



Northern Territory
Environment Protection Authority

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

**DARWIN REFINERY
TNG LIMITED**

May 2016

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Acronyms and Abbreviations

AAPA	Aboriginal Areas Protection Authority
AS/NZS	Standards Australia / Standards New Zealand
EA Act	<i>Environmental Assessment Act</i>
EAAP	Environmental Assessment Administrative Procedures
EIS	Environmental Impact Statement
EMP	Environmental Management Plan
EPBC Act	<i>Environment Protection and Biodiversity Conservation Act 1999</i>
ESCP	Erosion and Sediment Control Plan
ha	hectares
HMP	Heritage Management Plan
km	kilometres
MW	Megawatt [1 MW = one million (10^6) watts]
NES	(Matters of) National Environmental Significance, as listed under the EPBC Act
NT	Northern Territory
NT EPA	Northern Territory Environment Protection Authority
PJpa	Petajoules per annum [1 petajoule = 10^{15} joules = $\sim 2.8 \times 10^8$ kilowatt hours]
t	tonne (metric) [1 t = 1 000 kilograms]
the Project	Darwin Refinery
the Proponent	TNG Limited
TiO ₂	titanium dioxide
TIVAN	Proposed new processing technology trademarked by TNG
TNG	TNG Limited
TPWC Act	<i>Territory Parks and Wildlife Conservation Act 2000 (NT)</i>
TSF	Tailings Storage Facility
V ₂ O ₅	Vanadium pentoxide

1 Introduction

On 27 October 2015, the Northern Territory Environment Protection Authority (NT EPA) received a Notice of Intent for the Darwin Refinery (the Project) for consideration under the *Environmental Assessment Act* (EA Act). TNG Limited (the Proponent) proposes to construct and operate the Project on Lot 1817 Middle Arm, Darwin Harbour, adjacent to the Elizabeth River Bridge. The Project, with associated access roads, supporting infrastructure and services comprises a development footprint of approximately 140 ha, of which 35 ha has already been cleared by extractive industries.

The Project would process magnetite concentrate to produce vanadium pentoxide (V_2O_5), titanium dioxide (TiO_2) pigment and pig iron. The three products would be exported through the Port of Darwin's East Arm Wharf to international customers. The magnetite concentrate would be railed from the Proponent's proposed Mount Peake Project, 235 km northwest of Alice Springs, and the subject of a separate environmental assessment and approvals process. The design life of the Project would be 40 years, during which processing of magnetite concentrate would occur at a rate of 894 000 tonnes per annum during years one to four, increasing to 1 788 000 t per annum from year five onwards.

The Project would require access to services including:

- road access from the existing Channel Island Road
- natural gas (12.7 PJpa) supplied from the Amadeus gas pipeline
- power (approximately 82 MW) provided from the existing Channel Island and Weddell power stations via an existing power line
- communications
- water from the Palmerston zone pipeline
- Adelaide-Darwin rail line.

New infrastructure requirements on Lot 1817 Middle Arm include:

- rail siding - 4 km long, alongside the Adelaide-Darwin railway line
- processing plant
- concentrate and coke stockpiles and conveyor tunnels
- process water, raw water and cooling water ponds
- filter cake stockpile area / hardstand
- workshop and stores
- offices, administration area, including kitchen / mess-hall, emergency services
- electricity sub-station
- potable water, raw water and fire water tanks
- gatehouse and weighbridge
- oxygen plant
- acid regeneration plant

- tank farm and reagent storage
- car park.

Third parties will provide services external to the lot boundary including concentrate transport to the Project, the transport of products by rail from the Project to East Arm Wharf, port activities including the unloading, storage, handling and export of products, port importing activities for consumables such as coke and limestone, and the transport of consumables by rail to the Project. Third party services will assume responsibility for environmental management measures associated with their activities covering potential impacts such as spill management, air emissions and noise emissions.

On 15 January 2016 the NT EPA decided that the Project required assessment under the EA Act at the level of an Environmental Impact Statement (EIS). The NT EPA decision was based on the following risks and potential environmental impacts:

- risks to biodiversity values¹ of adjacent areas, including nationally significant mangrove communities², marine ecosystems, local fisheries and listed threatened species
- environmental risks associated with vegetation clearing, erosion and sediment control, uncontrolled discharges, dust, spills, disturbance of acid sulfate soils, contamination of soils, surface water and / or ground water
- potential for Project noise, lighting and emissions to impact on existing residents, potential for future residential development of the area, and other sensitive receptors
- potential for introduction and / or spread of weeds
- risks of exposure of workers to high biting insect numbers
- environmental risks associated with waste streams and waste management practices
- risks associated with transport, handling and / or storage of reagents, products and / or hazardous materials
- public health and safety risks associated with siting a potential major hazard facility adjacent to Darwin Harbour
- potential for impacts on service infrastructure and service supply capacities, due to Project demands.

The Project was referred by the Proponent to the Australian Department of the Environment for consideration under the *Environment Protection and Biodiversity Conservation Act 1999* (EPBC Act). On 4 January 2016 a delegate of the Commonwealth Minister for the Environment decided that the proposed action was a *controlled action* and, as such, required assessment and an approval decision under the EPBC Act. The controlling provisions included the likely significant impact on:

¹ Smit, N., Penny, S.S. and Griffiths, AD., 2012. *Assessment of marine biodiversity and habitat mapping in the Weddell region, Darwin Harbour*. Report to the Department of Lands, Planning and Environment. Department of Land Resource Management, Palmerston. Available at: http://www.lrm.nt.gov.au/_data/assets/pdf_file/0006/350385/Weddell-Marine-Biodiversity-and-habitats-2012-optimised.pdf

² Northern Territory Government. *Sites of Conservation Significance Darwin Harbour*. Available at: http://www.lrm.nt.gov.au/_data/assets/pdf_file/0020/13934/06_darwin.pdf

TNG Limited - Darwin Refinery – EIS Terms of Reference

- listed threatened species and communities (sections 18 & 18A)
- listed migratory species (sections 20 & 20A).

The Project is being assessed under the assessment bilateral agreement between the Australian and Northern Territory Governments³. Matters that must be addressed under the Environment Protection and Biodiversity Conservation Regulations 2000 are attached (Appendix A).

These Terms of Reference have been developed to assist the Proponent in preparing an EIS for the Project in accordance with clause 8 of the Environmental Assessment Administrative Procedures (EAAP).

³ <http://www.environment.gov.au/protection/environment-assessments/bilateral-agreements/nt#assessment>

2 Description of the proposed action

The EIS should identify all processes and activities intended for the Project and associated ancillary activities, during the life of the Project.

2.1 General information

The EIS should provide a brief background and context to the Project, including:

- the title of the Project
- the full name, contact details and postal address of the Proponent
- an explanation of the objectives, benefits and justification for the Project
- the current status of the Project
- the location of the Project in the region and its proximity to:
 - landmark features
 - sites of sacred, cultural, historical, recreational or social interest (including popular recreational fishing areas)
 - current and proposed regional community centres and residential areas (including proposed Weddell urban area)
 - areas on the National Reserve System
 - sensitive environments, such as major waterways, significant groundwater resources, significant natural features, fisheries and significant marine habitats.
- the background to the development of the Project, including discussion of associated environmental impact assessments
- 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
- lease requirements, land tenure, acquisition requirements (permits, rezoning and Native Title), and the tenures under which the Project would be held, including details of any relevant legislative processes required to grant proposed tenure
- identification of areas proposed for future expansion, or any other potential future activities being planned.

2.2 Project components

All construction (including site preparation), operation and management elements of the Project should be described in detail to allow a detailed understanding of infrastructure design and engineering. This should include the precise location (including coordinates) of all works to be undertaken, structures to be built or elements of the action that may have environmental impacts, including on matters of National Environmental Significance (NES).

The description of the action must also include (but not be limited to) details on:

- how the works are to be undertaken (including stages of development and their timing) and design parameters for those aspects of the structures or elements of the action that may have relevant impacts

- the disturbance associated with all construction activity, such as temporary access tracks, earth works or filling of land
- design parameters for those structural aspects of the action that have impact potential
- elements of the action with potential to impact on:
 - matters protected under Part 3 of the EPBC Act
 - species protected under the *Territory Parks and Wildlife Conservation Act* (TPWC Act)
 - aspects of the environment relevant to other applicable legislation, such as the *Heritage Act*.
- workforce requirements through Project phases, including number, sources, accommodation, support services required and transport arrangements
- traffic (road & rail) management through Project phases, including:
 - operating times and scheduling
 - vehicle types, numbers, loads, routes and frequency
 - proposed infrastructure upgrades, such as for site access / heavy vehicle access / increased traffic flows
 - traffic flow management.

2.2.1 Construction phase

Describe the elements of the construction phase, including:

- plant and machinery required
- vegetation clearing methods
- construction materials required – major types, quantities, qualities, sources, storage requirements, potential hazards.

Describe water requirements for the construction phase, including consideration of quantities, quality and sources, uses and re-use, such as for dust suppression, construction requirements, drinking water, ablutions and sewage treatment and landscaping.

2.2.2 Production process and operation

The EIS should describe all aspects of the production process, including:

- process design concepts and proposed recovery methods (including flow-diagrams)
- history and explanation of the proposed (TIVAN) process, with demonstration of its effectiveness at the projected Project scale⁴

⁴ If details of the *TIVAN* process are considered to be of a confidential nature, refer to section 8.3 of this document.

- detailed description, physical / chemical characterisation, characterisation of toxicity, and quantification of:
 - inputs
 - products
 - filter cake (pig iron slag, iron residue, insoluble salts, and coke rich solids from the titanium pigment plant)
 - other outputs, waste streams and emissions
 - hazardous or dangerous materials that may be transported, stored and / or generated by the Project.
- conceptual engineering design for proposed on-site landfill for filter-cake
- infrastructure and procedures associated with material / product unloading / loading for / after transport, by road, rail, ship, etc., where controlled by the proponent
- information on operational energy, fuel and water requirements, including sources, uses, storage and infrastructure requirements.

2.2.3 Decommissioning and rehabilitation

The EIS should discuss the expected life of the Project and plan for decommissioning and closure, including unexpected closure. At a minimum, the EIS should:

- identify actions and options for decommissioning of all components of the Project and rehabilitation of the site at Project end-of-life
- propose environmental objectives and completion criteria against which the progress of decommissioning and rehabilitation can be measured
- discuss future land tenure arrangements
- describe proposed rehabilitation of any temporarily disturbed areas.

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:

- 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, the Northern Territory, and / or the Australian Governments, 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*
- *Building Act*
- *Bushfires Act*

- *Dangerous Goods Act*
- *Environment Protection and Biodiversity Conservation Act 1999*
- *Heritage Act*
- *Liquor Act*
- *Northern Territory Aboriginal Sacred Sites Act*
- *Public and Environmental Health Act & Regulations*
- *Territory Parks and Wildlife Conservation Act*
- *Traffic Act*
- *Transport of Dangerous Goods by Road and Rail (National Uniform Legislation) Act*
- *Waste Management and Pollution Control Act*
- *Water Act*
- *Work Health and Safety (National Uniform Legislation) Act*

Identify national, state and/or territory standards, codes of practice and guidelines relevant to the Project.

2.4 Environmental history

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

- details of any proceedings against the Proponent under Commonwealth, state or territory law for the protection of the environment or the conservation and sustainable use of natural resources, 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

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 development⁶.

Alternatives to be considered should include:

- not proceeding with the Project
- alternative locations for components of the Project
- alternative processing methods
- alternative infrastructure designs
- alternative environmental management techniques
- alternative energy sources
- alternative decommissioning and rehabilitation methods.

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, in particular, alternatives that will reduce net water use and potential contamination of water resources
- a comparison of short, medium and long-term advantages and disadvantages of the options
- a comparative description of the impacts of alternatives on the matters of NES.

2.6 Environmental assessment guidelines

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 the EIS. The Guidelines, current at the time of publication of these Terms of Reference, include:

- *Guidelines for Assessment of Impacts on Terrestrial Biodiversity*
- *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*
- *Guidelines on Conceptual Site Models*
- *Guidelines for the Siting, Design and Management of Solid Waste Disposal Sites*

The Guidelines are available on the NT EPA webpage at:

www.ntepa.nt.gov.au/environmental-assessments/guidelines

or:

www.ntepa.nt.gov.au/waste-pollution/guidelines/guidelines

Relevant Department of the Environment documents that should be reviewed to assist in preparation of an EIS include⁵:

- *Matters of National Environmental Significance - significant impact guidelines*
- *EPBC Act Environmental Offsets Policy 2012*
- relevant EPBC Act survey guidelines, recovery plans and any approved conservation advice.

2.7 Ecologically Sustainable Development

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

- (a) promote ecologically sustainable development (ESD)
- (b) protect the environment, having regard to the need to enable ESD.

Accordingly, the Project, its potential impacts (positive and negative) and the management measures used to enhance positive and reduce negative impacts will be assessed in the

⁵ Available at: <http://www.environment.gov.au/epbc/publications>

context of ESD principles, consistent with the *National Strategy for Ecologically Sustainable Development*⁶. Therefore, it is essential that the Proponent demonstrates 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 site 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 may be assessed in related / subsequent monitoring programs. The level of detail in the EIS should reflect the scale and nature of the studies required to clearly define the potential for impacts and risks from the Project. Units / metrics should aim to be consistent with related comparative studies and relevant Guidelines.

3.1 Physical and biological

A detailed description must be provided of the terrestrial, coastal and marine environments potentially affecting and affected by the Project, to the extent that effects could occur in a worst case scenario. Include description and discussion of:

- local meteorology, including its effects on proposed Project environmental management, construction timing / methods and infrastructure design specifications. Consideration of 2, 10 and 100 year average recurrence interval rainfall and extreme weather events should be included
- significant site, local and regional topography
- geology, geomorphology, soil types and land unit(s). Identify details of any limiting properties of soil, substrate type or land units on the Project (for example, potential acid sulfate soils, sodic / dispersive soils).
- surface hydrology (terrestrial, aquatic and marine) including identification and description of:
 - creeks and drainage lines (permanent, ephemeral):
 - stormwater discharge directions / rates
 - catchment boundaries
 - water reservoirs (natural and artificial), wetlands and areas of seasonal inundation / flooding
 - mangrove areas and highest astronomical tide
 - storm surge zones (computed primary / secondary / extreme)
 - water quality of local water bodies (fresh / estuarine / marine waters). Describe existing temporal variations in suspended solids and parameters potentially impacted by the Project, to serve as baseline data

⁶ 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>

- hydrodynamics of the receiving waters of any potentially uncontrolled contaminated discharges. For example, consideration of tidal regime, current velocities, directions, depositional vs. flushing system characteristics
- beneficial uses and water quality objectives for Darwin Harbour (Elizabeth River / East Arm).
- groundwaters and hydrogeological properties of the local area and region. Identify pathways of potential groundwater connectivity between the Project site and habitats or ecosystems sensitive to contamination, including marine habitats / ecosystems. Include as a minimum:
 - Project-site groundwater flow directions and rates
 - depth to water tables
 - groundwater quality
 - interconnectivity between aquifers
 - local springs / recharge zones
- ambient air quality and noise / vibration levels. Description should be provided of any existing variability in air quality target parameters, such as the impact of seasonal smoke haze and dust. The Project's nearest sensitive receptors to air quality, dust, noise and vibration impacts should be identified.

The EIS should identify and describe fauna, flora and vegetation communities of the Project area and local region, including terrestrial, aquatic, coastal and marine habitats where relevant. The EIS should detail survey / program timing, locations and methodology, to demonstrate appropriate and statistically adequate survey designs. At a minimum, surveys should be in accordance with the Northern Territory⁷ and Australian Government^{8,9} Guidelines. Include details of:

- how the Australian Government best practice survey guidelines were applied
- how surveys were consistent with (or a justification for divergence from) published Australian Government guidelines and policy statements.

Details and results should be provided of targeted surveys for species and habitats of conservation significance within the (worst-case) potential impact footprint of the Project.

The EIS should identify, describe and map, where relevant:

⁷ 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.

⁸ Department of the Environment, 2011. *Survey Guidelines for Nationally Threatened Species*. Available at: <http://www.environment.gov.au/epbc/policy-statements>.

⁹ Department of the Environment, 2009. *Draft Background Paper to EPBC Act Policy Statement 3.21 – Significant Impact Guidelines for 36 Migratory Shorebird Species*. Available at: <http://www.environment.gov.au/resource/draft-significant-impact-guidelines-36-migratory-shorebird-species-migratory-species-epbc>.

- significant or sensitive vegetation types and/or ecosystems within the Project area and potential (worst-case) impact footprint
- 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, including historic records. Relevant species for the EPBC Act include, but are not limited to:
 - EPBC Vulnerable listed species: dwarf sawfish (*Pristis clavata*) migratory; largetooth sawfish (*Pristis pristis*) migratory; green sawfish (*Pristis zijsron*) migratory; green turtle (*Chelonia mydas*) marine, migratory; flatback turtle (*Natator depressus*) marine migratory; hawksbill turtle (*Eretmochelys imbricata*) marine, migratory
 - EPBC Endangered listed species: loggerhead turtle (*Caretta caretta*) marine migratory; olive ridley turtle (*Lepidochelys olivacea*) marine, migratory
 - EPBC critically endangered listed species: curlew sandpiper (*Calidris ferruginea*) marine migratory; eastern curlew (*Numenius madagascarensis*) marine migratory
- the size and distribution of the local threatened species population, including at different life cycle stages, for example, when the population is breeding, foraging, resting and/or migrating
- the importance of the local population in a local, regional, NT, national and international context
- suitable habitat for listed threatened species, including:
 - consideration of habitat suitable for breeding, foraging, aggregation or roosting
 - the quality and quantity of available habitat the local population's range, important habitat areas and migratory pathways
 - the areas to be disturbed or altered by development as part of the proposed action (with reference to maps showing important habitat areas), making clear how those areas will, or potentially could be, disturbed or altered
- 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*. A weed survey should be undertaken that incorporates all areas likely to be disturbed by the Project. Weed data is to be collected in accordance with the Northern Territory Guidelines¹⁰
- any areas within the Project footprint that have previously been subject to clearing activities or disturbance.

Explain the basis for information provided 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.

¹⁰ Department of Land Resource Management, 2015. *NT weed data collection guidelines*. Available at: <http://www.lrm.nt.gov.au/weeds/mapping>

The information provided should take into account / respond to other relevant plans, policies and advices including, but not limited to those listed at Appendix B.

3.2 Socio-economic aspects

A relevant section of the EIS should include a brief description of the current population, demography and socio-economic aspects of the Darwin region and, in particular, Palmerston and the Elizabeth River area. 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.

3.3 Historic and cultural heritage

The EIS should outline the cultural and heritage significance of any sites that could be impacted by Project components. The EIS should include the results of searches of the NT Government database and identify any sites or places protected or nominated for protection under the following legislation:

- *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.*

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 (e.g. traditional land-use)
- survey(s) used to identify sites, places or objects of historic or cultural heritage significance (e.g. archaeology)
- areas nominated for listing or listed on 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 EIS should provide a summary outlining the survey effort and level of confidence that all items of heritage or cultural significance at risk have been identified. The EIS 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 any current Traditional Owner utilisation and spiritual / cultural significance of areas potentially affected by the Project.

4 Risk assessment

4.1 Risk assessment 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 phase 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 Biodiversity

4.2.1 Environmental objectives

- To maintain the conservation status, abundance, 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).

- To minimise the risk of significant impacts to threatened species and communities, and migratory species listed under the EPBC Act¹¹, and species listed under the TPWC Act.
- To prevent the introduction and / or spread of invasive and pest species.

4.2.2 Assessment of risks

The EIS must include an assessment of all of the relevant risks of the Project to listed threatened and migratory species under the EPBC Act, species listed under the TPWC Act and to nationally significant aggregations of water birds¹²

The EIS should consider risks to protected matters, and sensitive species / habitats from threatening processes. Potential impacts during the construction, operational and decommissioning phases of the Project should be identified and addressed. Key threatening processes should become apparent through the assessment and could include but not be limited to vegetation clearance, habitat fragmentation, altered hydrology, water quality impacts, acid sulfate soils, erosion and sedimentation, groundwater contamination, impacts on surface and groundwater systems, uncontrolled contaminated discharges, vehicles during construction and operation, weed and pest invasion and spread, human disturbance, lighting, dust, noise and inappropriate / ineffective rehabilitation.

The following information should be provided:

- a detailed assessment of the nature and extent of the likely short-term and long-term relevant impacts to listed threatened and / or migratory species at the local, regional, Territory, national and international context
- a statement about whether any relevant impacts to listed threatened and/or migratory species are likely to be unknown, unpredictable or irreversible
- 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 to listed threatened and/or migratory species.

The EIS should include references to relevant research, statutory advice and statutory plans, such as conservation advice, action plans, recovery plans and threat abatement plans, when assessing the risks, including, but not limited to, plans, policies and advice listed at Appendix B. The EIS should also demonstrate how the action is consistent with the relevant statutory recovery plans and threat abatement plans.

In addition to the above risk assessment, the EIS should include an analysis of the potential risks to sensitive vegetation communities and marine habitats / ecosystems at a local and regional scale. Consideration should be given to the potential for ongoing indirect impacts resulting from the Project.

¹¹ See Department of the Environment, Significant Impact Guidelines *Matters of National Environmental Significance* at: www.environment.gov.au/epbc/publications/significant-impact-guidelines-11-matters-national-environmental-significance

¹² Chatto, R., 2000. *Waterbird Breeding Colonies in the Top End of the Northern Territory*, Technical Report No. 69. Parks and Wildlife Commission of the Northern Territory, Palmerston.

4.2.3 Mitigation and monitoring

The EIS should present management plans that include proposed safeguards, mitigation measures and monitoring programs to deal with the relevant impacts to biodiversity from the Project. Proposed management plans should:

- identify clear environmental outcomes capable of objective measurement and reporting
- permit timely identification and resolution of problems that arise through the course of a Project that may compromise the achievement of the appropriate environmental outcome.

Specific and detailed descriptions of the proposed measures must be provided and substantiated, based on best available practices and advice from relevant Northern Territory and Australian Government advisory agencies and must include the following elements:

- a consolidated list of mitigation measures proposed to be undertaken to prevent, minimise or compensate for the relevant impact of the Project, including:
 - a description of proposed safeguards and mitigation measures to deal with impacts including mitigation measures proposed to be taken by the Territory government, local government or the Proponent
 - assessment of the expected or predicted effectiveness of the mitigation measures
 - statutory or policy basis for the mitigation measures
- the name of the agency responsible for endorsing or approving each mitigation measure or monitoring program.

Monitoring programs should identify objectives, clear thresholds and contingency measures in the event that construction and operational activities affect biodiversity. Monitoring programs should be capable of detecting change in a statistically robust manner. Management measures and monitoring programs should be prepared by a suitably qualified expert that has demonstrated experience in the mitigation and monitoring of adverse impacts to biodiversity and threatened species.

Proposed mitigation measures must be incorporated in relevant sections of the Environmental Management Plan (EMP) (Section 7).

4.3 Water

4.3.1 Environmental objectives

- To 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.
- Water resources are utilised efficiently and appropriately.

4.3.2 Assessment of risks

The EIS should include an assessment of risks to surface water (marine and fresh) and groundwater 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/or groundwater quality as a result of Project components, including but not limited to chemicals and reagents, products, fuels, tailings and waste processing, handling, storage and / or disposal
- associated with extreme weather events, including storm surge, during the whole life of the Project

- associated with Project activities such as site preparation, component construction, introduction of construction materials to the site, loading / unloading activities, stormwater management
- of uncontrolled contaminated discharge, including the failure of proposed mitigation measures
- of alteration of hydrology and rates of erosion / sedimentation of waterways
- of disturbance of potential acid sulfate soils
- of any additional impacts to surface water and / or groundwater resulting from the Project
 - to the Beneficial Uses, Water Quality Objectives and identified environmental values
 - to the food chain, particularly species that are consumed by people.
- of unsustainable use, and/or wastage of water resources.

A water-balance and water management plan should be provided for the Project.

The influence of seasonality and annual variability should be discussed where relevant. The risk assessment should consider short, medium and long term timeframes of the Project.

Provide a groundwater and surface water contaminant transfer model for the Project site, to predict potential contaminant transport dynamics over time, and in response to alternative management actions and infrastructure configurations.

Provide design specifications of facility components to indicate the magnitude of flood event the components will be designed to withstand. For example, indicate the average recurrence interval (ARI) flood categories for which the water process dam will remain a secure no-discharge facility.

Particular details on the location of the process water dam in relation to storm surge should be provided and details on whether water from the dam will meet ANZECC guidelines if there is ever a need to dispose of excess water and, if not, what safe disposal measures are being proposed.

Where identified risks to water quality and related sensitive receptors occur for the Project, interactions should be illustrated in a Conceptual Site Model for the Project (Section 5).

4.3.3 Mitigation and monitoring

The EIS should provide management measures aimed at ensuring the environmental objectives are achieved and the Beneficial Uses and Darwin Harbour Water Quality Objectives are maintained.

The EIS should outline measures proposed for the efficient and appropriate use of water, including for example the use of alternative sources and re-use opportunities.

The EIS should outline the design of stormwater management systems relevant to the local meteorology, including capacity and resilience of any existing natural drainage systems that will be implicated in stormwater management.

Provide a discussion on the likely effectiveness of safeguards.

The EIS should provide management plans to address identified risks to water resources, prepared by suitably qualified and experienced professionals in accordance with appropriate guidelines¹³ that clearly outline objectives and measures to mitigate likely impacts of the Project on terrestrial, marine and freshwater systems.

A conceptual erosion and Sediment Control Plan¹⁴ (ESCP) for the EIS construction and operation should be prepared by a suitably qualified and experienced professional in erosion and sediment control planning.

Where potential for disturbance of acid sulphate soils is identified within the proposed development area an acid sulfate soil management plan is required, to be developed by a suitably qualified and experienced professional in accordance with the Queensland or Western Australian acid sulfate soil management plan guidelines.

The management plan(s) should outline details of monitoring programs that would be implemented throughout the life of the Project to determine the effectiveness of the mitigation measures. The monitoring programs should be statistically robust and identify objectives and clear thresholds for detecting change.

Provisions to notify responsible agencies and respond to environmental and human health risks associated with water quality, or other water related emergencies, should be discussed and provided in the EIS.

Where interpretation of the monitoring data or other observations has detected the potential for or actual adverse trends in performance or impacts, detail the remedial / corrective strategies and actions that would likely be implemented. Include scopes of work where appropriate together with a commitment to an implementation timetable and any modifications to the monitoring program required in order to assess the performance of the actions.

Proposed mitigation and monitoring measures must be incorporated in relevant sections of the EMP (Section 7).

4.4 Waste management

4.4.1 Environmental objectives

To ensure wastes generated by the Project, both solid and liquid, are appropriately managed in accordance with the waste management hierarchy to minimise the risks of environmental pollution and public health nuisances.

4.4.2 Assessment of risks

Identify and assess risks presented by each predicted waste stream, including liquid and solid, and particularly hazardous wastes likely to be generated during construction, operation or decommissioning of the Project. Discussion of each waste stream should include:

- production rate / quantification
- characterisation, including chemical composition and toxicity

¹³ Including: NT EPA *Guidelines for the Siting, Design and Management of Solid Waste Disposal Sites in the Northern Territory January 2013* (see section 2.6 of this Terms of Reference).

¹⁴ Further information relating to erosion and sediment control can be found at www.austieca.com.au and on the Department of Land Resource Management website at: <http://lrm.nt.gov.au/soil/management>

- associated risks and hazards to the environment and/or human health, for each waste stream life stage (i.e. creation, processing, handling, temporary storage, long-term disposal) as applicable

4.4.3 Mitigation and monitoring

Provide a management plan in the EIS that considers waste management strategies for storage, transport and disposal of waste taking into account the waste hierarchy. The EIS should provide information on appropriately licensed facilities for disposal of listed wastes and consider the requirement for an Environment Protection Approval and or Environment Protection Licence under the *Waste Management and Pollution Control Act* (WMPC Act).¹⁵

A monitoring program should identify objectives, clear thresholds and contingency measures if waste management practices do not perform as predicted during construction and operation. Monitoring programs should be capable of detecting change in a statistically robust manner.

4.5 Human health and safety

4.5.1 Environmental objectives

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

4.5.2 Assessment of risks

The EIS should include an assessment of the risks to people, the environment and nearby facilities, including consideration of:

- construction, operation, maintenance, decommissioning and post-closure phases of the various components of the Project and the site
- storage of materials
- transport of materials to and from the Project site. A traffic impact assessment should be provided.

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, operation, and decommissioning of the Project, including safety risks associated with:
 - fire, explosions, toxic emissions / leaks / spills / seepage
 - catastrophic failure of Project components
 - effects of unusual and extreme weather conditions or seismic events on vulnerable components of the Project, including whether the maximum amount of hazardous goods and flammable liquids that will be on site at any point in time can be securely

¹⁵ Guidance and application forms can be found at: <http://www.ntepa.nt.gov.au/waste-pollution/approvals-licences>

stored in the case of extreme weather events, and if not, the alternative mitigation measures that will prevent a hazardous spill

- human error, accidents including road / rail / vessel traffic or transport accidents
- operational energy, fuel and water use
- natural environmental hazards, such as heat exposure, and biting insects. A biting insect assessment is to be conducted in the Project area.

When assessing the risks to human health and safety, it is recommended that consideration be given to a recognised human health risk assessment (e.g. enHealth¹⁶).

Human Health risks and exposure pathways should be summarised in the Conceptual Site Model for the Project (Section 5).

Identify whether the Project will require a Major Hazard Facility licence under the *Work Health and Safety (National Uniform Legislation) Act* and describe the triggers for that requirement.

4.5.3 Mitigation and monitoring

Describe proposed management and monitoring of risks to human health and safety identified for the Project.

Detailed emergency plans and response procedures will need to be developed as a contingency in the event of an emergency or accident (e.g. natural disaster, chemical spillages, leaks, fire and explosions etc.), incorporating management of all emergencies that may impact the environment, infrastructure (e.g. police, fire and emergency services infrastructure, roads, etc.) personnel or the public. Responsibilities and liabilities in such an event should be included.

The EIS should include a construction Traffic Management Plan that outlines detailed avoidance and management measures to mitigate the risks to human health and safety associated with Project construction and operation of transport infrastructure, and transport operations. The plan should identify clear thresholds for accidents, near misses and delays / interruptions that trigger review of the plan and be prepared consistent with the Department of Transport's Policies, which are available at: <http://www.transport.nt.gov.au/ntroads/nt-roads-policies>. Where there is the potential for transport-related impacts to have unintended social and economic consequences, management and mitigation measures should also be provided.

The EIS should outline how the Project would conform to applicable sections of the Department of Health Medical Entomology guideline '*Guidelines for preventing mosquito breeding associated with construction practice near tidal areas in the NT*¹⁷', to ensure no new mosquito breeding sites are created.

Details of monitoring programs to detect risks and impacts to human health, and to determine the effectiveness of the proposed mitigation measures in protecting human health and safety,

¹⁶ 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](http://www.health.gov.au/internet/main/publishing.nsf/content/A12B57E41EC9F326CA257BF0001F9E7D/$File/Aust-Exposure-Factor-Guide.pdf)

¹⁷ Department of Health 2011, *Guidelines for Preventing Mosquito Breeding Associated with Construction Practice near Tidal Areas in the NT*, Available at: http://www.health.nt.gov.au/Medical_Entomology/Publications/Development_Guidelines/index.aspx

should be outlined in relevant sections of the EMP (Section 7). Provisions to avoid / mitigate identified human health risks / impacts should be discussed and provided in the EIS.

4.6 Air quality

4.6.1 Environmental objectives

To maintain air quality for the protection of the environment and human health and amenity.

4.6.2 Assessment of risks

Risks to air quality may arise from emissions of chemicals and particulates. The EIS should assess the risks of the Project to ambient air quality, including risks associated with dust, levels of particulates (e.g. PM₁₀ fraction), odour and other gaseous emissions, where relevant. Consideration is required of meteorological information applicable to air quality in the Project area.

Risks to sensitive receptors from Project emissions should be identified and discussed. Identified Project risks to air quality and sensitive receptors should be included in the Conceptual Site Model for the Project (Section 5).

4.6.3 Mitigation and monitoring

The draft EIS should include:

- a description of how identified risks to ambient air quality and sensitive receptors will be prevented, minimised or mitigated
- emission limits / thresholds with reference to relevant air quality standards. Justify proposed limits / thresholds in terms of levels of risk to identified sensitive receptors
- an Air Quality Management and Monitoring Plan that provides an overview of the risks, sources of emissions, monitoring programs and proposed management of identified risks.

4.7 Socio-economic

4.7.1 Environmental objectives

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

4.7.2 Assessment of risks

An Economic and Social Impact Assessment (ESIA) should be conducted in accordance with the NT EPA *Guidelines for the Preparation of an Economic and Social Impact Assessment* (see section 2.6). Key matters that should be included in the assessment are:

- details of any public consultation activities undertaken, and their outcomes
- projected economic costs and benefits of the Project, including the basis for their estimation through cost / benefit analysis or similar studies
- employment opportunities expected to be generated by the Project (including construction and operational phases)
- opportunities for local and regional businesses
- any negative economic and social impacts on the local community.

Details of the relevant costs and benefits of alternative options to the Project, as identified in Section 2.5, should also be included.

4.7.3 Mitigation and monitoring

The EIS should include an Economic and Social Impact Management Plan that describes proposed measures to avoid or mitigate identified social / economic risks. The ESIMP should include an ongoing stakeholder communications strategy, with mechanisms for monitoring, reporting and addressing any identified or emerging socio-economic and/or cultural impacts.

4.8 Other risks

The following environmental risks should be identified and proposed management strategies provided in the EIS.

4.8.1 Bushfires

The Proponent should be aware of sections of the *Bushfires Act* and Regulations that apply to the Project and address risk and management of bushfires. The development of a Fire Management Plan should be in consultation with relevant stakeholders.

4.8.2 Historic and cultural heritage

The *Heritage Act* and / or *Northern Territory Aboriginal Sacred Sites Act* may apply to sacred, historic or culturally significant heritage places and items potentially affected by the Project. The Proponent should consult with the NT Heritage Branch (of Department of Lands Planning and the Environment), and the Aboriginal Areas Protection Authority to ensure all obligations for the protection of cultural and heritage values of any places or items of significance are fulfilled.

Baseline description should be provided of Aboriginal cultural / archaeological and historic values of areas potentially impacted by the Project.

4.8.3 Noise, vibration and lighting

The EIS should describe modelled levels of noise, vibration and lighting and the potential impacts on species protected under the EPBC Act and TPWC Act.

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

4.8.4 Amenity

Project impacts on existing amenity of the proposed site should be assessed for each Project stage, including consideration of:

- the extent and significance of the changed landscape
- visibility of the Project from key vantage points
- increased or decreased public access to the site, adjacent waterways or other areas of significance

Management of unauthorised access or restricted access to waterways and natural areas adjacent to the Project should be described and discussed.

4.8.5 Public health

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*¹⁸.

4.8.6 Climate change

Provide an inventory of projected annual emissions for each relevant greenhouse gas, with total emissions expressed in 'CO₂ equivalent' terms and a description of proposed greenhouse gas abatement measures.

Provide an assessment of risks to the Project from climate change impacts (e.g. increases in mean sea level, storm tides, waves and shoreline erosion).

Identify measures to minimise risk to the Project from climate change impacts, particularly where there may be a significant impact to human safety or property.

4.9 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, reasonably foreseeable future developments, and the combined effects of multiple different impacts on a receptor, 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 EIS should address potential cumulative impact of the action on ecosystem resilience.

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 accumulating over time.

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

¹⁸ Department of Health, 2013. *Environmental Health Fact Sheet 700 Requirements for Mining and Construction Projects*, Available at: http://www.health.nt.gov.au/Environmental_Health/Health_Risk_Assessment/

5 Conceptual site model

A Conceptual Site Model is a representation of the nature, fate and transport of discharges, wastes or contaminants that allows assessment of potential and/or actual exposure to contaminants. A Conceptual Site Model enables the formation of hypotheses that can be tested under a monitoring program, and can be represented by a plan or diagram.

Where environmental risks and related sensitive receptors are identified for the Project, interactions should be illustrated in a Conceptual Site Model for the Project. The Model should include, but not be limited to potential impacts to sensitive receptors, environmental values and to human health and safety. Model design and information content should be in accordance with the NT EPA Guidelines on Conceptual Site Models (see section 2.6).

6 Environmental offsets

The Australian Government *Environmental Offsets Policy*¹⁹ 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 Environmental management

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

The scope, content and structure of the EMP will be a function of the outcomes of the environmental risk assessment and determined by the significance of the potential 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

¹⁹ Department of the Environment, 2012. *Environmental Offsets Policy*., Available at: <http://www.environment.gov.au/epbc/publications/epbc-act-environmental-offsets-policy>

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 (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.

Reference should be made to relevant legislation, guidelines and standards, and proposed arrangements for necessary approvals and permits should be noted. Proposed procedures for independent auditing or self-auditing and reporting of accidents and incidents should be included. The agencies responsible for overseeing implementation of the EMP should be identified. The EMP should continue to be developed and refined following the conclusion of the environmental assessment process, taking into consideration the proposed timing of development activities, comments on the assessment documentation and incorporating the Assessment Report recommendations (if any) and conclusions, and any conditions of the Australian Government Minister's approval.

Further information on the development of an EMP is available in the NT EPA's *Guidelines for the Preparation of an Environmental Management Plan* (see section 2.6).

8 General advice on the Environmental Impact Statement

8.1 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. Technical jargon should be avoided wherever possible. Cross-referencing should be used to avoid unnecessary duplication of text. Maps (using an appropriate scale, resolution and clarity), plans, diagrams and other descriptive detail should be included. Spatial data should also be provided to the NT EPA as importable Geographic Information System (GIS) shape files (compatible with ArcMap) with relevant features and areas marked as polygons, lines and points, and any relevant geospatially referenced underlays included.

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.

8.2 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 detailed table listing how each component information request of these Terms of Reference has been addressed in the EIS, cross-referenced to chapters and/or appendices, and page numbers
- 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. Commitments should follow the ‘Specific, Measureable, Attainable, Realistic and Timely’ (SMART) principle, where possible.
- 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.

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

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

8.4 Administration

The Proponent should lodge electronic versions (unsecured Adobe PDF, and Microsoft Word format where possible) 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 confirm the requirement for hard copies prior to lodgement.

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

8.5 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 the late December or January periods.

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

- NT Environment Protection Authority, Suite 201, The Avenue, 12 Salonika Street, Parap
- Northern Territory Library, Parliament House, 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.

Appendix A: Matters that must be addressed in an Environmental Impact Statement - (Schedule 4 of the EPBC Regulations 2000)

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
- (i) 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 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.

Appendix B: Australian Government Plans, Policies and Advice

Marine bioregional plan for North Marine Region Department of Sustainability, Environment, Water, Population and Communities, 2012

Sawfish and River Sharks Multispecies Recovery Plan, Department of the Environment, 2015

*Commonwealth Conservation Advice on *Pristis clavata* (Dwarf Sawfish)*, Threatened Species Scientific Committee, 2009

*Approved Conservation Advice for *Pristis pristis* (Largetooth sawfish)*, Threatened Species Scientific Committee, 2014

*Approved Conservation Advice for *Pristis zijsron* (Green Sawfish)*, Threatened Species Scientific Committee, 2008

Recovery Plan for Marine Turtles in Australia, Environment Australia, 2007

*Approved Conservation Advice for *Calidris ferruginea* (curlew Sandpiper)*, Threatened Species Scientific Committee, 2015

Wildlife Conservation Plan for Migratory Shorebirds, Commonwealth of Australia, 2006

*Approved Conservation Advice for *Numenius madagascariensis* (Eastern Curlew)*, Threatened Species Scientific Committee, 2015

EPBC Act Policy Statement 3.21 – Industry Guidelines for avoiding, assessing and mitigation impacts on EPBC Act listed migratory shorebird species, 2015

EPBC Act Environmental Offsets Policy, 2012