Northern Territory Government
Department of Infrastructure, Planning and Environment

PART B – Contents of the EIS

GUIDELINES FOR PREPARATION OF A DRAFT ENVIRONMENTAL IMPACT STATEMENT ON THE PROPOSED BLACKTIP GAS PROJECT

MARCH 2004

TABLE OF CONTENTS

The draft Environmental Impact Statement (EIS) 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 draft EIS, allowing the reader to obtain a clear understanding of the proposed project, its environmental implications and management objectives. The Executive Summary should be written as a stand-alone document, able to be reproduced on request by interested parties who may not wish to read or purchase the draft EIS as a whole.

2 THE PROPOSAL

2.1 General Information

The EIS must provide detail of the proposed wellhead platform (WMP), processing facility locations, pipeline route (including associated ancillary activity sites) and surrounding environment to place the proposal in its local, regional and national context. As a minimum the EIS should include the following:

- an explanation of the objectives, benefits and justification for the project;
- meteorological data;
- topography and bathymetry;
- surrounding and proposed land uses (including the location of residential properties, communities and outstations, military reserves or exercise areas, extractive industries, road reserves etc);
- detailed description of the Wadeye community and its outstations;
- description of relevant NT and Local Government planning schemes; local laws; Territory, Australian Government and International policies, legislation and treaties; and other applicable policies;
- identification of any development approvals or infrastructure proposals likely to be required or affected by the proposal;
- how the action relates to any other actions that have been or are being taken or that have been approved in the region affected by the action;
- areas under native title claim and determinations of native title, areas of Aboriginal land, claims over sea/intertidal areas, and areas available for claim;
- substrate (marine) and soil (land) types and properties along the pipeline route (including composition, presence of acid sulphate soils, etc);
- ecological information including flora and fauna in both terrestrial and marine environments;
- availability of services/ infrastructure and accessibility taking into account seasons; and
- reference to planning issues such as land tenure, zoning, timeframes, potential for additional development and the lifespan of the project.

2.2 Description of the Proposal

The EIS should identify all the processes and activities intended for the proposed wellhead platform (WMP), pipeline (and associated ancillary activities) and processing facility during the life of the project. This should include details of:

- the size and type of the operation, the nature of the processes, products and by-products, and quantities and production rates of products and by-products;
- proposed layout for all operations, both onshore and offshore, including the WMP, gas processing case and pipeline. Include the location and/or frequency of spur lines, cathodic protection points, sales taps, compressor stations, control valves (isolation points), and any other Project facilities and linkages to existing gas pipelines;
- other exploration activities proposed for the area and how further production wells will tie-in to the project;
- the pipeline route (including the condensate pipeline), easements (including widths and access requirements) and alternative routes. In the event that the pipeline or structures may need to be constructed above ground at the shore crossing, define the reason and locality;
- all associated ancillary activities, including materials storage areas, access roads, construction camps etc;
- all equipment, production processes and methods intended for the development;
- measures to minimise the potential for third party interference;
- all chemicals, including fuels and the proposed methods for transportation, storage, use and emergency management of these substances;
- project schedule;
- the proposed tenures under which the various components and stages of the project would be held, in particular the granting of proposed tenure on Aboriginal land. Details of any Territory or Commonwealth legislative processes required to grant the proposed tenure should also be discussed;
- waste generation, storage and disposal;
- platform, pipeline and gas processing case design with regard to relevant Australian Standards and other legislative requirements, and design limitations imposed by site characteristics;
- employment opportunities (directly and indirectly, including Aboriginal people) at the different stages of the Project (construction and operation), likely sources of the workforce and level of skill required;
- the accommodation requirements and arrangements for both construction and maintenance activities and any associated infrastructure and services;
- transport systems, methods and routes for delivering construction and maintenance materials and other necessary goods and consumables including a general description of requirements for upgrading existing transport routes. Information on the use of and impact on port, road, air and rail networks is required for the construction and operational phases; and
- the use and extent of other infrastructure required for the Project, including but not limited to gas, telecommunications and power. This includes details of water supply, source, treatment and usage for both the construction and operational workforce, and pipeline testing.

In addition to the above, further information is required for the construction, operation and decommissioning phases of the project.

- Construction of the WHP, gas processing case and pipeline. The EIS should provide details of:
  - WHP, pipeline and gas processing case construction, and pipeline laying and stabilisation methods including the plant and machinery likely to be involved in both the marine environment and onshore. Include details of materials used for construction (including sources, quantities and potential for contaminants);
  - the anticipated timing, duration and progress of construction activities;
  - possible interruption to other activities, eg. interruption to road and/or shipping traffic; and
  - provision and location of service corridors.

- Operation of the WHP, gas processing case and pipeline. The EIS should provide details of operating, maintenance and safety procedures, including monitoring, provisions for the shutdown of facilities and the pipeline and/or the venting of gas, in the event of leakage of gas and possible condensate, as well as provisions for public safety in such circumstances.

- Decommissioning. The EIS should provide details of:
  - decommissioning methodologies and possible future uses of the pipeline and the offshore and onshore facilities. This should include decommissioning and rehabilitation timetable for both temporary and permanent facilities; and
  - proposed rehabilitation of construction areas, including camp sites and storage areas.

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 selection criteria should be discussed and the advantages and disadvantages of preferred options and alternatives detailed. The potential beneficial and adverse impacts of the alternatives should also be described. A comparative description of the impacts of each alternative on the matters protected by the Controlling provisions (under the *EPBC Act*) for the action. The short-, medium- and long-term advantages and disadvantages of the options should also be considered.

Alternatives to be discussed should include:

- not proceeding with the proposal;
- alternative routes for the pipeline, both offshore and onshore;
- alternative locations for components of proposal (eg. offshore and onshore facilities,);
- alternative gas and condensate processing scenarios, onshore or offshore; 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 areas not impacted by the project should be included in proposed studies, and long-term monitoring locations should be established.

This section of the draft EIS should include an in-depth description of the areas with the potential to or expected to be impacted by the project or any feasible alternatives and 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 impact, be it global, national, regional or local (eg. global and national implications of greenhouse gases and the localised impact of service roads or artificial water bodies). The possibility of remediation should also be discussed. Performance indicators for all potential impacts and remediation efforts should be identified. Environmental Management Plans will need to be developed in order to minimise and manage impacts associated with the project.

Cumulative impacts should also be discussed including the extent to which the environment is already affected by existing developments. The reliability and validity of forecasts and predictions, confidence limits and margins of error should be indicated as appropriate.

4.2 Landform and seabed features

4.2.1 Baseline

- Provide maps of and interpret the regional topography/bathymetry, both onshore and offshore.
- Provide maps of and interpret the regional geology, including seismic stability. Describe geological structures and seabed features along the pipeline route, WHP and gas processing sites that are of conservation significance.
- Provide maps of and interpret the regional geomorphology, including the coastline.
- Discuss the soil types and land unit(s), including the major marine substrate types and potential and actual acid sulfate soils in areas likely to be affected by the proposal.
- Detail the existing level of soil erosion and other disturbances.

4.2.2 Impacts

- Detail the extent and implications of possible impacts to landform and seabed features/sites from construction of all project components, including the pipeline shore crossing. Include a discussion of impacts to visual amenity.
- Provide details of limiting properties of soil and substrate types and land units or seabed features along the proposed pipeline route and onshore and offshore facility sites relating to erosion, rehabilitation, acid generation or specific management requirements.

4.2.3 Management

- Discuss measures taken to avoid or minimise the impacts identified in 4.2.2.
- Provide management plans detailing measures to manage potential environmental impacts arising from landform limitations previously discussed.

4.3 Water

4.3.1 Baseline

- For the offshore facilities and pipeline, describe local and regional tides, current patterns and typical wave magnitudes. Include details of the potential for acid generation, particularly at the pipeline shore crossing.
- Provide a general description of the surface water systems and their hydrology that may be impacted by the onshore pipeline and gas processing facilities including stormwater systems; natural and artificial catchment systems, drainage lines, wetlands and waterways; and the directions of overland flows.
- Describe the ground water systems that may be intercepted or potentially impacted by construction of the onshore pipeline and the gas processing plant.
- Provide details of the potential locations of pipeline waterway crossings including bed and bank profiles and describe selection criteria for determining the final crossing locations.
- Describe the beneficial uses and environmental values of water resources in the vicinity of the pipeline and gas processing facility (eg. Aboriginal landholders, outstations and the Wadeye community). Include a discussion of the resource type (freshwater, marine areas) and the likely effects that an impact on the resource or impediments to access could have on the respective users, both during construction and operation of the proposed gas facility.

4.3.2 Impacts

- Describe how construction and operation of the pipeline and other project components might impact on the oceanic, surface and ground water features and parameters described in 4.3.1.
- Provide information on construction techniques and design for pipeline waterway crossings and the potential impacts from their construction and installation.
- Detail the options for the source and management of water for hydrostatic testing and any other construction/ operational water use, together with plans for its disposal after use.

4.3.3 Management

- Discuss measures to ensure the beds and banks of water courses remain stable and protected from the natural forces of erosion as required, incorporating preferred methodologies of relevant Advisory Agencies where practicable particularly where there has been any disturbance to the bank or bed.
- Discuss measures to safeguard downstream surface and ground water quality including appropriate management of any excavated acid sulphate soils and management of wetland crossings.
- Describe measures to address potential impacts arising from extraction and dewatering of groundwater from the trench.
- Outline measures employed to mitigate any impacts to water users that might result from disturbances or access restrictions to water resources in the project area as discussed in 4.3.1.

4.4 Ecology

4.4.1 Baseline

- Describe floral and faunal species (including pest or exotic species) and biological communities (including marine, estuarine, terrestrial and aquatic) including those of local, regional or national significance, which could be affected by the Project. Flora and fauna should be surveyed and described, taking into account seasonality, with rare, threatened, endangered and listed migratory species identified against relevant Territory and Commonwealth legislation. Species with Indigenous conservation values should also be described. Include survey methodologies in the Appendices.
- Significant vegetation includes:
  - rare, threatened, endangered and regionally restricted species, vegetation types or habitats;
  - communities that are particularly good examples of their type;
  - vegetation types which are outside their normal distribution or have other biogeographical significance;
  - ecologically outstanding areas which have importance beyond the immediate site, eg. wetlands, riparian forests, etc; and
  - vegetation which is the habitat of rare and threatened fauna or has outstanding diversity.
- Specify the extent of clearing required along the pipeline corridor and onshore facility.
- Provide an assessment of statutory obligations under NT legislation (IDCO No. 12 – *Planning Act 1999* and s.38 *Pastoral Land Act 1992*) for permits to clear native vegetation and appropriate timelines to allow for application assessment and approvals.

4.4.2 Impacts

- Discuss the impact of the proposal on species, communities and habitats, including those of local, regional or national significance as described in 4.4.1. Discuss also the implications of these impacts on the Aboriginal use of and access to flora and fauna.
- An assessment should be made of the nature and extent of the likely short term and long term impacts, including whether impacts are likely to be unknown, unpredictable or irreversible. The assessment should indicate the significance of these impacts.
- Discuss the effects of pollutants discharged to the marine environment, such as produced formation water and possibly condensate or hydrocarbon spills.
- Discuss the potential for lighting to impact on wildlife.
- Describe the impact associated with any proposed land clearing.
- Discuss the ability of identified stands of vegetation and faunal communities to withstand any increased pressure resulting from the proposal and measures proposed to mitigate impacts.
- Identify pest species/noxious weeds that are likely to occur as a result of activities within the project footprint.

4.4.3 Management

- Discuss ways in which impacts on species, communities and habitats can be minimised (eg minimised disruption to fish passage, timing of works to minimise migratory species disturbance, minimise riparian vegetation disturbance, proposed rehabilitation of instream and floodplain disturbances, mitigation of lighting impacts).
- Describe the methods for rehabilitating disturbed areas following construction, including revegetation strategies, surface stabilities and aquatic monitoring programs.
- Discuss measures to minimise wildlife capture and mortality in the open trench, including inspection and collaboration with Commonwealth and Territory wildlife agencies, and Traditional Owners.
- Discuss the method of managing/minimising the introduction of marine pests, feral animals, and other exotic flora and fauna species.
- Include a weed management plan in the EMP to cover construction, rehabilitation and operation periods (a weed management plan is required under the NT *Weeds Management Act 2001*). Best practice weed management should be adopted with particular reference to The Australian Pipeline Industry Association APIA code of Environmental Practice.
- A Vegetation Clearing Plan should be developed as part of the Construction EMP. Management of land clearing should be in accordance with The Australian Pipeline Industry Association Inc. (1998) Code of Environmental Practice – Onshore Pipelines.

4.5 Biting Insects

- Discuss the impact of biting midge and mosquito populations as pest and disease vectors on the work force and potential for construction activities to create new sources of biting insects for nearby residents.
- Identify measures to prevent the creation of new mosquito breeding sites in quarries and borrow pits.
- Identify measures to prevent construction activities causing impacts on drainage lines which will lead to increases in biting insect species of pest and health significance.
- Discuss the effects of construction activities and disposal of construction wastes on biting insect species of pest and health significance, including measures to prevent increases in these species.

4.6 Air quality & Noise

4.6.1 Baseline

- Sensitive noise receptors adjacent to the pipeline route, offshore and onshore facilities and relevant ancillary activities, should be mapped and typical background noise levels recorded. The potential sensitivity of such receptors should be discussed. Performance indicators and standards should be nominated for each affected receptor. Include a discussion of receptors in the water column that may be impacted by noise.
- Similarly, ambient air quality including background dust levels should be measured and described for the shore crossing and land-based activities.
- Meteorological information applicable to noise and air quality in the project area should be provided.

4.6.2 Impacts

- Assess impacts of noise generated during construction and operation of the pipeline, offshore and onshore facilities, and ancillary activities against current typical background levels. Anticipated noise levels, their timing and duration, should be considered in conjunction with the sensitivity of the receptor. Include an assessment of impacts to underwater receptors such as cetaceans.
- Identify and assess the possible impacts of the following air quality issues resulting from the construction and operation of the pipeline and gas processing facility:
  - odour;
  - gaseous emissions including carbon monoxide (CO) and oxides of nitrogen (NO_x);
  - fine particulate emissions;
  - accidental and planned gas releases, including flaring; and
  - greenhouse gas emissions and ozone depleting substances.

4.6.3 Management

- Discuss measures that will be used to minimise the impacts of noise assessed in 4.6.2, including the attenuation of noise in the water column.
- Outline dust suppression initiatives. Discuss and recommend dust suppression strategies and monitoring of dust impacts.
- Outline the measures that will be employed for monitoring and dealing with gas leakages during operations.
- Discuss the effectiveness of the pollution control technology in minimising odour emissions.

4.7 Waste Management

4.7.1 Baseline

- Identify and describe (amount and characteristics) all wastes, their sources and their intended management, associated with construction, operation and decommissioning of all components of the proposal.
- Describe all activities, including chemical and mechanical processes, to be conducted on the construction sites/camps (eg. chemical storage, sewage treatment, power generation, fuel burning, mechanical workshop, diesel storage).

4.7.2 Impacts and management

- Discuss the treatment and disposal of effluent water from the gas processing plant. Include in the discussion the intended disposal of wastes associated with treatment of the process water and the potential impacts of effluent water released into the environment.
- Discuss waste management strategies, including avoidance of waste generation, reduction, reuse, recycling, storage, transport and disposal of waste, and site drainage and erosion control.
- Detail hazardous materials to be stored and/or used on site; provide their Material Safety Data Sheets and environmental toxicity data and biodegradability for raw materials and final products.

4.8 Fire

- Identify activities, which pose a risk of wildfire and describe safeguards for minimising the likelihood of wildfire and fire response plans.
- Develop a fire management plan in consultation with traditional Aboriginal owners, pastoralists and their representative organisations, including the NLC, that have specialist knowledge in fire management.

4.9 Greenhouse gas emissions inventory and benchmarking

Refer to Appendix 1 NT Environmental Impact Assessment Guide – Greenhouse Gas Emissions.

4.10 Socio-Economic

4.10.1 Use (land and marine)

4.10.1.1 Baseline

- Identify zoning, uses and features within the project footprint including:
  - urban and rural residential;
  - agricultural, pastoral, fisheries and shipping;
  - conservation, wilderness, scenic and heritage areas;
  - Indigenous land use;
  - recreational land use (eg recreational fishing), areas of research, educational and scientific value; and
  - extractive, mining and other commercial industries.
- Identify land titles (eg freehold, leasehold, pastoral, crown land, native title, mining tenure etc) and rights over land such as Native Title (under the *Native Title Act 1993* and Aboriginal land claims under the *Aboriginal Land Rights (Northern Territory) Act 1976* and any other appropriate legislation).
- List the jurisdictions and responsible authorities for the areas described above and show on maps at appropriate scales, together with the regulatory regime applying to each area.
- Discuss the distances from towns, communities, outstations, houses, recreation areas, and other facilities, and the locations of pipelines, power lines, telephone lines and other infrastructure.

4.10.1.2 Impact

- Describe, including timeframes, the anticipated and potential site specific and cumulative impacts on existing and potential uses and developments (as described in 4.10.1.1) during the construction and operation phases. The proponent is required to consult with responsible authorities for policies on such disturbances.
- Discuss the likely impacts on the land use status and ownership of the land crossed by the proposed pipeline and gas processing case in terms of land acquisition and compensation. Indigenous ownership, including native title claimants and holders, and land use should be a component of this discussion.

4.10.1.3 Management

- Outline measures to minimise the impacts to current and future uses of land and water in the project area. Include an assessment of the need for any land easement acquisition and compensation for loss of land.
- Provide details on measures to rehabilitate areas impacted by the project.

4.10.2 Historic and Cultural Heritage Values

4.10.2.1 Baseline

- Identify Indigenous and non-indigenous places of historic or contemporary cultural heritage significance, including:
  - areas nominated for listing or listed on the Register of the National Estate or the Northern Territory Heritage Register, or Interim listing on either of these Registers;
  - areas nominated for listing or listed on Commonwealth and Territory Heritage registers and Commonwealth and Territory registers of indigenous cultural heritage;
  - sacred sites - provide evidence of an Authority Certificate under the *Northern Territory Aboriginal Sacred Sites Act 1989* and compliance with protection of sites under both the *Aboriginal Land Rights (Northern Territory) Act 1976* and the *Northern Territory Aboriginal Sacred Sites Act 1989;*
  - traditional and historic Aboriginal and Torres Strait Islander (ATSI) archaeological and heritage places and objects protected under relevant Territory and/or Commonwealth legislation;
  - any historic shipwrecks that may be encountered and are protected under the *Historic Shipwrecks Act 1976*;
  - European and Macassan historic sites; and
  - 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 EIS. However, the EIS 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.

4.10.2.2 Impact

- Describe the potential impacts on the features described in 4.10.2.1.
- 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 fishing 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.
- Discuss the impacts on the relationships between groups identified with traditional and/or contemporary interest in the project area.

4.10.2.3 Management

- Every attempt should be made to identify a pipeline route and gas processing site, which avoids any significant heritage areas. The separation distances between right of way and associated infrastructure and identified areas of cultural significance should be considered.
- Cultural Heritage Management Plans (CHMPs) should be developed and implemented with the direct involvement of indigenous people. The CHMPs should encourage ongoing protection and management of cultural values; maximise involvement in management strategies and enable proponents to meet duty of care to protect Aboriginal cultural values.
- Describe procedures following the discovery of surface or sub-surface materials during the course of the project.

4.10.3 Social Environment

4.10.3.1 Baseline

- Identify key stakeholders.
- Detail regional community structures and vitality (including demography, health, education and social well being, access to services, housing, etc).
- Identify the number and capacity of existing human services to support a remote construction work force:
  - skills audit of affected communities;
  - workforce characteristics; and
  - housing accommodation type and quantity.

4.10.3.2 Impacts and Management

The EIS should include a Social Impact Management Plan developed in consultation with impacted communities, which discusses:

- general social impacts of the proposal during construction and operation, including the impacts of the construction workforce/ maintenance teams on affected landowners (including native title holders and claimants) and communities, recreational users, health and housing, property values and local authority rates;

- the potential of the local communities and the strategies used to meet the demands for employment in the company's workforce and as a source of provisions for construction, rehabilitation and operation phases of the project. The proponent should identify relevant government policies related to employment in regional areas and discuss compatibility of the project with these policies (liaise with the Office of Indigenous Policy, Department of the Chief Minister).
- relations between groups, in particular those based on age, sex, kinship, and place of origin and how this will be impacted by the Project;
- opportunities for training and employment during construction of the Project (eg. employment, monitoring and maintenance contracts) and how this will be structured, managed and implemented;
- options for possible external commercial arrangements;
- possible future benefits following construction;
- opportunities for ongoing involvement in the project operation;
- the provision of cultural awareness programs and behavioural guidelines to project employees; and
- monitoring regimes to monitor and evaluate the management of the above mentioned impacts. Provide for modifications to existing measures where mitigation strategies fail to prevent negative impacts.

4.10.4 Economics

4.10.4.1 Baseline

Detail local, regional, state and national economic viability (including economic base and economic activity, future economic opportunities, etc).

4.10.4.2 Impacts and Management

- The EIS should present a balanced broad summary of the project's impact on the regional, territory and national economies in terms of direct and indirect effects on employment, income and production. It should specify any disturbance to existing land use or threat to wilderness areas, which may impact on commercial activities and potentially impact adversely on employment.
- An indication of the broader development benefits of the project should be included.
- Describe opportunities available to regional centres/communities based on the activity generated by the project (construction, rehabilitation and operation) and the availability of gas and other services to existing and potential customers.

4.10.5 Infrastructure and Transport

4.10.5.1 Baseline

- Detail existing transport networks (including road, air and ports), telecommunications (optical fibre routes), gas and electricity infrastructure, and water supply and wastewater utilities. Include detail to differentiate between types of infrastructure eg. road type, dual carriage way/single lane bitumen/gravel.

- Identify constraints with existing infrastructure and transport networks (eg wet season access, periods of road closure and load limits, tides and sea conditions).
- Provide details of new infrastructure that will be required for the project including any requirements to upgrade existing infrastructure. In particular, provide locations of new roads or tracks, lay down storage areas, turning circles, approach diversion lanes etc.

4.10.5.2 Impact

- Describe the potential impacts of the proposal on existing and future local infrastructure and transport networks during construction and operation. This should include reference to increased road usage and shipping generated by the project.
- Detail the value of proposed pipeline and associated infrastructure in terms of the potential to provide alternative gas supply to other gas customers and to act as a conduit for other services.
- Discuss the potential impacts of transport operations on public amenity associated with construction and operation (noise, dust, light).

4.10.5.3 Management

- Describe the management of impacts on the road system and other existing infrastructure, including proposed corrective measures (in consultation with relevant regulatory agencies) and relevant guidelines used for construction, and operational and maintenance phases. Include measures to upgrade, maintain and restore gazetted or nominated roads and access tracks, and to undertake pipeline crossings of tracks.
- Outline requirements and responsibilities for rehabilitation or maintenance of roads and other project infrastructure upon project completion.
- Discuss the provision for safety of the travelling public if a high pressure gas pipeline were to be located in a road reserve.
- Discuss measures to minimise disruption to road users during construction of the pipeline and to ensure their safety during both construction and subsequent operation of the pipeline.

5 PROJECT ENVIRONMENTAL MANAGEMENT

Specific safeguards and controls, which would be employed to minimise or remedy environmental impacts, are to be outlined. These are to be covered in detail in the Environmental Management Plans (EMPs).

5.1 Environmental Management System

- It is recommended that the proponent develops and implements an Environmental Management System (EMS) for the project. The EMS should incorporate all facilities and operations 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;
- BS 7750 – Specifications for Environmental Management Systems; and
- The APPEA code of Environmental Practice.

- The EMS should include an annual program with the objective of verification of compliance with all environmental performance commitments, including permits and licences. The Environmental Management Plan required as part of this EIS should describe a commitment to develop an EMS to one of the above specifications.
- Discuss the potential use of an Integrated Environmental Management System (EMS) incorporating Environment Management Plans (EMPs), Monitoring and Reporting arrangements, or equivalent site-based management plans that would assist the determination of appropriate approval conditions for the project.

5.2 Resourcing and Policies

Information is to be provided on strategic matters relating to environmental management and should include:

- staffing and resourcing arrangements to ensure that the measures described in the report will be carried out effectively;
- procedures and instructions to employees on minimising unnecessary environmental impacts;
- a staff induction and education program to ensure an informed response to construction and operational environmental concerns; and
- development of staff behavioural guidelines and cross-cultural awareness training.

5.3 Environmental Management Plan

- It is recommended that all environmental commitments made in the EIS be included and indexed in the Construction and Operational Environmental Management Plans.
- The EMPs should be prepared in consultation with the relevant Commonwealth and Territory advisory agencies.
- Provide strategic draft EMPs with the draft EIS.
- Discuss the process for updating the EMPs including periods for regular review.
- The EMP commitments should include clear timelines for key commitments, especially in relation to stabilisation and rehabilitation of the corridor and other disturbed areas.
- When information is not available, it should be described with an indication of how and when the information will be incorporated into the final detailed EMP.
- The EMPs must be prepared in accordance with recognised standards and, in particular, to standards applicable to the construction and operation of gas production facilities and pipelines and as required by Commonwealth and Territory legislation, for example The Australian Pipeline Industry Association Inc. (1998) *Code of Environmental Practice – Onshore Pipelines*.
- The EMPs should also cover any ancillary developments with potential environmental impacts, occurring as part of the pipeline. This should ensure that environmental risk, particularly to regional communities, is minimised.
- Reference to the standards used is required; relevant standards are referred to in Section 5.1 in relation to Environmental Management Systems. The plan should address, but not be limited to, the following matters:
  - the management objectives;

- specific strategies to meet the management objectives, such as the preparation and implementation of various management plans, eg. rehabilitation plans, habitat enhancement projects, erosion and sediment control plans, pollution control plans, greenhouse emissions, waste management plans, etc, in consultation with agencies;
- the quality assurance, monitoring and auditing requirements and programs including the identification of performance indicators and criteria, monitoring and auditing locations and frequency;
- identification of responsible personnel in the Proponent's organisation; in the contractors' staff and in the government agencies concerned;
- reporting processes and structures;
- whole of project and life of project variations to environmental conditions; and
- linking of EIS findings with environmental authorities and development approvals.

5.4 Monitoring and Reporting Strategies

Specific programs of monitoring or measuring the success of the Project's environmental management are to be outlined. These should be covered in greater detail in the Environmental Management Plan. The EIS should include strategies to enable appropriate reporting to Aboriginal landholders. Matters to be considered should include:

- details of inspections to be undertaken to ensure the integrity of the pipeline; and
- objectives to measure rehabilitation success, address weed infestation, restrict access along the pipeline route, extent of erosion along the route, water quality in adjacent streams and control of biting insect species of pest and health significance.

Performance requirements should be specified quantitatively, including performance indicators for each aspect to be measured, and the stipulated target level or standard to achieve for each indicator. The timing and frequency of monitoring should also be provided. 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, and the actions taken to address problems.

The reporting program should detail:

- steps to be taken to correct detrimental effects identified by monitoring;
- procedures for reporting on monitoring programs; and
- proposed recipients of reports.

The monitoring of rehabilitation success at pipeline sites adjacent to or across waterways must continue for an adequate period to ensure that such works/rehabilitation withstand the natural flow regimes of the region.

6 HEALTH AND SAFETY PROGRAM

- Health and Safety issues pertaining to the design, construction and operational phases of the project, and the transport of construction materials, should be investigated. This should address issues concerning employees visiting the site and members of the public.
- Discuss issues relating to provision of emergency first aid treatment and transport of sick or injured persons to the nearest appropriate medical facility.
- Prepare a management and administration plan outlining strategies and procedures in the event of an emergency.

7 RISK ASSESSMENT AND EMERGENCY MANAGEMENT PLANS

7.1 Risk Assessment

- The Proponent shall carry out a Risk Assessment in accordance with AS 2885 Gas and Liquid Petroleum Pipelines and the guidelines of the responsible authority, where relevant.
- While the EIS must deal comprehensively with on-site risks, it is suggested that external risks to the project also be considered. It is suggested that external risks from natural hazards be determined on the basis of AS/NZS Risk Management Standard 4360:1999.
- The study should discuss all potential risks associated with operation of the WHP, pipeline and gas processing facility. Where possible describe these risks in quantitative terms.
- An indication is required of the likelihood of possible abnormal events that may occur in operation, together with the safeguards that will be employed to reduce the likelihood of their incidence.
- The seismic stability of the pipeline route needs to be assessed and the vulnerability of the platform, pipeline and processing facilities to cyclonic conditions and flooding should be discussed.
- Analysis shall be conducted of the consequences of these events in terms of possible risks to public safety and environmental damage in the Project area, particularly in the vicinity of the pipeline.
- Details are to be provided of the safeguards that will be employed or installed to reduce the risk of injury to persons, fauna and environmentally sensitive sites along the pipeline route.
- A review of potential hazards and accident risk during the construction, operational and decommissioning phases should be provided.

7.2 Emergency Management Plan

An outline of the proposed emergency management procedures, including the likelihood of accidental release of gas or other materials from the pipeline is to be provided. The information should include:

- the quantity of gas or other materials that would be lost;
- the area affected by the gas or condensate, under a range of likely flow conditions, including no flow up to a “typical” flood flow; and
- the approximate time scale for removal of gas or condensate by natural processes.

The following should also be considered:

- contingency plans to deal with hydrocarbon (eg. diesel, lubricating oils) oil spills during construction, operation and maintenance of the pipeline;
- contingency plans to account for natural disasters such as storms, floods and fires during the construction, operation and maintenance phases;
- ensure that development of emergency planning and response procedures are determined in consultation with regional emergency service providers; and
- include the relevant Commonwealth and Territory agencies in relation to emergency medical response and transport and first aid matters.

8 PUBLIC INVOLVEMENT AND CONSULTATION

Public involvement and the role of government organisations should be clearly identified. 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.

Negotiations and discussions with local and community government, the Territory Government and the Australian Government should be detailed and any outcomes referenced. Details of any ongoing negotiations and discussion with government agencies should also be presented.

9 BIBLIOGRAPHY

The Draft EIS 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 Draft EIS should be clearly identified, cited in the text and referenced in the bibliography.

10 GLOSSARY

A glossary should be provided, defining the meaning of technical terms, abbreviations and colloquialisms. (Note: throughout the Draft EIS, technical terms and jargon should be minimised).

11 APPENDICES

Information and data related to the Draft EIS 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 Draft EIS.

11.1 APPENDIX 1

NT Environmental Impact Assessment Guide - Greenhouse Gas Emissions

1 PURPOSE

1.1 The Office of Environment and Heritage (the Office) has developed this Guide[1]. It provides advice to proponents about the minimum requirements for environmental management, which the Office expects to be met when considering a proposal during the assessment process.

1.2 This Guide primarily addresses the minimisation of greenhouse gas emissions from new or expanding operations where greenhouse gas emissions are considered to be a relevant environmental factor in an assessment of a proposal under the NT *Environmental Assessment Act 1994*.

1.3 This Guide provides advice only. Proponents are encouraged to consider their proposals in the light of this advice. A proponent wishing to deviate from the guidance provided would be expected to put a well-researched and clear justification to the Office, rationalising the need for that deviation. In practical terms this means that the proponent would need to show that the intent of this Guide has been understood and given serious consideration.

2 THE GUIDANCE

2.1 Overview

There is a range of views within the scientific community over the climatic and environmental effects that can be expected as a result of the increasing atmospheric concentration of greenhouse gases. The majority view held in the scientific community is that global warming is occurring and that future climate change is inevitable.

The Northern Territory Government recognises that it has a role to play in addressing this complex and challenging problem. It is committed to greenhouse policies that are guided by scientific consensus and that take into consideration the Territory's current and future environmental, social and economic needs.

The Government's objective for managing greenhouse gas emissions from new and expanding operations is to reduce emissions to a level that is as low as practicable. To achieve this, the Office will ensure that potential greenhouse gas emissions from proposed projects are adequately addressed in the planning, design and operation of projects. Specifically the Office will ensure that:

- best practice is applied to maximise energy efficiency and minimise emissions;
- proponents undertake an ongoing program to monitor and report emissions and periodically assess opportunities to further reduce greenhouse gas emissions over time;

[1] This Guide has been based on a similar document produced by Western Australia's Environmental Protection Agency.

- comprehensive analysis is undertaken to identify appropriate emission offsets; and
- consideration is given to preparing for possible climate change impacts.

Emission offsets include activities that sequester carbon or reduce the greenhouse gas output or intensity 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 emission permits in a nationally approved system;
- synergistic linking of enterprises to reduce net greenhouse gas outputs; and
- development of new greenhouse gas efficient technologies.

Measures that offset emissions within the Northern Territory are encouraged, however, the Office recognises the global nature of climate change and proponents are also advised to consider national and international offset options.

2.2 Guidance on greenhouse gas emissions

Proponents should indicate the following in their environmental assessment documentation:

(a) Greenhouse gas emissions inventory and benchmarking

Using the methodology developed and periodically updated by the National Greenhouse Gas Inventory Committee[2] or another nationally agreed methodology:

(i) Estimate the gross emissions of greenhouse gases that are likely to be emitted from the proposed project for each year of its operation in absolute and in carbon dioxide equivalent figures. The estimate of gross emissions should include on site and upstream sources, such as the production and supply of energy to the site. Emissions should be detailed on a gas by gas and a process by process basis.

(ii) Detail the project lifecycle greenhouse gas emissions and the greenhouse gas efficiency of the proposed project (per unit of product and/or other agreed performance indicators). The parameters should be compared with similar technologies producing similar products. Reductions in emissions due to improvement in industry practice since 1990[3] should also be described.

(iii) Estimate any removals of greenhouse gases due to carbon sequestration activities (see (c) below), in carbon dioxide equivalent figures for each year of operation.

(b) Measures to minimise greenhouse gas emissions

[2] Up to date methodology information can be obtained by contacting the Australian Greenhouse Office.

[3] The year 1990 has been selected because it is the base year against which the Kyoto Protocol's emission abatement targets are calculated.

Consider a wide range of options (including, innovative options) and then indicate the intended measures and efficient technologies to be adopted to minimise total greenhouse gas emissions in the proposed project. This should include:

(i) Identifying improvements in energy efficiency, conservation measures and the reduction of fugitive emissions where applicable; and

(ii) Indicating where potential savings in greenhouse gas emissions can be made through the use of renewable energy sources. This should take into account fossil fuels used for supplementary power generation.

(c) Carbon Sequestration

Consider a wide range of carbon sequestration options and include intended measures for research and adoption. Options include:

- forestry or other revegetation;
- geological re-injection;
- chemical methods;
- soil uptake; and
- re-use.

(d) Minimising emissions over the life of the project

The design measures to minimise emissions, and the sequestration and sink enhancement actions to offset emissions, identified in points (b) and (c) above should, at a minimum, represent best practice at the time of seeking project approval.

Within the proponent's Environmental Management Plan, consistent with the principles of continuous improvement, the Office expects commitment to an ongoing program of monitoring, investigation, review and reporting of internal and external greenhouse gas abatement measures.

Proponents should also advise whether they will join the Commonwealth Government's "Greenhouse Challenge" voluntary cooperative agreement program (whether on a project-specific basis, company-wide arrangement or within an industrial grouping, as appropriate).

(e) Benefits on a national or global scale

This section provides the opportunity for proponents to place the proposal in a national and global context so as to provide an understanding of where broader offset benefits might occur. It provides the opportunity for the proponent to provide a statement in support of the proposal indicating where positive outcomes would be achieved in relation to greenhouse gas emissions, regardless of where these measures are located.

The Office looks to proponents to provide the best possible outcome within the Northern Territory but also recognises the potential for benefits to accrue at the national and global scale. If a proponent has adopted best practice to reduce greenhouse gas emissions in the Northern Territory, the Office then acknowledges that benefits may also accrue through actions taken by the proponent elsewhere in Australia or internationally.

2.3 Preparedness for climate changes

Proponents should demonstrate due consideration of the risk of climate change impacts. 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 events; 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 or the Intergovernmental Panel on Climate Change.

3 LIMITATIONS

This Guide has been prepared by the Office of Environment and Heritage to assist proponents and the public. While it represents the contemporary views of the Office of Environment and Heritage each proposal which comes before the Office of Environment and Heritage for environmental impact assessment will be judged on its overall merits.

4 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 resources 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: This is calculated by multiplying the actual mass of emissions by the appropriate Global Warming Potential (GWP) factor. This will enable emissions of different gases to be added together and compared with carbon dioxide.

Commonwealth Government's "Greenhouse Challenge" Voluntary Cooperative Agreement Program: The Greenhouse Challenge is a cooperative effort by industry and Commonwealth Government to reduce greenhouse gas emissions through voluntary industry action. Participation in the challenge will be through 'cooperative agreements' between the Commonwealth Government and industry participants.

The objective of these agreements is to capture the capacity of industry to abate its greenhouse emissions, mainly by improving its efficiency in energy use and processing. A successful program will mean that Australia is developing sustainable strategies that respond effectively to climate change, while maintaining or enhancing Australian industry competitiveness.

The following features form the basis for cooperative agreements between industry and the Commonwealth to abate greenhouse gas emissions and enhance sinks, as part of a comprehensive approach.

Cooperative agreements include the following:
- an appropriate emissions inventory;
- specific greenhouse action plans;
- a commitment to regular monitoring and reporting of performance against action plans;
- provision for verification of performance; and
- a public statement, as agreed by the parties, on the undertakings contained in the agreement.

Greenhouse Gases: Proponents would be required to report on the emissions of:
- carbon dioxide (CO_2);
- methane (CH_4);
- nitrous oxide (N_2O);
- perfluorocarbons (CFx);
- hydrofluorocarbons (HFCs); and
- sulphur hexafluoride (SF_6).

Emissions must be reported in terms of their absolute emissions and their "carbon-dioxide equivalent" (CO_2-e). The "carbon dioxide equivalent" is calculated by multiplying the actual mass of emissions by the appropriate Global Warming Potential (GWP) factor published by the Intergovernmental Panel on Climate Change.

Gross Emissions: The actual mass of the greenhouse gases emitted. These emissions should be expressed as both absolute and "carbon dioxide equivalent" emissions.

Global Warming Potential: Global Warming Potential (GWP) is the warming potential of a gas. GWPs are revised from time to time as knowledge increases about the influences of different gases and processes on climate change. GWPs also vary with the time horizon being considered. The 100-year horizon is generally used in policy analyses. At the time of the publication of this document the published GWPs were 1 for carbon dioxide (CO_2), 21 for methane (CH_4), 310 for nitrous oxide (NO_2), 23,900 for sulphur hexafluoride (SF_6), 6,500 for the PFC perfluoromethane (CF_4), and 9,200 for the PFC perfluoroethane (C_2F_6). GWPs are not yet available for other greenhouse gases.

Project lifecycle greenhouse gas emissions: Project lifecycle greenhouse gas emissions are those 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 the product or the final disposal or recycling stage of the exhausted product, depending on its nature. Proponents should justify their choice of the defined period.

Measures: Refers to the range of possible actions that could be undertaken which directly or indirectly contribute to the abatement of greenhouse gas emissions through source reduction or sink enhancement.

National Greenhouse Gas Inventory Committee: The National Greenhouse Gas Inventory Committee consists of representatives of the Commonwealth, State and Territory Governments and oversees the development of greenhouse gas inventory methods and compilation of inventories for Australia. Up-to-date methodology information may be obtained by contacting the Australian Greenhouse Office.

Net Greenhouse Gas Emissions: The actual mass of the greenhouse gases emitted minus any emissions that may have been removed through sequestration or sink enhancement.

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, the Office will need to take a common sense approach on a case by case basis in the interim. To assist proponents, the Office 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.

Sink: A pool or reservoir that absorbs and stores carbon lowering the amount of carbon dioxide in the atmosphere.

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