Northern Territory Government
Office of Environment and Heritage

PART B

GUIDELINES FOR PREPARATION OF A DRAFT ENVIRONMENTAL IMPACT STATEMENT

Matilda Minerals Ltd

Andranangoo Creek West and Lethbridge Bay West Mineral Sand Mining Proposal

Melville Island NT

August 2005

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INTRODUCTION TO THE GUIDELINE

These guidelines have been developed to assist Matilda Minerals Ltd (the Proponent) in preparing a Draft Environmental Impact Statement (DEIS) for the proposed Andranangoo Creek West and Lethbridge Bay West Mineral Sand Mining Proposal on Melville Island (NT) in accordance with Clause 8 of the Administrative Procedures of the *Environmental Assessment Act* of the Northern Territory.

Administrative Procedures of the *Environmental Assessment Act* of the Northern Territory state that the Minister will specify the following in the guidelines:

- matters relating to the environment which the proponent shall deal with;
- number of copies of the report to be provided to Minister/other agencies; and
- newspapers in which and on occasions when the proponent will publish a notice.

The DEIS should contain sufficient information to enable understanding and assessment of the scope and environmental implications of the proposal. The DEIS should clearly identify the main environmental impacts associated with the development and should contain management strategies that demonstrate how these impacts will be avoided or minimised.

Information should be presented in a concise format, using maps, overlays, tables and diagrams where appropriate to clarify the text.

The DEIS should include the following sections, but need not be limited to these sections or inferred structure.

1 EXECUTIVE SUMMARY

The Executive Summary should include a brief outline of the project and each chapter of the DEIS, allowing the reader to obtain a clear understanding of the proposed project, its environmental implications and proposed management strategies. The Executive Summary should be written as a stand-alone document.

2 GENERAL INFORMATION

The following general project information should be provided for the proposal:

a) Proponent details.

b) Project name and location.

c) Overview of the proposed project in the context of the proponent's long-term plan for exploration and mining on the Tiwi Islands.

d) The scale and type of operation.

e) Ore reserves, mining rate, production.

f) Overall timeframes for construction, operation and closure.

g) Extent of previous exploration or mining activity.

h) Existing project facilities and planned use of other facilities eg roads, port.

i) Project objectives, benefits and justification.

j) Regulatory framework and approvals.

2.1 DESCRIPTION OF THE PROPOSAL

The DEIS must provide a detailed description of the proposal including:

a) Proposed layout for all project components and facilities.

b) The extent of clearing required for the project, including all mine infrastructure, roads, borrow pits etc.

c) The proposed tenures under which mining and haulage would occur.

d) Mining, processing and tailings disposal methods, including inputs, products, by-products, including tailings characterisation.

e) Materials, equipment and infrastructure requirements of the project, including transport methods, frequency and routes for access to the project sites and haulage of concentrate. All camp and other infrastructure is to meet relevant standards.

f) Workforce requirements (numbers and positions, residential or commuter).

g) Ongoing management, maintenance and administrative requirements.

h) Rehabilitation, decommissioning and closure of the project and future land uses.

3 ALTERNATIVES

Alternative proposals, which may still allow the objectives of the project to be met, should be discussed, detailing reasons for the selection and rejection of particular options. The short, medium and long-term potential beneficial and adverse impacts of each of the options should also be considered.

Alternatives to be discussed should include:

- not proceeding with the proposal;
- alternative locations for components of the proposal;
- alternative operational procedures (e.g. restriction to daytime activity);
- alternative routes for access roads; and
- alternative environmental management techniques.

4 EXISTING ENVIRONMENT, POTENTIAL IMPACTS AND ENVIRONMENTAL SAFEGUARDS

4.1 PRELIMINARY

Studies to describe the existing environment should be of a scope and standard sufficient to serve as a benchmark against which the impacts of the project may be assessed over an extended period. Control sites not impacted by the project should be included in proposed studies, and long-term monitoring locations should be established.

This section of the DEIS should include an in-depth description of the areas with the potential to be impacted by the project (or any feasible alternatives) and should clearly identify, qualify and quantify, where appropriate, those potential environmental impacts. The section should also include an assessment of the level of significance of the impacts taking into account the following factors:

- the nature and intensity of impacts (magnitude, duration, frequency and extent);
- the degree of mitigation and management possible;
- the degree of public interest;
- the reliability and validity of forecasts and predictions; and
- the resilience of the biophysical and social receiving environment to cope with change.

Cumulative impacts should also be discussed including the extent to which the environment is already affected by existing developments.

Environmental Management Plans(s) will need to be developed in order to minimise and manage impacts associated with the project and should be outlined in the DEIS. When reference is made in the DEIS to legislation, guidelines, standards etc, these should be named specifically.

4.2 CLIMATE AND LANDFORMS

4.2.1 ***BASELINE***

a) Describe the project area, in terms of broad climatic zones and present meteorological data including average/monthly rainfall and evaporation, maximum/minimum annual rainfall/evaporation.

b) Provide suitably detailed maps and an interpretation of the regional geology and geomorphology of the site and peripheral areas. Contour intervals of 1m should be presented on site maps.

c) Describe topographical, geological or landform features/sites that may be of conservation or economic significance in the vicinity of the project areas.

d) Discuss the soil types and land units of the sites and peripheral areas.

e) Describe the risk of storm surge to the existing landform.

f) Detail the existing level of soil erosion in the project areas, including adjacent coastal areas.

4.2.2 ***IMPACTS***

a) Detail the extent and implications of possible impacts to topographical, geological or landform features/sites from the project, including the deposition of tailings into the mine slot.

b) Provide details of limiting properties of soil types and land units in the project area relating to erosion, rehabilitation, acid generation or special management requirements including storm surge.

c) Describe the post-mining landform in terms of chemical and physical properties and any constraints this poses for rehabilitation success.

d) Describe susceptibility to storm surge and erosion (particularly wind erosion) after rehabilitation, including discussion of the alteration of the elevation, properties (eg bulk density), vegetative cover and integrity of the dunes and related impacts on areas inshore of the dunes and for coastal protection.

4.2.3 ***MANAGEMENT***

a) Detail the preventative, management and monitoring strategies proposed to avoid or minimise the impacts identified in 4.2.2., including topsoil management, erosion and sediment control, tailings characterisation, acid soil management, storm surge contingencies.

4.3 HYDROLOGY AND WATER QUALITY

4.3.1 ***BASELINE***

a) Provide a detailed description of site and regional surface water quality, catchments, waterways and wetlands, natural or artificial, ephemeral or permanent, including springs, in the vicinity of the proposed project areas, including along access roads.

b) Provide a description of site and regional groundwater resources and quality in the vicinity of the proposed mining areas and their connectivity with surface waters.

c) Discuss the sensitivity and significance of site and regional surface water and groundwater resources from an ecological, public/social and economic perspective, including a description of water quality and flows, and any existing surface water or groundwater users in the project areas.

d) Describe site (and, if relevant, regional) hydrogeology to enable the prediction of potential impacts of the proposal on wetlands and vegetation adjacent to mining areas, including drawdown cones and pollution pathways.

4.3.2 IMPACTS

a) Describe how the project might impact on the surface water and groundwater quality and features described in 4.3.1 (including impacts on adjacent wetlands, vegetation and other users) eg. due to mine slot dewatering, groundwater abstraction from mine bores, mine and waste water disposal (include volumes and quality), stormwater runoff, dust suppression, acidification of ground or surface water in the mine slot and metals mobilisation, contamination due to major hydrocarbon or chemical spills or acidification.

b) Provide an estimate of seepage/recharge rates in the mine slots and an indication of time for groundwater recovery following cessation of mining activities.

c) Describe the potential for ground instability due to slot mining occurring in proximity to wetlands.

d) Describe the location of groundwater bores for the project and projected volumes abstracted per year.

e) Provide an estimate of dewatering volume totals and quality predicted for the mine slots, the volume likely to be discharged, and map the location of proposed dewatering discharge location(s).

f) Provide a description of the seepage/recharge rates at water disposal points (taking into account the effects of discharged fines/sediments).

4.3.3 MANAGEMENT

Detail preventative, management, treatment and monitoring strategies used to minimise the impacts of the project on the hydrological features described in 4.3.2. In particular, provide details on the following:

i. measures to safeguard surface and groundwater resources and their dependant ecological communities including options for mine slot dewatering, management and treatment of clean and contaminated water, including site stormwater;

ii. measures to minimise disturbance to, and erosion of, surface water bodies, particularly where access roads cross wetlands and water courses; provide details of typical waterway crossings that would be constructed;

iii. measures to safeguard surface water and groundwater quality including erosion and sediment control measures at dewatering discharge locations, proposed waste water treatment and final effluent quality, and appropriate management of any acid sulphate soils excavated or exposed through mining, dewatering or wetland crossings;

iv. if stability issues are identified, measures to reduce associated risks,

v. proposed surface water and groundwater monitoring programmes;

vi. proposed decommissioning of any water related structure eg dams, bores etc; and

vii. proposed data management and reporting.

4.4 ECOLOGY

4.4.1 BASELINE

a) Flora and fauna survey methodologies are to be agreed with the Biodiversity Conservation Division of the Department of Natural Resources, Environment and the Arts and the Australian Government Department of Environment and Heritage (DEH). The survey methodologies are to be included in the appendices. The methodology should include the following:

i. analysis of ecological data at three scales: within the project area, within 5km of the project, and in the broader region;

ii. vegetation map at 1:25,000 or finer;

iii. flora and fauna sampling density, number of regional survey sites and survey methodology to be determined with the Biodiversity Conservation Division and DEH;

iv. both wet season and dry season surveys, or sampling when species most likely to be affected are present;

v. where significant species are considered likely or possible to occur in the project area, specifically targeted sampling should be conducted for them to determine presence and abundance or absence; and

vi. survey of aquatic flora and fauna of the wetlands and strand in the vicinity of the project areas.

b) Describe (and map, where possible) the occurrence and abundance of flora and fauna species (including weed or exotic species) and ecological communities (including groundwater-dependant ecosystems) which could be affected by the Project (including minesite, other infrastructure and associated roading). The assessment should particularly include:

i. Flora and fauna that are designated threatened species under relevant Territory and Commonwealth legislation (fauna to include brush-tailed rabbit-rat, false water-rat [water mouse], red goshawk, masked owl, partridge pigeon, hooded robin, butler's dunnart and northern brush-tailed phascogale and threatened invertebrates *Amphidromus cognatus*, *Trochomorpha melvillensis* (snails) and Dodd's azure butterfly *Ogyris iphis doddi*; flora to include *Calochilus caeruleus, Endiandra limnophila, Garcinia warreni, Luisia teretifolia, Thrixspermum congestum, Typhonium jonesi, T. mirabile* and *Utricularia subulate*).

ii. Species with cultural/indigenous significance.

iii. Species listed under international treaties (such as CAMBA, JAMBA or the Bonn Convention).

iv. Special consideration should also be given to the following:

a) ecologically outstanding areas;

b) vegetation that is the habitat of rare, threatened or endangered species or has outstanding diversity;

c) communities that are exceptional examples of their type; and

d) vegetation outside its normal distribution or of other biogeographical significance.

c) Survey for significant species should use sampling techniques appropriate for the indicated species, and be undertaken at the time of year appropriate for detection of those species.

d) Comment is to be provided on the potential for occurrence of significant species in project areas which may not have been identified in surveys.

e) Describe the significance of the beaches in the vicinity of the project areas to breeding sea turtles, shorebirds and seabirds as per methodologies agreed with the Biodiversity Conservation Division of the Department of Natural Resources, Environment and the Arts and the Australian Government Department of Environment and Heritage (DEH).

i. This assessment should include an estimate of the number of breeding turtles (of each species) using the beach at peak breeding season and throughout the year;

ii. the distance inland from high water mark moved by nesting turtles; and

iii. a description (including height, width and density) of any areas of vegetation that are anticipated to buffer nesting beaches from likely disturbances, especially light.

f) Describe the significance of wetlands in the vicinity of mining areas including the use and dependence of flora and fauna species on these environments as per methodologies agreed with the Biodiversity Conservation Division of the Department of Natural Resources, Environment and the Arts and the Australian Government Department of Environment and Heritage (DEH).

g) For all components above, the studies should provide an assessment of the significance of the biodiversity values relative to local regional and national scales.

4.4.2 IMPACT

a) Discuss the potential impacts of the proposal (including clearing, road upgrades and increased traffic, light and noise) at a species and an ecosystem level (impacts on biophysical and ecological functions and the process which maintain them), particularly those of local, regional, national or cultural/indigenous significance as

described in 4.4.1. The significance of impacts should be discussed in terms of the factors listed in section 4.1 – Preliminary.

b) Discuss the impacts of the proposal in the context of pristine coastal environments.

4.4.3 MANAGEMENT

a) Discuss ecological constraints to the project and describe preventative, management and monitoring strategies which will address the impacts identified in 4.4.2 above including, but not limited to:

   i. how the potential for impacts on sea turtles would be minimised, including the impact of artificial light, noise and human disturbance on their breeding success;

   ii. weed management strategies; and

   iii. management of the risk of introducing feral animals (including ants), and other exotic fauna species.

b) Describe management measures for land clearing, including any salvage of plants prior to clearing.

c) Describe the objectives and methods for rehabilitating disturbed areas and provide evidence that the methods proposed would be successful. Discussion should identify constraints in relation to the rehabilitation of tailings and how these will be overcome and timeframes for the progress of rehabilitation towards meeting end objectives.

d) Describe what monitoring would occur to measure the effectiveness of controls implemented and to enable identification of impacts on wetlands, flora and fauna (particularly nesting marine turtles) during each phase of the project.

e) Describe the program for adaptive management should monitoring indicate that the proposed mitigation measures are not effective at reducing impacts to the levels indicated in the assessment.

4.5 AIR QUALITY & NOISE

4.5.1 BASELINE

a) Discuss the potential sensitivity of noise receptors adjacent to the mining operation and ancillary activities.

b) Discuss background dust levels in relation to proposed project components.

4.5.2 IMPACTS

a) Assess impacts of noise generated by the project in terms of sensitivity of receptors.

b) Detail each of the emission sources associated with the project eg number of generators used at each site, will they be linked etc.

c) Identify, quantify and assess the possible impacts of the following air quality issues resulting from the project:

   i. gaseous emissions;

   ii. fugitive dust; and

   iii. greenhouse gas emissions and ozone depleting substances (use guide provided in Appendix 1).

4.5.3 ***MANAGEMENT***

Detail the preventative, management and monitoring strategies proposed to avoid or minimise the impacts identified in 4.5.2 including:

a) dust suppression measures for the project;

b) measures to manage potential noise issues related to the operations; and

c) mechanisms available to the community regarding dust emissions complaints.

4.6 RADIOLOGICAL ISSUES

4.6.1 ***BASELINE***

Describe the radiological characteristics of the orebodies.

4.6.2 ***IMPACTS***

Detail the potential sources, pathways, and potential doses of radiation (taking into account epidemiological information from other mines where radiation is an issue). Include the impact on members of the public and the surrounding ecosystems.

4.6.3 ***MANAGEMENT***

Detail preventative, management and monitoring strategies used to minimise any radiological impacts of the project identified in 4.6.2., including reference to codes of practice. A Radiation Management Plan must be submitted to the Department of Primary Industry, Fisheries and Mines and the Department of Health and Community Services for assessment.

4.7 FIRE

Detail the preventative, management and monitoring strategies proposed to avoid or minimise the impacts of fire including, but not limited to:

a) Develop a fire management plan in consultation with key stakeholders (including Traditional Aboriginal Owners, and the Tiwi Land Council). The plan must identify activities which pose a risk of wildfire and describe fire response plans and safeguards for minimising the likelihood of wildfire.

4.8 HYDROCARBONS AND OTHER HAZARDOUS SUBSTANCES

a) Describe what hydrocarbon and chemical products will be used and estimate quantities to be stored.

b) Describe the preventative, management and monitoring strategies proposed to minimise the impact on the environment from the use, storage and disposal of hydrocarbon and chemical products for the project.

4.9 WASTE MANAGEMENT

4.9.1 ***IMPACT***

a) Identify and describe (quantities and characteristics) of all wastes including 'Listed Wastes' as defined in Schedule 2 of the Waste Management and Pollution Control Act associated with construction, operation and decommissioning of the project including chemical and hazardous materials.

b) Describe all waste-producing activities (including chemical and mechanical) to be conducted as part of the project (eg. chemical usage, sewage treatment, power generation, mobile vehicle and machinery operation and

servicing). This should include activities relating to both extraction and transportation of product by road and sea.

4.9.2 MANAGEMENT

Detail the preventative, management and monitoring strategies proposed to avoid or minimise the impacts identified in 4.9.1. including reduction, reuse, recycling, storage, treatment, transport and disposal of waste including contaminated stormwater. This should include contingency arrangements and response obligations to effectively deal with pollution events. Waste disposal is to comply with relevant NT legislation and guidelines.

4.10 HISTORIC AND CULTURAL HERITAGE VALUES

4.10.1 BASELINE

Identify Indigenous and non-indigenous places of historic or contemporary cultural heritage significance in all areas proposed to be disturbed/utilised by mining activities and infrastructure, (including the port), including:

a) areas nominated for listing or listed on the Register of the National Estate or the Interim list of the Register of the National Estate;

b) areas nominated for listing or listed on Commonwealth and Territory Heritage registers and Commonwealth and Territory registers of indigenous cultural heritage;

c) sacred sites - provide evidence of an Authority Certificate under the Northern Territory Aboriginal Sacred Sites Act 2000 and strategies to achieve compliance with protection of sites under the Aboriginal Lands Rights (Northern Territory) Act 1976;

d) Macassan sites and traditional and historic Aboriginal and Torres Strait Islander (ATSI) archaeological and heritage places and objects protected under relevant Territory and/or Commonwealth legislation;

e) European historic sites; and

f) areas with special values to indigenous and non-indigenous people (eg. traditional land use, landscape, visual environment, recreational, commercial, tourism, fisheries, scientific, educational, marine archaeological sites).

This should be done through community consultation, historic research and field survey. No information of a confidential nature, (particularly that related to anthropological matters) relevant to indigenous people or groups is to be disclosed in the DEIS. However, the DEIS must describe the arrangements that have been negotiated with relevant indigenous groups in relation to anthropological and archaeological surveys.

Advice and permits on the conduct of these studies should be sought from the responsible authorities. Independent qualified professionals, in consultation with the Traditional Owners or their representative bodies in the relevant area must conduct surveys. Research and surveys are to be carried out using an appropriate methodology which provides for involvement of indigenous people and which is acceptable to the traditional owners concerned with the relevant areas. Relevant indigenous groups should be consulted in relation to the nature and scope of surveys and the appointment of the people to undertake them. Consultation with historical organisations should also be undertaken.

4.10.2 IMPACT

a) Describe the potential impacts on the features described in 4.10.1.

b) The identification of indigenous cultural heritage impacts is to take place in consultation with relevant indigenous groups. This should assess the Project's effects on lifestyles, traditional practices, heritage places, the impact of increased visitation and the effects on indigenous culture generally. All groups should be consulted in relation to the traditional subsistence economy, their natural resource use, and Native Title interests.

4.10.3 MANAGEMENT

Detail the preventative, management and monitoring strategies proposed to avoid or minimise the impacts identified in 4.10.2., including, but not limited to:

a) Describe how any sacred sites and archaeological sites and objects present will be protected. This is to include the process to be followed for incidental discovery of archaeological materials i.e. that works should cease and the Heritage Conservation Services be contacted.

4.11 SOCIO-ECONOMIC

4.11.1 BASELINE

a) Describe the distances of the project components from towns, communities, houses, recreation areas, and commercial enterprise facilities.

b) Describe the project component locations and surrounding areas in terms of land uses, zoning, planning schemes, land titles, jurisdictions and responsible authorities.

c) Describe local communities' structures and vitality (including demography, health, education and social well being, access to services etc).

d) Describe existing relevant transport networks (eg. road and ports), their level of use and constraints in these networks (eg wet season access, periods of road closure and load limits).

e) Describe land use history where relevant.

4.11.2 IMPACTS, OPPORTUNITIES AND MANAGEMENT

a) Describe the project's impact on the regional, territory and national industries and economies in terms of direct and indirect effects on employment, income and production.

b) Describe the relevant government policies related to employment and local industry participation and discuss compatibility of the project with these policies (liaise with the Office of Indigenous Policy, Department of the Chief Minister).

c) Describe the potential long-term and short-term social impacts and opportunities of the proposal for the local community and how these will be managed, including, but not limited to:

i. opportunities for local employment and business development during the various project phases including numbers and skills level, including specific opportunities for skills development that may be of benefit to the local community past the lifetime of the mine eg plant operator training, plant propagation, skills relevant to employment at Port Melville;

ii. negative impacts or potential benefits for existing regional industries (for example utilisation of remaining infrastructure in the tourism industry) and confirmation that consultation will take place to maximise these synergies and/or minimise any negative impacts;

iii. cultural awareness programs and behavioural guidelines for project employees;

iv. community health and safety issues associated with the project, including but not limited to, quantifying increased road usage and describing management measures to minimise safety risks to road users;

v. communication strategy to engage relevant community stakeholders regarding the project;

vi. mechanism for the community in general to provide feedback to the proponent or to raise concerns;

vii. management of interactions with the Indigenous community including during times of community and ceremonial business;

viii. strategy for planning with the local community and landowners for closure regarding issues such as final land use determination, infrastructure to remain, rehabilitation objectives;

ix. impacts on other land uses and infrastructure; and

x. monitoring, evaluation and reporting on socio-economic issues to government and other stakeholders.

d) Describe the status of, and outline the proponent's responsibilities under, any agreements required with land owners and other relevant parties.

e) Detail if any NT Government support is being sought for the project (ie NT Government assisted project or Public Private partnership).

4.12 BITING INSECTS

a) In liaison with the NT Department of Health and Community Services Medical Entomology Branch, conduct a brief biting insect survey and assessment to identify potential health risks at the project areas.

b) Discuss the potential impacts of biting midge and mosquito populations as pest and disease vectors on the work force and community.

c) Present preventative, management and monitoring strategies to minimise the risk of biting insects including providing information to the prospective and employed workforce, preventing the creation of new mosquito breeding sites due to the project such as the compaction of sands, the creation of borrow pits, interference to surface drainage lines, and the discharge of mine water. Liaise with the NT Department of Health and Community Services Medical Entomology Branch for relevant guidelines.

5 PROJECT ENVIRONMENTAL MANAGEMENT

Specific safeguards and controls which would be employed to prevent, manage and monitor environmental impacts are to be detailed in an Environmental Management Plan or Plans (EMP) for the project. As a minimum, the EMP(s) for the project should be managed under the broad components of an Environmental Management System (EMS) including policy and planning, implementation and operation, and checking and review. However, it is preferable that the proponent develops and implements a complete EMS for the project which deals with all activities associated with the project to an accepted standard commensurate with the risk of environmental harm. Accepted EMS standards are specified in:

- AS/NZS ISO 14000 – Environmental Management System, Guidelines on Principles;
- AS/NZS ISO 14001 – Environmental Management System, Specifications with guidance for Use; and
- BS 7750 – Specifications for Environmental Management Systems.

5.1 ENVIRONMENTAL MANAGEMENT PLAN

The EMP should be prepared in consultation with, and to the satisfaction of, relevant Northern Territory Government (NTG) agencies and key stakeholders. An outline of the Draft EMP should be submitted with the DEIS. Where possible, specific management policies, practices and procedures should be included in the draft EMP. Should any information not available be at the time of submission of the DEIS, this should be flagged in the DEIS along with an indication of how and when the information will be incorporated into the final detailed EMP.

The EMP for the project must cover all project activities and is to include, but not be limited to, the following:

Policy and Planning

a) Include all environmental commitments made in the DEIS in the EMP. Clear timelines should be included for key commitments, especially in relation to stabilisation and rehabilitation of disturbed areas.

b) Describe management policies and objectives and compatibility of these to the Tiwi Islands Natural Resource Management Strategy 2004 and other relevant government strategic planning and policy documents.

c) Describe specific strategies to meet management objectives and include key performance indicators to measures performance (quantitative where possible).

d) Reference to standards used.

e) Legal and other obligations for the project.

f) Identify all significant risks to the biophysical, cultural and socio-economic environment. External risks to the project should also be considered eg. risks from natural hazards such as cyclones and storm surges (refer Section 5.2).

g) Planning for decommissioning and closure, including details of financial provisioning and contingencies for sudden closure.

Implementation and Operation

a) Identification of responsible personnel in the Proponent's organisation, in contractors' staff and in the government agencies concerned.

b) Staffing arrangements to ensure that the measures described in the report will be carried out effectively.

c) Staff induction and education program, including delivery of staff behavioural guidelines and cross-cultural awareness training.

d) Hazard identification procedure.

e) Strategies/procedures for communicating with stakeholders.

f) Incident reporting and investigation.

g) Document control.

h) Operational controls eg Standard Operating Procedures for high risk activities/areas.

i) Emergency planning and procedures, including hydrocarbon and other hazardous chemical spills, natural disasters, coordination with regional emergency service providers, and emergency medical response and transport and first aid matters.

Checking and Review

a) Monitoring, inspection and audit programmes, including timing and frequency. Monitoring programs should ensure safeguards are being effectively applied, be capable of identifying any differences between predicted and actual impacts, and identify the party responsible for undertaking corrective actions.

b) Corrective action system.

c) Describe the process for updating the EMP including review periods.

d) Describe reporting processes against DEIS commitments, EMP procedures, monitoring and auditing, relevant licences and approvals.

5.2 RISK ASSESSMENT

The DEIS should include a preliminary risk assessment of the hazards to biophysical, cultural and socio-economic environment due to the project construction, operation, maintenance, decommissioning and closure. The risk analysis will identify the critical areas that need to be addressed in management plans, monitoring programs, contingency and emergency plans.

6 PUBLIC INVOLVEMENT AND CONSULTATION

Consultation with local landowners, the Tiwi Land Council, the Northern Territory and Australian Governments should be detailed, and any outcomes referenced. Details of any ongoing consultation should also be provided.

The outcomes of surveys, public meetings and liaison with interested groups should be discussed and any resulting changes made to the proposal clearly identified. Details of any ongoing liaison should also be discussed.

7 BIBLIOGRAPHY

The DEIS should contain a comprehensive reference list/bibliography. Any source of information such as studies, research, maps and personal communications used in the preparation of the DEIS should be clearly identified, cited in the text and referenced in the bibliography.

8 GLOSSARY

A glossary should be provided defining the meaning of technical terms, abbreviations and colloquialisms. Technical terms and jargon should be minimised throughout the DEIS.

9 APPENDICES

Information and data related to the DEIS but unsuitable for inclusion in the main body of the statement (eg. because of its level of technical detail) should be included as appendices. This may include detailed analyses, monitoring studies, baseline surveys, raw data and modelling data. Where necessary, specific guidance should be provided on the most appropriate means of accessing information not appended to the DEIS.

APPENDIX 1

NT Environmental Impact Assessment Guide
Greenhouse Gas Emissions

1. PURPOSE

The Northern Territory Government's objective for managing greenhouse gas emissions from new and expanding operations is to minimise emissions to a level that is as low as practicable.

This Guide aims to assist proponents in providing the information needed by the Office of Environment and Heritage (OEH) to assess the impact of greenhouse gas emissions from proposed projects during assessment under the Northern Territory Environmental Assessment Act 1994.

2. THE GUIDANCE

2.1 Emissions estimates

Proponents should detail the following in their environmental impact assessment documentation:

a) an estimate of the **greenhouse gas** emissions for the construction and operation phases:

- in **absolute** and **carbon dioxide equivalent** figures (refer to the Glossary in this Guide) for each year of the project; and
- identified on a gas by gas basis and by **source** (including on site and upstream sources such as emissions arising from land clearing and the production and supply of energy to the site).

*Emissions estimates are to be calculated using the methodology developed and periodically updated by the **National Greenhouse Gas Inventory Committee**[1] or another national or internationally agreed methodology.*

b) details of the **project lifecycle greenhouse gas emissions** and the greenhouse gas efficiency of the proposed project (per unit and/or other agreed performance indicators).

Lifecycle emissions and greenhouse gas efficiency should be compared with similar technologies producing similar products.

To provide an understanding of the broader impact of the proposal, proponents are encouraged to place the estimated greenhouse gas emissions from the proposal into a national and global context2.

2.2 Measures to minimise greenhouse gas emissions

Proponents must demonstrate consideration of a wide range of options and indicate the intended measures and efficient technologies to be adopted to minimise total greenhouse gas emissions from the proposed project, including:

a) identifying energy conservation measures, opportunities for improving energy efficiency and ways to reduce fugitive emissions where applicable;

b) indicating where potential savings in greenhouse gas emissions can be made through the use of renewable energy sources, taking into account fossil fuels used for supplementary power generation; and

c) their commitment to offsetting greenhouse gas emissions.

*The design measures to maximise efficiency and minimise emissions should represent **best practice** at the time of seeking project approval.*

Proponents are to advise whether they will join the **Commonwealth Government's Greenhouse Challenge** program.

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[1] Up to date methodology can be obtained from the Australian Greenhouse Office. See www.greeenhouse.gov.au.

[2] Information on Australia's national emissions profile can be obtained from the Australian Greenhouse Office at www.greenhouse.gov.au; international emissions from the United Nations Framework Convention on Climate Change (UNFCCC) webite at http://unfccc.int/2860.php/ .

Emission offsets include activities that remove carbon from the atmosphere or reduce the greenhouse gas intensity (output per unit product) from current or future activities. Examples may include but are not limited to:

- establishment and maintenance of perennial vegetation;
- **sequestration** of carbon by geological, chemical, biological or other means;
- reducing the carbon intensity of existing activities;
- replacing fossil fuels with renewable fuels;
- trading emissions permits in a nationally approved system;
- synergistic linking of enterprises to reduce net greenhouse gas outputs; and
- development of new greenhouse gas efficient technologies.

Proposed emissions offsets projects should include an estimate of greenhouse gas emissions savings that are likely to be achieved through implementation.

Measures that offset emissions within the NT are encouraged, and OEH staff can discuss possible options with proponents.

2.3 Emissions monitoring and reporting

Consistent with the principles of continuous improvement, a program is to be outlined in the proponent's Environmental Management Plan which includes ongoing monitoring, investigation, review and reporting of greenhouse gas emissions and **abatement** measures. It should be noted that in 2006, large energy users (those using greater than 0.5 petajoules per year) will be required by the Commonwealth Government to report publicly on their greenhouse gas emissions.

2.4 Preparedness for climate change

Proponents should demonstrate due consideration of the risk of climate change impacts to the proposal. Relevant variables may include, but are not limited to:

- increasing average temperature and evaporation rates;
- variation in rainfall and the incidence of floods;
- sea level rise;
- increased frequency and intensity of cyclones and storm surge levels; and
- altered distribution of pests and disease.

In assessing climate change risk, proponents should be guided by recent projections published by organisations such as the CSIRO and Intergovernmental Panel on Climate Change (For CSIRO projections, see: http://www.ipe.nt.gov.au/whatwedo/greenhouse/documents/pdf/ntclimatechange.pdf).

3. GLOSSARY OF TERMS

Abatement: Limiting, abating, avoiding or sequestering greenhouse gas emissions through source reduction, fuel displacement or switching, carbon stabilising techniques or **sink** enhancement.

Absolute emissions: Refers to the total emissions of greenhouse gases expressed in terms of the actual mass of each individual gas emitted over a specified time period.

Best Practice: A best practice is a process, technique, or use of technology, equipment or resource that has a proven record of success in minimising energy use and greenhouse gas emissions. A commitment to use best practice is a commitment to use all available knowledge and technology to ensure that greenhouse gas emissions are minimised.

Carbon Dioxide Equivalent: A unit of greenhouse gas emissions calculated by multiplying the actual mass of emissions by the appropriate **Global Warming Potential**. This enables emissions of different gases to be added together and compared with carbon dioxide (see Table 1 below).

Commonwealth Government's Greenhouse Challenge program: A cooperative effort by industry and the Commonwealth Government to reduce greenhouse gas emissions through voluntary industry action. See: www.greenhouse.gov.au/challenge.

Greenhouse Gases: Table 1 lists the greenhouse gases proponents are required to report on.

Global Warming Potential (GWP): The warming potential of a gas, compared to that for carbon dioxide. GWPs are revised from time to time as knowledge increases about the influences of different gases and processes on climate change. Refer Table 1.

Project Lifecycle Greenhouse Gas Emissions: Those greenhouse gas emissions measured cumulatively over a defined period. Typically this period is from the point of extraction of the raw materials to either the beginning of the consumer phase of a product or the final disposal or recycling stage of a product, depending on its nature. Proponents should justify their choice of the defined period.

National Greenhouse Gas Inventory Committee: A committee comprising representatives of the Commonwealth, State and Territory Governments that oversees the development of greenhouse gas inventory methods and compilation of inventories for Australia.

Sequestration: Removal of greenhouse gases from the atmosphere by vegetation or technological measures. Sequestration is not yet precisely defined for the purposes of recognised trading or offset schemes. Accordingly, OEH will take a common sense approach on a case by case basis in the interim. To assist proponents, OEH regards sequestration as a process that results in the isolation of carbon dioxide from the atmosphere for a period which is significant in terms of influencing the global warming effect.

Source: Any process or activity that releases a greenhouse gas into the atmosphere.

Table 1: Greenhouse gases and respective Global Warming Potentials (GWPs)[3]

Greenhouse Gas	Global Warming Potential
Carbon dioxide (CO_2)	**1**
Methane (CH_4)	**21**
Nitrous oxide (N_2O)	**310**
Perfluorocarbons (CF_x)	**6500 - 8700**
Hydrofluorocarbons (HFCs)	**560 – 11 700**
Sulphur hexafluoride (SF_6)	**23 900**

Greenhouse gas emissions expressed in carbon dioxide equivalent (CO_2-e) are calculated by multiplying the actual mass of emissions for each greenhouse gas by its respective GWP factor.

[3] GWP factors listed are those published by the International Panel on Climate Change at the time of publication of this Guide.