1 INTRODUCTION

1.1 INTRODUCTION

This chapter responds to general submissions received on the Queensland Curtis LNG (QCLNG) Project draft environmental impact statement (EIS) in relation to potential impacts of the Pipeline Component.

1.2 RESPONSES TO SUBMISSIONS

A summary of the submissions and corresponding responses is provided in *Table 4.1.1*.

Table 4.1.1 Responses to submissions on the draft EIS

Issue raised	QCLNG Response	Relevant submission(s)
All mitigation measures should be first described and explained in the main body of the EIS. This information should then be carried forward into the environmental management plan (EMP) as required in the EIS terms of reference and EMPs as required under section 310(d) of the *Environmental Protection Act 1994 (Qld)* that allows those mitigation measures to be measured and audited. No mitigation measure should be described for the first time in an EMP.	Mitigation measures for the pipeline were proposed in the body of the EIS. No special measures were identified for these particular pipeline routes. The specialist consultants assisting the Project believed standard techniques should be adequate. As such, standard techniques were then set out in the draft EMP, *Volume 10*. These standard measures will be reviewed once geotechnical studies are complete and any special measures added to the EMP. It is expected that this information should be available to enable a finalised EMP to be submitted with the application for an environmental authority.	32

1.3 CHANGES TO PROJECT DESCRIPTION

The key changes to the Pipeline Component are:

- the adoption of a more direct route from Woleebee Creek to the Export Pipeline,
- shortening of the Export Pipeline and transfer of 40 km of this route to the gas Collection Header

- removal of 20 km of the gas and water Collection Headers at the south-eastern end of these pipelines
- reduction of 70km of the water Collection Header north of Miles

The overall length of Pipeline to link the Gas Field Component and other nearby coal seam gas (CSG) resources to the LNG Facility therefore involves development, construction, operation and decommissioning of a gas pipeline network of approximately 630 km, as opposed to the 730 km in the EIS. The pipeline network now includes:

- a 340 km Export Pipeline from QGC's Gas Field to the LNG Facility in Gladstone, including crossing of The Narrows
- a 195 km gas Collection Header to collect gas from centralised compressor facilities for delivery to the Export Pipeline
- a 100 km water Collection Header to collect Associated Water from the centralised compressor facilities for delivery to the water treatment facilities.

Approximately 100 km of the gas and water Collection Headers will be located adjacent to each other in the upstream infrastructure corridor (UIC) to minimise the overall impact of the Project and disturbance to landholders.

Pipeline activities that may affect the environment remain unchanged. They include:

- clearing Pipeline construction corridors, referred to as right of way (ROW), for installation of pipes
- excavation of pipe trenches
- pipe laying activities
- restoration of the ROW
- erecting and operating temporary accommodation camps and administration facilities
- installing pressure management vents and power generation facilities
- transport of plant, equipment and materials
- maintenance and surveillance activities during operations.

Construction will occur over 24 months between 2011 and 2014.

Further details of the construction and operation of the Pipeline are in *Volume 2*, *Chapter 8* and *Volume 2*, *Chapter 12* respectively.

Although the 40 km reduced from the Export Pipeline has been incorporated into the gas Collection Header, all of the studies in this Volume refer to the original length of 380 km. This enables the studies performed since the draft EIS to link directly to the information provided in that document. Information related to the new section of the gas Collection Header is addressed directly

to the new section and referred to as the Woleebee Creek section of the gas Collection Header.

In the southern section of the UIC, an alternative to locate the gas Collection Header to a new corridor predominantly to the north east of the UIC is under investigation. Assessment of this route has not been presented in *Volume 4* chapters.

1.4 STUDIES

The selection of the Woleebee Creek to Export Pipeline route was evaluated against the standard criteria set out in the draft EIS, including:

- land ownership and land users
- environmental and social considerations
- transportation
- construction constraints or benefits
- operational constraints or benefits
- outcomes of cost/benefit and feasibility studies
- other investment and general operational criteria.

Existing data was gathered on land ownership and land users, the environment (contained in government information and planning information), site assessments, route design and analysis, and cost determination and variance.

The desktop assessments adopted a conservative (precautionary principle) approach (that is, all values that could occur in an area have been assumed to occur). Before this route is finalised, further detailed field investigations such as ecological assessments will be conducted.

Protection objectives and associated measurable indicators have been established for the identified environmental values. Where applicable, strategies for managing and mitigating impacts have been identified and described.

Volume 4 provides the key findings of the environmental assessments for the proposed Pipeline. The full reports of studies conducted are provided in *Appendices 4.1* and *3.5*. The findings are summarised below.

1.5 SUMMARY OF FINDINGS

1.5.1 Climate and Climate Change

There are no changes in relation to the Pipeline Component.

1.5.2 Topography and Geomorphology

The Project environmental objective for topography, as set out in the EIS, is to maintain a stable landform that does not result in uncontrolled erosion.

The proposed changes to the pipeline routes were selected to avoid or minimise impacts associated with land and terrain constraints. The proposed pipeline routes still pass through predominantly level or gently sloping country. The Callide Range crossing still presents challenges. The crossing location and methodology is being worked out through the joint working party group of key LNG proponents and government agencies.

The summary of impacts associated with topography and geomorphology remains unchanged. The overall impact significance is considered negligible, based on the successful implementation of the proposed mitigation measures.

1.5.3 Geology and Soils

The Project environmental value for geology and soils remains unchanged. It is to protect soils from contamination and erosion arising from Project activities.

The geology and soil characteristics of the Woleebee Creek section of the pipeline routes have been identified. Specific mitigation measures have been proposed with the primary objective of:

- preserving topsoil quantity and quality
- limiting areas of disturbance
- controlling overland water flows around disturbed areas
- minimising the potential for erosion and sedimentation, particularly associated with sodic sub-soils
- maintaining cropping productivity.

Assessment of good quality agricultural land (GQAL) has been broadened to include Class C land as well as the Class A and Class B land described in the draft EIS. The draft EIS identified a combined length of 252 km of combined Class A and Class B GQAL. Based on the revised pipeline routes and including classes A, B and C, there are now 280 km of GQAL. Approximately 227 km of that is Class A and Class B combined. Based on a ROW width of 40 m to 80 m, this equates to approximately 1,415 ha of clearing area within

GQAL (1,260 ha in combined Class A and Class B) compared with the 1,260 ha identified in the draft EIS. However, this area would only be affected during construction and agricultural practices could then be resumed. Mitigation measures have been proposed to reduce the potential impacts on cropping land within pipeline easements.

Overall assessment of impact significance remains minor in the short term and negligible in the long term based on the successful implementation of proposed mitigation measures. In coastal areas around Gladstone and on Curtis Island, acid sulfate soils could be disturbed during construction of the Export Pipeline. Impacts will, however, be localised and risks and impacts can be avoided or reduced through the implementation of the acid sulfate soil management plan.

1.5.4 Land Use and Infrastructure

Refinements to the pipeline routes have continued to minimise impacts on existing land use and infrastructure. The Woleebee Creek gas Collection Header route intersects the Wandoan branch railway, the Leichhardt Highway and Jackson-Wandoan Road but the overall impacts associated with land use and infrastructure remain unchanged. The overall assessment of impact significance remains minor in the short term to negligible in the long term.

1.5.5 Land Contamination

There are no changes in relation to the Pipeline Component.

1.5.6 Terrestrial Ecology

Wherever possible, the pipeline alignments have been refined to avoid areas of remnant vegetation and/or flora species listed under the *Environmental Protection and Biodiversity Conservation Act (EPBC Act) 1999* (Cth) and the *Nature Conservation Act (NC Act) 1994* (Qld). Review of Queensland Herbarium mapping indicates that the areas of remnant vegetation in the pipeline corridors have decreased as a result of the route refinements.

Preliminary investigations of the Woleebee Creek pipeline environs indicate that the selected route has, wherever possible, been aligned to avoid areas of endangered and of-concern vegetation. No conservation-significant flora/fauna species or essential habitat areas are known to occur along the proposed alignment.

Detailed flora studies have been undertaken along the length of the Export Pipeline. The study indicated the presence of at least 150 individuals of the flora *Cycas megacarpum* (large-fruited Zamia) at three locations in the proposed clearing area. This species is listed as endangered in the EPBC and NC Acts. Due to the restricted habitat niche of this species it may be impossible to avoid some impact. In 2007 the Queensland Herbarium found that there were more than 372,900 adult *Cycas megacarpum* individuals in

Queensland. Therefore the Project is unlikely to lead to a long-term decrease in population size and/or fragment an existing population into two or more populations. Although the proposed action is not expected to have a significant impact on this species, a threatened species management plan will be developed in accordance with the guidelines proposed by the draft cycad recovery plan (Forster & Holland 2005).

The overall assessment of impacts remains moderate in the short term and minor in the long term due to the initial loss of unavoidable vegetation and then the rehabilitation of the area disturbed during the construction of the Pipeline Component and/or the creation of offsets to compensate for any clearing of endangered regional ecosystems.

1.5.7 Aquatic Ecology

A review of Queensland Wetlands mapping identified a number of additional wetland areas in the vicinity of the proposed pipeline corridors. There are two lakes within 100 m of the proposed Export Pipeline corridor at KPs 13 and 334. With appropriate mitigation (see *Volume 4, Chapter 8, Section 8.3.1*), any impacts on wetland or riverine flora/fauna will be negligible.

Studies conducted since the draft EIS indicate that the proposed pipeline corridors will not affect any threatened ecological communities of “native species dependent on natural discharge of groundwater from the Great Artesian Basin” as listed in the EPBC Act.

The overall assessment of impacts associated with aquatic ecology remains minor, provided mitigation measures are put in place.

1.5.8 Marine Ecology

The assessment of The Narrows pipeline crossing is addressed in *Volume 5, Chapter 8*.

1.5.9 Surface Water Resources

The Woleebee Creek pipeline route intersects one major stream (Juandah Creek) and a number of significant watercourses, including Woleebee and Conloi creeks. These watercourses have similar characteristics to others in the pipeline network. The overall objectives and assessment of impact significance are unchanged. The risk of impact remains minor provided mitigation measures ensure the proper management of soils and appropriate storage and handling of chemicals.

1.5.10 Groundwater Resources

There are no changes in relation to the Pipeline Component.

1.5.11 Air

There are no changes in relation to the Pipeline Component.

1.5.12 Noise and Vibration

There are no changes in relation to the Pipeline Component.

1.5.13 Transport

A review of the transport strategy has been carried out for the supplementary EIS. The review's main focus is on increases in the volume of material transport expected for the Gas Field development. The transport aspects of pipeline construction and operation do not vary greatly from those in the draft EIS. The revised modeling focuses on the worst-case scenario of road transport of all materials and equipment. QGC is pursuing the option of rail transport and will use any capacity rail managers can provide. Where the majority of the materials have to be transported by road, the overall assessment of impact significance in relation to pipelines remains moderate over the two-year construction period. The availability of at least some rail transport is expected to reduce this impact. No long-term impacts are associated with transportation for pipelines because all major works will be completed by 2014.

1.5.14 Visual Amenity

There are no changes in relation to the Pipeline Component.

1.5.15 Waste Management

Local government authorities (LGAs) have expressed concern about their ability to assist the Project with waste disposal. The overall logistics studies and contracting strategy will account for this. QGC will engage LGAs to develop suitable facilities for the disposal of Project waste. The overall Project assessment significance level for waste management remains minor.

1.5.16 Hazard and Risk Assessment

There are no changes in relation to the Pipeline Component.

1.5.17 Conclusion

The following chapters of *Volume 4* respond to submissions received on the draft EIS in relation to potential impacts of the Pipeline Component.

The chapters also discuss how values for each environmental factor have been assessed in relation to any changes in the Project description as set out in *Volume 2, Chapters 8* and *12*.