17 SUMMARY OF CUMULATIVE ENVIRONMENTAL IMPACTS

17.1 INTRODUCTION

This chapter provides responses to submissions received on the Queensland Curtis LNG (QCLNG) Project draft environmental impact statement (EIS) related to cumulative impacts for the Pipeline Component.

Where changes to the project description, as detailed in *Volume 2, Chapters 8* and *12*, have cumulative impacts, these impacts and measures to mitigate impacts are described in this chapter.

17.2 RESPONSES TO SUBMISSIONS

A summary of the submissions received in relation to cumulative impacts for the Pipeline Component and a response to those submissions are provided in *Table 4.17.1*.

Table 4.17.1 Responses to Submissions on the draft EIS

Issue Raised	QCLNG Response	Relevant Submissions(s)
The potential cumulative impacts on local traffic flow, as a result of the high level of heavy vehicle traffic required to transport the gas pipeline to the hinterlands. Consideration must be given to the use of the rail network for the transportation of the gas pipeline.	Refer *Section 17.2.2*. See also *Volume 4. Chapter 13* of this supplementary EIS.	21
The EIS has not sufficiently analysed the cumulative impact of the Gas Field, Pipeline and LNG Facility of the Project with other proposed developments within the Project area. The supplementary EIS should include a detailed analysis of the cumulative impact of other proposed developments within the Project area. The proponent and their consultants should work closely with the relevant departmental contacts in the development of the supplementary EIS.	Refer to *Section 17.2.1.*	27
Section 7.1.2 states "Construction of the pipeline is expected to have a negligible impact on infrastructure as it does not interfere with any existing infrastructure, other than roads…" The Project pipeline will cross a number of operational and proposed railways, which the EIS has previously identified. The construction of the pipeline by tunnel boring techniques (HDD) under the railway will have implications for the safety of operations and the integrity of the rail infrastructure. As such, the above statement is inaccurate.	Refer to *Section 17.2.2.*	27

Issue Raised	QCLNG Response	Relevant Submissions(s)
The operation should not emit dust, noise and reduce visual amenity more than is absolutely necessary. Background measures should be taken to ensure there are no cumulative impacts associated with other developments in the area (e.g. Surat to Gladstone Pipeline) and that no undue pressure is placed on the health and amenity of residents within close proximity to the tenure. Council recommends that there be a focus on industry Best Practice and operational components of the development have as minimal an impact on the environment as possible.	Refer to *Sections 17.2.5* and *17.2.6.*	28
The EIS should include a detailed assessment of the opportunities for locating the pipeline in a corridor shared with other infrastructure interests. The assessment should detail the cumulative impacts on identified environment values. In particular, *Table 1.2.2* should be updated to include the following projects in any cumulative impact assessment: • Expansion of Origin and Arrow gas fields under the Gas Field Component • Surat-Gladstone Pipeline and Australia Pacific LNG pipeline under the Pipeline Component.	Refer to *Section 17.2.1.*	32
Council considers that the potential cumulative impacts from pipe transport are extreme should haulage for this and any other project occur at the same time.	Transport impacts and cumulative impacts within the Gladstone City Council area are addressed in *Volume 5, Chapter 14*. Refer also to *Section 17.2.2.*	29
The draft EIS states that successful negotiation of the management of road impacts with the relevant road authority is expected to form part of the conditions of Project approval. While this is a practical approach, it does leave conditioning for any approval rather open-ended. Council does hold concerns over who would then be the judge of what successful negotiation entails.	Refer to *Section 17.2.7* and *Volume 4, Chapter 13*.	29

17.2.1 Interaction with Other Projects

The methodology for inclusion or exclusion of projects from the cumulative impact assessment is described in *Volume 1, Appendix 1-6* of the draft EIS. As no published information, such as an Initial Advice Statement, was available on the development of Origin/Conoco-Philips (AP LNG) Project, QGC cannot assess the cumulative impacts from this project. It should be noted that as of the date of closure of submissions to the draft EIS, no publically available information was available on the development of the AP LNG Project. A table of cumulative impacts was provided in the draft EIS. An abridged version of this table, including the Surat-Gladstone Pipeline and the

Wiggins Island Rail Project, for which some data has become available, is provided in *Table 4.17.2*.

17.2.1.1 *Surat-Gladstone Pipeline*

The Surat-Gladstone Pipeline is a proposal for 467 km of 600 mm gas transmission pipeline. The proximity of the Arrow Energy Ltd (Arrow) coal seam gas fields to the QGC Gas Field results in the two projects requiring to construct pipelines along very similar routes.

As discussed in *Volume 2, Chapter 12,* QGC and Arrow are members of a joint technical working group that is working with the Government to identify opportunities for co-location. While QGC is committed to working with all parties in relation to co-location opportunities, QGC's larger diameter pipeline has size constraints that would not apply to the Arrow proposal.

The areas for cumulative impacts related to the two proposals are highlighted in *Table 4.17.2*. The key cumulative impacts relate to clearing of land (terrestrial and aquatic ecology), construction noise and air emissions (dust) and transport movements.

QGC is highly cognisant of the need to ensure that impacts on the wider community are minimised as far as is practicable. To this end, temporary accommodation camps are being planned to be in very close proximity to the pipeline right-of-way (ROW) to minimise the movement of workers. The routes for transport of workers, plant and materials will take public safety and amenity into consideration. Dust suppression measures will be implemented as necessary. Construction works and transport will as far as practicable be limited to daylight hours, particularly where these works are close to residential areas (refer to *Sections 17.2.2* to *17.2.7*).

17.2.1.2 *Rail Projects*

As discussed in *Volume 2, Chapter 12,* the Pipeline Component of the QCLNG Project lies several kilometres from the proposed Wiggins Island Project, and no interactions are considered likely. Therefore there are no cumulative impacts anticipated in relation to the Pipelines and the Wiggins Island rail development works.

Table 4.17.2 Identification of Cumulative Environmental Impacts for the Pipelines

Proposed Projects	Construction or Operations	Geology and Soils	Land Use and Infrastructure	Land Contamination	Terrestrial Ecology	Aquatic Ecology	Marine Ecology	Surface Water Resources	Groundwater Resources	Coastal Processes	Air	Noise and Vibration	Road Transport	Shipping Transport	Visual Amenity	Waste Management	Hazard and Risk
Gladstone LNG Project: Pipeline (Santos)	Con																
	Ops																
Surat-Gladstone Pipeline	Con																
	Ops																
Moura Link – Aldoga Rail	Con																
	Ops																
Wiggins Island Rail	Con	The Pipeline Component of the QCLNG Project does not intersect with any of the proposed Wiggins Island works.															
	Ops																
QCLNG LNG Facility	Con						□			□				□			
	Ops																
QCLNG Gas Field	Con						□			□				□			
	Ops																

The Export Pipeline will intersect the proposed Moura and Aldoga Link Project as discussed in *Volume 2, Chapter 12*. The Moura-Aldoga Link project is expected to commence construction in late 2010. The key interaction with these works would be the movement of construction plant and equipment in the area and interaction between the two construction activities where the Pipeline crosses the rail line. This will be taken into account in the logistics planning for QCLNG and in land access negotiations with Queensland Rail.

The Moura-Aldoga Link Project will be transporting the majority of its materials by rail, minimising transport on the road network. Personnel movements will be by road, however the potential location of the accommodation for the rail works and the Pipeline Component of QCLNG are unlikely to create major interactions.

17.2.2 Land Use and Infrastructure

Construction of the Pipeline is expected to have a negligible impact overall on existing infrastructure. The existing key infrastructure intersected by the pipelines includes roads, railway lines and powerlines. As discussed in *Volume 4, Chapter 5*, trenchless techniques will be used to cross sealed, state-controlled roads and all rail lines. Some reduction of speed may be required during the construction of the crossing but at no time is it expected that traffic or trains would be unable to pass through the area. All works within any road, rail or power corridor will be carried out in consultation with the relevant authorities and to the standards required by those authorities.

As stated in *Volume 2, Chapter 12,* QGC is working with other pipeline proponents to minimise the impacts to all existing land users. Location of the rail lines within the Callide to Gladstone Infrastructure Corridor will also ensure that the Pipeline makes the fewest number of crossings of rail infrastructure.

The Pipeline will have negligible impacts on land use, with existing grazing and agriculture resuming once the Pipeline is constructed and the Right-of-Way (ROW) reinstated.

Overall significance of the cumulative impacts to land use and infrastructure based on the overall duration of construction and construction techniques proposed: negligible.

17.2.3 Terrestrial Ecology

The cumulative impacts associated with the Surat-Gladstone Pipeline and the QCLNG Export Pipeline have been addressed in *Volume 4, Chapter 7*.

17.2.4 Aquatic Ecology

The cumulative impacts associated with the Surat-Gladstone Pipeline and the QCLNG Export Pipeline have been addressed in *Volume 4, Chapter 8*.

17.2.5 Air

As discussed in the draft EIS, the key air emission during the construction of the Pipeline Component would be dust. All of the identified projects have the potential to create dust emissions within the same airshed as the Pipeline Component. The scheduled construction period for each project will determine the extent of the impact.

The cumulative impacts will occur only during the construction period, and all projects would be expected to implement effective dust management measures, rendering the impacts temporary.

It is therefore considered that in relation to the Pipeline Component, the overall significance of the cumulative impact on air would be negligible. However, good dust management measures, as set out in *Volume 10* of the draft EIS, would need to be implemented.

17.2.6 Noise and Vibration

The draft EIS discussed noise associated with the Pipeline Component of the Project that would predominantly occur during the construction period. During this time, noise could be discernible up to 1 km from the construction area. Noise from the construction of the Surat-Gladstone Pipeline could therefore overlap noise from construction of the Export Pipeline. The extent of the impact would be dependent upon the overlapping timeframes and the direction and duration of construction of the pipelines.

As stated in the draft EIS, if all of the projects proceed simultaneously, noise impacts potentially increase. The area with the greatest potential impact would be around Yarwun and through the Gladstone State Development Area (GSDA). The GSDA is a designated industrial development area. QGC will identify sensitive receptors and the potential cumulative impact once project timing is known, and develop appropriate mitigation measures at the time and in consultation with the receivers.

State and federal development approval processes require implementation of appropriate planning and noise management strategies, which would negate adverse impacts. The joint technical working group would also take into consideration issues of minimising noise impacts.

Therefore the overall significance of the cumulative impact of noise and vibration are still considered negligible in the long term.

17.2.7 Road Transport

Preliminary road transport assessments have been carried out for the Pipeline, based on the assumption of road transport for all materials, plant, equipment and personnel movements. This provides a conservative estimate of the potential impacts on the road network, and has highlighted the potential for heavy impacts on the road pavement for a number of state-controlled and local government-controlled roads.

As previously discussed in *Volume 4, Chapter 13*, it is QGC's intention, where practicable, to transport pipe by rail from Gladstone to Biloela and Brisbane to Miles. The volume that can be transported by rail is dependent upon availability from the transport providers, and there may be the possibility to increase rail transport subject to seasonal variations in capacity. Any rail transport availability will reduce the level of Project traffic on the road network.

Should the various other projects proposed within the vicinity of the Pipeline use the same roads as the Pipeline traffic and proceed at the same time as the QCLNG Project, there is the potential for major impacts to the road network. This would be both in terms of pavement impacts and increased traffic volumes. However, it is extremely unlikely that these projects will all be approved and commence at the same time because they are at different design stages and construction phases.

A comparison of the key state-controlled roads proposed to be utilised by the Gladstone LNG Project and the Surat-Gladstone Pipeline that have also been identified for use by the QCLNG Project is shown in *Table 4.17.3*.

It is anticipated that as a maximum, the QCLNG Project would put 42 trucks per day on any of these roads (i.e. no rail transport available). The Gladstone LNG Project has identified a need for up to 67 pipe trucks per day, and the Surat-Gladstone Pipeline has identified 30 pipe trucks per day. The potential transport and construction phase for all three of these projects is 2010 to 2013. The cumulative impact of any one of the projects proceeding at the same time as the Pipeline potentially creates moderate impacts due to traffic interaction. If more than two projects proceed, it will be necessary to carefully plan all traffic movements. This would be coordinated through the joint technical working group and close consultation with the Department of Transport and Main Roads (DTMR) and the relevant local government bodies.

Consideration has been given to the cumulative impacts associated with the various elements of the Project (i.e. LNG Facility/pipeline transport in Gladstone and Pipeline/Gas Field transport around Miles and Dalby). These have been revised for the supplementary EIS based on further progress with the logistics studies. The cumulative impacts that could occur in Gladstone as a result of the Project have been addressed in *Volume 5, Chapter 14*.

The updated transport studies for Gas Field and Pipeline components have identified the potential for major impacts on the road pavements for most of the roads seen as possible key transport routes, as discussed in *Volume 3, Chapter 14* and *Volume 4, Chapter 13.*

Table 4.17.3 Comparison of State-controlled Road Interactions

State-controlled road	QCLNG	Gladstone LNG	Surat-Gladstone Pipeline
Bruce Highway			
Dawson Highway			
Burnett Highway			
Leichhardt Highway			
Cunningham Highway			
Warrego Highway	Ipswich to Roma	Miles to Roma	Miles to Chinchilla
Jackson-Wandoan Road			
Dalby-Kogan Road			
Chinchilla-Tara Road			
Kogan-Condamine Road			

Once a transport haulage contractor has been appointed, the methods and routes of transport will be determined. The transport studies will be further revised to determine the impact on transport networks to meet the schedule of the QCLNG Project. At this time, it would be possible to determine the cumulative impacts of other projects scheduled for the same period. Until this stage, estimates will be at similar resolution to those presented in the supplementary EIS. The proposed approach for assessing the transport impacts has been set out in *Volume 4, Chapter 13*. The overall impact to roads and transport is expected to be less than the conservative result of preliminary impact assessment.

As previously discussed in the draft EIS, staggering transport requirements for the Gas Field and Pipeline will be considered to minimise cumulative traffic impacts. However, QGC will work closely with the DTMR and local government road authorities to work out the best transport routes and how to best mitigate any identified adverse impacts. Preliminary meetings have been held with DTMR and some of the local government authorities. It is QGC's intention to work more closely with DTMR, Western Downs Regional Council, North Burnett Regional Council and Banana Shire Council during early 2010 as the logistics studies and road impact studies are completed.

Successful negotiation of the management of road impacts with the relevant road authority (e.g. DTMR or regional council) is expected to form part of the conditions of Project approval.

Once traffic studies are reviewed in the detailed design phase, and negotiations with relevant road authorities have been completed and transport routes designed and agreed upon, impacts will be minor for the QCLNG Project on its own.

Overall significance of the cumulative impact to road infrastructure given that at least one other project undertakes transport at the same time as the QCLNG Project would rank as moderate, based on the assessment strategy outlined in *Volume 1* of the draft EIS.

17.2.8 Waste Management

Both Banana Shire Council and Western Downs Regional Council have expressed concerns in relation to their capacity to manage waste material from the Project. QGC will seek ways to minimise its waste generation and to ensure appropriate disposal of waste.

The draft EIS recognised the potential for services in the area to become overloaded and that waste management contractors may need to transport the waste materials a greater distance for final disposal. This is being factored into the QCLNG Project logistics studies, and QGC will liaise with regional councils in the development of waste management options.

17.2.9 Conclusion

The main cumulative impacts associated with the Pipeline Component of the Project remains the roads and transport corridors used for the Project and other proposed projects in the area. Appropriate management strategies are being developed to reduce this impact, including negotiating with rail transport providers on scheduling times for the transportation of goods and services for this Project. The minor to moderate impacts identified in this impact analysis are both short-term and temporary, making the cumulative impact assessment in the long term negligible.