

Executive Summary



Introduction

Enertrade, a Government Owned Corporation, is investigating the feasibility of supplying coal seam gas (CSG) from the Bowen Basin Coalfields to Gladstone via a high pressure transmission pipeline. Known as the Central Queensland Gas Initiative (CQGI) the investigation is addressing three key elements:

- Gas Supply;
- Gas Markets; and
- Gas transmission pipeline.

This Environmental Impact Statement (EIS) which forms part of the feasibility studies addresses the construction and operation of the gas transmission pipeline. The EIS also addresses a potential upgrade to the existing compressor station facility at Moranbah which may be required for future gas supply. The findings from the feasibility study, including the outcomes of this EIS, will be taken into consideration in determining financial close for the CQGI. Determination of financial close and a decision on whether to proceed with the CQGI is expected to occur in late 2006 or early 2007.

The gas transmission pipeline, known as the Central Queensland Gas Pipeline (CQGP), would be approximately 450km in length (refer Figure ES-1). The pipeline would be a buried, 300-450mm¹ nominal diameter, high pressure gas transmission pipeline with an initial capacity to transport up to 20 Petajoules (PJ) per annum of gas. This could, through additional compression, be increased to a maximum of 100PJ per annum. Additional compression, which may be required in the future, could include the installation of an additional TriEthylene Glycol (TEG) unit as well as additional compressor units. This EIS has reviewed the potential for an additional four compressor units however these are unlikely to be installed as part of the pipeline construction.

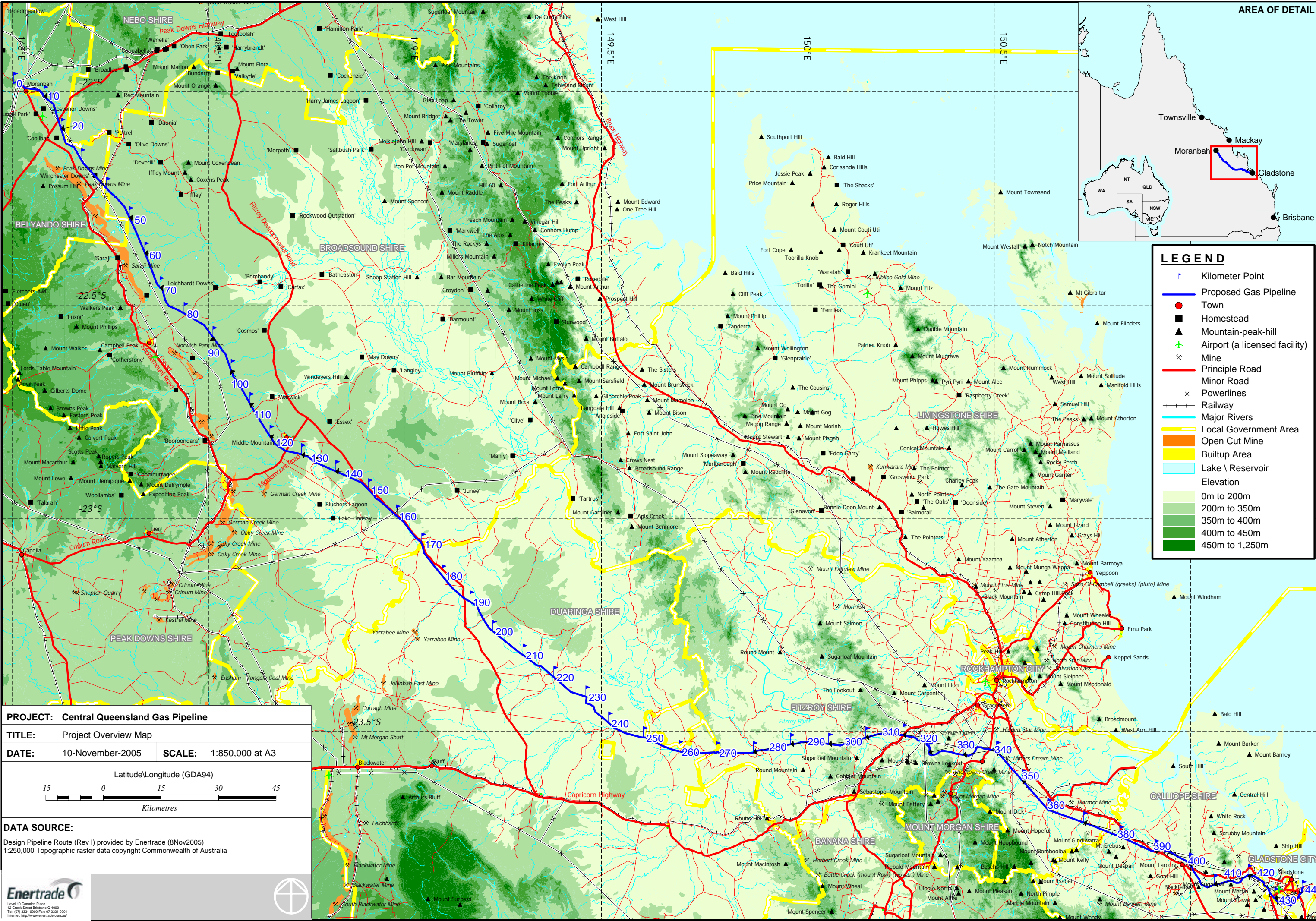
Construction would straddle approximately a 12 month period and capital investment would be in the order of \$A220-400 million depending upon the final pipe size selected.

The CQGP has been declared a significant project by the Queensland Coordinator-General (CG) pursuant to section 26 of the *Queensland State Development and Public Works Organisation Act 1971 (SDPWO Act)* and an EIS is therefore required under section 29 of the Act.

The Australian Department of the Environment and Heritage (DEH) has determined that the Project is a controlled action under the *Environment Protection and Biodiversity Conservation Act 1999 (EPBC Act)* for listed threatened species and communities. Under a Bilateral Agreement between the Australian and the Queensland State Governments, the State EIS process conducted by the CG will be used by DEH to make its assessment under the *EPBC Act*.

Thus this EIS has been prepared to satisfy the impact assessment requirements of all relevant State and Australian statutes for this Project and the abbreviation 'EIS' used in this document should be interpreted as satisfying the impact assessment requirements of both the State and the Australian Governments.

¹ The pipe diameter will depend upon market conditions. This EIS has assumed a 450mm pipeline. A smaller diameter pipe would have slightly less impact as it would result in less weight to transport and require less trench excavation.



Aims and Objectives

The aims of this Project are to provide an alternative gas supply into Gladstone, promote further development of the CSG resources of the Bowen Basin and to link Townsville to the State and National gas transmission grid via Enertrade's existing North Queensland Gas Pipeline (NQGP) between Moranbah and Townsville. An additional benefit of the CQGP could be the capacity for Enertrade to provide a transport service to deliver PNG Gas to both Townsville and Gladstone.

The Proponent

The Queensland Power Trading Corporation, trading as Enertrade, is a Queensland Government Owned Corporation trading energy in Australia's national electricity and gas markets. Enertrade is 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, owns one power station and two gas pipelines, including the NQGP, which it constructed.

Environmental Impact Assessment Process

As previously stated the CQGP has been declared a significant project by the CG and DEH has determined that the Project is a controlled action under the *EPBC Act*.

To build and operate the gas pipeline, Enertrade will require a pipeline licence under the *Petroleum and Gas (Production and Safety) Act 2004 (P&G Act)* from the Minister for Natural Resources and Mines and an Environmental Authority for Environmentally Relevant Activities (ERAs) construction (ERA 21(c)) and operation (ERA 21(e)) from the delegate of the Queensland Minister for Environment under the *Environmental Protection Act 1994 (EP Act)*.

All aspects of development for an activity authorised under the *P&G Act* (other than an activity relating to the construction and operation of an oil refinery) are exempt from assessment against a planning scheme as stated in Schedule 9, Table 5 of the *Integrated Planning Act 1997*.

A body of Australian, State and Local Government representatives and appropriate authorities were invited to participate as Advisory Agencies for the EIS process and provide comment on the draft Terms of Reference (TOR). The EIS is made available for public and advisory agency review and comment. The CG will coordinate the consultation process between Enertrade, the advisory agencies and the public. The CG will collate and review all comments received on the EIS.

The key steps in the EIS process are summarised in Table ES-1.

Responses to this EIS should be submitted by the publicly advertised closing date to:

Project Manager - Major Projects

Central Queensland Gas Pipeline Project

The Coordinator-General

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Brisbane City East QLD 4002

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Table ES-1: Environmental Impact Statement Process

Task	Date
Initial Advice Statement	November 2004
Coordinator General Prepares Draft TOR	April - May 2005
Public Advertisement and Review of Draft TOR	May – June 2005
Final Terms of Reference	June 2005
Prepare EIS	June 2005 – September 2006
Public Advertisement and Review of EIS	October – November 2006
Prepare Response to Submissions to EIS	November 2006
Supplement to EIS	December 2006
Coordinator General's Assessment Report	January – February 2007
Decision by Australian Department of Environment and Heritage	March 2007
Pipeline Licence issued under <i>Petroleum and Gas (Production and Safety) Act 2004</i>	April 2007

Consultation

During the pre-feasibility phase of the Project the key environmental and cultural sensitivities of the various route options were identified using a combination of desktop research and field reconnaissance. This included remnant ecosystems, riparian vegetation, protected species, soil types, watercourse crossings and cultural sites.

The preferred route was selected because it:

- Does not impact on any sites of heritage significance;
- Minimises potential impacts on sensitive ecosystems, particularly Bluegrass and Semi-Evergreen Vine Thicket (SEVT);
- Reduces conflicts with mining activities; and
- Reduces potential weather delays during construction.

Various route options were investigated taking into account the interests of various stakeholders including infrastructure corridors being developed as part of the Gladstone State Development Area (GSDA).

The CQGP has placed a high priority on consultation / communication with key stakeholders and has sought to actively engage relevant Ministers, parliamentarians, regulators, local government, private landowners / occupiers, utilities operators, non-government organisations, indigenous heritage groups, native title claimants, and the general public. A range of consultation and information dissemination measures have been employed including meetings, site visits, letters, facsimiles, and information brochures. Key issues for stakeholders have been ROW access and weed management, soil erosion and local employment opportunities. These items have been addressed within this EIS.

Enertrade recognises that consultation is an ongoing process and shall continue to facilitate discussion with all stakeholders throughout the duration of the Project.

Project Approvals

Relevant Legislation

As previously stated this EIS has been carried out under the SDPWO Act in conformance with the bilateral agreement in place with the Australian government. The pipeline will be licensed under the *P&G Act* and environmental authorities will be required from the EPA for both construction and operation of the pipeline. Any future changes to the compressor station may require an amendment to the existing environmental authority however this will be pursued only when additional compression is required. Other legislation that may apply to the Project includes:

- *Coastal Protection and Management Act 1995*;
- *Fisheries Act 1994* permit to construct waterway barriers in fish habitat areas or disturb marine plants;
- *Food Act 1994* management of camp food preparation areas;
- *Nature Conservation Act 1992* authority to move / disturb or destroy protected plants; and
- *Water Act 2000* permit to draw water.

Planning Processes and Standards

The project has been assessed against all the relevant State Planning Policies. The Planning Policies that most apply to the Project are:

- *SPP 1/92 Development and conservation of agricultural land*;
- *SPP 1/03 Mitigating the adverse impacts of flood, bushfire and landslide*; and
- *SPP 2/02 Planning and managing development involving acid sulphate soils*.

The Project will conform with the requirements of these Planning Policies and the *State Coastal Management Plan*.

Project Substantiation

Need for the Project

The Queensland Government is committed to encouraging the increased use of gas within the State and to promoting creative options for expanding gas utilisation. The Queensland Government's *Cleaner Energy Strategy 2000* outlines the Government's commitment to developing competitive gas and electricity markets to deliver lower energy prices and greater choice to customers. In addition the supply of competitively priced gas and electricity to provincial cities, such as Gladstone and Townsville, is seen by the Queensland Government as an important element of its regional development strategy and fundamental to the Government's efforts in attracting industry and promoting value adding to the State's abundant natural resources.

In 2004 Enertrade commissioned the NQGP from Moranbah to Townsville. Part of the original NQGP proposal to the Queensland Government's Office of Energy and Queensland Treasury in September 2001, included an interconnect with the State's gas transmission network. This Project provides that link, through the opportunity to connect Moranbah to the existing gas transmission lines which currently terminate in Gladstone.

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 two independent supply sources and associated infrastructure;
- Link Townsville to the national gas supply grid and also reduce supply risk to that area;
- 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 project has the potential to be a key link for possible PNG Gas supply to Townsville and Gladstone as well as Southern Queensland. The proposed pipeline will also significantly enhance the development opportunities for CSG in Queensland.

Costs and Benefits of the Project to Consumers and the Wider Community

The CQGP Project represents a total capital investment in Queensland in the order of \$A220 – 400 million. Benefits to the State will include:

- Revenue to Government, directly through royalty on the gas well-head value, which would evolve from increased utilisation of CSG;
- Reinforcement of the sustainable long term production capability of methane from coal seams thus unlocking the potential of this vast Queensland energy resource;
- Increased mine safety;
- Further diversification of the State's energy supply;
- Extending the State's gas transmission network;
- Securing further long term sources of gas for Queensland, from within Queensland, in addition to providing the capacity to facilitate other sources such as PNG;
- Securing long term energy infrastructure for Queensland; and
- Creation of further jobs in Queensland directly from the Project and indirectly as a result of increased industry development opportunities.

Alternative Options

A number of pipeline routes (refer Figure ES-2) have been investigated taking into account the various strategic objectives, route selection criteria (refer Table ES-2) and environmental and topographic constraints of the region. The preferred route has been derived through various revisions to take into account the strategic objectives of:

- Supply of natural gas to Gladstone;
- Proximity to Queensland's extensive CSG reserves in Central Queensland;
- Servicing potential markets in the Gladstone State Development Area (GSDA) industrial estate;
- Economically feasible construction;
- Operability considering environmental, access, stakeholder and cost impacts;
- Acceptable gas transmission costs; and
- Acceptable cultural heritage and other environmental impacts.

The preferred route has been determined based on discussions with landholders, petroleum and mining interests and local government, environmental and cultural heritage surveys, and

optimisation of the pipeline to provide the potential to deliver PNG Gas to the Townsville and Gladstone regions. The aim throughout the process has been to avoid negatively impacting areas of interest wherever practicable.

Table ES-2: Criteria for Identification of Pipeline Routes

Criterion	Rationale
Directness of route from source to market	Shorter routes may offer significant economic, environmental, social and logistical benefits.
Location of existing linear corridors suitable for pipeline construction	Utilisation of existing linear corridors (e.g. roads, stock routes) may avoid or reduce impact to sensitive areas.
Other land uses	Minimise impacts to State's resources (e.g. coal mining) and areas of intense farming or high yield agricultural land.
Major terrain constraints	Unduly steep or rugged mountain ranges, extensive areas of rock, large number of major river crossings etc each tend to increase the difficulty and cost of construction and influence the scale of potential environmental impact.
Areas of cultural and / or conservation significance	Minor deviations may avoid impact on cultural heritage sites and / or regional ecosystems.
Location of regional gas markets	Additional markets make a Project economically attractive.
Location of potential gas resources	Additional gas transmission customers make a Project economically more attractive.
Pipeline constructability	The location needs to consider all construction aspects and impacts.
Pipeline operability	The location needs to provide for low impact and safe access for routine maintenance and integrity monitoring.



Source: Design Pipeline (Rev 1 23June2006), Topographic data copyright Commonwealth of Australia

If the Project did not proceed, the State and Central Queensland region could potentially lose the following benefits:

- Opportunities for pipe-on-pipe and gas-on-gas competition in the developing Gladstone industrial areas;
- Ability to meet the increasing demand for energy, particularly for gas generated electricity;
- New opportunities for gas powered developments;
- Increased opportunities for gas competition, particularly in Queensland;
- An opportunity for further development of Queensland's CSG resources;
- Direct benefits to the Queensland economy from construction expenditure and longer-term benefits from gas supply in the region;
- Opportunities to further contribute to Australia's ability to meet its greenhouse gas commitments;
- Environmental benefits associated with CSG utilisation, particularly greenhouse gas abatement;
- Improved mine safety; and
- PNG gas would require duplication of pipeline between Townsville and Moranbah and result in environmental disturbance.

Construction impacts, such as short-term land disturbance for construction, would not occur if the Project did not proceed. However, active rehabilitation and progressive recovery of environmental values over time diminishes such impacts as discussed in this EIS.

Project Description

As stated in the Introduction, the Project encompasses construction of approximately 450km of 300-450mm diameter steel pipeline and a future upgrade to the existing Enertrade compressor station at Moranbah.

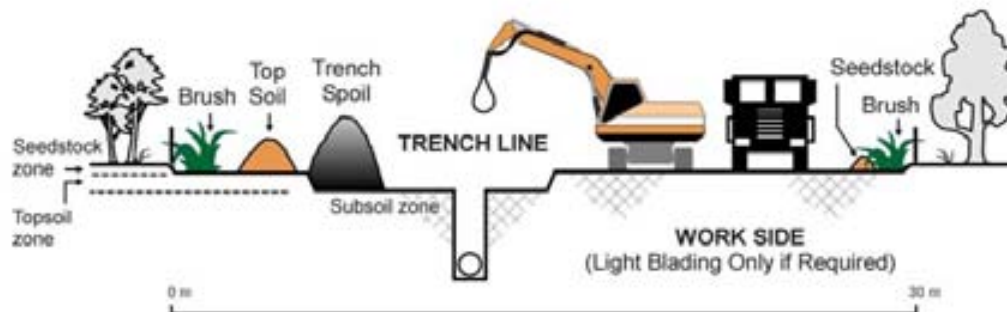
The proposed pipeline will run from the compressor station at Moranbah generally south to south-east to Gladstone through the local government areas of: Belyando, Broomsound, Duaringa, Fitzroy and Calliope Shires and the Gladstone City Council (refer Figure ES-1). The area lies through the Brigalow Belt Bioregion and is predominantly grazing and agricultural land with rural living allotments and horticulture around the Gladstone region.

The existing compressor station is located within the CH4 Petroleum Lease (PL) 191 in the shire of Belyando. The original site selection for the compressor station took into account mitigation of noise impacts on residential areas, 24 hour access, avoidance of mining conflicts, availability of suitable land, protection of watercourses and sensitive environments, and flood protection. The existing site has sufficient land space to accommodate future compression requirements including at least four additional compressor units and duplication of dehydration facilities with minimal additional land clearing.

Pipeline

The proposed pipeline route (inclusive of a potential lateral to the southern industrial areas of Gladstone) is approximately 450km in length and would be constructed in accordance with *AS2885-1997 Part 1 Pipelines Gas and Liquid Petroleum*. A Right of Way (ROW) width of 30m would be required to facilitate construction operations (refer Figure ES-3). The pipeline would comprise lengths of coated steel pipe which would be welded together and buried with a depth of cover of at least 750mm. The pipeline would be operated with a maximum allowable operating pressure of 15.3MPa.

Figure ES-3: Typical ROW Layout



Construction activities (refer Photos ES-1 to ES-6) would be typical of modern pipeline projects and would involve:

- 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 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);
- Welding the pipe sections together to form 'a string' approximately 1km in length;
- Placing the pipeline string into the trench and placing padding (e.g. screened trench sub-soil) around the pipe to protect the coating from external damage;
- Returning the subsoil and topsoil to their original horizons;
- Testing the integrity of the pipeline by filling it with water and pressurising it to above the operating level; and
- Clearing up and restoring the construction ROW and all temporary facilities.

Restoration would be undertaken in such a way as to 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 would be underground, land users would be able to resume previous land use activities on top of the pipeline provided that they did not include excavation activities. Whilst deep rooted vegetation cannot be re-established directly across the pipeline, due to the potential for damage to the pipeline, grasslands can be re-established and no long term impacts would be expected to sensitive ecosystems.

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During operation gas flow and pressure would be monitored from the compressor station at Moranbah and at the gas delivery points. Inspection of the pipeline easement for issues such as erosion, weeds, subsidence, and lack of revegetation or third party activity would be carried out on a regular basis, both by vehicle and from the air. Ground access to the easement would be necessary to follow up issues identified from aerial inspections and for periodic inspection of the corrosion protection (cathodic) system. Regular contact would be maintained with landowners of all properties traversed by the pipeline.

Whilst the pipeline is being designed for a minimum technical life of 42 years it is expected that this would be extended through integrity management.



Photo ES-1: Clearing and Pipe Stringing



Photo ES-2: Trenching



Photo ES-3: Welding



Photo ES-4: Sifting Subsoil for Padding



Photo ES-5: Placing the Pipe in the Trench



Photo ES-6: Clean up and Restoration

Compression Facilities

Future upgrades to the compressor station would include the installation of additional gas compressor units (refer Photo ES-7) and an additional TriEthylene Glycol (TEG) dehydration facility. The existing facilities, which could be expanded to encompass the additional equipment, include telemetry and instrumentation for the monitoring of the plant to ensure that it is controlled by Enertrade at all times. The current facilities, with a plant footprint of approximately 250m by 150m, are located within a site of approximately 500m x 300m (15ha). This area was selected to provide a 'buffer' around the plant and room for expansion of facilities if required.

The delivery point facilities include meters for the measurement of gas, pressure reduction and gas fired water bath heaters which bring the gas temperature up to the required delivery specification.

The facilities are protected by a security fence.

The expansion of the compressor station would require minimal vegetation clearance and minor earthworks to accommodate the additional plant and equipment; the remainder of the site would be left in its natural state. Based on the NQGP Project it is expected that plant and equipment would be pre-assembled in modular form to the maximum extent possible during construction for installation on-site. A temporary hard stand for laydown of equipment and materials on the southern side of the site would be required.



Photo ES-7: Compressors at Moranbah

Decommissioning

If and when the compressor station and pipeline were no longer required they would be decommissioned in accordance with the legislative requirements of the day. At such time the pipeline may be maintained for possible future use (moth-balled) or disconnected and allowed to naturally degrade (abandoned). Removing the pipeline from the ground would not be an environmentally or commercially viable option. All above ground facilities, including the compressor station would be removed and the area restored to the surrounding land use.

Workforce and Accommodation

Pipeline

Construction of the pipeline would involve up to 250 personnel at the peak time. Crews will typically work 26 days on and nine days off. Local labour and equipment will be sourced wherever practicable (e.g. earth moving requirements) but many tasks are highly specialised and a large proportion of the workforce will be on a fly-in fly-out basis. Buses will be used to transport workers to and from the nearest airport at the start and end of each work cycle.

Due to the mainly rural nature of the pipeline route and the strong competition for local accommodation from the mining interests in the area, the workforce will be accommodated in self contained camps. Camp facilities will be air conditioned demountable style units providing:

- Accommodation;
- Ablutions;
- Laundry and messing facilities;
- Recreational areas (e.g. gymnasium, television room and wet mess);
- Offices;
- Workshops; and
- First aid.

Pets are banned from pipeline construction activities to ensure no pest species are introduced into an area.

Food wastes are appropriately stored and disposed of to prevent the introduction / attraction of vermin and flies.

Mosquito management will be implemented including ensuring that breeding locations are minimised through the removal of unwanted materials as quickly as possible.

Compressor Station

Whilst not contemplated for the initial gas supply demands, installation of future compression facilities and supporting infrastructure would require approximately 40 - 50 personnel at any one time. The expanded compressor station would be operated by the appointment of one additional staff member to the existing Moranbah staff.

There is strong competition for accommodation in Moranbah and at the time of construction it may be necessary to provide additional accommodation at the Moranbah compressor station as occurred during the construction of the original facilities. Any such facilities will meet Belyando Shire Council standards for installation. However the first preference will be to use commercially available accommodation. It is highly unlikely that food would be prepared at site; rather existing facilities within Moranbah township would be used.

Gas Supply

Initial gas supply would be from the CH4 / Arrow fields from petroleum leases near Moranbah. Future gas supply options include CH4 / Arrow, local coal sites, and PNG Gas. The pipe will however be constructed to enable transport of gas to *AS4564 – 2003 Specifications for Pipeline Quality Gas Supply*.

Electricity and Telecommunications

Power for the compressor station is generated on-site using a gas powered generator. Any power requirements along the route of the pipeline would be handled through solar power. Power requirements in Gladstone, which would be less than 50kW, would be mains sourced. A permanent radio network was established for the NQGP and a similar system will be extended to the CQGP. Site telephone connections provide voice and data communications and field personnel utilise mobile and satellite telephones.

Water Supply / Storage

Water requirements for the Project will include raw water for dust suppression and hydro testing of the pipeline (see next section) and potable water for domestic use at campsites. For a 450mm diameter pipeline water consumption for the entire Project would be around 70ML. Raw water will be sourced from local water supplies (e.g. dams, rivers, bores, local supply pipelines) and permits will be gained as and where required. Potable water will either be trucked in or treated on-site at the camp. Dams may be built to hold hydrotest water to ensure acceptable fill flow rates.

Water for operations is provided through rainwater tanks with top up capacity from the Eungella water pipeline.

Environmental Values and Management of Impacts

Project-specific management measures have been, and will continue to be, developed for the Project and are documented in the Draft Construction Environmental Management Plan (EMP).

Detailed studies have been conducted into the existing environmental and land use conditions within and in proximity to the proposed pipeline route. Field investigations were conducted from November 2004 to August 2005 and intermittently thereafter to review any subsequent line changes. These field studies, combined with a review of existing biophysical data available from the various agencies, have resulted in the realignment of various sections of the route in order to establish the most appropriate alignment in terms of minimising environmental, cultural heritage and social impact.

Land***Land Use and Infrastructure***

The existing land uses through which the proposed pipeline will pass are predominantly rural with large areas of land previously cleared for grazing and cropping. The remainder of the route encompasses land areas that contain patches of regrowth (mostly Brigalow), remnant forest, grassland vegetation, wetlands, major rivers, mountainous areas and some Good Quality Agricultural Land (GQAL). Other land uses in the area include mining leases, powerline easements, road and rail reserves, industrial areas and stock routes. Cropping

areas are generally restricted to floodplains and are primarily used for cotton, sorghum, grains and cattle fodder (e.g. leucaena).

Land holdings in the north-western section of the pipeline are large rural holdings whilst further east (from approximately KP300) small rural lots for hobby farms and rural residential development occur. Land immediately north-west of Gladstone, in the vicinity of Mt Larcom, is within the GSDA and is predominantly disused horticultural farms designated for future industrial purposes. There are several leasehold and reserves / forestry reserves along the alignment. In and around Gladstone the land use is residential (existing and proposed) and industrial.

Avoidance rather than impact mitigation has been the general principle applied in selecting the pipeline route. In other words, Enertrade aims to avoid as many patches of potential impact (e.g. mining tenements, residential areas and remnant vegetation) as practicable during the planning and detailed design phase of this Project.

Disturbance to the land will be limited to the surface except for the trench line itself, which is approximately 600mm wide. The short duration of the construction period (approximately four months in any one location) promotes the retention of healthy seedstock, regrowth of rootstock and minimises the period of disturbance to land use.

Vegetation clearing will be carried out over a strip approximately 30m in width to provide adequate separation distances for cleared vegetation, topsoil and subsoil whilst allowing for construction activities and vehicle movements (refer Figure ES-3). Blade clearing (grading), which retains rootstock, thus promoting vegetation regrowth, will be the main form of vegetation clearance for construction of the pipeline. The removal of stumps and roots will normally be restricted to the trench line or where they are likely to inhibit movement of construction vehicles.

The proposed pipeline will not impose any long-term restrictions on the surface use of land tenures identified along the route. Existing and prospective coal and mineral mining areas and extractive industries have, as far as practicable, been avoided and the proposed pipeline should not impose any significant restrictions on future development. Where landholders may be affected, consultation and negotiation has occurred (and will be ongoing) so as to minimise any adverse effects as a result of the construction or operation of the pipeline.

Topography / Geomorphology

Route selection has focussed on avoiding steeper, more erodible and rocky terrain, with few sections of the route exceeding 7% slope. There are some areas of geotechnical instability such as where the pipeline crosses faultlines and these will be taken into consideration during engineering design, but there are no other significant topographical constraints.

Due to the predominantly level or gently sloping nature of the country, minimal landform modification will be necessary and major earthworks are not anticipated. The main issues will be related to crossings of significant watercourses with high and relatively steep riverbanks. It is proposed to conduct horizontal directional drilling (HDD) below the main watercourses where the geology permits (e.g. Fitzroy, Calliope Rivers). Stabilisation measures defined in this document and in the Draft Construction EMP (refer Appendix 3) are the minimum requirement for the Project.

Soils

The soils occurring along the proposed easement have been previously mapped and classified as part of various soil surveys and land resource studies. Studies conducted for this EIS involved a comprehensive review and synthesis of this information supplemented by field investigations that were focussed on areas of potential erosion risk.

Alkaline and Neutral Duplex soils (Solodised Solonetz² and Solodic Soils³ or Sodosols) are the most significant soil type in relation to erosion. Sodic (i.e. sodium rich) soils are widespread (42%) occurring at intervals throughout the entire length of the proposed pipeline. Such soil types are prone to dispersion and gully erosion if inappropriately managed. Offsetting this to some extent is the fact that most areas with this soil type are very low sloping (often <2% slope) and are thus not susceptible to sheet erosion.

There are also sections of the route with dark / grey cracking clay soils that may have significant shrink / swell characteristics. This will be taken into consideration during engineering design.

Mitigation measures to reduce impacts on soils will include, as necessary, the installation of erosion control banks, drains and sediment collection devices. These measures, along with others as set out in the Draft Construction EMP (refer Appendix 3) should ensure that the risk of a significant and on-going soil erosion problem is low.

Rehabilitation will include:

- Re-establishing drainage patterns;
- Installation of erosion control mechanisms; and
- River bank stabilisation.

The presence of Acid Sulphate Soils is regarded as a potential issue for the Calliope River area and at the terminal of the low pressure pipeline within Gladstone. Further soil evaluation will be carried out during detailed design and specific Acid Sulphate Soil Management plans will be developed.

The route traverses Good Quality Agricultural Land as defined by the Department of Primary Industries and Fisheries (DPI&F). However the likelihood of adversely impacting this land and affecting farming practices is considered to be low as previously discussed under the heading Land Use and Infrastructure.

Climate

The Project area is within the Tropic of Capricorn which has distinct wet and dry seasons. The wet season generally lasts for three months, from December to February. The regional average rainfall for these months is 120mm, although this generally varies between inland and coastal areas.

Cyclonic influences affect the region once a year on average between late November and April, particularly in coastal areas.

Mitigation strategies to minimise the impacts of weather on the Project will include:

- Focussing construction activities for the drier months (April to October) as much as possible;
- Monitoring short and longer term weather predictions;
- Ensuring pipeline is buried deep enough to not be affected during flooding events;
- Using HDD at major river crossings containing water; and
- Developing and implementing emergency response plans for cyclones, fire and flooding.

² Acid sandy or sandy clay topsoil over a light brown to yellow clay or sandy clay subsoil

³ A solodised solonetz that sets hard upon drying in the topsoil and subsurface layers

Water Resources

The proposed pipeline route traverses a number of major watercourses including the Fitzroy, Calliope and Mackenzie Rivers and Raglan Creek. Numerous ephemeral watercourses will also be crossed including Grosvenor, Twelve Mile and Parker Creeks.

Data from Department of Natural Resources and Water (DNRW) indicates that water quality is generally fresh (low salinity), above the tidal reaches, with slightly alkaline pH. Nutrient enrichment is a major issue in all of the rivers in the Fitzroy Basin and has been identified as a threat to downstream systems and the Great Barrier Reef (FBA, 2004). In general the downstream end of the catchment (the Fitzroy Estuary) is regarded as being in good condition but with high turbidity (Coastal CRC, 2005).

Streams in the area vary greatly in their degree of streambank erosion depending on location and surrounding landuse. There are substantial deposits of unconsolidated material (mainly sands) in the beds of the major streams and such deposits can become mobile during significant flood events.

Data derived from the DNRW database indicates that groundwater levels throughout the area traversed by the proposed pipeline are predominantly at least 10m below surface level, well below pipeline construction depths. The water table is shallower in proximity to the pipeline from KP270 onwards (up to two metres below the surface in the area near KP330). Depending on the season, there is potential for the groundwater to be intersected by the pipeline trench, whereby dewatering will need to be considered.

The main potential impact on the water environment is elevated turbidity levels in watercourses due to direct disturbance and dislodgement of material at watercourse crossings during construction and due to erosion during the life of the pipeline. Route selection has taken into account streambank stability and height and minimising impact on riparian vegetation. Implementation of soil erosion control strategies will mitigate water quality impacts. Monitoring of erosion control measures, rehabilitation and water quality during the construction and post construction phases will be carried out as described in the Draft Construction EMP (refer Appendix 3).

Nature Conservation

Terrestrial Flora

The proposed pipeline route traverses a generally degraded landscape in which much of the native vegetation has been cleared or modified for agriculture. Investigations into the vegetation characteristics of lands within and in proximity to the proposed pipeline route have included reviews and interpretation of Australian and Queensland databases combined with field surveys. Such surveys were focussed in areas identified as likely to contain communities and/or species that have been afforded special protection under the *Vegetation Management Act 1999 (VMA)*, *Nature Conservation Act 1992 (NCA)* and the *EPBC Act*. These Acts have had significant implications for route selection. An overriding objective in the selection of the preferred route has been to avoid as many threatened communities and species as possible.

In general terms, the pipeline corridor crosses areas that contain previously cleared and degraded grazing lands, patches of regrowth (mostly Brigalow regrowth) and areas of remnant vegetation. The areas of remnant vegetation can be broadly grouped into:

- Forest and woodland communities dominated by eucalypts;
- Forest and woodland communities dominated by Brigalow (*Acacia harpophylla*);
- Woodland communities dominated by other *Acacia* species;

- Semi-evergreen Vine Thicket (able to be avoided by the final alignment);
- Wetlands; and
- Grasslands.

The floristic condition, connectivity, size of the remnant patch and level of weed infestations within these remnant communities varies considerably.

It is estimated that the proposed works would disturb an area of approximately 1,350ha (30m pipeline easement x 450km pipeline length). Of this area, approximately 23ha (1.7%) contains State 'Endangered' regional ecosystems, 46ha (3.5%) contains State 'Of Concern' regional ecosystems, 140ha (10.4%) contains State 'Not of Concern' regional ecosystems and the remainder is cleared / degraded lands.

The route also encompasses approximately 24ha (1.8%) of Australian endangered ecological communities comprising:

- Bluegrass (*Dichanthium* spp.) (7ha) dominant grasslands of the Brigalow Belt Bioregions (North and South)(RE 11.4.4 and RE 11.8.11);
- Brigalow (*Acacia harpophylla*) (17ha) communities (RE 11.3.1, RE 11.4.8, RE 11.4.9, RE 11.9.1, RE 11.9.5); and

All areas of Semi-evergreen Vine Thickets of the Brigalow Belt (North and South) and Nandewar Bioregions have been avoided.

To provide an indication of the local significance of the potential loss of endangered communities, the area of these communities within a 10km buffer of the pipeline alignment was calculated and compared against the areas to be cleared. This showed that the impact on these communities represents 17% for Brigalow and 7% for Bluegrass which is not considered a significant adverse impact on these communities.

The flora database searches for noteworthy species established that 58 species afforded additional protection under either Australian and / or Queensland legislation have been previously recorded or have geographic ranges that overlap the wider area of the study corridor.

Only four of these species (one not previously recorded in that area) were actually located during field studies. These were:

- Rock Whitewood shrubs (listed as 'Rare' under the *NCA* and not previously recorded in the area);
- Native Frangipani trees and shrubs (listed as 'Rare' under the *NCA*);
- Black Ironbox trees (listed as 'Vulnerable' under both the *EPBC Act* and the *NCA*); and
- *Cycas megacarpa* plants (listed as 'Endangered' under both the *EPBC Act* and *NCA*).

Through route realignments it has been possible to avoid the Rock Whitewood and Native Frangipani. There may be a requirement to clear a small number of Black Ironbox trees and *Cycas megacarpa* plants and if this eventuates, appropriate permits and approvals will be sought and impact minimisation strategies implemented.

Significant Area Plans will be developed for Brigalow and Bluegrass communities, Black Ironbox and *Cycas megacarpa* prior to construction.

The pipeline corridor also contains suitable habitat types for an additional 46 protected flora species. Whilst the field survey results do not absolutely preclude the potential presence of these other significant species (as not all areas to be cleared were searched), the 24 days of targeted survey work indicated that additional protected flora species are unlikely to occur along the alignment.

Terrestrial Fauna

Due to the extensive modifications that have already occurred to the landscape, those areas that retain mature vegetation are of significance to fauna. Because of their greater habitat diversity, riparian vegetation and the larger patches of forest communities within or in proximity to the corridor are of particular value.

The collation and review of fauna databases established that a total of 66 fauna species afforded additional protection under either Australian and / or Queensland legislation have been previously recorded in, or have geographic ranges that overlap, the wider area of the pipeline corridor, including marine areas. Following the assessment of preferred habitats for these species, and the ground truthing of representative locations along the pipeline corridor, it was established that the proposed works could potentially impact 15 of these protected species (i.e. eight reptiles, four mammals, two birds and one insect). However these species are unlikely to be significantly adversely impacted by the Project.

Several of the species could utilise habitats within or in proximity to the corridor, but these species potentially occupy large home ranges and would not be significantly affected as a result of the proposed development. However, some species (e.g. Yakka Skink, Bridled Nail-tail Wallaby, Brigalow Scaly-foot, Little Pied Bat) if present, will require species-specific management measures to be implemented to avoid or minimise potential impacts.

Given the successful implementation of the mitigation measures provided, it is considered that the proposed gas pipeline would not result in a significant adverse impact on any fauna species afforded additional protection under Australian or State legislation. As such, faunal issues do not represent a critical constraint to this Project.

Aquatic Biology

A search of databases and directories identified a number of important and RAMSAR wetlands in the vicinity of the proposed pipeline route however only one (i.e. Port Curtis Wetland) is traversed by the alignment. The Port Curtis Wetland occurs to the east of the Gladstone City Gate and would only be affected if the pipeline were extended to the southern industrial areas of Gladstone. Whilst the route traverses a mapped section of this wetland, ecological experts have assisted in location of the route so as not to impact any areas of high ecological value.

West of the Calliope River, aquatic plants are very sparse along the alignment. The only observed aquatic plants were *Cyperus* spp. in areas subject to periodic waterlogging (including much of the Brigalow gilgae country), *Nymphaea violacea* in Parker Creek at KP185 and *Eleocharis cylindrostachys* found in a tributary to Lorraine Creek at KP218. It is recognised that additional aquatic plant species (including the scheduled plant, *Aponogeton queenslandicus*) are likely to occur at some distance down and upstream of the pipeline within some of the larger creeks / rivers.

Potential impacts to aquatic biology include pollution, siltation, degradation of waterways, removal and modification of riparian vegetation and the creation of barriers.

The platypus and Fitzroy River turtle are particularly vulnerable to pollution and siltation.

Mitigation measures for the protection of aquatic flora and fauna will include the measures set out for terrestrial flora and fauna as well as:

- Potential for HDD of major rivers, geology permitting, (e.g. Fitzroy and Calliope);
- Stockpiling soil within floodplain areas;
- Minimising corridor width in wetland/river areas to safest working width;
- Obtaining appropriate permits, under the *Fisheries Act 1994*;

- Avoiding major riparian vegetation wherever practicable;
- Avoiding altering hydrology; and
- Implementing key actions from the Action Plan for Australian Reptiles including:
 - Preventing pollution and siltation of the Fitzroy River and its tributaries;
 - Reducing erosion; and
 - Retaining native vegetation along river edge.

Weed Management

The potential for the investigation, construction and operational activities to either introduce or spread weeds along and adjacent to the pipeline route has been recognised by Enertrade and weed management is considered a 'whole of life' activity. A Draft Weed Management Plan, that includes hygiene and control protocols, has been prepared and is included as an attachment to the EIS (refer Appendix 3). Effective implementation will ensure that impacts will be minimal in this regard and may indeed improve the opportunities for control of existing outbreaks.

On-site vehicle wash-down facilities will be installed where appropriate and washdown and weed free certification of all equipment will be obtained prior to initial access to the easement.

Rehabilitation

The EIS presents strategies for the rehabilitation of the areas disturbed by the proposed pipeline development and comprehensive rehabilitation measures are detailed in the Draft Construction EMP (refer EIS Appendix 3) which will be further refined prior to commencement of the Project. A focus will be on the use of local native species for rehabilitation. Introduced grass species will only be used where the pipeline passes through an area of improved pasture and the pastoralist requires that similar species be re-established or where soil stability needs dictate the use of sterile or other introduced grasses.

Topsoil will be separated from sub-soils and stockpiled separately for re-instatement over the pipeline and work areas, ensuring retention of topsoil and providing a source of local provenance seedstock. The soil seed bank will be supplemented by broadcast sowing of appropriately treated seed (e.g. smoke pre-treated bluegrass seeds).

Rehabilitation will include those measures set out under Land Use.

Historic and Indigenous Cultural Heritage

Historic and Indigenous Cultural Heritage considerations have been taken into account in the planning of the CQGP. Work has included:

- Review of relevant cultural heritage registers and databases;
- Literature analysis of local historical studies;
- Compilation of a Historic Heritage Database;
- Targeted field investigations of places entered in the database and spot checks of portions of the route;
- Consultation with relevant agencies for the management of register and noted places; and

- Finalisation of management plans based on the above and with the concurrence of the Queensland Heritage Council, Environmental Protection Agency (EPA) and other agencies as necessary.

Historic heritage surveys located three sites in the vicinity of the pipeline route however none of these sites fall within the actual route of the proposed pipeline. None of the places correspond with any place included in Australian or Queensland historic heritage registers.

In regard to Indigenous Cultural Heritage Enertrade has to date agreed Cultural Heritage Management Plans (CHMP) for all bar 5km of the pipeline route and anticipates finalising the outstanding section by the end of 2006. The CHMP's comply with the *Aboriginal Cultural Heritage Act 2003* (ACHA). The processes and steps followed to achieve this include:

- Identification of cultural heritage parties via Notices and Letters as prescribed by the ACHA;
- Initial meetings and discussions with Traditional Owner groups on agreement and terms for cultural heritage surveys;
- Appointment by Traditional Owners of technical advisor of their choice;
- Detailed cultural heritage field surveys over an approximately 100m wide area, with emphasis of avoidance through line changes wherever practicable; and
- Negotiation of agreement (CHMP) in relation to the management and protection of identified cultural heritage sites during construction by provision of monitoring by Traditional Owners.

Potential impacts on cultural heritage include damage to shallow artefacts, subsurface material and significant vegetation (e.g. scar trees) as a result of clear and grade and trenching activities.

A settlement will be made with the Queensland Heritage Council and the EPA of any management measures required for any historic and cultural heritage.

Enertrade's agreed CHMP's provide for participation of Traditional Owners in the monitoring of clear and grade and trenching works. This approach, following on from the extensive on-ground surveys, will provide strong protection of Cultural Heritage sites.

Social and Economic Environment

The social character of the region varies from that of major coal mining centres and broad scale grazing activities in the northern and central areas of the route to uses associated with major industrial development in the GSDA and adjoining areas. There has been conversion of significant areas of agriculture and grazing lands to higher value crops such as cotton and summer grain crops in recent years.

Employment levels in the region are better than the state average with particularly high levels in the coal mining areas.

Whilst the area is well serviced with accommodation facilities, ranging from hotels and self service apartments to caravans and cabins, the occupancy rates are very high (up to 100%) particularly from Monday to Friday.

The region is well serviced by medical and educational facilities, with high order services available at Rockhampton and Gladstone. Facilities also exist at Moranbah and Emerald.

The main social impact will be the influx of pipeline construction workers. Due to the limited availability of accommodation in the area it is intended to accommodate this temporary workforce in construction camps along the corridor. Operational demands will be small (e.g. 3 – 5 personnel) and readily accommodated by the existing services and infrastructure.

The principal initial contribution of the Project to regional economic development would be for industrial gas supplies in Gladstone, as an energy source in industry and as a

petrochemical or chemical feedstock, as well as for domestic purposes. The gas pipeline also passes numerous coal mines in the region and offers scope for complementary development of other CSG fields.

Outside the Gladstone-Calliope area, there is scope for the use of gas in the Stanwell Energy Park to the west of Rockhampton, which would complement nationally competitive electricity supplies from the Stanwell Power Station.

In Belyando Shire the Project could add to the cumulative impacts of coal mining and gas developments and stimulate further residential and industrial development.

The gas pipeline investment has been estimated (as at November 2005) as having the potential to generate a direct increase in gross state product of approximately \$69 million and a total impact, allowing for flow-on impacts, ranging between \$116 million and \$168 million. The direct impact on employment would be approximately 150 full time equivalent (annualised) jobs during the year of construction, which would rise to approximately 221 to 295 full-time equivalents when flow-on impacts are incorporated.

Project expenditure during the operations and maintenance phase has been estimated to be of the order of \$6 million per annum. The total annual impacts have been estimated to range from \$4.2 to \$5.4 million for gross state product, and 8.2 to 12.7 full-time equivalent jobs.

Air Environment

The Queensland *EP Act and Environmental Protection (Air) Policy (EPP Air)* deal specifically with the air environment and specify the indicators and goals to protect identified environmental values for air.

There is a need to ensure that the construction and operation of the pipeline does not adversely affect the air quality of the urban areas or existing residences in proximity to the pipeline easement.

The major potential air quality impact during construction would be associated with dust generation. Most of the route is sufficiently distant from human habitation and major roads for the effects of elevated dust levels to go largely unnoticed except by the construction workforce. Areas where elevated dust levels may influence sensitive areas are that part of the route near the McKenzie River State School, particularly in dry windy conditions. Dust suppression methods (e.g. watering) will be employed to minimise nuisance and, given that the construction period is only a few months, any adverse effects will be of relatively brief duration.

There would be no initial change in the operational air emissions of the compressor station. In the event that the compressor station is expanded, there would be an increase in gaseous emissions, including methane, carbon monoxide and nitrogen oxides during normal operations. The model AUSPLUME was used to determine the air pollution concentrations of sulphur dioxide (SO₂), nitrogen oxides (NO_x) and unburnt hydrocarbons likely to be associated with the inclusion of an additional four compressor units. The modelling data showed that ground level concentrations of these pollutants are predicted to fall well below the ambient air quality criteria set out in the EPP Air and should therefore not create any long term impacts in the Moranbah area.

Greenhouse Gas

An assessment of the effects of the Project development on Greenhouse Gas emissions and the compliance with Australia's National Greenhouse Strategy has been undertaken. The pipeline Project will collect naturally occurring methane gas (CH₄) that under normal mining operations would generally be released to the environment. CSG from mines contributes a

large proportion of the overall CH₄ emitted to atmosphere in Australia, resulting in an elevated potential for global warming. By harnessing this CSG, and using it as a fuel source in power generation or as feedstock to industry, and by association, converting it to carbon dioxide which has a warming potential 21 times less than methane, there will be a net reduction to the overall greenhouse gas emissions. The Project will thus conform to Australia's National Greenhouse Strategy (as prepared by the Australian Greenhouse Office - AGO).

Noise and Vibration

Environmental values for noise are addressed in the Environment Protection (Noise) Policy (EPP Noise). The key values to be enhanced or protected are the well being of the community and individuals. The acoustic objective of the EPP is to ensure people living in residential areas are not subjected to ambient noise levels in excess of 55dB(A).

Due to the length of the route, the short term nature of construction and the minimal noise impacts associated with operation of the pipeline background noise monitoring has not been conducted for the route. Instead typical background noise levels for rural and rural residential areas have been adopted. The key noise impact during construction will be from plant and machinery used in earthworks on the pipeline. Impacts from construction machinery would be mitigated by the relatively short period of intensive construction activity at any one point along the pipeline route. Where necessary the construction contractor will liaise with the community on the likely duration of noisy activities and, in certain circumstances, will consider scheduling particularly noisy activities at periods less likely to cause nuisance to nearby residents. For the majority of the route, residents would be a significant distance from the alignment and would be unlikely to be impacted.

The compressor station at Moranbah currently holds licences that set out the allowable noise levels as a result of the plant operations. Ambient noise levels were measured in Moranbah prior to the commencement of construction on the existing compressor station. Noise measurements have been taken at locations around Moranbah to check the current ambient noise levels with the compressor station operational and to verify the results of the modelling carried out during the NQGP Project. The field measurements showed a high level of correlation between the predicted noise levels and actual noise levels in the area and demonstrated that Enertrade is in compliance with its noise limits.

This EIS has assessed the potential impacts of increasing the number of compressors at Moranbah from four to eight, with a maximum of seven units working at any one time. Modelling has shown that with the installation of an acoustic barrier, similar to the one already installed at the compressor station, the additional compressor units would not adversely affect the noise environment.

Vibration

The major source of vibration associated with construction and operation of the Project would be blasting during construction. Blasting may be necessary in hard rock terrain; however this is not expected to occur in proximity to any building or structures.

No adverse impacts are expected from vibration and fauna species are not expected to be adversely impacted by construction noise or vibration.

Waste

Relatively small amounts of domestic and industrial waste will be generated during construction and operation of the pipeline and compressor station. These will include low volume, low level contaminated soil / gravel (e.g. with substances such as oil or pesticides),

packaging and scrap metal. All waste material will be removed from the ROW each day and all wastes will be disposed of to a facility agreed to by the local Shire Council and in accordance with *EPA Waste Management Guidelines*.

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

A hazardous materials inventory for the Project will be finalised and all hazardous wastes will be appropriately stored in bunded areas away from watercourses and in accordance with legislative requirements. Sumps will be drained periodically so as to prevent overflow and subsequent pollution of the surrounding land and / or waterbody and all hydrotest water will be disposed of in accordance with the Draft Construction EMP.

Waste disposal during the construction phase of the Project will be carried out in consultation with the relevant Shire / City Council and preliminary contact has been made with the relevant Environmental Health Officers. Only waste management procedures consistent with the relevant local Shire requirements will be implemented.

Waste oils and semi-fluid lubricants (used in the compressors, gear cases, gas dehydration and vehicles) and ethylene glycol (used in the Dehydration unit) are collected by a licensed contractor for reprocessing and / or disposal through approved means.

Traffic Transport and Access Arrangements

Pipe and equipment transport options have not been decided at this stage but based on the NQGP experience are likely to be a combination of road and rail. Transportation of all plant, equipment and heavy vehicles required for the pipeline construction is not expected to generate any special transport requirements. Road transport of pipe would be on extendible semi-trailers, carrying up to 23 tonnes per vehicle, and would involve no more than 34 two way (i.e. 17 each way) truck movements per day over a two to four month period at any region. Other transport requirements for the Project will be associated with the movement of construction machinery, campsite facilities and workforce movements.

A specialist transport logistics firm will be contracted to manage the heavy equipment movements, and will handle all permitting and approvals through the Department of Main Roads (DMR) or Queensland Transport as appropriate.

An inventory of road conditions in and around the construction area will be carried out, in consultation with the relevant authorities, prior to construction commencing. Discussions with the DMR and a review of existing traffic flows indicate that there will be no long term adverse impacts on the road system as a result of Project transport requirements. The Project will manage road access and potential deterioration directly with relevant authorities and any damage that can be proven as being caused by hauling pipes on gazetted roads will be made good. It is expected that selected locations will require minor upgrades prior to construction and that water and maintenance grading (at the Proponent's expense) will be required during concentrated construction periods.

Impacts of pipe and equipment transportation during the construction period include slow moving traffic on roads and subsequent disturbance to local traffic and motorists. Traffic will increase near any given location of the construction spread with transport of pipe, materials, fuel and construction personnel. These impacts will be managed through procedures, in consultation with the relevant authorities and further specific mitigation measures provided.

Hazard and Risk

Pipelines are recognised as a safe and efficient means of transporting natural gas. However, all developments present some level of risk.

A preliminary risk assessment, focussing on location analysis and threat analysis, has been completed in accordance with the existing *AS2885 Gas and Liquid Petroleum Pipelines* and the proposed amendment under consideration for the standard. The route traverses predominantly rural land, with some residential locations at Gladstone and Moranbah. The preliminary studies have shown that the pipeline is located at a safe distance from populated areas.

A combination of physical and procedural measures will be applied to the entire pipeline to either eliminate threats or to reduce and manage them in order to ensure that appropriate safety standards are maintained.

A detailed risk assessment will be carried out prior to construction, in accordance with the most current version of *AS2885*.

Occupational Health and Safety

CQGP Project Manager, Discipline Managers, Leaders and Project personnel are fully committed to ensuring the safety of all people who may be affected by the development, construction and operation of the Pipeline and to attaining best practice results wherever possible, as opposed to minimum compliance.

A Field Safety Management Plan (FSMP) has been developed to meet the ongoing occupational health and safety (OHS) requirements of the Project. Additional procedures and plans have been, and will be, developed to complement the FSMP.

During the construction phase of the Project, additional safety procedures will be developed. Measures are in place to greatly reduce the likelihood of third party interference causing rupture to the pipeline.

Enertrade has in place detailed emergency response plans which are regularly reviewed and will be implemented for the construction phases of the Project.

Operations for CQGP will be carried out in accordance with the plans and procedures in place for NQGP.

Environmental Management Plans

A Draft Construction EMP (refer Appendix 3), compliant with the *Australian Pipeline Industry Association (APIA) Code of Environmental Practice*, and incorporating the findings of this EIS, has been prepared and will be finalised prior to construction commencing. This EMP will be the principal guiding document in relation to environmental management for the Project.

Conclusion

The proposed gas transmission pipeline from Moranbah to Gladstone is located in remote grazing country. The tropical climate and periods of drought in this region produce dramatic changes in the landscape depending upon the amount of rainfall.

The removal of vegetation for construction of the pipeline and future upgrade of the compressor station has the potential to further reduce the biological resources of the region. However, the area of impact from the Project is not considered significant within the wider region, which has been significantly impacted by agricultural activity.

The proposed pipeline route has been selected to avoid or minimise impacts on significant ecological species and remnant native vegetation.

Potential impacts associated with the construction and operation of the Project can be further minimised through the application of environmental management techniques set out in the Draft Construction EMP (refer Appendix 3).

Enertrade believes that the total impact of the proposed pipeline has been shown to not be significant when assessed in a regional context and that the Project will not result in any long-term adverse effects on the physical, built or social environment.