CENTRAL QUEENSLAND GAS PIPELINE

Initial Advice Statement

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GLOSSARY

APIA	Australian Pipeline Industry Association
CHMP	Cultural Heritage Management Plan
CQGP	Central Queensland Gas Pipeline
CSG	Coal Seam Gas
DNRM	Department of Natural Resources and Mines
EIS	Environmental Impact Statement
EMP	Environmental Management Plan
EPA	Environmental Protection Agency
EP Act	*Environmental Protection Act 1994*
EPBC Act	*Environment Protection and Biodiversity Conservation Act 1999*
ERA	Environmentally Relevant Activity
IAS	Initial Advice Statement
ILUA	Indigenous Land Use Agreement
MAOP	Maximum Allowable Operating Pressure
MPa	Mega Pascal
NDT	Non-destructive Testing
NQGP	Northern Queensland Gas Pipeline
PGA	*Petroleum and Gas (Production and Safety) Act 2004*
PPA	Power Purchase Agreement
PJ	Peta Joule
RE	Regional Ecosystem
ROW	Right-of-Way
SCADA	Supervisory Control and Data Acquisition System
SEVT	Semi-evergreen Vine Thicket
TOR	Terms of Reference
VMA	*Vegetation Management Act 1999*

EXECUTIVE SUMMARY

BACKGROUND AND PROPONENT

Enertrade, a Government Owned Corporation, is proposing to build, own and operate approximately 440km of high pressure gas transmission pipeline in Central Queensland from Moranbah to Gladstone (Figure ES - 1). Expansion of the existing Enertrade compression facilities at Moranbah is anticipated as part of this Project.

The Central Queensland Gas Pipeline (CQGP) Project is estimated to cost $200 million and provide employment for up to 300 people during construction. Enertrade plans to build on the success of the recently commissioned 400 km North Queensland Gas Pipeline (NQGP) Project which was developed and constructed during 2003 and 2004.

THE PROPOSAL

The pipeline will be a buried, 300 – 400mm nominal diameter, high pressure gas transmission pipeline to supply coal seam gas (CSG) from the Bowen Basin coalfields (Moranbah) to industrial customers in Gladstone (Figure 1). The pipe will be supplied in 18m lengths which will be welded together at site and buried at a depth of at least 900 mm, depending upon terrain and prevailing land use. The pipeline will be operated with a maximum allowable operating pressure of 15.3 MPa.

A number of route options were investigated taking into account strategic objectives, route selection criteria and environmental and topographic constraints of the region including:

- Minimising potential impacts on sensitive ecosystems;
- Reducing conflicts with mining activities;
- Proximity to areas of future coal seam gas production; and
- Proximity to areas of targeted future industrial development.

CSG is produced at pressures below those suitable for transmission and the gas requires compressing before entry to the pipeline. This will be achieved by increasing the number of compressors at the existing Enertrade compressor station at Moranbah.

JUSTIFICATION

Construction of the CQGP would provide interconnection of the NQGP to the State gas transmission network. This will enable an alternative source of gas into Townsville and the rapidly expanding industrial centre of Gladstone. This concept is in line with the Queensland Government's original "Invitation for Proposals" for developing a gas-fired base load power station in Townsville and interconnection to the existing State's gas transmission network.

The interconnection of the NQGP to the State's gas transmission network at Gladstone will:

- Reduce the gas supply risk to the major industrial plants in the Rockhampton and Gladstone regions through having 2 independent supply sources and associated infrastructure;
- Meet the Queensland government's aim of continuing to diversify the State's energy mix; and
- Promote gas-on-gas/pipe-on-pipe competition in the Central Queensland industrial hub. Thereby ensuring competitive energy pricing and adequate supplies to encourage further major development in the region.

The proposed pipeline will also significantly enhance the development opportunities for CSG in Queensland.

Figure ES - 1: Location Map

[To View this Map Click on this Link]

CONSTRUCTION AND OPERATION PROCESSES

Pipeline
Construction activities, typical of modern pipeline projects, will involve the following key steps:

- Route selection and survey of the right of way (ROW);
- Installation of temporary gates for construction;
- Clearing of vegetation and grading of the ROW to prepare a safe construction working area;
- Separation and stockpiling of topsoil and subsoil to protect and preserve topsoil;
- Setting up of temporary facilities such as work areas for equipment and pipe delivery and storage, campsites, worker accommodation, borrow pits and access tracks;
- Creation of a trench in which to lay the pipeline. This would be undertaken by a trenching machine, rock saws, or excavator and may involve rock hammers or blasting in hard rock terrain;
- Crossing watercourses, roads and rail lines by open cut, boring or horizontal directional drilling methods (depending upon the type and nature of the crossing);
- Stringing the pipe sections along the ROW;
- Welding the pipe sections together;
- Placing the pipeline into the trench and returning the subsoil and topsoil to their original horizons;
- Placing sand or screened trench sub-soil (padding and shading) into the trench to protect the pipe coating from external damage;
- Testing the integrity of the pipeline by filling it with water and pressurising it to above the operating level;
- Clearing up and restoring the construction ROW and all temporary facilities.

Rehabilitation will be undertaken in accordance with best practice pipeline construction and will ensure that:

- Topsoil cover is re-established and all land and waterways disturbed by project activities are returned to a stable condition as soon as possible after construction;
- Land is returned as close as possible to its previous productivity;
- Stable landforms are re-established to original topographic contours;
- Natural drainage patterns are reinstated;
- Erosion control measures (e.g. contour banks, filter strips) are installed in erosion prone areas; and
- The pre-construction environment is reinstated and disturbed habitats recreated.

Given that the pipeline will be underground, land users would be able to resume previous land use activities above the pipeline provided that they did not include excavation activities. Whilst deep rooted vegetation cannot be re-established directly across the pipeline, due to potential damage to the corrosion protection systems, shallow root cropping and grasslands re-establishment will be encouraged and no long term impacts would be expected to such areas.

During operations gas flow and pressure will be monitored from the control room in Brisbane. Inspection of the pipeline easement for issues such as erosion, weeds, subsidence, lack of revegetation or third party activity would be carried out on a regular basis, either via ground or aerial patrols. Regular contact will be maintained with landowners of all properties traversed by the pipeline.

Compression
The existing Enertrade compressor site at Moranbah has sufficient land available for the installation of further compressors as provision for future expansion was built into the original plans. Therefore it is not anticipated that any additional land clearing will be required for the installation of additional compressors.

EXTERNAL INFRASTRUCTURE

Gas – the project will supply 20 – 50PJ per annum of gas to Gladstone
Water – will be required during construction for hydrotesting the pipeline, dust suppression and domestic use at campsites.
Transport – road and/or rail is likely to be utilised for transport of the pipe, equipment and camp buildings to site.
Electricity – will not be required from the grid. All construction requirements will be supplied by diesel generators.

EXISTING ENVIRONMENT

The majority of the proposed pipeline route falls within Queensland's Brigalow Belt Bioregion, an area that has been subjected to extensive clearing. The eastern most 20km of the route lies in the northern tip of the Southeast Queensland Bioregion, an area of high biodiversity.

In general the proposed route traverses areas of previously cleared and degraded grazing lands, patches of regrowth (mostly Brigalow) and limited areas of remnant vegetation. The remnant vegetation is mainly Brigalow and Eucalypt Communities. Small patches of Semi-evergreen Vine Thicket (SEVT) and grasslands also occur in the vicinity of the pipeline. Due to its vulnerability to fragmentation SEVT will in most cases be avoided by the pipeline.

Database searches have identified the potential for a number of threatened flora and fauna species to be located in proximity to the proposed pipeline route. Detailed studies will be carried out during the EIS to verify whether these species are present and likely to be adversely impacted in the pipeline corridor.

POTENTIAL IMPACTS AND MANAGEMENT

Pipeline
Typical impacts associated with the construction and operation of a pipeline include:

- Clearing of 30m wide corridor which has the potential to cause:
  - Fragmentation and edge effects due to vegetation clearing;
  - Loss of habitat; and
  - Exposure of topsoil to erosion;
- Disturbance of fauna due to construction noise;
- Limited interference with land use for the duration of construction; and
- Introduction or spread of pest species.

Management techniques will be based on those developed for the North Queensland Gas Pipeline (NQGP) and will include, but will not be limited to:

- Avoidance of remnant vegetation, large trees and riparian vegetation, where practicable, by careful route selection;
- Habitat surveys to confirm and quantify site specific mitigation/management measures that will be documented in an Environmental Management Plan (EMP);
- Limiting the construction period through planning and scheduling. Limiting the construction period promotes healthy seedstock and regrowth of rootstock;

- Environmental Training programs;
- Restricting vegetation clearing to the minimum required to safely construct the pipeline;
- The use, as necessary, of erosion control banks, drains, dams and sediment collection devices on slopes and in the vicinity of drainage lines along the easement;
- Segregation and stockpiling of topsoil and sub-soils;
- Restricting vehicle access to the pipeline right-of-way (ROW) and designated tracks as far as practicable;
- Implementation of a Weed Management Plan that will include provision of vehicle wash-down facilities, training for personnel in wash-down techniques and a weed control program;
- Fauna management techniques developed for NQGP including limiting the distance between exit points to 500m and provision of refuges at intervals of 250m; and
- Rehabilitation of the route including:
    - re-establishing drainage patterns;
    - installation of erosion control mechanisms;
    - river bank stabilization;
    - brush spreading (to assist in erosion control and provide a source of local provenance seedstock); and
    - reseeding using native species as appropriate.

Compression

The installation of additional compressors at Moranbah has the potential to impact on the noise environment. Studies will be undertaken to estimate the potential impacts of the additional compression facilities and appropriate mitigation measures will then be developed. Enertrade undertook baseline noise studies at Moranbah prior to the installation of the existing compressor station and further noise monitoring will be carried out as part of the EIS.

COST BENEFITS

The establishment of the CQGP will give rise to a number of benefits including:

- Providing a vital link in the State's gas transmission network;
- Providing up to 300 direct jobs during construction;
- Contributing to the Queensland Government's strategy to provide competitively priced gas to provincial cities;
- Assisting in boosting the Queensland Government's aim of attracting industry to central and northern Queensland;
- Assisting in promoting value adding to the State's natural resources (e.g. coal seam gas (CSG));
- Reducing the amount of unused CSG venting to the atmosphere in the coal fields;
- Providing a cleaner burning fuel source; and
- Reducing risks in coal mining by promoting pre-drainage of CSG from coal fields.

1.0 INTRODUCTION

1.1 Background

Enertrade is proposing to build, own and operate approximately 440km of high pressure gas transmission pipeline connecting coal seam gas(CSG) from the Bowen Basin Coalfields to Gladstone (see Figure 1-1) to be used primarily by industrial customers. Expansion of the existing Enertrade compression facilities at Moranbah is anticipated as part of this Project.

The Central Queensland Gas Pipeline (CQGP) Project ('the Project') is planned to build on the success of the North Queensland Gas Pipeline (NQGP) Project, in which Enertrade developed and constructed a 400km high pressure natural gas pipeline from Moranbah to Townsville in 2003 and 2004. This project has recently been commissioned and is in operation supplying gas to the Townsville Power Station and the Xstrata copper refinery.

1.2 Project Proponent

Enertrade is a wholesale energy trader owned by the Queensland Government. The Corporation was originally established as part of the restructuring of Queensland's electricity industry. Enertrade has developed to be an active participant in Australia's competitive energy market (electricity and gas) specifically targeting large industrial customers with diverse energy needs. Enertrade has the rights to the generation output from several privately owned power stations and owns two gas pipelines, including the North Queensland Gas Pipeline.

Enertrade trades a diverse portfolio of 2,640 megawatts of generation capacity providing a turnover in the order of $400 million per annum which constitutes approximately 25% of the Queensland generation capacity. In addition to managing this portfolio of long term electricity contracts, the Corporation is also actively involved in assessing and developing new power projects throughout Queensland to better enhance the organisations services.

1.3 Purpose and Scope of this Initial Advice Statement

This Initial Advice Statement (IAS) has been prepared by Enertrade to provide information to government to:

- Assist the Coordinator-General to make a decision on 'significant project' declaration;
- Enable stakeholders to determine the nature and level of their interest in the proposal; and
- Enable the preparation of Terms of Reference (TOR) for an Environmental Impact Statement (EIS) for the proposed project.

This IAS is intended to scope the potential impacts that will be investigated in detail prior to the project being granted appropriate approvals. An EIS and EMP will be prepared as part of the approvals process. A TOR for the EIS will be developed based on the outcomes of this report and the requirements of relevant government agencies and other stakeholders through a public process.

Figure 1-1: Location Map

[To View this Map Click on this Link]

2.0 THE PROPOSAL

2.1 Location

The proposed pipeline will run from the CSG deposits in the Bowen Basin generally south and south-east to Gladstone (Figure 1-1). The area lies within the Brigalow Belt Bioregion except for the easternmost 20km, which lies within the Southeast Queensland Bioregion. The area is predominantly grazing and agricultural land with rural living allotments and horticulture around the Gladstone region.

The pipeline will traverse the local government areas of Belyando, Broadsound, Duaringa, Fitzroy, Calliope, and Gladstone.

2.2 Elements

2.2.1 Pipeline

The pipeline will comprise a nominal 300 – 400mm diameter, fully welded, coated steel pipe designed and constructed in accordance with AS 2885-1997 *Pipelines Gas and Liquid Petroleum*. Construction will involve surveying, clearing of the Right-of-Way (ROW), trenching, welding, lowering in and backfilling within a 30 metre wide easement; this is discussed in more detail in Section 2.4. The pipe, which is delivered in 18m lengths, will be welded together on-site and buried at a depth of at least 900 mm, depending upon terrain and prevailing land use. The pipe will be coated for corrosion protection prior to delivery. Cathodic protection will also be provided to supplement the protective coating. The proposed maximum allowable operating pressure (MAOP) for the pipeline will be 15.3 MPa.

2.2.2 Compression

CSG is gathered at pressures below those required for transmission pipelines. The gas with therefore require compression prior to entry into the gas transmission pipeline. At this stage it is planned to increase the compression capacity at the Moranbah Compressor Station and the impacts of this will be addressed in the EIS. On-going development of the CSG resources of the Bowen Basin may result in the need for an additional or alternative compression point along the CQGP route. If such facilities were to be required then the impacts of this would be investigated as a separate study.

2.2.3 Route Selection

The proposed route alignment (Figure 1-1) has been defined based on desktop assessment and limited, targeted field inspections. No detailed geotechnical or survey assessments have been undertaken to date.

The corridor was first established based on the most direct route from Moranbah to Gladstone and refined based on topographical features e.g. tablelands, ranges, and mining leases. The corridor was referenced against existing environmental data including Environmental Protection Agency (EPA) Regional Ecosystem (RE) Mapping, database searches (EPA (HERBRECS), EPBC web site) and appropriate guidelines under the *Environment Protection and Biodiversity Conservation Act 1999 (EPBC Act)*.

The proposed pipeline route aims to minimise impacts on all REs and has been selected using the EPA's RE mapping and initial broad-level field observations. The

actual location and condition of Commonwealth and State protected ecosystem patches within close proximity to the proposed alignment will be investigated by a qualified botanist as part of the EIS process. The pipeline route will be further adjusted based on the results of these detailed on-ground investigations.

2.3 Justification and Alternatives

2.3.1 Justification

Construction of the CQGP will provide interconnection of the NQGP to the State's gas transmission network. This will enable an alternative source of gas into Townsville and into the rapidly expanding industrial centre of Gladstone. This concept is in line with the Queensland Government's original "Invitation for Proposals" for developing a gas-fired base load power station in Townsville and interconnection to the existing State's gas transmission network.

The interconnection of the NQGP to the State's gas transmission network at Gladstone will:

- Reduce the gas supply risk to the major industrial plants in the Rockhampton and Gladstone regions through having 2 independent supply sources and associated infrastructure;
- Meet the Queensland Government's aim of continuing to diversify the State's energy mix; and
- Promote gas-on-gas/pipe-on-pipe competition in the Central Queensland industrial hub. Thereby ensuring competitive energy pricing and adequate supplies to encourage further major development in the region

The proposed pipeline will also significantly enhance the development opportunities for CSG in Queensland.

The supply of competitively priced gas to provincial cities, such as Gladstone and Townsville, is an important element in the Queensland Government's regional development strategy as set out in its *Cleaner Energy Strategy*. Construction of the CQGP will assist in promoting value adding to the State's natural resources which will further assist in boosting the Government's aim of attracting industry to Central and North Queensland.

2.3.2 Alternatives

As part of the North Queensland Gas Project bid in 2000 Enertrade had always envisaged a connection to the gas transmission grid. Early planning (2000) focused on a route through Rockhampton connecting to the grid via the Rockhampton-Gladstone pipeline.

With the increased development, and thus increased market potential, in Gladstone it was decided to direct the pipeline into this centre.

A number of route/corridor options have been considered (Figure 2-1) taking into account topographical features, land use, environmental and cultural issues, and the location of existing infrastructure corridors.

Figure 2-1: Route Alternatives

[To View this Map Click on this Link]

The proposed route/corridor has been chosen because it:

- Minimises potential impacts on sensitive ecosystems;
- Reduces conflicts with mining activities;
- Is in close proximity to areas of future CSG production; and
- Is in close proximity to areas of targeted future industrial development.

Whilst it is not expected that any major changes will occur in relation to the preferred route/corridor, the final alignment has not been agreed at this stage and is dependent upon the results of field surveys, geology, topography, ecology, cultural heritage values and landholder negotiations along the proposed corridor. This will be discussed further in the EIS that will be prepared as part of the project approval process.

2.4 Construction and Operation Processes

2.4.1 Construction

Pipeline construction is linear production-line-work with each crew targeting daily rates for their specific activity in the order of 3-4km/day. Activities are carried out sequentially with each crew typically being separated by 4-5 days.

Typical activities to be undertaken include:

Temporary Facilities - A range of temporary facilities will be required during pipeline construction. These include work areas for equipment and pipe delivery and storage, campsites, worker accommodation and borrow pits to source additional fill material (if required). The location of the temporary facilities is based on logistical requirements and the objectives for the pipeline route selection.

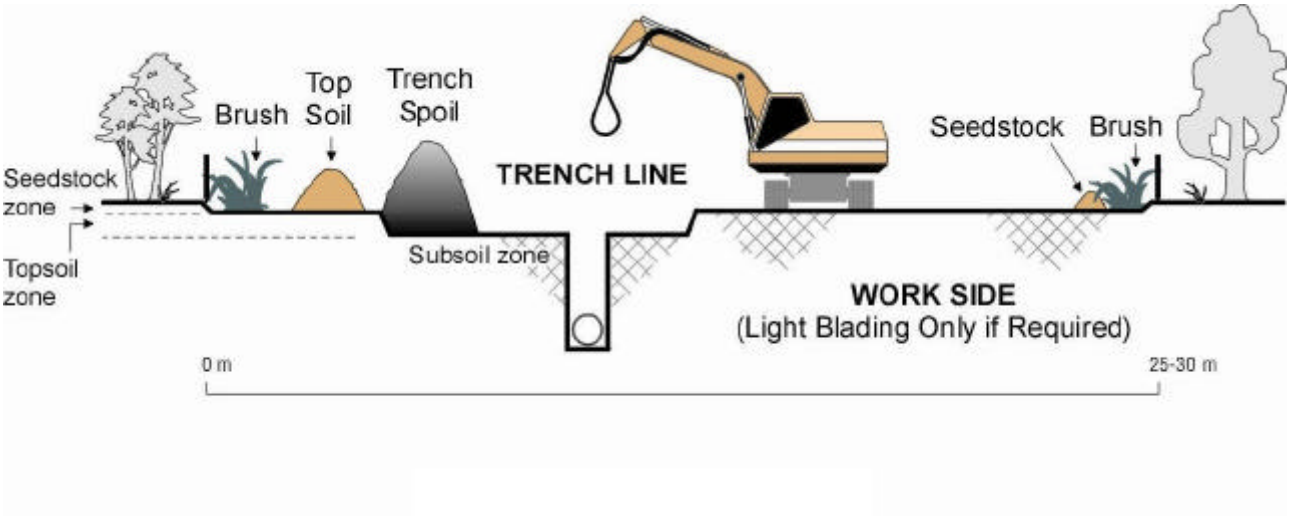
Access - During construction, access tracks will be required to areas such as the pipeline easement, work areas and campsites. Existing roads, tracks and disturbed areas will be utilised as far as practicable to minimise disturbance to the surrounding areas. The selection of access track routes will be based on the objectives for the pipeline route selection and subject to the conditions of the EMP.

Clearing - An impact width of 30 metres will be required for construction. The ROW is cleared of heavy vegetation; root stock is left in the ground where practicable to stabilise the area and reduce erosion. In scrubby areas some vegetation will be stockpiled for respreading as part of the restoration process. Breaks will be left in stockpiled vegetation to allow continued access for fencelines, tracks, stock and drainage lines. Gates will be installed where fencelines are required to be breached. Large mature trees will be preserved wherever practicable.

Grading - The ROW will be levelled to the required gradient using graders, excavators and bulldozers. Topsoil will be removed, where required, and stockpiled separately for reuse during rehabilitation (Figure 2-2).

Trenching - Either a wheel trencher or an excavator will be used to dig the trench in which the pipe will be laid. In rocky terrain rock saws (a type of trenching machine) or excavators using rock picks are likely to be used however blasting is a possibility but would probably be very limited. The length of trench left open at any given time will be the minimum practicable dependent on land use and prevailing conditions. Breaks in the trench will be left to facilitate stock and wildlife crossing, and methods will be adopted to prevent fauna entrapment.

Figure 2-2: Right-of-Way Layout



Stringing - Pipe will be transported to site on trucks in 18 metre lengths. The pipe is laid out adjacent to the trench and held off the ground on skids (typically wooden blocks) that protect the pipe coating from damage.

Line-Up and Welding - Once the pipe has been strung a line-up crew will position the pipe using side boom tractors and internal line-up clamps. Pipes will be welded in several segments, typically in one kilometre lengths called pipe strings.

Radiography - Each weld will be subjected to a 100 percent non-destructive test (NDT) inspection to check for compliance to the specification, thus ensuring the integrity of each weld.

Lowering In and Backfilling – If the trench bottom does not contain any rocks or other material that may damage the pipe coating the pipe will be laid directly on the trench bottom. However, if there are rocks or other debris present sandbags or foam pillows will be placed on the trench bottom to support the pipe. The pipe will then be lifted off the skids and lowered into the trench using side-boom tractors. The trench will be backfilled, ensuring that topsoil is replaced last, and soil packed down to minimise the potential for subsidence.

Testing - The pipeline will be hydrostatically tested (hydrotest) for strength and potential leaks by being filled with water and increasing the pressure to a minimum of 125% of the MAOP. Water resources for hydrotesting will be identified during the EIS process.

Crossings - Several different methods will be used when crossing rivers, roads, and major infrastructure corridors. The method used will be dependent on environmental factors and geotechnical constraints, which will be identified during the environmental studies. Typical methods used include open trenching, boring or directional drilling.

Clean up and Rehabilitation - Clean up and rehabilitation measures will be applied to the ROW, work areas, access tracks and camp sites in consultation with the relevant landholder/owner. Generally clean up and rehabilitation will involve removal of foreign material (construction material and waste), surface contouring, respreading topsoil, respreading vegetation and reseeding/revegetation (typically with native grass or other approved species). In certain areas a low 'formed

camber' of dirt may be allowed to remain over the trenchline to allow for possible subsidence. The formed camber is broken at regular intervals to prevent disruption to surface waters.

Rehabilitation will be undertaken in accordance with best practice pipeline construction and will ensure that:

- Topsoil cover is re-established and all land and waterways disturbed by project activities are returned to a stable condition as soon as possible after construction;
- Land is returned as close as possible to its previous productivity;
- Stable landforms are re-established to original topographic contours;
- Natural drainage patterns are reinstated;
- Erosion control measures (e.g. contour banks, filter strips) are installed in erosion prone areas;
- The pre-construction environment is reinstated; and
- Disturbed habitats are recreated.

2.4.2 Operations

Given that the pipeline will be underground, land users are able to resume previous land use activities on top of the pipeline provided that the use does not include excavation activities. Whilst deep-rooted vegetation cannot be re-established directly across the pipeline (due to potential damage of the corrosion protection systems) shallow root cropping and grassland re-establishment is encouraged and no long-term impacts would be expected to such areas.

Typical operational activities are:

General Operations - The routine operation and maintenance program includes ground and aerial patrols, repair of equipment, pigging and cleaning of the pipeline, corrosion monitoring and remediation, and easement and lease area maintenance including access roads. Aerial and/or ground inspections will include detection of third party activities on or near the ROW, detection of erosion, monitoring of rehabilitation success and detection and control of weed species.

Supervisory Control and Data Acquisition System (SCADA) - The pipeline will have a SCADA system which will continually monitor pipeline conditions such as pressure, temperature, gas flow in and out, linepack, valve status, cathodic protection and gas quality. All information will be relayed back to the central control room located in Brisbane. The SCADA system will enable the pipeline controller to instantly open or close valves, alter operating pressures and start or stop equipment as required at sites on the pipeline.

Prevention of Pipeline Damage - Prevention of damage due to third party activity will be achieved through appropriate depth of cover, signposting of the pipeline**, one call "Dial Before You Dig" programs,** regular inspection of the pipeline ROW to spot any construction or earthmoving activities in the area, and third party education on the potential dangers of carrying out activities in proximity to the pipeline. In some areas such as crossings, marker tape or concrete slabs may be buried above the pipeline to reduce risk of third party interference. Security fencing, gates and locks will be provided around all major above ground facilities (e.g. scraper stations and mainline valves) to inhibit accidental or unauthorised tampering.

Cathodic Protection - Pipeline corrosion will be prevented by the protective external coating and cathodic protection systems. The cathodic protection system will be checked regularly to ensure that the protection voltages are within limits and to monitor any likely areas of corrosion activity. The cathodic protection system and external coating system work independently to protect the pipeline from corrosion.

2.4.3 Workforce Accommodation

Due to the size of the construction workforce (up to 300 personnel – see Section 2.9) and limited availability of accommodation in an area dominated by mining, the construction workforce will generally be housed in self-sufficient construction camps. The possible exception to this will be in the Gladstone area where some workers may be accommodated in existing accommodation.

It is estimated that 3 campsites will be required during the pipeline construction. The exact location of the camps will be determined once the construction program is finalised. The construction crews will generally work a three week on, one week off schedule.

At this stage it is not anticipated that any night work will be required, however this possibility has not been eliminated. Enertrade will work closely with relevant landholders to ensure that they are notified prior to any night work and that any disruptions are minimised.

2.5 Waste Management

Relatively small amounts of domestic and industrial waste will be generated during construction and operation of the pipeline. The main regulated waste associated with gas pipeline operation is normally low volume, low level contaminated soil/gravel (e.g. from pesticides or compressor oil).

The waste management strategy for the Project will be based on the principles of “Reduce, Reuse, Recycle” and appropriate disposal. Opportunities for recycling materials will be investigated by the construction team and implemented where practicable (depending upon the availability and capacity of local facilities).

All hazardous wastes will be appropriately stored in bunded areas away from watercourses and in accordance with legislative requirements.

All waste disposal for the Project will be carried out in consultation with the relevant Shire/City Council Environmental Health Officers. Only waste management procedures consistent with the relevant local Shire requirements will be implemented.

2.6 Hazard and Risk

Pipelines are recognised as a safe and efficient means of transporting natural and coal seam gas. However all developments present some level of risk. The proposed route is predominantly through rural land, with some suburban locations at Gladstone. Risks associated with the pipeline will be assessed in accordance with AS 2885. These will include threats (e.g. corrosion, bushfire), location specific (e.g. flooding) and external issues (e.g. 3rd party interference). A combination of physical and procedural measures will be applied to the pipeline to ensure design and management meet appropriate safety standards.

2.7 External Infrastructure Requirements

2.7.1 Gas

Natural gas is to be supplied to Gladstone via the pipeline at an initial rate of 20 PJ per annum with the potential for expansion to 40-50PJ per annum.

2.7.2 Water

Water resources are required for hydrotesting of the pipeline, dust suppression and domestic use at campsites. The selection of water sources and final disposal locations for hydrotest water will be dependent on suitable sources and method of disposal. These will be determined during subsequent detailed studies. Potable water will be kept separate from construction activity water.

2.7.3 Road and Rail

The majority of traffic during the construction phase will be associated with delivery of pipes and equipment to site.

The final selection of the transport option will be heavily dependent on the availability of pipes within the required timeframe but, based on the NQGP experience, it is likely that the pipe will be rail freighted or shipped to Gladstone and then transported by road.

2.7.4 Power

The project will be self-sufficient for power needs with construction power being provided by diesel generators.

2.8 Economic Indicators

Central and North Queensland make a significant contribution to the Queensland economy and are rapidly expanding regions. Central Queensland is an important region for integrated energy delivery due to the three natural locations of energy intensive infrastructure, viz: Gladstone, Rockhampton and Biloela. Development of the pipeline will provide customers with increased gas supply security through diversity of upstream supply sources and delivery systems.

The project will assist with the development of a previously under utilised but significant Queensland natural gas resource – coal seam gas. The north Bowen Basin contains sufficient economically deliverable coal seam gas to support the development of numerous industrial and residential applications.

The capital cost of the project is anticipated to be around $200 million.

2.9 Employment Opportunities

It is intended that the pipeline construction workforce will work in a single spread requiring an average of 180-220 (maximum 300) personnel. Additional smaller teams may be required for areas involving specialised construction techniques including metering stations, scraper stations and river crossings.

The construction phase of the project will provide opportunities for local employment, for example manual labour positions, plant operators and hire, catering supplies, transport and courier services, fencing services and waste management subcontracts. Equipment installation and pipe welding tend to be highly specialised activities however recruitment practices will provide opportunities for appropriately qualified personnel in the local area.

In addition to direct employment opportunities, further employment opportunities could arise from vehicle hire and maintenance requirements, general fabrication activities and provision of campsite infrastructure.

Operation of the pipeline will require between 4 and 8 permanent operational staff, depending upon the final compressor configuration.

Full compliance with the State's 10% Training Policy is unlikely due to the nature of pipeline construction activities, which are typically of short duration and highly specialised. Enertrade will negotiate with the Department of Employment and Training to establish an acceptable level of compliance.

2.10 Financing

Enertrade's core business comprises both gas and electricity. In its electricity generation portfolio Enertrade manages a number of Power Purchase Agreement (PAA's) for the purchase of electricity generated by the privately owned Gladstone, Collinsville, Mt Stuart, Oakey and Townsville Power Stations. Enertrade also owns and operates the Barcaldine Power Station in Central Queensland and the Cheepie-Barcaldine and North Queensland Gas pipelines.

Enertrade receives working capital funding and equity funding through arrangements with the Queensland Treasury Corporation. Equity injections, together with existing cash reserves, provide the funding to support projects such as the acquisition of the Barcaldine Power Station and development of the NQGP. This demonstrates the ability of Enertrade to secure funding for development projects.

Future funding for project development could be in the form of equity injections, debt or through the working capital funding facility. The specific method of funding will be negotiated between Enertrade and Queensland Treasury and is subject to approval by Enertrade's Shareholding Ministers.

2.11 Proposed Environmental Studies

Environmental investigations completed to date have been largely desktop. More detailed environmental and engineering investigations will be completed prior to the finalisation of the preferred pipeline route alignment (Table 2-1).

Table 2-1: List of Detailed Environmental Studies Proposed

Discipline	Topic
Engineering	Engineering Conceptual Design
	Preliminary Hazard and Risk Assessment
Flora	Identification of areas of conservation significance (including regional significance)
	Rare and Endangered Plant Study
	Vegetation Survey of Selected Corridor
Fauna	Identification of areas of conservation significance (including regional significance)
	Rare and Endangered Fauna Study
	Habitat and Fauna Survey of Selected Corridor
Geophysical	Geology
	Terrain and Soil Evaluation
	Water Crossing Study
Cultural and Social	Cultural Heritage Study
	Social Impact Assessment
	Economic Analysis

Discipline	Topic
General Environmental	Air Quality Assessment Construction and Operations Noise impacts

3.0 EXISTING ENVIRONMENT

3.1 Natural

3.1.1 Terrain

West of the Fitzroy River the corridor passes through predominantly cleared Brigalow areas in which flat and gently undulating plains are dominant. These plains occur mainly on extensive Cainozoic clay and sand deposits.

East of the Fitzroy River crossing the area is made up predominantly of Cainozoic alluvial plains surrounding a number of mountain ranges and some hilly regions. Raised areas in the proximity of the corridor consist predominantly of ancient deformed and metamorphosed sediments.

3.1.2 Bioregions

Brigalow Belt Bioregion - The majority of the proposed pipeline route falls within Queensland's Brigalow Belt Bioregion, which encompasses much of the 500-750mm per annum rainfall country from the Queensland-New South Wales border to Townsville (Sattler & Williams, 1999). Since the 1960s, the Brigalow Belt Bioregion has been subjected to extensive clearing primarily for cultivation and livestock production. This pressure, combined with harvesting of cypress pine and native hardwoods, has resulted in a significant reduction in the extent of many regional ecosystems formerly found throughout the area. This has led to nature conservation receiving increasing attention across the region.

Southeast Queensland Bioregion - The easternmost 20km of the corridor passes into the northern tip of the Southeast Queensland Bioregion which includes the coastal strip and hills around Gladstone. The Southeast Queensland Bioregion generally has a higher rainfall (i.e. 800-1500mm per year (Sattler & Williams, 1999). The Southeast Queensland Bioregion is considered to have high biodiversity. Population expansion, clearing, weeds and feral animals are major threats to the Bioregion's biodiversity.

3.1.3 Regional Ecosystems/Ecological Communities

Specific vegetation communities found in association with certain geological characteristics are referred to as "Regional Ecosystems" (REs). A review of REs for the proposed pipeline route found 89 occur within a 10km radius. Of these, 70 are within the Brigalow Belt Bioregion and 19 are within the Southeast Queensland Bioregion (see Attachment A).

Eighteen of the identified REs (ten Brigalow Communities, five SEVT Communities and three Grasslands) are listed as Endangered Ecological Communities under the *Environment Protection and Biodiversity Conservation Act 1999* (EPBC Act).

Under the Queensland *Vegetation Management Act (VMA) 1999*, 52 of the REs are listed as 'Not of Concern', 18 as 'Of concern' and 19 as 'Endangered'.

Initial broad-level field observations have been undertaken by a qualified botanist and verified that Brigalow and SEVT Communities occur within the corridor area. The extent and condition of these communities and the location of any grasslands

will be determined through detailed on-ground investigations as part of the EIS. Protection of these communities will be taken into account in determining the final pipeline alignment within the proposed corridor.

3.1.4 Flora

Searches of the EPBC database[1] and EPA's HERBRECS database[2] for the area encompassing the pipeline corridor revealed 67 species listed under State and Commonwealth Legislation as having the potential to occur within the wider study area (Attachment B).

As part of the EIS process, preferred habitats for each listed flora species will be identified and a targeted botanical survey conducted along the pipeline route to determine whether any of the listed species are actually present.

3.1.5 Weeds

Preliminary investigations have identified the potential for Parthenium Weed (*Parthenium hysterophorus*), Rubbervine (*Cryptostegia grandiflora*), Mother of Millions (*Bryophyllum* spp.), Prickly Pear (*Opuntia* spp.), Lantana (*Lantana camara*) and exotic Rats Tail Grasses (*Sporobolus* spp.) to occur in the area. The presence of these species and other declared plants will be investigated as part of the EIS. A Weed Management Plan will be developed for the project and management measures will be implemented on the proposed pipeline ROW to prevent the potential for further spread of these species during field studies and construction, operation and maintenance activities.

3.1.6 Fauna

Searches of the EPBC database[1] and Queensland EPA's Wildnet database[3] for the area encompassing the pipeline corridor revealed 108 species listed under State and Commonwealth Legislation provisions as having the potential to occur within the wider study area (Attachment C). This includes 46 birds, 23 mammals and 34 reptiles, the remainder being made up of a shark, fish, a frog and an insect.

Searches of Birds Australia and the Queensland Museum's databases will also be undertaken as part of the EIS process. Once this has been completed, the preferred habitats for each listed fauna species will be identified and targeted surveys will conducted where necessary along the pipeline route to determine whether any of the listed species are actually present or likely to be present.

3.2 Native Title & Cultural Heritage

3.2.1 Native Title

A search of the National Native Title Tribunal database identified a number of native title claimant groups with an interest in the area traversed by the proposed pipeline route, namely:

[1] Data from the EPBC website is based on a combination of actual records, primarily from State Government databases, combined with modeled distributions of species according to their ecological characteristics.
[2] HERBRECS data is based almost exclusively on plant specimens actually present in the Queensland Herbarium. The absence of any specimens of a particular species from an area does not imply that that species does not occur in that area.
[3] The EPA states that the Wildnet data may be incomplete. The absence of a particular species from the list for an area does not imply that that species does not occur in that area.

- Barada Barna Kabalbara Yetimarla QC01/013
- Barada Barna Kabalbara & Yetimarla #4 QC01/025
- Port Curtis Coral Coast QC01/029
- Darumbal QC97/021
- Wiri #2 QC98/011
- Kangoulu QC98/025
- Southern Barada & Kabalbara QC00/004
- Gangulu QC970/36

Enertrade will implement a comprehensive community consultation program (see Section 6.0), as part of its overall development program. This program will follow on from the process initiated for the NQGP. Indigenous peoples with a registered interest in the area will be included in this process and Enertrade will seek the support of all the groups affected on an inclusive basis to negotiate an Indigenous Land Use Agreement (ILUA) with Enertrade for affected sections of the pipeline route. These groups will also be consulted on an inclusive basis in relation to the cultural heritage surveys and easement access.

3.2.2 Cultural Heritage (including European Heritage)

Enertrade is committed to the protection of cultural heritage sites and the sensitive handling of any accidental discovery of sites.

Cultural and heritage surveys will be conducted to determine whether the proposed route will impact any anthropological issues or sites. The outcome of the investigations will allow for the final pipeline route to be aligned avoiding significant areas. These investigations will be conducted in consultation with indigenous peoples/groups that have an interest in the area.

Enertrade will negotiate the development of a Cultural Heritage Management Plan (CHMP) with affected indigenous peoples. This plan will document the procedures to be followed during construction to ensure the ongoing protection of any identified sites of significance.

All studies, consultation and development of the CHMP will be in accordance with the requirements of the *Aboriginal Cultural Heritage Act 2003*.

3.3 Social and Economic

The proposed pipeline route will pass through the 6 local authority areas of Belyando, Broadsound, Duaringa, Fitzroy, Calliope, and Gladstone City. The majority of the shires are rural and mining communities supported by a number of small towns and centres.

The major activities of the five Shires are predominately cattle grazing, broad scale grain cropping (with sugar cane in coastal areas) and coal mining. In addition Fitzroy shire is home to the Stanwell Power Station and Calliope Shire, which abuts the Gladstone City Council area, contains major industries including an alumina refinery, aluminium smelter, cement works, ammonium nitrate plant, magnesium plant and oil shale refinery.

The major towns of the area which are close to the proposed pipeline route include Moranbah, Dysart, and Middlemount which are all coal mining towns.

The Queensland Government has designated Gladstone as a hub for heavy industry and as a centre of excellence for light metals engineering and manufacturing. Over one quarter

of Queensland's and some seven per cent of Australia's exports are conducted through Gladstone which has an international class port capable of handling vessels up to 220,000 dwt[4].

3.4 Land Tenure

Land tenure comprises a mixture of freehold and leasehold tenure with a number of state and crown reserves (Figure 3-1).

3.5 Planning Schemes

Planning schemes will be investigated during the EIS process.

[4] Reference: www.gladstoneindustry.org.au

Figure 3-1: Land Tenure Map

[To View this Map Click on this Link]

4.0 POTENTIAL IMPACTS & MANAGEMENT - CONSTRUCTION

This section of the IAS provides a general overview of potential impacts and mitigation measures associated with the construction of a pipeline.

The aspects assessed in this report are consistent with those outlined in the *Australian Pipeline Industry Association* (APIA) *Code of Environmental Practice*.

A range of impacts may potentially occur due to the construction of a pipeline. Building on the procedures developed for the NQGP Enertrade intends to undertake thorough investigations and detailed planning through the route selection and engineering design processes to minimise potential adverse impacts. Additional studies are planned to refine the proposed pipeline route alignment and determine the actual level and significance of impacts associated with the construction and operation of the Project.

4.1 Physical Alteration of the Area

A strip of land will be cleared of vegetation, where required, to a width of 30m along the pipeline ROW. This will be undertaken in accordance with best practice for minimising/avoiding impacts on significant vegetation, minimising the practical width of clearing for construction, and keeping surface disturbance and soil removal to a minimum.

4.2 Land Use

Interference to landholder activities should be minimal and each landholder will be consulted regarding the project to discuss their specific requirements. There will be no displacement of residents for the construction of the project and displacement of existing forms of land use will be only temporary. The trench will be left open for the minimum amount of time practicable and should not pose a long term hazard or barrier to stock. Temporary provisions such as fencing or access to water will be discussed with the landholder and any existing fences impacted by the proposed pipeline will be reinstated to at least the original condition.

Additional tracks may be required in some areas to provide access to the ROW. The location and rehabilitation of the access tracks will be conducted in consultation with the landholder.

Minor disruptions to local roads may occur during the construction of the proposed pipeline due to transport of pipe and equipment and the installation of the pipeline itself. Enertrade will liaise with the relevant local councils regarding the scheduling of activities to minimise disruption. Local roads will be left in a condition at least equivalent to the existing condition at commencement of construction.

Any crossing of a major road or rail infrastructure will be carried out in consultation with the Department of Main Roads and Queensland Rail and in such a way as to minimise disturbance to traffic.

4.3 Drainage and Watercourses

Alteration to topography or drainage will be minimised during the clearing phase and rectified to original condition during cleanup and rehabilitation.

A number of watercourse crossings will be required for the construction of the proposed pipeline. The actual location of the crossings will be dependent on the final pipeline alignment. The construction of the proposed pipeline will not permanently modify any

watercourses, although there is the potential for temporary disruption during construction of the pipeline crossings. The construction method for watercourse crossings will be dependent on site factors (e.g. hydrology, stream substrate and geology, environmental sensitivities and engineering feasibility), with the aim to minimise both environmental impacts during construction and the need for future remedial work during the operation of the proposed pipeline.

4.4 Erosion and Water Quality

Clearing of the land exposes soil to wind and rain increasing the potential for erosion and, in proximity to watercourses, reduction in stream water quality (e.g. increased turbidity and suspended solids). Construction planning will take into account weather conditions with the aim of minimising the potential for erosion and sedimentation to occur, thus reducing the risk of adversely impacting water quality.

Restoration will be managed to minimise the duration that the trench will be open so as to limit the potential for soil erosion and reduction of water quality from any unanticipated adverse weather conditions.

The EMP will detail all appropriate sediment and erosion control requirements for the project. With the implementation of erosion control measures in accordance with the *APIA Code of Environmental Practice* impacts on soil loss and water quality are expected to be low.

4.5 Flora and Fauna

4.5.1 Ecosystems

Potential impacts from construction of a buried gas pipeline are associated with fragmentation due to vegetation clearing and disturbance associated with edge effects. Based on the overlay of the proposed pipeline corridor on the EPA RE data, there are several locations where the proposed pipeline has the potential to fragment remnant RE patches. These include:

- Eucalypt Communities;
- Commonwealth Protected Brigalow Communities; and to a very limited extent
- Commonwealth Protected Semi-Evergreen Vine Thickets (SEVT); and
- Commonwealth Protected Grasslands.

Where practicable, the pipeline route will avoid ecosystems protected by the Commonwealth and REs listed as 'Endangered' and 'Of Concern' under the Queensland VMA and selection of the final route alignment will take into account minimisation of fragmentation to protect the viability of remnant vegetation. Detailed studies and mapping will be undertaken as part of the EIS process.

Commonwealth Protected Brigalow Communities - Whilst the pipeline route will endeavour to avoid Commonwealth (and State) listed communities there are likely to be a limited number of locations where protected Brigalow Communities cannot be avoided (for example, due to topographical constraints). The initial broad-level field observations indicate that only relatively narrow sections of Brigalow will need to be traversed and that the impacts associated with clearing and construction of the pipeline through these Brigalow patches will generally not be significant. In many cases the species within these ecosystem associations readily regenerate after clearing. For example, Brigalow (*Acacia harpohylla*), False Sandalwood

(*Eremophila mitchellii*), Native Current Bush (*Carissa ovata*) and Yellowwood (*Terminalia oblogata*) are known to regenerate readily by suckering from lateral roots. Coolabah (*Eucalyptus coolabah*), and other eucalypts can also quickly regenerate with butt suckers and seedlings after clearing (Anderson, 1993).

Semi-Evergreen Vine Thickets (SEVT) - The EPA RE mapping and the initial broad-level field observations indicate that only a few small SEVTs occur along the proposed alignment and in most cases these should be able to be avoided.

Grasslands - The EPA RE mapping and the initial broad-level field observations indicate that only a very few, if any, tiny native grassland areas occur along the proposed alignment and it is unlikely that more than a very small area of grassland would be required to be disturbed for the construction of the pipeline. The main threats to this ecosystem are grass clearing for cropping and weed infestation.

If any disturbance to native grasslands is required, rehabilitation activities along the ROW mean that the Bluegrass communities encountered will not be permanently damaged or lost. Top soil will be stockpiled to maintain the seed stock, and will be respread once the pipeline trench has been filled in. The area will also be reseeded with native grass seed either from the surrounding area or with commercially available (local provenance) bluegrass seed.

As outlined in Section 3.1.5, weed management will be an important component of the construction, operation and maintenance activities for the pipeline.

4.5.2 Flora

The impact of clearing a ROW up to 30 metres wide is dependent on the type and nature of vegetation to be disturbed, its function as fauna habitat or linkage and topographical features such as slope and aspect. If large trees are removed these species would take many years to regenerate and this will be avoided wherever practicable. However most impacts are considered to be temporary especially where active rehabilitation measures are put in place. Detailed flora studies will be undertaken as part of the EIS process to enable impacts on common and scheduled flora species to be minimised.

4.5.3 Fauna

The main impacts of construction on fauna would be short term increases in disturbance from construction noise, vehicle movements and dust production or mortality from traffic and truck movement. Clearing of vegetation may also result in loss of habitat. It is anticipated that in most cases significant isolated habitat trees will be able to be avoided by the final pipeline alignment.

Analysis of preferred habitat requirements for each scheduled fauna species, as well as searches of the Birds Australia and Queensland Museum databases and an ecological survey will be carried out as a part of the EIS to determine if the terrain crossed by the pipeline comprises “preferred habitat” for any scheduled fauna species. From the results of this work a more thorough overview of potential impacts on these species will be ascertained.

Impacts on flora and fauna are expected to be low.

4.6 Noise

The proposed pipeline route does not come into close proximity to urban or rural residential areas for more than 75% of its length. Some disturbance to rural residential areas in the Gladstone area may be experienced but this will be temporary and of short duration.

Construction noise impacts at the gas processing facility would also be temporary and short term.

4.7 Traffic

An increase in haulage vehicles transporting sections of pipe via local major roads will occur. Furthermore, local traffic along shire roads adjacent to the proposed route may increase as a result of construction activity, although the vast majority of traffic for the construction phase will be along the ROW itself. Councils will be advised if significant increases in vehicle use on minor roads are expected.

Given the temporary nature of construction activity in a specific area, increased traffic impacts are expected to be low.

4.8 Air Quality

The main impact to air quality from the Project would be as a result of dust generation during construction activities. This can be mitigated by the use of water trucks as necessary. Dust control may be appropriate where the ROW follows existing roads or where the ROW passes in close proximity to rural residences. Increased vehicle use on unsealed roads may also cause localised dust impacts to residences located adjacent to haul routes. These impacts will generally be of short-term duration as the construction team works through an area.

Air quality may also potentially be affected by emissions generated from equipment and vehicles utilised during construction however this will be of a localised nature only. The effect on air quality will be minimised through ensuring that the contractor only uses equipment that is properly maintained and in sound working order.

Given the isolated nature of potential emission generation, impacts on air quality associated with the proposed pipeline are expected to be low.

4.9 Visual Amenity

Clearing of the ROW through formerly timbered areas will have visual impacts from locations where works are visible from roads or by individual land owners. By ensuring that restoration works adhere to a sound and well compiled EMP, the negative aesthetics of a landscape with a cleared ROW can be quickly and greatly reduced. This can be facilitated by respreading or burning vegetative debris and incorporating a pasture reseeding component as part of the restoration process.

As the opportunity for public viewing of construction activities will be limited to areas of already cleared vegetation short-term impacts on visual amenity are expected to be low.

5.0 POTENTIAL IMPACTS & MANAGEMENT- OPERATION AND MAINTENANCE

5.1 Pipeline Failure

During pipeline construction the integrity of welds and pipe will be assessed through Non-Destructive Testing (NDT) (e.g. radiography or ultrasonic inspection) and hydrotest and a cathodic protection system will be installed. Successful completion of these phases will ensure that the potential for gas leaks from the buried pipeline is extremely low. Further more a key component of the operation of the pipeline will be an on going integrity management program. As such, the risk of failure will be remote.

The potential impacts from pipeline failure depend on the scale of the failure. Significant leakage of the pipe that goes undetected for a period of time could cause significant impacts on local air and soil quality and could contribute to greenhouse gases. A risk assessment in accordance with AS 2885 will be undertaken as part of the EIS process. Safeguards for such a failure will be incorporated into the Safety Management Plan.

5.2 Erosion

This IAS has identified that areas along the proposed corridor traverse clayey and sandy soil types. The erosion potential of these different soils will be assessed as part of the EIS process and appropriate soil conservation works will be identified. It will be imperative that ROW maintenance be regularly undertaken to ensure that the integrity of soil conservation works installed during restoration are maintained and vegetative cover is promoted to ensure minimal soil loss.

The EMP will detail appropriate maintenance requirements with regards to sediment and erosion control requirements for the ROW. With the implementation and maintenance of erosion control in accordance with the *APIA Code of Environmental Practise* impacts on soil loss and water quality are expected to be low.

5.3 Fragmentation

The environmental effects of operation and maintenance of the proposed pipeline are considered to be low. A maintenance track (generally only light vehicles) will be required and the ROW will be kept cleared of large vegetation (trees and bushes) to a width of 6m metres; however, grasses will be re-established using native varieties.

Effects on ecosystem of a 6 metre wide grassed corridor for all ecosystems other than Brigalow and SEVT Communities are not considered significant relative to the natural spacing of trees in the eucalypt woodlands and grasslands that are present within the study area. A 6 metre wide corridor is not considered to constitute fragmentation of these Eucalypt or grassland ecosystems or to result in any inhibition of natural ecosystem function or fauna movement in these ecosystems.

The most significant potential impact of a 6 metre wide grassed corridor is through Brigalow and SEVT Communities through the potential establishment of a significant fire fuel load and the introduction of fire into these fire sensitive communities. As there are few SEVT patches of limited size along the pipeline route , most (if not all) of these patches will be able to be avoided and the extent of clearing, if any, is likely to be insignificant in terms of area cleared and the impact on individual SEVT patches or any SEVT community as a whole.

However, it will not be possible for the pipeline to avoid transecting a number of Brigalow patches. As part of the EIS process, appropriate management strategies to mitigate the potential build up of significant fuel loads (eg. appropriate grass species, grass establishment and slashing regimes) will be investigated.

5.4 Pest Species

Another threat to ecosystems and native flora and fauna is the introduction and spread of pest species. Pest plant species can displace native species, which in turn can impact on fauna habitat and food sources, thereby altering ecosystem function and threatening a broad range of native flora and fauna. Where vehicles are travelling over distances, particularly from weed infested areas to weed free areas, weed introduction can be a serious issue.

It will be a requirement that for the life of the proposed project, a Weed Management Plan be formulated and implemented to prevent the spread of declared and environmental weeds along the proposed pipeline route. Requirements and responsibilities for the maintenance program will be outlined in the EMP.

5.5 Noise

No permanent noise issues are anticipated with the operation of the pipeline. Venting of gas during commissioning can result in loud, high pitched noise generation but this is normally of short duration. Planned venting, which may occur at the delivery locations (e.g. industrial areas in Gladstone or the Moranbah compressor station) will be notified to neighbours prior to such events being undertaken; these are generally infrequent.

Installation of additional compressors may impact the noise levels generated at the station during the operations phase. Baseline background noise level measurements were undertaken for residential areas in Moranbah as part of the NQGP Project. Modelling of the impacts of additional generation facilities will be undertaken as part of the EIS.

6.0 COMMUNITY CONSULTATION

Enertrade believes that well designed and executed community consultation activities are essential to the overall success of any project. To this end, Enertrade will implement a comprehensive community information and awareness program which will inform communities about the nature of the project and the construction and operational impacts. Further, the community consultation process will seek input from the community and this information will be taken into account during deliberations in order to achieve optimum outcomes for all parties.

Preliminary route selection has already focused on avoiding residential areas and maximising the use of existing infrastructure corridors in an effort to minimise impact on the local population.

6.1 Purpose

The purpose of the Community Relations Plan will be to facilitate input from stakeholders by:

- Providing them with a clear understanding of the nature of the project, the potential impact and the timelines; and
- Providing information exchange mechanisms and suitable methods of identifying and servicing their concerns.

6.2 Aims

The Aims of the Community Consultation Plan will be to:

- Determine stakeholder views on the proposed pipeline project with a view to achieving the most acceptable outcomes for all;
- Identify and manage issues that are highlighted by community stakeholders and which may impact upon finalisation of route options;
- Keep key stakeholders and appropriate agencies informed of project progress; and
- At all times to promote a positive corporate image for Enertrade.

6.3 Program

The consultation program will be undertaken via a number of stages. Key phases will be:

Identification of key stakeholders - Enertrade is currently identifying all stakeholders who may be impacted by the project (e.g. landowners, mining interests, relevant community groups such as Chambers of Commerce and Community Cooperatives). Preliminary discussions have been held with the relevant Local Authorities and the Department of Natural Resources and Mines (DNRM).

Community Consultation Process - Enertrade is committed to taking a proactive approach to seeking community views and to ensuring that adequate means of communication are provided. To this end a consultation team, comprising personnel with expertise in community consultation, Cultural Heritage, Native Title, and public relation issues will work with the technical team to design and implement an appropriate strategy for the project.

Stakeholders will be given a clear understanding of the nature of the project, its parameters, timelines and impacts. They will be kept informed of the progress of the project through public meetings, personal visits, correspondence, bulletins and displays. During this campaign stakeholders will be given the opportunity to express their concerns and desires.

Similarly, expert advice will be sought on Cultural Heritage and Native Title issues, appropriate interest groups identified and negotiations undertaken.

Enertrade will consult all landholders who may be impacted by the project. This will be done on an individual basis and will continue on a regular basis for the duration of the Project.

7.0 AUTHORITIES, PERMITS AND SURVEY REQUIREMENTS

7.1 General

Enertrade is seeking designation of the Moranbah to Gladstone gas pipeline as a Significant Project under the *State Development and Public Works Organisation Act 1971.* The Act sets out the requirements for environmental assessment and public review of the EIS.

Access permits and a Pipeline Licence pursuant to the *Petroleum and Gas (Production and Safety) Act 2004* (PGA) will be required for the construction and operation of the proposed pipeline. A draft environmental authority (petroleum activities) under the *Environmental Protection Act 1994* (EP Act) will be developed as part of the environmental assessment

process. A relevant environmental authority is a pre-requisite for the grant of a Pipeline Licence.

7.2 Other Legislation

Other legislation that may apply to the pipeline project includes:

- *Aboriginal Cultural Heritage Act 2003*
- *Environment Protection and Biodiversity Conservation Act 1999*
- *Environmental Protection Act 1994* and *Environmental and Other Legislation Amendment Act, 1997*[5]
  Environmentally Relevant Activities (ERAs) that should be considered are:
  - Mining Activity – Pipeline Licence
  - Dredging Material (construction)
  - Motor Vehicle Workshop (construction)
  - Extracting Rock or Other Material (Borrow pits during construction)
- Environmental Policies under the EP Act that must be complied with include:
  - Environmental Protection (Noise) Policy, 1997 Qld (EPP Noise)
  - Environmental Protection (Air) Policy, 1997 Qld (EPP Air)
  - Environmental Protection (Water) Policy, 1997 Qld (EPP water)
- *Petroleum and Other Legislation Amendment Act 2004*
- *Petroleum and Gas Regulations 2004*

If any water or sewerage connections to local authority facilities are required this would fall within the provisions of the *Local Government Act 1993.*

7.3 Codes of Practice

Australian Pipeline Industry Association Code of Environmental Practice
This document details industry Best Practice Management to mitigate environmental impacts from construction and operation of gas pipelines. The Association advocates this document as an appropriate Code of Practice for the industry. Section 4 of the Code details mitigation strategies that should be incorporated in an EMP for the project.

8.0 COMPLEXITY OF LOCAL, STATE AND COMMONWEALTH REQUIREMENTS

The project is expected to involve a high level of complexity, including:

- Implementation of new legislation (e.g. PGA)
- Negotiations with six local authorities;
- Variety of land tenures including:
  - freehold
  - leasehold
  - crown reserves
  - state lands
  - existing easements
  - mining tenures
- Negotiations with numerous utility providers including:
  - Powerlink
  - Main Roads
  - Queensland Rail
  - Telstra

5 Amendments to the EP Act to include petroleum activities are currently under consideration by the EPA

  - Ergon Energy
  - Possible water authorities.
- The need to address local and State Government approvals and/or legislative requirements (e.g. local approvals for temporary road closures, State Government licenses and permit applications);
- Numerous environmental approvals and licences from agencies such as the EPA, DNRM and Department of Primary Industries and Fisheries (DPIF);
  - Pipeline Licence (PGA - DNRM)
  - Environmental Authorities (EP Act - EPA)
  - Permit to undertake works in a watercourse (*Water Act 2000* - DNRM)
  - Permit to undertake Works on Tidal Lands (*Transport Infrastructure Act 1994* – EPA)
  - Permit to disturb marine plants (*Fisheries Act 1994* – DPIF)
- Negotiations with up to eight Native Title claimants; and
- Negotiations with approximately 200 landholders.

9.0 COSTS AND BENEFITS

The establishment of the CQGP will give rise to a number of benefits including:

- Providing a strategic link in the State's gas transmission network;
- Providing up to 300 direct jobs during construction;
- Contributing to the Queensland Government's strategy to provide competitively priced gas to provincial cities;
- Assisting in boosting the Queensland Government's aim of attracting industry to central and northern Queensland;
- Assisting in promoting value adding to the State's natural resources (e.g. CSG);
- Reducing the amount of unused CSG venting to atmosphere from coal mining processes;
- Providing a cleaner burning fuel source; and
- Reducing risks and increasing the efficiency of coal mining by promoting pre-drainage of CSG from coal fields.

10.0 CONCLUSIONS

A desktop assessment has been undertaken of the potential impacts of the construction and operation of the proposed Moranbah to Gladstone gas pipeline. This IAS has identified that potential impacts could include:

- Removal and modification of flora and fauna habitat;
- Potential impact on wildlife protected under the *Nature Conservation (Wildlife) Regulation* 1994;
- Potential impact on small sections of fragile soils;
- Weed dispersion;
- Dust generation;
- Traffic impacts;
- Water quality; and
- Interruption to farming operations.

As set out in the introduction to this document, the purpose of an Initial Advice Statement is to highlight issues relating to the proposed development and make recommendations as to the need for further studies, in particular an EIS. With the implementation of an appropriate EMP, overall

impacts from the proposal are expected to be low; however this will be investigated in greater detail through the EIS process.

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APPENDIX A – REGIONAL ECOSYSTEMS

Regional Ecosystems within 10km of the Proposed Pipeline
(E = Endangered; O = Of concern; N = No concern at present)

REGIONAL ECOSYSTEM		Status*	
NO.	**DESCRIPTION**	**EPBC**	**VMA**
	Brigalow Belt Bioregion		
11.1.1	*Sporobolus virginicus* grassland on marine clay plains.	-	N
11.1.2	*Samphire forbland* on marine clay plains.	-	N
11.1.4	Mangrove forest/woodland on marine clay plains.	-	N
11.3.1	*Acacia harpophylla* and/or *Casuarina cristata* on alluvial plains.	E (Brigalow)	E
11.3.2	*Eucalyptus populnea* woodland on alluvial plains. Texture contrast and deep clay soils.	-	O
11.3.3	*Eucalyptus coolabah* woodland on alluvial plains.	-	O
11.3.4	*Eucalyptus tereticornis* and/or *E. camaldulensis* tall woodland on alluvial plains.	-	O
11.3.6	*Eucalyptus melanophloia* woodland on alluvial plains.	-	N
11.3.7	Bloodwood – Moreton bay ash *Corymbia* spp. woodland on alluvial plains.	-	N
11.3.9 11.3.9a	*Eucalyptus platyphylla – Corymbia* spp. woodland on alluvial plains.	-	N
11.3.11	Semi-evergreen vine thicket on alluvial plains.	E (SEVT)	E
11.3.12	*Melaleuca viridiflora* woodland on alluvial plains.	-	N
11.3.13	*Grevillea striata* on alluvial plains.	-	O
11.3.21	*Dichanthium sericeum* and/or *Astrebla* spp. grassland on alluvial plains. Cracking clay soils.	E (Grassland)	E
11.3.25 11.3.25a 11.3.25b	*Eucalyptus tereticornis* or *E. camaldulensis, Casuarina cunninghamiana* fringing woodland on alluvial plains.	-	N
11.3.26	*Eucalyptus moluccana* or *E. microcarpa* woodland to open forest on margins of alluvial plains.	-	N
11.3.27	Freshwater wetlands.	-	N
11.3.29	*Eucalyptus crebra, E. exserta, Melaleuca* spp. woodland on alluvial plains.	-	N
11.3.37	*Eucalyptus coolabah* fringing woodland on alluvial plains.	-	N
11.4.1	Semi-evergreen vine thicket ± *Casuarina cristata* on Cainozoic clay plains.	E (SEVT)	E
11.4.2	*Eucalyptus-Corymbia* grassy or shrubby woodland on Cainozoic clay plains.	-	O
11.4.3	*Acacia harpophylla* and/or *Casuarina cristata* shrubby open forest on Cainozoic clay plains.	E (Brigalow)	E
11.4.4	*Dichanthium* spp., *Astrebla* spp. grassland on Cainozoic clay plains.	E (Grassland)	N
11.4.7	Open forest of *Eucalyptus populnea* with *Acacia harpophylla* and/or *Casuarina cristata* on Cainozoic clay plains.	E (Brigalow)	E
11.4.8	Open forest of *Eucalyptus cambageana* with *Acacia harpophylla* or *A. argyrodendron* on Cainozoic clay plains.	E (Brigalow)	E
11.4.9 11.4.9a 11.4.9b	*Acacia harpophylla* shrubby open forest with *Terminalia oblongata* on Cainozoic clay plains.	E (Brigalow)	E
11.4.11	*Dichanthium sericeum, Astrebla* spp. and patchy *Acacia harpophylla, Eucalyptus coolabah* on Cainozoic clay plains.	-	N
11.4.13	*Eucalyptus orgadophila* open woodland on Cainozoic clay plains.	-	E
11.5.2 11.5.2a	*Eucalyptus crebra, Corymbia* spp., with *E. moluccana* on lower slopes of Cainozoic sand plains/remnant surfaces.	-	N
11.5.3	*Eucalyptus populnea* and/pr *E. melanophloia* and /or *Corymbia clarksoniana* on Cainozoic sand plains/remnant surfaces.	-	N
11.5.9	*Eucalyptus crebra* + other *Eucalyptus* and *Corymbia* spp. woodland on Cainozoic sand plains/remnant surfaces. Plateaus and broad crests with deep red loams.	-	N

REGIONAL ECOSYSTEM		Status*	
NO.	**DESCRIPTION**	**EPBC**	**VMA**
11.5.15	Semi-evergreen vine thicket on Cainozoic sand plains/remnant surfaces. Deep red loams.	E (SEVT)	E
11.5.16	*Acacia harpophylla* and/or *Casuarina cristata* open forest in depressions on Cainozoic sand plains/remnant surfaces.	E (Brigalow)	E
11.5.18	*Micromyrtus capricornia* shrubland on Cainozoic sand plains/remnant surfaces.	-	O
11.7.1	*Acacia harpophylla* and/or *Casuarina cristata* and *Eucalyptus thozetiana* or *E. microcarpa* woodland on lower scarp slopes on Cainozoic lateritic duricrust.	-	N
11.7.2	*Acacia* spp. woodland on Cainozoic lateritic duricrust. Scarp retreat zone.	-	N
11.7.3	*Eucalyptus persistens, Triodia mitchellii* open woodland on stripped margins of Cainozoic lateritic duricrust.	-	N
11.7.4	*Eucalyptus decorticans* and/or *Eucalyptus* spp., *Corymbia* spp., *Acacia* spp., *Lysicarpus angustifolius* on Cainozoic lateritic duricrust.	-	N
11.7.6	*Corymbia citriodora* or *Eucalyptus crebra* woodland on Cainozoic lateritic duricrust.	-	N
11.8.4	*Eucalyptus melanophloia* woodland on Cainozoic igneous rocks. Hillsides.	-	N
11.8.5	*Eucalyptus orgadophila* open woodland on Cainozoic igneous rocks.	-	N
11.8.11	*Dichanthium sericeum* grassland on Cainozoic igneous rocks. Lowlands.	E (Grassland)	O
11.9.1	*Acacia harpophylla-Eucalyptus cambageana* open forest on Cainozoic fine-grained sedimentary rocks.	E (Brigalow)	E
11.9.2	*Eucalyptus melanophloia +/- E. orgadophila* woodland on Cainozoic fine-grained sedimentary rocks.	-	N
11.9.3	*Dichanthium* spp., *Astrebla* spp. Grassland on Cainozoic fine-grained sedimentary rocks.	-	N
11.9.4	Semi-evergreen vine thicket on Cainozoic fine grained sedimentary rocks.	E (SEVT)	E
11.9.5	*Acacia harpophylla* and/or *Casuarina cristata* open forest on Cainozoic fine-grained sedimentary rocks.	E (Brigalow)	E
11.9.7	*Eucalyptus populnea, Eremophila mitchellii* shrubby woodland on Cainozoic fine-grained sedimentary rocks.	-	O
11.9.9	*Eucalyptus crebra* woodland on Cainozoic fine-grained sedimentary rocks. Lowlands.	-	N
11.10.1	*Corymbia citriodora* open forest on Cainozoic coarse-grained sedimentary rocks.	-	N
11.10.3	*Acacia catenulata* or *A.shirleyi* open forest on Cainozoic coarse-grained sedimentary rocks. Crests and scarps.	-	N
11.10.4 11.10.4b	*Eucalyptus decorticans, Lysicarpus angustifolius* ± *Eucalyptus* spp., *Corymbia* spp., *Acacia* spp. woodland on coarse-grained sedimentary rocks. Crests and scarps.	-	N
11.10.8	Semi-evergreen vine thicket in sheltered habitats on Cainozoic medium to coarse-grained sedimentary rocks.	-	O
11.10.12	*Eucalyptus populnea* woodland on Cainozoic medium to coarse-grained sedimentary rocks.	-	N
11.11.1	*Eucalyptus crebra* ± *Acacia rhodoxylon* woodland on old sedimentary rocks with varying degrees of metamorphism and folding.	-	N
11.11.3	*Corymbia citriodora, Eucalyptus crebra, E. acmenoides* open forest on old sedimentary rocks with varying degrees of metamorphism and folding. Coastal ranges.	-	N
11.11.4 11.11.4c	*Eucalyptus crebra* on old sedimentary rocks with varying degrees of metamorphism and folding. Coastal ranges.	-	N
11.11.5	Microphyll vine forest ± *Araucaria cunninghamii* on old sedimentary rocks with varying degrees of metamorphism and folding.	-	N
11.11.10	*Eucalyptus melanophloia* woodland on deformed and metamorphosed sediments and interbedded volcanics.	-	O
11.11.14	*Acacia harpophylla* open forest on deformed and metamorphosed sediments and interbedded volcanics.	E (Brigalow)	E

REGIONAL ECOSYSTEM		Status*	
NO.	**DESCRIPTION**	**EPBC**	**VMA**
11.11.15 11.11.15a	*Eucalyptus crebra* woodland on deformed and metamorphosed sediments and interbedded volcanics. Undulating plains.	-	N
11.11.16	*Eucalyptus cambageana, Acacia harpophylla* woodland on old sedimentary rocks with varying degrees of metamorphism and folding. Lowlands.	-	O
11.11.18	Semi-evergreen vine thicket on old sedimentary rocks with varying degrees of metamorphism and folding. Lowlands.	E (SEVT)	E
11.12.1	*Eucalyptus crebra* woodland on igneous rocks.	-	N
11.12.2	*Eucalyptus melanophloia* woodland on igneous rocks.	-	N
11.12.3	*Eucalyptus crebra, E. tereticornis, Angophora leiocarpa* woodland on igneous rocks especially granite.	-	N
11.12.4	Semi-evergreen vine thicket and microphyll vine forest on igneous rocks.	-	N
11.12.6	*Corymbia citriodora* open forest on igneous rocks (granite).	-	N
11.12.14	*Lophostemon* spp. woodland on igneous rocks. Coastal hills.	-	O
11.12.21	*Acacia harpophylla* open forest on igneous rocks. Colluvial lower slopes.	E (Brigalow)	E
	South East Queensland Bioregion		
12.1.2	Saltpan vegetation including grassland and herbland on marine clay plains.	-	N
12.1.3	Mangrove shrubland to low closed forest on marine clay plains and estuaries.	-	N
12.2.2	Microphyll/notophyll vine forest on beach ridges.	-	O
12.2.11	*Corymbia* spp., *Eucalyptus* spp., *Acacia* spp. Open forest to low closed forest on beach ridges in northern half of bioregion.	-	N
12.2.14	Foredune complex.	-	N
12.3.1	Gallery rainforest (notophyll vine forest) on alluvial plains.	-	E
12.3.3	*Eucalyptus tereticornis* woodland to open forest on alluvial plains.	-	E
12.3.7	*Eucalyptus tereticornis, Callistemon viminalis, Casuarina cunninghaniana* fringing forest.	-	N
12.3.11	*Eucalyptus siderophloia. E. tereticornis, Corymbia intermedia* open forest on alluvial plains near coast.	-	O
12.3.12	*Eucalyptus latisinensis or E. exserta, Melaleuca viridiflora* on alluvial plains.	-	O
12.5.1	Open forest complex with *Corymbia citriodora* on sub coastal remnant Tertiary surfaces. Usually deep red soils.	-	N
12.11.4	Semi-evergreen vine thicket on metamorphics ± interbedded volcanics.	-	O
12.11.6	*Corymbia citriodora, Eucalytus crebra* open forest on metamorphics ± interbedded volcanics.	-	N
12.11.7	*Eucalyptus crebra* woodland on metamorphics ± interbedded volcanics.	-	N
12.11.12	Araucarian complex microphyll vine forest on metamorphics ± interbedded volcanics; northern half of bioregion.	-	N
12.11.14	*Eucalyptus crebra, E. terecornis* woodland on metamorphics ± interbedded volcanics.	-	O
12.11.17	*Eucalyptus acmenoides* or *E. portuensis* open forest on metamorphics ± interbedded volcanics.	-	N
12.11.18	*Eucalyptus moluccana* tall open forest on metamorphics ± interbedded volcanics.	-	N
12.11.20	*Corymbia intermedia, Lophostemon suaveolens* woodland on metamorphics ± interbedded volcanics.	-	O

- EPBC = *Environment Protection and Biodiversity Conservation Act 1999* (Commonwealth legislation)
- Brigalow = Brigalow Communities listed as 'Endangered' under the EPBC
- SEVT = Semi-evergreen Vine Thicket Communities listed as 'Endangered' under the EPBC
- Grassland = Grassland Communities listed as 'Endangered' under the EPBC
- VMA = *Vegetation Management Act 1999* (Queensland legislation)

APPENDIX B – PROTECTED FLORA SPECIES

Protected flora species recorded by Queensland Herbarium and EPBC databases as occurring in or having ranges that overlap the pipeline corridor.

Family	Scientific name (Common name where known)	Conservation Status
Acanthaceae	*Graptophyllum excelsum*	Rare *Qld*
Apocynaceae	*Alyxia magnifolia*	Rare *Qld*
Apocynaceae	*Cerbera dumicola*	Rare.*Qld*
Apocynaceae	*Parsonsia largiflorens*	Vulnerable *Aust, Qld*
Aponogetonaceae	*Aponogeton queenslandicus*	Rare *Qld*
Asclepiadaceae	*Marsdenia brevifolia*	Vulnerable *Aust, Qld*
Asclepiadaceae	*Marsdenia hemiptera*	Rare *Qld*
Asteraceae	*Oleria* sp.	Endangered *Qld*
Caesalpiniaceae	*Senna acclinis*	Rare *Qld*
Capparaceae	*Capparis humistrata*	Endangered *Qld*
Capparaceae	*Capparis thozetiana*	Vulnerable *Aust, Qld*
Combretaceae	*Dansiea elliptica*	Rare *Qld*
Combretaceae	*Macropteranthes fitzalanii*	Rare *Qld*
Combretaceae	*Macropteranthes leiocaulis*	Rare *Qld*
Convolvulacear	*Bonamia ditrichiana*	Rare *Qld*
Cycadaceae	Cycas megacarpa	Endangered *Aust, Qld*
Cycadaceae	*Cycas ophiolitica*	Endangered *Aust, Qld*
Cyperaceae	*Cyperus clarus*	Vulnerable *Qld*
Cyperaceae	*Eleocharis blakeana*	Rare *Qld*
Dryopteridaceae	*Tectaria devexa*	Endangered *Aust, Qld*
Epacridaceae	*Leucopogon cuspidatus*	Vulnerable *Aust*
Euphorbiaceae	*Actephilia sessilifolia*	Rare *Qld*
Euphorbiaceae	*Bertya pedicellata*	Rare *Qld*
Euphorbiaceae	*Neoroepera buxifolia*	Vulnerable *Aust, Qld*
Fabaceae	*Desmodium macrocarpum*	Rare *Qld*
Fabaceae	*Pultenaea setulose*	Vulnerable *Aust, Qld*
Fabaceae	*Tephrosia baueri*	Rare *Qld*
Hernandiaceae	*Hernandia bivalvis*(Grease Nut, Cudgerie)	Rare *Qld*
Hemerocallidaceae	*Dianella fruticans*	Rare *Qld*
Lamiaceae	*Callicarpa thozetii*	Rare *Qld*
Mimosaceae	*Acacia arbiana*	Rare *Qld*
Mimosaceae	*Acacia pubicosta*	Rare *Qld*
Mimosaceae	*Acacia storyi*	Rare *Qld*
Myrtaceae	*Choricarpia subargentea* (Giant Ironwood)	Rare *Qld*[2]
Myrtaceae	*Corymbia xanthope*	Vulnerable *Qld*
Mytacaea	*Decaspermum* sp. Mt Morgan	Endangered *Aust, Qld*
Myrtaceae	*Decaspermum stuckoilicum*	Endangered *Qld*
Myrtaceae	*Eucalyptus raveretiana* (Black Ironbox)	Vulnerable *Aust, Qld*
Mytaceae	*Eucalyptus xanthope*	Vulnerable *Aust*
Myrtaceae	*Melaleuca groveana*	Rare *Qld*
Orchidaceae	*Bulbophyllum globuliforme* (Miniature Moss-orchid)	Vulnerable *Aust, Qld*
Pittosporaceae	*Bursaria reevesii*	Vulnerable *Qld*
Poaceae	*Dichanthium queenslandicum* (King Bluegrass)	Vulnerable *Aust, Qld*
Poaceae	*Digitaria porrecta* (Finger Panic Grass)	Endangered *Aust* Rare *Qld*
Poaceae	*Paspalidium scabrifolium*	Rare *Qld*

Family	Scientific name (Common name where known)	Conservation Status
Poaceae	*Paspalidium udum*	Vulnerable *Qld*
Proteaceae	*Grevillea hockingsii*	Vulnerable *Qld*
Proteaceae	*Hakea trineural*	Vulnerable *Aust, Qld*
Proteaceae	*Persoonia ameliae*	Rare *Qld*
Rutaceae	*Bosistoa selwynii* (Heart-leaved Bosistoa)	Vulnerable *Aust*
Rutaceae	*Bosistoa transversa* (Three-leaved Bosistoa)	Vulnerable *Aust*
Rutaceae	*Zieria* sp. (Mt Larcom N.Gibson TOI8	Vulnerable *Qld*
Sapindaceae	*Atalaya calcicola*	*Rare* Qld
Sapindaceae	*Atalaya collina*	*Endangered Aust, Qld*
Sapindaceae	*Atalaya rigida*	*Rare Qld*
Sapindaceae	*Cossinia australiana*	Endangered *Aust, Qld*
Sapindaceae	*Cupaniopsis shirleyana* (Wedge-leaf Tuckeroo)	Vulnerable *Aust, Qld*
Simaroubaceae	*Cadellia pentastylis* (Ooline)	Vulnerable *Aust, Qld*
Simaroubaceae	*Quassia bidwillii* (Quassia)	Vulnerable *Aust, Qld*
Solanaceae	*Solanum adenophorum*	Endangered *Qld*
Stackhousiaceae	*Stackhousia tryonii*	Rare *Qld*
Surianaceae	*Cadellia pentastylis*	Vulnerable *Aust, Qld*
Tiliaceae	*Corchorous hygrophilus*	Rare *Qld*
Tiliaceae	*Corchorus thozetii*	Presumed Extinct *Qld*
Thymelaeaceae	*Pimelea leptospermoides*	Rare *Qld*
Zamiaceae	*Macrozamia serpentina*	Vulnerable *Aust* Endangered *Qld*

Aust = Commonwealth *Environment Protection and Biodiversity Conservation Act 1999.*
Qld = Queensland *Nature Conservation (Wildlife) Regulation 1994.*

APPENDIX C – PROTECTED FAUNA SPECIES

Protected fauna species recorded by EPA 'WildNet' and EPBC databases as having ranges which overlap with the pipeline corridor.

Type	Scientific name (Common name)	Conservation status
Bird	*Accipiter novaehollandiae* (Grey Goshawk)	Rare *Qld*
Bird	*Anseranas semipalmata* (Magpie Goose)	Marine provisions *Aust*
Birds	*Apus pacificus* (Fork-tailed Swift)	Marine Provisions *Aust*
Birds	*Ardea alba* (Great Egret, White Egret)	Marine Provisions *Aust*
Birds	*Ardea ibis* (Cattle Egret)	Marine Provisions *Aust*
Bird	*Calyptorhynchus lathami* (Glossy Black-cockatoo)	Vulnerable *Qld*
Bird	*Climacteris erythrops* (Red-browed Treecreeper)	Rare *Qld*
Bird	*Collocalia spodiopygius* (White-rumped Swiftlet)	Rare *Qld*
Bird	*Ephippiorhynchus asiaticus* (Black-necked Stork)	Rare *Qld*
Bird	*Epineural crocea macgregori* (Yellow Chat)	Critically Endangered *Aust* Endangered *Qld*
Bird	*Erythrotriorchis radiatus* (Red Goshawk)	Vulnerable *Aust* Endangered *Qld*
Bird	*Esacus neglectus* (Beach Stone-curlew)	Vulnerable *Qld*
Bird	*Falco hypoleucos* (Grey Falcon)	Rare *Qld*
Bird	*Gallinago hardwickii* (Latham's Snipe, Japanese Snipe)	Migratory Provisions *Aust* Marine Provisions *Aust*
Bird	*Geophaps scripta scripta* (Squatter Pigeon (southern))	Vulnerable *Aust, Qld*
Bird	*Haematopus fuliginosus* (Sooty Oystercatcher)	Rare *Qld*
Bird	*Haliaeetus leucogaster* (White-bellied Sea-eagle)	Migratory Provisions *Aust* Marine Provisions *Aust*
Bird	*Hirundapus caudacutus* (White-throated Needletail)	Migratory Provisions *Aust* Marine Provisions *Aust*
Bird	*Hirundo rustica* (Barn Swallow)	Migratory Provisions *Aust* Marine Provisions *Aust*
Bird	*Lophoictinia isura* (Square-tailed Kite)	Rare *Qld*
Bird	*Macronectes giganteus* (Southern Giant-Petrel)	Endangered *Aust, Qld* Migratory Provisions *Aust*
Bird	*Melithreptus gularis* (Black-chinned Honeyeater)	Rare *Qld*
Bird	*Meropos ornatus* (Rainbow Bee-eater)	Marine Provisions *Aust*
Bird	*Monarcha melanopsis* (Black-faced Monarch)	Migratory Provisions *Aust* Marine Provisions *Aust*
Bird	*Monarcha trivirgus* (Spectacled Monarch)	Migratory Provisions *Aust* Marine Provisions *Aust*
Bird	*Myiagra cyanoleuca* (Satin Flycatcher)	Migratory Provisions Aust Marine Provisions Aust
Bird	*Neochmia phaeton* (Crimson Finch)	Vulnerable *Aust, Qld*
Bird	*Neochmia ruficauda ruficauda* (Star Finch (eastern), Star Finch (southern))	Endangered *Aust, Qld*
Bird	*Neophema pulchella* (Turquoise Parrot)	Rare *Qld*
Bird	*Nettapus coromandelianus albipennis* (Australian Cotton Pygmy-goose)	Rare Qld Migratory Provisions Aust Marine Provisions Aust

Type	Scientific name (Common name)	Conservation status
Bird	*Ninox strenua* (Powerful Owl)	Vulnerable *Qld*
Bird	*Numenius madagascariensis* (Eastern Curlew)	Rare *Qld*
Bird	*Numenius minutus* (Little Curlew, Little Whimbrel)	Migratory Provisions Aust Marine Provisions Aust
Bird	*Phaethon rubricauda* (Red-tailed Tropicbird)	Vulnerable *Qld*
Birds	*Psephotus pulcherrimus* (Paridise Parrot)	Extinct *Aust* Presumed extinct *Qld*
Bird	*Pterodroma neglecta neglecta* (Kermadec Petrel (western)	Vulnerable *Aust*
Bird	*Rallus pectoralis* (Lewin's Rail)	Extinct *Aust* Rare *Qld*
Bird	*Rhipidura rufifrons* (Rufous Fantail)	Migratory Provisions Aust Marine Provisions Aust
Bird	*Rostratula australis* (Australian Painted Snipe)	Vulnerable *Aust*
Bird	*Rostratula benghalensis* (Painted Snipe)	Vulnerable *Aust, Qld* Migratory Provisions *Aust* Marine Provisions *Aust*
Bird	*Sterna albifrons* (Little Tern)	Endangered *Qld*
Bird	*Stictonetta naevosa* (Freckled Duck)	Rare *Qld*
Bird	*Tadorna radjah* (Radjah Shelduck)	Rare *Qld*
Bird	*Turnix melanogaster* (Black-breasted Button-quail)	Vulnerable *Aust, Qld*
Bird	*Tyto tenebricosa* (Sooty Owl)	Rare *Qld*
Bird	*Xanthomyza phtygia* (Regent Honeyeater)	Endangered *Aust, Qld*
Shark	*Rhincodon typus* (Whale Shark)	Vulnerable Aust Migratory Provisions Aust
Fish	*Neoceratodus forsteri* (Queensland Lungfish)	Vulnerable *Aust*
Fish	33 listed marine fish species	Listed under marine provisions *Aust*
Frog	*Adelotus brevis* (Tusked Frog)	Vulnerable *Qld*
Insect	*Jalmenus evagoras eublus* (Northern Species)	Vulnerable *Qld*
Mammal	*Balaenoptera acutorostrata* (Minke Whale)	Marine Provisions *Aust*
Mammal	*Balaenoptera edeni* (Bryde's Whale)	Migratory Provisions *Aust*
Mammal	*Balaenoptera musculus (Blue Whale)*	Endangered Aust Migratory Provisions Aust
Mammal	*Chalinolobus dwyeri* (Large-eared Pied Bat, Large Pied Bat)	Vulnerable *Aust* Rare *Qld*
Mammals	*Chalinolobus picatus* (Little Pied Bat)	Rare *Qld*
Mammal	*Dasyurus maculatus maculatus* (Spotted-tailed Quoll (southern subspecies))	Endangered *Aust* Vulnerable *Qld*
Mammal	*Dugong dugon* (Dugong)	Vulnerable *Qld* Migratory Provisions *Aust* Marine Provisions *Aust*
Mammal	*Kerivoula papuensis* (Golden-tipped Bat)	Rare *Qld*
Mammal	*Lasiorhinus krefftii* (Northern Hairy-nosed Wombat)	Endangered *Aust, Qld*
Mammal	*Macroderma gigas* (Ghost Bat)	Vulnerable *Qld*
Mammal	*Megaptera novaeangliae*	Vulnerable *Aust, Qld*

Type	Scientific name (Common name)	Conservation status
	(Humpback Whale)	Migratory Provisions *Aust*
Mammal	*Miniopterus schreibersii oceanensis* (Eastern Bentwing-bat, Southern Bentwing-bat)	Conservation Dependant *Aust*
Mammal	*Nyctophilus timoriensis* (Eastern Long-eared Bat (South Eastern form))	Vulnerable *Aust, Qld*
Mammal	*Onychogalea fraenata* (Bridled Nail-tail Wallaby)	Endangered *Aust, Qld*
Mammal	*Orcaella brevirostris* (Irrawaddy dolphin, Indo-Pacific hump-back)	Rare *Qld*
Mammal	*Orcinus orca* (Killer Whale, Orca)	Migratory Provisions *Aust*
Mammal	*Pteropus conspicillatus* (Spectacled Flying-fox)	Vulnerable *Aust*
Mammal	*Pteropus poliocephalus* (Grey-headed Flying Fox)	Vulnerable *Aust*
Mammal	*Sousa chinensis* (Dolphin)	Rare *Qld*
Mammal	*Taphozous troughtoni* (Troughton's Sheathtail Bat)	Endangered *Qld*
Mammal	*Vombatus ursinus* (Common Wombat)	Vulnerable *Aust* Rare *Qld*
Mammal	*Xeromys myoides* (Water Mouse, false Water Rat)	Vulnerable *Aust, Qld*
Mammal	7 listed marine dolphin species	Listed under marine provisions *Aust*
Reptile	*Acalyptophis peronii* (Horned Seasnake)	Marine Provisions *Aust*
Reptile	*Acanthophis antarcticus* (Common Death Adder)	Rare *Qld*
Reptile	*Aipysurus aydouxii* (Spine-tailed Seasnake)	Marine Provisions *Aust*
Reptiles	*Aipysurus duboisii* (Dubois Seasnake)	Marine Provisions *Aust*
Reptile	*Aipysusus laevis* (Olive Seasnake)	Marine Provisions *Aust*
Reptiles	*Anomalopus brevicollis*	Rare *Qld*
Reptile	*Astroitia stokesii* (Stokes' Seasnake)	Marine Provisions *Aust*
Reptile	*Caretta caretta* (Loggerhead Turtle)	Endangered Aust, Qld Migratory Provisions Aust Marine Provisions Aust
Reptile	*Chelonia mydas* (Green Turtle)	Vulnerable Aust, Qld Migratory Provisions Aust Marine Provisions Aust
Reptile	*Crocodylus porosus* (Esturine Crocodile, Salt-water Crocodile)	Vulnerable Qld Migratory Provisions Aust Marine Provisions Aust
Reptile	*Delma torquate* (Collared Delma, Striped Delma)	Vulnerable *Aust, Qld*
Reptile	*Denisonia maculata* (Ornamental Snake)	Vulnerable *Aust, Qld*
Reptile	*Dermochelys coriacea* (Leathery Turtle, Leatherback Turtle, Luth)	Vulnerable *Aust* Endangered *Qld* Migratory Provisions *Aust* Marine Provisions *Aust*
Reptile	*Disteira kingii* (Spectacled Seasnake)	Marine Provisions *Aust*
Reptile	*Disteira major* (Olive-headed Seasnake)	Marine Provisions *Aust*
Reptile	*Egernia rugosa* (Yakka Skink)	Vulnerable *Aust, Qld*
Reptile	*Emydocephalus annulatus* (Turtle-headed Seasnake)	Marine Provisions *Aust*
Reptile	*Eretmochelys imbricata* (Hawksbill Turtle)	Vulnerable *Aust, Qld* Migratory Provisions *Aust*

Type	Scientific name (Common name)	Conservation status
		Marine Provisions *Aust*
Reptile	*Furina dunmalli* (Dunmall's Snake)	Vulnerable *Aust, Qld*
Reptile	*Hemiaspis damelii* (Grey Snake)	Endangered *Qld*
Reptile	*Hydrophis elegans* (Elegant Seasnake)	Marine Listed *Aust*
Reptile	*Lapemis hardwickii* (Spine-bellied Seasnake)	Marine Listed *Aust*
Reptile	*Laticauda colubrine* (a Sea krait)	Marine Provisions *Aust*
Reptile	*Laticauda laticaudata* (a Sea krait)	Marine Provisions *Aust*
Reptile	*Lepidochelys olivacea* (Pacific Ridley, Olive Ridley)	Endangered *Qld* Marine Provisions *Aust*
Reptile	*Lerista allanae* (Allan's Lerista)	Endangered *Aust, Qld*
Reptile	*Natator depressus* (Flatback Turtle)	Vulnerable Aust, Qld Migratory Provisions Aust Marine Provisions Aust
Reptile	*Ophioscincus coolooensis*	Rare *Qld*
Reptiles	*Paradelma orentalis* (Brigalow Scaly-foot)	Vulnerable *Aust, Qld*
Reptile	*Pelamis platurus* (Yellow-bellied Seasnake)	Marine Provisions *Aust*
Reptile	*Rheodytes leukops* (Fitzroy Tortoise, Fitroy River Turtle)	Vulnerable *Aust, Qld*
Reptile	*Simoselaps warro* (Robust Burrowing Snake)	Rare *Qld*
Reptile	*Strophurus taenicauda* (Golden-tailed gecko)	Rare *Qld*
Reptile	*Varanus semiremex* (Rusty Monitor)	Rare *Qld*

Aust = Commonwealth *Environment Protection and Biodiversity Conservation Act 1999.*
Qld = Queensland *Nature Conservation (Wildlife) Regulation 1994.*