Northern Territory Environment Protection Authority

TERMS OF REFERENCE FOR THE PREPARATION OF AN ENVIRONMENTAL IMPACT STATEMENT

EAST POINT OUTFALL PROJECT

POWER AND WATER CORPORATION

NOVEMBER 2014

1 Introduction

The Power and Water Corporation (Power and Water) is proposing to upgrade the existing sewage outfall at East Point, Darwin in the Northern Territory (the Project). The Project will involve the extension of the existing outfall or the construction of a new outfall including discharge pipework on a new alignment. Power and Water stated in its Notice of Intent (NOI) that the final design and construction methods have not yet been finalised. Options for the final alignment and construction of the Project will be presented in the EIS. Power and Water predicts that the Project will have a minimum design life of 50 years.

In 2009, Power and Water referred a NOI under the *Environmental Assessment Act* (EA Act) to extend the East Point Outfall and to duplicate the East Point Rising Main. On 18 December 2009, the then Minister for Natural Resources, Environment and Heritage (NT Minister) decided that the proposal required assessment under the EA Act at the level of a Public Environmental Report (PER). In August 2011, Power and Water sought a variation under clause 14A of the Environmental Assessment Administrative Procedures. The variation proposed to split the initial project so that assessment of the East Point Rising Main could be completed and works could commence while designs for the outfall could be considered and baseline studies conducted.

The following risks associated with the construction and operation of the Project were identified through an NT Government review of the NOI:

- erosion and long-term integrity of sand waves occurring in the construction area;
- suspended material caused by construction reducing light availability for submerged aquatic fauna
- loss of biodiversity within a single benthic community
- transport of dredge material to intertidal areas and wader bird feeding areas
- impacts at the mixing zone and increases in nutrient loads from the outfall including:
    - the build-up of sediments at the outfall associated with effluent particulate matter
    - the persistence and accretion of nutrients from effluent
- introduction of aquatic pests during construction
- increased underwater noise and its impact on cetaceans and dugongs.

On 6 October 2011, a delegate for the then Commonwealth Minister for Sustainability, Environment, Water, Population and Communities decided that the East Point Outfall Project was a ‘controlled action’ and would require assessment and approval under *the Environment Protection and Biodiversity Conservation Act 1999* (EPBC Act). The relevant controlling provisions under the EPBC Act are:

- Listed threatened species and communities (Sections 18 and 18A)
- Listed migratory species (Sections 20 and 20A).

On 10 November 2011, the Executive Director of the Environment and Heritage Division wrote to the Australian Government to advise that the Project would be assessed at the level of PER in accordance with the bilateral agreement between the Australian and Northern Territory Governments. In January 2013, the bilateral agreement ceased operating as a result of changes to legislation. In response, the Northern Territory Environment Protection Authority (NT EPA) decided to assess the project at the level of

Environmental Impact Statement (EIS) in order to facilitate an accredited assessment. On 23 October 2013, the Australian Government accredited the Northern Territory's assessment process for the purposes of assessing this action.

2 Scope of assessment

Following the separation of the East Point Outfall component from the East Point Rising Main assessment, the PER process for the rising main was completed taking into account the following matters:

- effects of increased sewage output (32%) from the existing outfall at East Point, including the consequent risks to water quality, marine biodiversity and recreation areas/public health
- disturbance to acid sulphate soils during construction of the rising main
- impacts to sensitive monsoon forest and mangrove communities.

Recommendations were made in Assessment Report 72, issued in December 2012, to address the issues raised. Recommendations 4, 5, 6, 7 and 8 are considered relevant to the East Point Outfall as they pertain to investigating and monitoring the effects of sewage discharge from the existing outfall, the results of which could therefore be used to inform studies and as baseline information for future monitoring for the proposed outfall upgrade.

The EIS should exclude those aspects of the environment that were dealt with through the PER for the rising main, except where information is relevant to the outfall upgrade such as the likely volumes and quality of effluent from the Ludmilla Waste Water Treatment Plant (LWWTP), and any pre-upgrade baseline information and effects of the existing outfall on the receiving environment.

The criteria for discharge from the current outfall were established through a Waste Discharge Licence (WDL) under the *Water Act*. The assessment should be conducted taking into account the requirements of a future WDL for an upgraded outfall. The outcomes of the environmental assessment will inform the Proponent's application for the WDL.

3 Description of the Proposed Development

3.1 General Information

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

- the title of the project
- the full name, contact details and postal address of the Proponent
- a description of the proposal's location in the region and its proximity to:
    - landmark features
    - underlying and surrounding tenure and land use
    - sites of cultural significance
    - sites of social significance
    - Darwin CBD and suburban areas
    - areas on the National Reserve System

    - sensitive environments such as Darwin Harbour, other significant waterways, significant natural features, and conservation and recreational reserves
- climate and atmospheric characteristics relevant to the Project, e.g. wind speed and direction, rainfall and extreme events
- the background to the development of the Project including discussion of previous 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
- an explanation and outline of the objectives, benefits and justification for the Project
- legislative background for the proposal, including the relevant NT legislation that applies to the project
- the current status of the action
- the consequences of not proceeding with the action.

3.2 Description of the Proposal

Project components

The Project footprint should be delineated using detailed maps and diagrams, including:

- locations of existing infrastructure
- all areas to be disturbed
- the location of any works to be undertaken and structures to be built.

Construction

The EIS should outline all construction options considered including a justification for their selection. Provide the following relevant information which relates to construction activities for the Project:

- construction program (timing and duration)
- final (or preferred) designs, methods, materials and options for installation
- quantity, methods and location for disposal of any disturbed material
- details of laydown areas, hardstand areas, stringing areas and any drilling entry and exit points (where applicable)
- details of raw materials that will be required for use during construction
- justification for the location of the outfall and modelling that has been used to identify the location
- specifications and standards incorporated into the Project design for dealing with significant and/or catastrophic weather events.

Operation phase

Provide specific details on the following aspects of operation:

- preliminary commissioning, including pipeline testing and completions

- maintenance requirements and operations
- predicted operational life of the proposal
- an overview of the LWWTP including aspects of the source, treatment and discharge of treated effluent
- estimates of the volume of treated effluent to be discharged through the outfall. Estimates should take into account seasonal variation and future population growth.

Workforce and accommodation

- Describe the number of people to be employed, the skills base required, and likely sources (local, regional, overseas) of employees during construction and operation.
- Discuss arrangements for transport of workers to and from project areas.
- Specify the number of people to be employed to manage or undertake environmental duties on the site. Provide information on the minimum requirements for qualifications and experience.

3.3 Ecologically Sustainable Development

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

- promote ecologically sustainable development (ESD)
- 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*[1]. Therefore, it is essential that the Proponent demonstrate how it complies with and contributes to the principles and objectives of ESD in the relevant section(s) of the EIS.

3.4 Alternatives

The EIS should describe any feasible alternatives to carrying out the Project. The choice of the preferred option(s) should be clearly explained. Alternatives should include:

- not proceeding with the proposal
- site selection for all Project components
- alternatives to discharging to the marine environment
- pipeline materials and installation options
- methods of sediment disturbance considered and sediment spoil disposal locations
- environmental management techniques for key risks.

[1] 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

Discussion should include:

- sufficient detail to make clear why a particular alternative is preferred to another
- adverse and beneficial effects of alternatives at regional and local levels
- the comparison of short (whilst operational), medium and long term advantages and disadvantages of the alternatives
- a comparative description of the impacts of each alternative on the relevant Matters of National Environmental Significance protected by controlling provisions of Part 3 of the EPBC Act for the action.

4 Risk Assessment

4.1 Risk Assessment Approach

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

- identify and discuss the full range of risks presented by the Project, including those of special concern to the public
- quantify and rank risks so that the reasons for proposed management responses are clear
- identify levels of any uncertainty about estimates of risk and the effectiveness of risk controls
- 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
- the prevention and mitigation of risks are properly addressed in the design specifications
- the risks can and will be managed effectively during the construction, operation, and decommissioning phases of the Project.

Information provided should permit the reader to understand the likelihood and potential severity of each risk presented by the Project. 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. Relevant

standards, codes and best practice methodologies that minimise risks should be discussed. The risk assessment should be based on international best practice. Processes for risk management are formalised in Standards Australia / Standards New Zealand (e.g. AS/NZS ISO 31000:2009; HB 436:2004; HB 158:2010; HB 203:2012).

A number of key Project risks have been identified through a preliminary assessment of the Project. Each of the identified risks defined in this Terms of Reference should be addressed by the Proponent in the risk assessment and management process.

Additionally, it is expected that further risks will be identified through the comprehensive risk assessment process required for the EIS. These should also be addressed and appropriate management initiatives developed.

Environmental objectives, or overarching goals identifying environmental values to be protected, have been identified for each key risk. The major risks below have been identified through analysis by the Northern Territory Government of the Notice of Intent for the extension or replacement of the East Point Outfall. It is possible that further risks may be identified through the environmental impact assessment process.

4.2 Information requirements

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

- *Guidelines for the Environmental Assessment of Marine Dredging in the Northern Territory*
- *Guidelines for the Preparation of an Economic and Social Impact Assessment*
- *Guidelines on Environmental Offsets and Associated Approval Conditions*.

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

- *EPBC Act Environmental Offsets Policy 2012*
- relevant EPBC Act survey guidelines, recovery plans and any approved conservation advice.

4.3 Cumulative impacts

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

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

- landscape change originates not only from single projects and management actions but also from complex and dynamic interactions of multiple past, present and future management actions

- biophysical, social and economic change accumulates through additive or interactive (or synergistic) processes. The aggregate impact of multiple actions on the environment can be complex and may result in impacts that are more significant because of interactive processes
- any given action does not operate in isolation. The most significant changes are often not the result of the direct effects of an individual action, but from the combination of multiple minor effects over the accumulation of time.

4.4 Marine sediments

Key Risks

- Physical disturbance to benthic environments could result in destabilisation and erosion of physical environments and changes to hydrodynamic processes.
- Disturbance and exposure to air of acid sulphate sediments could result in localised impacts to water quality and biota.
- Disposal or disturbance of sediments during construction could result in localised smothering of benthic communities.

Information Requirements

The EIS should include the details of benthic and bathymetric surveys from along the pipeline alignment and in areas that may be indirectly at risk during construction and operation (within the zone of influence). The surveys should identify details of the types of marine sediment, including any areas that may be sensitive to disturbance.

Assessment of risk

- The EIS should provide an assessment of the potential risk to marine sediment and benthic structures during construction and/or operation of the Project.
- The EIS should assess the potential for construction and/or operation to initiate or facilitate marine sediment or sand wave movement along the pipeline alignment.

Mitigation and Monitoring

The EIS should include details of a management plan that outlines clear and concise methods to mitigate and monitor the extent of impact to marine sediments and bathymetrical features such as sand waves. All mitigation and monitoring measures should focus on reducing sediment disturbance where practicable.

4.5 Water quality

Key Risks

- Nutrients released from the outfall will change the primary productivity, potentially resulting in environmental degradation.
- Contaminants (e.g. nutrients, suspended solids, toxicants) and microbiological pathogens from the outfall will accumulate and therefore cause long-term environmental and/or social impacts; and
- The distribution of contaminants and microbiological pathogens within Darwin Harbour will be more widespread, leading to more extensive impacts.

Information requirements

The EIS should include a quantitative summary of the operational regime for the LWWTP. In particular, the EIS should include details of the level of treatment and the monthly volumes of treated effluent discharged from the plant.

The EIS should include discussion of current WDL requirements and the results of previous water quality monitoring/studies quantifying the current concentrations of contaminants in the receiving environment related to discharges from the existing outfall. In particular, the EIS should include details of monitoring sites, discussion of any observed changes in water quality over the monitoring period and how environmental objectives for the receiving environment have been met.

Assessment of Risks

Outcomes of an environmental risk assessment process that considers the current status of relevant environmental values and the Beneficial Uses of Darwin Harbour for marine waters should be discussed. The EIS should:

- identify situations where components of the Project could affect water quality during all stages, including site preparation, construction and operation
- include an assessment of the risks of impact to the environment associated with contaminants and microbiological pathogens that could accumulate in the environment. The assessment should include a summary of current literature and interpretation of any pertinent data from WDL requirements
- identify any potential sensitive receptors that may be impacted by the outfall
- include a detailed risk assessment on the potential for further or ongoing disturbance of any contaminated material deposited in the area from the ~40-year operation of the current outfall.

Mitigation and monitoring

The EIS should include a monitoring program to detect impacts of contaminants on the marine environment and management plans that detail measures to mitigate expected impacts. The management plan should be prepared in accordance with criteria prescribed in the Darwin Harbour Water Quality Objectives (WQOs), *Australian New Zealand Environment Conservation Council Water Quality Guidelines* (ANZECC 2000) and any other relevant standards relating to the risks of significant impacts. The monitoring program design should be outlined and methods for monitoring the following aspects of the receiving environment included:

- water quality and sediment health measures, in particular Total Nitrogen, Total Phosphorus and ammonia
- the characteristics, condition and quality of marine sediments in the vicinity of the outfall, including any evidence of eutrophication and/or contamination by organic matter and metals
- the quality of the water for recreational purposes including enterococci and faecal coliforms
- aquatic ecosystem health including a range of physico-chemical parameters and contaminants.

4.6 Listed migratory species, and listed threatened species and communities

Key Risks

- The Project may have significant impacts on species listed as threatened under the EPBC Act and the *Territory Parks and Wildlife Conservation Act* (TPWC Act), including, but not necessarily limited to:
    - flatback turtle (*Natator depressus*)
    - loggerhead turtle (*Caretta caretta*)

  - leatherback turtle (*Dermochelys coriacea*)
  - olive ridley turtle (*Lepidochelys olivacea*)
  - green turtle (*Chelonia mydas*)
  - hawksbill turtle (*Eretmochelys imbricata*)
  - dwarf sawfish (*Pristis clavata*)
  - green sawfish (*Pristis zijsron*).
- The Project may have significant impacts on species listed as migratory under the EPBC Act, including, but not necessarily limited to
  - snub-fin dolphin (*Orcaella heinsohni*)
  - Indo-Pacific humpback dolphin (*Sousa chinensis*)
  - spotted bottlenose dolphin (*Tursiops aduncus*)
  - dugong (*Dugong dugon*).
- Specifically, the Project may expose marine wildlife to contaminants and toxicants that could result in ongoing impacts, especially to animals at higher trophic levels through biomagnification.
- The Project may cause behavioural changes to listed threatened and listed migratory species during construction (e.g. noise) and operational (e.g. turbidity) phases.
- The Project could lead to direct or indirect loss of benthic habitat important for dugong and marine turtles.

Environmental Objectives

- To 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
- To minimise the risk of Significant Impacts to EPBC Act listed threatened and listed migratory species during construction and operation of the Project.

Information Requirements

Where it has been identified that there is potential for significant impact, the following information should be included in the EIS as a baseline to quantify the impact to listed threatened and migratory species:

- the results of targeted surveys for species listed as threatened and migratory under the EPBC Act and/or TPWC Act in the area of the proposed action and surrounding areas. The EIS should include information on the survey effort, timing and location. The survey methodology should be consistent with current Northern Territory and Australian Government guidelines
- the EIS should include mapping that illustrates the proximity of the proposed alignment to habitats used by listed threatened or listed migratory species. Consideration should be given to sensitive ecosystems/habitats identified in previous surveys.

Assessment of risk

- The EIS should identify risks of Project-related activities interacting with listed threatened and/or migratory species. Of those risks identified, the potential for

impacts to individuals or populations of listed threatened and listed migratory species should be discussed.

- The EIS should identify any potential risks to habitat for listed threatened and migratory species during the construction and/or operation of the Project. Of the identified risks, the EIS should discuss the likely occurrence and the potential severity of impacts to areas of habitat.
- Existing and cumulative threats to listed threatened and migratory species, whether or not attributable to the proposed action, should be discussed with reference to relevant impacts from the proposed action (including taking into consideration any relevant guidelines, policies, plans and statutory provisions such as the EPBC Matters of National Environmental Significance (NES) Significant Impact Guidelines).
- The EIS should assess the risks associated with the release of contaminants and toxicants from the outfall. The EIS should identify those contaminants that may be released by the outfall and that could potentially accumulate in suitable habitat or in the tissues of listed threatened and migratory species. Any discussion of the risks and impacts should consider the available literature and identify potential trophic pathways in Darwin Harbour where contaminants could accumulate.

Mitigation

The EIS should contain a detailed management plan that outlines clear and concise methods to mitigate likely/potential impacts to listed threatened and migratory species. All mitigation and monitoring measures should focus on potentially significant impacts to listed threatened and migratory species as a whole. The following information should be provided for EPBC Act listed species:

- a description of proposed safeguards and mitigation measures to deal with relevant impacts of the action
- any statutory or policy basis for the mitigation measures.

Monitoring

The EIS should include details of a monitoring program for marine biota to monitor the effectiveness of the stated mitigation measures. The monitoring program should outline the methodology for monitoring the impacts to listed threatened and/or migratory species and habitats as well as identifying clear trigger thresholds and contingency measures that will be implemented in the event that monitoring activities find that the mitigation measures are ineffective.

4.7 Marine benthic communities

Key risks

- Changes to the community structure of the local benthic faunal community
- Disturbance and degradation of sensitive ecosystems e.g. mangroves, seagrass and coral reefs, due to water quality impacts and sediment mobilisation
- Increased frequency and/or intensity of macrophytic algal and cyanobacterial blooms in the marine environment.

Environmental Objectives

To protect the marine benthic communities in Darwin Harbour into the future such that ecological health, commercial uses, and cultural and recreational values are maintained.

Information Requirements

- Provide marine habitat mapping of Darwin Harbour with greater resolution for the area surrounding the existing and proposed outfalls that may be directly or indirectly impacted from construction and operation.
- Provide the results of ecotoxicological investigations undertaken for the proposed outfall extension site selection process (Recommendation 4 of the East Point Rising Main (EPRM) Assessment Report).
- Provide the results of benthic infauna surveys along a gradient away from the existing outfall (Recommendation 6 of the EPRM Assessment Report).
- Describe the characteristics for the predicted dilution and mixing zone (including suspended solids) at the point of release based on hydrodynamic modelling.
- Provide the results and interpretation of hydrodynamic modelling undertaken for the outfall in an Appendix to the EIS.
- Describe the maximum load and the concentration limits of Total Nitrogen, Total Phosphorus and ammonia that are predicted to be discharged over a given time period (e.g. annually and monthly).
- Demonstrate how the effluent released at the outfall compares with criteria as prescribed in the WDL and Darwin Harbour WQOs, and any locally-derived guidelines as set out in ANZECC 2000.
- Provide the extent of the mixing zone required and identify impacted habitats, where management criteria prescribed for relevant parameters are not met prior to discharge.

Assessment of risks

The outcomes of an environmental risk assessment process should be provided that considers the current status of relevant environmental values and the Beneficial Uses of Darwin Harbour for local and regional biota. In particular, the EIS should:

- assess the risks to local benthic communities associated with changes to water quality and release of contaminants from the Project, and provide a detailed assessment of the potential impacts to the existing benthic infauna assemblages
- describe the predicted extent that effluent constituents may move beyond the mixing zone and what, if any, effects to the wider benthic communities this may have
- discuss any changes to the assimilative capacity and sustainable load of the receiving environment as a result of the Project, with reference to Butler *et al* (2013)[2].

Monitoring and Mitigation

The EIS should include a management and monitoring plan that outlines clear and concise mitigation and monitoring measures for marine biodiversity. The management plan should include goals and objectives, defined thresholds or trigger values for

[2] Butler, E.C.V., Streten-Joyce, C., Tsang, J.J., Williams, D.K., Alongi, D.M., Furnas, M.J. and McKinnon, A.D. (2013) A procedure for evaluating the nutrient assimilative capacity of Darwin Harbour. Report for Aquatic Health Unit, NT Department of Land Resource Management. Australian Institute of Marine Science, Darwin.

identifying impacts to benthic communities, and contingency measures for exceedence of trigger values.

Where specific monitoring or management plans have been required under an existing approval or licence issued by the Australian Government or the Northern Territory Government, the management/monitoring plans in the EIS should include the minimum requirements specified in the conditions of any approval or licence. All monitoring and management plans included in the EIS should consider and be consistent with the requirements of the East Point Reserve Management Plan.

4.8 Other Issues

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

Cultural Heritage

The EIS should identify any sites or items at risk which have cultural heritage significance. The EIS should identify any sites or items that currently have protection under one or more of the following legislation:

- *Environment Protection and Biodiversity Conservation Act 1999* (Cwth)
- *Aboriginal and Torres Strait Island Heritage Protection Act 1984* (Cwth)
- *Historic Shipwrecks Act 1976* (Cwth)
- *Aboriginal Sacred Sites Act* (NT)
- *Heritage Act* (NT).

The EIS should include the results of searches on the Northern Territory Government's Heritage Database, the Australian Government Shipwrecks Database and the Australian Government's Environmental Reporting Tool. Where information is not confidential or of a sensitive nature, the results of any archaeology and heritage assessment should be included in the EIS.

An assessment of the risks to cultural heritage associated with the Project should be conducted.

The EIS should include the outline of a draft cultural heritage management strategy that seeks to avoid impacts to and afford protection for significant sites or items. The cultural heritage management strategy should include provisions to mitigate and manage any items or places identified prior to or during construction and maintenance activities. When preparing the archaeological report and the cultural heritage management plan it is strongly recommended that the Proponent give consideration to, and refer to the Burra Charter and guidelines at: http://australia.icomos.org/publications/charters/, to ensure that the investigations and mitigation measures proposed meet best practice standards for the management of heritage in Australia.

Human health and safety

Outcomes of an environmental risk assessment process that considers the current status of relevant environmental values and Beneficial Uses of Darwin Harbour for waters, sediment and biota should be discussed in the context of human health.

The EIS should identify any important recreational areas including beaches and recreational fishing locations that may be impacted by effluent, particularly microbiological pathogens and toxicants. The risk assessment should consider the potential for elevated levels of pathogens and toxicants from discharges to be found in seafood likely to be consumed by people as well as the potential for microbiological

pathogens to affect sediments and water in recreational areas during the operational phase of the Project.

Measures for minimising and managing public health issues associated with the Project should be discussed in the EIS.

Recreational and commercial boating activities

The EIS should identify any areas within Darwin Harbour that may be unavailable or excluded for recreation activities, such as fishing, boating and diving. The EIS should detail the proposed construction timeframe and the expected period where access to certain areas may be restricted or excluded.

Provide a discussion of the measures that could be taken to schedule works so that the likelihood of interference to commercial marine activities in the area during the peak tourism season is minimised.

Noise and vibration

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

Include reference to any best practice guidelines and new innovations for resolving noise and vibration issues during the Project.

Visual amenity

The effects on the 'visual amenity' of visitors and tourists along the land and sea portions of the coastline should be discussed and any proposals to minimise the footprint of the disturbance area and thereby minimise the visual disturbance included.

Biting Insects

Any onshore disturbance and disturbance in the tide zone above the 7.3 m tide level should be remediated to be free from potential ponding at the end of construction. If ponding occurs during the construction phase, the proponent should treat mosquito breeding and rectify the ponding as soon as possible. Further information can be found in the Department of Health Medical Entomology's *Guidelines for Preventing Mosquito Breeding Associated with Construction Practice near Tidal Areas in the NT* at: http://www.health.nt.gov.au/Medical_Entomology/Publications/Development_Guidelines/index.aspx.

5 Environmental Management

Specific safeguards and controls proposed to be employed to minimise or remedy environmental impacts identified in previous sections are to be included in an Environmental Management Plan (EMP) or similar plan.

The EMP should be strategic, describing a framework for environmental management of the Project. However, as much detail as is practicable should be provided to enable adequate assessment of the proposal during the public exhibition phase. Specific management practices and procedures should be included in the EMP, where possible. Reference should be made to relevant legislation, guidelines and standards, and proposed arrangements for necessary approvals and permits should be noted. Proposed reporting procedures on the implementation of the plan, 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

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

6 Public Involvement and Consultation

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

7 General Advice on EIS

7.1 General Content

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

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

Detailed technical information, studies or investigations necessary to support the main text should be included as appendices to the draft EIS.

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

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

7.2 Format and style

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.

The EIS should comprise of three elements:

- Executive summary

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

- Main text of the document

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

- Appendices

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

- a table listing how these Terms of Reference have been addressed in the draft EIS, cross-referenced to chapters, page numbers and/or appendices
- an outline of the relevant legislation, codes, standards and guidelines applicable to the Project
- a list of persons and agencies consulted
- the names of, and work done by, the persons involved in preparing the draft EIS
- the qualifications and experience of the parties involved in work contributing to the EIS.

The draft EIS must be written so that any conclusions reached can be independently assessed. 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 must be available upon request.

7.3 Administration

The Proponent should lodge five bound, hard copies and an electronic copy (Adobe PDF format) of the draft EIS with the NT EPA and two bound hardcopies with the Australian Government Department of the Environment. The electronic copies should be provided both as a single file of the entire document and separate files of the document components. Additionally, a Microsoft Word copy of the EIS should be provided to facilitate the production of the Environmental Assessment Report. The Proponent should consider the file size, the number of files, format and style of the document appropriate for publication on the NT EPA website. The capacity of the website to store data and display the material may have some bearing on how the documents are constructed.

The Proponent is to advertise when the draft EIS will be available for review and comment in *The NT News.*

Please note that the NT EPA requires the 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.

7.4 Public Exhibition

The EIS has an important role in informing the public about the risks associated with the Project. It is essential that the Proponent demonstrate how any public concerns were identified, and how those concerns 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. To ensure that the EIS is publicly available to interested members of the public or stakeholders, the NT EPA requires that it be made available at the following locations:

- NT Environment Protection Authority, 2nd Floor, Darwin Plaza, 41 Smith Street Mall, Darwin
- the Northern Territory Library, Parliament House, Darwin.

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

8 Guidance Notes

8.1 Environmental Offsets

The Australian Government *EPBC Act Environmental Offsets Policy 2012* (the Offsets Policy) requires residual significant impacts (after avoidance and mitigation measures have been implemented) 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. These documents are available at: http://www.environment.gov.au/epbc/publications/environmental-offsets-policy.html.

The EIS should provide information on:

- any identified impacts or detriments that cannot be avoided, reduced 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 should be identified
- proposed offsets for residual significant impacts to listed threatened or listed migratory species or an explanation as to how these proposed offsets will be consistent with the requirements of the Offsets Policy and Offsets assessment guide, where relevant.

8.2 Waste Discharge

Discharge of wastewater from the Project area is and will continue to be licensed under the NT *Water Act*. Guidance and application forms can be found at: http://www.ntepa.nt.gov.au/waste-pollution/approvals-licences

8.3 Invasive Species

The presence of vessels during construction or operation may pose a risk to introductions of invasive marine species. The environmental risks associated with the potential introduction or translocation of invasive species, including how any vessel involved in the project during the construction or operation stages (including dredging vessels) will meet minimal national standards. Guidance on best practice management biofouling is available at: http://www.marinepests.gov.au/non-trading-vessels.