



**Submissions of the Northern Land Council on the Public Review of the draft
Environmental Impact Statement Guidelines released by the Northern Territory's
Environmental Protection Agency**

15 July 2013

In May 2013, the Northern Territory Environmental Protection Agency (**EPA**) released a set of 11 draft Environmental Impact Statement Guidelines (**Guidelines**) for public comment.

The Northern Land Council (NLC) welcomes the opportunity to comment on these Guidelines.

The NLC has restricted its review to Guidelines 1, 2, 4, 5, 8, and 9, since these Guidelines are the most directly relevant to the NLC's work. The NLC's submission comprises two parts, although there are commonalities between the two partitions:

- (a) a legal analysis of the Guidelines in the context of the legal and regulatory framework of environmental assessment in the Northern Territory, and nationally; and
- (b) a technical analysis of the Guidelines in the context of the best practice technical, scientific and environmental requirements for environmental assessment in the Northern Territory, and nationally. This analysis has been undertaken by Dr Howard Smith of APChem Scientific Consultants.

The legal analysis referred to in (a) follows immediately below. Dr Howard Smith's analysis referred to at (b) is attached to this document at Annexure 1.

The NLC notes the detailed review of the environmental assessment process in the Northern Territory, completed by the EPA in April 2010 ("Final Advice on Improving Environmental Assessment in the Northern Territory" (**EPA Report**)). The NLC supports the findings of this review and, in particular, the call for new environmental assessment legislation that reflects the current, national approach to environmental assessment taken under the *Environment Protection and Biodiversity Conservation Act 1999* (Cth) (**EPBC**). It is noted that the draft Guidelines produced do not appear to address or reflect the comprehensive recommendations of the EPA Report.

In sum, while the NLC considers the publication of environmental assessment guidelines (at least conceptually) to be a positive development, the NLC is concerned that the Guidelines

fall far short of nationally (and internationally) acceptable standards for environmental assessment. Indeed, they fall short of the recommendations made by the EPA itself in the 2010 EPA Report, and may actually diminish two key principles of any acceptable environmental assessment regime, namely:

- (a) the transparency and accountability of the environmental assessment process in the Northern Territory; and
- (b) the EPA's ability to identify and minimise the environmental impacts of major proposals, particularly in relation to mining and petroleum exploration and production proposals.

Short of the thorough overhaul of environmental law in the Northern Territory recommended in the 2010 EPA Report, the NLC believes that the development of environmental assessment guidelines represents a singular opportunity to strengthen the Northern Territory's environmental assessment regime, which the EPA itself has acknowledged as deficient in a number of key respects.¹ Without significant amendments to the Guidelines, this opportunity will be largely lost.

In sum, the NLC has identified the following key recommendations arising from its analysis of the Guidelines:

1. Each Guideline should be amended to state at what stage in the environmental assessment process it is intended to apply, and whether and to what extent the Guidelines are intended to replace existing procedures. As currently drafted, it is not clear when and in what circumstances the Guidelines are intended to apply. Without amendment, the Guidelines are confusing for proponents and the public, and may open the EPA's environmental assessment process to legal challenge.
2. The principles of ecologically sustainable development (**ESD**) should be incorporated into the Guidelines, including a definition of the term and how the principles are to be implemented. None of the Guidelines explicitly identify, or attempt to implement, the principles of ESD. The Northern Territory falls significantly behind other jurisdictions in its omission to incorporate the principles in its environmental assessment processes (a matter acknowledged by the EPA itself in the 2010 EPA Report) and in so doing may not comply with its obligations under the Intergovernmental Agreement on the Environment.
3. In accordance with the principles of ESD, the Guidelines should require that a notice of intent (**NOI**) be lodged in respect of all mining and petroleum proposals. Currently, Guidelines 8 and 9 provide a "blueprint" for proponents to avoid submitting an NOI and therefore to escape any governmental or public scrutiny of their activities. This approach is inconsistent with the principles of ESD. Further, it inappropriately places the onus on the proponent, rather than the EPA, to assess the

¹ See further, the recommendations contained in EPA Report, iv–vi.

environmental significance of a proposal. The NLC submits that all proponents for mining and petroleum proposals should submit an NOI, and the EPA should then assess whether the proposal is “environmentally significant” such that it triggers the environmental assessment process under the *Environmental Assessment Act* 1982 (NT) (EAA). Guidelines 8 and 9 should be redrafted and directed towards whether a mining or petroleum proposal will be “environmentally significant” and the level at which an assessment should take place (see recommendations (d) and (e) below).

4. Guidelines should be developed for the EPA to determine when a proposal submitted by way of NOI is “environmentally significant” such that it triggers the environmental assessment process under the EAA. The Guidelines fail to address this critical deficiency in the Northern Territory’s environmental assessment regime.
5. Guidelines should be developed for the EPA to determine whether a Public Environmental Report (PER) or an Environmental Impact Statement (EIS) is required, once a proposal has been determined to be “environmentally significant”. The Guidelines fail to address this critical deficiency in the Northern Territory’s environmental assessment regime.

1. Recommendation 1: The Guidelines should be amended to state when and in what circumstances they apply

While the NLC welcomes the provision of information to proponents in respect of environmental approvals, it is not clear when the Guidelines are intended to apply in the broader context of the Northern Territory’s environmental assessment regime, or if they are intended to replace existing procedures in whole or part.

Each Guideline should be amended so that it clearly states at what stage in the environmental assessment process it is intended to apply, and whether and to what extent it is intended to replace or supplement existing procedures.

The NLC notes that “guidelines” already form part of the environmental assessment process in the NT, and are prepared by the EPA after a project has been determined to require an EIS or a PER.² It is not readily apparent whether the new draft Guidelines are intended to replace or supplement these guidelines (prepared on a case by case basis), or whether they are directed towards a different part of the process. The NLC provides the following specific examples which may give rise to confusion in this regard:

- Guideline 2 (in respect of marine dredging) is the only draft Guideline that specifically requires the submission of an NOI (the first stage in an environmental impact assessment);

² These are required under s 8(3) of the EAAP ‘as a description in writing of the matters relating to the environment which [NT EPA] ... considers are necessary to be dealt with in the report or statement’.

- Guidelines 1 and 4 appear to be intended to apply at a different stage of the process, providing a basis for proponents to prepare a PER or an EIS (ie, they apply after an NOI is submitted);
- Guideline 5 appears only to apply if a proposal is to be assessed at the level of EIS (ie, it applies after an NOI is submitted, and a decision is made by the EPA as to what level of assessment is required);
- Despite the above, all the Guidelines contain a common statement that they are intended to apply to proposals prior to the proponents submitting the proposal to the EPA for environmental assessment.

This lack of clarity is confusing to proponents, and the public, since it is difficult to readily ascertain at what stage and how the standards described in the Guidelines apply.

To assist with the application of the Guidelines, the NLC recommends that:

- each Guideline should have a consistent structure and style, including a clear indication of the matters that will need initial consideration by both the proponent and EPA at the NOI stage. For example, Appendix 4 of Guideline 2 provides a flowchart that the NLC recommends be adapted and included in all other Guidelines.
- each Guideline should be drafted so that it does not overlap with other Guidelines, ie that there is thematic consistency in their content. Some Guidelines (for example, Guidelines 1 and 4) appear to have very general application across most, if not all, proposed activities, while other Guidelines seem directed at particular outcomes of an activity (for example, Guideline 5), and others still are directed at particular types of activities (for example, Guidelines 8 and 9). The result of this inconsistency is that it is not clear which guidelines apply to which kinds of activity. By way of illustration, where a proponent is seeking to conduct onshore petroleum exploration, it is not clear whether they are only required to consider Guideline 9, or whether they are also required to consider Guidelines 1, 3 and 4.

Guidelines should not be a tool or “blueprint” for a proponent to avoid environmental assessment, but should be available at the beginning of the process for the EPA to determine whether or not assessment is required and what the content of that assessment should be.

2. Recommendation 2: The Guidelines should incorporate the principles of ecologically sustainable development

The principles of ESD should be incorporated into the Guidelines, including a definition of the term and how the principles are to be implemented. None of the Guidelines explicitly identify, or attempt to implement, the principles of ESD, despite these principles now being widely accepted in environmental assessment processes in Australia and internationally. The Northern Territory falls significantly behind other jurisdictions in its omission to incorporate

the principles in its environmental assessment processes (a matter acknowledged by the EPA itself in its 2010 Report),³ and in so doing may not to comply with its obligations under the Intergovernmental Agreement on the Environment (to which it is a party).

3. Recommendation 3: The Guidelines should ensure that a notice of intent is required for all mining and petroleum proposals

In accordance with the principles of ESD, the Guidelines should require that a NOI be lodged in respect of all mining and petroleum proposals. Currently, Guidelines 8 and 9 provide a “blueprint” for proponents to avoid submitting an NOI allowing them to escape governmental or public scrutiny of their activities. Further, they inappropriately place the onus on the proponent, rather than the EPA, to assess whether a proposal requires environmental assessment. The NLC submits that an NOI be submitted for all mining and petroleum proposals because:

- it ensures a consistent approach to environmental assessment between types of proposals, as opposed to creating the potential for confusion, duplication and inefficiency caused by different processes for different proposals;
- requiring that NOIs are submitted in respect of all mining and petroleum proposals ensure that the approach is consistent with the principles of ESD, and in particular the precautionary principle;
- it ensures governmental and public scrutiny of the activities of proponents, and encourages accountability and transparency, without inviting conflict of interests;
- it is inappropriate to require the proponent, rather than the EPA, to assess the environmental significance of a proposal, given that the EPA has a statutory duty to determine the level of environmental assessment required; and
- there is no administrative provision for review of a decision made by a proponent under the Guidelines or the legislation, effectively leaving other interested parties without recourse to review of a proponent’s decision.

The NLC submits that all proponents for mining and petroleum proposals should submit an NOI, and the EPA should then assess whether the proposal is “environmentally significant” and such that it triggers the environmental assessment process under the EAA. The NLC also reiterates the concerns expressed by Dr Smith at pages 13 and 14 of Annexure 1. Guidelines 8 and 9 should thus be redrafted and directed towards whether a mining or petroleum proposal will be “environmentally significant” and the particular triggers for this assessment. This is consistent with the approach taken by the EPA that all proposed actions (actions that have the potential to have a significant impact on the environment), should be required to

³ See especially, page 4.

submit an NOI.⁴ After reviewing the NOI, the EPA should decide the level at which environmental assessment is to occur, if at all. The NLC is opposed to the premise that an NOI may be an optional step in the process, as is suggested by the current drafting of Guidelines 8 and 9.

4. Recommendation 4: The definition of ‘significance’ for the purpose of assessing NOIs should be clarified.

Guidelines should be developed for the EPA to determine when a proposal submitted by way of NOI is “environmentally significant” such that it triggers the environmental assessment process under the EAA. The Guidelines fail to address this critical deficiency in the Northern Territory’s environmental assessment regime, a point also made by the EPA in its 2010 Report.⁵

Across Australia environmental impact legislation generally requires the existence of some specific criteria (or ‘trigger’) to bring the environmental assessment regime into play. However, in the Northern Territory, there has to date been little published guidance on when a project will be considered to potentially have this significant effect on the environment.⁶ These guidelines present an opportunity to clarify the meaning of ‘significant’, thus clarifying when a project will be required to undergo an impact assessment.

5. Recommendation 5: Guidelines should be prepared to determine whether a Public Environmental Report or an Environmental Impact Statement is required.

Guidelines should be developed for the EPA to determine whether a PER or an EIS is required once a proposal has been determined to be “environmentally significant”. The Guidelines fail to address this critical deficiency in the Northern Territory’s environmental assessment regime.

First, these new Guidelines should provide clarity on the meaning of each term, as neither the EAA nor the *Northern Territory Environmental Protection Authority Act* (NT) currently defines either PER or EIS (although currently some guidance is found in the Environmental Assessment Administrative Procedures). The clearest indication of the difference in definition is contained in the departmental level and incomplete EPA Guide.⁷

⁴ EPA Report, page 23.

⁵ See especially chapters 5 and 6.

⁶ While the EPA’s website does contain one list of indicative criteria, this is still insufficient: NT EPA, Proposals which may require some level of formal Environmental Assessment: http://www.ntepa.nt.gov.au/environmental-assessments/eiaguide/formal_assessment.

⁷ The definition of PER in the EPA Guide follows:

Second, the content required in a PER or EIS is not described by the legislation or the EAAP. Again, the only real guidance is given by the EPA Guide, which indicates that the content of each PER/EIS will be determined according to the circumstances, via the release of guidelines. While this approach allows for flexibility in approach so as to be able to tailor the requirements for each assessment to the project involved, it does not give any colour to the distinction between a PER and an EIS, and it does not give any objective shape to what either report might look like. Proponents are not able to assess in advance what they will be required to address in a PER/EIS, and neither are other interested parties able to assess whether the requirements put out for public comment are standard, valid or appropriate, similarly whether the final PER/EIS produced is of an acceptable standard.

Accordingly, the NLC urges revision and legislative clarity in respect of the definition and content of a PER and EIS.

A PER is called for to assist in assessing environmental impacts which are considered significant but limited in extent. It is not a precursor to an EIS, hence the decision on a PER or an EIS has to be made on the receipt of the NOI.

Key points on a PER:

- single or limited number of environmental issues and
- limited magnitude, duration, frequency and extent of impacts.

(section 4.2(a) of EPA Guide, emphasis in original). The definition of an EIS is also provided:

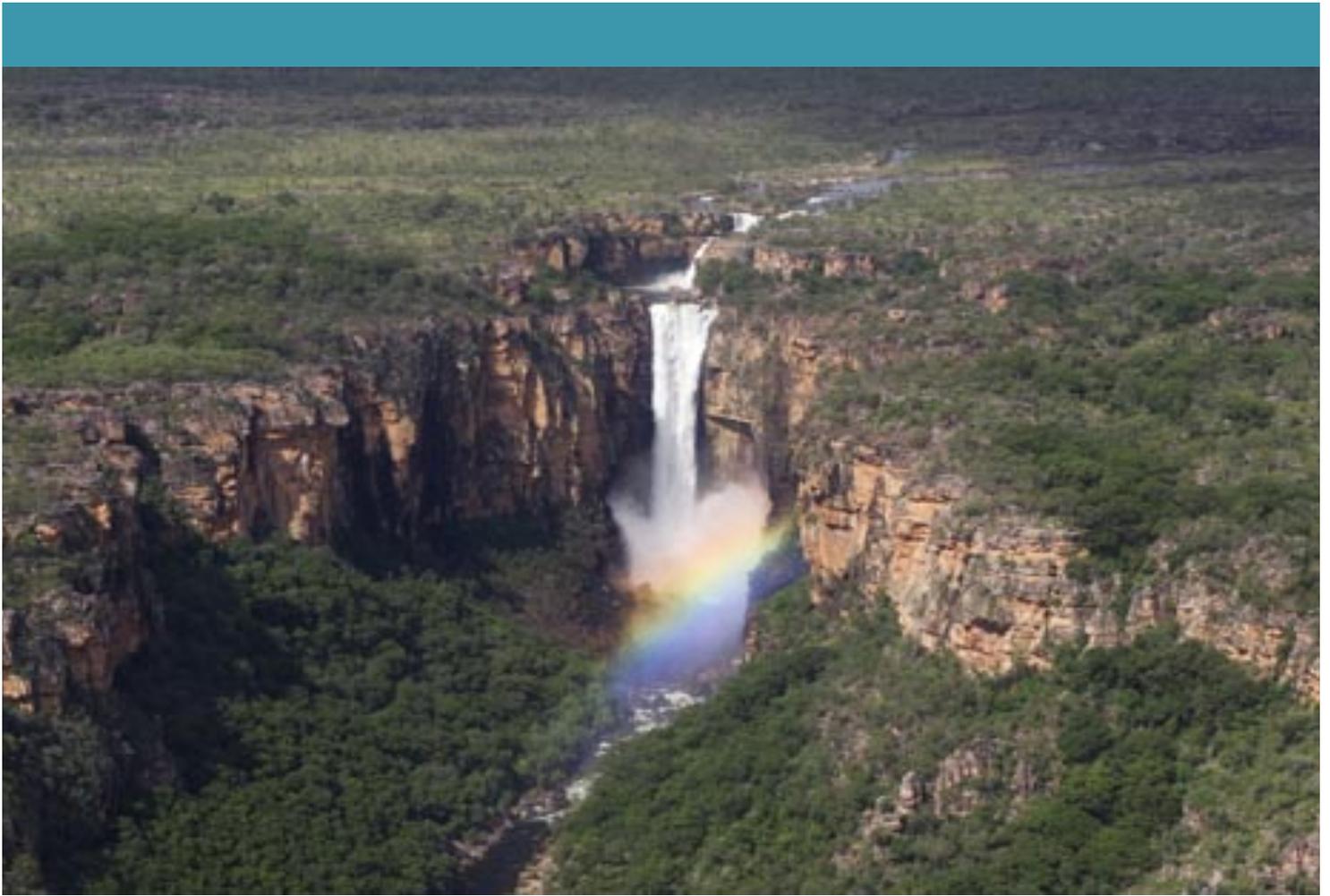
An EIS is called for to assist in assessing environmental impacts which are considered significant either in terms of site specific issues, offsite issues and conservation values and / or the nature of the proposal.

Key points on an EIS are:

- number of environmental issues;
- greater magnitude, duration, frequency and extent of impacts;
- proposal affected by international, national or State / Territory legislation or treaties for the protection of natural habitats, flora and fauna;
- proposal has potential for significant environmental risk or hazard to adjacent users or users;
and

proposal has potential for significant environmental impact to occur.

Annexure 1



Evaluation of the 2013 Northern Territory EIS Guidelines

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EVALUATION OF THE 2013 NORTHERN TERRITORY EIS GUIDELINES

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1.0 Introduction

The Northern Territory's Environmental Protection Agency (NTEPA) released a set of 11 draft Environmental Impact Statement (EIS) Guidelines for public review in May 2013, with submissions due by 15 July 2013.

The draft guidelines provide a basis by which project developers can prepare assessments of the predicted impacts their project will have on the various economic, natural and social aspects of the environment. Eleven draft guidelines were released, covering the following issues:

- *Economic and Social Impact Assessment;*
- *Marine Dredging in the Northern Territory;*
- *Offsets and Associated Approval Conditions;*
- *Impacts on Terrestrial Biodiversity;*
- *Acid and Metalliferous Drainage;*
- *Proposals submitted under the Planning Act;*
- *Land clearing proposals submitted under the Pastoral Lands Act;*
- *Mining exploration or production proposals;*
- *Onshore petroleum exploration or production proposals;*
- *Conceptual Site Models; and*
- *Disposal of Waste by Incineration.*

The purpose of these guidelines is to help develop a consistent and quality environmental assessment process that meets the expectations of the general public.

1.1 Background

A large proportion of the Northern Territory is either communally owned or managed by Aboriginal people according to their long-established cultural practices. However, the cultural difference that exists between Aboriginal people and mainstream Australian society should not be interpreted to mean that Aboriginal people are anti-development. Instead, it should be considered a signal that development will be considered and accepted, provided the highest level of protection (i.e. leading practice) is applied to all cultural, social and biophysical aspects of the environment.

Leading practice environmental impact assessment has four principle objectives (Senecal et al, 1999) that should be applied across all components of the assessment process:

- 1) To ensure that environmental considerations are explicitly addressed and incorporated into the development decision making process;
- 2) To anticipate and avoid, minimize or offset the adverse significant biophysical, social and other relevant effects of development proposals;
- 3) To protect the productivity and capacity of natural systems and the ecological processes which maintain their functions; and
- 4) To promote development that is sustainable and optimizes resource use and management opportunities.

Under a leading practice system, it is essential to ensure that assessment is approached in a well-defined consistent and comprehensive manner. Guidelines must adhere to internationally recognized principles and draw upon standard methods of analysis where available. Identification and mitigation of risks to key aspects of the environment (i.e. social, cultural and biophysical) are mandatory.

The International Association for Impact Assessment (IAIA) has developed and implemented sets of principles that could be considered world's leading practice in impact assessment. Guidelines for the biophysical environment (IAIA, 2005), the social environment (Vanclay, 2003); public participation (Andre et al, 2006); and more specifically for respecting indigenous people and their knowledge (Croal et al, 2012) have been developed. These principles maintain their currency and are the subject of continuous improvement through ongoing international debate and review over a 3 to 5 year period.

The IAIA principles have been developed against a backdrop of high-level international determinations on human rights (United Nations, 1948) and rights of indigenous people (United Nations, 2007) and associated business principles (Equator Principles, 2013; World Bank, 2012), making them especially valuable where projects are being developed in cross-cultural or multi-cultural situations. They engender important principles that are often overlooked, including respect for: (i) free, prior and informed consent; (ii) cultural distinctiveness; and (iii) recognition and valuing of traditional ecological and cultural knowledge.

Other documents that are relevant in the Northern Territory context include a number of international standards and systems that represent international leading practice. These include:

- AS/NZS ISO 31000 standard for Risk Management;
- AS/NZS 4801 ISO 18001 standard for Occupational Health and Safety;
- ISO 14000 series standard for Environmental Management Systems; and
- ISO 9000 series standards for Quality Control.

1.3 Terms of Reference

Evaluation of the guidelines has been made with a special relevance to known and perceived concerns of Aboriginal people; and with respect to their distinctive cultural values.

It is limited to 6 of the 11 Draft Guidelines, all of which have special relevance to Aboriginal land and society, specifically:

- *Economic and Social Impact Assessment;*
- *Acid and Metalliferous Drainage (AMD);*
- *Mining exploration or production proposals;*
- *Onshore petroleum exploration or production proposals;*
- *Marine Dredging in the Northern Territory; and*
- *Impacts on Terrestrial Biodiversity.*

1.2 Purpose of this evaluation and document

This evaluation aims to identify areas where the proposed guidelines might be improved to better reflect current leading practice in environmental assessment, by comparing the selected draft guidelines against the IAIA principles. The level of relevance of each of the principles will vary, depending on the context into which they are placed. For example, some of the guidelines represent specific activities that create environmental risk (AMD, ESIA); some are part of the wider screening process (mining, petroleum, dredging); while others are primarily aimed towards monitoring and managing impacts on specific environmental aspects (biodiversity).

This document has been prepared in response to a request by the Northern Land Council (NLC) to assist with preparation of a submission that reflects concerns and current views of traditional Aboriginal landowners on these matters. Consequently, there is a strong focus on the social and cultural ramifications related to each of the guidelines evaluated.

This document is the property of the NLC and may be used in whole or in part during preparation of a formal submission.

2.0 Evaluations of selected guidelines

Each guideline has been evaluated against IAIA principles and use of standard systems; and outcomes tabulated and documented below. Some principles are relevant only to specific guidelines (e.g. biodiversity, ESIA) while others are not and may have been excluded from the tables for individual guidelines. Additional principles or foci may have been added to tables where required to ensure that the widest possible range of impacts are assessed and that a greater holistic view of environmental assessment is evaluated. The same process has been applied to each guideline's requirements for monitoring and management plans where applicable.

Individual evaluations also contain greater detail with respect to perceived shortfalls, along with recommendations of what amendments could be sought to bring them on par with leading practice. These are also summarized in section 3, where a rating of each guideline against the general principles of leading practice environmental assessment and respect for Aboriginal traditions and culture. Is also provided.

2.1 Preparation of an economic and social impact assessment (ESIA)

An Economic and Social Impact Assessment (ESIA) provides an overarching framework for evaluation of all impacts on people and the manner by which people and communities interact with their socio-cultural, economic and biophysical environment. The objective of an ESIA is to ensure that the benefits attributed to development are maximized and costs borne by people (in both spatial and temporal context) as a result of that development are minimized. Many of these costs and benefits may be intangible and cannot be quantified, making accounting of them difficult for decision-makers and developers.

Assessing the veracity of an ESIA (or any part of an environmental assessment) is further complicated by the context applied by the assessor. For example, from the Aboriginal viewpoint, there is usually greater concern with maximizing cultural protection, social utility and development potential, while at the same time ensuring that development remains equitable, sustainable, culturally appropriate and acceptable. The IAIA has developed sets of core values and principles that cut across context and represent world's leading practice (Vanclay, 2003); and these have been used as the standard against which this guideline has been evaluated.

The outcome of this evaluation is presented in table 1-1, with perceived shortfalls identified and discussed in greater detail below.

Principle	Applied in Guideline	Comments
Landscape Analysis (aesthetics)	No	§6.1 requires areas of aesthetic appeal to be documented but the guidelines make no requirement for a risk assessment.
Archaeology	No	Not considered in the guideline.
Cultural Heritage	No	Not considered in the guideline.
Community	Yes	The guidelines are fairly comprehensive in providing an assessment of risks to communities. In particular, §6.1 and §6.3 refer to assessment of risks to community infrastructure, cohesion and inclusion.
Demography	Yes	Together, §6.1 and §6.2 allow assessment of changes in demography.
Development	Yes	§5.1.4 identifies the economic contributions that will emanate from the project. These are supported by requirements of §6.1 and §6.3 which form the basis for social assessment.
Economy and fiscal	Partly	§5.1.1 is comprehensive, but does not require an analysis of alternative economies (e.g. those that provide a measure of the level of reliance on the environment by subsistence economies); does not consider the value of opportunities lost to future generations in terms of net present value and; does not require the proponent to provide a 'sensitivity' analysis.
Gender	No	Not considered in the guideline.
Health and mental health	No	Not considered in the guideline. §6.3 refers to impacts on health services, but does not require an overall assessment of impacts to health.
Human and social capital	Yes	§6.1 requires the proponent to collect information about attitudes towards the project and develop stakeholder engagement as part of the ESIMP in §6.5.

Principle	Applied in Guideline	Comments
Indigenous rights	Partly	§5.1.3 considers plans for training of indigenous people and §5.1.4 considers “other contributions to communities, including traditional owners”. However, this is inadequate unless impacts on other aspects of indigenous life (e.g. culture and traditional knowledge) are addressed elsewhere in the process.
Social infrastructure	Yes	§5.1.4 identifies the contributions that will be made while §6.1 and §6.3 examine impacts on community infrastructure and services.
Institutional	Yes	§6.3 considers the impacts on policing. This should be supported by the provision of policing and crime statistics in §6.1.
Leisure and Tourism	Yes	§6.1 refers to impacts on leisure and cultural opportunities (as distinct from indigenous cultural activity).
Other industry	Yes	§5.1.1 considers impacts of neighbouring projects, businesses and major developments.
Political	No	Not considered in the guideline.
Poverty	Yes	No requirement to discuss impacts in terms of addressing poverty. However, it may be indirectly addressed through measures of demography and outcomes of the ESIMP.
Psychological	No	Not considered in the guideline. These could be considered in the wider raft of requirements for assessing impacts on health.
Resource ownership and access	No	Not considered in the guideline. May be indirectly assessed through assessment of other social and cultural risks and impacts.
Traditional Knowledge	No	Not considered in the guideline.

Table 1-1: Assessment of ESIA guideline against IAIA principles for leading practice environmental assessment.

Shortfalls against leading practice

Table 1-1 shows that the NTEPA’s guideline for preparation of an economic and social impact assessment is deficient in a number of areas. These include:

- 1) Failure to consider a number of critical aspects of the social environment. Risks to cultural heritage, archaeology and contemporary indigenous cultural activities are not addressed, resulting in only partial assessment of impacts on Indigenous rights. Cultural protection is one of the fundamental rights of indigenous people protected by the United Nations and constitutes a core value of leading practice environmental assessment.

There is no recognition of cultural matters in the NTEPA’s guidelines, but normal practice in the Northern Territory is that impacts on cultural matters (including archaeology) are addressed in a separate Historic and Cultural Impact Assessment. If this practice is to continue, then failure to recognise cultural matters through this guideline does not represent a problem. However, if the intent is to incorporate them into the ESIA, then the ESIA guidelines must state this is required. In accord with the current process instigated by the NTEPA, guidelines for Historic and Cultural Impact Assessments should also be provided for public review.

- 2) Risks to health (including mental health and impacts of a psychological nature) are not addressed, but normal practice in the Northern Territory is that impacts on health are addressed in a separate Health and Safety Impact Assessment. If this practice is to continue, then non-consideration of health in this guideline does not represent a problem. However, if the intent is to incorporate health risks into the ESIA, then the ESIA guidelines must state this is required. In accord with the current process instigated by the NTEPA, guidelines for Health and Safety Impact Assessments should also be provided for public review.
- 3) The guidelines do not provide scope for understanding or addressing gender based issues. Aboriginal society generally operates under a gender-based dichotomy, with separate land management practices, access to sites and ceremonies for men and women. Gender issues will be prevalent where information is being gathered (e.g. men may not disclose some cultural information to women consultants and vice versa) and unless correct protocols are followed, risk assessments may be incomplete.

Although guidance on the recommended level of public participation required for project assessment is provided (IAPP, 2012), the ESIA guidelines and the environmental impact assessment process should also recognize and recommend best practice protocols specific to cross-cultural and Aboriginal engagement (Croal et al, 2012).

- 4) The guidelines do not address potential impacts on access to natural resources. Large-scale projects and mining projects on large areas of leased land may prevent access to natural resources and to sacred sites. This hinders Aboriginal people's right to continue ceremony and customary practices and may impinge on the ability to access natural resources for food or other material purposes. These rights should be recognized in the ESIA and management practices developed in other parts of the EIS where access to resources and sites is required.
- 5) The guidelines do not address the value of alternative (subsistence) economies. Traditional values placed on resources and patterns of resource use help to describe the relationships and reliance between people and the environment – and provide an insight into a type of economic impact not usually considered. Traditional economies were critical to survival of Aboriginal people prior to the arrival of European culture, are still partly in place and may represent a sustainable future for the post-development environment. Even though it may not be possible to place a monetary value on a subsistence lifestyle, it represents an important part of intergenerational equity that often has no risk assessment attached to it. An assessment on traditional economies should be included as an integral part of the ESIA guidelines.
- 6) The guidelines do not address the value of traditional Aboriginal ecological and cultural knowledge to understanding the environment and to risk assessment. Aboriginal people hold a different worldview to that promoted in the environmental impact assessment process and have developed an understanding of the natural environment and land management practices that complement non-indigenous impact assessments. Once integrated into the process, traditional knowledge will help provide a more complete evaluation and a more holistic approach to environmental impact assessment.

Where possible, information relating to traditional knowledge and management systems should be collected and incorporated into EIS documents, potentially the Historic and Cultural Impact Assessment. In addition, specific reference should be made in the ESIA to the contributory value of traditional Aboriginal knowledge and its inclusion in the risk assessment process; and information that is of value for describing specific biophysical impacts should be included as part of the required surveys and analyses (e.g. flora and fauna surveys).

- 7) The guidelines should prompt inclusion of a description of potential future economic costs in terms of net present value in the EISA. This should include an evaluation of opportunities lost to the landowner, cost of closure and cost of on-going maintenance should the project remain in stasis for a lengthy period.

Evaluation of project economics, including potential future economic costs, should be supported with a sensitivity analysis that demonstrates the project's susceptibility to market forces (e.g. exchange rates and commodity prices). When considered in conjunction with future cost assessments, a clearer picture of the projects long-term sustainability and future risks to community, especially in the event of early closure, will be obtained.

Summary

The ESIA guideline would benefit if an economic sensitivity analysis and estimation of future costs was provided. More importantly, it fails to meet leading practice standards in terms of Aboriginal rights. Although it is participatory and focuses on consultation and engagement, some essential cultural aspects, including heritage protection and a direction to integrate Aboriginal knowledge into the ESIA is missing. These must be included in guidelines for Cultural Heritage Impact Assessments if they are not to be included in the ESIA.

2.2 Acid and metalliferous drainage (AMD)

AMD results when sulfate-bearing minerals (e.g. pyrites) and soils undergo natural oxidation when they are exposed to air and water. AMD will impact surface water and groundwater, causing detrimental effects on ecosystems and potable water supplies through decreased pH of water and increased concentration of dissolved metals. There is no reliable method that can predict when AMD will commence, or its duration, meaning that its impacts often pose a large spatial and temporal risk.

AMD presents one of the most significant risks that large developments poses to the biophysical environment, making it important to have management practices that are high quality and represent leading practice. The NTEPA's draft guidelines have been evaluated here against the overall aims of the environmental assessment process (IAIA, 2005) and with respect to management and monitoring of AMD (INAP, 2012). The outcomes of this evaluation are presented in tables 2-1, 2-2 and 2-3, with specific shortfalls explained in greater detail below.

Impact	Applied in Guideline	Comments
Archaeology	No	Not considered in the guideline.
Community	No	Not considered in the guideline.
Cultural Heritage	No	Not considered in the guideline.
Economy and fiscal	No	Not considered in the guideline.
Fauna (including NES)	Partly	Baseline information and risk assessment have not been requested, but monitoring of bioaccumulation is addressed in §9.
Flora (including NES)	No	Not considered in the guideline.
Groundwater Quality and Volume	Partly	§9 considers only monitoring of groundwater. §8 indirectly considers groundwater via a requirement for considering permeability through the floors of impoundment structure.
Health and mental health	No	Health effects are considered only when sampling programs are being planned.
Indigenous rights	No	Not considered in the guideline.
Social Infrastructure	No	Not considered in the guideline.
Soils and sediments	No	Not considered in the guideline, but may not be applicable.
Surface Water Quality	Partly	§9 considers only monitoring of surface water.
Traditional Knowledge	No	Not considered in the guideline, but may not be applicable

Table 2-1: Assessment of the AMD guideline against IAIA principles for leading practice environmental assessment.

AMD Management Requirements	Applied in Guideline	Comments
Intergenerational view	Partly	Intergenerational concerns are partly addressed through the operational requirements and closure plans, however they are incomplete because the guidelines do not require the proponent to consider the nature and extent of impacts on cultural, economic and social aspects of the environment.
Management Plan	Yes	§7.4 and §8 require management plans and strategies for AMD.
• Avoidance	Partly	§8 considers minimizing disturbance as a management strategy. This could be expanded to include avoiding areas of known high AMD potential where possible.
• Chemical amelioration	Yes	§8 considers chemical amelioration and removal of pyritic material.
• Conceptual model	No	Not specifically required, but this should be easily addressed if appropriate baseline data relating to geochemistry and hydrology are collected.
• Considers appropriate strategies	Yes	§8 refers to a range of strategies that can be used to manage AMD.
• Closure Planning	Yes	§7.4 and §10 identify the need to develop a closure plan based on the project's AMD potential.
Monitoring Program	Yes	§9 requires monitoring of management plans and strategies.
• Baseline studies	Yes	§7.1 contains a comprehensive guide to the amount of background detail required to assess acid forming potential.
• Compliance with NWQMS guidelines	Partly	§9 considers the need for monitoring contaminant transport, and developing trigger levels and management plans based on them. There are no recommendations or guidance provided to indicate that where applicable, these triggers are to be developed in accordance with the NWQMS guidelines.
Segregation and impoundment	Yes	§8 considers segregation, encapsulation and burial of AMD wastes.
• Construction designs	Yes	§8 considers design of storage facilities.
• Cover designs	Yes	§8 considers cover design and characteristics.
• Operational guidelines	Yes	§8 considers the need for guidelines for on-going management of AMD.
• Long-term management	Yes	This is a necessary requirement for closure planning in §7.4 and §10 and in the operational and monitoring requirements required in §8 and §9.
• In-pit burial	No	Not specifically considered, but should be considered when planning segregation and impoundment.
• Subaqueous interment	No	Not specifically considered, but should be considered when planning segregation and impoundment, where complete backfill of a pit is not viable.

AMD Management Requirements	Applied in Guideline	Comments
Risk Assessment according to AS/NZS ISO standards	No	Not considered in this guideline.
Water Management	Yes	Considered as part of the management strategies in §8 and monitoring requirements in §9.
• Treatment	Yes	§8 considers collection and treatment of AMD contaminated water.
• Diversion and storage	Yes	§8 considers provisions for extreme rainfall and flood events.
Testing Regime	Yes	§7 details requirements for sampling and laboratory analysis/testing.

Table 2-2: Assessment of the AMD guideline's management requirements against INAP recommendations.

Monitoring Requirements	Applied in Guideline	Comments
Impacts on Aquatic fauna	Yes	§9 considers monitoring of bioaccumulation.
Permeability and infiltration of contaminated water	Yes	§8 considers permeability of chemical contaminants.
Structural integrity of impoundment facilities	Yes	§9 considers monitoring of cover performance, placement of wastes and geochemical and geotechnical characteristics.
Groundwater and surface water Quality control	Yes	§9 considers monitoring of groundwater and surface water quantity and quality upstream and downstream (refer also to trigger levels).
Water trigger Levels	Partly	§9 considers the need for monitoring contaminant transport, and developing trigger levels and management plans based on them. There is no requirement to base these trigger levels on standards such as ANZECC/ARMCANZ 95% protection levels.

Table 2-3: Assessment of the AMD guideline's monitoring requirements against INAP recommendations.

Shortfalls against leading practice

The guideline is a valuable tool for the evaluation of acid generating potential of projects including those involving marine dredging. Although its contents are comprehensive, there are a number of points where it does not meet leading practice. These are discussed below:

- 1) This guideline does not consider potential impacts of AMD on social and cultural aspects of the environment. AMD has the potential, through chemical contamination and subsequent ecosystem change, to impact downstream social infrastructure, and aesthetic, cultural and social values of recreational or sacred areas or heritage places. Human and animal health may be impacted if contaminated water is consumed. The extent of these changes will also impact on the economic significance of the impacts and may lead to political or public relations ramifications.

In the Northern Territory's assessment process, impacts associated with culture and archaeological and cultural heritage are usually addressed via a risk assessments required for separate Historical and Cultural Heritage Impact Assessment, while the economic, political and social ramifications are covered by the ESIA. Separate guidelines for Historical and Cultural Heritage normally apply, but these have yet to be released for review. Other issues associated with the way risk assessments are dealt with in the ESIA guideline are discussed below.

- 2) This guideline does not specifically consider risk assessment according to AS/NZS ISO 31000:2009 standards. The level of information sought is sufficiently adequate to characterize the degree of AMD that might be expected from the site, but without a full risk assessment the impacts on the social and biophysical aspects of the environment cannot be determined. For example, a significant lowering of pH in the surface water may adversely affect cultural sites, road infrastructure or ecosystems reliant on water downstream of the development.

Without this standard of assessment, it becomes difficult to assess the veracity of proposed management and monitoring systems. Under the existing process, formal evaluation according to AS/NZS ISO 3001:2009 is usually undertaken via a separate comprehensive Risk Assessment as part of the proponent's overall environmental impact assessment documents (EIS or PER). If this practice is to continue, then failure to consider AS/NZS ISO 13000:2009 in this guideline does not represent a problem. If the intent is to now incorporate formal risk assessment into individual parts of the environmental impact documents, then these guidelines must state it is required.

- 3) The guideline only partially addresses key environmental aspects where biophysical impacts might occur. Baseline information for surface and groundwater, flora and fauna are not sought as part of the background information, where the focus is strongly on geochemistry, geotechnical qualities and sampling. Baseline biophysical data are an essential part of any risk-based environmental assessment and while they may be collected as other studies related to the assessment (e.g. biodiversity studies or flora and fauna surveys), the links between AMD and impacts on the biophysical environment may be underestimated if they are not addressed in this guideline or through a formal risk assessment.
- 4) If the principles of sustainable development are to be upheld, the guideline must promote intergenerational equality. The guideline only partly meets this objective because there is no requirement to demonstrate the social and economic risk of long-term AMD on final and future land uses.
- 5) There are instances where surface impoundment of PAF materials in tropical regions has failed (e.g. Rum Jungle) leading to an increase in AMD long after the closure plan was brought into effect and resulting in additional social, economic and biophysical impacts and on the ability of the landowner to return the land to productivity. The AMD guideline should promote a hierarchy of avoidance of AMD as follows: (i) – avoidance of high AMD risk areas in the deposit; (ii) – in-pit burial and backfill; and (iii) – subaqueous burial in the pit void if complete backfill is deemed unviable or uneconomic.

- 6) This guideline requires surface water to be monitored and managed in accordance with a set of trigger levels, but does not specify how the trigger levels are to be calculated or from where they should be sourced. Leading practice suggests that, unless scientifically proven otherwise, triggers are to be based on proven standards. The ANZECC/ARMCANZ guideline levels and protocols have been developed by the National Water Quality Management Strategy (NWQMS, 2000) and may be used for either as protection levels or to develop triggers in a local context. The AMD guideline should refer to these as the preferred means of developing trigger levels for use in AMD management.

Summary

The AMD guideline fails to meet leading practice standards in terms of Aboriginal rights and the rights of the wider society. It provides no opportunities for stakeholder participation and does not consider potential short and long-term impacts on cultural, recreation and heritage sites. It also fails to promote principles of best practice because there is no direction to apply appropriate standards to risk assessment or monitoring procedures.

2.3 Mining exploration or production proposals (Mining)

The NTEPA guideline for mining exploration or production is geared more towards exploration and lower levels of minerals production (e.g. quarrying), rather than construction of large mines. Consequently, there is a strong focus on the contents of the NOI, rather than requesting the amount of detail needed for a fuller assessment (i.e. PER or EIS). Screening in this manner is the first step in the assessment process and meets the IAIA leading practice principles (Senecal et al, 1999). Screening determines whether or not a proposal should be subject to EIA and, if so, at what level of detail. It also creates a risk that a project might be approved without adequate, or any level of assessment.

Attachment 'A' of the guideline contains a set of assessment criteria against which an NOI for project can be evaluated to determine if referral under the NT Environment Assessment Act is required. These criteria have been assessed in table 3-1 against the IAIA leading practice standard and shortfalls are identified and discussed below.

Impact	Applied in Guideline	Comments
Air Quality (including dust)	Yes	Assessment criterion 4 refers to the need for dust management plans, but there are no requirements for any other form of air quality assessment.
Archaeology	No	Not specifically considered but may constitute a part of criterion 9 (cultural heritage survey).
Biodiversity	Yes	Assessment criterion 5 in Attachment A.
Community	Yes	Assessment criteria 12 & 13 in Attachment A.
Cultural Heritage	Yes	Assessment criteria 8 & 9 in Attachment A.
Economy and fiscal	Yes	Assessment criterion 12 in Attachment A.
Fauna (including NES)	Yes	Assessment criteria 1, 5, 6 & 14 in Attachment A.
Flora (including NES)	Yes	Assessment criteria 5, 6, 7 & 14 in Attachment A.
Groundwater Quality and Volume	Yes	Assessment criterion 1 in Attachment A.
Health and mental health	Yes	Assessment criteria 10 & 11 in Attachment A.
Indigenous rights	Partly	Some aspects of indigenous rights are considered in the cultural heritage survey and requirement for an AAPA Authority Certificate.
Noise	Yes	Assessment criteria 4 in Attachment A.
Social Infrastructure	Yes	Assessment criterion 13 in Attachment A.
Soils	Yes	Assessment criterion 3 in Attachment A.
Surface Water Quality	Yes	Assessment criteria 1, 2, & 3 in Attachment A.
Traditional Knowledge	No	Not considered in the guideline.
Waste Management	Partly	Assessment criterion 2 in Attachment A discusses storm water.

Table 3-1: Assessment of the mining guideline against IAIA principles for leading practice environmental assessment.

Shortfalls against leading practice

The contents of the guideline (and in particular, Attachment A) are generally robust, reasonably comprehensive and fit for purpose. However, there are several shortfalls, discussed in more detail below, that need to be addressed to bring them to leading practice standard.

- 1) This guideline carries an inherent risk because there appears to be no obligation for a proponent to lodge an NOI and trigger the assessment process.
- 2) The guideline revolves around what is considered to be of “significance”. This is a subjective term that varies according to the levels of knowledge and experience of those determining whether or not the NOI should be referred. This may lead to:
 - Projects to be developed without appropriate level of assessment, which in turn may;
 - Diminish the application of leading best practice; and
 - Lead to unsustainable outcomes having long-term economic, social and biophysical impacts.

Greater guidance would be provided if a statement identifying a minimum level of production above which environmental impact assessment would be mandatory was provided; and below which a decision based on “significance” would be made. This would help provide a more objective determination of significance, provide proponents with greater certainty, lead to increased public confidence in the system and reduce the risk of projects being developed without appropriate levels of assessment being undertaken.

- 3) Attachment A provides guidance on what risks should be considered when determining significance but is incomplete because it ignores the potential for AMD and management of AMD and other mineral wastes. While it is generally accepted that the level of risk generated by exploration proposals is considerably less than for minerals production, chronic AMD (even though it may be at low level) may still result from drilling and bulk sampling activities. An additional assessment criteria based upon the risk of AMD should be included into Attachment A.
- 4) The Assessment criteria only partly address indigenous rights (e.g. cultural heritage survey and AAPA certificate requirements) and do not address traditional knowledge. Indigenous rights will be particularly important where the project’s activity is to take place on land subject to the Aboriginal Land Rights Act, or where Native Title rights apply. Failure to consider this may result in lack of community acceptance and approval and affect the proponent’s social license to operate.

Indigenous rights can be addressed in Assessment criterion number 12 as part of the wider social and economic impacts. This can be achieved by inserting a direction to proponents to pay special attention to land tenure and associated legal rights held by Aboriginal people in areas where they plan to work. This approach could be further strengthened by encouraging the proponent to speak with landowners about their concerns, prior to submitting the NOI for assessment. Traditional knowledge should be recognized in the NOI as an important facet of environmental management and a commitment made to procure and use it where appropriate.

- 5) The assessment criteria do not address archaeological heritage. This is another important feature of the cultural environment that is protected by legislation and should be specified in the assessment criteria. In minerals exploration, industry standards are now leaning towards a process known as 'walking the line', where access roads and drill pads are first cleared for access by undertaking a cultural heritage and archaeological survey. This should be encouraged in the guideline and addressed by explicitly stating the need for protection of archaeological sites as part of Assessment criterion 9.
- 6) The assessment criteria do not adequately address waste management. Only storm-water management is addressed. Other waste streams such as AMD (mentioned above) and general camp waste are not considered. Mining exploration camps vary in size and duration and can generate significant amounts of sewage and other waste that requires treatment and/or disposal. An additional criterion, requiring the proponent to address anticipated levels and types of waste generated by the project should be included.

Summary

This guideline is inherently flawed as it provides an opportunity for developers to bypass the environmental assessment procedure or have them assessed at a lower level than is appropriate by returning insufficient detail. However, if sufficient detail about the project and its risks is provided, it does provide a holistic view, but one that could be further improved if a more participatory direction was given.

2.4 On-shore petroleum exploration or production proposals (Petroleum)

Similar to the mining guideline, the NTEPA guideline for petroleum exploration and production proposals focuses largely on exploration projects and not major developments such as production infrastructure and pipelines. It does not cover exploration and production from near-shore or deep-water (oceanic) environments. It also represents a part of the initial screening process required as part of the legislated environmental assessment process.

The guideline has been assessed against IAIA leading practice standards. Outcomes are presented in table 4-1 and the shortfalls discussed in greater detail below.

Impact	Applied in Guideline	Comments
Air Quality (including dust)	No	Assessment criterion 5 refers to the need for dust management plans, but there are no requirements for any other form of air quality assessment.
Archaeology	No	Not specifically considered but may constitute a part of criterion 11 (cultural heritage survey).
Biodiversity	Yes	Assessment criterion 6 in Attachment A.
Community	Yes	Assessment criteria 14 & 15 in Attachment A.
Cultural Heritage	Yes	Assessment criteria 10 & 11 in Attachment A.
Economy and fiscal	Yes	Assessment criterion 15 in Attachment A.
Fauna (including NES)	Yes	Assessment criteria 1, 6, 7 & 16 in Attachment A.
Flora (including NES)	Yes	Assessment criteria 6, 7, 8, 9 & 16 in Attachment A.
Groundwater Quality and Volume	Yes	Assessment criterion 1 in Attachment A.
Health and mental health	Yes	Assessment criteria 12 & 13 in Attachment A.
Indigenous rights	Partly	Some aspects of indigenous rights are indirectly considered in the cultural heritage survey and requirement for an AAPA Authority Certificate.
Noise	Yes	Assessment criteria 5 in Attachment A.
Social Infrastructure	Yes	Assessment criterion 14 in Attachment A.
Soils	Yes	Assessment criterion 3 in Attachment A.
Surface Water Quality	Yes	Assessment criteria 1, 2, & 3 in Attachment A.
Traditional Knowledge	No	Not considered in the guideline.
Waste Management	Yes	Assessment criteria 2 & 4 in Attachment A.

Table 4-1: Assessment of the petroleum guideline against IAIA principles for leading practice environmental assessment.

Shortfalls against leading practice

The principle outcomes discussed in section 2.4 of this evaluation (mining and exploration proposals) also apply here:

- 1) There is an opportunity to bypass the environmental assessment process;
- 2) Greater guidance on a definition of significance is required;
- 3) More attention should be paid to the risk of AMD;
- 4) More attention should be paid to stakeholder participation and impacts on Aboriginal culture and rights;
- 5) Archaeological heritage should be addressed; and
- 6) More attention should be paid to description and management of waste streams.

Additional attention should be paid to exploration projects that consider the use of high pressure horizontal drilling (commonly referred to as 'hydraulic fracturing' or 'reservoir stimulation'). It can be argued that the current levels of public concern over this procedure indicate that proponents will not easily obtain a 'social license to operate', community acceptance or community approval. This suggests leading environmental practice is not being met because social concerns are not being adequately addressed. Importantly, concerns have been raised over the risk to and adequacy of protection of the biophysical environment from the use of hydraulic fracturing for production of oil and gas from shale and coal; and calls made for more detailed study (Cook et al 2013).

Until these matters are fully addressed and public confidence in the process has been gained, leading practice requires the precautionary principle to apply. This principle considers that where there is a risk or potential risk of serious impact (social and/or biophysical), lack of full certainty about those risks should not be used as a reason for approving the planned project or not requiring the implementation of mitigation measures and stringent monitoring (Vanclay, 2003). High-pressure horizontal drilling practices, when used for oil and gas exploration and/or production, pose an as yet unquantifiable, but high-level of risk.

Until such time that public concerns are assuaged and detailed risk assessments undertaken, the guideline should be modified to ensure that projects seeking to utilize high-pressure horizontal drilling for oil and gas exploration and/or production mandatorily require a high level of environmental impact assessment (i.e. EIS or PER). A statement to this effect in the guideline will help to address questions about significance and provide a more certain and consistent approach.

Summary

This guideline is inherently flawed as it provides an opportunity for developers to bypass the environmental assessment procedure or have them assessed at a lower level than is appropriate by returning insufficient detail. However, if sufficient detail about the project and its risks is provided, it does provide a holistic view, but one that could be further improved if a more participatory direction was given.

2.5 Marine dredging (Dredging)

The NTEPA guideline for marine dredging was assessed against the National Assessment Guidelines for dredging (Commonwealth of Australia, 2009) and information contained in Technical Annex III of the OSPAR Convention (OSPAR, 1992; OSPAR 2007). The OSPAR Convention relates to the North Sea, but contains the same generic principles that are applied world wide and applied in the National Assessment Guidelines. Assessment against the IAIA leading practice principles was also undertaken to determine the degree to which the guideline successfully considers the holistic environment.

Outcomes of the evaluation against IAIA standards are presented in table 5-1; and comparison against leading practice guidelines for management and monitoring of dredging are presented in table 5-2 and table 5-3. Shortfalls are identified in each of the tables and discussed in greater detail below.

Impact	Applied in Guideline	Comments
Air Quality	Partly	§6.12 expresses a need for mitigation of odour, but the guideline does not consider any other air quality issues such as dust or GHG emissions.
Archaeology	No	The guideline makes reference to the heritage act and assessment criterion 9 in Appendix 5 requires a description of heritage and cultural matters to be provided, but archaeology is not specified.
Community	Partly	§6.13 indicates that community consultation may be required.
Cultural Heritage	Yes	Required under assessment criterion 9 of Appendix 5.
Economy and fiscal	Yes	Appendix 5 requires the proponent to provide a brief description of economic factors for the NOI.
Fauna (including NES)	Partly	§4.1 refers to invasive species and potential impacts on aquatic fauna and benthic organisms but does not consider impacts on other land-based predatory species. Background information is required under assessment criterion 6 of Appendix 5.
Flora (including NES)	Partly	Background information is required under assessment criterion 6 of Appendix 5 and monitoring of leachate from large spoil deposits is contemplated in §6.9.
Groundwater Quality and Volume	No	Not considered in the guideline.
Health and mental health	No	Not considered in the guideline, but may not be applicable.
Indigenous rights	Partly	Some aspects of Aboriginal rights may be encapsulated in assessment criteria 7, 9 and 10 of Appendix 5. These deal with land use, cultural heritage and sacred sites clearances.
Noise	Yes	§6.12 expresses a need for mitigation of noise.
Social Infrastructure	No	Not considered – may not be applicable.
Surface Water Quality	Yes	§4.1 refers to potential impacts on marine water quality.
Traditional Knowledge	Partly	§6.2 notes the cultural and economic significance of mangrove environment for Aboriginal people. However, no effort is made to utilize traditional knowledge in the assessment, management or monitoring processes.

Table 5-1: Assessment of the marine dredging guideline against IAIA principles for leading practice environmental assessment.

Management Requirements	Applied in Guideline	Comments
Risk Assessment according to AS/NZS ISO standards	No	Not considered in this guideline.
Management Plan	Yes	The entire guideline is heavily skewed towards the development of environmental management plans, rather than express a need for a full risk based environmental impact assessment.
<ul style="list-style-type: none"> • Seeks to minimize the need for dredging and soil disposal 	Yes	Recognized in §5.7.7.
<ul style="list-style-type: none"> • Seeks to minimize the physical effects of spoil disposal 	Yes	Management of spoil and mitigation of its impacts are key considerations of this guideline. In this respect the guideline is quite comprehensive with all aspects of spoil disposal covered in §5, §6 and their subsections; and in Appendix 5 – guidelines for the NOI.
<ul style="list-style-type: none"> • Seeks to minimize the impacts of contaminated sediments 	Yes	Management and monitoring requirements are adequately addressed in §4.2, §5.2, §5.4, §6.1, §6.2 and Appendix 5 – guidelines for the NOI.
<ul style="list-style-type: none"> • Refers to ANZECC ocean disposal guidelines 	No	§5 contains a comprehensive discussion on evaluation of ocean disposal alternatives, but does not direct the proponent to consider the ANZECC guidelines. The guidelines direction to consider ANZECC marine water quality guidelines and reference to the National Assessment Guidelines for Dredging is an acceptable alternative.
<ul style="list-style-type: none"> • Seeks to minimize effects on water quality 	Yes	This will primarily be achieved by managing spoil (refer above). Quality control can be achieved through applying the ANZECC/ARMCANZ marine water quality triggers (refer below).
<ul style="list-style-type: none"> • Refers to ANZECC ARMCANZ 2000 marine water quality triggers 	Yes	These guidelines are referenced in §3.2 their role in elutriate testing (Phase III) of assessment of sediment quality is advocated in §5.2.3.
<ul style="list-style-type: none"> • Seeks to optimize dredging and disposal methods 	Yes	§5.1 requires the proponent to evaluate all possible alternatives for disposal of spoil in the economic, social and biophysical context. From this, it should be able to optimize dredging and disposal methods.
<ul style="list-style-type: none"> • Seeks to manage noise 	Yes	Addressed by §6.12.
<ul style="list-style-type: none"> • Seeks to manage odour (e.g. hydrogen sulfide especially if land disposal is used) 	Yes	Addressed by §6.12.
<ul style="list-style-type: none"> • Considers higher order impacts (e.g. on species that predate marine species) 	Partly	This not clear in the guideline. §5.7.6 discusses some windows of environmental sensitivity that need to be considered, however there appears to be no consideration of predatory terrestrial species (e.g. birds) that might be impacted by changes to benthic populations or mangrove habitats.
<ul style="list-style-type: none"> • Considers rehabilitation 	Yes	Assessment criterion 13 of Appendix 5 requires a brief description of rehabilitation.

Table 5-2: Assessment of the marine dredging guideline against leading practice principles for management as described by the Australian National Assessment Guidelines for Dredging and OSPAR Convention Guidelines (Technical Annex III).

Monitoring Requirements	Applied in Guideline	Comments
Appropriate Monitoring Programs	Yes	§5.7.4 and §5.7.5 advocate a risk-based environmental monitoring framework that is integrated with environmental management plans. This is a common theme carried throughout the guideline.
<ul style="list-style-type: none"> Assesses biological impacts on the seabed 	Yes	§5.2.3, §5.2.4 details testing of sediments and spoil for bioavailability and bioaccumulation of chemical species, while §5.3 and §5.4 focus on the wider implications to benthic communities.
<ul style="list-style-type: none"> Assesses biological effects land disposal of spoil 	Yes	Addressed in §6.9 of the guideline,
<ul style="list-style-type: none"> Monitors release of contaminants 	Yes	§5, §6.9 and §6.10 outline the rationale for monitoring contaminants released from sediments on land and in water.
<ul style="list-style-type: none"> Monitors turbidity and sea grass health 	Yes	§4.1 identifies that turbidity and sea grass impacts result from dredging. §5.7.7 suggests that application of near-time data collection for turbidity represents best practice. Turbidity limits are advocated in §6.7 where spoil is disposed to land.
<ul style="list-style-type: none"> Considers higher order impacts (e.g. on species that predate marine species) 	Partly	This not well developed in the guideline. §5.7.6 discusses some windows of environmental sensitivity, but does not clearly identify how they are linked or what level of monitoring should apply.
<ul style="list-style-type: none"> Monitors impacts on mangrove ecosystems 	Yes	§6.2 recommends the development of intertidal sedimentation and mangrove health monitoring programs. These are to be dependent on the scale of the project.
Assesses and monitors rehabilitation of the seafloor (post dredging)	Partly	Appendix 5 requires detailed information on monitoring programs during and after dredging but does not specify the nature of the monitoring.

Table 5-3: Assessment of the marine dredging guideline against leading practice principles for monitoring as described by the Australian National Assessment Guidelines for Dredging and OSPAR Convention Guidelines (Technical Annex III).

Shortfalls against leading practice

The dredging guideline is highly descriptive and cumbersome and geared towards screening projects out of the environmental assessment process by focusing on the NOI, similar to those evaluated for mining and petroleum exploration and production. It does not consider the environmental significance of prospective large-scale marine dredging operations (e.g. potential seafloor mining) and is incorrect in its statement that dredging for marine mining operations is yet to be proposed in the Northern Territory. At least one company has already targeted reclamation of offshore manganese and has indicated that should this proceed, dredging technologies are likely to be involved (NTEPA, 2012).

This approach means the guideline caters more for impacts at the lower end of the scale and seeks resolution through environmental management plans (EMP) triggering a more detailed assessment at a higher level (i.e. PER or EIS). This is acceptable if dredging included in higher-level assessments (e.g. as was done for the INPEX project) or if the project is small enough to warrant a separate lower level assessment (e.g. 2008 maintenance dredging of Fort Hill and Stokes Hill wharves). This again brings into question the definition of what is defined as significant.

In terms of assessing the quality of this guideline, a number of shortfalls have been recognized and are discussed below.

- 1) This guideline carries an inherent risk because there appears to be no obligation for a proponent to lodge an NOI and trigger the assessment process.
- 2) This guideline does not specifically consider risk assessment according to AS/NZS ISO 31000:2009 standards. Instead, the framework advocated is confined to benthic pathways and does not address wider ramifications of large-scale projects. Under the existing environmental assessment process, formal evaluation according to AS/NZS ISO 3001:2009 is usually undertaken via a separate comprehensive Risk Assessment as part of the proponent's overall environmental impact assessment documents (EIS or PER). If this practice is to be continued here, then non-consideration of AS/NZS ISO 3001:2009 in this guideline does not represent a problem. If the intent is to now incorporate formal risk assessment into individual parts of the environmental impact documents, then these guidelines must state it is required and that it should be done to this standard.
- 3) The guideline does not fully address impacts on air quality, as greenhouse gas loads are not considered. Greenhouse gases are currently considered to be major contributors to environmental change and should be monitored for larger dredging operations that require a higher level of environmental assessment. This is normally undertaken via a separate Air Quality Impact Assessment as part of the environmental assessment documents (EIS or PER). If the EPA determines that the project is to be subjected to assessment at a level higher than an EMP, then the types of impacts to be evaluated (e.g. dust, greenhouse gases) must be specified.
- 4) The assessment criteria do not address archaeological heritage in the marine and land-based environments. This is another important feature of the cultural environment that is protected by legislation and should be specified in the assessment criteria by explicitly stating the need for consideration of archaeological sites as part of Assessment criterion 9 in Appendix 5.
- 5) Some secondary and tertiary impacts, such as those on transient, predatory fauna species (terrestrial and marine) are not fully addressed. Although the importance of protecting sea grass and mangroves are highlighted, the guidelines do not require proponents to detail, manage and monitor the range of species (particularly those that utilize mangroves for breeding and feeding) that might be impacted by ecosystem change brought on by sedimentation, changing water currents or loss of primary species (benthic or otherwise). In remote areas, many of these species have cultural and economic value (i.e. as food sources) or may otherwise be of significance to Aboriginal people.
- 6) The guideline does not satisfactorily address the potential for large deposits of spoil to contaminate groundwater and the terrestrial biophysical environment. Sulfate rich spoil, when exposed to air, has the potential to create long-term AMD impacts. Although the need for management plans specific to dealing with AMD from sulfate bearing soils is recognized, no detail on the plan is provided. The plan should be commensurate with the NTEPA's AMD guidelines evaluated in section 3.2 of this report, however, they are not referenced and proponents are not directed to consider them when developing their management plans.

Summary

This guideline is inherently flawed as it provides an opportunity for developers to bypass the environmental assessment procedure or have them assessed at a lower level than is appropriate by returning insufficient detail. It does not adopt the standard risk-based approach and does not account for all risks to the biophysical, cultural and social environments, particularly where large areas of land might be required for disposal of spoil.

2.6 Terrestrial Biodiversity

Best practice in biodiversity conservation requires protection mechanisms to apply at ecosystem, species and genotype levels. At each of these levels, assessment of impacts must consider risks to composition, structure and function in spatial and temporal terms (IAIA, 2005). Biodiversity and species values are equally important because they are of economic, social, biophysical and cultural relevance. By developing protection mechanisms that consider these values in conjunction with an ecosystem-based approach, a firm basis for intergenerational sustainability and a 'no net loss' of biodiversity approach can be established.

IAIA principles for environmental assessments are directed towards measurement of outcomes from activities and do not strictly apply to impacts. Consequently evaluation of this guideline against all IAIA standards for environmental assessment except those that relate to direct human interactions with flora and fauna would be largely meaningless. Even though social, cultural and economic values can be linked with biodiversity, they can only be considered as secondary impacts in terms of risk assessment. Evaluation against the general IAIA principles is addressed in table 6-1 and against the salient aspects of management, drawn from the IAIA biodiversity guidelines (IAIA, 2005) in table 6-2. Shortfalls identified in each of the tables are discussed in greater detail below.

Impact	Applied in Guideline	Comments
Aesthetics	No	Not considered.
Cultural Heritage	Yes	§8 identifies Commonwealth guidelines that can be used to assess impacts on heritage places listed for their natural values. There is usually a strong link with Aboriginal cultural values in remote areas of the Northern Territory.
Economy	No	Not considered.
Indigenous rights	Yes	Appendix A recognizes the roles played by Aboriginal ranger groups and the need for permission to access Aboriginal Land. Reference is made to relevant protocols.
Traditional Knowledge	No	No recognition of species of significance to Aboriginal people.

Table 6-1: Assessment of the biodiversity guideline against IAIA principles for leading practice environmental assessment.

Aspects Assessed	Applied in Guideline	Comments
Ecological function at ecosystem level is measured	Yes	§5.3 and §7.3 require the proponent to consider relationships between species and habitats across local, regional and national bioregions.
Management and Monitoring systems are used	Yes	Standard flora and fauna survey methods are summarized in Appendix A. No specific management plans are identified, however guidance for management of weed under legislation is provided in §6.2.3.
Risk Assessment according to AS/NZS ISO standards	Yes	§8 advocates the use of AS/NZS ISO 3001:2009 for undertaking risk assessments.
Spatial and temporal impacts are considered	Yes	§8 requires assessment of consequences of the cumulative impacts of each contributing source.
Standard methods of analysis are applied	Yes	Appendix A provides guidance on standard methods for the identification of species abundance and diversity; and collection of flora and fauna specimens where required.
Values at genetic, species and ecosystem levels are measured	Partly	§8 requires risk assessments to consider multiple and cumulative impacts for individual and multiple components of biodiversity at habitat/ecosystem level. There is no mention of assessment at sub-species (genetic) level.

Table 6-2: Assessment of the biodiversity guideline against key biodiversity management principles recommended by the IAIA.

Shortfalls against leading practice

The guidelines for impact assessment on terrestrial biodiversity are robust, but fail to consider a number of aspects related largely to the social environment and its values. These are highlighted below.

- 1) The definition used for species of conservation significance should be broadened beyond a definition based upon population statistics and ‘sensitivity to change’, or a new category should be created, to include species that are of cultural or socio-economic significance to Aboriginal people. These are species that have a value outside of the standard European definition of ‘conservation significance’, but should be conserved to ensure the cultural integrity of the environment is preserved and the post-development environment has sustainable intergenerational qualities. These species of indigenous significance should be included in rehabilitation and closure planning in an effort to recreate a post-development environment that most closely resembles that of predevelopment and suits the cultural needs of future generations of Aboriginal people.
- 2) Socio-economic values of flora and fauna species to Aboriginal people are not recognized. In the guideline. Even though they may not be quantifiable in monetary terms, they are a major part of alternative sustainable economies discussed in section 3.1 of this evaluation. They are also strongly linked to the concept of species of indigenous significance and are important in demonstrating intergenerational sustainability of the links between cultural and biophysical aspects of the post-development environment.

The guideline should recommend that wherever possible, the socio-economic values of species of significance to Aboriginal people are considered during all aspects of recording, managing and monitoring of flora, fauna and other vegetation. This should be included when the environment and risks to it are being described and as a part of rehabilitation and closure planning.

- 3) In addition to socio-economic values, any market values of species that are grown and/or harvested for sale in close proximity to a development are not being included in the assessment. Population, seasonal availability and economic data for species having market value (e.g. mud crabs) is necessary if assessment of potential economic impact and risk to this type resource industry (e.g. fisheries) is to be complete. The information must then be factored into management and monitoring programs designed to mitigate any demonstrated social and economic risk.
- 4) The guideline does not consider aesthetic values of potentially impacted areas (e.g. old, large growth forests), which may attract tourism and be of subsequent economic benefit to nearby communities. Analysis of the touristic value of the local bioregion, with a view to specific biophysical attractions should be collected and assessed for risk, then factored into management and monitoring programs designed to mitigate any demonstrated social and economic risk.
- 5) The guideline contains no specific requirement to manage risk to genetic diversity, however some instruction in how to collect genetic samples from terrestrial vertebrates is provided in Appendix A. Genetic diversity creates variation in species' characteristics and is important to maintaining overall population levels and health by the presence of alleles that may be valuable in resisting disease, pests or other sources of stress. Genetic diversity creates a buffer against change and provides a species the ability to adapt, while its loss inevitably leads to localized extinction of species.

Scientific analysis of genetic biodiversity across numerous species and a large area is a complicated and expensive process and may remain outside of the scope of environmental assessment procedures in the Northern Territory for considerable time. Some guidance on how to use genetic monitoring for conservation and management is available (Schwartz et al, 2006) and should be applied to management plans at least for species that are identified as having conservation or indigenous significance.

SUMMARY

The biodiversity guideline is good practice, but could be improved if greater attention was paid to the cultural, social and economic values placed on flora and fauna by surrounding communities and/or Aboriginal people.

3.0 Summary and recommendations

In May 2013, eleven guidelines constituting a part of the Northern Territory's environmental assessment process were presented for public consultation. Six of these have been evaluated here for potential inclusion in a formal submission by the NLC. These six guidelines have been evaluated against principles developed by the IAIA that are considered world's leading practice at this time. Special regard has been paid to Aboriginal rights and concerns in undertaking this evaluation.

A summary of evaluation against the fundamental principles of leading practice environmental assessment is provided in table 7-1. General and specific recommendations of the evaluation are provided in tables 7-2 and 7-3. Further recommendations with respect to additional uses for the information provided in this evaluation are available at the end of this section.

3.1 Summary

Of these guidelines, two (ESIA and Biodiversity) focus on the receiving environment; one (AMD) focuses on a specific source of impact; while the remaining three (Mining, Petroleum and Dredging), focus on activities that can lead to wider impacts. This may help to explain why they do not meet some of the principles described below.

Many of the principles used in Table 7-1 are value-based judgments and may be subject to interpretation, depending on the context in which they are considered. The definitions used in this evaluation have been adapted from the IAIA principles (IAIA, 2005) and are outlined below:

- 1) *Adaptive*: the guideline promotes a realistic outcome that can be iterative and incorporate additional information as it arises, without compromising its integrity.
- 2) *Credible*: the guideline balanced, objective, impartial and subject to independent checks and verification.
- 3) *Fit for purpose*: the guideline informs decision-making and results in appropriate levels of environmental protection and community wellbeing.
- 4) *Focused*: the guideline concentrates on the environmental effects and key issues that are required for effective decision-making.
- 5) *Integrated*: the guideline considers interrelationships between various environmental aspects in spatial and temporal context and includes other bodies of knowledge.
- 6) *Participatory*: the guideline provides appropriate opportunities involve and empower stakeholders and develop their trust.
- 7) *Rigorous*: the guideline applies and mandates the use of best practicable science and standards and development of management plans.
- 8) *Systematic*: the guideline considers all information and alternatives and uses it effectively in developing monitoring and management plans.
- 9) *Transparent*: the guideline is easily understood and acknowledges limitations and difficulties that may apply.

Principle	ESIA	AMD	Mining	Petroleum	Marine Dredging	Bio-Diversity
Adaptive	Yes	Yes	No	No	Yes	No
Credible (objectivity)	Yes	Yes	No	No	No	Yes
Fit for purpose	Yes	Yes	Yes	Yes	Yes	Yes
Focused	Yes	Yes	Yes	Yes	Yes	Yes
Integrated						
• Considers cumulative impacts	Yes (Economic)	No	No	No	Partly	Yes (Diversity)
• Considers social, cultural and biophysical aspects	Yes	Partly	Yes	Yes	Partly	Partly
• Includes local and/or traditional knowledge	Yes	No	No	No	No	Yes
Participatory						
• Advocates consultation	Yes	Partly	Partly	Partly	Yes	Yes
• Engenders trust	Yes	No	No	No	No	Yes
• Promotes community development	Yes	No	No	No	No	No
• Promotes empowerment	Yes	No	No	No	No	Yes
Rigorous						
• Considers secondary or higher order impacts	No	No	No	No	Partly	Yes
• Plans for mitigation or management of impacts	Yes	Yes	Yes	Yes	Yes	Yes
• Specifies 'best practicable' science and systems	Yes	No	No	No	Partly	Yes
Systematic	Yes	Yes	Yes	Yes	Yes	Yes
Transparent	Yes	Yes	Yes	Yes	No	Yes

Table 7-1: Summary comparison of each of the draft guidelines against the IAIA guiding principles of leading practice environmental assessment.

The outcomes listed in table 7-1 indicate the evaluated guidelines are generally robust and fit for purpose, but they do not meet the rigours of leading practice. Notably, the most significant problems relate to how the cultural and social aspects of the environment are being addressed. This suggests that a general need for the application of better mechanisms and increased opportunities for public engagement and participation exists. The potential benefits of collection, protection and application of traditional knowledge to the environmental assessment process is one obvious mechanism to improve participation and engender trust, but one that has been largely ignored in the guidelines.

Most of the guidelines are minimalistic and do not consider cumulative, secondary or higher level impacts. In addition, guidelines that relate to active inputs to the environment do not specify the need to ensure that assessment and management is to be done using the best available systems (e.g. AS/NZS ISO 3001:2009 and ISO 14001). This will not represent a problem for projects that are to undergo high-level scrutiny through a PER or an EIS, provided that the standard practice of undertaking full risk assessments still applies, but poses a major concern for projects that are assessed solely on the basis of an NOI.

3.2 Recommendations to be considered for submission

It is noted that guidelines for some integral components of standard EIS documents (e.g. Risk Assessment) or for NOI for activities (e.g. exploration and production of petroleum on submerged lands; or exploration and production of gas), have not been presented for consultation. These should be sought and evaluated.

Details of the evaluations against key principles and activities that represent leading practice for the six guidelines assessed here have been provided in section 2.1 to 2.6 in this report. These have been collated into sets of general and specific issues in the tables below. Recommendations, which aim to improve the quality of the guidelines, bring them into line with international leading practice and generate greater consistency across the Northern Territory's environmental assessment process, are also provided.

General issues and recommendations

Issue	Reference	Recommendation
Numerous risks and impacts are not fully addressed	All guidelines evaluated	Guidelines for Exploration and Production of Minerals, Petroleum and Gas from Submerged Lands; Guidelines for on-shore exploration and production of Gas; the Risk Assessment approach; for describing the Project; and for addressing impacts on Health & Safety, Hydrology & Water Quality, Soil & Landform and Historic & Cultural Heritage should be prepared and released for public review.
More attention should be paid to using international principles that represent world's leading practice.	All guidelines evaluated	The guidelines are to encourage reference to world's leading practice principles when developing EIS and SIA documents. Principles such as those developed by the IAIA should be referenced in the guidelines where available.
Lack of focus on community engagement and participation.	All guidelines evaluated	Each of the guidelines is to provide avenues for increased opportunities for community participation and engagement.
Cumulative impacts have not been fully considered.	All guidelines evaluated	Each of the guidelines is to include a separate section that requires an assessment of cumulative impacts. The section should highlight the need to undertake cumulative assessments within a spatial and a temporal framework.
Risk assessments required do not always match the background information collected.	All guidelines evaluated	The guidelines are to require an assessment of risk to each of the aspects for which background information is requested.

Table 7-2: General issues raised following guideline evaluation and recommendations for improvements.

Specific issues and recommendations

Issue	Guideline	Recommendation
Impacts on aesthetics are not addressed	ESIA	Formal assessment of risk to this aspect is to be undertaken, if not here, then elsewhere in the EIS documents.
Impacts on archaeology, cultural heritage and culture (including traditional knowledge and access to natural resources) are not addressed	ESIA	Formal assessment of risk to these aspects is to be undertaken, if not here, then elsewhere in the EIS documents.
Impacts on health, mental health and psychological well-being are not addressed	ESIA	Formal assessment of risk to these aspects is to be undertaken, if not here, then elsewhere in the EIS documents.
Economic impacts are not fully addressed	ESIA	The guideline is to provide an assessment of the project's sensitivity to external economic factors (e.g. exchange rate, commodity prices). The guideline is to provide an estimation of future costs, including closure and opportunity loss to landowners.
Gender based issues are not addressed	ESIA	The guideline is to require any specific gender based issues to be obtained through consultation and managed through a formal risk assessment.
Local political implications of the project are not addressed.	ESIA	The guideline is to require any specific political implications of the project to be raised and to be managed through a formal risk assessment.
Impacts on cultural, economic and social aspects of the environment are not addressed.	AMD	Formal assessment of risk to these aspects is to be undertaken, if not here, then elsewhere in the EIS documents.
Impacts on flora and fauna (especially those of NES) are only partly addressed.	AMD	Formal assessment of risk to these aspects is to be undertaken, if not here, then elsewhere in the EIS documents.
The principle of intergenerational equity is only partly addressed by management plans	AMD	The guideline is to require that management consider land use by future generations and aim towards mitigation of long-term and cumulative social impacts.
Guidelines for water quality and trigger levels are not leading practice.	AMD	The guideline is to specify that trigger guidelines developed are to meet the ANZECC/ARMCANZ 95% protection levels and that surface water is to remain suitable for human consumption.
Guidance on leading practice options for managing AMD at closure is limited.	AMD	The guideline is to be written so that developers consider more stringent options, namely: (i) avoidance of areas suspected to contain large amounts of acid forming materials; (ii) in-pit burial of acid forming materials followed by pit backfill; and (iii) subaqueous burial of acid forming materials in the pit void, where pit backfill is unviable.
Impacts on surface and groundwater are only partly addressed.	AMD	Formal assessment of risk to these aspects is to be undertaken, if not here, then elsewhere in the EIS documents.
A requirement to undertake risk assessments using the AS/NZS ISO 31000:2009 standard is missing.	AMD, Mining, Petroleum, Dredging	The guidelines are to require formal risk assessment using the AS/NZS ISO 31000:2009 standard approach.
Waste management is only partly addressed	Mining	The guideline is to require assessment and management of impacts caused by waste streams other than storm water.

Issue	Guideline	Recommendation
Other than dust, air quality is not addressed.	Mining, Petroleum	The Assessment criteria are to request at least a descriptive analysis of anticipated impacts on air quality; and an assessment of expected contributions to GHG emissions.
Impacts on archaeology are not addressed	Mining, Petroleum	Unless these are considered under the more general cultural heritage, the Assessment criteria are to request a survey of archaeological sites.
Traditional knowledge is not addressed	Mining, Petroleum	The guidelines are to require integration of traditional ecological knowledge into the NOI where practicable and to develop a plan to manage and protect traditional ecological knowledge.
AMD is not addressed	Mining, Petroleum	The guidelines are to refer to the guideline for AMD and to request the proponent consider the potential for AMD at all levels of the project.
There is no obligation to lodge an NOI.	Mining, Petroleum, Dredging	The guidelines are to oblige an NOI to be prepared for all projects.
The definition of significance is open to interpretation	Mining, Petroleum, Dredging	The guidelines are to contain a statement that details levels of activity or production beyond which the higher levels of assessment (EIS and PER) become mandatory.
Current public concerns and political ramifications are not adequately addressed	Petroleum	The guidelines are to state that high-level assessments (EIS and PER) are mandatory for projects using the technique of high-pressure horizontal drilling. The NTEPA should consider separate guidelines for projects that consider use of high-pressure horizontal drilling.
Impacts on air quality are not adequately addressed	Dredging	The guidelines are to state that an assessment of GHG emissions is to be undertaken for larger projects.
Impacts on archaeology are not addressed	Dredging	The guideline is to include impacts on archaeological sites in the cultural and heritage assessments and include them in management plans.
Impacts on flora (especially those of NES) are only partly addressed.	Dredging	The guideline is to require the proponent to describe impacts of leachate from spoil on surrounding vegetation patterns and floral species and include this in management plans.
Impacts on fauna (especially those of NES) are only partly addressed.	Dredging	The guideline is to require assessment of impacts on land-based predatory species that use the marine and mangrove environments and to include this in management plans.
Impacts on groundwater are not addressed	Dredging	The guideline is to require assessment of potential impacts of leachate from spoil disposed to land on groundwater quality and include this in management plans.
Traditional knowledge is only partly addressed	Dredging	The guideline is to require integration of traditional ecological knowledge into the NOI where practicable.
Monitoring of rehabilitation is only partly addressed	Dredging	The guideline is to provide advice on what aspects of the environment are to be monitored once the project is complete.
Impacts on aesthetics are not addressed	Biodiversity	Formal assessment of risk to this aspect is to be undertaken, if not here, then elsewhere in the EIS documents.

Issue	Guideline	Recommendation
Impacts on economy are not addressed	Biodiversity	The guideline is to require an assessment of market and socio-economic values of species as part of the risk assessment process. This information must be considered in management plans.
Impacts on ecosystem functions are not fully addressed	Biodiversity	The guideline is to require ecosystem functions and the functional relationships between species, at least for species of conservation and indigenous significance to be described. Reference should be made to conceptual diagrams where appropriate. This information must be considered in management plans.
Traditional knowledge is only partly addressed	Biodiversity	The guideline is to require integration of traditional ecological knowledge into the assessment where practicable. The definition of species of conservation significance is to be expanded to include species of indigenous significance, or a new category added.
Genetic diversity within species is not fully addressed	Biodiversity	The guideline is to require that biodiversity management plans must consider within-species and across species genetic diversity.

Table 7-3: Specific issues raised following guideline evaluation and recommendations for improvements.

3.3 Further recommendations

The recommendations expressed above represent only a single viewpoint. Consequently, the NTEPA may elect to implement all or only some of them once it considers all submissions made. Usually decisions to reject recommendations would occur because they are viewed as unsound or too restrictive to development. In these instances, non-inclusion of some recommendations may be made more palatable if enough detailed information is provided in the NOI.

These recommendations represent leading practice in the field of environmental impact assessment and can be put to use by the NLC in other ways to further protection of land-based assets owned or controlled by Aboriginal people. In this context, it is recommended that:

- 1) the IAIA international leading practice guidelines used here to evaluate the NTEPA guidelines be developed into a tool that the NLC can use when evaluating NOI, PER and EIS documents and preparing public submissions for developments that affect their Aboriginal constituents;
- 2) the IAIA guidelines are used as a reference for those seeking to negotiate best outcomes in agreements with companies looking to develop projects on land subject to the Aboriginal Land Rights Act or where Native Title applies. Although all of the guidelines will not necessarily apply, those that do may lead to improved outcomes with respect to social, cultural and environmental management of land based assets;
- 3) the IAIA guidelines are used in efforts to engender change in legislation when opportunities to make public submissions on relevant legislation arise.

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