

Section 7

Economics, Land Use & Archaeology



7. Regional Economics, Land Use & Archaeology

7.1 Baseline Studies and Surveys

This section of the Draft EIS presents a description of the existing land uses and economic activity in the region of the TTP. A range of studies and surveys were undertaken including:

- Anthropological research into traditional Aboriginal ownership undertaken by the NLC.
- Economic impact assessment undertaken by ACIL Tasman.
- Social impact assessment undertaken by ImpaxSIA Consulting.
- Archaeology and heritage survey undertaken by Begnaze.
- Identification and assessment of species with Indigenous cultural values undertaken by Smyth and Bahrdr Consultants.

With the exception of the anthropological reports the complete findings of these reports can be found in **Appendix K, L and M, Volume 2** of this Draft EIS.

7.2 Land Tenure and Land Use

7.2.1 Land Tenure

Land tenure in the Northern Territory is largely dominated by pastoral leases and Aboriginal freehold land (**Table 7-1**).

▪ Table 7-1 Northern Territory Land Tenure

Tenure Type	% of Total NT Area
Pastoral leases (under the <i>Pastoral Land Act</i>)	46.4
Aboriginal freehold land - granted as Commonwealth or NT title	43.9
Rural and urban vacant Crown land	4.8
Perpetual and term Crown leases	3.1
Freehold	0.4
Special purpose leases, for example mining leases	0.1
Crown stock routes and reserves, roads and river esplanades	1.2
Government usage and fishing farming/pearl culture leases	0.1

Source: Australian Government 2004a

Along the proposed pipeline route land tenure can be broken down as follows, as presented in **Figure 7-1**:

- 70% freehold tenure (of which 67% is Aboriginal freehold);
- 22% pastoral leasehold;
- 5% crown lease.

Freehold Tenure: Represents privately owned land, which under certain circumstances can be held by a Government body.

Aboriginal Freehold: Aboriginal freehold land is land held by Aboriginal Land Trust, with special conditions attached to the titles (DIPE 2004b). This land tenure does not include land held privately by individual traditional Aboriginal owners. Land granted under the *Aboriginal Land Rights (NT) Act 1976* (which sets up the processes for managing land that is Aboriginal land and the process by which development proponents can obtain an interest in Aboriginal land) is held by the following Aboriginal land trusts along the pipeline route:

- Daly River / Port Keats;
- Upper Daly;
- Wagiman;
- Beswick;
- Arnhem Land.

Pastoral Leasehold: These leases are issued for broadacre areas specifically used for pastoral purposes (DIPE 2004b). Under the *Pastoral Land Act*, the clearing of native vegetation on pastoral leases, other than for minor infrastructure and the selective removal of noxious woody weeds, requires the approval of the Pastoral Land Board (Australian Government 2004a).

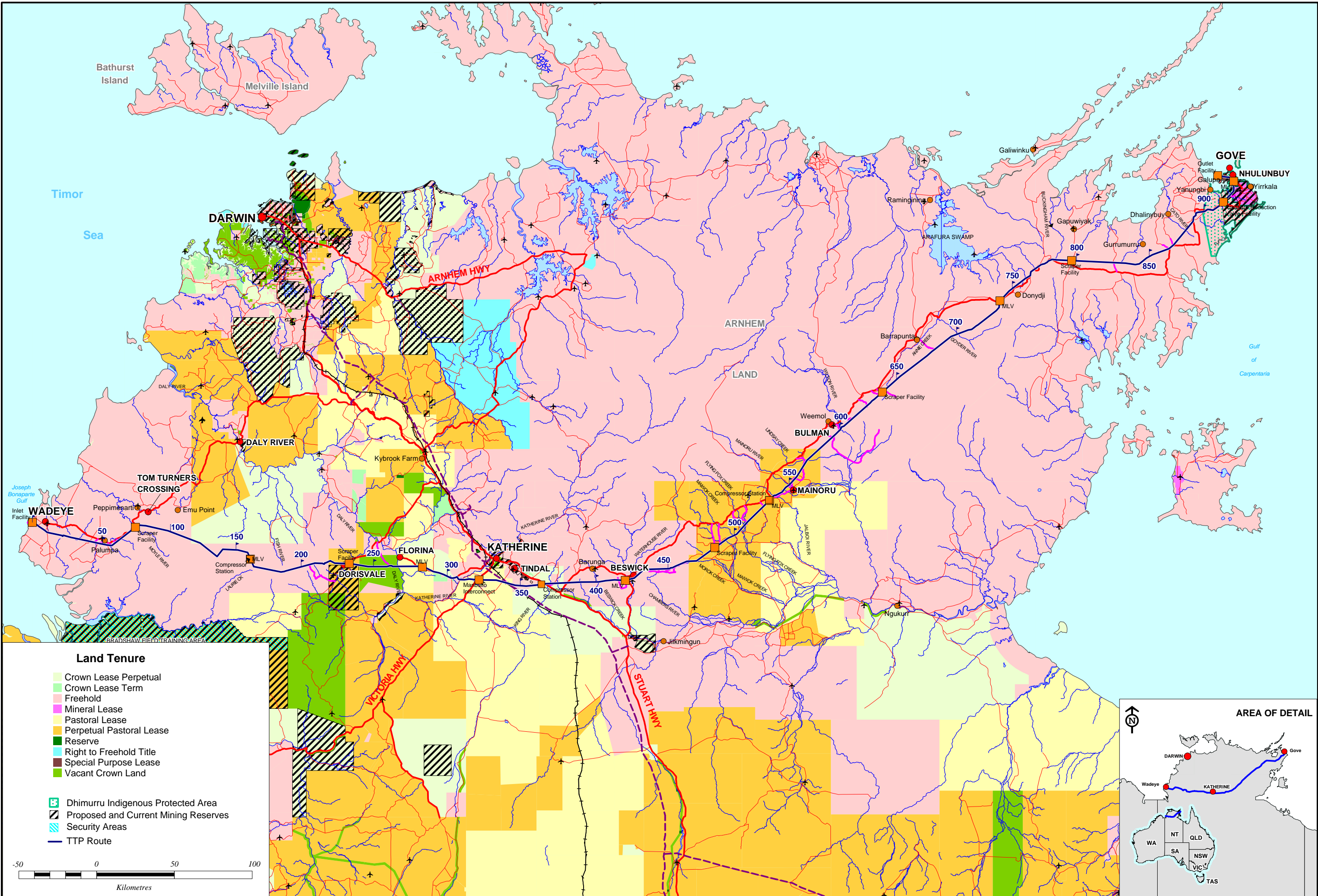
Crown Lease: A crown lease term is a development lease containing conditions and covenants requiring development to be undertaken in accordance with the agreed development plan. Crown leases are convertible to freehold title once development has been completed in accordance with the lease (DIPE 2004b).

Crown Roads and Rivers: There are a number of roads and rivers that the pipeline will cross, which require tenure or some form of agreement with the Northern Territory Government. These include the Victoria and Stuart Highways, parts of Central Arnhem Road and the Katherine River.

Mining and Petroleum Tenure: A mineral lease is the ultimate development title, it provides the authority for a person or a corporate body to develop mineral deposits with certain exclusive rights and obligations (DIPE 2004b). Mineral leases include mining and petroleum leases. As at September 2003, there were a number of mining tenements, and mining and petroleum tenement applications across the pipeline route (**Figure 7-2**):

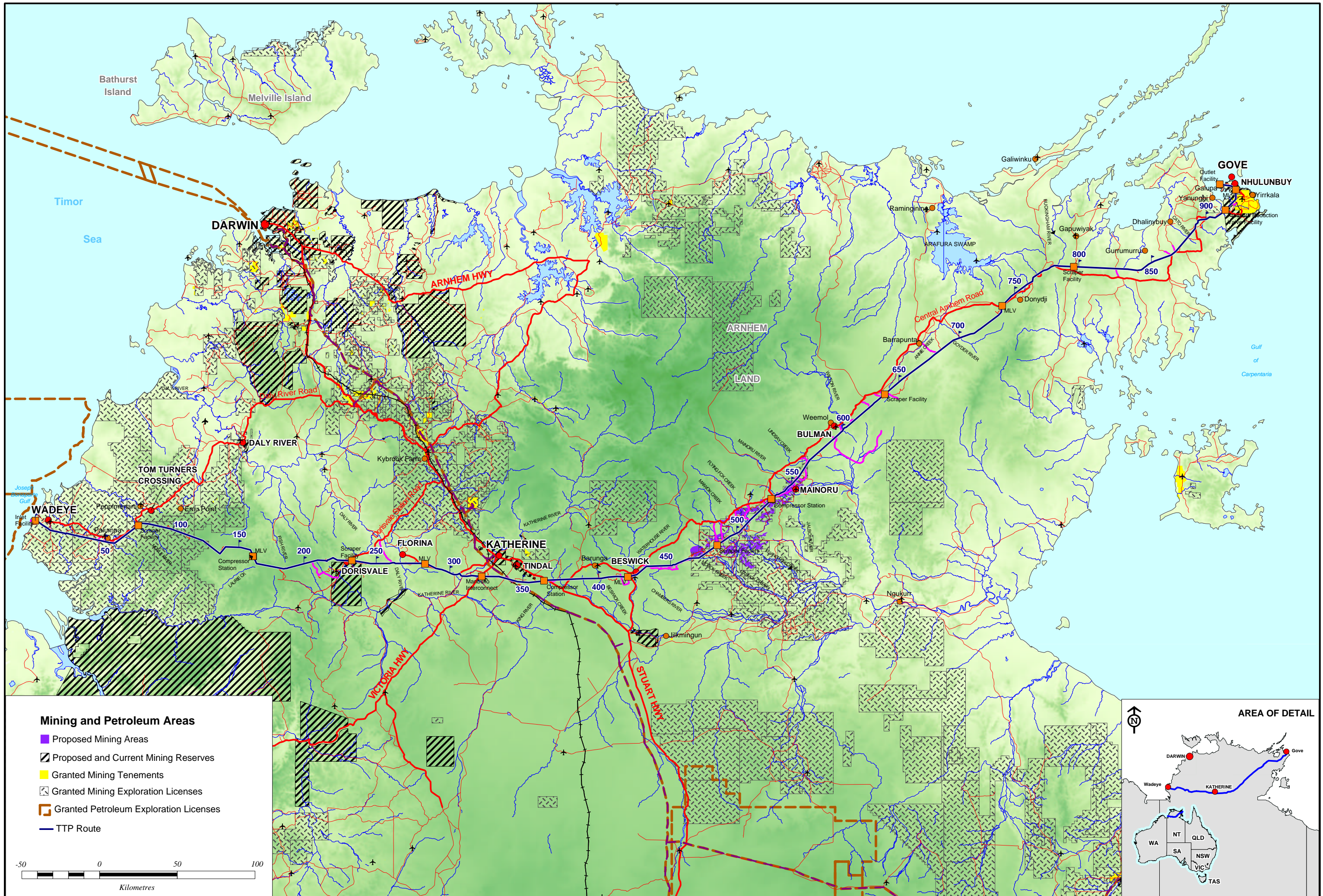
- Granted Mining Tenements (two – including an Alcan Gove special mining lease);
- Applications for Mining Tenements (two);
- Granted Exploration Licences (12);
- Exploration Licence Applications (21);
- *Petroleum Act* Exploration Licence Application (1).

Figure 7-1: Land Tenure and Land Use in the Project Region



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

Figure 7-2: Mining and Petroleum Areas (Existing and Proposed) in the Project Region



These were held by 14 separate entities at the time of writing (November 2004). The petroleum tenement exploration application area covers the western most section of the Daly/River/Port Keats Aboriginal Land Trust. It is currently in stasis as the traditional Aboriginal owners declined to agree its grant.

Native Title Land: Native title land includes all land which is not Aboriginal freehold land, nor ordinary Northern Territory freehold land or roads. Land where native title may exist, can include all pastoral and crown leases and rivers.

7.2.2 Land Use

As stated in **Section 1.10**, the proposed pipeline route passes within the boundaries of three land use planning areas.

Katherine Rural Area Plan, 1988: The Katherine Policy area covers 6,517 hectares and includes the Town of Katherine and the adjoining rural areas (**Figure 7-1**). The Katherine Rural Area Plan applies to all rural areas outside of the Katherine Town Plan area. Under the Rural Plan, areas are zoned agricultural, rural, water management areas, recreational, special purpose and special planning instrument. The pipeline intersects the Katherine Rural Area Plan from KP305–KP310.

The pipeline route will pass through two zoned areas classified under the Katherine Rural Area Plan (1998), namely:

- Agriculture zone (Zone A), this land is reserved for agriculture land uses including horticulture, dry land and irrigated cropping and pastoral use.
- Recreation zone (Zone 0), located at the proposed crossing of the Katherine River. New developments adjacent to the river must ensure that public access to the land is retained and enhanced where appropriate.

Katherine Planning Concepts and Land Use Objectives, 2001: The land use objectives are statements of planning policy, contained under the provisions of the *Planning Act* and are binding on the Development Consent Authority (DCA). In determining a development application, the DCA will interpret and apply provisions in a manner consistent with the land use objectives (DLPE 2001).

As stated in **Section 1.10**, the proponent has proposed to the Northern Territory Government that an amendment be made to the regulations to exempt the grant of interests in land to the TTP from amounting to a subdivision under the *NT Planning Act*.

Highway Controls Planning Scheme: The Highway Controls Plan (1984) applies to land use within 500 m of certain roads and highways in the Northern Territory. The TTP will transect or run adjacent to the following roads covered by the Highway Controls Plan:

- Victoria Highway
- Stuart Highway

This plan provides provisions for removal of vegetation. Native vegetation cannot be removed from up to and including 100 m from each side of a road reserve or the centre line of the road, unless permission has been granted by the consent authority (NTA 1984).

7.2.3 Residential Areas

The main townships in the immediate vicinity of the TTP comprise Katherine, Wadeye and Nhulunbuy.

Katherine: Katherine is located 317 km south of Darwin on the Stuart Highway. It is a modern and self-contained town with around 10,000 inhabitants. The town has a range of accommodation and restaurants as well as modern banking services, Northern Territory Government offices, and a variety of businesses, services and social infrastructure. There is access to primary, secondary and tertiary education.

The town has a competitive construction industry. During construction of the Alice Springs to Darwin railway, a sleeper factory was established in Katherine. A range of industries including engineering are established in Katherine; firms from Darwin also service the region. It has access to road, rail and air transport and is also connected to the optical fibre network.

Wadeye: Wadeye, formerly known as Port Keats, is an Aboriginal community situated on the western edge of the Daly River Reserve in the Northern Territory. The population is made up of around 2,500 mainly Indigenous people from approximately 20 different clan groups and from seven different language groups.

The community is relatively isolated with the most reliable form of transport being by air and road during the dry season. Flying time from Darwin is around 50 minutes. The town has a number of facilities including an airstrip, primary and secondary school, health centre, police station, credit union and recreational facilities.

Nhulunbuy: Since its initial beginnings as a mining town, Nhulunbuy has developed into a thriving township and community of approximately 4000 people. Nhulunbuy is a modern centre with excellent services and infrastructure compared to many other Australian towns of a comparable size. The town has schools offering education from pre-school to final year high school and a wide range of shops. It also has a hospital and air ambulance service. These facilities also service the local and remote Aboriginal homelands.

Nhulunbuy has become an important commercial and administrative regional centre for Arnhem Land. As such the two major employers are the Government and Alcan, with the Gove bauxite mining and alumina refining operations.

Rural Settlements: Within the vicinity of the TTP there are a number of smaller settlements with populations of less than 1,000 persons. These are represented in **Table 7-2** and are identified in **Figure 7-3**.

■ **Table 7-2 Settlements Located within 20 km of the Proposed Pipeline Route**

Community / Township	Distance from Proposed Pipeline Route (km)	Population ¹
Palumpa	4.3	457
Barunga (Bamyili)	8.7	370
Bulman	6.2	154
Weemol	9.6	155
Peppimenarti	12.3	230
Yirrkala	11.1	890
Beswick	1.7	500
Tindal	10.74	-
Nemarluk	7.54	43
Barrapunta	12.5	32
Dhunganda	6.65	1
Donydji	5.4	-
Galingar	8.2	-
Dhamiyaka	3.6	20
Gurrumuru	9.5	54
Dhalinybuy	15.8	473
Baghetti	11.3	-
Mobarn	11.5	-
Maranboy	8.3	-

Note ¹ – Where population data has not been included it is not readily available.

Source: Data supplied by the NT Government, 2004a

Pastoral stations located in the vicinity of the TTP route are discussed in **Section 7.2.4** and presented in **Figure 7-3**.

7.2.4 Agricultural, Pastoral and Freehold

The proposed TTP will pass through seven pastoral leases as follows:

- Dorisvale
- Florina
- Manbulloo
- Goondooloo
- Moroak
- Mountain Valley
- Mainoru

The nearest cattle stations/homesteads located on the pastoral lease areas listed above are Dorisvale and Florina stations, located 0.95 km and 6.1 km away from the pipeline route, respectively. Cattle grazing for beef production is the main land use on these stations.

In addition, the pipeline will pass through an area of land, to the south west of Katherine, which is designated agricultural land (**Figure 7-1**) and is held by the Northern Territory Land Corporation.

There are no known commercial plantations or native forestry activities along the proposed TTP route.

7.2.5 Extractive, Mining and Other Commercial Industries

Mining activities are undertaken in the Northern Territory and within the vicinity of the TTP. There are also a number of prospective mining areas, which are currently under evaluation by the Northern Territory Government (**Figure 7-2**).

The proposed pipeline route passes through an existing special mining lease, which is operated and managed by the lead TTP sponsor, Alcan Gove (DBIRD 2004). Operations at this location include a bauxite mine, conveyor corridor and alumina refinery. Further detail is provided in **Section 1.3**.

7.3 Protected Areas

7.3.1 Indigenous Protected Areas

Indigenous Protected Areas (IPAs) are areas of land (and sea), for which the traditional Aboriginal owners have entered into a voluntary agreement for the purposes of promoting and conserving biodiversity and cultural values. The declaration of an IPA results in that area being added to the national database of protected areas (National Reserve System), and provision of Australian Government funding and other support for the development and implementation of management plans.

The proposed TTP will pass through the Dhimurru IPA, which is an area of approximately 92,000 ha of Aboriginal land on the Gove Peninsula, and includes approximately 9,000 ha of marine area adjacent to the Gove Peninsula. Dhimurru IPA was declared in 2000 and is managed by the Dhimurru Land Management Aboriginal Corporation, under the direction of its traditional Aboriginal owners.

The proposed TTP route will also pass through the proposed Laynhapuy IPA, in north-east Arnhemland extending from approximately Galiwinku on the Arafura coast in the north, to Blue Mud Bay on the Gulf of Carpentaria coast in the east, and is situated adjacent to the Dhimurru IPA. Together, the Dhimurru IPA (**Figure 7-1**) and the proposed Laynhapuy IPA comprise the north-east corner of Arnhem land, with the exception of Nhulunbuy township and other settled areas.

7.3.2 National Parks and Nature Reserves

There are a number of reserves and national parks located in the region through which the TTP passes and these are presented in **Figure 7-4**. **Table 7-3** presents a summary of the key parks, reserves and conservation areas located within 100 km of the TTP route.

Figure 7-3: Urban and Rural Residential Areas in the Project Region



Source: Localities Commonwealth Government, Design Pipe Alignment Data Rev 6 (2004-09-27) Alcan. Prepared by Mipela GIS.

Figure 7-4: National Parks, Nature Parks and Conservation Areas in the Project Region



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

The most significant National Park is Kakadu National Park which is located approximately 60 km to the north of the proposed pipeline route. This park is classified as a World Heritage Site by the United Nations Educational Scientific and Cultural Organisation (UNESCO). Kakadu is also an internationally designated RAMSAR site.

■ **Table 7-3 Distances of National Parks, Nature Reserves and Conservation Reserves from the TTP**

Name	World Heritage Site/ RAMSAR site	Northern Territory National Park	Nature Park	Conservation Area	Distance from TTP (km)
Cutta Cutta Caves			✓		3
Kintore Caves			✓		18
Nitmiluk (Katherine Gorge)		✓			21
Kakadu	✓	✓*			62
Flora River			✓		18
Elsy		✓			35
Limmen		✓			92
Gregory		✓			91
Keep River Extension (proposed)		✓			88
Stray Creek				✓	28
Douglas River / Daly River Esplanade				✓	33
Umbrawarra Gorge			✓		58
Tjuwalyin (Douglas) Hot Springs			✓		78
Butterfly Gorge			✓		84
Daly River (Mt Nancar)				✓	65
Litchfield		✓			98

* Denotes areas considered of national environmental significance and designated under Commonwealth legislation.

The TTP does not directly impinge on any national parks, nature reserves or conservation areas. The key protected areas located within relatively close proximity (ie 20 km) of the TTP route include:

- ***Nitmiluk National Park, located approx 21 km from TTP:*** The 292,000 ha National Park is owned by the Jawoyn Aboriginal people and is jointly managed with the Parks and Wildlife Commission of the Northern Territory. The park is classified as an IUCN ‘National Park II’ designated for its ecological integrity and on the basis that it provides spiritual, scientific, educational, recreational and visitor opportunities (DEH 2004b).
- ***Cutta Cutta Caves Nature Reserve, located approx 3 km from TTP:*** The caves were designated as a nature park in 1979 and provide habitat for a range of species including the harmless brown tree snake (*Boiga irregularis*). As many as five species of bats frequent the caves including the ghost bat (*Macroderma gigas*) and the orange horse-shoe bat (*Rhinonictis aurantius*) which are considered rare and highly specialised species

(PWC 2004a). In addition, around 170 species of birds have been recorded in the park including the hooded parrot (*Psephotus dissimilis*) and the endangered gouldian finch (*Erythrura gouldiae*) (PWC 2004a).

- **Kintore Caves Nature Reserve, located approx 18 km from TTP:** The Kintore Caves are of scientific and archaeological significance. The caves contain an Aboriginal art gallery consisting of paintings and engravings (DIPE 2004c).
- **Flora River Nature Park, located approx 18 km from TTP:** Flora River Nature park protects two major vegetation communities, namely open woodland consisting of spaced trees with a grassy under storey and the riverine forest lining the river banks and islands (PWC 2004b). The reserve includes species with limited distribution including the palm *Livistona mariae ssp. rigida*. Fauna species found within the reserve are characterised by the pig-nosed turtle *Carettochelys insculpta*, once believed to only occur in Papua New Guinea (PWC 2004b). Fish species include barramundi, bream, catfish and grunters, as well as freshwater and estuarine crocodiles.

7.4 Wilderness Areas

Wilderness areas were defined by the former Australian Heritage Commission as ‘large areas in which ecological processes continue with minimal change caused by modern development’ (DEH 2004b). This definition recognises that Indigenous practices have been, and in many instances continue to be, significant factors in creating what non-Indigenous people refer to as ‘wilderness’. The Guidelines nevertheless required assessment of the TTP on wilderness values.

An inventory of national wilderness areas was developed in the early 1990s according to a number of nationally adopted criteria (DEH 2001). The National Wilderness Inventory that was established from this work is now referred to as the Australian Land Disturbance Database (ALDD). A series of disturbance indicators have been used to map Australia’s least disturbed lands. These include distance-based indicators including:

- Remoteness from access – remoteness from established access routes;
- Remoteness from settlement – remoteness from places of permanent occupation;
- Apparent naturalness – the degree to which the landscape is free from the presence of permanent structures associated with modern technological society.

An assessment of biophysical naturalness was also conducted, although this has been a difficult attribute to measure and define (DEH 2004b). Biophysical naturalness is basically a measure of the ‘degree to which the natural environment is free from biophysical disturbance caused by the influence of modern technological society’. A total wilderness quality index is then derived for an area by summing the distance-based indicators and the assessment of biophysical naturalness.

The TTP will cross two defined as areas of high Wilderness Quality as they have experienced minimal disturbance and meet the wilderness size thresholds. These are numbered as area 114 and 102 on the wilderness quality database downloaded from the Environment and Heritage website

(DEH 2004b). The original works on Wilderness Areas in the Northern Territory classified these areas for the following reasons (EcOz 1999).

Area 114 – Fitzmaurice Wilderness Area: This area is a premium Wilderness Area with a combination of broad, tidal rivers, wild coastal mudflats and mangroves as well as a hinterland of high cliffs and deep gorges (EcOz 1999). This wilderness area reaches the ocean at Fossil Head. Some surrounding areas were excluded due to historic grazing and Defence activities at the Bradshaw Training Facility. The TTP traverses this Wilderness Area between KP58 and KP217.

Area 102 – The Arnhem Land Wilderness Area: This area has been noted as a premium Wilderness Area due to its size and the fact that it has largely been managed by Aboriginal people (EcOz 1999). The Arnhem Land Wilderness Area was characterised by gently undulating lands, largely covered by forests and woodland savanna systems, but also extensive coastal habitats. The boundary of the area is not clearly defined (DEH 2004b). The TTP will traverse this Wilderness Area in a number of places including KP628 to 740; KP774 to 783; and KP900 to 915. These sections of the pipeline route largely extend along the borders of this Wilderness Area.

The Arnhem Land Wilderness Area has a close proximity to the Arnhem Land Plateau Wilderness Area. The proposed pipeline will pass approximately 18 km south of the Arnhem Land Plateau Wilderness Area, which is largely covered by savanna type habitat with pockets of rainforest in the plateau gorges. This area has undergone continuous management by Aboriginal people to the present day.

Impacts, preventative and management measures are described in **Section 10.4**.

7.5 Tourism and Recreation

Tourism contributed an estimated 9.1% of the total Northern Territory Gross State Product in 2001/2002. Most of this is earned in dry season months across the Territory (NTTC 2003a). Tourism is a strong growth area for the Northern Territory and is supported by a number of Government initiatives, for example the Indigenous Tourism Strategy, the Northern Territory Cruise Shipping Strategy and the Northern Territory Aviation Strategy.

Growth of the Industry: Holiday visitor numbers to the Northern Territory were 897,000 in 2003, which was a 5-year low. However, in the six months between June 2003 and January 2004 the NTTC reported that there was a 16% increase in interstate visitor numbers. The Top End region of the Northern Territory received approximately 782,000 visitors over the 2002/2003 financial year, with holiday visitors accounting for 50.3% of this number (NTTC 2003b). Northern Territory visitor forecasts for 2003/2004 predicted that there will be a 3% growth in total visitor numbers and a 4% increase in holiday visitor numbers (NTTC 2003a).

Access: Interstate visitors who stayed in commercial accommodation in 2002/2003 increasingly arrived by air or were self-drive. Fewer interstate visitors arrived by coach. Within the Northern Territory, there was an 84% increase in 4WD travel by interstate visitors whilst fewer Territorians took a holiday which involved internal travel by 4WD (NTTC 2003a). Rail and boat transport

gained popularity amongst international visitors. Coach travel for international visitors within the Territory increased by 9% reaching a 5-year high. However, air travel within the Territory for international visitors in 2003 was reduced by 70% from 2002 (NTTC 2003a).

Tenure along the Pipeline Route: A large percentage (approx. 68%) of the TTP route traverses Aboriginal Land Trust lands, including Daly River/Port Keats, Upper Daly River, Wagiman, Beswick, and Arnhem Land Aboriginal Land Trust lands. Tourism is relatively insignificant in these areas, apart from specific festival times (see below for the different regional centres). Permits from the NLC are required to enter these areas at times other than during festivals. Some tour operators provide organised tours into areas owned by traditional Aboriginal owners. Operators that conduct tours on Aboriginal Land must have agreements in place with the traditional Aboriginal owners of the land, negotiated with the NLC and will organise entry permits for tourists partaking of their organised tours.

To the east of the proposed pipeline route in Eastern Arnhem Land is an IPA. This IPA was declared in November 2000 and covers an area of approximately 100,000 hectares within the Arnhem Coast Bioregion, with significant natural and cultural features and strong and continuing Aboriginal culture and land management practices (DEH 2004d).

These permit areas are administered by the Dhimurru Land Management Aboriginal Corp (EALTA 2004). The permit areas include areas classified as 'General' and 'Special'. General permits authorise access at any one time so long as the permit is valid unless otherwise advised or directed. Special permits are subject to availability through a booking system. A general permit must be held prior to applying for a special permit. General permit areas in the vicinity of the proposed pipeline route include:

- Guwatjorumurru (Giddy River)
- Wathawuy
- Banamburruna

Special permit areas in the project vicinity include:

- Gapuru
- Ganami (Wonga Creek)
- Ranura Lurrupukurru

Areas that are not on Aboriginal land include pastoral leases, crown land and freehold land. Pastoral and other private lease or freehold land that the TTP will traverse. These are not tourism centres and permission is required from the owner before access is permitted. A variety of tourist activities are available along the pipeline route, including sight-seeing, swimming in designated areas, and fishing (the Daly River is popular for barramundi fishing) and around the Gove Peninsula.

Regional Centres: The TTP route will pass south of the Aboriginal Community of Wadeye on the west coast. It will then pass within 4 km of Palumpa, 12 km of Peppimenarti and 1 km of the Dorisvale homestead before crossing the Stuart Highway approximately 15 km south of Katherine.

From the Katherine region, the pipeline will largely follow the Central Arnhem Road past Barunga, Beswick, and Bulman to Nhulunbuy. The Central Arnhem Road is a dirt road suitable for 4WD vehicles only and joins the Stuart Highway approximately 109 km south of Katherine. Road access to Nhulunbuy is available only during the dry season due to rivers flooding along the route. NLC access permits are required for travel on this road north of the Mainoru River.

Table 7-4 summarises the available accommodation and tourism product that operates around the regional centres and communities that are located along the pipeline route.

■ **Table 7-4 Available Accommodation, Access and Tourism Opportunities In Regional Centres And Communities Located In The TTP Vicinity**

Township/Community	Accommodation	Access	Local Tourism Areas/Events
Wadeye	Nil	Inaccessible by road during the wet season – Permit required	Wadeye Women's Crafts (Craft Centre)
Palumpa	Camping available with organised tours only.	Inaccessible for wet season – Permit required	Aboriginal dreaming places (organised tour groups only)
Peppimenarti	Nil	Inaccessible for wet season – Permit required	Peppimenarti Art
Katherine	Hotel/Motel (approximately seven available within the region) Caravan sites available (approximately seven locations) Camping available throughout the region Serviced apartments (one available) Homestead Backpackers Bed and breakfast	Stuart Highway all year round.	Nitmiluk gorge (walks, cruises or canoe) Cutta Cutta caves Mataranka thermal pools Bitter Springs Edith Falls 12 National Parks and Conservation Reserves in the region (for example, Flora River Nature Park, Butterfly Gorge Conservation Reserve) Short tours available for day/night ranging from half day to full day Guided canoe tours Fishing on local river systems with/without guides Aboriginal guided tours
Daly River	Motel/homestead (4–5) Limited camping and caravan sites available throughout the Douglas/Daly region	Stuart Highway all year round. Daly River crossing floods during wet season.	Merrepen Arts Centre Merrepen annual festival 'Barra Classic' 'Barra Nationals' Fishing Butterfly Gorge

Township/ Community	Accommodation	Access	Local Tourism Areas/Events
Barunga	Camping available during festival.	Central Arnhem Road (4WD only) – Permit required	Barunga Indigenous cultural and sports festival (annual, dry season)
Manyallaluk	Nil	Central Arnhem Road (4WD only) – Permit required	Guided tours, arts and crafts
Nhulunbuy/ Gove	Hotel/motel Budget accommodation Bush camping without facilities (permit required from Dhimurru Land Management) No caravan park or serviced campground available	Central Arnhem Road during the dry season due to river floodings (4WD only, NLC permit required) Daily flights to Darwin/Cairns	Garma Arts and Cultural Festival – mid dry season Nambara Arts and Craft Centre Buku Larrngay Mulka (art centre) in nearby Yirrkala Annual fishing competitions (for example, Gove Game Fishing Classic) Sports and recreational fresh and marine fishing in general Snorkelling and scuba diving Cultural tours Eco/wilderness tours Golf tournaments

7.6 Archaeology and Historic Heritage

A detailed study of archaeological and historic places and objects was conducted by archaeologists. The study included a desktop review of Commonwealth and Northern Territory heritage registers, and a field survey involving vehicle and pedestrian transects of all except 50 km of the pipeline corridor (KP685 to KP701 and KP744 to KP775 were not surveyed) and at a number of sites proposed for above ground facilities. Access tracks were being surveyed at the time this document was being prepared, therefore, archaeological and historic sites that may be affected by access routes to the project area will be addressed in the Supplement to the EIS. The unsurveyed sections of the pipeline corridor are considered to have a high potential for archaeological sites due to the presence of rocky outcrops used for raw material in artefact production and the presence of permanent water sources. However, as detailed in **Section 10.6**, a response mechanism will be in place to deal with the presence of previously unrecorded sites. This section summarises the findings of the study, which is reported in full in **Appendix L, Volume 2** of this Draft EIS. The locations of all archaeological and historic sites identified during the study are also shown in **Figure 7-5**.

7.6.1 Territory and Commonwealth Register Listings

The Commonwealth Government protects heritage sites under the *Environment Protection and Biodiversity Conservation Act 1999* (EPBC Act) and the *Environment and Heritage Legislation Amendment Act (No 1) 2003* and places legal constraints on archaeological and historic sites. Protected sites are recorded in the Register of National Estate and/or the National Heritage List. There are no historic or archaeological sites protected under Commonwealth legislation recorded in the pipeline corridor.

The *Northern Territory Heritage Conservation Act 1991* protects declared and prescribed places and objects. Eighteen declared archaeological sites or objects protected under the Act were identified within 10 km of the pipeline centreline on the Northern Territory Archaeological Sites Register. All except one of the sites are located at least 1.5 km from the proposed pipeline corridor and so will not be disturbed by the development. On the Gove Peninsula, the pipeline corridor is confined to an area adjacent to the existing Alcan conveyor. Site 6273–0010, a shell midden, is located less than 500 m from the pipeline in this area. This site is situated on the opposite side of the conveyor to the pipeline corridor and is not at risk of disturbance by the TTP activities.

A number of declared archaeological sites and objects protected under the *Northern Territory Heritage Conservation Act 1999* were identified in the field surveys that were not previously recorded on the Northern Territory Archaeological Site Register. These sites are described in the sections below.

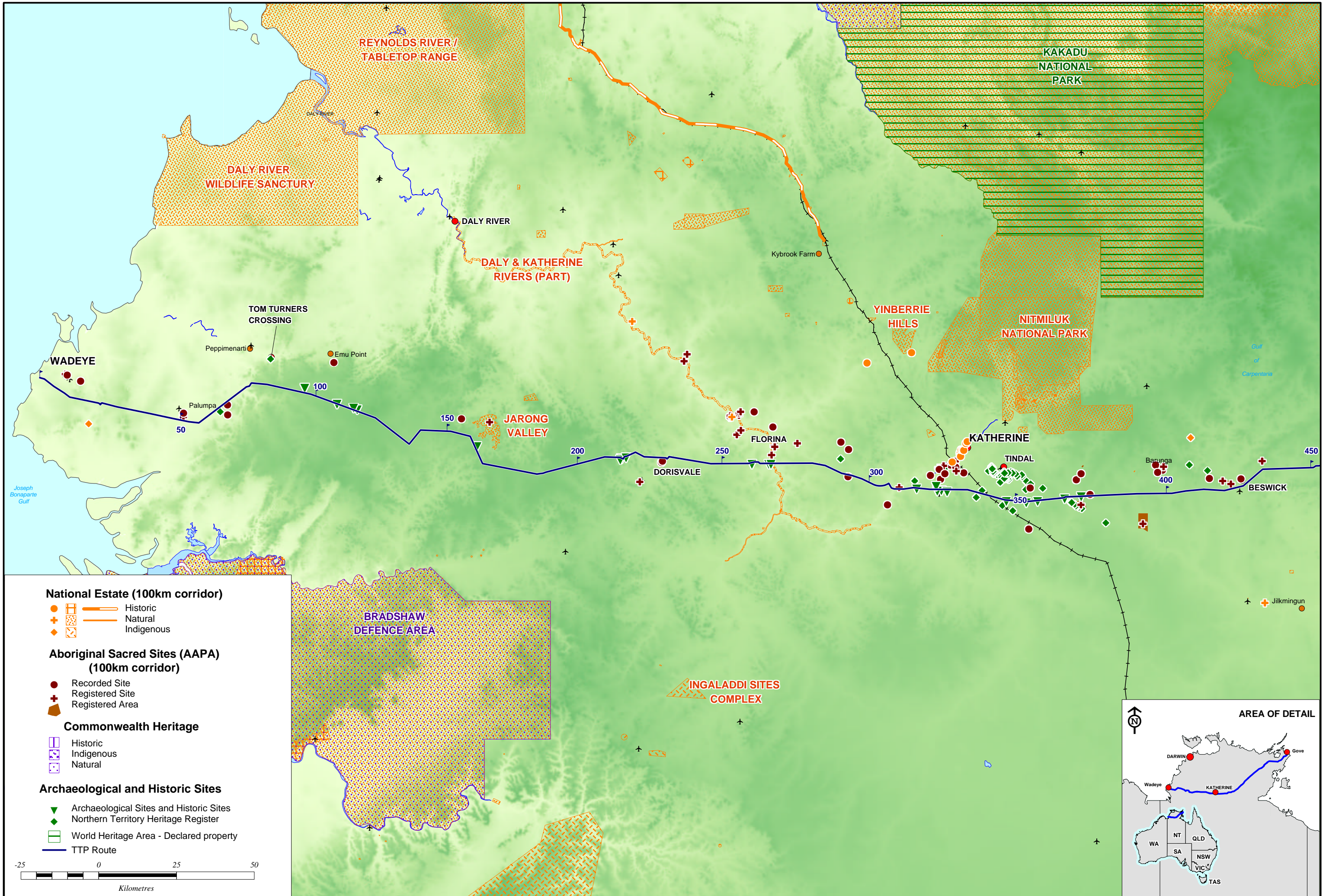
7.6.2 Archaeological Sites Recorded in Field Surveys

Archaeological Sites in Pipeline Corridor: Five hundred and five pedestrian traverses, covering a total distance of 314 km, were made in or near the pipeline corridor and at sites proposed for construction camps and compression stations. Thirty-four archaeological sites and 84 background scatters of isolated stone artefacts were identified during the field surveys. **Table 7-5** lists archaeological sites recorded in the field surveys. A list of background scatters are included in **Appendix L, Volume 2**. The most common archaeological sites were open artefact scatters. Smaller numbers of rock shelters with stone artefacts, quarries, stone arrangements and skeletal remains were also recorded.

■ **Table 7-5 Archaeological Sites Recorded in Field Surveys**

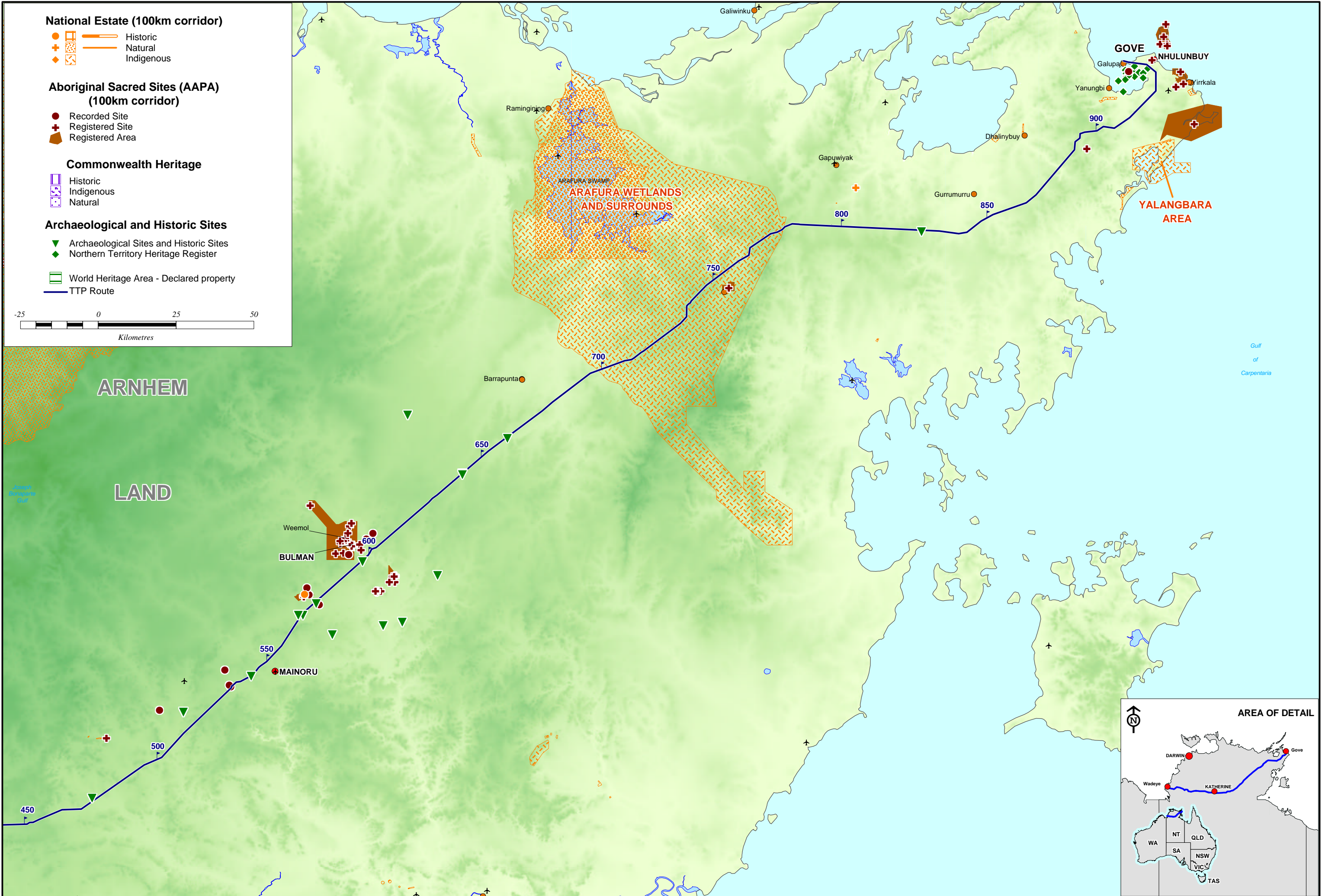
Nearest KP	Metres from Centreline km	Site No.	Site Type	Landscape Feature
96	1.9	40	Quarry	Creek
107	300	39	Quarry	Creek
113	890	38	Stone artefact scatter	Creek
114	880	37a	Stone artefact scatter	Creek
162	880	37	Rock shelter	Escarpment edge
215	250	9	Rock shelter	Escarpment edge
215	200	10	Rock shelter	Escarpment edge
215	205	11	Stone artefact scatter	Escarpment edge
215	360	12	Rock shelter	Escarpment edge
217	85	36	Stone artefact scatter	Creek
260	105	13	Stone artefact scatter	Hill
266	145	14	Quarry	Hill
266	86	16	Stone artefact scatter	River
315	200	35	Rock shelter	Escarpment edge
317	110	17	Quarry	Rocky outcrop
325	20	18	Stone artefact scatter	Creek
327	360	19	Stone artefact scatter	Creek
347	50	20	Stone artefact scatter	Creek
354	30	21	Stone artefact scatter	Creek
358	80	22	Stone artefact scatter	Creek
570	180	31	Stone artefact scatter	Creek
570	1	32	Stone artefact scatter	Creek
576	200	30	Stone arrangement	Outcrop
597	50	29	Stone artefact scatter	Hill
642	140	26	Stone artefact scatter	Creek
642	60	27	Stone artefact scatter	Creek
642	20	28	Stone artefact scatter	Billabong
661	60	5	Stone artefact scatter	Hill
661	350	6	Skeletal remains	Hill
827	60	24	Stone artefact scatter	Creek
NA	12	1	Stone arrangement	Creek
NA	22	2	Stone artefact scatter	Floodplain
NA	32	3	Stone artefact scatter	Hill
NA	34	4	Stone artefact scatter	Billabong

Figure 7-5: Places with Heritage, Social or Cultural Values in the Project Region (Map 1 of 2)



Source: Vegetation Data NT Government, Flora and Fauna Survey Data Alcan, Topographic Data Geoscience Australia, Design Pipe Alignment Data Rev 6 (2004-09-27) Alcan. Prepared by Mipela GIS.

Figure 7-5: Places with Heritage, Social or Cultural Values in the Project Region (Map 2 of 2)



Overall the number of sites recorded in the field surveys was surprisingly low. This is probably a reflection of the type of terrain over which the pipeline corridor traverses. The pipeline route favours level ground and mostly avoids rugged terrain, escarpments, hills and areas prone to long term flooding after the wet season. The route also covers vast areas of sandy plains or undulating country, where there is less potential for locating archaeological material. During the surveys it was noted that no archaeological material was located near any water sources where the banks were sandy.

Ground visibility was low for the surveys, ranging between 49% and 56% which may have hindered the detection of isolated artefacts. However, as the survey methods included targeting areas where it was predicted there would be a high probability for the presence of sites and also targeting areas where ground visibility was higher than the surrounding area, it was considered that the low number of sites detected is probably not the result of low ground surface visibility. The low numbers of sites recorded in most places is therefore likely to reflect the low numbers of sites present.

Archaeological Sites at Locations Proposed for Above Ground Facilities: The results of the surveys at the proposed construction camp and compressor sites are shown in **Table 7-6**. All of the surveyed areas were on relatively level or gently undulating terrain. Isolated artefacts were found at three areas which were located near a seasonal water source. These were the Moyle River Scraper Station site, Moyle River Construction Camp and the Victoria Highway Construction Camp.

■ **Table 7-6 Archaeological Backscatters Recorded at Above Ground Facilities Sites**

Proposed Facility	KP	Archaeological Material
Scraper Facility Moyle River	77	BS78
Construction Camp Moyle River	69	BS2 & 3
Compressor Station Wingate Mountains	162–163	nil
Compressor Station Victoria Highway	322	BS65 and 66
Compressor Station Stuart Highway	364	nil
Compressor Station Mainoru	528	nil
Construction Camp Annie Creek	5.5 km north 631	nil
Construction Camp Buckingham River	1.5 km south 787	nil
Construction Camp west of Gupuwiak Rd	1 km east 888	nil

Background Scatter 78 was located approximately 50 m outside the scraper facility site on the eastern side of the Moyle River. Background Scatters 65 and 66 were located along the western banks of Chinaman Creek south of the Victoria Highway. Background Scatters 2 and 3 were located at least 100 m away from the eastern boundary of the proposed construction camp. In each case the artefacts were located at least 50 m to 100 m away from areas that will be directly disturbed.

Site Distribution: The distribution of archaeological sites and backscatters in regions traversed by the project area is summarised in **Table 7-7**. Sites and background scatters were identified most frequently in the Tipperary region. The Roper and Arnhem Land regions had very low site frequencies. Arnhem Land and the Ord-Victoria regions had the lowest frequencies for background scatters.

■ **Table 7-7 Frequency of Background Scatters and Site Types Recorded in Each Region**

Region	Total Scatters	Av. scatters per km	Total Arch sites	Av. sites per km	Site Type*					
					AS	QU	SR	SA	RS	H
Ord-Vic	15	1/5.4 km	11	1/7.3km	4	2			5	
Tipp.	18	1/1.8km	13	1/2.4km	7	2				4
Roper	23	1/3.1km	6	1/11.7km	2		11	1		2
A/ Land	28	1/4.7km	10	1/13km	9			1		
Total	84		40		22	4	1	2	5	6

*Site Type Codes
 AS = Artefact Scatter, QU = Quarry, SR = Skeletal Remains, SA = Stone Arrangement, RS = Rock Shelter, H = Historic Site

Table 7-8 summarises the landscape features that the archaeological sites and background scatters were associated with. The majority (62%) of the archaeological material was located adjacent to a source of fresh water, followed by higher ground, escarpments, plains and isolated outcrops. Archaeological sites were never found in the plains areas. Isolated artefacts may be located in areas where there are no landscape features. Based on this information, areas that have a high probability of further sites being present can be identified.

■ **Table 7-8 Landscape Features Associated with Recorded Archaeological Sites and Background Scatters**

	Water	Higher ground	Plain	Outcrop	Escarpment
All archaeological material	62%	22%	9%	2%	5%
Sites	59%	17%	-	6%	18%
Background scatters	63%	24%	13%	-	-

Significant Archaeological Sites: Archaeological sites recorded during the field surveys were ranked according to their perceived significance by a qualified archaeologist if they occurred within 200 m of the pipeline centerline. The archaeological significance of the fifteen sites that occur within 200m of the proposed pipeline centerline is summarised in **Table 7-9**. Detailed justification for the outcome of the significance assessment is provided in the full report in **Appendix L, Volume 2**. The assessment of significance for each site should be regarded as

provisional and may be subject to change after additional archaeological surveys have been carried out along the pipeline route.

■ **Table 7-9 Significance of Archaeological within 200 m of Proposed Pipeline Centreline**

Nearest KP	Site No.	Significance	Comments
217	36	Moderate to high	Medium density artefact scatter with a potential for excavation in undisturbed areas
260	13	Moderate	Stone artefact scatter with variety of raw material and artefact types
266	14	Low-moderate	Intact chert quarry, but fairly common in the Daly Basin
266	16	Low	Highly disturbed artefact scatter
317	17	Moderate to high	Quarry with the potential for excavation
325	18	Low	Small disturbed artefact scatter with low density of artefacts
347	20	Moderate	Artefact scatter with a diversity of artefacts of different raw materials
354	21	Low	Small artefact scatter low diversity and density of artefacts
358	22	Low	Small artefact scatter low diversity and density of artefacts
597	29	Low	Low density artefacts scatter with a diversity of stone artefacts
642	26	Moderate	Low density of artefact scatter but with a variety of raw material and artefact types
642	27	Moderate	Low density of artefact scatter but with a variety of raw material and artefact types
642	28	Low	Artefact scatter majority of artefacts located in creek bed, highly disturbed
661	5	Moderate to high	Rare site with unusual combination of archaeological material.
827	24	Low	Small artefact scatter low diversity and density of artefacts

There were no sites considered to have a high archaeological value, although there were three sites that were assessed as having moderate to high significance. Site 5 consists of an edge ground axe and ochre pieces scattered around a small water soak on the side of a hill. This site is distinctive because of its unusual combination of stone artefacts and has been assessed on its rarity alone.

The other two sites, a quarry, Site 17 and an artefact scatter, Site 36 both have the potential to be excavated. While the density of artefacts on the surface of the quarry is relatively low there is a high possibility of artefacts under the surface. The quarry is located on an outcrop surrounded by undulating plains where artefacts would be buried under the sediment brought to the area during the regular floods. The majority of stone artefacts at Site 36 were found in areas that had been eroded by sheet wash on a gentle slope next to a creek. As the areas between are intact there is high potential for locating sub-surface archaeological material in these areas.

All background scatters located during the surveys have been assessed as having low archaeological significance. The methods used during the survey ensured that the artefact's location, dimensions, type and raw material were documented. Consequently, the isolated artefacts have little potential for contributing to further knowledge.

7.6.3 Non-Aboriginal Heritage

Six historic sites were recorded during the field surveys (**Table 7-10**). These sites were related to World War II activities, surveying activities, the pastoral industry, the North Australian Railway and the Overland Telegraph line. The sites were located in the vicinity of the Stuart Highway south of Katherine and Victoria Highway east of Katherine. Site descriptions are included in the full report at **Appendix L, Volume 2**.

■ Table 7-10 Historic Sites Recorded in Field Surveys

Nearest KP	Metres from Centrelines	Site No.	Site Type
324	130	15	Manbulloo Airstrip 1
324	1.4	34	Manbulloo Airstrip 2
366	0	23	North Australian Railway
372	260	25	Overland Telegraph pole
475	1.2	33	Marked Tree
518	6	7	Policeman's yard

Significant Historic Sites: There are two historic sites located within 200 m of the proposed pipeline route. These are the Manbulloo Airstrip (Site 15) and the North Australian Railway (Site 23) (**Table 7-11**). While there are few reminders of the wartime activities in the area adjacent to the Manbulloo Airstrip and south of the proposed pipeline corridor, the survey located new structures that are in very good condition two kilometres north of the corridor. As several of the airstrips between Katherine and Darwin have been damaged or destroyed in the last few years, this site is significant as an increasingly rare reminder of World War II activities in northern Australia.

The North Australian railway line played a significant role in opening up the Top End, however, the section of the line that crosses the pipeline route has been assessed as having low historic significance as the remains consist only of the gravel base on which the line was built.

■ Table 7-11 Significance of Historic Sites Within 200 m of Proposed Pipeline Centreline

KP	Site No.	Significance	Comments
324	15	High	World War II site, Manbulloo Airfield very little disturbance, covers a large area
366	23	Low to moderate	Historic railway line, no significant remains at this location

7.7 Aboriginal Heritage

7.7.1 Aboriginal Sites of Significance

Sacred Sites: Pursuant to the *Northern Territory Aboriginal Sacred Sites Act 1989*, Authority Certificates were issued by the Aboriginal Areas Protection Authority (AAPA) in relation to all on-ground work undertaken for the TTP. Sacred site surveys of the pipeline project area were undertaken by the NLC in consultation with traditional Aboriginal owners. Reconnaissance permits, negotiated between TTP and the NLC, governed the conduct of all the works that were

undertaken. Further Authority Certificates will need to be applied for and issued to cover the construction and operation phases of TTP.

Figure 7-5 depicts, along the TTP route (in a 100 km wide corridor) recorded sacred sites, recorded site delimiters, registered sacred sites, unconfirmed recorded sites and areas surrounding registered sacred sites as provided by the AAPA.

The TTP route surveys already undertaken have delineated a 100 m wide pipeline corridor which will be further narrowed down to a 30 m wide construction corridor for the TTP and licensing and lease requirements under relevant legislation.

Unlike the archaeological work undertaken for TTP, whereby a detailed report is prepared and included as an appendix to the EIS, 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 proponents in the form of a report by the NLC. Instead, the NLC is obliged to provide such information to the AAPA so that it can in turn assess the application for an Authority Certificate.

Overall, it has been a high priority of TTP that the location of the pipeline must not damage or impact sacred sites. None of these sites will be impacted on by the proposed development.

The perceptions of traditional Aboriginal owners and affected Aboriginal people in relation to the TTP route clearance process are documented in Section 8.7 of the TTP Social Impact Assessment Report (**Appendix N, Volume 2** of this Draft EIS). In summary, whilst the major concern of the project for interviewees is its potential to disturb or affect sacred and other significant sites, people generally expressed confidence in the clearance process. Traditional Aboriginal owners of country affected by the TTP route who were consulted were mostly of the view that the right people had been spoken to and involved in the survey work, or where they had not been to date, that this had been worked through satisfactorily with the NLC.

However, to date there is one area of the pipeline corridor that has not been surveyed between KP745 and KP783 (38 km in distance) in the Mitchell Ranges of north-east Arnhem Land. Discussions with the traditional Aboriginal owners for this area and the NLC are ongoing and it is anticipated this will be resolved in the near future.

7.7.2 Species with Indigenous Cultural Values

Background: The pipeline passes through a mosaic of cultural landscapes, or Country, associated with at least ten language/tribal groups, each of which comprise many traditional Aboriginal owner groups, often with complex interconnected cultural obligations and each with their own clan estates. 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.

The proposed route of the pipeline passes through the southern portion of a 900 km² area of Aboriginal land in north-east Arnhem land known as the 'Arafura Swamp and Surrounds' that has been registered on the Register of the National Estate for its Indigenous cultural landscape values (**Figure 7-5**). This registration has the effect of requiring Australian Government Ministers to seek to protect these values in the exercise of their authority

Methodology: In recognition of the significant role played by animals, plants and the environment generally in the cultural and economic life of Aboriginal people across the Top End, a methodology has been developed to protect Aboriginal environmental cultural values that may be impacted by the construction and operation of the pipeline. Based on experience gained in the Blacktip Project environmental cultural assessment process, other research and discussions with Indigenous and non-Indigenous staff of Aboriginal land management agencies in the Northern Territory, criteria for the development of an appropriate methodology for describing Indigenous environmental cultural values along the proposed pipeline route have been developed. These criteria and the implications for the methodology are summarised in **Table 7-12**.

■ **Table 7-12 Criteria for Developing a Methodology for Assessing Aboriginal Environmental Cultural Values associated with the Proposed Project**

Criteria	Implications	Requirements
Recognition of Country as a cultural landscape.	Holistic and integrative approach to all natural and cultural values.	Complement existing information from other components of the draft EIS and SIA reports and other published and unpublished sources, taking into account broad, landscape scale values.
Recognition that each traditional Aboriginal owner group has values, knowledge, rights and obligations to their own clan estates and other specific areas through cultural obligations.	Assessment of environmental cultural values must be undertaken at the appropriate local scale.	Provide the opportunity for traditional Aboriginal owner groups to engage in the management process.
Recognition that the broader Aboriginal community (for example Aboriginal residents of larger communities) have an interest in their local environments whether or not they are traditional Aboriginal owners of those environments	While respecting the prime authority of traditional Aboriginal owners to speak for Country, the interests and values of other local Aboriginal people need to be considered.	In collaboration with traditional Aboriginal owner groups, provide opportunities for the wider Aboriginal community to convey interests and concerns (for example about impacts on hunting and gathering areas, water sources, cultural resources etc.)
Recognition that impacts on environmental cultural values will depend on the specifics of the environmental disturbance caused by particular projects.	Consider the environmental cultural implications of specific aspects of the construction and operation of the proposed pipeline.	Ensure that traditional Aboriginal owners and others are fully informed about each stage of construction and operation of the pipeline, and the process of rehabilitation of the pipeline corridor after construction
Recognition that cultural values associated with Country (traditional knowledge, resource use practices, totemic relationships, transfer of knowledge between generations etc.) can be impacted through changed land use and associated social changes.	Assess status of environmental cultural values, and develop measures to protect those values.	Provide traditional Aboriginal owner groups with the opportunity to ways to consider ways to monitor and protect those values.

The process of assessing these values and developing strategies for their protection will take place in collaboration with traditional Aboriginal owners, the broader Aboriginal Community, other key organisations and technical experts in the following three stages:

- Phase 1: Development of a broad methodology for the assessment and protection of Aboriginal cultural values associated with environments potentially impacted by the project.
- Phase 2: Consultation with traditional Aboriginal owners in support of the preparation and implementation of management measures to protect cultural values during the construction and operation of the project. The main mechanism for this will be the Cultural Heritage Management Plan.

Phase 1 has been completed; Phase 2 will utilise information already provided by traditional Aboriginal owners and others during the SIA and the on-ground consultations for selecting the pipeline route. Key issues to be addressed in Phase 2 to be undertaken in 2005, including:

- Identification of aspects of pipeline construction and operation which are most likely to impact on these categories of cultural values.
- Documentation of places and habitats where cultural values are most likely to be affected.
- Preparation and implementation of management actions during construction to minimise the potential impacts on cultural values.

7.8 Existing Infrastructure and Transport Network

7.8.1 Roads

Local Government in the Northern Territory manages over 13,663 km or 40% of the total 34,340 km of the Northern Territory road network (LGANT 2003). This road network is made up of the following:

- 1,952 km sealed roads;
- 1,743 km gravel roads;
- 9,968 km flat bladed tracks.

National and regional highways provide major interstate connections and include:

- Stuart Highway – connecting with South Australia and south-eastern states;
- Barkly Highway – connecting with Queensland;
- Victoria Highway – connecting with Western Australia.

With completion of the Alice Springs to Darwin railway, the role of road transport is expected to change to focus more on providing freight links to the railway.

The proposed TTP route directly crosses the following highways and roads:

- Dorisvale Road;
- Florina Road
- Victoria Highway;
- Stuart Highway;
- Charlie Toms Yards Road;
- Central Arnhem Road;
- Goondooloo Road.

A number of other station roads and tracks will also be crossed. In addition, a number of tracks will be used by the TTP and these are presented in **Table 5-4**.

7.8.2 Rail

The Northern Territory has no railway system, other than the single operated line between Alice Springs and Darwin. The Adelaide to Darwin railway line is approximately 2,250 km in length and runs from Tarcoola (near Adelaide) to Darwin's East Arm Port. The rail line was initially constructed south of Katherine and north from Tennant Creek. This section of the line was subsequently joined in 2002. Construction north from Katherine to Darwin, and south from Tennant Creek to Alice Springs, was completed in 2003.

The new railway upgrade completes the national railway network and links the economic heartland of Australia to Darwin. The northern terminus for the railway is the new East Arm Port in Darwin. The railway is a trade corridor, a significant conduit for the export and import of goods between markets in Asia and beyond (NTIC 2000). The proposed TTP will cross the Darwin to Adelaide railway at approximately KP330.

7.8.3 Ports

The Northern Territory has three major ports, Darwin, which has regular national and international shipping connections, is the main general cargo port, while Gove and Alyangula (Groote Eylandt) are major mining export ports.

Darwin Port which is Australia's largest natural deep-water port providing access to the growing markets of Asia, has regular international and national shipping connections. The port includes an inter-modal container terminal served by the AustralAsia Railway.

The Alcan Gove port is located on either side of Dunas Point in Melville Bay. The Alcan Gove alumina and bauxite export-loading terminal is located on the north side of Dundas Point. On the south side of the point is a cargo wharf at which coastal vessels dock to unload bulk materials required for the refinery and load hydrate for export (Alcan 2003b). The port loads approximately 90 ships per year (Alcan 2004). The port facility is connected to the alumina refinery by a 3km conveyor loading up to 2,000 tonnes of bauxite per hour (**Plate 7-1**).

■ Plate 7-1 Alcan Gove Port



7.8.4 Air Transportation

There are four airports in the region of the TTP, namely Wadeye, Darwin, Katherine/Tindal and Gove.

Wadeye: The Wadeye community is serviced by a sealed all weather airstrip capable of accepting fixed wing aircraft. The runway length is approximately 1,410 m and strip is 18 m wide. It is located on the perimeter of the community and is equipped with lights for night landings.

Darwin: The Darwin airport is located approximately 13 km from the central business district. The airport operates 24 hours a day and can accommodate a Boeing 747. The main runway is 3,354 m long by 60 m wide. The second runway is 1,524 m long by 30 m wide.

A helicopter landing area and associated apron, hangars and refuelling facilities are located at the eastern end of the Airport.

Katherine/Tindal: Tindal airport is located 17 km from Katherine and 320 km by road south-east of Darwin. The airport contains an operational RAAF Air Force Base and accommodates emergency medical aircrafts for aerial medical service and commercial movements.

Gove: Gove airport consists of a single sealed runway, control tower, navigational and landing aids, lighting, fuel facilities and a passenger terminal. There is a weather observation tower on the south-western side of the runway.

7.9 Economic Environment

7.9.1 Local Economic Environment

Wadeye: The economic base in the Thamarrurr Region is limited to a fledgling construction industry being developed by the Council, a small-scale cattle industry based at Palumpa Station and the remotely operated tourism and fishing industries. There are very few employment opportunities for local Aboriginal people. Thamarrurr Regional Council, local Indigenous enterprises and the Northern Territory Government provide some employment for local people in the delivery of a range of municipal and social services and in the provision of other goods and services (ImpaxSIA Consulting 2004).

Katherine: The economy of the Katherine region is diverse and vibrant. The town has experienced a 60% increase in population since 1988 (KREDO 2004). This is mainly attributed to the establishment of RAAF Base Tindal, which accommodates 2,200 people, and the ongoing development of several industries such as tourism, mining and horticulture (KTC 2004).

The Katherine Region Economic Development Organisation facilitates growth and improvement in the economy of the Katherine Region. The organisation obtains funding to provide economic assistance for developments.

Nhulunbuy: The communities and homelands in this region have a poor economic base and limited capacity for growth, which contributes to high unemployment levels (DCDSCA 2004). Mining is currently the primary industry in the region, contributing most to the local economy and is the largest single industry sector employer in the region (DCDSCA 2004).

7.9.2 Regional Economic Environment

Overview: The Northern Territory economy accounts for 1.2% of Australia's Gross Domestic Product (GDP) and 1% of nation wide employment. The structure of the economy is distinctive, with a high reliance on export markets and a large percentage of the workforce employed in the defence and Government sectors.

The economy is extremely sensitive to economic impacts such as recent resource and infrastructure investment projects. Recent major projects include the Alice Springs to Darwin Railway, the Wickham Point LNG plant and the expansion of the defence force presence. These projects have resulted in economic and employment growth in the Northern Territory out-performing the rest of Australia in recent times. As the impacts of these developments come to an end economic growth is expected to slow – unless other projects such as the TTP follow.

The medium term outlook for the Northern Territory greatly depends on:

- the increase in freight volumes and value, and the advantage that can be taken of it (including value adding of freight) now that the new AustralAsia rail link and East Arm Port facilities are in operation;
- the performance of the tourism industry;

- development of new resources and infrastructure projects.

Main Industries: The most significant industry in the Northern Territory is the mining and petroleum sector, which produces 23% of GSP, whilst the next most valuable sector is the property and business services sector which contributes 9% of GSP.

The Government and defence sectors are responsible for a higher proportion of employment in the Territory than in other jurisdictions, due to the large Australian Defence Force presence. Compared to Australia, the Territory also comprises relatively more employees in the areas of mining, education (given the relatively younger population of the Territory), transport and storage (given longer distances to cover) and the tourism related industries of accommodation, cafes and restaurants and cultural and recreation services.

■ **Table 7-13 Major Northern Territory industries by percentage of state employment**

Industry	NT	Australia
Government & Defence	17.3%	4.6%
Retail Trade	12.4%	14.9%
Health & Community Service	9.2%	9.9%
Property & Business Service	8.8%	11.4%
Education	8.3%	7.3%
Mining* (including petroleum)	3.5%	1.1%

Source: ABS Census 2001, *ABS Census 1996 contained in ImpaxSIA Consulting 2004

Local Businesses and Services: The major population centres in the Northern Territory are modern, well serviced and well equipped to provide the relevant businesses and services for major projects.

Recent major projects such as the Alice Springs to Darwin Railway and projects currently under construction such as the Wickham Point LNG plant have successfully used a high percentage of local employment and business content.

The Alice Springs to Darwin Railway was particularly successful in providing jobs for Indigenous people with over 150 placements in the first two years of the project. This project also resulted in a sleeper factory being built at Katherine to service the railway. The pool of available employees and skills (particularly specialised skills) in the Territory is limited. Supply and service businesses similarly are limited. For this reason, it is expected that a substantial supply of labour, supplies and services will be sourced from interstate for major construction projects. Furthermore, in the event that several major projects are constructed during the same time period, a situation of demand for construction services outstripping supply could eventuate.

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