DRAFT ENVIRONMENTAL IMPACT STATEMENT

Trans Territory Underground Pipeline

Wadeye to Gove in the Northern Territory

November 2004 Executive Summary

How to View a Copy of the Draft EIS

The Draft EIS describes the project proposal, and addresses the potential environmental impacts and how these impacts will be mitigated. This document will be available for review from **3rd of December, 2004** until **4th March 2005** at the following locations:

- Darwin Public Library, Civic Centre, Harry Chan Avenue, Darwin, NT
- Casuarina Public Library, Bradshaw Terrace, Casuarina, NT
- Palmerston Public Library, Civic Plaza, Cnr University Avenue & Chung Wah Terrace, Palmerston, NT
- Katherine Town Council Offices, Stuart High Katherine NT.
- NT Environment Centre, 3/98 Woods Street, Darwin, NT
- Thamarrurr Regional Council Offices, Wadeye, NT
- Northern Land Council Offices, 9 Rowling Street, Casuarina, NT
- NLC Nhulunbuy Regional Office , Endeavour Square, Nhulunbuy
- NLC Katherine Regional Office. 5 Katherine Terrace, Katherine
- Commonwealth Department of Environment and Heritage Library, John Gorton Building, King Edward Terrace, Parkes, ACT
- State and Territory Libraries:
  - Northern Territory Library, Parliament House, Cnr Bennett & Mitchell Streets, Darwin
  - Katherine Library.

And at the following communities:

- Wadeye Knowledge Centre, Wadeye, NT
- Palumpa - Nganmarriyanga Community Inc, NT
- Daly River - Nauiyu Nambiyu Community Government Council, NT
- Peppimenarti - Peppimenarti Community Council, NT
- Kybrook
- Jawoyn Association
- Kalano Association
- Barunga
- Jilkmingun
- Wugularr (Beswick)
- Bulman
- Weemol
- Ngukurr
- Barrapunta
- Gapuwiyak
- Ramingining

- Galiwinku
- Dhanbul Association – Yirrkala
- Laynhapuy Homelands Association – Yirrkala
- Marngarr Association (Ski Beach)
- Doyinji.

The report can also be examined for the duration of the public review period either on the Office of Environment and Heritage Internet site at www.lpe.nt.gov.au/enviro/ or on the Trans Territory Pipeline Internet site at www.transterritorypipeline.com.au.

The Executive Summary of the Draft EIS is available free of charge and Volume 1 of the Draft EIS is available at a cost of $40. These are available from:

Trans Territory Pipeline Project
Level 8, 59 Mitchell Street
Darwin NT 0800
GPO Box 732
Darwin NT 0801
Email: Katie.tchia@alcan.com
Fax: 08 8941 7220

Making a Submission

Persons wishing to comment on the Draft EIS are invited to make written submissions by close of business on **4th March 2005** to:

Roderick Johnson
Office of Environment and Heritage
GPO Box 1680
DARWIN NT 0801
Email: roderick.johnson@nt.gov.au
Fax: (08) 8924 4053

All submissions should be in writing and should include the following details:

- The project name.
- Your name and address.
- Note the appropriate section number and heading used when commenting on specific sections in the Draft EIS.

Further Information

Further information on the project can be obtained from our website at www.transterritorypipeline.com.au. Alternatively contact:

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Executive Summary

Introduction

The Trans Territory Pipeline (TTP) is a proposed 940 km underground pipeline development, designed to transport natural gas from the Blacktip gas field in the Joseph Bonaparte Gulf, 250 km south-west of Darwin, to the Gove Peninsula in north east Arnhem Land (**Figure ES-1**). The TTP has the potential to provide economic and social advantages to the Northern Territory and will also provide environmental improvements as a result of the transfer from fuel oil to natural gas at the Alcan Gove Alumina Refinery. The TTP provides the vital gas transportation link between the Blacktip gas facilities and the Alcan Gove Refinery.

Alcan Gove Pty Ltd (Alcan) in association with the Blacktip Joint Venture (Woodside Energy and Eni Australia) has developed the TTP proposal as described in this Draft Environmental Impact Statement (EIS). The proposal relates to the construction and operation of the pipeline.

Through a detailed assessment of the possible environmental, social and economic impacts it has been concluded that the pipeline can be constructed in a manner that effectively mitigates the range of possible negative impacts during both the construction and the operating phases of the project.

The gas will be sourced from the Blacktip gas field and will be treated onshore at a proposed gas plant near Wadeye, as part of the Blacktip Project. The TTP will commence at the eastern boundary of the proposed Blacktip gas plant and will terminate north of the Alcan Gove Refinery on the Gove Peninsula. Alcan is currently expanding the Gove Alumina Refinery and is seeking to convert the plant's primary fuel source and operation from fuel oil to natural gas.

A conditional Gas Sales Agreement (GSA) was signed on 5 November 2004 with the Blacktip Project for the supply of natural gas to Alcan's Gove Alumina Refinery, for the supply of 800 petajoules of natural gas from the Blacktip gas field over a 20 year period starting in 2007. The GSA is conditional upon a number of milestones, all of which are expected to be reached by the end of May 2005.

In March 2004 the Commonwealth Government granted Major Project Facilitation Status to the TTP project and the Blacktip Project.

Project Proponent: The TTP sponsors are Alcan Gove Pty Ltd and the Blacktip Joint Venture participants, Woodside and Eni Australia.

Alcan Gove Pty Ltd operates a bauxite mine and alumina refinery located at Nhulunbuy on the Gove Peninsula in the east Arnhem Land region of Australia's Northern Territory.

From this remote location Alcan Gove supplies alumina and bauxite for the international aluminium industry. It is regarded as one of the most cost-efficient producers in the highly competitive world alumina market, with a commitment to innovation and excellence.

Alcan Gove is part of the Alcan group, a multinational, market-driven company and global leader in the aluminium industry.

Woodside is a leading Australian oil and gas company with substantial assets and a growing international reputation as a successful oil and gas explorer, developer and operator. The company operates Australia's biggest energy resources development, the North West Shelf Project supplying most of WA's domestic gas requirements and exporting Liquefied Natural Gas (LNG), Liquefied Petroleum Gas (LPG) and crude oil. Having successfully operated the North West Shelf Project for 20 years, the company is now strongly positioned to take advantage of new opportunities in Australian and international oil and gas markets.

Eni Australia is part of one of the world's major integrated energy companies, operating large upstream projects, downstream gas and power generation infrastructure, refining and marketing activities as well as oilfield services and engineering.

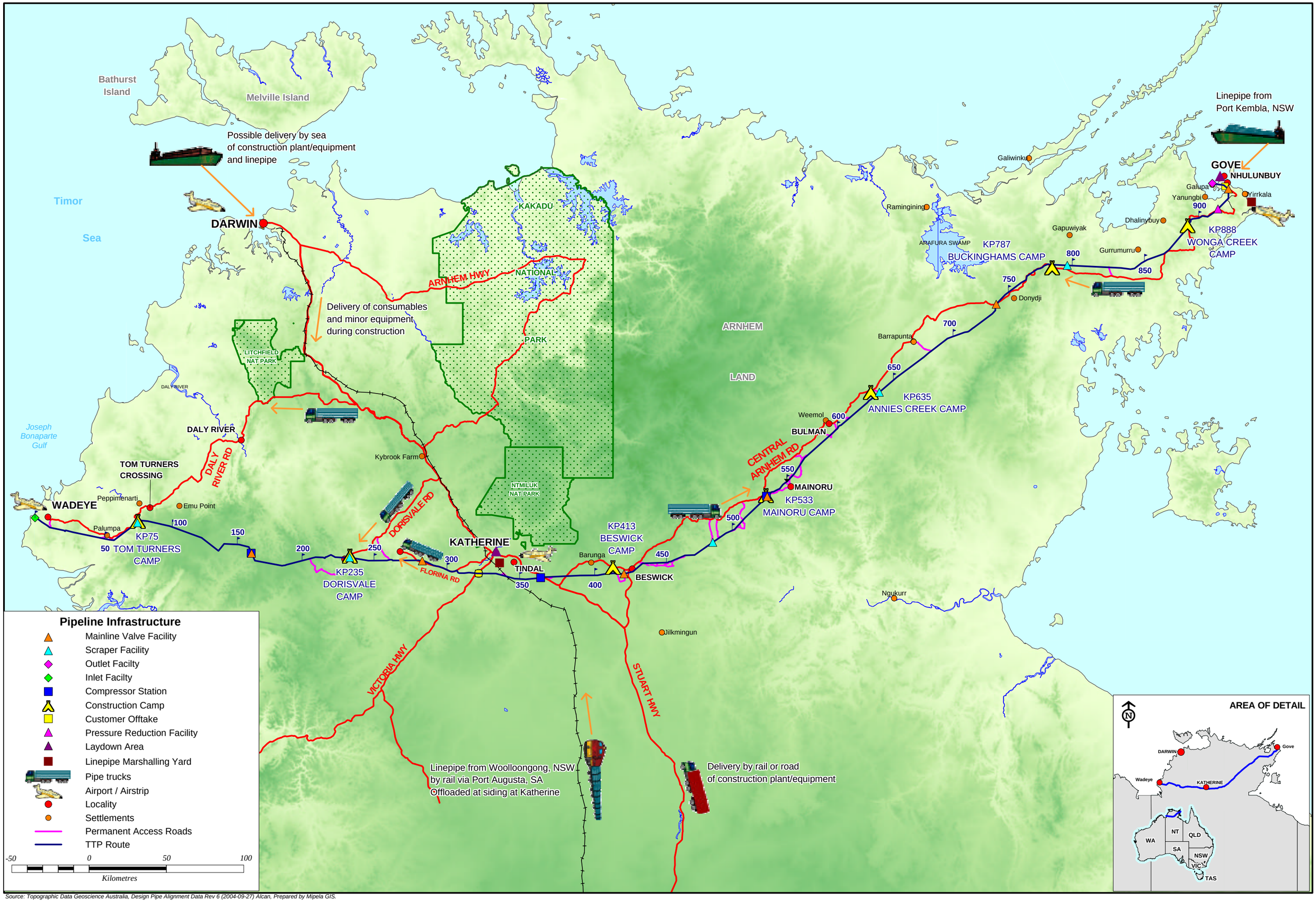
The TTP sponsors are responsible for the Environmental Impact Assessment (EIA) process and submission of the Draft EIS, as the initial developers of the project. However, the project will require a third party Builder, Owner and Operator consortium (BOO), to construct and operate the proposed 940 km pipeline and associated facilities. The BOO will be assigned the obligations of the EIS environmental commitments and will develop the subsequent Environmental Management Plans (EMPs) accordingly. Selection of the BOO consortium is anticipated in quarter 1, 2005.

Environmental Assessment Process: The Draft EIS addresses the environmental, social and economic issues associated with the proposed TTP. The document has been prepared to provide the Northern Territory Government, Non Government Organisations (NGOs) and the public with the information necessary to inform them of the project and enable them to assess the potential environmental impacts and the associated preventative and management measures proposed by the proponents.

The area traversed by the pipeline falls under the jurisdiction of the Northern Territory. However, the TTP has been declared a 'controlled action' by the Commonwealth Government under the *Environmental Protection and Biodiversity Act 1999* (EPBC Act) because it was considered possible that there could be an impact on listed threatened species and communities, as well as listed migratory species. Therefore, this Draft EIS will be assessed in accordance with schedule 1 to the 'Agreement between the Commonwealth of Australia and the Northern Territory Government under s.45 of the EPBC Act relating to environmental impact assessment' (ie the Bilateral Agreement). This agreement enables the Commonwealth to rely on the Northern Territory environmental assessment process, as per the *Northern Territory Environmental Assessment Act 1982*, and ensures that a single assessment process can be carried out to satisfy both Northern Territory and Commonwealth requirements.

The indicative date for the future planning and approvals process that applies to this project is summarised **Table ES-1**.

Figure ES1: Proposed TTP Route and Ancillary Infrastructure



Source: Topographic Data Geoscience Australia, Design Pipe Alignment Data Rev 6 (2004-09-27) Alcan, Prepared by Mipela GIS.

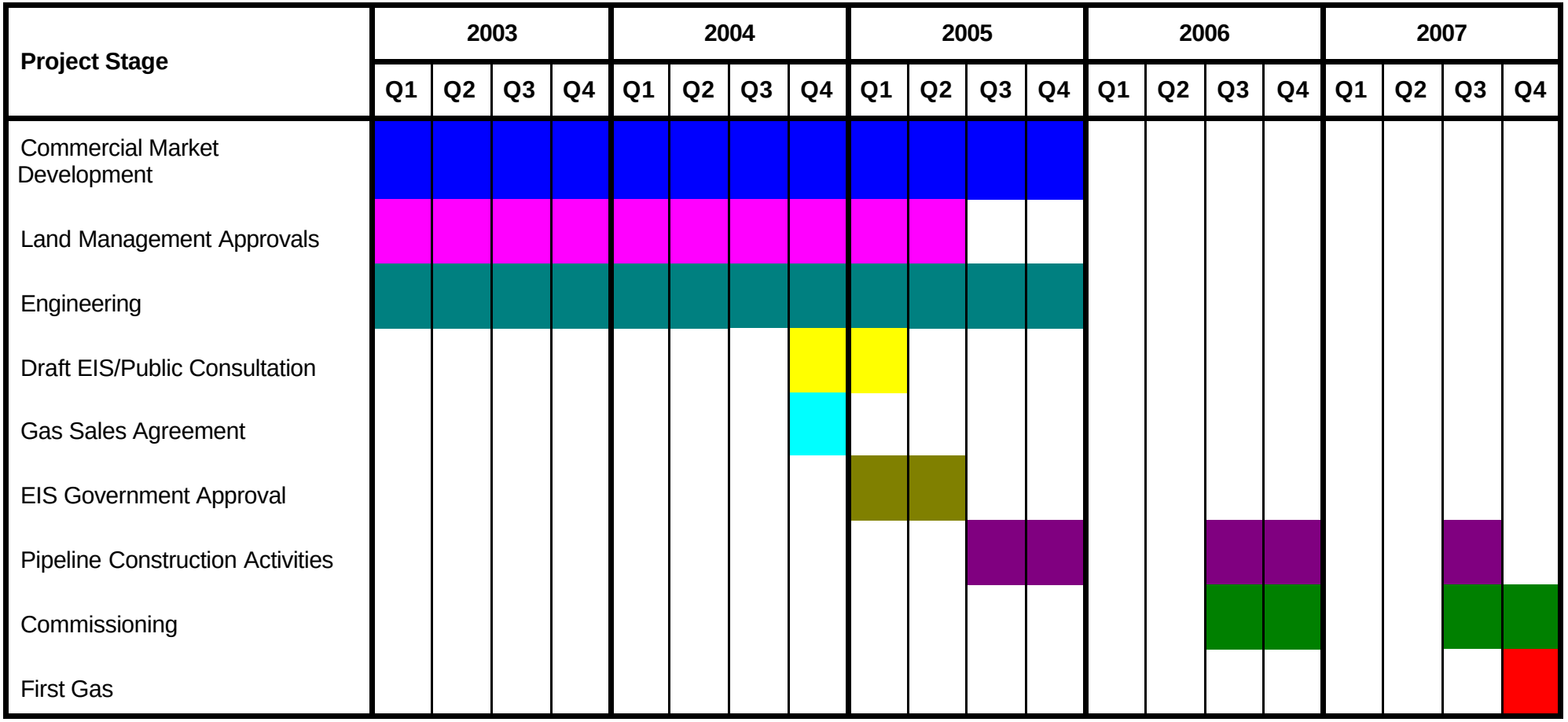


Table ES1: TTP Schedule

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Project Objectives

The primary objective of the project is to transport natural gas from the Blacktip gas field to Alcan's Gove Refinery.

Successful project outcomes also include:

- achieve all regulatory and statutory consents;
- meet the construction schedule of the pipeline;
- address the concerns of stakeholders;
- deliver the expected economic benefits;
- stimulate future growth in the Northern Territory.

Project Benefits

The project has the potential to result in social and economic benefits for communities along the pipeline corridor as well as regional and national benefits for the Northern Territory and Australia by expanding economic activity, employment, income and expenditure.

The main environmental benefits of the project can be attributed to the substitution of fuel oil for natural gas as the primary fuel source at the Alcan Gove Refinery. Natural gas produces less particulate matter, sulphur dioxide and greenhouse gas emissions (up to 24% less) when compared to the fuel oil currently used at the Alcan Gove refinery. Supplying natural gas to Alcan will result in a cleaner production process and positive impacts on existing atmospheric quality.

Specific economic benefits can be summarised as follows:

- The construction of the TTP is expected to add an average of $18 million per annum to the Northern Territory's economy and up to $98 million per annum to the rest of Australia.
- During operation the TTP will add additional revenue to both the Northern Territory and Australian economies.
- Employment will be generated particularly during the construction phase, peaking at approximately 800 personnel.
- The TTP is the catalyst for development of the Blacktip gas field which will help consolidate the Northern Territory as one of Australia's major gas hubs.
- There will be opportunities for Northern Territory businesses to be involved in the TTP during construction and operation, including site preparation and revegetation, provision of airline and accommodation services, and construction support.
- Land use payments to relevant Aboriginal communities and other stakeholders.
- Development of the TTP will enable future gas transportation to additional markets, in the event that these markets should mature and the necessary gas reserves are identified.

Social benefits will include:

- Local employment and training opportunities for local companies involved in the project.
- Localised upgrades to infrastructure (such as roads) to allow for access during construction and maintenance of the pipeline.

Stakeholder Engagement

The TTP sponsors recognise that community participation and partnership are important parts of the environmental and social management of potential impacts of the TTP and has conducted a comprehensive stakeholder engagement programme. Consultation with stakeholders was initiated in 2003 through the identification of key stakeholders with an interest in the TTP. Key stakeholders identified included:

- members of the public;
- Non Government Organisations (NGOs);
- Territory, State and Commonwealth government departments;
- traditional Aboriginal owners, the Northern Land Council (NLC);
- local business people and groups;
- local community government councils.

A wide range of consultation methods have been adopted and continue to be used. In each case the approach selected was based on the interests and geographical location of the group being consulted. Consultation methods used include a number of project workshops, project briefings, direct consultation with interested groups and the establishment of a project website.

Consultation undertaken to date has focussed on keeping interested groups informed of the project, providing these groups with the opportunity to comment and ultimately to be included in the decision-making process.

Extensive consultation with traditional Aboriginal owners via the NLC, in particular, has been vital in plotting and assessing the route for the pipeline and generating support for the project.

Specific stakeholder engagement undertaken in support of the EIA process has been successful in encouraging stakeholder groups to participate in the process. The issues raised have been addressed in the Draft EIS. Responses to issues raised as part of the public review of this Draft EIS, will be subsequently provided in the Supplement to this Draft EIS.

The selected BOO consortium will continue to undertake consultation throughout the construction, operation and decommissioning phases of the project to ensure key stakeholders continue to participate in the environmental management programme.

Alternatives

An integral part of project planning has been the assessment of project alternatives. A combination of environmental, economic and technical selection criteria were used to assist in the review and consideration of each alternative option. The main alternatives assessed included:

- the 'no development' option;
- alternative energy supply options;
- alternative pipeline route selection options (routes A–D);
- alternative power generation during operations;
- alternative design and construction specifications.

To arrive at the current pipeline route alignment several alternative pipeline routes were assessed. The route selection process involves four main stages.

Stage 1 Desktop Studies: Initial environmental desk-top studies were undertaken to identify key environmental and cultural sensitivities in the region. Based on the findings of these studies, an initial 10 km wide corridor was selected for a range of alternative routes.

Stage 2 Helicopter Surveys, Field Surveys and Route Refinement: A number of field surveys were conducted along a route through Arnhem Land in October 2001 and also a route south of the preferred route between Wadeye and Katherine. Following consideration of all route options, a preferred route was selected and a preliminary pipeline alignment identified within a 10 km wide corridor.

Stage 3 Selection of 100 m Pipeline Corridor: The initial 10 km-wide corridor was narrowed down to 100 m based on the field surveys conducted in 2003 and 2004.

Stage 4 Finalise 30 m Construction Corridor: Prior to construction activities the BOO consortium will conduct a land survey to select a 30 m wide construction corridor within which the pipeline will be located, within the 100 m pipeline corridor.

The Project

The TTP construction corridor will commence at the Blacktip gas plant near Wadeye and progress east to a point south of Katherine where it will cross the NT gas pipeline and the Alice Springs to Darwin railway line. The corridor will then continue east, passing close to Beswick, before crossing the Stuart and Victoria Highways and finally reaching Alcan Gove.

The main pipeline components will comprise:

- A 940 km long, 406.4 mm (16") diameter pipeline which will consist of a high-tensile buried steel pipe located within an approved 30 m wide construction corridor, developed within a 100 m wide temporary pipeline corridor. The statutory corridor under the *NT*

Energy Pipelines Act is then defined as being 25 m from the completed pipeline centreline, within the 30 m wide land access corridor.

- Access roads, above ground facilities such as meter stations, scraper stations, mainline valves and compressor stations at intervals along the route.
- No processing of gas will be required either en route or at the Alcan Gove refinery.
- The pipeline will terminate at an outlet facility near Nhulunbuy on the Gove Peninsula. The outlet will have filtering, flow metering, heating and pressure reduction systems installed.
- The pipeline and associated facilities will be constructed and commissioned during the 2006 and 2007 dry seasons. Commissioning activities will be carried out throughout quarter 4, 2007, with first gas delivery to Gove scheduled for December 2007. The pipeline is designed to have an operational design life of 50 years.

Environmental Baseline Studies

A range of environmental studies and field surveys were conducted as part of the EIA process to provide specific baseline information and to gain a better understanding of the potential environmental issues associated with the project development. Baseline field surveys included aquatic ecology, flora and fauna, archaeology and heritage, and social studies.

Due to access issues there is one section of the pipeline corridor in the Mitchell Ranges of north east Arnhem Land (approximately 40 km long) that has not been surveyed. Once approval to access this area has been granted, detailed environmental surveys will be undertaken; however aerial surveys and comparative studies of the area reveal similar environmental issues as found in surveyed areas.

Existing Biophysical Environment

Physical Environment

The TTP is located in the northern most part of the Northern Territory, also referred to as the 'Top End'. The Top End lies within the tropics and experiences a monsoonal climate with distinctive wet and dry seasons. Much of the Territory is relatively flat except for the presence of some disconnected ranges. The eastern part of the Top End contains the sandstone escarpment and plateau of Western Arnhem, rising from the Gulf of Carpentaria and continuing along the coast. The plateau is a distinct topographical feature, rising to 400–450 m in height. Other notable features include the Mitchell Ranges within the project area, located to the east of Katherine, and the Wingate Mountains situated east of Wadeye. There are a large number of river systems in the region. Rivers draining into the Joseph Bonaparte Gulf to the west of the region include the Daly, Moyle, Victoria and Keep Rivers. Rivers draining eastward into the Gulf of Carpentaria include the Roper and McArthur Rivers. There are many wetlands including permanent swamps, most notably the Arafura Swamp in Central Arnhem Land, as well as vast seasonally inundated floodplains, permanent and semi-permanent freshwater lake systems and ephemeral saline lakes. Groundwater extraction is currently concentrated in the

Daly Basin. Shallow, high yielding aquifers with significant development potential exist in the area.

Ecological Environment

Vegetation & Flora: The TTP covers six bioregions, these are the Darwin Coastal, Victoria-Bonaparte, Daly Basin, Gulf Fall and Uplands, Central Arnhem and Arnhem Coastal bioregions. The vegetation traversed by the pipeline corridor is characterised by 16 Vegetation Groups. Woodlands to forests dominated by Eucalyptus characterise most of the pipeline corridor. Vegetation communities of conservation significance including riparian corridors, wetlands (swamps and floodplains), monsoon vine forests and sandstone communities occur in proximity to the project area. Most communities of notable conservation significance were avoided during the design phase. Only one 'threatened' plant species (*Pternandra coerulescens*) possibly occurs in the pipeline corridor; although others have also been recorded in the region. It is considered unlikely that the project will impact on this species. Other species of conservation interest are the Northern Cypress Pine and Cycads.

Weeds: Fifteen weed species were recorded during the field surveys, and a further 16 weeds of potential concern were also identified. Weeds were most prevalent on land under pastoral lease, and on the freehold properties in the Katherine region. Nineteen of the species identified from the field surveys and desktop review are 'declared' weeds under the *NT Weeds Management Act.* Weeds of 'National Significance' were also recorded in the project area.

Terrestrial Fauna: The desktop review and fauna surveys identified 76 terrestrial fauna species of conservation significance that are known to occur in the bioregions traversed by the proposed pipeline corridor. Thirteen of these species are protected fauna under Northern Territory and\or Commonwealth legislation, 14 are migratory species protected under Commonwealth legislation, and 49 are species classified as near-threatened or with a restricted distribution in the Northern Territory. The Northern Quoll has been nominated for listing as vulnerable under the EPBC Act and was located at the Moyle River. Other threatened mammal species may also exist along the pipeline route. The endangered Gouldian Finch was located at the Chambers River. A number of vulnerable listed species are also known to occur along the route. Three migratory species protected under the EPBC Act were also recorded along the pipeline route during the field surveys. Most habitats of notable conservation significance to fauna have been avoided by the pipeline route.

Aquatic Flora & Fauna: The majority of the waters to be crossed by the proposed pipeline contain plant communities that live in water with a very small amount of dissolved solids. Overall a total of 63 fish species comprising 27 families are known from the aquatic systems that will be traversed by the pipeline corridor. The Daly River, one of the largest and best-studied rivers in the Northern Territory, possesses the highest fish species diversity (49 species) of the proposed waterways to be crossed by the pipeline corridor. One 'threatened' fish species the Freshwater Sawfish is known to occur in watercourses traversed by the pipeline corridor.

The Pig-nosed Turtle is currently proposed for listing as a threatened species under the EPBC Act.

Biting Insects: The main species of biting midges likely to be present within the pipeline corridor is the mangrove biting species *Culicoides ornatus*, breeding in the upper tidal creek mangrove areas within 3.5 km of the gas pipeline route. It may cause moderate pest problems in the Gove Peninsula section of the pipeline in the months of August to November. The pest problem in other months is likely to be minimal. There are also likely to be at least eight mosquito species capable of causing minor to major pest and\or potential mosquito borne disease problems in the project area.

Fires: Bushfires are frequent and widespread throughout the grassy savannas of Northern Australia. Within the extensive region traversed by the TTP, they occur throughout the dry season from March or April each year to the end of the dry season in about November or December. The region experiences fires on an annual basis, and approximately a quarter to half of the natural vegetation may burn each year.

Economics, Land Use & Archaeology

Land Tenure & Land Use: Along the proposed pipeline route 70% of land tenure is classified as freehold of which 67% is Aboriginal freehold, 22% is pastoral leasehold and 5% crown lease. Land granted under the *Aboriginal Land Rights (NT) Act 1976* is held by five Aboriginal land trusts along the pipeline route.

The main townships in the immediate vicinity of the TTP comprise Katherine, Wadeye and Nhulunbuy. Within the vicinity of the TTP there are a number of smaller settlements with populations of less than 1,000 persons. The proposed TTP will pass through seven pastoral leases. In addition, the pipeline will pass through an area of land, to the south west of Katherine, which is designated agricultural land. There are no known commercial plantations or native forestry activities along the proposed TTP route.

Protected Areas: Indigenous Protected Areas (IPAs) are areas of land (and sea), for which traditional Aboriginal owners have entered into a voluntary agreement for the purposes of promoting and conserving biodiversity and cultural values. The proposed TTP will pass through the Dhimurru Indigenous Protected Area (IPA) and the proposed Laynhapuy IPA. Together, the Dhimurru IPA and the proposed Laynhapuy IPA comprise most of the north-east corner of Arnhem land.

The TTP does not directly impinge on any national parks, nature reserves or conservation areas.

Archaeology & Historic Heritage: Two field surveys were carried out along the proposed pipeline route to identify archaeological and heritage sites. Thirty four archaeological sites, six historic sites and 84 background scatters were located during the survey. Of these, twelve sites and 47 background scatters are located within 100 m of the centre line of the proposed pipeline

route and may be disturbed during the construction of the pipeline. Recommendations were also made in the field to realign the pipeline around identified archaeological sites.

Aboriginal Sites of Significance: Sacred site surveys of the pipeline project area were undertaken by the NLC in consultation with traditional Aboriginal owners. Information gathered in relation to Aboriginal sacred sites and sites of significance is considered to be confidential in nature and is not provided to the TTP proponents in the form of a report by the NLC. Instead, the NLC is obliged to provide such information to the Aboriginal Areas Protection Authority (AAPA) so that it can in turn assess the application for an Authority Certificate. It has been a high priority of TTP that the location of the pipeline must not damage or impact sacred sites.

Species with Indigenous Cultural Values: The pipeline passes through a mosaic of cultural landscapes associated with at least ten language/tribal groups, each of which comprise many traditional Aboriginal owner groups. The cultures of each of these groups is intimately related to their local environments. As a result, many attributes of the natural environment (animals, plants, habitats, rivers, waterholes etc.) along the length of the pipeline corridor hold cultural values for traditional Aboriginal owners. These values include the significance of particular species and habitats for hunting, gathering and other resource use for cultural purposes, as well as more complex relationships between environment and Aboriginal beliefs, identity, kinship and ceremony.

Infrastructure and Transport: The proposed TTP route directly crosses the Victoria Highway and Stuart Highway. A number of roads, station roads and tracks will also be crossed. The TTP will also cross the Adelaide to Darwin railway and the NT Gas Pipeline.

Economics: The Northern Territory economy accounts for 1.2% of Australia's Gross Domestic Product (GDP) and 1% of nation wide employment. The most significant industry in the Northern Territory is the mining and petroleum sector, which produces 23% of Gross State Product (GSP). The economy of the Katherine region is the most diverse and vibrant in the project vicinity.

Biophysical Impacts

Based on the findings of the baseline studies, assessments were undertaken to determine the predicted impact on the receiving environments as a result of the TTP. The assessment covered all known potential effects associated with the construction and operation of the project and included a semi-quantitative risk assessment to assist in identifying the main environmental impacts.

A summary of the key biophysical impacts are summarised in **Table ES–2**, along with associated preventative and management measures. The majority of the impacts are anticipated to occur during the construction phase and mitigating control measures will be applied as identified.

A key mitigation measure for TTP has been the avoidance of sensitive environmental and cultural sites. This has been achieved by identifying sensitive sites during the field surveys and aligning the potential corridor to avoid these areas. Furthermore, many of the impacts will be mitigated through use of a construction technique known as Horizontal Directional Drilling (HDD). This involves drilling a hole into the ground at an angle at one side of a crossing (for example a watercourse), with the drill surfacing on the other side of the crossing. The hole acts like a tunnel through which the pipeline is threaded.

A summary of the key environmental impacts is provided below.

Potential for erosion, runoff and soil compaction - associated with construction activities including stockpiles, vegetation clearing and vehicle movements. Removal of vegetation and disturbance of soils during construction will expose the underlying soils. At watercourse crossings the removal of vegetation and construction of temporary vehicle crossings for use during construction may cause scouring of the streambed if the crossings are not adequately rehabilitated prior to the wet season. At perennial watercourses where culverts may be required, downstream erosion may occur if the culvert outlet or downstream banks are inadequately protected. The project will therefore minimise soil disturbance, degradation and erosion, turbidity impacts on surface and ground waters, and optimise rehabilitation success to minimise the potential for soil erosion long-term. A detailed Erosion and Sediment Control Plan will be developed in accordance with established guidelines for the control of erosion at construction sites. The plan will identify site specific construction techniques, management requirements and guidelines for erosion and sediment control for all areas disturbed during construction.

Potential for death, injury and disturbance to fauna - resulting from various construction activities particularly trenching for the pipeline. Construction of the pipeline has the potential to cause fauna mortality due to capture in the open trench during construction. Animals captured in trenches are exposed to various elements such as stress, predators, effects of the sun and subsequent dehydration. Fauna mortality as a result of capture will be minimised through appropriate measures to facilitate their escape and removal. During construction, pipeline trenches will be inspected throughout the day by an experienced wildlife handler. Wildlife removed from the trenches will be identified, recorded and released into nearby vegetated areas. A Terrestrial and Aquatic Fauna Management Plan will be implemented. The construction workforce will be briefed about their obligations to protect native fauna.

Potential for alteration of natural drainage, hydrology and pollution of groundwater and surface water - from vegetation clearing, road construction, fuel and chemical storage, disposal of sewage and grey water and sourcing and disposal of hydrotest water. Potential impacts include changes to surface water and groundwater quality; contamination of waterways, wetlands and other groundwater dependent systems. Several preventative and management measures will be implemented as documented in the following detailed plans: Watercourse Crossing Construction Management Plan, Hydrotest Management Plan and an Erosion and Sediment Control Plan. HDD will also be used at 12 sensitive watercourse crossings.

Potential for visual amenity degradation during construction - from vegetation clearing, presence of construction camps and dust from construction traffic. The pipeline route will cross and pass close to existing roads and a rail line, which will result in temporary visual impacts as a visible 'scar' is evident on the landscape. The potential long term impact on the landscape is closely linked to the successful reinstatement of the construction corridor in accordance with a Rehabilitation Management Plan. A Dust Management Plan will also be implemented during construction.

Potential for damage and destruction of vegetation and flora - associated with vegetation clearing, earthworks, road upgrades and from vehicle movement during construction. The primary preventative measure to minimise the impacts of vegetation clearing is to avoid sensitive habitats and to plan and manage construction activities so that only the minimum area of vegetation necessary is cleared during construction. The pipeline corridor was selected to avoid direct impacts on ecologically sensitive vegetation communities; where this was not possible, for example at riparian corridors, measures will be implemented to minimise potential impacts. These will be detailed in a Vegetation Clearing Management Plan and Rehabilitation Management Plan. In order to avoid unauthorised vegetation clearing or disturbance the boundaries of the corridor and all working areas will be clearly delineated on the ground. Access will be via approved access tracks only.

Potential for damage or destruction of aquatic ecosystems and species - from various construction activities including vegetation clearing, watercourse crossings, disposal of liquid waste and spills. Potential impacts include disturbance and loss of aquatic habitats, changes to species composition of aquatic flora and fauna, and restriction of fish passage. A significant preventative measure will be the use of HDD to cross twelve sensitive watercourses. Watercourse crossings will be prioritised for early in the dry season and will be rehabilitated as soon as practicable following construction. Management plans will be implemented including an Erosion and Sediment Control Plan, Watercourse Crossing Construction Management Plan and a Hydrotest Management Plan. Correct handling procedures and storage will be implemented for all chemicals and fuel on site to prevent accidental release to the environment.

Potential for damage to and disturbance of flora and fauna species of conservation significance - during vegetation clearing, earthworks and from vehicle and traffic movement during construction. Potential impacts include the disturbance or damage to habitat and plants of conservation significance. The pipeline corridor, above ground facilities sites and access routes were chosen to avoid direct impacts on habitats and flora and fauna species of recognised conservation significance. Where total avoidance of habitats was not possible at major watercourse crossings, HDD will be used to avoid direct disturbance of riparian and aquatic habitats. Construction activities will maintain a distance of at least 100 m from isolated wetlands and 500 m from Gouldian Finch habitats. A system for the identification and avoidance of large bird nests will be implemented, where possible, with the aim of avoiding impacts on the Red Goshawk. A Watercourse Crossing Management Plan, Weed and Exotic Species Management Plan and Fire Management Plan will be implemented.

Potential for damage and disturbance of ecologically sensitive habitats - resulting from construction activities including vegetation clearing, earthworks and from vehicle and traffic movements. Impacts on ecologically sensitive habitats were minimised during the design phase by avoiding direct disturbance of a number of highly sensitive rainforest and wetland habitats, and proposals for HDD crossings at 12 permanently flowing waterways. Consequently, construction and operation will avoid disturbing ecologically sensitive habitats where long-term impacts on those communities cannot be prevented or managed. Activities associated with construction and operation of the pipeline will still occur in proximity to some ecologically sensitive habitat areas, and in the absence of adequate controls there is potential for indirect impacts to occur through changes to hydrology and increased sedimentation in watercourses. Measures to reduce potential impacts will be implemented and include confining construction activities to the dry season and preventing access to ecologically sensitive areas.

Potential for introduction and spread of weeds and exotic fauna – from movement of vehicles, plant and construction materials and from construction of access routes and clearing of native vegetation. The potential for the introduction of weed species, and the spread of existing exotic flora and fauna species, will be critical management issues. Weed species could be introduced and spread into areas that are currently mostly weed free, especially in the Wingate Mountains and in areas through north-east Arnhem Land. The greatest risk of weeds being introduced and their spread will occur during the construction phase when there will be high levels of disturbance associated with vegetation clearing and large numbers of vehicles, plant and construction materials being transported in and out of the project area. Cane toads and Crazy Ants may also be transported from one area to another by construction vehicles in the absence of controls to prevent this.

The risk of the introduction and spread of weeds and exotic species will be minimised through the implementation of a Weed and Exotic Species Management Plan. This plan will specify appropriate hygiene measures and will specify the need for all plant, equipment and vehicles to be clean prior to entering the project area. All disturbed areas will be monitored for weed establishment bi-annually for the duration of construction and operation. Construction and operation workforces will be trained in weed, Cane Toad and Crazy Ant identification and awareness. The risk of the project assisting the dispersal of both Crazy Ants and Cane Toads will be greatly reduced through the implementation of the preventative and management measures specified.

Planned fire and potential for alteration of ecological habitats - from deliberate ignition of vegetation to reduce fire risk. Fires will be lit as small strategic patch burns at many points along the pipeline route prior to construction, to minimise impacts of fires on the construction work force and equipment. However, the integrity of the vegetation in and surrounding the project area could be diminished by more frequent planned and unplanned fires. This threat will be mitigated through coordination of weed and fire management activities. Planned fires will be lit by personnel skilled in lighting and managing fires and the construction workforce will be inducted in fire awareness and prevention. A Fire Management Plan will be implemented.

Potential for small chemical or hydrocarbon spills - associated with vehicle and plant refuelling operations during construction. Potential impacts from small spills include contamination of soil, surface water and groundwater and aquatic and terrestrial habitat destruction or modification. The volume of chemicals and hydrocarbons stored on site will be minimised. Spill equipment will be available at watercourse crossings and all construction crews will be equipped with spill response kits. A Waste Management Plan and Spill Contingency Plan will be implemented.

Potential for dust emissions - from trucks transporting material and workforce to the construction corridor along access roads and from pipeline trenching, padding and backfill during construction. Dust emissions have the potential to adversely impact the condition of the environment including vegetation, fauna and public amenity. Dust generation is likely where construction vehicles utilise roads which pass through towns and small communities. During construction these impacts will be carefully managed through the development of specific management measures and controls as specified in a Dust Management Plan. This plan will specify dust suppression techniques. A Traffic Management Plan and Rehabilitation Management Plan will also be implemented.

Economics, Land Use & Archaeology Impacts

An assessment of the potential impacts concluded that both positive and negative impacts could materialise. The potential negative impacts include disturbance to archaeological and heritage sites, changes or restrictions to land use, and pressure on utilities, transport networks, infrastructure and services. Potential positive impacts include the creation of direct and indirect employment opportunities during the construction phase, enhanced revenue streams into the local and Northern Territory economies, and opportunities for local business. Management measures have been identified and will be developed further with the local community to maximise the potential positive impacts and minimise the potential negative impacts. Management measures will include social impact management plans, employment and training strategies focused on maximising opportunities for local communities and cultural heritage management plans to provide safeguards for sensitive cultural heritage issues. A summary of the key impacts is provided below and in **Table ES–3**.

Archaeology, Historic and Cultural Heritage: The potential impacts are expected to be minimal as great care has been taken during the design phase, to avoid direct impacts on such sites. The proposed pipeline alignment was moved to avoid most archaeological sites; however, there are two archaeological sites and two historic sites located within 50 m of the centreline that may be destroyed in the absence of appropriate measures to protect these sites during construction. A further six sites located within the 100 m pipeline corridor will potentially be vulnerable to disturbance.

A Cultural Heritage Management Plan will be developed to collate all preventative and management measures that will be implemented to protect archaeological and historic heritage values. Sites with moderate to high archaeological significance will be given various levels of

protection, including temporary fencing of the site during construction, and restrictions on work within a certain distance from the site. Where it is deemed that it is not feasible to protect archaeological and heritage sites of low significance, consent to disturb will be sought under the *Heritage Conservation Act 1991* and through consultation with traditional Aboriginal owners.

Cultural heritage management will also extend to the protection of species and habitats that contribute to the broader cultural values held by the Aboriginal communities along the pipeline corridor. The Cultural Heritage Management Plan will include protection measures for those cultural values.

Aboriginal Sites of Significance: Sacred site surveys of the pipeline project area were undertaken by the NLC in consultation with traditional Aboriginal owners. However, the potential impacts on Aboriginal sites of significance are expected to be minimal as great care has been taken to avoid disturbance to any sites during the planning and site selection stage of the project. Traditional Aboriginal owners and anthropological specialists were involved in the TTP surveys, and the proposed pipeline and facilities were aligned to avoid sensitive areas. Continued involvement by traditional Aboriginal owners during the construction phase will help ensure areas of cultural sensitivity are given appropriate levels of protection. Pursuant to the *Northern Territory Aboriginal Sacred Sites Act 1989*, Authority Certificates will be issued by the Aboriginal Areas Protection Authority (AAPA) in relation to all on-ground work undertaken for the TTP.

Transport Network, Infrastructure and Utilities: Impacts on transport infrastructure will be experienced during the construction period, as materials, pipe sections and workforce are transported to site along main roads, through rural townships, and also between the construction camps and along the construction corridor. This increased traffic may lead to increased local noise and dust emissions as well as a deterioration of road integrity. There is also the risk of the incidental creation of an 'unofficial highway' to rural and Aboriginal areas along the construction corridor. Transport routes and storage areas will be planned in consultation with regulatory authorities to minimise disruption to residents. Infrastructure upgrades will be undertaken where required prior to commencement of construction in consultation with relevant local government departments, landowners and regulatory authorities. A Traffic Management Plan will be developed and implemented.

During construction and commissioning, where possible the TTP will use existing utility systems for water supply and waste disposal. This has the potential to create additional pressure on existing facilities. A Groundwater and Surface Water Protection Plan will be implemented to ensure that there is no over-abstraction of water or improper discharge of waste that may affect drinking water supplies. A Waste Management Plan will also be implemented to identify appropriate waste handling facilities.

Economics: The TTP will bring a range of positive benefits to the local area, Northern Territory and Australia in general. Employment will be generated during the construction phase, peaking at approximately 800 personnel and there will be opportunities for Northern Territory

businesses to be involved in the TTP during construction and operation. Strategies will be put in place to maximise opportunities for local Aboriginal employment.

There are opportunities for Northern Territory businesses to be involved in the TTP during construction and operation. Such opportunities include site preparation and revegetation, provision of airline and accommodation services, and construction support through pipeline coating.

Social Impact Assessment

The TTP sponsors propose a three-phase approach to assessing potential social impacts associated with the development of the TTP.

- Phase 1 involved an independent consultant compiling a Social Impact Assessment (SIA) Report to assist the project to identify potential social impacts in addition to providing valuable information to the statutory regulators responsible for overseeing the approvals processes. This phase is complete.
- Phase 2 involves the BOO consortium developing a comprehensive Social Impact Management Plan, in consultation with the affected communities and other key stakeholder organisations.
- Phase 3 involves implementation of the plan as well as instituting appropriate monitoring and review mechanisms.

The proposed Social Impact Workshop (an integral part of the development of the Social Impact Management Plan) is intended for second quarter of 2005 and involves the BOO proponent. Once developed, measures and resources will be put in place to implement, monitor and if necessary review and amend the plan. It is expected that this will be an ongoing and intensive process during the construction phase of the TTP.

Health, Safety and Environmental Management System

Preventative and management measures will be applied throughout the life of TTP to ensure that all significant environmental effects associated with the proposed project are minimised, mitigated or avoided. Various tools will be implemented to ensure sound environmental management. These include an Environment, Health and Safety (EHS) policy, preparation of hazard registers, audits of environmental performance, environmental management and performance in tendering and contract requirements, inductions and Environmental Management Plans (EMPs).

The development of an environmental hazard register began in early 2004 and included active participation of key stakeholders. Part of project planning will be ongoing development of the register of environmental hazards to further identify environmental issues, enabling project management to ensure issues are addressed, along with other business priorities in the early screening and design stages. Progress will continue to be periodically reviewed and documentation updated during project design and execution.

Environmental performance issues relevant to the design, construction and operation of the TTP will be managed by the BOO consortium. A key component of the BOO selection criteria will be demonstrated ability to achieve the required level of environmental performance and a preparedness to work with all stakeholders to effectively manage social impacts along with a commitment to the following:

- Environmental, Health and Safety (EHS) performance.
- Environmental Management Plan (EMP) compliant to regulatory, landowner and other requirements.
- Auditing of compliance to the EMP including corrective actions.
- Workshops and inductions for all personnel, focussed on EHS management, cultural awareness and performance.
- Presence of on-site EHS and cultural representatives during construction activities.

All personnel involved in the various phases of the TTP will undertake EHS and cultural awareness training, which will involve input from professional EHS staff and Indigenous groups.

- **Table ES–2 Summary of Key Biophysical Impacts and Management Measures**

Hazard	Source	Potential Impact	Preventative and Management Measures
Physical Environment			
Erosion, Runoff and Soil Compaction.	Development of stockpiles and trenches, and 'cut and fill' activities. Vegetation clearing, earthworks for trenching of the pipeline and construction of infrastructure. Road upgrades and borrow pits. Vehicle movements.	Localised changes to topography and the physical environment. Increased run-off leading to erosion of soil and subsequent deposition. Soil compaction. Soil loss via wind or water erosion. Increased sediment load of waterways.	Watercourse crossings on the corridor and access tracks will be sited and constructed in accordance with accepted engineering standards and environmental protection guidelines in order to minimise downstream impacts. Vegetation will be cleared and rehabilitated progressively throughout construction to minimise the period that bare soil is left exposed to erosion. Rehabilitation of disturbed areas will be undertaken as soon as possible during the work season following construction, and prior to the onset of the wet season. A storm water and drainage management system will be developed and implemented for the facility sites including compressor and scraper stations. An **Erosion and Sediment Control Management Plan** will be developed and implemented.
Visual impact during construction.	Construction camps, vehicles operating along the pipeline construction corridor.	Negative Impacts on visual aesthetics.	A **Rehabilitation Management Plan** will be developed and implemented to reduce potential visual intrusion. A **Traffic Management Plan** will be developed and implemented prior to construction activities. The plan will include restrictions and speed limitations to reduce the generation of suspended dust along unsealed tracks. A **Waste Management Plan** will be developed and implemented to ensure good housekeeping practices and that all construction areas are left in a good condition.
Alteration of natural drainage and hydrology and pollution of ground water and surface.	Disturbance of vegetation and soils and acid sulfate soils during construction. Road construction/ upgrade and borrow pits. Disposal of sewage and greywater from construction camps. Sourcing and disposal of hydrotest water.	Erosion and sedimentation, chemical contamination of waterways and death of aquatic flora and fauna. Adverse changes to water quality of surface water and groundwater. Decline in health of wetland ecosystems and other groundwater dependant systems.	An **Erosion and Sediment Control Plan** will be developed and implemented. An **Acid Sulfate Soils Management Plan** will be developed and implemented. A **Waste Management Plan** will be developed and implemented. A **Watercourse Crossing Construction management Plan** will be developed and implemented. A **Hydrotest Management Plan** will be developed and implemented. A **Spill Contingency Plan** will be developed and implemented.
Ecological Environment			
Disturbance/ injury/ death to fauna.	Vegetation clearing, earthworks, blasting, vehicle and traffic movement. Fauna capture in pipeline trench.	Habitat loss and disturbance. Disturbance/ injury/ death of individual fauna. Disturbance of species of conservation significance. Introduction and spread of weeds and exotic fauna species.	The pipeline trench will be open for the minimum amount of time possible and will be interrupted with frequent "escape ramps" while open. Trenches will be inspected by an experienced wildlife handler throughout the day. Wildlife removed from trenches will be identified, recorded and released into nearby vegetated areas. Wildlife data will be provided to the Northern Territory Parks and Wildlife Service. Direct impacts on ecologically sensitive and significant habitat areas will be avoided wherever possible. A **Dust Management Plan** will be developed and implemented. A **Noise Management Plan** will be developed and implemented.
Disturbance/ damage/ destruction of vegetation and flora.	Vegetation clearing, earthworks and vehicle and traffic movement.	Loss of vegetation. Degradation of sensitive vegetation communities and habitats. Disturbance to species of conservation significance. Introduction and spread of weed species.	Construction activities will disturb only the minimum area of vegetation necessary. Access during construction and operation will be via environmentally approved access tracks and the pipeline corridor only. The construction workforce will be informed about their obligations to protect native vegetation. A **Vegetation Clearing Management Plan** will be prepared and implemented. A **Rehabilitation Management Plan** will be developed and implemented.
Disturbance/ damage/ destruction of aquatic ecosystems and species.	Clearing of riparian vegetation and construction of watercourse crossings. Road construction\upgrade and borrow pits. Vehicle and traffic movements. Translocation of water between catchments.	Disturbance and loss of aquatic habitats. Changes to species composition of aquatic flora and fauna. Reduced fecundity and death of aquatic fauna and flora. Restriction of fish passage. Translocation of pests and diseases.	An **Erosion and Sediment Control Management Plan** will be developed and implemented. A **Watercourse Crossing Construction Management Plan** will be developed and implemented. A **Hydrotest Management Plan** will be developed and implemented.

Hazard	Source	Potential Impact	Preventative and Management Measures
Disturbance/ damage/ destruction of flora and fauna species of conservation significance.	Vegetation clearing and earthworks. Vehicle and traffic movement. Construction of access routes and borrow pits.	Destruction or damage to a range of habitats and species.	A **Watercourse Crossing Management Plan** will be developed. A **Weed and Exotic Species Management Plan** will be developed and implemented. A **Fire Management Plan** will be developed and implemented.
Disturbance/ damage/ destruction to Ecologically Sensitive Habitats.	Vegetation clearing and earthworks. Vehicle and traffic movement. Construction of access routes and borrow pits.	Damage to and loss of riparian corridor habitats, aquatic habitats, wetland habitats and monsoon rainforest habitats.	Access to ecologically sensitive areas will be prohibited. Construction activities will be planned for the dry season. Rehabilitation of disturbed areas will be undertaken as soon as possible during the work season following construction, and prior to the onset of the wet season. Rehabilitation success will be frequently monitored at watercourses and areas of saturated soils. A monitoring and maintenance programme will be implemented to regularly check the condition of each watercourse crossing for the duration of operation, and repair damage caused by erosion as necessary.
Introduction or Spread of Weeds and Exotic Fauna.	Clearing of native vegetation and earthworks. Movement of vehicles, plant and construction materials. Construction of access routes and borrow pits.	Introduction and spread of weeds. Spread of Cane Toads and Yellow Crazy Ants. Displacement of native flora and fauna species. Direct competition for resources (for example water, habitat) with existing fauna and/or flora.	An **Exotic Species and Weed Management Plan** will be developed and implemented. Rehabilitation and landscaping will be undertaken in accordance with a **Rehabilitation Management Plan**, which will specify that only native vegetation species will be used. Inductions and briefings will take place to increase the awareness of weed management issues.
Planned Fire.	Deliberate ignition of vegetation to reduce fire risk.	Alteration of habitat. Maintenance of ecosystem dynamics.	A **Fire Management Plan** will be prepared and implemented.
Small Chemical or Hydrocarbon Spills.	Transport or refuelling accidents, poor packaging, rupturing of tanks, improper handling or use of construction materials and accidents.	Soil, surface and groundwater contamination. Aquatic and terrestrial habitat destruction/ modification. Air emissions.	A **Waste Management Plan** will be developed and implemented. A **Spill Contingency Plan** will be developed and implemented. Vehicles will be equipped with spill response kits.
Dust Emissions.	Trucks transporting material and workforce to the construction corridor along access roads, trenching, backfill and padding operations earth moving activities, and open stockpiles.	Potential impacts include health impacts, loss of topsoil, disturbance to vegetation and amenity.	Stringent controls on vehicle speeds will be applied through development of a **Traffic Management Plan** and by restricting travel to designated roads during construction. A **Dust Management Plan** will be developed and implemented prior to construction activities.

- **Table ES–3 Summary of Key Economic, Land Use and Archaeological Impacts and Management Measures**

Hazard	Source	Potential Impact	Preventative and Management Measures
Land Tenure and Land Use.	Presence of construction crew, vehicles and machinery and construction footprint. Presence of permanent access road and above ground facilities.	Permanent loss of land associated with the presence of some newly established permanent access roads and above ground facilities. Temporary loss of potential crop growing areas associated with the construction footprint. Degraded land due to poor reinstatement and waste management practises. Restriction on excavation and building on land directly above the buried pipeline. Restriction on planting of deep-rooted vegetation above the buried pipeline. Temporary loss of access during construction. Providing unintentional third party access. Prohibition of shooting in the vicinity of compressor stations.	Clearance for construction will not commence until all relevant agreements are in place with landowners in accordance with Northern Territory legislation and TTP project requirements. The pipeline will be buried and is not likely to result in any long term disturbance to existing land use practices. Permanent access roads will be minimised to approximately 4 m wide to accommodate access for operations and maintenance vehicles. A **Traffic Management Plan** will be developed and implemented which will specify designated access routes (**Table 12-7**). A **Waste Management Plan** will be developed and implemented which will specify clean up measures along the construction corridor and all other construction sites (**Table 12-2**). A **Rehabilitation Management Plan** will be developed and implemented which will specify procedures for effective restoration (**Table 12-13**). A **Social Impact Management Plan** will be developed and implemented **(Table 12-18**).
Archaeology and Historic Heritage.	HDD, surveying, clearing of vegetation, pipeline trenching. All site works, vehicle, plant and equipment movements. Rehabilitation works.	Destruction of or damage to archaeological and cultural material.	An archaeologist will be in attendance during pipeline trenching. An **Erosion and Sediment Control Management Plan** will be developed and implemented. A **Cultural Heritage Management Plan** will be developed and implemented to address protection and management of archaeological and other cultural heritage matters.
Aboriginal Sites of Significance.	HDD, surveying. Clearing of vegetation, pipeline trenching. All site works. Vehicle, plant and equipment movements. Rehabilitation works.	Disturbance to Aboriginal sacred sites through off-road driving, sourcing of fill or raw materials and through exploration of the area surrounding the pipeline development by the construction workforce. Inappropriate access by the construction and operation workforces.	A **Cultural Heritage Management Plan** will be developed. Where necessary traditional Aboriginal owners will be employed as monitors during development/construction activities. Disturbance of areas of current traditional usage will be kept to a minimum during construction. The project personnel will be thoroughly briefed on prohibited areas, and rules and disciplinary measures will apply where breaches occur. Construction and operation personnel will undertake cross-cultural awareness training to ensure positive and effective inter-cultural communication.
Aboriginal Environmental Cultural Values.	Environmental disturbance during the construction and operation of the pipeline.	Aboriginal environmental cultural values (including hunting, gathering, other cultural resource uses and the broader relationships between Aboriginal people and their environment) may be impacted by the environmental disturbance, particularly during the pipeline construction.	A methodology has been developed to assess and protect Aboriginal environmental cultural values, in collaboration with traditional Aboriginal owners, the broader Aboriginal community and key Indigenous organisations and technical experts. Specific measures to avoid or minimise impacts on Aboriginal environmental cultural values will be incorporated into Cultural Heritage Management Plans.
Transport Network, Infrastructure and Utilities.	Increased construction traffic, including large pipe trucks, along main roads and through rural through townships. Construction of pipeline crossings at roads and railway lines. Water abstraction from bores used by local communities and landowners. Waste disposal during pipeline construction.	Incidental creation of an ‘unofficial highway’ to rural and Aboriginal areas along the construction corridor. Deterioration of road integrity. Increased pressure on existing air services and accommodation services. Draw down of aquifers and hence bores used by local communities and landowners. Increased pressure on existing local solid waste handling facilities. Damage to electrical cables and rupture of existing pipelines. (for example Northern Territory Gas Pipeline).	Prior to significant use a joint assessment of road conditions by TTP and the road authorities will take place for all roads intended to be used by the project. Infrastructure upgrades will be undertaken where required prior to commencement of construction in consultation with relevant local government departments, landowners and regulatory authorities. A **Traffic Management Plan** will be developed specifying speed limits. A **Groundwater and Surface Water Protection Management Plan** will be implemented. A **Waste Management Plan** will be implemented to identify appropriate waste handling facilities and confirm expected waste volumes.
Economic Environment.	Construction and operational phases.	Potential impacts are likely to be positive. A wide range of economic benefits from the TTP will potentially be delivered to the local area, the Northern Territory and Australia, including, employment benefits and business opportunities.	Opportunities exist for participation by Northern Territory based businesses. Where possible, emphasis will be placed on optimising the utilisation of the local indigenous population.

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