazardous wastes) materials from a variety of sources

- staged power supply with stage 1 of the project (construction phase) being powered by a diesel generator and stage 2 powered by a hybrid “diesel/solar-salt battery” power station

Issues contributing to the decision made by the NT EPA that the Chandler Facility requires assessment at the level of an EIS include:

- the potential for construction, operation and visual impacts to sites with Indigenous and non-indigenous cultural or archaeological significance
- the clearing and loss of potential habitat and individuals of a number of species listed as threatened under the *Environment Protection and Biodiversity Conservation Act 1999* (EPBC Act) and the *Territory Parks and Wildlife Conservation Act* (TPWC)
- an increased risk of environmental damage or degradation to the site. In the absence of suitable mitigation or management measures, ongoing degradation could result in significant impacts to the environment, in particular flora and fauna and remnant vegetation
- the potential for leaks and spills of wastes being transported to the site and stored at the site on the surface and underground
- potential ongoing impacts to groundwater resources through the establishment and abstraction of water
- uncertainty around the scope of the project in relation to the scale, size and complexity of all components
- the potential for ongoing land degradation and impacts associated with the management and disposal of brine, sulphates, wastewater and other contaminants
- reviewing the engineering and environmental barriers and waste protocols and procedures for the complementary secure storage business in mitigating and managing potential risks
- the social and economic impacts associated with finalising the alignment of transport routes along existing roads/rail infrastructure and within proximity to local communities
- based on the information provided and in the absence of further assessment or analysis, the introduction and operation of a new development with associated infrastructure is likely to alter the current social and economic aspects of the region significantly.

The Project was also referred to the Australian Government Department of Sustainability, Environment, Water, Population and Communities (now Department of Environment) and, on 21 February 2013 was determined to be a controlled action under the *Environment Protection and Biodiversity Conservation Act 1999* (EPBC Act).

The proposed action has the potential to result in significant impacts to listed threatened species and communities (sections 18 & 18A) which is a matter protected under Part 3 of the EPBC Act:

The Australian Government has accredited the EIS process under the EA Act for the purposes of assessing this action.

2 Description of the proposed action

2.1 General information

Effective scoping of the Project will assist with the preparation of the EIS, as well as clearly defining the footprint and sequence of the development. Establish the context of the Project, including, but not limited to, the following information:

- the title of the proposed Project
- the full name, contact details and postal address of the Proponent
- a clear outline of the objective of the Project
- the current status 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 all infrastructure (both existing and proposed) relating to any aspect of the construction, operation and decommissioning/rehabilitation of the Project
- the background to the development of the Project, including discussion of previous or other environmental impact assessment
- 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

2.2.1 Infrastructure overview

Provide a description of the whole-of-project footprint, using detailed maps and diagrams (drawn to scale), including:

- locations of existing public and private infrastructure, such as roads, power supply, landfills, airstrips, bores, dams etc.
- locations of existing water extraction points and storage facilities
- location of the mineral resources to be explored, developed, mined and included in mine rehabilitation and closure activities
- all areas to be cleared or disturbed, both temporarily and for the life-of-mine

- the location of any works to be undertaken, structures to be built or elements of the Project, including but not limited to:
 - underground mine
 - waste storage and transfer facilities
 - transport infrastructure including roads, rail, aircraft, etc
 - accommodation village and construction camps
 - hard stands
 - stockpiles
 - product export or transshipment facilities
 - mine-related infrastructure
 - water-related infrastructure (e.g. storage facilities, extraction/discharge points)
 - any other mining or ancillary infrastructure

2.2.2 Mining operations

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

- design and methods of construction of the underground mine, including:
 - sequencing
 - designs
 - construction and mining methods
- types / categories, quantities and characterisation of materials to be mined (e.g. resource classes, top soil, waste rock classes).
- clearing and preparation of the site, including handling/stockpiling/disposal of vegetation and topsoil
- equipment requirements
- proposed staging of the Project
- how target resource grades will be produced
- product handling requirements
- run of mine stockpile(s)
- sources and volumes of materials required to support construction of mine infrastructure, such as fill, clays and consumables.

2.2.3 Processing

Provide relevant information with respect to processing operations and stage to be utilised for the Project, as relevant:

- methods proposed for processing of the resource
- processing chemical source / production
- projected quantities of mine product to be produced
- major components and equipment of each processing operation
- processing circuit inputs, outputs, volumes / feed grades of materials / consumables required, product recovery grades

- demonstration and comparison of performance with alternative processing methods, if available
- transport of materials to / from the processing circuits.

2.2.4 Mining waste management

Describe all construction and operational aspects relating to the management and disposal of waste as a result of salt mining activities, including but not limited to:

- an inventory of waste streams requiring management during the Project, both industrial and domestic, including solid wastes at the mine site, accommodation and other relevant locations
- waste generated during mining activities and/or by-products (e.g. waste rock), their storage and disposal
- methods for storage, handling, containment and emergency management of chemicals and other hazardous substances (including fuel)
- waste management strategies, including reduction, reuse, recycling, storage, transport and disposal of waste.

2.2.5 Commercial waste storage and transfer

Provide the following information in relation to the construction and operation of waste storage and transfer facilities, for both above-ground and underground operations:

- the expected market
- details of wastes to be stored, including types, sources and corresponding volumes locations and design specifications for all waste storage/transfer areas
- details of relevant laboratory and field testing to characterise and confirm the specified/required physicochemical properties of waste materials as they are received at the facility
- details of containment of the waste materials above and below ground (including long term isolation from surface water or groundwater), transfer and spill prevention systems in accordance with accepted standards, stormwater management, dust and odour management, and compliance with any NT WorkSafe requirements
- details of periods of storage of wastes above-ground, prior to being placed below ground
- a process flow diagram to illustrate the key processes, inputs (i.e. raw materials, energy and water), outputs (i.e. emissions, product, by-product and waste) and controls
- in relation to the proposed hydraulic backfilling operations, provide the following:
 - details of the hydraulic backfilling method proposed (i.e. flushing, viscous slurry or both), wastes considered suitable and associated infrastructure (i.e. plant location, design, function and operation)
 - details of environmental (and safety) advantages, possible emissions from reactions of the waste material when mixed with brine, and any risks associated with the backfill mixture not reaching the required composition and being backfilled into a disposal room (e.g. groundwater contamination)
 - how this method ensures a low permeability seal to prevent leakage of liquid waste material from the salt cavern
 - a review of lessons learnt from other jurisdictions (e.g. Europe and USA)

- demonstrate that the proposed facilities and operations are in accordance with industry best practice and utilises best practicable technology (BPT), including alternatives that have been considered
- arrangements for financial assurances and operational safeguards to manage waste, in the event that the waste facilities and/or salt mining ceases prematurely
- regulatory processes in relation to operation of the facilities and associated activities (e.g. activities covered by *Mining Management Act* and *Waste Management and Pollution Control Act*)
- consideration of possible effects of climate change and seismic activity on the stability/integrity of the below ground waste storage areas within the salt mine
- emergency procedures to cover potential incidents associated with stored wastes (e.g. leak, fire, explosion) above and below ground
- site security arrangements, including consideration of long term (i.e. post-closure) requirements above and below ground
- a detailed Waste Management Plan should be compiled, based on a Conceptual Site Model and Risk Assessment for waste handling (transport and storage) processes. The Waste Management Plan should identify the waste types and volumes expected and their management techniques. The Plan should also consider the requirement under the *Waste Management and Pollution Control Act* for an Environment Protection Approval and/or Environment Protection Licence for both the waste storage and transfer facilities and the hydraulic backfill plant

2.2.6 Energy

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

- information on the Project's energy requirements, including mining fleet fuels, and electricity demand for mine / processing operations and workers accommodation
- details of energy infrastructure requirements, for all components of the Project, including fuel storage
- consideration of alternative (renewable) sources of energy
- describe any initiatives proposed to improve energy efficiency and/or reduce emissions to air.

2.2.7 Water management

Describe water management, including:

- water demand requirements for each aspect of the Project
- water supply source(s) for operations, including the number, location and extraction rates of proposed extraction bores
- management of effluent
- diversion of surface waters
- mine dewatering requirements
- management of high/extreme rainfall events including Probable Maximum Precipitation
- management of process waters
- water balance and account

- water efficiency and recycling
- treatment of domestic sewage

Please refer to the Northern Territory Department of Mines *Template for the Preparation of a Mining Management Plan* (Section 6 – Water Management):

https://minerals.nt.gov.au/_data/assets/word_doc/0019/256060/AA7-030-Template-for-the-Preparation-of-a-Mining-Management-Plan.docx

2.2.8 Transport

Provide details of the internal project area road network and any external access/haul road construction or upgrade, including:

- maximum width of road corridors required for construction and operation
- plant and machinery required
- vegetation clearing methods and disposal of plant matter following clearing
- timeframes for access and haul road construction and upgrade
- 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 road and rail use associated with the Project, including:

- type, size and number of vehicles required during all phases of the Project
- quantities of materials to be transported to the Project (e.g. heavy machinery, equipment, fuel, hazardous materials)
- estimated frequency of Project-related vehicle use on public roads
- details of the method of truck and rail loading and load constraint so as to prevent the release or tracking of materials into the environment (includes ensuring that all wheels, tracks and body surfaces are free of mud and other contaminants before entering onto a sealed road network)
- hours of operation, including peak user times.

Describe the proposed methods and areas for transporting and exporting product, including:

- product handling requirements
- storage and laydown areas
- road, rail and port networks to be utilised by the Project
- requirements for transport of hazardous materials
- a discussion of the facilities purposes and capability to meet the transporting and exporting requirements of the Project.

2.2.9 Air and noise emissions

Provide relevant information with respect to air quality and noise emissions associated with the Project, including but not limited to:

- an inventory of any emissions to air resulting from the Project (e.g. dust, machinery, vehicles, gases/vapours, odours, etc.)
- expected noise levels associated with the Project construction and operation, including timing and duration
- reporting requirements and compliance with relevant health and/or environmental standards
- target thresholds with reference to regulatory industry-standard, health-related safe-limits, or aspirational parameter levels
- nominated performance criteria and standards.

2.2.10 Workforce and accommodation

Provide relevant information with respect to the workforce and accommodation, including but not limited to:

- details of the estimated number of people to be employed, skills base required, and likely sources (local, regional, overseas) for the workforce during construction, operation and decommissioning and closure phases
- 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
- discuss arrangements for transport of workers to and from Project areas, including any air services required
- layout of the construction camp and accommodation village with respect to the work sites and mining and processing operations
- any upgrades or changes to the current accommodation and provision of services, e.g. telecommunications, to provide for contractors and/or workers for the Project.

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

2.2.11 Closure and rehabilitation

Discuss the various aspects of proposed progressive and final rehabilitation of disturbed areas, including:

- proposed post-mining land uses which have been identified and agreed upon through consultation with stakeholders
- proposed staging/timing for closure and rehabilitation of mining related disturbances not necessary for the ongoing waste disposal activities
- soil profile reconstruction

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#EnvironmentallmpactAssessment

- final landform design and any voids or landscape depressions to be left at cessation of mining
- the rehabilitation techniques to be used and the final topographic and drainage morphology
- the proposed revegetation program, with selection and collection of local native species e.g. native grasses and other vegetation
- other preparations required for successful rehabilitation (seed harvesting, seedling generation, etc.)
- water supply
- the current and projected financial situation of the proponent including the ability to allocate sufficient resources to meet all closure, stabilisation and rehabilitation requirements once operations have ceased.

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 proposed action, including:
 - what environmental assessment of the proposed action 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 will be required from State, Territory or Commonwealth agencies and/or authorities
- a summary of current agreements between the Proponent and the Northern Territory Government, and/or the Australian Government, and/or other stakeholders, including Traditional Owners and/or land managers
- 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 Land Rights Act 1976*
- *Environment Protection and Biodiversity Conservation Act 1999*
- *Native Title Act 1993*
- *Environmental Assessment Act & Administrative Procedures*
- *Fire and Emergency Act & Regulations*
- *Heritage 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*
- *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
- if the Person proposing to take the action is a corporation, details of the corporation's environmental policy and planning framework.

2.5 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.

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, such as traffic management
- options to optimise ecological sustainability for the Project, such as alternatives to reduce / offset the Project's environmental footprint and reduce ongoing need for high rates of electricity and water consumption
- consideration of alternative environmental management measures for key risks / impacts
- 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 and long-term advantages and disadvantages of the alternatives.

2.6 Ecologically Sustainable Development

When considering the matters to be addressed in the EIS, the NT EPA is required under the NT EPA Act 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 It is therefore 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 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.

3.1 Physical and biological

3.1.1 Climate

Detail should be provided on the 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 construction methods.

3.1.2 Topography, geology and soils

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

The EIS should provide a geological description, including:

- map(s) of geological properties of the Project site in a regional context
- a summary of the results of studies and surveys undertaken to identify the extent of the resource within the Project area
- geochemical characterisation of the waste material associated with the resource, including potential for contaminated mine drainage (e.g. acid/neutral mine drainage - AMD/NMD)

In relation to soils, detail the following:

- soil types and land unit(s)

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>

- details of any limiting properties of soil and substrate types (e.g. susceptibility to erosion, waterlogging) and land units in the Project footprint

3.1.3 Water resources

- surface water features in and adjacent to the proposed action, including:
 - major and minor rivers and drainage lines (permanent and ephemeral)
 - catchment boundaries and sizes
 - surface water flow directions and rates
 - water reservoirs (natural and artificial)
 - wetlands
 - areas of periodic inundation
 - beneficial uses, including a discussion of the sensitivity and significance of site and regional surface water resources from an ecological, public/social and economic perspective
 - surface water quality, including existing temporal variations.
- groundwater aquifers and hydrogeological properties, including:
 - surface connections via springs or recharge zones
 - local and regional aquifers and bores
 - depth to water tables, including existing temporal variations
 - potential bore yields (if groundwater is to be utilised as a source for the Project)
 - a conceptual baseline groundwater model of regional aquifers investigating their size and location and the effect of drawdown on flow rate, water quality, recharge ability and any dewatering activity, etc.
 - groundwater quality.

3.1.4 Biodiversity

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 Northern Territory³ and Australian Government⁴ 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.

³ Northern Territory Environment Protection Authority, 2013. Guidelines for Assessment of Impacts on Terrestrial Biodiversity, Available at: http://www.ntepa.nt.gov.au/_data/assets/pdf_file/0003/349941/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>.

The EIS should describe and map, where relevant:

- significant or sensitive vegetation types and/or ecosystems, including any areas already cleared or disturbed (if any)
- the presence or likely presence of listed threatened and/or migratory species under the EPBC Act and/or the *Territory Parks and Wildlife Conservation Act* within the Project area and in any areas that may be impacted by the proposed action
- aquatic ecosystems or groundwater dependent ecosystems likely to be affected by the Project
- suitable habitat for listed threatened species, including the locations of historic records and consideration of habitat suitable for breeding, foraging, aggregation or roosting
- 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*.

Explain the basis for statements made in response to the above, that is, whether the Proponent:

- is identifying and relying upon existing literature or previous surveys
- has conducted its own surveys specifically for this purpose.

3.1.5 Air quality and noise

Provide details of baseline air quality, noise and vibration, including any sensitive receptors adjacent to the proposed Project site.

3.2 Historic and cultural heritage

The EIS should outline the cultural and heritage significance of any sites located during archaeological investigations on or near the Project area or that could be impacted by the Project activities. The EIS should include the results of searches protected or nominated for protection under the following legislation and / or databases:

- *Aboriginal and Torres Strait Island Heritage Protection Act 1984*
- *Aboriginal Land Rights (Northern Territory) Act 1976*
- *Environment Protection and Biodiversity Conservation Act 1999*
- *Heritage Act*
- *Native Title Act 1993*
- *Northern Territory Aboriginal Sacred Sites Act*
- The Register of the National Estate.

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 nominated for listing or listed on Commonwealth and Northern Territory Heritage registers and Commonwealth and Northern Territory registers of Indigenous cultural heritage
- provision of evidence of an Aboriginal Areas Protection Authority (AAPA) Authority Certificate or an application under the Northern Territory Aboriginal Sacred Sites Act

- the results of detailed archaeological surveys in and around the Project area. The EIS should provide a summary outlining the survey effort and level of confidence that all items of heritage or cultural significance at risk have been identified. Archaeological surveys and past monitoring for sites of historic or cultural heritage must be undertaken by a suitably qualified person with demonstrated experience in archaeological assessment.

The EIS should provide information on the current status of any approvals, permits or clearances in relation to the protection of heritage items or places.

The EIS should outline consultations with Indigenous stakeholders 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.

3.3 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 brief 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 a remote construction 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, pastoral, industrial, traditional land use, residential and/or educational purposes
- laws, customs and/or culture of the Native Title Holders to establish a baseline for aspects of traditional Aboriginal culture
- a summary of the Project's economic feasibility
- 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 operation and maintenance activities
- estimated total project revenue for the duration of the Project (to provide the economic scale of the Project)
- total contribution to Gross State Product and Gross Domestic Product over the economic life of the Project
- opportunities available to regional centres based on the activity generated by the Project (construction, rehabilitation and operation)
- estimated overall tax
- estimated capital and annual operational expenditure for the whole Project

- community and economic value of any residual infrastructure, such as roads, following the life of the Project
- other contributions to local communities, including Traditional Owners.

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

4 Risk assessment

4.1 Approach

The EIS should be undertaken with specific emphasis on the identification, analysis and mitigation of potential impacts 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
- identify relevant potential direct and indirect impacts
- quantify and rank risks so that the reasons for proposed management responses are clear
- identify levels of uncertainty about estimates of risk and the effectiveness of risk controls in mitigating risk
- explicitly identify those members of the community expected to accept residual risks and their consequences, providing better understanding of equity issues
- demonstrate that the project represents best practicable technology.

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

- Proponent is fully aware of risks associated with all predictable aspects of the Project
- prevention and mitigation of risks are properly addressed in the design specifications
- risks can and will be managed effectively during the construction, operation, decommissioning, closure and post-closure phases of the Project.

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

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

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

The risk assessment should be based on international best practice. The NT EPA recommends the use of processes for risk management that are formalised in Standards Australia / Standards New Zealand (e.g. AS/NZS ISO 31000:2009; HB 436:2004; HB 203:2006; HB 158:2010).

4.2 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 risk 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' under the EPBC Act 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.

4.3 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 (AMD)*
- *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:
<http://www.ntepa.nt.gov.au/environmental-assessments/guidelines>.

4.4 Biodiversity

4.4.1 Environmental objectives

Maintain 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).

Minimise the risk of Significant Impacts to threatened species and communities, and migratory species listed under the EPBC Act, and species listed under the TPWC Act.

Prevent the introduction and/or spread of invasive and pest species.

4.4.2 Assessment of risks

The EIS should include a detailed risk assessment outlining the risks to biodiversity as a result of the Project, including consideration of the following construction and operational aspects of the Project:

- clearance and disturbance activities in the mine area, waste storage and transfer areas, rail siding and haul/access roads
- transportation of personnel, machinery and materials
- modification of surface water hydrology
- groundwater extraction, where there may be interaction with surface water
- contamination of soils and/or water
- dust, airborne salt and noise

The risk assessment should specifically consider, where relevant:

- significant or sensitive vegetation types and/or ecosystems
- suitable habitat for listed threatened species
- the presence or likely presence of species listed under the EPBC Act and/or the TPWC Act, including but not limited to:
 - Crest-tailed Mulgara (*Dasycercus cristicauda*)
 - Brush-tailed Mulgara (*Dasycercus blythi*)
 - Southern Marsupial Mole (*Notoryctes typhlops*)
 - Greater Bilby (*Macrotis lagotis*)
 - Thick-billed Grasswren (eastern) (*Amytornis modestus*)
 - Night Parrot (*Pezoporus occidentalis*)
 - Princess Parrot (*Polytelis alexandrae*)
 - Great Desert Skink (*Liopholis kintorei*)
 - Slater's Skink (*Liopholis slateri slateri*).
- the presence, or likely occurrence, of introduced and invasive species.

The EIS should specifically include the following for threatened species listed under the EPBC Act:

- a description of the relevant direct, indirect and consequential impacts of the proposed action 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 operation 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 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.

Reference should be made to the EPBC Act Policy Statement 1.1 Significant Impact Guidelines - Matters of National Environmental Significance (2013).

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 Plans⁵). A snapshot of such plans, relevant at the Commonwealth level as these terms of reference are finalised, is at Appendix A. Where a risk has been identified, the EIS should include an analysis of the risks to individuals and populations.

In addition to the above risk assessment, the EIS should include an analysis of the potential risks 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 Northern Territory and Australian 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

All mitigation and monitoring measures proposed to be undertaken to prevent, minimise or compensate for the relevant impacts of the proposed action on TPWC Act/EPBC Act-listed threatened species must include:

- a description of proposed mitigation measures to deal with relevant impacts of the proposed action, including mitigation measures proposed to be taken by State/Territory governments, local governments or the Proponent
- assessment of the expected or predicted effectiveness of the mitigation measures, including the scale and intensity of the impacts of the proposed action and the on-ground benefits to be gained from each of these measures

⁵ NT Department of Land Resource Management – Weed Management Plans, available at: <http://www.lrm.nt.gov.au/weeds/resources>

- a description of the outcomes the mitigation and monitoring measures will achieve
- 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.

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

Present a proposed monitoring program for identified threatened species present in the local area, to monitor the effectiveness of the mitigation measures proposed for all stages of the development. The monitoring program should identify the methodology for monitoring the impacts to biodiversity and identify clear thresholds and contingency measures that will be implemented in the event that the mitigation measures appear ineffective.

Proposed mitigation and monitoring measures must be incorporated in relevant sections of the Environmental Management Plan (EMP).

4.5 Water

4.5.1 Environmental objectives

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

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

4.5.2 Assessment of risks

The EIS should include an assessment of risks 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:

- 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. spills, controlled/uncontrolled release, passive seepage) of contaminants (e.g. saline water, hydrocarbons, wastewater, hazardous materials) 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, PMP) on water management and infrastructure, including as relevant, flooding and/or storm surge
- 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 risk 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 is to be provided in the EIS. The model should be of sufficient detail for the general reader to understand the source(s) of potential contaminants, the mechanism(s) of their release, the pathway(s) for transport, and the potential for human and ecological exposure to these potential contaminants.

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

- relevant laboratory and field testing to characterise the potential physicochemical properties of mine products and infrastructure (e.g. stockpiles, etc.)
- material volume and mass of potential contaminant sources
- hydrogeological characterisation (e.g. groundwater occurrence, direction and rate of flow, etc.)
- hydrologic characterisation (e.g. surface water flow, seasonality etc.)
- baseline water quality (i.e., major cations and anions, metals, metalloids, acidity/alkalinity, etc.) of receiving waters
- 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 the number of samples, sampling site selection procedures and QA/QC protocols to support the development of the model should be provided and justified.

4.5.3 Mitigation and monitoring

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 on-site
- proposed surface and groundwater monitoring programs and thresholds triggering management actions
- description of any 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 draft Water Management Plan (WMP) that outlines clear and concise measures to mitigate identified risks 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. The WMP should include but not be limited to measures that:

- avoid contamination of surface or groundwater resources (e.g. appropriate containment of hazardous materials)
- ensure the protection and resilience of any 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 occurs 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. 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 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 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 proposed mitigation measures, and to monitor for impacts to water resources from the Project.

Proposed monitoring should be described for leaks, spills or seepage of materials from pipelines, storage / disposal facilities (including tailings disposal facilities) and transport operations to identify impacts, should they occur, to local soils, aquifers, environments, workers and/or the general public.

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 mine operations and beyond mine closure
- 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.

4.6 Historic and cultural heritage

4.6.1 Environmental objectives

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

4.6.2 Assessment of risks

The EIS should include a comprehensive risk assessment undertaken by a qualified expert who has experience with heritage items and places. The EIS should consider the potential risks 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 Lands, Planning and the Environment. 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 Heritage Management Plan which outlines clear and prescriptive mitigation and management measures for protecting the values of those places/items. The plan should include:

- measures that encourage ongoing protection and management of cultural values
- procedures to avoid significant sites
- protection of key sites during construction, operation and decommissioning work
- measures to enable the Proponent (or its contractor) 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 and guideline. The *Burra Charter*⁶ and guideline outline measures for ensuring that heritage investigations and mitigation measures meet best practice standards for the management of cultural heritage in Australia.

4.7 Human health and safety

4.7.1 Environmental objectives

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

4.7.2 Assessment of risks

The EIS should include an assessment of the risks to people, the environment and nearby facilities associated with the construction, operation, maintenance and decommissioning of the various components of the Project, and the storage and transport of materials to and from the work sites. The aim of the risk assessment is to demonstrate that:

- the Proponent is fully aware of the risks to human health and safety associated with all aspects of the proposed action
- the prevention and mitigation of risks to human health and safety are properly addressed in the design specifications
- the risks can and will be managed effectively during the construction, commissioning, operation, and decommissioning of the proposed action, including safety risks associated with:
 - fire, including combustible materials and wildfire
 - emergency situations and exclusions/evacuation zones
 - increased traffic and use of existing transport networks
 - hazardous materials exposure, including hazardous process inputs/outputs
 - hazards associated with the transportation of personnel, construction materials, consumables and dangerous goods
 - the Project being located in a remote area.

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

⁶ The Australian National Committee of International Council on Monuments and Sites), 2000. The Burra Charter: The Australia ICOMOS Charter for Places of Cultural Significance. Available at: <http://australia.icomos.org/publications/charters/>

4.8 Socio-economic

4.8.1 Environmental objectives

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

4.8.2 Assessment of risks

The EIS should include an Economic and Social Impact Assessment (ESIA) that demonstrates the potential benefits and costs of the Project. Reference should be made to information requirements contained within the NT EPA publication *Guidelines for the Preparation of an Economic and Social Impact Assessment*, accessible from the NT EPA webpage at: <http://www.ntepa.nt.gov.au/environmental-assessments/guidelines>. 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
- encourage development of new and/or expansion of existing businesses in the locality
- foster sustainable development and community health and wellbeing
- provide for appropriate contingencies to protect the community, local business owners and residents in the event of forced or unpredicted delays
- discuss the risks of the Project, related infrastructure and associated workforce negatively impacting on identified economic and social issues in the region.

The EIS should also include a detailed assessment of the risks and impacts on existing services and transport infrastructure networks and corridors as a result of the Project, addressing:

- interruptions to existing and future land use, relevant to service and infrastructure network activities
- how service and infrastructure requirements for the Project are predicted to operate with the existing service and infrastructure networks.

4.8.3 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 risks (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.

4.9 Closure and rehabilitation

4.9.1 Environmental objectives

As far as practicable, rehabilitation will achieve a stable and functioning landform which is compatible with the surrounding landscape and other environmental values.

Potential impacts to downstream water quality / potable-water supplies, ecosystems, beneficial uses, environmental / cultural values or human health, associated with closure and rehabilitation of the Project will be identified, and adequately avoided, mitigated and/or minimised.

Rehabilitation of areas impacted by mining and waste storage will be undertaken to ensure health risks to members of the public, including traditional owners, will be as low as is reasonably achievable.

4.9.2 Assessment of risks

Closure planning should be risk-based, taking into account results of materials characterisation, data on the local environmental and climatic conditions, and consideration of potential impacts through contaminant pathways and environmental receptors. Identify risks to the successful rehabilitation and closure of the Project, including risks to prescribed closure timeframes, including:

- closure timeframes and objectives and the Project not realising its projected outcomes (i.e. delays, unexpected or forced closure, etc.)
- risks that the Project may create an ongoing environmental, social and/or economic legacy if operations are required to cease ahead of schedule due to unforeseen circumstances, prior to the planned closure and rehabilitation of the site
- the post-closure risk assessment should include a discussion of the effects of:
 - changes in the assumptions used as a basis for the post-closure risk assessment
 - natural events, including earthquakes, rainfall events, fire and flood.

4.9.3 Mitigation and monitoring

A draft Rehabilitation and Closure Plan (RCP), specific to the Project should be prepared, to:

- describe proposed rehabilitation, decommissioning and closure for all aspects of the Project on completion of mining / waste storage operations, for each operational location (i.e. mine site, transport infrastructure, waste storage and processing facilities)
- address objectives identified in Section 4.9.1
- describe how risks identified in Section 4.9.2 will be mitigated

- 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 draft RCP should include description of:

- removal of plant, equipment, infrastructure, water storages, and methods proposed for stabilisation of affected areas
- proposed staging and timing of rehabilitation and closure
- protocols for the securing a safe and stable mine-site and waste disposal site
- proposed methodologies of topsoil management, and soil profile reconstruction, with demonstration of their effectiveness for rehabilitating disturbed areas
- closure criteria and future land tenure and land-use arrangements
- revegetation strategies for disturbed sites to utilise local native plant species similar in type, density and abundance to those existing in adjacent areas
- measures to ensure the soil stabilisation against erosion, to a level similar to comparable landforms in surrounding undisturbed areas
- contingencies to make landforms and mine components secure and non-polluting
- proposed final topographic and drainage morphology, including design concepts and methods to be used.

The RCP should include a Care and Maintenance Plan based on the RCP. The Care and Maintenance Plan should include measures outlining how the Proponent will maintain its environmental obligations and commitments should the Project be temporarily or unexpectedly closed or suspended at any stage in the Project life.

In relation to monitoring, the EIS should:

- describe proposed post-operational (for both mining and waste storage) monitoring and reporting to be used to evaluate and report on the effectiveness and performance of the RCP
- describe contingency measures to be implemented in the event that monitoring demonstrates that management measures described in the RCP have not been effective.

4.10 Other risks

4.10.1 Air

The EIS should assess the potential point and diffuse source impacts of the Project on air quality, including ambient air quality (e.g. PM₁₀ fraction), dust and odour/gases, where relevant. Risks to air quality may arise from emissions of chemicals, particulates or biological materials from:

- power generation
- movements of mobile plant and vehicles
- wind erosion mobilising dust from exposed surfaces, such as from laydown areas, access tracks and sites of vegetation clearing
- storage, processing (e.g. hydraulic backfilling plant) and/or testing of any hazardous waste materials.

The assessment should be informed by meteorological information applicable to air quality in the Project area.

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.

4.10.2 Fire

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 Traditional Owners, pastoralists and their representative organisations, including relevant Land Councils that have specialist knowledge in fire management.

The EIS should outline proposed management to mitigate any identified risks from the Project with regard to fires that may affect waste storage facilities, including:

- segregation of incompatible materials
- ventilation
- exclusion of ignition sources
- fire protection
- emergency planning

4.10.3 Noise and vibration

The EIS should outline proposed management to mitigate any identified risks 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.

4.10.4 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.

4.10.5 Public health and food

Information regarding accommodation requirements, food safety standards, on-site wastewater disposal, wastewater stabilisation ponds, solid waste disposal and public health nuisance abatement should be included in a relevant section of the EIS. Information with regard to the environmental health requirements from the Department of

Health is provided in *Environmental Health Fact Sheet 700 Requirements for Mining and Construction Projects*⁷.

4.10.6 Biting insects

The proponent should assess the risk of exposure to high numbers of biting insects, both as a result of potential increases in breeding areas as a result of Project activities/infrastructure and from existing nearby potential/known breeding areas (e.g. wetlands, mangroves). Where there is a significant risk identified, the Proponent should prepare a Biting Insect Management Plan (BIMP) detailing:

- consultations with the Department of Health (Medical Entomology) regarding existing management programs and ongoing biting insect management through construction and occupation phases
- a program for the rectification of known mosquito breeding sites in consultation with the Department of Health (Medical Entomology)
- how the development meets the NT Department of Health *Guidelines for preventing mosquito breeding sites associated with mining sites* (available at: http://www.health.nt.gov.au/Medical_Entomology/Publications/Development_Guidelines/index.aspx)

5 Environmental offsets

The Australian Government Environmental Offsets Policy⁸ requires residual (after avoidance and mitigation measures have been implemented) significant impacts to be offset, with a focus on direct offsets. The Offsets Assessment Guide, which accompanies this policy, has been developed to give effect to the policy's requirements, utilising a balance sheet approach to quantify impacts and offsets. It applies where the impacted protected matter is a threatened species or ecological community.

The EIS should provide information on:

- any identified impacts or detriments that cannot be avoided or mitigated at reasonable costs and whether these impacts could be considered as 'significant' under the EPBC Act
- risks of failure of management actions (such as rehabilitation, weed control, etc.) and uncertainties of management efficacy
- proposed offsets for residual significant impacts to protected matters and an explanation as to how these proposed offsets are consistent with the requirements of the Environmental Offsets Policy and Offsets Assessment Guide, where relevant
- how the proposed offsets meet the Environmental Offsets Policy requirement of a minimum of 90% 'direct offsets' (direct offsets are actions which provide a measurable conservation gain for the impacted protected matter).

⁷ Department of Health, 2013. *Environmental Health Fact Sheet 700 Requirements for Mining and Construction Project*, Available at: http://www.health.nt.gov.au/Environmental_Health/Health_Risk_Assessment/

⁸ Department of the Environment, 2012. *Environmental Offsets Policy*. Available at: <http://www.environment.gov.au/epbc/publications/epbc-act-environmental-offsets-policy>

6 Environmental management

The specific safeguards and controls proposed to be employed to minimise or remedy environmental impacts identified in the risk assessment process are to be included in an 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 risk assessment and determined by the significance of the environmental impacts. The EMP should not be prepared in isolation but should be consistent and integrated with the principles of an environmental management system. The EMP should include specialised management plans where it is necessary to provide a high level of operational detail. 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. construction, operation and decommissioning/rehabilitation) separately. It must state the environmental objectives, performance criteria, monitoring, reporting, corrective action, necessary resourcing, responsibility and timing for each environmental issue.

Further information on the development of an EMP is available in the NT EPA's Guidelines for the Preparation of an Environmental Management Plan, accessible on the NT EPA webpage at: <http://www.ntepa.nt.gov.au/environmental-assessments/guidelines>.

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 and the NT EPA to understand the environmental consequences of the proposed action. 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 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 of the proposed action 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 of three elements:

1. Executive summary

The executive summary must include a brief outline of the Project and each chapter of the EIS, allowing the reader to obtain a clear understanding of the proposed action, 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 proposed action.

3. Appendices

The appendices must include detailed technical information, studies or investigations necessary to support the main text. These 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's *Guideline for Consultants Reporting on Environmental Issues* outlines 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
- 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.

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

- The NT News
- The Centralian Advocate.

At a minimum, the advertisement should be published in the Saturday edition of the NT News at the commencement of the public exhibition period and the first edition of the Centralian Advocate after the commencement of the 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 and comment on advertising text.

7.5 Public exhibition

The public exhibition period for the draft EIS will be six (6) 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 any Christmas 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
- Mines and Energy Information Centre, Department of Primary Industry and Resources, 3rd Floor, Paspalis Centrepont, 48 Smith Street Mall, Darwin
- Northern Territory Library, Parliament House, Darwin
- Central Land Council, 27 Stuart Hwy Alice Springs
- Arid Lands Environment Centre, 90 Gap Rd, Alice Springs
- 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.

Appendix A: Snapshot (August 2016) of recovery plans, threat abatement plans and conservation advices relevant at the Commonwealth level

It would greatly assist the EPBC Act decision-maker's considerations for a decision on any approval if the statutory documents relevant under section 139 of the EPBC Act are specifically addressed for each of the listed threatened species likely to be impacted by the proposed action. Reasons for any inconsistency between actions proposed and the relevant plans and conservation advices should be explained.

Birds

Amytornis modestus — Thick-billed Grasswren

- Threatened Species Scientific Committee 2016 [Approved Conservation Advice for *Amytornis modestus* \(thick-billed grasswren\)](#)
- NSW National Parks & Wildlife Service, 2002 [Thick-billed Grasswren \(Eastern Subspecies\) \(*Amytornis textilis modestus*\) \(North, 1902\) Recovery Plan - July 2002](#) (this plan is due to sunset on 1 April 2017)

Pezoporus occidentalis — Night Parrot

- Threatened Species Scientific Committee 2016 [Approved Conservation Advice for *Pezoporus occidentalis* \(night parrot\)](#)

Polytelis alexandrae — Princess Parrot

- Threatened Species Scientific Committee 2008 [Commonwealth Conservation Advice on *Polytelis alexandrae* \(Princess Parrot\)](#)

Mammals

Dasyercus cristicauda — Crest-tailed Mulgara

- Threatened Species Scientific Committee 2013 [Commonwealth Conservation Advice for *Dasyercus cristicauda* \(Crest-tailed Mulgara\)](#)

Macrotis lagotis — Greater Bilby

- Threatened Species Scientific Committee 2016 [Approved Conservation Advice for *Macrotis lagotis* \(greater bilby\)](#)
- Pavey, C., 2006 [National Recovery Plan for the Greater Bilby *Macrotis lagotis*](#)

Reptiles

Liopholis kintorei — Great Desert Skink

- McAlpin, S. 2001 [A recovery plan for the Great Desert Skink \(*Egernia kintorei*\) 2001-2011](#)

Liopholis slateri slateri — Slater's Skink

- Threatened Species Scientific Committee 2016 [Approved Conservation Advice for *Liopholis slateri slateri* \(Slater's skink, floodplain skink\)](#)

Threat abatement plans (that are potentially relevant)

Australian Government Department of the Environment, Water, Heritage and the Arts (2008). *Threat Abatement Plan for Predation by the European Red Fox*. Commonwealth of Australia, Canberra. Available from:

<http://www.environment.gov.au/biodiversity/threatened/publications/tap/predation-european-red-fox>

Australian Government Department of the Environment, Water, Heritage and the Arts (2008). *Threat abatement plan for competition and land degradation by rabbits*. Commonwealth of Australia, Canberra. Available from:

<http://www.environment.gov.au/biodiversity/threatened/publications/tap/competition-and-land-degradation-rabbits>

Australian Government Department of the Environment, Water, Heritage and the Arts (2008). *Threat Abatement Plan for competition and land degradation by unmanaged goats*. Commonwealth of Australia, Canberra. Available from:

<http://www.environment.gov.au/biodiversity/threatened/publications/tap/competition-and-land-degradation-unmanaged-goats>

Australian Government Department of the Environment (2015). *Threat abatement plan for predation by feral cats*. Commonwealth of Australia, Canberra. Available from:

<http://www.environment.gov.au/biodiversity/threatened/publications/tap/threat-abatement-plan-feral-cats>

Australian Government Department of Sustainability, Environment, Water, Population and Communities (2011). *Threat abatement plan for the biological effects, including lethal toxic ingestion, caused by cane toads*. Commonwealth of Australia, Canberra. Available from:

<http://www.environment.gov.au/biodiversity/threatened/publications/tap/threat-abatement-plan-biological-effects-including-lethal-toxic-ingestion-caused-cane-toads>

Australian Government Department of Sustainability, Environment, Water, Population and Communities (2012). *Threat abatement plan to reduce the impacts on northern Australia's biodiversity by the five listed grasses*. Commonwealth of Australia, Canberra. Available from:

<http://www.environment.gov.au/biodiversity/threatened/publications/threat-abatement-plan-reduce-impacts-northern-australias-biodiversity-five-listed-grasses>