Enertrade

Central Queensland Gas Pipeline Project

EIS Supplement: Response to Submissions

July 2007

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1 INTRODUCTION

Enertrade, a Government Owned Corporation, has been investigating the construction of approximately 450km of gas transmission pipeline in central Queensland (the Central Queensland Gas Pipeline (Moranbah to Gladstone) (CQGP). The pipeline will comprise approximately 420km of high pressure (15.3MPa) pipeline and 30km of low pressure (5.1MPa) pipeline. The high pressure section would cover from Moranbah to a City Gate in Gladstone, which is proposed to be adjacent to the existing Comalco facilities. The low pressure lateral would provide a connection from the City Gate to the southern industrial area of Gladstone. The pipeline will be a buried for its entire length except for above ground structures such as mainline valves and scrapper stations. The pipe is proposed to be 300-450mm[1] nominal diameter, and will supply coal seam methane (CSM) gas from Moranbah in central Queensland to Gladstone. The pipeline will have an initial capacity to transport up to 20PJ per annum of gas which, through additional compression, can be increased to a maximum of 50PJ per annum. Construction will straddle approximately a 12 month period. Capital investment for the CQGP Project will be in the order of $A220-440 million depending upon the pipe diameter.

In October 2006 the Environmental Impact Statement (EIS) for the project was released for public comment. This document provides a response to the submissions made to the EIS.

During the period between the EIS and this Supplement being completed the Queensland Government undertook a review of its government owned corporations. Enertrade was awaiting a decision on the outcome of this review before formally submitting the Supplementary Report. On the 15 May 2007 the Queensland Government announced that Enertrade's electricity and gas interests would be transferred to other government owned corporations. As part of the ClimateSmart strategy this plan was revised and Enertrade's gas assets, which include the North Queensland Gas Pipeline (NQGP), will now be sold. It is intended that NQGP and CQGP will be sold as a package and to this end it is Enertrade's intention to complete the application for a pipeline licence for the CQGP. To achieve this it is necessary to complete the EIS process to enable the Environmental Protection Agency (EPA) to issue an Environmental Authority (EA) in support of the pipeline licence.

Whilst the EIS has addressed the entire pipeline route from Moranbah to the southern industrial estate in Gladstone land agreement's have been focussed on the high pressure pipeline route from Moranbah to the City Gate location. As such Enertrade has responded to all of the issues raised in the submission for the entire route of the pipeline but recognises that approval for the low pressure lateral will be conditional upon the Proponent/construction contractor finalising a number of land access and approval issues. All commitments made within the EIS and this Supplementary report will apply to any new Proponent and its construction contractor as such any reference in the EIS to Enertrade should be replaced with 'the Proponent'.

The following sections of this report provide revisions to the various sections of the EIS as a result of the responses to the submissions to the EIS. The information is presented under the original EIS chapter/section headings and numbers with the revisions shown in blue. Copies of the submissions to the EIS are provided in Attachment A. Full responses to the submissions, with reference to the relevant sections of the EIS, are given in Attachment B to enable individual submitters to review the responses to their submissions directly.

[1] The pipe diameter may be increased prior to pipe order if market conditions justify it. Any change in pipeline diameter would not alter the construction duration, or environmental impacts for the route. The EIS addressed the impacts based on the larger pipe diameter.

2 REVISIONS TO THE EIS

EXECUTIVE SUMMARY

Project Approvals

Amend title of Food Act to read Food Act 2006.

Project Description

Pipeline

Amend the wording on page ES-9 to read:

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 typically buried with a depth of cover[2] of at least 900mm. The pipeline would be operated with a maximum allowable operating pressure of 15.3MPa.

1.0 INTRODUCTION

Replace Figure 1-1 with Revision J of the route which incorporates the amendments discussed in this Supplementary Report.[3]

1.1 Project Description

Construction would straddle approximately a 12 month period the timing of which will be dependent upon the new Proponent. Capital investment for the Project will be in the order of $A220-400 million depending upon the final pipe diameter selected[4].

[2] AS2885 requires a minimum cover of 750mm.

[3] These amendments are not large and do not affect most of the mapping provided in the EIS thus other maps have not been provided. The main change occurs at Moranbah and this section of the revised route is shown in Figures 3-6 and 4-24.

[4] The price variation simply reflects the difference in cost between building a 300mm pipeline and a 450mm pipeline. One of the major contributors to this cost variation is the price of steel which is sold by the tonne. 300mm pipe typically has a wall thickness of ~7mm and weighs ~56tonnes per km whilst 450mm pipe typically has a wall thickness of ~10mm and weighs almost twice that of the 300mm pipe. The size of the pipe will make very little change to the construction time for the Project. There would be additional work in welding and joint coating in the field however this would be addressed by additional crew members. These additional numbers are already reflected in the potential maximum number of workers quoted in the EIS.

Replace Table 1-2 with the following table which includes a number of amendments to legislation requirements.

Table 1-2: Legislation, Licences and Permits

Legislation	Approvals Licences and Permits	Government Agency
Coastal Protection and Management Act 1995	Permit for works in tidal areas and in coastal management districts.	Environment Protection Agency (EPA)
Environmental Protection and Biodiversity Conservation Act 1999 (Commonwealth)	Approval under section 9 of the *EPBC Act.*	Minister for the Environment & Heritage
Environmental Protection Act 1994	Environmental Authority for: Environmentally Relevant Activity (ERA) 21C Construction of a new transmission pipeline. ERA 21E for operation of the pipeline.	EPA
Dangerous Goods Safety Management Act and Regulations 2001	Permits for the storage of dangerous goods	Local Government
Fire and Rescue Authority Act 1990	Permit to light fires – if burning of waste materials required.	Department of Emergency Services
Fisheries Act 1994	Permit to construct waterway barriers, temporary or permanent; disturbance of marine plants.	Department of Primary Industry and Fisheries (DPI&F)
Food Act 2006	Campsite food preparation areas to comply with the provisions of the Food Safety Standards.	Local Government
Nature Conservation Act & Regulation 1992	Authority to move / disturb or destroy protected plants if required. Permit to rescue/rehabilitate protected animals	EPA
Petroleum and Gas (Production and Safety) Act 2004 and Regulations	Survey Licence. Pipeline Licence.	Department of Mines and Energy (DME)
Public Health Act 2005	Camp sites must conform with the requirements of the Act	Queensland Health
State Development and Public Works Organisation Act 1971	Coordinator General's report.	Coordinator General
Transport Infrastructure Act 1994	Permit to work on or interfere with State owned Roads or Railways.	Department of Main Roads (DMR) / Qld Rail

Legislation	Approvals Licences and Permits	Government Agency
Transport Planning and Coordination Act 1994 *Transport Operations (Road Use Management) Act 1995* *Transport Infrastructure (SCR) Regulation 2006* *Transport Planning and Coordination Act 1994*	Approval for any temporary road access	DMR
Water Act 2000	Permit to draw water from any river, creek, stream or groundwater aquifer in Queensland – where water is required for construction purposes.	DNRW
Workplace Heath and Safety Act 1995	Primary legislation for the safe conduct of construction activities	Workplace Health and Safety

2.0 PROJECT SUBSTANTIATION

2.3.2.1 Route Selection

The study area was referenced against existing environmental data including:

- Regional Ecosystem Mapping (EPA);
- Flora and fauna database searches (EPA, (Herbrecs, Wildnet), Queensland Museum and EPBC databases);
- Biodiversity Planning Assessment (EPA);
- EPBC Act guidelines;
- Ramsar listings;
- Directory of Important Wetlands in Queensland (Blackman et. al., 1999);
- Watercourses (DNRW);
- Topography and slope data (DNRW);
- Acid sulfate soils reporting and mapping (Ross, 2004);
- Good Quality Agricultural Land mapping (DRMW); and
- Existing land use.

Results of these preliminary assessments identified a number of sensitive areas, including ecological communities and flora and fauna species protected under both Queensland and Australian legislation, important wetlands, large watercourses, steep terrain and potential acid sulfate soil areas, which might occur in the study area.

A constraints mapping layer was established by the ecological experts based on the preliminary desktop assessments and the results of their field survey work (refer Section 4.4.1 - Sensitive Environmental Areas and Figure 4-21). These ecologically sensitive areas include:

- Ecological communities and flora and fauna species protected under Queensland and Australian legislation;
- Important wetlands;
- Large watercourses;
- Steep terrain; and
- Potential acid sulfate soil areas.

Experienced botanists / ecologists have assisted (and will continue to assist) where any alignment refinements are proposed within these constraint areas.

2.3.2.2 Constraints

Yarwun

Amend the section to read:

The Yarwun area provided a number of challenges to route selection. This area represents a major transport corridor adjacent to the Mt Stowe State Forest. The corridor already contains a main road, electric rail line, water pipeline, existing gas transmission pipeline and telecommunications. A key issue for the proposed pipeline in this area is electrical interference from the rail line and avoidance of the State Forest. The Proponent has been in consultation with the various parties involved with the infrastructure corridor through Yarwun to resolve an appropriate route for the pipeline. The Proponent believes that its current proposed route, adjacent to but outside of, the Mt Stowe State Forest is an appropriate location as

it avoids the State Forest, minimises any potentially adverse electrical interference from the railway line and avoids restricting other users of the infrastructure corridor.

Replace Table 2-3 with the following:

Table 2-3: Route Development

Revision	Comment on Major Changes
A	This was the original starting line for initiation of studies. The route basically selected the shortest distance between Moranbah and Gladstone taking into account obvious terrain challenges to a transmission pipeline such as the Mt Morgan Range. Desktop studies were carried out to identify environmental and land tenure (e.g. mining lease) constraints within 50km either side of this line.
B	Based on the studies conducted on Revision A the route was refined to produce Revision B. A helicopter survey was carried out for this route to review constructability constraints and vegetation. Several changes were made to the route to avoid areas of sensitive vegetation and an environmental constraints map was created.
C	With key environmental and land tenure constraints identified, technical field studies were carried out to assess whether there were any issues with constructing the pipeline in close proximity to existing power transmission lines or electrical rail line. As discussed above it was determined that co-location with electric rail lines was not feasible and the route was thus revised in relevant locations.
D	This revision developed from the need to reduce close proximity to the electric rail line.
E	Whilst the environmental and technical route changes were occurring, consultation was continuing with potentially affected landowner Route changes were also initiated that avoided the proposed Byellee Wetlands area near the Calliope River and mining interests. Mining tenement holders, both lease and exploration holders, requested alterations to Revision D. Discussions with these stakeholders indicated that a route to the east of Revision D might be achievable without creating other major conflicts (e.g. environmental, cultural or technical).
F	Revision E was circulated to mining tenement holders for review and further changes to the route were identified. At this time field studies for flora and fauna also commenced and accounted for minor localised route adjustments. .
G	The principal changes in this revision arose from further issues arising out of the electrical interference associated with proximity to the electric rail line in the GSDA and uncertainty associated with availability of space through the highly congested Yarwun transport corridor. A number of minor changes were also made to accommodate the findings of the environmental field studies plus further changes to accommodate mining lease holder requirements and Gladstone City Council requirements in relation to proposed residential development.
H	Further refinements were made to the route to the north of Mt Larcom seeking better pipeline construction terrain. In addition changes were made around the Stanwell Power Station as a result of electrical induction issues within a section of the Powerlink easements.
I	Further terrain investigations and stakeholder negotiations, particularly with Shale Oil tenures, the GSDA and State Forest areas, resulted in the abandonment of the route to the north of Mt Larcom and reassessment of the southerly route which has now been adopted as preferred. This portion of route follows one of the 3 identified transport corridors through the GSDA.
J	Minor adjustments to take into account landowner negotiations over this period. Amendments in the Rainbow Nature Reserve as agreed with EPA during field review.
K	Amendments to incorporate line changed associated with Moranbah area and Bowen Central Coal sections of the pipeline route as a result of submissions to the EIS.

2.4 Commitments

Additional Commitments

Number	Section	Commitment
2-3	2.3.2.2	The pipeline route will not impact upon the Byellee Wetland.
2-4	2.3.2.2	The pipeline route will not adversely impact on the landscaped area of the Botanic Gardens that impinges upon the powerline easement
2-5	2.3.2.2	The Proponent will ensure no long term negative impact on the social amenity of the Meteor sports field.
2-6	2.3.2.2	The Proponent will ensure that all areas of the pipeline are designed to provide the maximum level of safety in accordance with AS2885, this will include areas such as the Meteor Sports Club.
2-7	2.3.2.2	The pipeline route will not directly impact the Mt Stowe State Forest unless directly requested by the State Government.
2-8	2.3.2.2	The Proponent will seek approval from Council and the EPA on the most appropriate pipeline route in the Kirkwood Road area as and when the low pressure lateral is required.

3.0 DESCRIPTION OF PROJECT

3.1.4 Highest Astronomical Tide Line

Add the following paragraph:

Potential impacts to wetland areas would only occur on that section of the pipeline route which is proposed between the Gladstone City Gate, adjacent to the existing Comalco facilities, and the terminus in the southern industrial area of Gladstone, adjacent to QAL (i.e. the low pressure lateral). As discussed this section of the route is subject to market requirements and is not proposed for immediate construction. The Proponent and construction contractor will seek approval from DNRW and the EPA for the final route of the low pressure lateral once there is a demand for a pipeline connection in this area. The aim will be to ensure that the final route has no long term adverse impacts on any wetlands of national significance or on any sensitive/threatened ecosystems located downstream of any such crossings (also refer Section 3.15).

3.1.6 Access

Amend the second paragraph to read:

The selection of access track routes will be based on the objectives for the pipeline route selection, subject to the conditions of the Draft Construction EMP, and completed in consultation with all relevant landholders and regulatory authorities. The appointed Proponent and construction contractor will ensure that all temporary access meets the requirements of the Main Roads - Road Planning and Design Manual and meets safety criteria for use during the construction period. New access tracks shall avoid environmentally sensitive areas, shall be managed in accordance with the Cultural Heritage Management Plan (CHMP) and shall be scheduled to minimise disturbance to landholders. Access tracks shall be rehabilitated in accordance with landowner requirements.

3.1.7 Easement Widths and Acquisition

Amend the final paragraph to read to:

The Proponent is actively negotiating with landowners / holders and native title claimants along the proposed route of the pipeline. Negotiations will continue with landholders on issues relating to compensation and terms and conditions of individual consent agreements (refer Section 1.5). The construction contractor will, in accordance with legislative requirements, apply to DMR for Ancillary Works and Encroachment (AWEs) permits for all works within road easements prior to construction. Such applications will include detailed maps and drawings of the Peak Downs Highway crossing and the Fitzroy Development Road area, along with all other State controlled road crossings.

3.1.9.4 Survey and Fencing

Add to last paragraph:

The permanency of these gates is dependent upon access arrangements and landowner consent. Permanent gates will be left wherever practical. Where this is not practicable alternative operations access arrangements will be made with the relevant landowner.

3.1.9.5 Temporary Facilities

A range of temporary facilities will be required during pipeline construction. These include work areas for equipment and pipe delivery and storage and campsites.

Occasionally borrow pits to source additional fill material may be required but this is not anticipated for the CQGP. Riverine quarry material will not be used by the Project, unless sourced through a licensed provider.

3.1.9.12 Testing

Amend the second paragraph to read:

Hydrotesting procedures, including water sourcing and disposal, will be determined during the detailed design and construction phase. Water is normally sourced from existing water sources in the area such as dams or watercourses. Occasionally perched turkeys nest dams (i.e. no capture of overland flow) may be built to hold hydrotest water to ensure acceptable fill flow rates (e.g. where bore water is used). Such dams would typically have a capacity of 20-25ML and be lined with a short term polythene liner. These dams are typically impractical for landowner needs and are removed at the end of construction. Approvals will be obtained from the DNRW and / or the owner of the water.

Insert the following in front of the last paragraph of Section 3.1.9.12 and renumber all subsequent Tables in Chapter 3:

Disposal of hydrotest water has received much attention from regulatory authorities in recent years and during 2005 the CSIRO Manufacturing and Infrastructure Technology (CMIT) group conducted studies into the quality of hydrotest water (paper available through the Australian Pipeline Industry Association). The study found that the impact of hydrotest water on the environment was a function of the initial water quality, nature of any additives, the rate of application, the site of application and the robustness of the receiving ecosystem.

The quality of the initial water can affect the rate of metal oxidation during pressurisation and certain bacteria, such as sulphate reducing bacteria (SRB) often found in soil can induce bio-corrosion of the pipe walls. Additives are used as a preventative measure to minimise the risk of corrosion damage to the pipe during hydrostatic testing. The two main additive groups are oxygen scavengers and biocides. The oxygen scavengers reduce the amount of oxygen available within the pipeline thus reducing the potential for corrosion, whilst the biocides prevent the formation and growth of micro-organisms. On occasion these additives may be used in combination. Examples of typical oxygen scavengers and biocides used in the oil and gas industry are given in Tables 3-3 and 3-4.

The effects of oxygen scavengers and any residual within the test water can be treated through exposure to air (i.e. spraying of the water into the air).

Biocides are rarely used in hydrotesting due to the limited residence time (CMIT 2005) and it is not intended to use biocides for the CQGP. Elimination of suspended particles, scale and cleaning of the pipe by scrubbing and flushing is often sufficient to reduce the potential habitats and bacteria proliferation (CMIT 2005). If it is found necessary to use biocides, due to the quality of the available water and/or the duration that the water is required to be held in the pipe, then treatment and disposal will be in accordance with the recommendations made in the CMIT (2005) report on hydrotests.

Table 3-3: Examples of common oxygen scavengers

Active Ingredient	Example
Ammonium bisulphite	Baker Petrolite 3-514 OS
Sodium sulfite	Chemtreat 649L
Sodium bisulphite	
Sodium metabisulfite	MAXSO3™ Chemtreat 650 OS
Liquid carbonhydrazide	
Monoethanolamine	Cortron IRU-163

Source: CMIT 2005

Table 3-4: Examples of biocides used in the oil and gas industry (Chen and Chen 1997, Frayne 2001)

Biocide	**Active ingredient**	**Examples**
Glyoxal	Dialdehyde	
Organobromide	DBNPA (2,2 dibromo-3-nitrilopropionamide)	Dow™Antimicrobial 7287 Antimicrobial 8536
Polymeric biguanide	PHMB	Vantocil® IB
Quaternary phosphonium salt	THPS (tetrakis(hydroxymethyl)phosphonium sulfate)	Tollcide® PS71S Bactron AUK-550
Quaternary ammonium	Alkyldimethylbenzylammonium chloride	Synprolam™ 35DMBQC50 and 80 Barquat® OJ50 and OJ80 Arquad™ B-100
Thiocyanate	MBT	AMA®-410W AMA®-210
Combination package	Biguanide/oxygen scavenger/corrosion inhibitor	

Source: CMIT 2005

3.1.9.14 Easement Widths and Acquisition

Amend paragraph 3:

Appropriate approvals from the DNRW (e.g. *Riverine Protection Permit*, *Consent to Construct* across a watercourse) must be in place prior to construction.

Amend factors to be considered (page 3-12)

In selecting an appropriate pipeline watercourse crossing method, many factors must be taken into consideration. These include (but are not limited to):

- Pipeline diameter;
- Watercourse width, depth and flow;
- Environmental sensitivity (refer Table 3-3);
- Minimising impacts to the crossing;
- Geotechnical concerns;
- Substrate composition;
- Hydrological data;
- Cost;
- Navigation;
- Need for access across watercourse during construction;
- Regulatory constraints;
- Equipment availability;
- Contractor expertise;
- Downstream water users;
- Landowner and community issues;
- Engineering constraints;
- Timing (i.e. season); and
- Amount of working space.

3.2.1 Facilities Layout

A printing error occurred with Figure 3-6 resulting in an extra line being shown on the diagram which gave the impression that the pipeline was going to both the east and west of Moranbah. Figure 3-6 should be replaced with this correctly printed figure.

3.3.1.2 Accommodation

Insert after "A typical camp layout is provided in Figure 3-10." (page 3-22)

Campsite effluent is typically handled through an on-site package treatment plant with the following features:

- Sized to adequately treat municipal wastewater produced by up to double the number of expected personnel (e.g. 450 equivalent persons);
- Biological activated sludge system (with return activated sludge);
- Chlorine dosing at two disinfection points, effluent clarified prior to entering the chlorine contact tank and again prior to sand filtration;
- Sand filtration of final effluent;
- Capable of producing Class A level effluent; and
- Discharge of treated effluent to ground in a fenced and signed area.

The problem commonly encountered with these systems is the twice daily shock loading which occurs each morning and evening coinciding with the start/end of the working day. This shock loading can upset the operation of the system, particularly the capacity to destroy E Coli. Other characteristics (e.g. BOD, DO, TSS), whilst well managed by transportable systems, are also difficult to control to standard treatment parameters under the daily shock loading levels.

To minimise the shock loading effect it is desirable to separate the grey water stream (i.e. shower, hand basin, laundry) and discharge this directly to ground. Disposal points for discharge of both grey water and treated black water are selected to ensure:

- No discharge directly to any watercourse or aquifer;
- Away from areas used by humans;
- Fenced to prevent livestock entry; and
- Signed to advise that effluent is being disposed.

Campsites are a short term facility, located away from watercourse, and as such should not have any long term impacts in relation to contamination of waters or land. The key criteria for control should be E Coli as this effects human health. All other elements (e.g. BOD, DO, TSS) should biologically adjust during the irrigation process.

Effluent discharge from the system is monitored daily and when E Coli levels are too high discharge is halted. If necessary the system is pumped out by a licensed contractor and the effluent disposed of to a nearby Council facility. The Proponent is aware that the Belyando sewage treatment facilities are at their limits and no sewage will be discharged to this Council's facilities from campsites used to construct the pipeline.

Septic facilities capable of handling up to 60 personnel were installed at Moranbah for the compressor station construction. If required these facilities would be reactivated/reinstalled at the time of any future compressor station upgrade.

3.6.2 Water Supply and Storage

3.6.2.1 Construction

Amend the first paragraph:

Raw water for construction will be sourced from local water supplies (e.g. dams, rivers, bores or local supply pipelines) and permits will be gained as and where required (e.g. authorisation under the Fitzroy Basin Water Resource Plan).

Add new paragraphs at the end of the section:

On-site treatment of raw water would only take place where it was not possible to source water from other suppliers. Treatment would typically be reverse osmosis followed by UV treatment for disinfection. All potable water will be required to meet *NHMRC Australian Drinking Water Guidelines 2004* and if treated on-site the water will undergo daily testing to ensure that it meets regulatory standards.

Effluent from the treatment of raw water would be used for dust suppression. Organic sludge from the processes would be disposed of by drying and then spreading on the land.

3.9 Commitments

Additional Commitments

Number	Section	Commitment
3-37	3.1.4	The Proponent and construction contractor will seek approval from DNRW and the EPA for the final route of the low pressure lateral once there is a demand for a pipeline connection in this area.
3-38	3.1.4	The Proponent and construction contractor will ensure that the final route has no adverse impacts on any wetlands of national significance or on any sensitive/threatened ecosystems located downstream of any such crossings.
3-39	3.1.6	The Proponent and its appointed construction contractor will ensure that all temporary access meets the requirements of the Main Roads - Road Planning and Design Manual and meets safety criteria for use during the construction period.
3-40	3.1.7	The Proponent and its appointed construction contractor will, in accordance with legislative requirements, apply to DMR for AWEs for all works within road easements prior to construction
3-41	3.1.9.5	Riverine quarry material will not be used by the Project, unless sourced through a licensed provider.
3-42	3.6.2	The construction contractor will ensure that the supply of water to the project will not compromise community water supplies along the pipeline route.
3-43	3.6.2.1	The principal construction contractor for the project will ensure that all potable water meets NHMRC Australian Drinking Water Guidelines 2004. If water is to be treated on-site the Rockhampton Population Health Unit Environmental Health Services will be notified.

4.0 ENVIRONMENTAL VALUES AND MANAGEMENT OF IMPACTS

4.1 Land

4.1.1 Land Use and infrastructure

Infrastructure

Add new paragraph:

The depth of pipe under road crossings will be a minimum of 1.2m below the bottom of the table drains. This depth will be maintained under the full width of the road reserve of the following roads:

- Peak Downs Highway
- Capricorn Highway
- Burnett Highway
- Bruce Highway
- Gladstone - Mt Larcom Road
- Dawson Highway
- Gladstone - Benaraby Road

4.1.3.2 Soils

Soil Stability and Erosion Control

Amend paragraph 6:

Erosion and sediment control associated with watercourses will include:

- Assessment of each watercourse by the construction contractor prior to construction of the crossing;
- HDD (geotechnical constraints permitting), at the main watercourses (e.g. Fitzroy and Calliope Rivers);
- Benching of the banks to provide a safe and stable crossing profile (excavated material stockpiled outside of the watercourse refer Figure 3.2);
- Grading soil away from the watercourses;
- Use of containment structures as appropriate;
- Use of stabilising techniques as appropriate (e.g. brush spreading, pegging of just matting or loose rock fill); and
- Use of trench breakers, silt fences and temporary and permanent earth banks.

Acid Sulphate Soils

Add to the end of the final paragraph:

A detailed ASS report will be prepared prior to construction of the low pressure lateral from the proposed Gladstone City Gate, near the existing Comalco Plant, to the southern industrial zone of Gladstone.

4.3.1.1 Surface Water

Replace the 1st paragraph on page 4-35 with:

The Ramsar site at Shoalwater and Corio Bays is approximately 70km north of the proposed alignment at its closest point. The proposed alignment does not transect any of the catchments which feed directly into this (or any other) Ramsar site. The catchments which are transected by the alignment feed water into the ocean at least 60km to the south of this Ramsar Site.

Delete last sentence before Section 4.3.1.2 (Groundwater) and insert new paragraph:

With the exception of the Port Curtis Wetland (which is transected by the alignment in the vicinity of the Calliope River), each of the Nationally Important Wetlands is some distance downstream of the proposed pipeline route (i.e. Fitzroy River Delta (5km), Fitzroy River Floodplain (15km) and The Narrows (10km)) and not directly transected.

4.3.2 Potential Impacts and Mitigation Measures

4.3.2.1 Surface Water

Insert new Section page 4-38 prior to Mitigation Measures:

Ramsar and Nationally Important Wetlands

Due to the separation of catchments transected by the proposed route and the closest Ramsar wetlands (i.e. Shoalwater and Corio Bays) being 70 km to the north, it is very unlikely that the proposal could have any potential impact on any Ramsar wetland.

Whilst it is recognised that there is potential for the proposal to impact on the four Nationally Important Wetlands downstream of (or in the case of the Port Curtis Wetland transected by) the alignment, it is considered that, subject to the following mitigation measures and the Proponent commitments to environmental management (refer Section 4.13 and Appendix 4), these wetlands will not be significantly affected by the Project activities.

Construction Techniques:

Insert at the end of the section:

During the drilling of a watercourse crossing there is the potential for the drill bit to intersect a fracture within the riverbed; when this occurs bentonite mud may be released into the watercourse. This event is referred to as a 'frac out'. Bentonite is a natural clay-like substance formed from the deposition of volcanic ash. When it is released into a watercourse through a 'frac out' it will cause increased turbidity until the material is fully dispersed. As an expansive clay bentonite works to reseal the fracture and released material normally settles quite rapidly. To aid the sealing of the fracture, wood or bark chips are often pumped into the drill hole combined with the bentonite; this then seals the fracture.

Where the watercourse is dry it is often preferable to leave the spilt bentonite insitu where it will dry out and breakdown into the surrounding area. Where a large spill occurs the material can be excavated and disposed of by burial.

Management Measures,

Add to paragraph two after the 4th dot point:

- To minimise the potential for a frac out occurring geotechnical investigations are normally carried out prior to drilling to provide a better understanding of the prevailing conditions and the type of drill equipment required. The entry and exit locations are normally set well back from the watercourse to enable the pipe to be located well below the bed of the watercourse thus reducing the potential for break through. As a final resort where a frac out has occurred which cannot be sealed off, the drill will be abandoned and an open cut crossing will need to be undertaken.

4.4 Nature Conservation

4.4.1 Sensitive Environmental Areas

4.4.1.1 Description of Environmental Values

Matters of State, Regional and Local Biodiversity

Insert new paragraphs on page 4-46 after 'Bridles Nailtail Wallabies around KP225-235)'.

The pipeline route originally discussed with the EPA from KP347 through to KP372 was altered due to the severe electrical induction that would be experienced from the Powerlink high voltage transmission lines (refer EIS Section 2.3.2 Electrical Interference).

A specialist corrosion and AC induction consultant was engaged by the Proponent to review the proposed route and pipeline design and to advise of areas whereby the pipeline and pipeline maintenance personnel would be put at risk through induced voltages from adjacent power or rail lines (refer Attachment D report and supporting independent peer review). In this area if the pipeline was installed in the vicinity of the transmission line it would, due to the extremely high soil resistivity, transmission line fault currents, tripping times of electrical protection equipment and phase sequencing, have induced voltages that would be potentially fatal to maintenance personnel or that would cause interference to the cathodic protection system. Apart from the interference to the cathodic protection system the induced voltages are likely to cause accelerated corrosion on the pipeline which if undetected could result in a pipeline rupture.

The Proponent therefore investigated alternative route options. A paper road reserve was identified and the boundaries confirmed by field survey work. The route was also investigated by a qualified ecologist to determine ecological features and values.

The route that is currently proposed is intended to be wholly contained within the road reserve (i.e. the entire 30 metres with no overhang outside of the road reserve). The Proponent would not be seeking any form of tenure over the nature reserve but rather a right to occupy the road reserve. The route has been selected to minimise disturbance to vegetation and wildlife habitat and recommended realignments identified in the field by EPA personnel have been incorporated into the latest route alignment (Rev J).

The Proponent is aware of proposals to create an infrastructure corridor in the Stanwell Power Station area and is maintaining a dialogue with the Department of Infrastructure on the options to use some, or all, of this corridor. The Proponent remains concerned about electrical interference issues with this corridor and its

alignment relative to urban areas, combined with a longer route. However the Proponent will continue to investigate this option. If the corridor is available at the time construction is required and can be demonstrated to be commercially and technically viable (e.g. electrical and urban safety issues) for gas transmission pipeline installation the Proponent is prepared to consider use of all or part of this corridor. Accordingly the Proponent seeks EPA endorsement for the proposed route through the nature reserve in the event that the infrastructure corridor is not available or not considered technically or commercially viable for installation of a gas transmission line.

4.4.1.2 Potential Impacts and Mitigation Measures

Replace Figure 4-21 with revised map showing the Port Curtis Wetland as an Ecological Constraints Area

4.4.2 Terrestrial Flora

4.4.2.2 Potential Impacts and Mitigation Measures

Vegetation Communities

Add dot point to the list on page 4-60:

- The Proponent and/or its construction contractor will hold talks directly with the DPI&F prior to construction of any crossing of the Calliope River and will apply for any required permits.

4.4.4 Aquatic Biology

4.4.4.1 Description of Environmental Values

Habitats

Replace the last paragraph (1st paragraph page 4-69) with:

The currently proposed crossing point of the Port Curtis Wetland was identified by ecologists on the basis that it is the narrowest extent of marine plants (i.e. saltmarsh and mangrove communities) within the vicinity. It is recognised however, that existing and proposed land use constraints and detailed engineering/construction requirements may require the selected crossing point to be adjusted. The extent and boundaries of the marine plant areas in this vicinity have been logged to facilitate assessment of any realignment requirements. It is proposed that the Calliope River and the adjoining salt marsh and mangrove communities will not be cleared or trenched but will be directionally drilled (i.e. HDD) in order to avoid impacts on this Nationally Important Wetland (refer Commitments 3-42, 3-43 and 4-23 and Appendix 4).

4.6.2.5 Accommodation

Insert additional paragraph at the end of the section:

The Proponent and construction contractor will ensure through the use of dedicated camp facilities that no further pressure is placed on the housing market in the Bowen Basin region.

4.7 Air Environment

4.7.2.2 Operational Phase

Predicted Gas Emissions

Add to last paragraph:

A detailed air analysis taking into account the issues raised in the EPA submissions to the EIS will be carried out as part of the design of any compressor station upgrade and the results submitted to the EPA as part of the license amendment application.

4.8 Noise and Vibration

A printing error occurred with Figure 4-24 resulting in an extra line being shown on the diagram which gave the impression that the pipeline was going to both the east and west of Moranbah. Figure 4-24 should be replaced with this correctly printed figure.

4.9 Waste

4.9.2 Waste Management

Replace paragraph 4 with:

Waste disposal during the construction phase of the Project will be carried out in consultation with the relevant Shire Council. Initial contact has been made with each shire and this will be followed up by the construction contractor prior to construction activities commencing in a given shire area. A summary of the potential waste facilities available in each local government area is given in Table 4-38(b). Waste, where practicable and taking into account health and hygiene issues, will be segregated and collected on-site and stored in suitable containers for removal to approved facilities as agreed with the relevant Council prior to construction.

Rename Table 4-38 Table 4-38a and insert new Table 4-38b.

Table 4-38b: Local Government Waste Facilities

Shire	Location	Capacity	Facilities
Broadsound	Landfill: St Lawrence Dysart Middlemount Transfer Stations: Green hill Carmilla and Middlemount	St Lawrence - 50 yrs Dysart - 50 yrs Middlemount- 5 yrs * at current population	Domestic Limited Regulated All waste removal is contracted through JJ Richards who look after recycling.
Calliope	Landfill: Benaraby Transfer Stations: Yarwun Mt Larcom Raglan	Supports Gladstone waste indirectly 40-50 000 people	Domestic Most Regulated Recyclable Green waste Council contractor can provide 240L waste and recycling services including industrial bins
Duaringa	Landfill: Blackwater Transfer Stations: Duaringa Dingo Bluff Blackwater	Combined capacity 6738m3	Domestic Some recycling EPA permits some regulated waste combined with domestic waste e.g. asbestos, tyres, batteries
Fitzroy	Landfill: Gracemere Alton Downs Transfer Station: Bouldercombe More planned and under development Approx 9 Roadside bin facilities (on the way out)	Gracemere-3 - 4 yrs. Alton Downs-12 months	Domestic Some recycling Scrap metal Green waste Regulated Bouldercombe (domestic and light commercial)
Gladstone	Transfer Station: Gladstone Waste Management Centre Jo Josephs Drive	Supports approx 30,000 people All waste goes through before it goes to Benaraby.	Domestic Regulated Green Waste Recyclable Inert waste (soil, gravel)

4.10 Traffic, Transport and Access Arrangements

4.10.1 Transport Methods and Routes

Amend paragraph 2 to read:

Road haulage routes (refer Figure 4-25) have been estimated based on the most likely access points to the worksites. Transport assessment has been based on all vehicle movements being out of Gladstone as the worst case. The initial case used the Gavial-Gracemere Road however at the request of both the DMR and the Fitzroy Shire Council this route will not be used for heavy vehicle movements. Where any transport movements originate from Mackay these are expected to be low volume compared to the existing road usage and reduce the impacts identified in the Road Impact Assessment Report (refer Appendix 10). The road impact assessment will be reviewed with the haulage contractor when they are appointed and the road impact assessment revised to reflect the actual routes to be used. Any route amendments that increase traffic flows beyond the allowable Annual Average Daily Traffic (AADT) or Equivalent Standard Axle (ESA) requirements will be reviewed with the DMR and relevant local government authorities prior to construction.

4.10.2.2 Transport Management Measures

Road Pavement Integrity

Amend the last sentence in paragraph 4 on page 4-98 to read:

Any damage that can be proven as being caused by hauling pipes on gazetted roads will be made good by agreement with the DMR or the local government authority as appropriate.

Add to mitigation measures on Page 4-99:

- The pipeline crossings will be designed in consultation with the relevant authority; in particular the Kirkwood Road crossing will be designed and installed in consultation with the GCC.
- The pipeline crossings or occupation of the road reserve will be negotiated with the relevant road authority during design. Pipeline laid within road reserves shall allow for future road construction. Only a 5m wide permit to Occupy over the actual pipeline will be applied for.
- Gavial-Gracemere Road will not be used for heavy vehicle movements.

4.12 Occupational Health and Safety

Amend the last paragraph of the preamble to Section 4.12 to read: The FSMP relates to both the *Workplace Health and Safety Act 1995* and the *Petroleum & Gas (Production & Safety) Act 2004*). Using these documents ensures the FSMP is specific to the petroleum industry, and also meets current, and future, industry-wide management system principles and practices. This approach is also in line with the general objective of achieving best practice results for the Project.

4.13 Commitments

Additional or amended commitments:

Number	Section	Commitment
4-7	4.1.1.2 4.4.1.2 4.4.3.2	No clearing of vegetation for camp sites, access tracks or work areas will be carried out in reserves, wetlands, state forests, GQAL or in identified habitat areas for the Brigalow Scaly-foot, Collard Delma and Dunmall's Snake, or areas of remnant vegetation. No trenching will occur in marine plant areas in proximity to the Port Curtis Wetland
4-37	4.1.1.2 4.4.2.2	Strict weed management protocols will be implemented throughout the life of the Project including: • Certification of all vehicles, plant and equipment as clean prior to commencement of work; • Hygiene controls (e.g. washdowns); • Washdown bays will have seed trapping capability; • Half yearly monitoring of weed infestations in SAP areas post-construction; and • Half yearly monitoring of vegetation reestablishment.
4-68	4.10.2.1	Any damage that can be proven as being caused by hauling pipes on gazetted roads will be made good by the construction contractor in agreement with the DMR or relevant local government authority.
4-85	4.1.1	The depth of pipe under road crossings will be a minimum of 1.2m below the bottom of the table drains. This depth will be maintained under the full width of the road reserve of the following roads: • Peak Downs Highway • Capricorn Highway • Burnett Highway • Bruce Highway • Gladstone - Mt Larcom Road • Dawson Highway • Gladstone - Benaraby Road
4-86	4.1.1	The construction contractor will submit to DMR, at least 15 business days prior to undertaking any construction works within a State-controlled road reserve, any proposal for co-locating the route within 300m of the existing State-controlled road centreline for review and resolution of any conflicts.
4-87	4.1.2.1	A risk assessment will be performed of ASS impacts on surrounding sensitive environments and management plans implemented and agreed with the EPA prior to construction of the low pressure lateral from the City Gate to the southern industrial estate in Gladstone. The assessment will include a map of ASS areas and any sensitive ecological areas.
4-88	4.4.1.1	The Proponent will liaise with the Department of Infrastructure in relation to the use of a proposed infrastructure corridor. If the corridor is available at the time construction is required and is considered technically and commercially viable for gas transmission pipeline installation the Proponent is prepared to

Number	Section	Commitment
		locate within this corridor.
4-89	4.4.2.2	The Proponent and/or the construction contractor will hold talks directly with the DPI&F prior to construction of any crossing of the Calliope River and will apply for any required permits.
4-90	4.6.2.5	The Proponent and construction contractor will ensure through the use of dedicated camp facilities that no further pressure is placed on the housing market in the Bowen Basin region.
4-91	4.6.2.7	The Proponent will meet with officers of the DETA in advance of the tendering stage to discuss the 10% Training Policy and determine opportunities to collaboratively develop an employment and skilling strategy.
4-92	4.7	A detailed air analysis taking into account the issues raised in the EPA submissions to the EIS will be carried out as part of the design of any compressor station upgrade and the results submitted to the EPA as part of the license amendment application.
4-93	4.10.1	Upon appointment of a construction contractor and prior to the commencement of construction the Road Impact Assessment and Road Use Management Plan will be revised and submitted to DMR for review and agreement on contribution payments.
4-94	4.10.1	The Gavial-Gracemere Road will not be used as a heavy transport route by the Project.
4-95	4.10.1.1	The construction contractor will contact DMR and arrange for a DMR officer to inspect all the proposed intersection sites to agree the measures to be implemented, typically signage, and to ensure that the locations selected have adequate visibility.
4-96	4.10.2.1; 4.13	The pipeline crossings will be designed in consultation with the relevant authority; in particular the Kirkwood Road crossing will be designed and installed in consultation with the GCC.
4-97	4.10.2.2; 4.13	The pipeline crossings of roads or occupation of the road reserve will be negotiated with the relevant road authority during design. Pipeline laid within road reserves shall allow for future road construction. Only a 5m wide permit to Occupy over the actual pipeline will be applied for.

5.0 ENVIRONMENTAL MANAGEMENT PLANS

No change

6.0 CONCLUSIONS AND RECOMMENDATIONS

No change

7.0 REFERENCES

Add:

DNRM, 1993 Queensland Dominant Soils 1:7 500 000 Digital Vector data, NRM Indooroopilly, Brisbane

8.0 STUDY TEAM

No change