Application for 15-year no coverage determination under section 151 of the *National Gas Law*

QCLNG Pipeline

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QCLNG Pipeline

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Executive summary

The Application

QGC Pty Ltd (QGC), a wholly-owned subsidiary of BG Group plc (BG Group), plans to develop a world-scale, integrated, coal seam gas (CSG) to liquefied natural gas (LNG) project in Queensland, known as the Queensland Curtis LNG Project (QCLNG Project). The project consists of producing CSG from QGC's gas fields located in the Surat Basin, and transporting the gas via a pipeline system to the LNG liquefaction plant at Curtis Island, near Gladstone.

QCLNG Pipeline Pty Ltd, also a wholly-owned subsidiary of BG Group and future owner of the QCLNG Pipeline, is applying for a 15 year no-coverage determination for the proposed QCLNG Pipeline. BG Group, through its subsidiary QCLNG Pipeline Pty Ltd, is seeking a greenfields exemption in order to provide regulatory certainty for the QCLNG Project and to ensure that it has secure access to the gas transportation capacity required to underpin its investment in this major, new project.

Project Description

The QCLNG Project involves expanding QGC's existing CSG operations in the Surat Basin of Southern Queensland and transporting the gas via an underground gas pipeline to a gas liquefaction and export facility on Curtis Island, near Gladstone, where the gas will be liquefied for export to LNG markets in the Asia Pacific region and around the world. The QCLNG Project will rank as one of Australia's largest capital investments and generate significant economic benefits for Australia and in particular for Queensland. This will include the creation of more than 4,000 direct jobs at the peak of construction, about 1,000 permanent positions and increased demand for goods and services. In addition, the Project will generate significant indirect employment (primarily in Queensland) during construction and operation.

The QCLNG Project is forecast to stimulate an increase in Queensland's gross state product of up to $32 billion between 2010 and 2021, or approximately $2.6 billion per annum. QGC has estimated an annual average royalty income for the Queensland Government of between $150 million and $330 million and annual average tax income for the Australian Government of between $600 million and $1.1 billion, depending on oil prices.

QGC's Curtis Island LNG plant will rank in the top three of the world's most environmentally friendly LNG facilities with technological innovation which will set a benchmark for LNG facilities.

The QCLNG Project consists of the following key components:

Gas fields

Expansion of QGC's existing CSG fields in the Surat Basin of southern Queensland including the management of associated water produced.

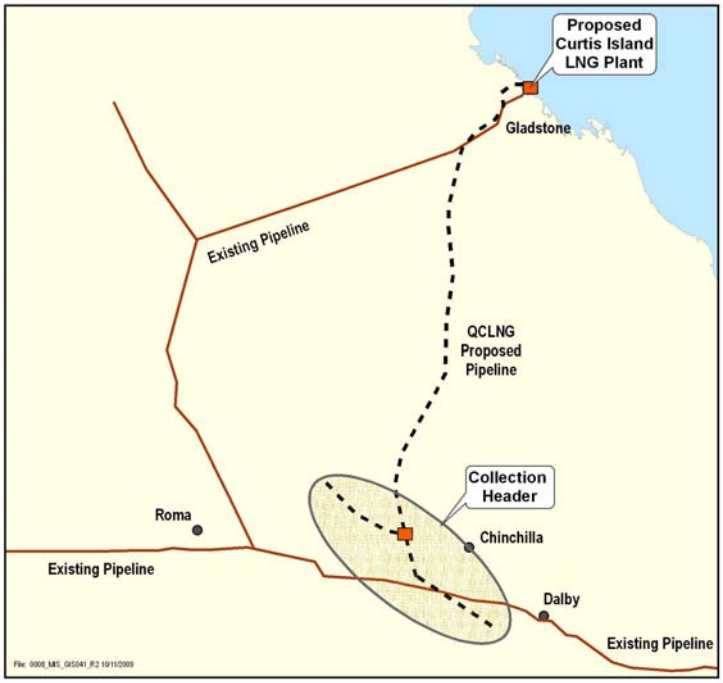
Pipelines

The QCLNG Pipeline is a pipeline system comprising of a gas Collection Header and an Export Pipeline from the gas fields to the Curtis Island LNG plant. The QCLNG Pipeline is the subject for which this greenfields exemption is sought. In addition, the Project will also involve construction of a network of underground gas and water gathering systems in the gas fields which do not form part of the greenfields exemption application.

The proposed QCLNG Pipeline route is shown below. CSG is produced, processed and compressed from the gas fields in the Surat Basin and then collected and aggregated via a 200 km 42 inch diameter Collection Header. The CSG is then transported by a 342 km 42 inch diameter Export Pipeline to the LNG plant at Curtis Island. While QGC considered a range of diameters and pipeline classes, a pipeline of this size was selected as the most cost-effective way of meeting QGC's transportation requirements for the QCLNG Project. The QCLNG Pipeline is a vital part of the fully integrated system producing LNG from CSG.

The pipeline system is designed to transport sufficient gas to supply two LNG trains (approximately 1,510 TJ/d) under free-flow conditions. This will provide sufficient gas for the two initial LNG trains. As environmental approval is being sought for a nominal LNG production capacity on Curtis Island of 12 mtpa (or approximately three trains), QGC will need a pipeline that is capable of transporting sufficient volumes of gas (utilising in-line compression) for an LNG plant producing at least 12 mtpa. There is sufficient space at Curtis Island for the development of a fourth LNG train by QGC, and the scope to further expand the capacity of the Export Pipeline to supply a fourth train.

QCLNG Proposed Pipeline Route



LNG Plant

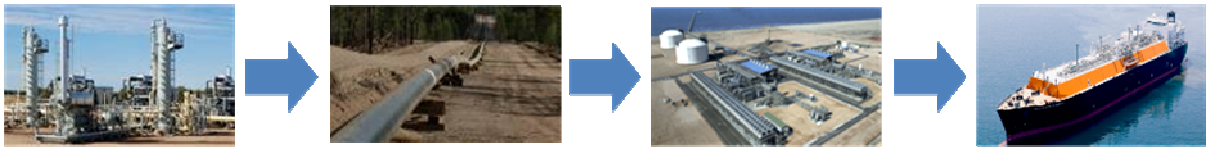
The LNG plant is to be located on the south west coast of Curtis Island. The LNG plant will initially comprise two processing units, or 'trains' (each of approximately 4 million tonnes per annum (mtpa)), with provision for a third train. Environmental approval is being sought for up to 12 mtpa of LNG. This includes an export jetty and other supporting infrastructure.

Shipping operations

LNG shipping operations to load the LNG and transport cargoes to global export markets.

A basic overview of the project chain is shown below:

QCLNG Project chain



The LNG plant is designed to receive a very narrow specification of natural gas and is specifically designed to process QGC's CSG. As a result, the pipeline is only able to transport gas that meets this gas specification. For example, without further processing conventional natural gas will not be able to be transported to the LNG plant using the QCLNG Pipeline as conventional gas has a wider specification and includes certain hydrocarbons and impurities which cannot be accepted by the LNG plant.

CSG to LNG production is only viable if supported by secure, long-term gas transportation arrangements. Given the scale of investment required and volumes involved, LNG production cannot be based on supply arrangements that are limited in duration, variable or subject to curtailment. The QCLNG Pipeline is not being developed for the commercial purpose of providing pipeline services to third party users. Its primary purpose is to provide 'point to point' gas transportation services as part of the highly integrated process for the production and sale of LNG by QGC.

Greenfields Exemption

The purpose of the 15-year no-coverage exemption regime under the *National Gas Law* (NGL) is to create incentives for the development of pipeline projects such as the QCLNG Pipeline.

The NGL states:

> *'The objective of this Law is to promote efficient investment in, and efficient operation and use of, natural gas services for the long term interests of consumers of natural gas with respect to price, quality, safety, reliability and security of supply of natural gas.*[1]*'*

Under section 97 of the NGL, the Council is required to make a recommendation on whether or not each of the 'pipeline coverage criteria' is satisfied in relation to the proposed pipeline.

In this Application QGC seeks to demonstrate that it is entitled to the exemption as:

- it would be economic to develop another pipeline to provide the services provided by means of the pipeline;
- access would not promote a material increase in competition in a dependent market; and
- access would not be in the public interest.

Granting the exemption for the QCLNG Pipeline will facilitate this and other similar major investments in LNG projects (both currently proposed and in the future) by providing certainty about the future regulatory status of the pipeline components of those projects.

[1] NGL, s 23.

Pipeline will be economic to duplicate

Under the NGL, the Council is to recommend that the exemption be granted if it is not satisfied that it would be uneconomic for anyone to develop another pipeline to provide the pipeline services provided by means of the pipeline.

The assessment of this criterion centres on identifying whether a pipeline exhibits 'natural monopoly' characteristics, such that the pipeline to be developed by the applicant is capable of meeting likely demand at lower cost than two or more pipelines. If this is the case, it would be uneconomic to duplicate the pipeline, and society's resources would be most efficiently used and costs minimised if additional pipelines were not developed.

The Council has stated that, in applying this test, if the reasonably foreseeable demand for the pipeline services outstrips both the existing capacity and maximum achievable capacity of the relevant pipeline, then it will likely be economical to develop another pipeline to provide the pipeline services, with the result that this criterion will not be satisfied.

The reasonably foreseeable demand for gas in the downstream LNG market is likely to be far greater than the ability of the QCLNG Pipeline to supply (operating at its maximum compressed capacity). As such, another pipeline(s), in addition to the QCLNG Pipeline would be required to transport the volumes of gas required to meet the reasonably foreseeable demand. The reasonably foreseeable demand for the services to be provided over the next 15 years will be approximately 5000 TJ/day, while the maximum achievable capacity of the QCLNG Pipeline system that can be achieved by means of compression is estimated to be approximately 2,916 TJ/day.

Description of Pipeline Services	***Capacity (TJ/day)***
Reasonably foreseeable demand for Pipeline Services	5,000
Free flow capacity of the QCLNG Export Pipeline	1,510
Maximum achievable capacity of the QCLNG Export Pipeline through compression	2,916

Accordingly, in order to meet the reasonably foreseeable demand for the pipeline services the Applicant submits that a duplicate pipeline will be required to provide the pipeline services.

This Application further demonstrates in the accompanying Frontier Economics Report that it is economic to duplicate the QCLNG Pipeline in order to provide the pipeline services.

Access will not promote competition

Under the NGL, the Council is to recommend that the exemption be granted if it is not satisfied that access (or increased access) to pipeline services provided by means of the pipeline would promote a material increase in competition in at least one market (whether or not in Australia), other than the market for the pipeline services provided by means of the pipeline.

In assessing whether this criterion is satisfied, the Council:

- identifies the relevant dependent (upstream or downstream) markets;
- considers whether the identified dependent market(s) is separate from the market for the pipeline services; and
- assesses whether access (or increased access) would be likely to promote a materially more competitive environment in the dependent market(s).

Upstream markets

In the case of upstream markets, producers in the Surat and Southern Bowen Basins have, and will continue to have, multiple economically viable outlets for commercialisation of their gas. Producers can currently access markets in Gladstone, Rockhampton and the Wide Bay area (principally via the Queensland Gas Pipeline) and markets in Brisbane and its surrounds via the Roma to Brisbane Pipeline. Other markets in Queensland and indeed in other States can now be accessed by the South West Queensland Pipeline and the new 'QSN' pipeline linking Queensland to the Southern States. Other transmission pipelines are also in development. In this environment, the establishment of a dedicated LNG export pipeline linking the Surat Basin to Curtis Island will not materially improve this already competitive environment for upstream gas producers. In particular, small upstream producers will not be advantaged by regulated access to the QCLNG Pipeline. Independent analysis undertaken by RLMS demonstrates that due to location, tie in costs and relative transportation costs, the QCLNG Pipeline is highly unlikely to be an attractive commercial option for small upstream producers to transport their gas to downstream markets.

Downstream markets

In the case of downstream domestic markets, users of gas in the Gladstone, Rockhampton and Wide Bay areas will also have more economical options for accessing upstream gas supply than utilisation of the QCLNG Pipeline. It will continue to be the case that the Queensland Gas Pipeline is likely to be the predominant method of transporting gas from upstream fields in the Surat and Bowen Basins. In the future, the proposed Moranbah to Gladstone pipeline will provide a further alternative. Independent analysis and modelling by ACIL Tasman demonstrates that the QCLNG Pipeline is very unlikely to be a cost competitive transportation option once relative transportation costs in different upstream locations able to serve the Gladstone, Rockhampton and Wide Bay areas are taken into account.

In the case of downstream LNG markets, these markets are global in nature. Competition between major LNG projects occurs within and between countries. LNG is a global commodity with prices set by world supply and demand, with some regional variations. Regulated access to the QCLNG Pipeline can have no impact on competition in this market and would not, in any event, assist the development of the LNG industry in Queensland.

Access would not be in the public interest

Under the NGL, the Council is to recommend that the exemption be granted if it is not satisfied that access (or increased access) to the pipeline services provided by means of the pipeline would not be contrary to the public interest.

Successive Government reviews of the regulatory regime for gas pipelines have highlighted the need to provide appropriate incentives for major investments such as the QCLNG Pipeline by providing up front certainty in relation to the regulatory status of a proposed pipeline. The 15-year no-coverage exemption scheme was inserted into the NGL for this express purpose.

Granting the exemption sought by QGC will facilitate a major investment in gas production and transportation infrastructure by providing certainty about the future regulatory status of the QCLNG Pipeline. The QCLNG Pipeline is a fundamental component of the QCLNG Project that is anticipated to contribute to the very significant economic and environmental benefits highlighted above.

Denying the exemption will materially increase regulatory risk for this and like projects, jeopardise future investment and create perverse incentives such as deliberate and inefficient undersizing of new greenfields pipelines due to the threat of regulation and its attendant risks and costs. It is in any event economically efficient (from the markets perspective) and commercially viable (from a private proponent's perspective) to build duplicate pipeline(s) and denying the exemption will not result in any enhancement of the competitive environment in any relevant upstream or downstream markets.

Conclusion

For these reasons, the Applicant submits that the Council should recommend to The Hon. Martin Ferguson MP, Minster for Resources, Energy and Tourism, that the QCLNG Pipeline be exempted from being a covered pipeline for a period of 15 years.

Compliance Checklist

The following table summarises the information required by rules 121 and 122 of the NGR and the location in this Application where further information can be found.

Rule	Summary	Location
121(1)(a)	The QCLNG Pipeline is a pipeline system comprised of: (a) an Export Pipeline from a point near Wandoan to Curtis Island; (b) a Collection Header consisting of the Woleebee Creek Lateral and the Southern Collection Header.	Annexure 1 (s 1.2)
121(1)(b)	The trunk of the pipeline will end at Curtis Island.	Annexure 1 (s 1.2)
121(1)(c)	The Woleebee Creek Lateral will start near the Woleebee Creek CPP and end at the start point of the Export Pipeline. The Southern Collection Header will start near the Ruby CPP and end at the start point of the Export Pipeline.	Annexure 1 (s 1.2)
121(1)(d)	The entire QCLNG Pipeline system will have a diameter of 42 inches.	Annexure 1 (s 1.3)
122(1)(a)	The Applicant is QCLNG Pipeline Pty Ltd. The Applicant's contact details are set out in Chapter 1.2.	Chapter 1.2
122(1)(b)	The pipeline and its route are described above. A map of the route is attached as Annexure 1 to this Application. More information can be found at http://qclng.com.au/uploads/docs/qclng_pipeline_fs_WEB.pdf.	Annexure 1 (s 1.1 to 1.4); Annexure 1
122(1)(c)	The QCLNG pipeline is a greenfields pipeline project as it is a project for the construction of a pipeline that will be structurally separate from any existing pipeline. The QCLNG pipeline will be a dedicated CSG pipeline, transporting gas from fields in the Surat Basin directly to the LNG plant on Curtis Island.	Annexure 1 (s 1.5)
122(1)(d)	As at 31 October 2009, QGC had incurred construction costs with respect to the QCLNG Pipeline of approximately [c-in-c]. At this time, the estimated cost of the QCLNG Pipeline system (as commissioned) is approximately [c-in-c].	Annexure 1 (s 9)
122(1)(e)	The pipeline's free flow capacity at commissioning will be approximately 1,510 TJ/day. In addition to free-flow, the capacity on the pipeline can be expanded by compression by a further 1,406 TJ/day. The entire free flow capacity of the pipeline, as well as the compressed capacity, will be utilised by Walloons Coal Seam Gas Company Pty Ltd, an associate of the Applicant.	Annexure 1 (s 4, s 8)
122(1)(f)	The Applicant will supply Walloons Coal Seam Gas Company Pty Ltd with a firm forward haul service for the transportation of CSG to Curtis Island.	Annexure 1 (s 5); Chapter 2.5
122(1)(g)	The QCLNG Pipeline will connect CSG fields in the Surat Basin to Curtis Island. The other sources of natural gas available to consumers at Curtis Island and in the Gladstone area are: (a) producers in the Surat and Bowen basins (supplying via the Queensland Gas Pipeline and, if necessary, the Roma to Brisbane Pipeline and Dawson Valley Gas Pipeline); and (b) producers in other production areas (eg. the Cooper/Eromanga Basin) connected to the Queensland Gas Pipeline via the South West Queensland Pipeline, QSN link and the Moomba hub. It is expected that consumers in the Gladstone area will also be served by gas producers in the Northern Bowen Basin through the proposed Moranbah to Gladstone Pipeline.	Annexure 1 (s 6)

122(1)(h)	The existing gas transmission pipelines serving areas within 100 km of Curtis Island are the Queensland Gas Pipeline and Wide Bay Pipeline. In the future, the Gladstone area may also be served by the proposed Moranbah to Gladstone Pipeline and export pipelines that are proposed as part of other LNG projects (these are described in Chapter 4.5).	Chapter 4.5
122(1)(i)	Estimates of reserves in the Surat and Bowen Basins are to be found in Chapter 4.1 and the MMA Study.	Chapter 4.1
122(1)(j)	The expected demand at Curtis Island associated with LNG production is set out in Chapters 3 and 6 of the Application. Global LNG demand is expected to reach between 245 and 340 mtpa by 2015. The expected demand from domestic and industrial users in Gladstone and surrounding areas is expected to reach 66 PJ by 2015. A description of this customer base is set out in Chapter 4 of the Application and Annexure 4.	Annexure 1 (s 7); Chapters 3, 4, 6; Annexure 4
122(1)(k)	The pipeline will be owned and operated by the Applicant.	Annexure 1 (s 2)
122(1)(l)(i)	See above.	N/A
122(1)(l)(ii)	Walloons Coal Seam Gas Company Pty Ltd will acquire gas transportation services from the Applicant. The Applicant and Walloons Coal Seam Gas Company Pty Ltd are related bodies corporate (by being subsidiaries of BG Group), and are therefore 'Associates' within the meaning of the NGL. CSG that is shipped by Walloons Coal Seam Gas Company Pty Ltd to Curtis Island over the QCLNG Pipeline will be consumed by subsidiaries of BG Group for the purposes of LNG production. These subsidiaries and the Applicant will also be 'Associates' within the meaning of the NGL	Annexure 1 (s 2)
122(1)(l)(iii)	The Applicant has no relationship with the owner, operator or controller of any other pipeline serving any one or more of the same locations as the QCLNG Pipeline.	Annexure 1 (s 2)
122(1)(m)	It is possible to expand the capacity of the Export Pipeline to approximately 2,916 TJ/day through compression, at an estimated cost of approximately [c-in-c]. The capacity of the Export Pipeline can be further expanded through looping, although the Applicant estimates that construction costs associated with looping the pipeline would be approximately 1.2 times the original construction costs for the pipeline.	Chapter 6.5; Annexure 1 (s 9)
122(1)(n)	The estimated cost to the service provider of full regulation is approximately $260,000 to $326,000 per annum.	Annexure 3

Application

1. Application

1.1 Application for a 15-year no-coverage determination

QCLNG Pipeline Pty Ltd (ACN 140 760 612), a wholly owned subsidiary of BG Group, applies to the Council under section 151 of the NGL for a 15-year no-coverage determination for the proposed QCLNG Pipeline.

The pipeline description, as required by section 151(3) of the NGL and rule 122 of the NGR, can be found in **Annexure 1** to this Application.

A **Glossary** of defined terms used in this application can be found at the end of this document. Notes on terminology (including units of measurement) can also be found at the end of this document.

1.2 Applicant's contact details

Applicant	**Applicant's Legal Advisers**
QCLNG Pipeline Pty Ltd (ACN 140 760 612) Level 30 275 George Street BRISBANE QLD 4000	Minter Ellison Waterfront Place 1 Eagle Street BRISBANE QLD 4000
Telephone: +61 7 3024 9000 Facsimile: +61 7 3024 8999	Telephone: +61 7 3119 6000 Facsimile: +61 7 3119 1000
Attention: Jim Seaton	Attention: Geoff Carter/Justin Oliver

2. The QCLNG Project

2.1 Overview

QGC, a wholly-owned subsidiary of BG Group, proposes to develop a world-scale, integrated CSG to LNG project in Queensland, known as the QCLNG Project.

Drawing on BG Group's track record of successful LNG projects and associated market development, the QCLNG Project will make a significant contribution to developing Queensland's large reserves of CSG and establishing the LNG industry on the east coast of Australia.

LNG is a safe, proven and efficient technology used to safely and economically deliver supplies of natural gas, the least carbon-intensive of all fossil fuels, to markets around the world. LNG is natural gas that has been cooled to become a liquid, making it easier and more efficient to store and transport.

The QCLNG Project involves the expansion of QGC's existing CSG operations in the Surat Basin and transportation of the gas via an underground gas pipeline to the LNG plant on Curtis Island, near Gladstone, where the gas will be used to produce LNG for export.

The Project will rank as one of Australia's largest capital investments and generate significant economic benefits for Australia, and in particular for Queensland, including an estimated 9,500 direct jobs at the peak

of construction, about 1,000 permanent positions and increased demand for goods and services. In addition, the Project will indirectly generate employment (primarily in Queensland) during construction and operation. The QCLNG Project is forecast to stimulate an increase in Queensland's GSP of up to $32 billion between 2010 and 2021, or approximately $2.6 billion per annum. QGC has estimated an annual average royalty income for the Queensland Government of between $125 million and $280 million and annual average tax income for the Australian Government of between $800 million and $1.4 billion, depending on oil prices.

2.2 Proponents

QGC

QGC listed on the ASX in August 2000 with a market capitalisation of $16 million. Over the next seven years, the company rapidly developed a strong CSG reserves base in the Surat Basin, culminating in its first gas sales in the domestic market in 2007.

In February 2008, QGC announced an alliance with BG Group (through a subsidiary company, BG International Limited) to develop the QCLNG Project.

BG Group purchased QGC through an agreed takeover announced in October 2008. As a result of this acquisition, QGC ceased to be listed on the ASX in April 2009. BG Group's acquisition of QGC combined QGC's extensive CSG expertise and BG Group's international experience in LNG within a single company. As at December 2009, the business had more than 660 employees located in Queensland.

In addition to LNG, the new QGC is focused on continued expansion of its CSG resource base in Queensland and supply to both domestic and export markets.

BG Group

BG Group is a UK-listed energy business with activities on five continents and interests in more than 20 countries. More than 60 percent of the company's 5,300 employees are located outside the United Kingdom. BG Group has operations across the energy sector, particularly in natural gas where it has experience throughout the gas chain from exploration to distribution to the customer. BG Group ranks among the largest companies on the London Stock Exchange, with a market capitalisation of approximately $72 billion (as of July 2009). In 2008 BG Group's operating profit was approximately $11.26 billion.[2]

BG Group's LNG business encompasses liquefaction, shipping, regasification and marketing. BG Group also has a long history in LNG shipping and was involved in development of both the prototype and the first working LNG carriers in the industry.

In 2008, BG Group managed total LNG volumes of some 13 million tonnes and supplied around 8.4 million tonnes of LNG to customers in the Pacific Basin. BG Group believes there is significant potential to further expand its LNG supply activities in the Pacific Basin to meet increasing global demand.

As at mid 2009, BG Group had commitments from customers to underpin ay least two trains at Curtis Island.

China National Offshore Oil Corporation (CNOOC)

On 12 May 2009, BG Group signed a 'LNG Project Development Agreement' with CNOOC, one of China's leading integrated energy companies, focused on the QCLNG Project. The agreement sets out the basis on which:

[2] BG Group reported an operating profit of £5.4 billion for the 2008 calendar year. This is converted to AUD using the exchange rate published by the RBA for December 2008.

- CNOOC will purchase 3.6 mtpa of LNG for a period of 20 years from the start-up of QCLNG;
- CNOOC will purchase 5% of BG Group's interest in the reserves and resources of certain tenements in the Walloons Fairway of the Surat Basin; and
- CNOOC will become a 10% equity investor in one of the two liquefaction trains which will form the first phase of the QCLNG development at Gladstone.

2.3 Description of Project

The QCLNG Project will be a fully integrated process from CSG extraction through to LNG production of up to 12 mtpa of LNG at the QCLNG site on Curtis Island. The Project will initially involve building two LNG trains at Curtis Island, supplied by CSG produced from QGC's tenements in the Surat Basin and transported to Gladstone by means of the QCLNG Pipeline. Once commissioned, the QCLNG Pipeline's free flow capacity will be sufficient to supply the first two LNG trains. The third train will be supplied by expanding the capacity of the QCLNG Pipeline utilising in-line compression. There is sufficient space at the QCLNG site on Curtis Island for the development of a fourth LNG train by QGC, and the scope to further expand the capacity of the QCLNG Pipeline to supply a fourth train.

The Project involves the following major components:

- Gas field component
- Pipeline component
- LNG component
- Shipping operations.

Gas field component

The upstream or gas field component of the QCLNG Project involves the expansion of QGC's existing CSG fields in the Surat Basin.

Current production facilities

The existing QGC gas field exploration and development areas in the Walloons Fairway of the Surat Basin cover 7,500 km^2. The gas field development area is located between the towns of Moonie (in the south), Wandoan and Miles (in the north), Condamine and Tara (in the west) and Chinchilla and Kogan (in the east). QGC's tenements are shown in Figure 1 of the RLMS Report (**Annexure 5**).[3]

At present, QGC operates an exploration and production programme to fulfil domestic supply contracts. For these existing activities, well development is expected to involve more than 250 commercial gas production wells by 2010, with production levels reaching 200 TJ/day.

These fields and further lateral extensions will be substantially developed and expanded to provide sufficient gas supply to the LNG plant.

Infrastructure

Over at least 20 years, the gas field expansion development will comprise the following components:

- the development of approximately 6,000 gas production wells, with up to 1,500 wells by mid-2014. The remaining wells will be phased in over the life of the project to replace declining wells;

[3] Figure 1 in Annexure 5 has been submitted to the Council on a commercial-in-confidence basis.

- the construction and operation of associated surface equipment, such as wellhead separators, wellhead pumps, telemetry devices and metering stations;
- the installation of gas-gathering systems;
- the construction of gas processing and compression infrastructure;
- the development of field infrastructure, such as access tracks, warehouses, camps (both construction and operations), office and telecommunications; and
- the construction of water-gathering and water management infrastructure and water treatment facilities.

The gas production wells will be connected, via a network of gathering systems and field compression stations, to a series of Central Process Plants (CPPs). At each CPP, gas will be dehydrated and compressed for delivery into the Collection Header, and then into the Export Pipeline for transportation to Curtis Island. The expected location of the initial CPPs, and their points of connection to the Collection Header are shown below. The CPPs located at Berwyndale South and Kenya will be able to inject gas into both the Collection Header and the RBP. This is to provide alternative uses for excess 'ramp up' gas produced from the QGC tenements while the LNG plant at Curtis Island is brought into commercial operation, or when it is turned down during subsequent operations. Gas from the Berwyndale South area will also be supplied to the Condamine Power Station (which will be operated by QGC) for the same purpose.

'Ramp up' gas refers to CSG which is produced from QGC's tenements in the early years of the Project. The volumes produced in this early stage, while significant, will not be sufficient to enable the Project to go into full commercial production. Generally, 'ramp up' gas must either be flared or used in some other way.

There will, however, be no facility for conventional gas to be injected from the RBP into the Collection Header or any other part of the QCLNG Pipeline due to the particular gas specification requirements of the QCLNG Project.

The full extent to which QGC will need to develop alternative uses for excess ramp gas will not be known until the QCLNG Project is further advanced. It is possible that QGC will need to consider and develop other options to utilise excess ramp up gas.

CSG and conventional natural gas

CSG is produced from within underground coal seams. The coal formations that store CSG have two separate porosity mechanisms, micropores within the coal matrix, and a system of natural fractures called cleats. Methane is adsorbed into the micropores under water pressure and is released when the water pressure falls due to a well being drilled into the coal seam. It then flows through the matrix to the cleats and then to the well bore. Free gas exists in the cleats only when the water pressure equals the adsorption pressure. A typical CSG well produces mainly water for twelve months, after which gas flow rates increase and remain steady for eight or more years, on the basis that the wells have dewatered and gas flows continuously.[4]

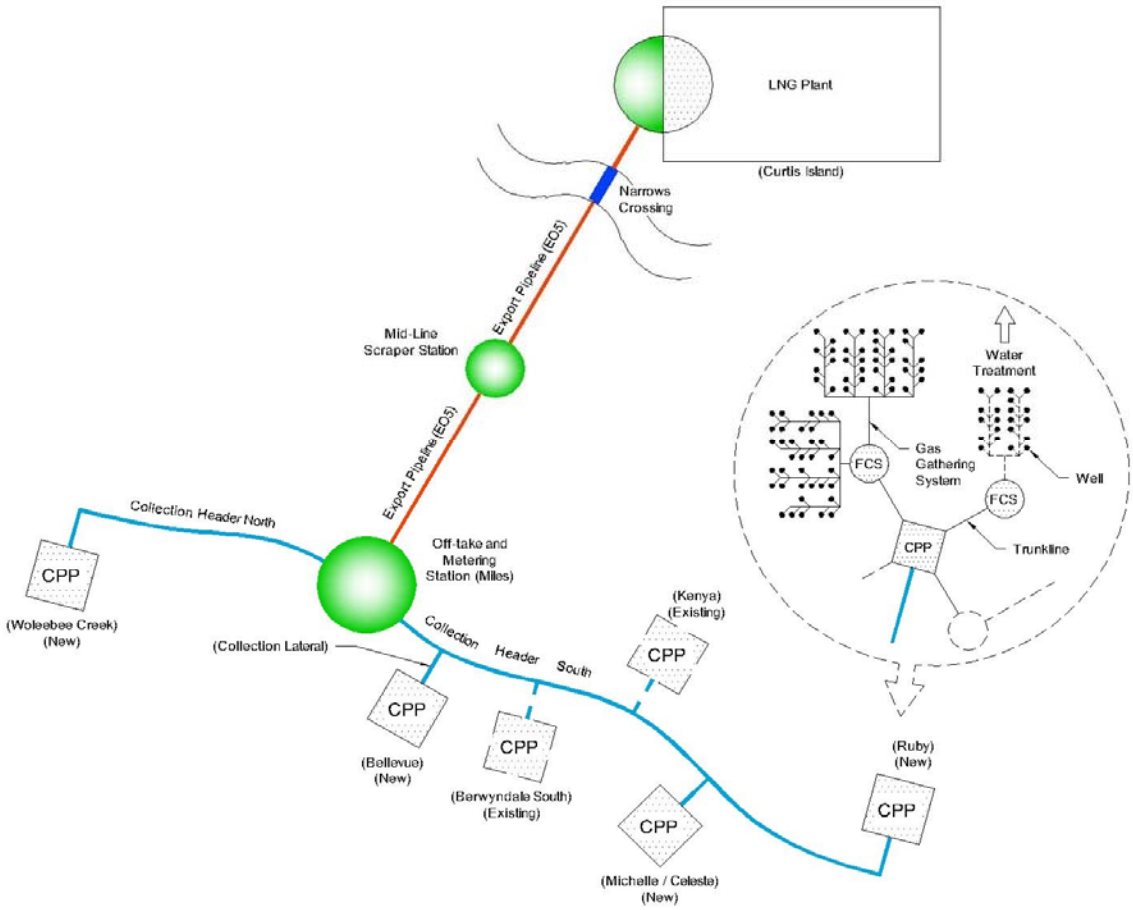
Conventional gas is produced from sandstone reservoirs. Conventional gas reservoirs are comprised of largely homogeneous porous sandstone capped by impermeable rock. The gas is stored at high pressure and flows to the surface spontaneously at high flow rates from each well drilled into the sandstone structure.[5] Typically, fewer wells are required to produce conventional gas, compared to an equivalent volume of CSG.

[4] MMA Study, p 4.

[5] MMA Study, p 4.

CSG is sold in competition to conventional natural gas and can be transported through the same transmission and distribution pipeline networks used to transport conventional natural gas.[6] However, QGC's LNG trains are specifically designed to process CSG that has a narrower specification than conventional gas which meets the specifications prescribed by *AS 4564: Australian Standard Specification for general purpose natural gas*. Conventional natural gas generally has higher concentrations of heavier hydrocarbons (such as propane and butane) than CSG. The QCLNG Pipeline, as a critical component of the Project, will only be able to carry gas of a narrower specification, which excludes these concentrations of heavier hydrocarbons.[7]

Figure 1: Central Processing Plants[8]



The injection of conventional gas into the QCLNG Pipeline will interfere with the operation of QGC's LNG plant, unless such conventional gas is further processed to meet the gas specification requirements of the QCLNG Project. For this reason, natural gas carried on, say, the RBP or Queensland Gas Pipeline (QGP), could not be injected directly into the QCLNG Pipeline for carriage to Gladstone without intermediate processing to the narrower specification.

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[6] MMA Study, p 4.

[7] See **Annexure 1**.

[8] Note that the reference in Figure 1 to 'Collection Header North' is a reference to the Woleebee Creek Lateral. The reference to 'Collection Header South' is a reference to the Southern Collection Header (see the pipeline description in **Annexure 1** for more details.

Wells

The exact location of the proposed 6000 wells will not be known until exploration activities are conducted in each tenement. Table 1 below summarises the cumulative number of wells anticipated at various stages of the Project's lifespan.

Table 1: Upstream Wells

Year	Estimated number of wells
2010	400
2013	1,000
2014	1,500
2020	3,600
2030	6,000

Source: QGC

Pipeline component

The pipeline component of the Project will involve the construction and operation of a network of underground pipelines, including gas and water collection pipelines, in the gas fields. Gas pipelines in the gas fields will be connected by the Collection Header to an underground gas transmission pipeline to the Curtis Island LNG plant. The gas and water gathering systems in the gas fields do not form part of the QCLNG Pipeline for which a greenfields exemption is sought. The project will involve laying more than 500 km of pipelines to connect gas fields and production facilities to the main pipeline. Related infrastructure, such as compressor stations (included as part of the gas filed component), marker posts and metering will support the pipelines. It will also be necessary to build a crossing at 'The Narrows', which is the channel that separates Curtis Island from the mainland at Gladstone.

More specifically, the pipeline component of the QCLNG Project consists of:

- the Export Pipeline; and
- the Collection Header.[9]

The Environmental Impact Statement (EIS) published in August 2009 proposed the construction of a mainline which commenced near Miles. In a supplementary EIS, due to be released in early 2010, QGC will propose a more northerly start point for the mainline, connecting to the Collection Header described above. The EIS published in August 2009 also proposed the construction of a lateral connecting the Export Pipeline to a point near Fairview. QGC does not currently intend to proceed with this lateral, and it is not included in the pipeline description for the purposes of the Application.

The QCLNG Pipeline will be a class 600 steel pipeline with a diameter of 42 inches along its entire route.

QGC considered a range of diameters and pipeline classes, as there are a number of factors that need to be assessed in arriving at the appropriate class and diameter. These include:

- present and future maximum potential capacity;
- logistics involved in construction. Typically, construction of a 42 inch pipeline would require:
  - in excess of 200,000 tonnes of steel;

[9] See **Annexure 1** for the pipeline description.

- over 11,000 truck movements, each carrying 4 x 12 meter pipeline sections;
- storage and lay-down areas for the pipeline sections;
- a hydrotest every 14km;

- safety conditions;
- procurement (availability and timing) of steel pipeline; and
- the NPV of the Project.

Given the above factors, QGC concluded that a 42 inch pipeline was the most cost-effective way of meeting QGC's transportation requirements for the QCLNG Project.

Construction of the QCLNG Pipeline is anticipated to take approximately 18 months.

The QCLNG Pipeline's expected operational life is 40 years.

A description of the QCLNG Pipeline is set out in **Annexure 1**. The capacity of the pipeline once commissioned, as well as the capacity that can be achieved through expansion, is set out in section 6.5 below.

LNG production and sales

The Project will involve the construction and operation of an LNG plant at a site appointed by the Queensland Government on the south west coast of Curtis Island, together with an export jetty, and other supporting infrastructure. The Project will also require LNG shipping operations to load the LNG and transport cargos to global export markets.

Location and size

QGC proposes to construct the LNG plant on the south-western portion of Curtis Island between Laird Point and Hamilton Point. This site is within the Curtis Island Industry Precinct of the Gladstone State Development Area.

The site boundary on Curtis Island covers approximately 268 hectares above the highest astronomical tide, with an additional proposed wet lease area of approximately 71 hectares. Within this boundary, the LNG plant's onshore footprint will occupy approximately 140 hectares. An additional 25 hectares is required for intertidal and marine facilities (including a jetty, docking facilities, and materials offloading facility) and 29 hectares for other shore disturbance related matters, such as the placement of excess site strip material within the LNG plant boundary.

Infrastructure

The LNG plant comprises:

- onshore gas reception facilities;
- gas pre-treatment facilities for the removal of water and impurities from the feed gas;
- gas refrigeration and liquefaction units sized for approximately 4 mtpa trains;
- a nitrogen rejection unit for the removal of nitrogen in the feed gas;
- two full containment LNG storage tanks with up to 180,000 m^3 capacity each, with space for another two if required;
- jetty and docking facilities with a turning basin for the loading of LNG carriers and the unloading of propane ships to storage;

- a materials offloading facility for ferry transportation and construction material receiving;
- associated onshore mainland facilities; and
- utility requirements to support the LNG plant.

The LNG plant to be built and operated at Curtis Island is designed to process gas at the narrower specification of QGC's CSG.

Development of the swing basin and channel will require the following components:

- a temporary access channel to the materials offloading facility for vessel access during construction of the Project;
- the 'Curtis Spur' channel, consisting of berth pocket, swing basin, connecting channel and upgrade of existing port channels; and
- the consideration of a range of options for disposal or use of dredge material from dredging activities.

Capacity

The first phase of the QCLNG Project will comprise two LNG trains, with a potential second phase to develop a third LNG train. QGC has sufficient space at its Curtis Island LNG plant to develop a fourth train if this is considered viable.

The average production capacity of each train is approximately 4 mtpa, taking into consideration the expected average feed gas-flow rates and long-term availability of the processing equipment. Environmental approval is being sought for three trains which will have a nominal LNG production capacity of approximately 12 mtpa.

LNG shipping

LNG will be pumped from the storage tank, through a cryogenic pipeline to the loading platform at the jetty head. It is expected that there will be four LNG cargo arms on the loading platform for a maximum LNG loading rate of 12,000 m^3 per hour. Shipping operations will involve the regular transit of LNG tankers on a 'just in time' basis. The jetty is designed to accommodate the loading of LNG vessels ranging from 125,000m^3 to 220,000m^3 in capacity.

Typically shipping of LNG out of the Port of Gladstone will be undertaken by BG Group, with LNG ships being a combination of vessels owned by BG Group and vessels contracted by BG Group to carry cargo. BG Group has a core fleet of nine LNG tanker ships.

Current commitments for LNG sales

Upon execution of the transaction documents with CNOOC, BG Group's LNG supply commitments with partners and customers in Chile, Singapore and China will account for up to 8.3 mtpa of LNG. This will be supplied from BG Group's global portfolio (including the QCLNG Project) thereby firmly underpinning development of the two-train first phase of the Project. These commitments include:

- CNOOC's agreement to purchase 3.6 mtpa of LNG for a period of 20 years from the start-up of QCLNG Project;
- a 25-year agreement to supply Chile's first LNG import terminal; and
- being selected as the LNG aggregator for Singapore for a period of up to 20 years.

Quintero LNG (Chile)

In July 2009, BG Group delivered the first cargo of LNG to Chile to commission the GNL Quintero LNG regasification terminal, in which it is an investor.

BG Group has commitments to supply 1.7 million tonnes of LNG over 21 years to Chile from its global portfolio. Gas from the Queensland Curtis LNG Project will be available to supply BG's Chilean commitments from 2014. The regasification plant, 110 km from Santiago, has the capacity to receive 2.5 million tonnes of LNG a year.

BG Group's partners in GNL Quintero are the Chilean oil company, Empresa Nacional del Petróleo, the Spanish electricity utility, Acciona, Latin America's largest electricity company, Endesa, and Santiago's largest gas distribution company, Metrogas.

Energy Market of Singapore

In April 2008, the Energy Market of Singapore selected BG Group to supply up to 3 million tonnes of LNG a year to the Singaporean market for up to 20 years. BG Group will supply LNG from its global portfolio and a significant portion is expected to be sourced from the Queensland Curtis LNG Project. The Energy Market Authority of Singapore is a statutory body under the country's Ministry of Trade and Industry that regulates the electricity and gas industries. Singapore is highly reliant on its neighbours for energy and has promoted diversification to enhance security of supply. LNG imports are now important to Singapore's energy policy.

BG Group's initial deliveries to Singapore are expected to begin in 2012 on completion of an LNG import terminal on Jurong Island in Singapore. Supplies from the Queensland Curtis LNG Project are anticipated from 2014.

2.4 The significance of the QCLNG Pipeline to the Project

The QCLNG Pipeline is an essential component of a fully integrated system for the production of LNG from CSG extracted in the Surat Basin by QGC.

In most cases, production from CSG wells must be continuous. With up to 6,000 wells to be established over the life of the Project, this means there is a need for a high of level of certainty in relation to transportation services. CSG to LNG production is only viable if supported by secure, long-term gas transportation arrangements. Given the scale of investment required and the volumes involved, LNG production cannot be based on supply arrangements that are limited in duration, variable, or subject to curtailment.

In the case of the QCLNG Project, the need for certainty and security of supply is underscored by the design of the Curtis Island LNG plant. As noted above, the LNG trains to be located at Curtis Island will be designed to process CSG that meets the specifications described in **Annexure 1**. The injection of other gas into the QCLNG Pipeline will interfere with the operation of the LNG trains unless it is processed to meet the gas specification requirements of the QCLNG Project.

2.5 Pipeline classification

The QCLNG Pipeline is located entirely in the State of Queensland and is not therefore a cross-border pipeline. The Applicant further submits that, applying the pipeline classification criterion in section 13 of the NGL, the QCLNG Pipeline (ie. both the Export Pipeline and Collection Header) should be classified as a transmission pipeline.

The pipeline classification criterion in section 13(1) is:

> '*whether the primary function of the pipeline is to:*

(a) reticulate gas within a market (which is the primary function of a distribution pipeline); or

(b) convey gas to a market (which is the primary function of a transmission pipeline).'

No part of the QCLNG Pipeline system is used for the reticulation of gas within a market. CSG produced from QGC's tenements in the Surat and Southern Bowen Basins is gathered and processed through a series of CPPs. The CSG is injected into the Collection Header from these CPPs, and from there transported to the start of the Export Pipeline for transportation to Curtis Island. The characteristics of the QCLNG Pipeline are similar to the characteristics of other pipelines classified as transmission pipelines under the *Gas Pipeline Access Law* (GPAL) and the NGL.

In determining the primary function of the QCLNG Pipeline, the Council must have regard to a series of factors in section 13(2) of the NGL. Each of these factors is discussed below.

'(a) the characteristics and classification of, as the case requires, an old scheme transmission pipeline or an old scheme distribution pipeline;

(b) the characteristics of, as the case requires, a transmission pipeline or a distribution pipeline classified under this Law;

(c) the characteristics and classification of pipelines specified in the Rules (if any)'

As the QCLNG Pipeline is a greenfields pipeline project it has never been classified under the GPAL or NGL, and no provision in made the classification of pipelines under the NGR. However, as noted above, the characteristics of the QCLNG Pipeline are similar to the characteristics of other pipelines classified as transmission pipelines under the GPAL and the NGL.

'(d) the diameter of the pipeline;

(e) the pressure at which the pipeline is or will be designed to operate'

With a diameter of 42 inches, the QCLNG Pipeline will be one of the largest pipelines constructed in Australia. A pipeline of this size, operating at pressures of up to 10.2 MPa, is consistent only with the characteristics of a transmission pipeline. In contrast, the maximum diameter of the QGP is less than 13 inches, and the maximum diameter of the SWQP just under 16 inches. Both the QGP and the SWQP have been classified as transmission pipelines.

'(f) the number of points at which gas can or will be injected into the pipeline'

While gas will initially be injected into the Collection Header at six points (for each of the six CPPs) this does not suggest the Collection Header is a distribution system. Each CPP will be a substantial source of gas supply in its own right, processing CSG gathered from hundreds of wells. In a different commercial context, the volume of gas processed at a single CPP could be sufficient to justify a stand-alone transmission pipeline. However, the volumes required to underpin the QCLNG Project require gas to be transported from multiple CPPs to QGC's LNG plant at Curtis Island. This means that the Collection Header must transport gas from each CPP to the single point of connection with the Export Pipeline. Put another way, the number of connection points on the Collection Header is a function of the volume of gas that must be transported to Curtis Island. It is not a function of the Collection Header reticulating gas within a market.

'(g) the extent of the area served or to be served by the pipeline'

While the Collection Header serves a very large area in the Surat and Southern Bowen Basins this is, again, a function of the volume of gas that must be transported to Curtis Island. It is not a function of the Collection Header reticulating gas within a market. The primary purpose of the Collection Header

is to transport gas from upstream production fields to Curtis Island via the Export Pipeline.

'(h) the pipeline's linear or dendritic configuration'

The Collection Header and Export Pipeline both have a linear configuration, further supporting the submission that the QCLNG Pipeline system is a transmission pipeline.

2.6 Foundation transportation contracts

As noted above, the QCLNG Pipeline is a critical component of a fully integrated CSG to LNG production project, with a life span well in excess of the 15 years for which a no coverage determination can apply. Accordingly, the Applicant and Walloons Coal Seam Gas Company Pty Ltd (Walloons CSG) (a subsidiary of QGC) will enter into a gas transportation agreement (GTA) to provide the long-term security and certainty of supply that is required over the life of the QCLNG Project. Walloons CSG will contract with the Applicant to ship gas through the QCLNG Pipeline to meet the requirements of the Project. This GTA will define the scope of the services to be provided, together with tariffs for transportation services and other necessary commercial terms.

The GTA will provide for the Walloons CSG to acquire pipeline services in at least three tranches.

Tranches 1 and 2

Tranche 1 will consist of a firm forward haul service for an annual maximum quantity of approximately 755 TJ/day. This Tranche will be sufficient to support one LNG train at the Curtis Island LNG plant, together with associated line pack. Tranche 2 will consist of a firm forward haul service for an annual maximum quantity of approximately 755 TJ/day. This Tranche will be sufficient to support a second LNG train at the Curtis Island LNG plant, together with associated line pack.

The actual daily quantities to be transported to the Curtis Island LNG plant under these first two Tranches will fluctuate on a daily basis in accordance with weather conditions and other operational issues. In particular, changes in temperature will affect the capacity of the LNG processing plant, and weather is generally expected to impact on shipping schedules. This means that Tranches 1 and 2 will account for the entire free flow capacity of the QCLNG Pipeline as commissioned.

Tranche 3

Tranche 3 will consist of a firm forward haul service for an annual maximum quantity of approximately 703 TJ/day. This Tranche will be sufficient to support a third LNG train at the Curtis Island LNG plant. Provision may be made for additional capacity (beyond Tranche 3) to be supplied, depending on the requirements of the Project. The capacity to supply capacity beyond Tranches 1 and 2 will not be built into the Pipeline from its commissioning date, but will instead be created by expanding the capacity of the pipeline, most likely through compression.

2.7 Status of the Project

Pending the relevant approvals, QGC is on track to commence commercial operation of the QCLNG Project in early 2014. Gas field exploration, drilling, and production well development is currently on-going. Environmental assessment approvals are expected to be received during the first quarter of 2010. A Final Investment Decision (FID) on the Project is currently scheduled for 2010.

Construction of the LNG plant, pipelines and gas fields is scheduled to begin soon after FID and conclude in the third quarter of 2013. QGC plans to commission train 1 in late 2013 and train 2 approximately six to 12 months later (early to mid 2014). First production of LNG is planned to begin in the fourth quarter of 2013.

3. Other Queensland LNG Projects

The LNG industry that is currently being developed in South East Queensland is easily the most significant event in the Queensland gas market in recent years. The discovery and continued expansion of CSG reserves has potential to create a new LNG production industry centred on Gladstone.

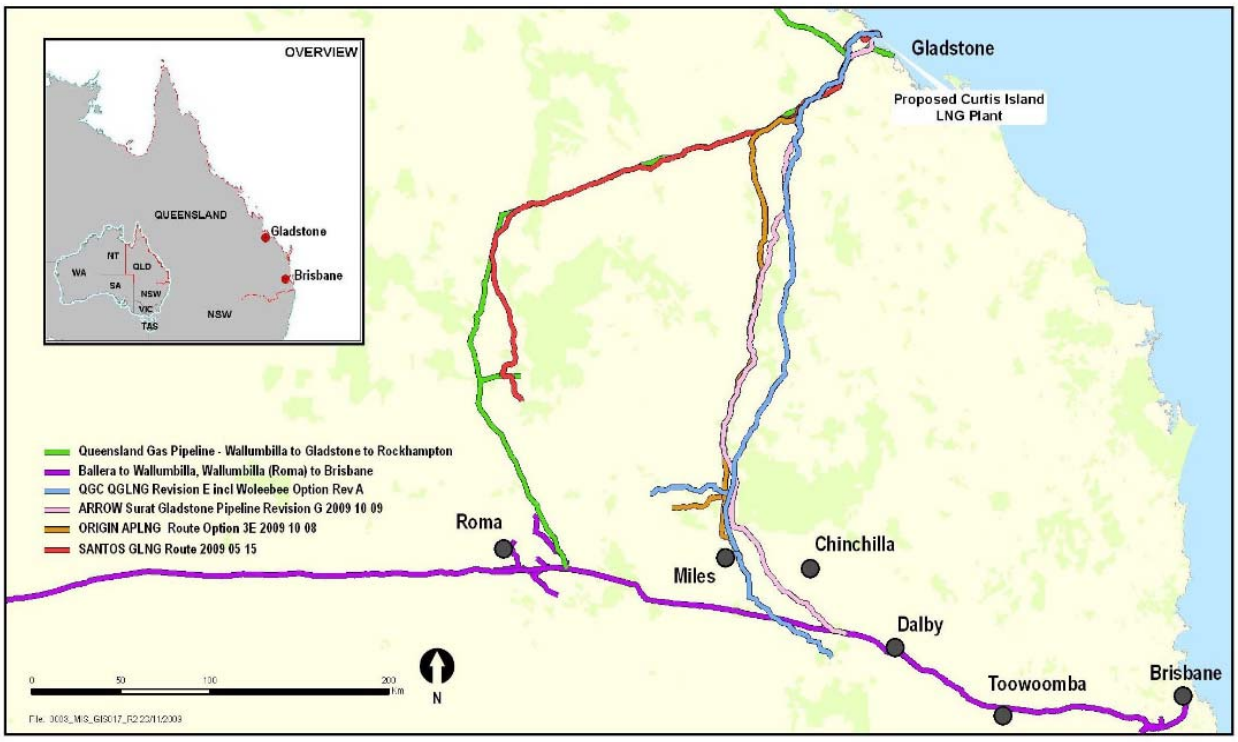
There are currently eight LNG projects proposed in Queensland, with a total capital expenditure in excess of $40 billion. It is estimated that if all projects were to proceed, more than 50 mtpa of LNG would be produced as a result of extracting CSG from the Surat and Bowen Basins and piping it to the coast to be exported.[10]

Other CSG to LNG projects will include investments in:

- the development of CSG fields in Queensland;
- the construction of a gas pipeline between the gas fields and Gladstone; and/or
- the construction of LNG processing facilities on Curtis Island.

The development of other CSG to LNG projects in Gladstone has the potential to add multiple major gas transmission pipelines to the existing pipeline infrastructure in South East Queensland. The locations of proposed pipelines (based on public announcements by proponents), together with South East Queensland's major existing transmission pipeline infrastructure, are shown in Figure 2 below.

Figure 2: Proposed LNG Export Pipelines



[10] DEEDI 2009, p 1.

Major LNG projects currently in development include:

- the QCLNG Project;
- the Australia Pacific LNG (APLNG) Project (Origin-ConocoPhillips);
- the GLNG Project (Santos-Petronas);
- the Fisherman's Landing LNG Project pipeline (LNG Limited-Arrow); and
- the Shell Australia LNG Project (Shell-Arrow).

These proposed projects are described in detail in **Annexure 2** to this Application and are summarised in Table 2 below.

Table 2: Summary of proposed LNG Projects

Project	Number of Trains	Anticipated LNG Production (mtpa)	Anticipated Start Date
QCLNG (BG Group-QGC)	1 – 3 (each train ≈ 4 mtpa)	4 - 12	2013
APLNG (Origin-ConocoPhillips)	1 – 4 (each train = 3.5 - 4 mtpa)	3.5 – 16	2014
Energy World Corporation	Unknown	0.5 – 2	2012
GLNG (Santos-Petronas)	1 - 3 (train 1 = 3 – 4 mtpa; trains 1 + 2 = 6 – 7 mtpa; trains 1 + 2 + 3 = 10 mtpa)	3 – 10	2014
Impel (Southern Cross LNG)	1 - 3 (each train = 0.7 – 1.3 mtpa)	0.7 – 3.9	2013
Fisherman's Landing LNG (LNG Limited-Arrow)	1 – 2 (each train ≈ 1.5 mtpa)	1.5 – 3	2013
Shell Australia LNG (Shell Australia-Arrow)	1 – 4 (each train = 3 - 4 mtpa)	3 – 16	2014 / 2015
Sojitz Corporation	1 – 2 (each train = 0.5 mtpa)	0.5 – 1	2012
Total		**16.7 - 63.9**	

*This table is a summary of published information. References can be found in **Annexure 2**.*

If all of these projects were to proceed, Queensland's LNG industry would produce in excess of 63 mtpa. While it is questionable whether the industry will reach this size, it is realistic to expect that a substantial LNG production industry will be developed at Gladstone.

The Applicant's estimates of the likely size of this industry, and its associated demand for pipeline services, is set out in Chapter 6 below.

4. The Queensland Gas Industry

In May 2009, the Queensland Government released a study by McLennan Magasanik Associates (MMA) entitled *Queensland LNG Industry Viability and Economic Impact Study*. This study was commissioned by the Queensland Government to assess the sustainability of the proposed LNG production and export industry

and to identify its costs and benefits to Queensland.[11] The MMA study provides a valuable insight into key aspects of the gas industry in Queensland.

4.1 CSG Production in Queensland

Australia has significant CSG resources, estimated at in excess of 250,000 PJ.[12] It is estimated that only 20% of these CSG resources need to be recovered to meet Queensland's and New South Wales' gas needs for more than 40 years.[13]

Estimates of 2P reserves of conventional natural gas and CSG in the Surat and Bowen Basins can be found at pages 48 and 49 of the MMA Study.

Estimates of Queensland's CSG reserves are set out at pages 51 to 57 of the MMA Study. Given the size of these resources and the projected growth in demand for LNG, there is significant opportunity for the development of CSG-to-LNG facilities on the coast of Queensland in proximity to the CSG reserves. It is expected that both CSG production and reserves will continue to grow rapidly in Queensland and New South Wales over the next three to five years.[14]

QGC is unable to estimate the rates of production for conventional natural gas and CSG in the Surat and Bowen Basins, although MMA has produced estimates of the potential rate of development of CSG reserves in Queensland.[15]

The MMA Study estimates that, as at 30 June 2008:

- 2P reserves held by the major Queensland CSG producers were 12,174 PJ; and
- 3P reserves held by the major Queensland CSG producers were 29,015 PJ.[16]

The MMA Study goes on to state (at p 54):

> '*The history of the increase in the 2P reserves by companies over the past five years has been one of significant growth with the companies generally having 2P reserves today well above their level of 3P reserves of three to four years ago. With the accelerated appraisal and development activity being undertaken across the industry together with the increasing knowledge base of the importance of the coal specific geology within the gas field development area, understanding of the nature of the coals and the application of relevant well finishing techniques applicable to the coals,* ***it is expected that the current level of 3P reserves will mostly be upgraded to 2P reserve status by 2012***.' (**emphasis added**)

The MMA Study noted that the LNG projects proposed at the time of the report would produce over 37 mtpa of LNG by 2023.[17] However, the scenario which the MMA Study describes as 'feasible' is one in which the LNG industry would grow at a rate of one 3.5 mtpa train per year over eight years. The first train would

[11] MMA Study, p 1.

[12] ABARE 2002, p 2. This estimate is over ten times greater than the total of all eastern Australia's conventional natural gas reserves combined.

[13] ABARE 2002, p 18.

[14] RET 2009, p 16.

[15] see Chapter 6.4 below.

[16] MMA Study, p 54.

[17] MMA Study, p 8.

enter production in 2014, with production reaching 28 mtpa in 2021.[18] This scenario, which assumes 8 trains running for 20 years, requires the development of reserves of 35,200 PJ by 2023. The MMA Study states that the CSG industry can 'readily achieve' these growth rates.[19]

With growth in reserves exceeding domestic demand, CSG producers have sought alternative markets in which to sell their product including the export LNG market. The export LNG market is attractive, in terms of value of gas, as LNG prices are indexed to oil prices which were at historical highs during 2008.[20]

4.2 The Global LNG Market

Demand for LNG

The MMA Study concluded that global demand for LNG was growing rapidly, and was expected to continue to grow at between 5%-10% per annum.[21] From 165 mtpa in 2007, global demand is expected to reach between 245 and 340 mtpa by 2015. In 2007, the global LNG demand was 165 million tonnes, an increase of 7% over 2006.[22] World LNG trade is forecast to remain at around 171 mtpa in 2009 with a 6% increase to 181 mtpa forecast for 2010.[23] It is forecast that by 2020, global demand for LNG will rise to 380 mtpa or 14% of total gas consumption.[24] Over that same period, the Pacific Basin LNG trade (historically the largest market for LNG), is forecast to increase by 109 mtpa to 201 mtpa.[25]

Table 3 below sets out actual global LNG demand by region in 2007 and forecast global LNG demand by region in 2015.

Table 3: Global LNG Demand 2007/2015 (mtpa)

Market	2006	2015 (forecast)
Americas	19	60-90
Asia	108	140-180
Europe	38	45-70
Total	**165**	**245-340**

Source: MMA Study, p 97

As illustrated in Table 3, demand for LNG in Asia is expected to increase by between 30 and 70% by 2015. Asia is Australia's nearest market geographically and most Asian import markets have little or no domestic natural gas.[26] Although the export of Australian LNG to the United States would incur additional

[18] MMA Study, p 9.

[19] MMA Study, p 59.

[20] MMA Study, p i.

[21] MMA Study, p vi.

[22] MMA Study, p 97.

[23] ABARE 2009, p 337.

[24] EIS, Executive Summary, p 16.

[25] EIS, Volume 1, Chapter 2, p 16. The Pacific Basin is defined as the geographic trade area to the east of the Suez Canal while the Atlantic Basin is that to the west of Suez Canal. The Pacific Basin comprises countries in North Asia, South Asia, North America and those of the Western side of South America that ring the Pacific Ocean. The Pacific Basin includes the world's largest economies, China, USA and Japan.

[26] MMA Study, p 96.

transportation costs, the size of the United States market means that, depending on price, there are potentially opportunities for sale of larger volumes of LNG than could be supplied into Asia.

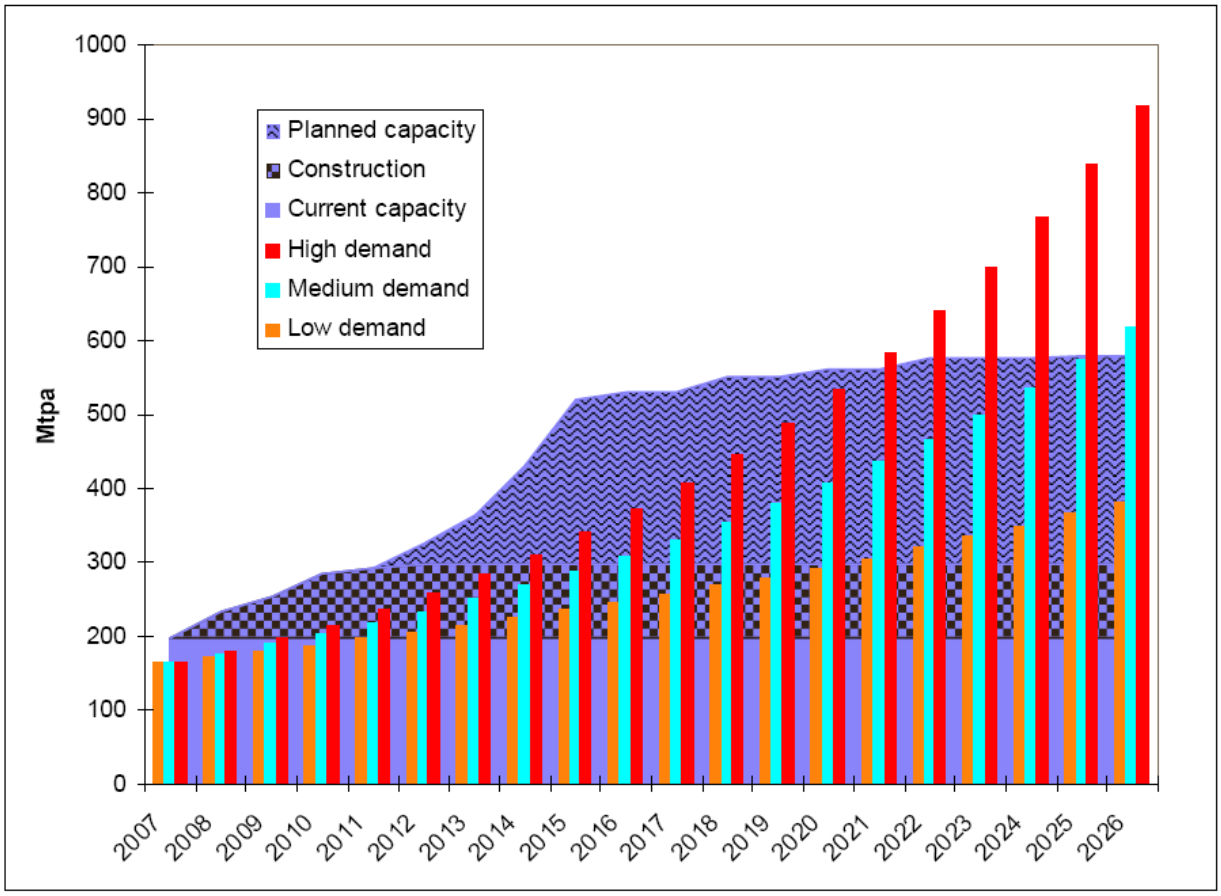
Supply of LNG

In 2007, global supply of LNG was 197 mtpa. World LNG supply capacity is expected to increase to approximately 297 mtpa by 2012, as capacity currently under construction is completed.[27] However, the MMA Study concluded: [28]

> *'whilst commitments have been made to progress a large number of Greenfield and Brownfield LNG Projects, actual supply has struggled to match the pace of anticipated demand growth'.*

In 2007 100 mtpa of capacity was under construction and 278 mtpa in planning.[29] At the end of 2008, global LNG production capacity was around 202 mtpa.[30]

Figure 3: World LNG demand v capacity



Sources: Forecasts derived from and consistent with forecasts provided by FACTS Inc, Gas Strategies, Wood Mackenzie and ABARE. Capacity from Natural Gas market Review 2008, International Energy Agency 2008

Source: reproduced from the MMA Study (page 101)

[27] MMA Study, p 99.
[28] MMA Study, p 97.
[29] MMA Study, p 100.
[30] ABARE 2009, p 339.

Global supply of LNG is expected to reach to 297 mtpa by 2015 as capacity under construction is completed. Beyond 2012, capacity will be determined by commitment to proceed with projects currently under consideration,[31] including the QCLNG Project.

Australia's Involvement in the LNG Industry

Australia began exporting LNG from the North West Shelf Project in 1989,[32] and currently supplies LNG through two projects (the North West Shelf and Darwin LNG). In 2008-09, Australia's LNG exports were estimated at 16.4 mtpa.[33]

Australia currently exports over 30% of its natural gas production in the form of LNG. The Department of Resources, Energy and Tourism reports that Australia's LNG exports supply approximately 7% of world LNG trade and 10% of the Asia-Pacific market, with LNG exports in 2006 valued at over $5 billion.[34] Australia's largest LNG customer is Japan (under long-term contracts). LNG is also exported to South Korea (under a mid-term contract) and Spain, Turkey, India and the United States (spot sales). In August 2002, the North West Shelf Joint Venture signed a 25-year supply agreement with the Chinese Government to supply 3.3 mtpa to the Guangdong Province, the first shipment of which was delivered in May 2006.[35]

The QCLNG Project represents a significant opportunity to participate in the establishment of an LNG production and export industry on the east coast of Australia and to provide LNG to global markets (particularly to markets in Asia) in the future.

The Queensland Government has clearly expressed its support for the establishment of an LNG industry in Queensland, and has taken a number of steps to facilitate LNG production at Curtis Island. Those steps include establishment of an LNG Industry Unit within the Department of Employment, Economic Development and Innovation as a 'one stop shop' for inquiries and to co-ordinate the Government's activities, development and implementation of CSG and LNG policies including the 'Blueprint for Queensland's LNG Industry',[36] and planning a dedicated pipeline corridor between Gladstone and the Callide Range.[37] The Commonwealth Department of Resources, Energy and Tourism has also recognised the potential of LNG, noting that the LNG industry has the potential to attract significant new project investment over the next 10 years, providing major, long-term employment, economic and government revenue benefits.[38]

4.3 Domestic demand for gas in Queensland

In 2007, estimated demand for gas in Queensland was 156 PJ.[39] MMA estimates that demand is to increase to 293 PJ/a by 2013.[40]

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[31] MMA Study, p 99.

[32] RET 2009, p 11.

[33] ABARE 2009, p 340.

[34] RET 2009, p 8.

[35] RET 2009, p 8.

[36] Queensland Government, 'Liquefied Natural Gas', URL: http://www.industry.qld.gov.au/dsdweb/v4/apps/web/content.cfm?id=14123.

[37] Queensland Government, 'Callide Infrastructure Corridor', URL: http://www.dip.qld.gov.au/local-area-planning/callide-infrastructure-corridor.html.

[38] Australian Government, 'Australian Liquefied Natural Gas', URL: http://www.ret.gov.au/resources/upstream_petroleum/australian_liquefied_natural_gas/Pages/Home.aspx.

[39] MMA Study, p 15.

[40] MMA Study, p 24.

The main centres of demand that could potentially be served by gas carried through the QCLNG Pipeline are Gladstone, Rockhampton and the Wide Bay area (Bundaberg, Maryborough and Hervey Bay).

The industrial city of Gladstone is the main downstream area that could potentially be served by the QCLNG Pipeline. If tied in, CSG delivered to Gladstone could then be transferred to the QGP for carriage to Rockhampton, or through the Wide Bay Pipeline to the Wide Bay area.

Table 4 summarises current and projected gas consumption in those areas.

Table 4: Summary of domestic demand in relevant downstream markets (PJ/a)

	2009	2015	2020	2025	2030
Gladstone	23.6	64.2	64.8	65.0	65.0
Rockhampton	1.6	1.6	1.6	1.6	1.6
Wide Bay	0.3	0.4	0.4	0.5	0.5
Total	**25.5**	**66.2**	**66.8**	**67.1**	**67.1**

Source: ACIL Tasman Report (Annexure 4)

Table 4 illustrates an expected large increase in demand in the Gladstone region between 2009 and 2015. This increase is forecast on the basis of the successful completion of Rio Tinto's expansion of its Yarwun Alumina Refinery including the construction of a 160MW gas cogeneration plant (requiring an additional 22.8 PJ/a) and a potential major plant expansion at Queensland Alumina Limited's Gladstone alumina refinery (requiring an additional 16 PJ/a). Note that none of this increase in demand is connected to the growth in LNG production.[41]

While ACIL Tasman's report shows forecast demand levelling out from 2016, this is an artefact of the planning horizon for large industrial projects in the area, rather than an indication that the Gladstone market will have reached any form of natural size limit. ACIL Tasman recognises that there may well be further growth in gas demand at Gladstone post 2015, but no such emergent demand has been included in its projections because any such growth would, at this stage, be speculative.[42]

QGC is unable to estimate the revenue that could be expected from customers in the Gladstone and Wide Bay areas.

4.4 Gas supply in Queensland and Eastern Australia

Supply conditions in Eastern Australia

As at 30 June 2008, Eastern Australian 2P gas reserves were estimated at 24,848 PJ, of which 11,977 PJ was conventional gas and 12,871 PJ was CSG. 95% of these CSG reserves were located in the Bowen and Surat Basin.[43]

Producers in South East Queensland

The major gas producers in South East Queensland are QGC, Origin, Santos and Arrow.

[41] ACIL Tasman Report, pp 13-15.

[42] ACIL Tasman Report, p 13.

[43] MMA Study, p 46.

In addition, there are a number of smaller producers developing gas reserves in South East Queensland. Producers within 100 km of the QGC gas fields and the QCLNG Pipeline include AJ Lucas Ltd, Blue Energy Ltd, Bow Energy Ltd, Icon Energy Ltd, Molopo Australia Ltd, Rawson Resources Ltd, Victoria Petroleum NL, Westside Corporation Limited, Anglo Coal Australia Pty Ltd, Clark Energy Pty Ltd and Pangea Resources Pty Ltd.[44]

Gas Reservation for Domestic Markets

In September 2009, the Queensland Government released a consultation document entitled *'Domestic Gas Market Security of Supply'*. This paper noted that the development of an LNG export industry in Queensland has the potential to raise issues about the long term availability of gas for electricity generation and industrial use.[45] The paper sought submissions on a number of possible options, specifically:

- a reservation policy requiring a percentage of gas production to be supplied to the domestic market; and
- the reservation of certain potential producing land, which could be released as required to supply the domestic market.[46]

On 14 November 2009 the Queensland Government announced its decision to set aside future gas fields for future domestic supply if needed, and rejected the option of requiring a percentage of gas from all fields to be reserved for domestic supply.[47]

4.5 Transmission pipeline infrastructure in Queensland

Existing transmission pipelines in Queensland

Queensland is now served by a network of gas transmission pipelines, connecting gas producers in the Cooper/Eromanga, Surat and Bowen Basins with centres of demand throughout Queensland and with the Moomba hub (via the SWQP).

The major gas transmission pipelines currently located in Queensland are summarised in table 5 below:

Table 5: Major South East Queensland gas transmission pipelines

Pipeline	Owner
Roma (Wallumbilla) to Brisbane Pipeline	APT Petroleum Pipelines
Dawson Valley Pipeline	Anglo Coal (Dawson) Limited and Mitsui Moura Investment Pty Ltd
Ballera to Wallumbilla Pipeline (South West Queensland Pipeline)	Epic Energy Pty Limited
Wallumbilla to Rockhampton System (Queensland Gas Pipeline)	Jemena Limited
Ballera to South Australia (QSN link)	Epic Energy Pty Limited

Source: AEMC (http://www.aemc.gov.au/Gas/Scheme-Register/Pipeline-list-summary.html#QLD

[44] RLMS Report, p 8.

[45] DEEDI Consultation Paper 2009, p 2.

[46] DEEDI Consultation Paper 2009, p 4.

[47] Queensland Governement, 'Green light for $40 billion LNG industry – joint statement by the Premier and Treasurer' (14 November 2009) URL: http://statements.cabinet.qld.gov.au/MMS/StatementDisplaySingle.aspx?id=67421.

In addition to those pipelines listed Table 5, regions in Queensland are served by:

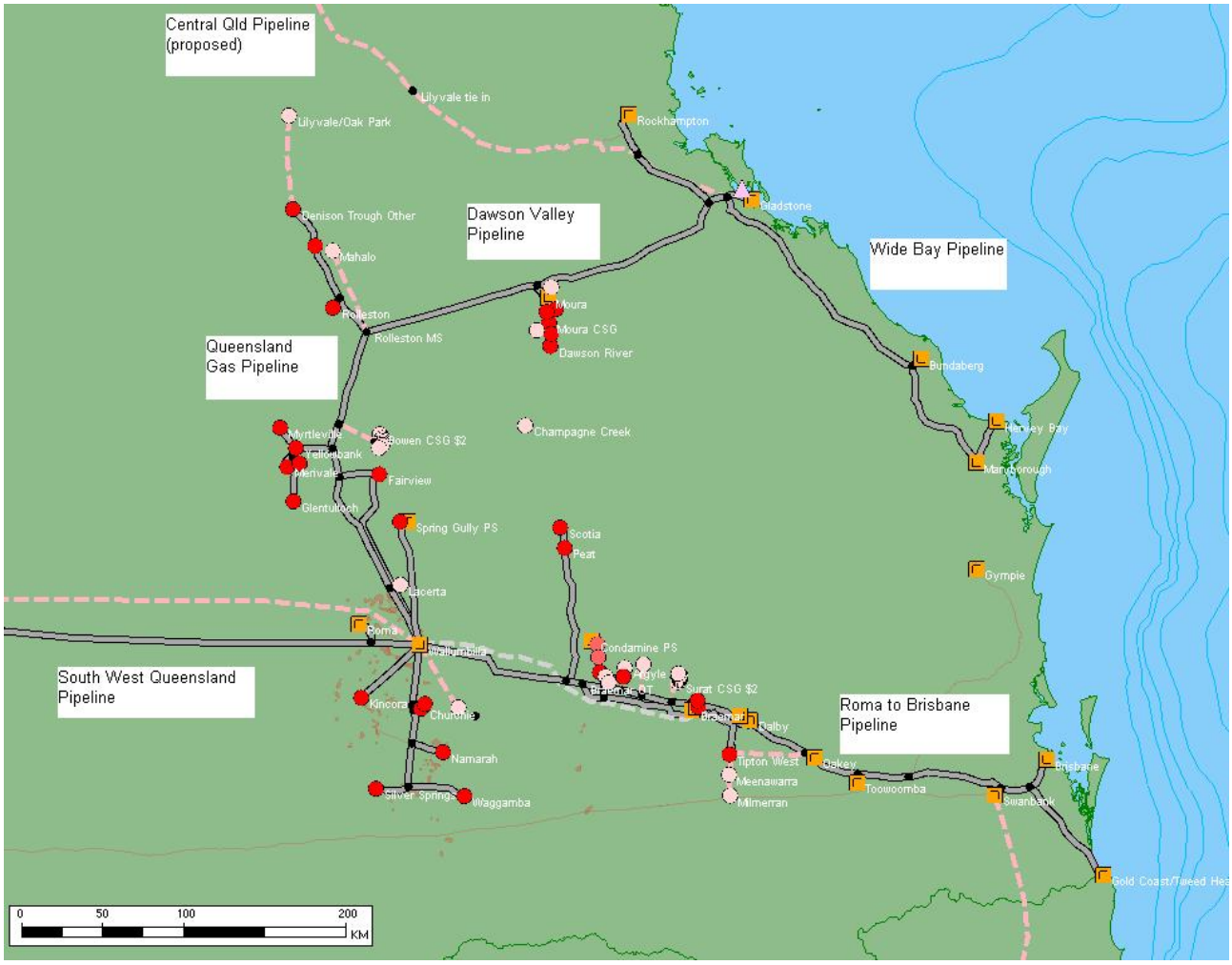
- the Moranbah to Townsville Pipeline (owned by the Victorian Funds Management Corporation and operated by AGL/Arrow); and
- the Wide Bay Pipeline (see below).

Neither of these two pipelines are covered under the NGL.

There are two existing gas transmission pipelines serving areas within 100 km of Curtis Island. Neither pipeline is covered under the NGL.

The major pipelines serving South East Queensland are illustrated in Figure 4 below.

Figure 4: South East Queensland transmission pipelines



Source: ACIL Tasman Report (Annexure 4)

Queensland Gas Pipeline

The QGP currently serves downstream locations which include those downstream locations capable of being served by the QCLNG Pipeline. The QGP is a gas transmission pipeline which interconnects with the South West Queensland Pipeline (SWQP) and RBP and primarily supplies gas to customers in Gladstone and Rockhampton. It transports both CSG and conventional gas. The main pipeline was constructed in 1989 by the Queensland government and commissioned in 1990.

The 627 km pipeline is a free flow high pressure pipeline with a current capacity of approximately 30 PJ/a. The pipeline has the potential to be expanded via compression and looping up to its current licence limit of 52 PJ/a at which time a higher licence limit would need to be requested. It has a design life of 50 years and a remaining life of 30 years. The capacity of the QGP is being expanded from 30 PJ/a to up to 52 PJ/a. The expansion is expected to reach practical completion by April 2010.[48]

Wide Bay Pipeline

Areas south of Gladstone are served by the Wide Bay Pipeline. This pipeline is owned by PG&E Gas Transmission Australia Pty Ltd. PG&E Gas Transmission Australia Pty Ltd is a subsidiary of PG&E Corporation. This pipeline is 309 km long, with a diameter of 100 mm, and supplies the gas distribution networks in Hervey Bay and Maryborough.

Proposed transmission pipelines in Queensland

LNG project pipelines

The LNG projects currently being developed in South East Queensland (in addition to the QCLNG Project) are described in **Annexure 2.**

Other proposed LNG pipelines that could potentially be capable of serving the locations that could be served by the QCLNG Pipeline (or pass within 100 km of these locations) are:

- the Australia Pacific LNG Project pipeline (Origin-ConocoPhillips);
- the GLNG Project pipeline (Santos-Petronas);
- the Southern Cross LNG Project pipeline (Impel); and
- the Fisherman's Landing LNG Project pipeline (LNG Limited-Arrow).

Central Queensland Gas Pipeline

The other relevant transmission pipeline currently proposed is the Central Queensland Gas Pipeline (CQGP), which will connect Moranbah with Gladstone. This proposed pipeline will also serve the Gladstone region. In December 2005, Enertrade applied for a pipeline licence to build, own and operate a high pressure gas transmission pipeline, running approximately 440km between Moranbah and Gladstone. Enertrade was acquired by Arrow and AGL Energy Ltd in November 2007. In September 2008, the Queensland Government awarded a 45-year point-to-point gas pipeline licence (PPL 121) to Central Queensland Pipeline Pty Ltd, a 50-50 joint venture company owned by Arrow and AGL. The CQGP will be laid in a 30 metre wide corridor from the existing compressor station at Moranbah generally south to southeast to Gladstone. The pipeline will initially be configured to deliver 20PJ/a, but could be expanded through further gas compression to approximately 50 PJ/a. The pipeline is expected to cost $500 million.

According to Arrow's website, 'the project is well advanced in all areas with all environmental studies completed, native title and cultural heritage agreements in place and easements obtained for over 70 percent of the route'.[49] Arrow's Quarterly Report for the period ended 30 September 2008 stated that AGL and Arrow were working towards a final investment decision by mid 2009, when it was expected sufficient 2P gas reserves and a binding gas supply agreement would be in place to underpin the project.

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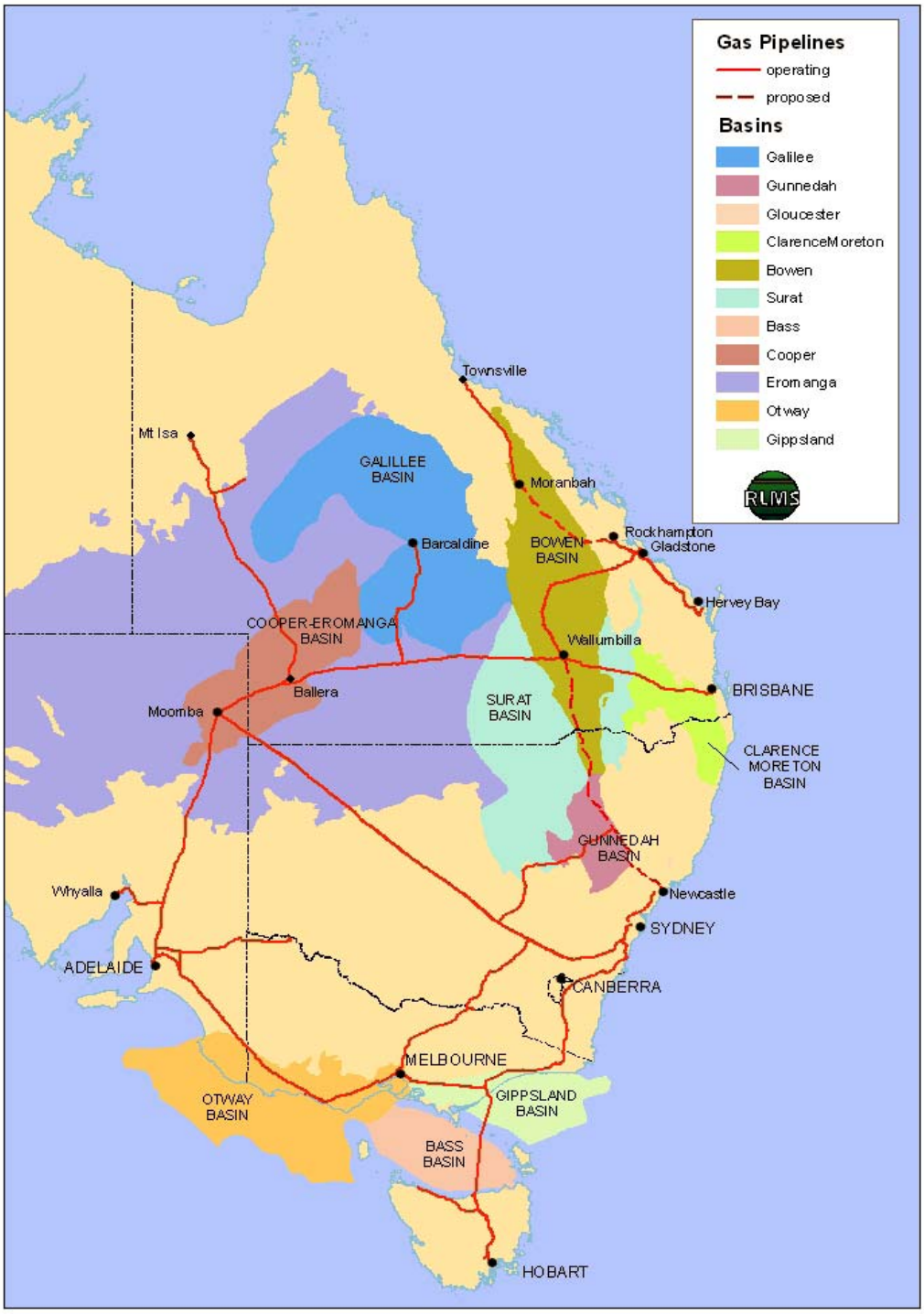
[48] Jemena, 'Queensland Gas Pipeline', URL: http://www.jemena.com.au/operations/transmission/qgp/assetDetails/assetOverview/default.aspx.

[49] Arrow, 'Central Queensland Pipeline', URL: http://www.arrowenergy.com.au/page/Projects/Australia/Central_Queensland_Pipeline.

4.6 The Eastern Australian transmission pipeline network

The commissioning of the Queensland-NSW Link (QSN Link) means that the Queensland pipeline network is now connected to the Moomba hub, and through Moomba to an interconnected pipeline network that extends from Mt Isa to Tasmania, and serving all eastern Australian capital cities.

Figure 5: Map of Eastern Australian gas transmission pipelines



Source: MMA Study, p 47

The QSN Link is a 180 km pipeline owned by Epic Energy that runs from Ballera (where it connects to the SWQP) to Moomba. The pipeline commenced commercial operations in January 2009. Epic Energy states that the capacity of the SWQP, which includes the QSN Link, is approximately 168 TJ/day.[50] Figure 5 above shows the QSN Link and the connection between the Queensland pipeline network and the rest of Australia.

5. Criteria for Greenfields Exemption

5.1 History of the greenfields exemption regime

The 15-year no-coverage ruling for 'greenfields' pipelines was introduced into the now repealed *Gas Pipelines Access Law* in June 2006. Its introduction was the culmination of a review of the strategic direction for energy market reform in Australia which was commissioned by the Council of Australian Governments on 8 June 2001 (known as the 'Parer Review').

Throughout the process of review which resulted in the creation of the greenfields incentive regime, two key themes emerged. First, the importance of encouraging investment (and in particular greenfields investment) and second, the commercial concerns of potential investors in relation to the regulatory risk associated with any new investment. The greenfields incentive regime was introduced to address these concerns by providing incentives to encourage investment in new pipeline infrastructure.

In 2002, the Parer Review made a number of key findings in relation to the Australian gas market including:[51]

- while previous gas reform had been successful, Australia's gas markets could at best be described as emerging;
- significant additions to the nation's pipeline infrastructure over the last decade had enhanced the competitiveness of the natural gas market considerably; and
- current approaches to economic regulation were creating a perception of uncertainty for investment in new pipelines.

The Parer Review concluded that the concerns raised were causing regulatory uncertainty which, in turn, created risk and costs that impacted on the viability of new pipelines.[52] The Parer Review recommended amendments to the *Gas Pipelines Access Law* to allow project developers to seek an up-front binding ruling on coverage, and a 15 year economic regulation holiday.[53]

This recommendation was subsequently endorsed by the Productivity Commission,[54] the Expert Panel on Energy Access Pricing,[55] and the Ministerial Council on Energy (MCE).[56] Amendments to introduce a greenfields pipeline incentive regime into the *Gas Pipelines Access Law* came into operation in June 2006.[57]

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[50] Epic Energy, 'SWQP and QSN Link', URL: http://www.epicenergy.com.au/index.php?id=31.

[51] Parer Review, p 189.

[52] Parer Review, p 114.

[53] Parer Review, p 37.

[54] PC 2004, p XXII.

[55] Expert Panel 2006.

[56] MCE 2005, p 15.

[57] Greenfields Guide, paragraph 2.20.

5.2 National Gas Objective

The National Gas Objective states:[58]

> *'The objective of this Law is to promote efficient investment in, and efficient operation and use of, natural gas services for the long term interests of consumers of natural gas with respect to price, quality, safety, reliability and security of supply of natural gas.'*

The insertion of an objects clause into the NGL was recommended by the Productivity Commission and endorsed by the MCE. Both the Productivity Commission and MCE agreed that the inclusion of an overarching objects clause was highly desirable to:[59]

- clarify the policy intent of the regime;
- guide and improve the accountability of decision makers;
- provide greater certainty to service providers and access seekers about possible regulatory intervention; and
- promote national consistency across jurisdictions and between access regimes.

The final form of the National Gas Objective closely mirrors the objects clause in the *National Electricity Law* to ensure a consistent approach to energy access across the energy sector.[60]

Section 154(1)(b) of the NGL requires the Council to 'have regard to' the National Gas Objective in deciding whether each of the coverage criteria are satisfied.

5.3 Application of the coverage criteria

In applying the pipeline coverage criteria, the Council typically considers criterion (b) before considering criterion (a). This is because criterion (b) involves the identification and consideration of relevant services, which, for the purpose of criterion (a), informs the identification of the markets that are dependent on these services and whether the pipeline operator can exercise market power. The Applicant adopts the same approach in this Application.

6. Criterion (b) – Economic to develop another Pipeline

6.1 Statutory test

The Council must recommend that the exemption be granted if it is not satisfied:

> '*that it would be uneconomic for anyone to develop another pipeline to provide the pipeline services provided by means of the pipeline*'.[61]

6.2 Approach to criterion (b)

The Council's approach to criterion (b) is set out in the Coverage Guide.[62] At paragraph 5.98 of the Coverage Guide, the Council summarises its approach to criterion (b) in the following terms:

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[58] NGL, section 23.

[59] MCE 2005, p 7.

[60] MCE 2005, p 8.

[61] NGL, sections 154(2), 15.

[62] Greenfields Guide, paragraphs 4.27 – 4.28. The Council notes that the application of criterion (b) to a greenfields pipeline project is likely to be similar to the application of the criterion to an existing pipeline.

'The assessment of criterion (b) centres on identifying whether a pipeline exhibits "natural monopoly" characteristics, such that a single pipeline is capable of meeting likely demand at lower cost than two or more pipelines. Therefore, it is uneconomic to duplicate the pipeline, and society's resources are most efficiently used and costs minimised if additional pipelines are not developed.'

The Council has stated that, in applying this test:

'if the reasonably foreseeable demand for the pipeline services outstrips both the existing capacity and maximum achievable capacity of the pipeline, then it will likely be economical to develop another pipeline to provide the pipeline services, with the result that criterion (b) will not be satisfied.' [63]

The Council has also recognised the need to consider whether the services provided by means of the relevant pipeline could be provided by using an existing pipeline or developing a new or existing pipeline to provide the services.[64] For example, if the relevant pipeline cannot satisfy reasonably foreseeable demand without modification or augmentation, the Council would need to consider whether reasonably foreseeable demand could be met, at lower cost, by modifying or augmenting an existing pipeline. Where this is the case, criterion (b) is unlikely to be satisfied.[65]

Before considering the application of criterion (b) to the circumstances surrounding the QCLNG Pipeline, it is useful to discuss the relevant concepts used by the Council in this exercise.

'Uneconomic'

In *Duke Eastern Gas Pipeline Pty Ltd* [2001] ACompT 2 (the EGP Decision), the Tribunal stated (at [137]):

'We agree with the submissions of NCC that the "test is whether for a likely range of reasonably foreseeable demand for the services provided by means of the pipeline, it would be more efficient, in terms of costs and benefits to the community as a whole, for one pipeline to provide those services rather than more than one".'

The Council describes the appropriate test for assessing whether criterion (b) is met as a social test. That is, the term 'uneconomic' should be construed in a social cost benefit sense rather than in terms of private commercial interests.[66] The question of whether it is economic to develop another pipeline to provide the relevant services should be assessed by reference to the costs to society as a whole, rather than the costs to individual service providers.

One of the consequences of this approach is that the fact that another pipeline provides the same service as the relevant pipeline, does not necessarily mean it is *economic* to develop the other pipeline. While duplication of a pipeline may be justified by private commercial interests, it may still be the case that the overall social cost would be minimised if the service was provided using a single pipeline.[67]

The Applicant notes that the correct approach to criterion (b) has been put in issue in submissions to the Australian Competition Tribunal in the review of the decision to designate rail services in the Pilbara region of Western Australia as 'declared' services[68] under Part IIIA of the *Trade Practices Act 1974*.[69] In that

[63] Coverage Guide, paragraph 5.120.

[64] Coverage Guide, paragraphs 5.123-5.125.

[65] Coverage Guide, paragraph 5.127-5.128.

[66] Coverage Guide, paragraph 5.92.

[67] Coverage Guide, paragraph 5.109.

[68] Once a service has been 'declared' under Part IIIA, an access seeker or access provider can seek arbitration from the ACCC if they cannot agree on terms and conditions of access to a declared service.

matter, it has been argued that a 'private investment' test should be used in applying criterion (b). Under a 'private investment' approach, a service would be designated as declared services only if insurmountable barriers to entry make duplication infeasible.[70] By contrast, using a social cost approach, the issue is not whether duplication is feasible, but whether duplication would result in the reasonably foreseeable demand being met at a higher overall cost than using or developing the relevant pipeline.

The Applicant submits that on the basis of the Council's usual social cost approach, the QCLNG Pipeline does *not* satisfy criterion (b) for the reasons set out further below. The adoption of a private investment test by the Tribunal or the Courts, would only strengthen the Applicant's position with respect to the application of criterion (b). However, in the absence of such a ruling, the Applicant has applied the Council's usual approach in the consideration of criterion (b).

'Pipeline services provided by means of the pipeline'

This criterion requires identification of the relevant 'pipeline services provided by means of the pipeline'. The Council has stated:

> *'the relevant point to point service descriptions for the pipeline in question are the comparators to determine whether it would be economic to duplicate the pipeline in question.'* [71]

This approach is consistent with the decision of the Tribunal in the EGP Decision.[72] The size of the 'points' served by the relevant pipeline will depend on the pipeline in question and the nature of the services provided.

It should, however, be noted that in his final decision to revoke coverage of part of the Moomba to Sydney Pipeline, the Commonwealth Minister found that defining services on a 'point to point' basis was not appropriate in the presence of an integrated pipeline network, stating:

> *'A more appropriate consideration is whether these other pipeline systems, acting alone or in combination as part of a network, are being operated or can be developed to provide the range of services provided by means of an existing pipeline.'*[73]

'Reasonably foreseeable demand'

In its Coverage Guide, the Council states:

> *'the 'demand' in question is the demand for the pipeline services (ie the likely level of demand in the market for the pipeline service).'*[74]

In the EGP Decision, the Tribunal refers to a *'likely range of reasonably foreseeable demand'*.[75] Both the Tribunal and the Council have recognised that forecasts are likely to produce a range of foreseeable demand. In paragraphs 5.133 and 5.134 of the Coverage Guide, the Council discusses the appropriate time horizon for assessing demand and supply conditions, noting that this must be assessed on a case by case basis. It is also

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[69] *Application by Fortescue Metals Group* and related proceedings.

[70] *Application for declaration of a service provided by the Robe Railway, Final Recommendation*, National Competition Council, August 2008, paragraph 5.11.

[71] Coverage Guide, paragraph 5.97.

[72] *Re Duke Eastern Gas Pipeline Pty Ltd* [2001] ACompT 2 at [70].

[73] *Applications for revocation of coverage on certain portions of the Moomba to Sydney Pipeline System, Statement of Reasons*, Minister for Industry Science and Resources, 19 November 2003, paragraph 28.

[74] Coverage Guide, paragraph 5.114.

[75] *Re Duke Eastern Gas Pipeline Pty Ltd* [2001] ACompT 2 at [137] – [138].

necessary to take into account the nature of future demand for pipeline services and the likely timeframes in which those services will be required. The Applicant submits that the appropriate timeframe for forecasting future demand for pipeline services is 15 years.

'**Maximum achievable capacity**'

In the context of a greenfields pipeline project, this requires consideration of the maximum potential capacity of the pipeline that is to be built. This is not limited to the free flow capacity of the pipeline at its commissioning, but includes the maximum additional capacity that could be achieved with, for example, compression or potentially looping. It does not, however, extend to additional capacity that could be created by modifying or re-designing the proposed pipeline that is the subject of the application, or by establishing a structurally separate pipeline along a similar route. This is consistent with the Council's view that the application of criterion (b) to a greenfields pipeline is likely to be similar to an existing pipeline. [76]

In applying this criterion, the Council has stated:

> *'[5.119] If the pipeline does not have sufficient capacity to meet reasonably foreseeable demand for the pipeline services, but would have sufficient capacity following relatively low cost modifications, then the pipeline is again likely to be a natural monopoly and uneconomical to duplicate.*
>
> *[5.120] By contrast, if the reasonably foreseeable demand for the pipeline services outstrips both the existing capacity and maximum achievable capacity of the pipeline, then it will likely be economical to develop another pipeline to provide the pipeline services, with the result that criterion (b) will not be satisfied.'*[77]

6.3 Identification of the pipeline service to be supplied by means of the QCLNG Pipeline

For the purposes of criterion (b), it is submitted that the QCLNG Pipeline is capable of supplying pipeline services for the transportation of gas[78] produced in the Surat Basin and southern Bowen Basin to Curtis Island (and potentially points in between).[79]

The upstream 'point' for the service is not confined to a precise geographic location. While the Export Pipeline will commence near Wandoan, the Collection Header is capable of transporting gas gathered from production fields spread throughout the Surat Basin and southern Bowen Basin. This is a feature of a pipeline system designed to transport gas to Curtis Island for LNG production. The volumes of gas required for LNG production mean that any pipeline system providing a service for this purpose will need to aggregate gas from relatively widely dispersed tenements for transportation to Curtis Island. As a result, the upstream 'point' served by a CSG to LNG project pipeline must, by definition be a widespread area covering multiple gas fields.

The Collection Header will have a length of almost 200 km. The Collection Header will be connected to at least 6 CPPs, which are, in turn connected to QGC's wells via a system of gathering systems, trunklines and field compression stations. As shown in Figure 2 in the RLMS Report (**Annexure 5**),[80] QGC's production

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[76] Greenfields Guide, paragraph 4.28.

[77] Coverage Guide, paragraphs 5.119-5.120.

[78] As noted in Chapter 2 above, gas to be transported in the QCLNG pipeline would need to meet the narrower specification required by the Project to avoid interfering with the LNG liquefaction process.

[79] While backhaul services could be provided by means of the QCLNG Pipeline, demand for forward haul services is the factor that will be determinative in the application of criterion (b), as demand for forward haul will far outweigh any potential demand for backhaul services.

[80] Figure 2 in Annexure 5 has been submitted to the Council on a commercial-in-confidence basis.

fields are interspersed with fields held by other producers, chiefly Arrow, Santos and APLNG. For any proponent to transport CSG from any of these fields to Gladstone for LNG production, it will be necessary to aggregate CSG through some form of collection system. This illustrates the point that the 'upstream' point for the services provided by the QCLNG Pipeline is the Surat Basin and southern Bowen Basin, and encompasses the fields held by the major CSG producers.

The downstream point is focussed on LNG production at Curtis Island. However, in past decisions, the Council has found that pipeline services also include points between the start and end points of a pipeline.[81] In the case of the QCLNG Pipeline, the services provided by means of the pipeline would, for example, include the transportation of gas to Gladstone from possible points of interconnection along the route of the QCLNG Pipeline.[82]

6.4 Level of reasonably foreseeable demand

Demand for the pipeline services to be provided means of the QCLNG Pipeline (ie. forward haul services) will be driven by:

- demand for LNG production; and
- demand for domestic and industrial use in the Gladstone area.

Demand driven by LNG production

If each of the eight proposed LNG projects proceeds, they will together create an LNG industry at Gladstone producing in excess of 60 mtpa. This provides an indication of the level of interest in LNG production at Gladstone.

For the purposes of this application, it is not helpful to speculate as to which specific projects are likely to proceed in order to estimate the likely demand for the pipeline services described above. As set out in Chapter 4 above, global demand for LNG is expected to grow rapidly over the period for which the no-coverage determination is sought. In terms of global demand for LNG, it is predicted that demand will increase from approximately 153 mtpa in 2006, to levels up to 340 mtpa by 2015, and up to 380 mtpa by 2020.[83]

It is also clear that, with eight LNG projects currently being proposed, potentially capable of producing in excess of 60 mtpa, there is likely to be sufficient investment in LNG production facilities to respond to this increasing global demand.

Ultimately any upper constraint on the demand for pipeline services is likely to be defined by the CSG reserves that will be available in the Surat Basin and southern Bowen Basin. Given the expected investment in LNG production facilities at Curtis Island and the expected levels of global LNG demand, it is realistic to expect that, if there are CSG reserves available for LNG production in the Surat Basin and southern Bowen Basin, there will be demand for pipeline services to transport that gas to Gladstone.

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[81] See for example, *Application for revocation of coverage of the Moomba to Sydney Pipeline System, Final Recommendation*, November 2002, paragraph 6.13; *Application for revocation of coverage of the Goldfields Gas Pipeline, Final Recommendation*, November 2003, paragraph 4.15; *Application for revocation of coverage of the Dawson Valley Pipeline, Final Recommendation*, August 2005, paragraph 6.19; *Application for revocation of coverage of the Moomba to Adelaide Pipeline System, Final Recommendation*, December 2005, paragraph 5.16.

[82] As discussed above, the purposes of applying criterion (b), the relevant services are likely to be forward haul services. Given the scale of likely demand for forward haul services, the Applicant does not believe potential demand for backhaul services will materially affect this analysis.

[83] See Chapter 4.

MMA

MMA has undertaken, for the Queensland Government, a detailed study of the Eastern Australian gas industry, paying particular attention to Queensland's CSG reserves. This independent export report is the most up to date and comprehensive study of Queensland's gas reserves that is presently in the public domain.

MMA predicts that CSG producers in Queensland can readily achieve the development CSG reserves of approximately 35,000 PJ by 2023 (ie. within 10 years of the commissioning of the QCLNG Pipeline). This level of CSG reserves would be sufficient to support an LNG industry at Gladstone consisting of 8 trains, each producing 3.5 mtpa (that is, 28 mtpa in total). The MMA report describes this as a 'feasible' scenario. MMA envisages that CSG supplies for this industry will be sourced predominantly from the Bowen and Surat Basins south-west of Gladstone, which make up 95% of Queensland's currently proved CSG reserves. The remaining proved CSG reserves are to be found in the Bowen Basin north of Gladstone.[84] Given the relatively small proportion of reserves located north of Gladstone, the Applicant has assumed, for the purposes of estimating demand for pipeline services, that the gas for a 28 mtpa LNG industry would be sourced entirely from the Surat and Southern Bowen Basins.

MMA estimates that each 3.5 mtpa LNG train would require approximately 220 PJ of gas each year.[85] This produces a total gas requirement for LNG production of approximately 1,760 PJ/a, or 4,819 TJ/day.

ACIL Tasman

For the purposes of modelling future domestic and industrial demand in Gladstone and surrounding areas, ACIL Tasman developed an 'industry case', in which it assumed the existence of an LNG industry producing 22 to 23 mtpa. This is described by ACIL Tasman as a reasonable mid-line assumption relating to supply and demand conditions.[86] It is therefore broadly consistent with ACIL Tasman's mid range assumption that the LNG industry could grow to the 28 mtpa industry discussed by MMA.

Gas Reservation for Domestic Markets

As noted above, the Queensland Government has announced that future gas fields will be set aside for domestic supply if needed, and rejected an option to require a percentage of gas from all fields to be set aside for domestic customers. This was described as a 'green light' for a $40 billion LNG industry.[87]

This decision has no discernable impact on the forecast levels of demand for pipeline services associated with LNG production. The Government's policy will have no impact on existing gas fields held by LNG proponents and there is no certainty that any future fields will need to be set aside for domestic use.

Summary

The Applicant submits that the reasonably foreseeable demand for the pipeline services to be provided by means of the QCLNG Pipeline associated with LNG production will be in the order of 1,760 PJ/a, or approximately 4,819 TJ/day.

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[84] MMA Study, p 111.

[85] MMA Study, p 57.

[86] ACIL Tasman Report, p 24.

[87] Queensland Governement, 'Green light for $40 billion LNG industry – joint statement by the Premier and Treasurer' (14 November 2009) URL: http://statements.cabinet.qld.gov.au/MMS/StatementDisplaySingle.aspx?id=67421.

Demand driven by domestic and industrial use

ACIL Tasman's estimates of domestic and industrial demand in the Gladstone region (including Wide Bay and Rockhampton) are set out in Chapter 4 above (see Table 4). Total demand is expected to increase from 25.5PJ/a in 2009 to at least 66 to 67PJ/a between 2015 and 2030.[88]

The Applicant submits the Council should therefore proceed on the basis of forecast domestic and industrial demand of approximately 66 PJ/a in the relevant period, or approximately 181 TJ/day.

Total reasonably foreseeable demand

The combined estimates of future demand for pipelines lead to the conclusion that reasonably foreseeable demand for the services to be provided by means of the QCLNG Pipeline over the next 15 years will be in the order of 1,826PJ/a or approximately 5,000TJ/day.

It is possible that demand over this period will not reach this level or that it may even exceed it. The task for the Council is to determine the range of reasonably foreseeable demand for pipeline services. When the projects currently being proposed are viewed against the likely global demand for LNG and independent predictions relating to CSG production in the Surat and southern Bowen Basin, it is apparent that the estimate of demand for pipeline services stated above is within the range of reasonably foreseeable demand over the period for which the no-coverage determination is sought.

The nature of forecast demand makes the development of other pipelines more likely

As noted above, the Applicant is unable to specifically predict which of the currently proposed LNG projects is most likely to make up the 28 mtpa of LNG production found by MMA to be feasible, subject to the qualification that QGC intends to develop at least 2 trains (producing approximately 7 to 8 mtpa) with the possibility of developing a third LNG train. To supply these trains, QGC will utilise the entire free flow capacity of the QCLNG Pipeline (approximately 1,510 TJ/day) and will have a contractual right to acquire sufficient capacity to supply a third train (approximately 703 TJ/day).

Those proponents who do proceed will also have operational requirements, other than quantifiable financial cost, which will encourage the development of additional pipelines in preference to utilising (or even expanding) existing pipeline infrastructure. LNG production requires secure, long term supply arrangements for gas transportation services. An LNG producer can generally obtain these services more easily by developing a dedicated pipeline as part of an integrated production process than by sharing access to other pipeline infrastructure. The risks of disruption to an LNG production process are exacerbated if an LNG producer attempts to share a pipeline, or use multiple pipelines to transport gas to its LNG production facilities.

In the Applicant's view, these constitute social costs that, while not financially quantifiable, should be taken into consideration. Frontier Economics' Report (**Annexure 6**) notes that there are additional factors, including costs associated with coordination and risk allocation, that make the development of other pipelines more likely. Similarly, the MMA Study states that:

> *'Several factors suggest that the capacity requirement [to underpin a QLD LNG industry] will be met most efficiently by a series of replica pipelines using the same route, rather than by one very large capacity pipeline:*
>
> - *The sequential construction of LNG trains and the likelihood that at most 3 or 4 trains will be committed by the time pipeline design has to be finalised and pipe orders made;*

[88] ACIL Tasman Report, p 12.

- *Significant economies of scale can be achieved by pipelines serving 2-3 trains (450 to 675 PJ/a) with very few further economies to be gained at even greater scales;*
- *The consequences of pipeline failure are less severe;*
- *Flexibility to alter the route and design is preserved until further LNG trains and associated gas reserves are committed."*[89]

The nature of likely demand for the services to be provided by means of the QCLNG Pipeline makes it more likely that LNG producers will need to develop additional pipelines to provide dedicated transportation services. Using a social cost approach, this suggests that the development of additional pipelines is more likely to be economic.

6.5 Maximum achievable capacity of the QCLNG Pipeline

As explained in Chapter 2, the QCLNG Pipeline System consists of the Export Pipeline plus the Collection Header (see the map of the pipeline system in **Annexure 1**). In this section we describe the expected capacity of the QCLNG Pipeline when commissioned and the maximum achievable capacity of the components of the pipeline system. **Annexure 1** sets out the estimated costs of building, operating and expanding the QCLNG Pipeline.[90]

Expected capacity once commissioned

Once commissioned, it is expected that the Export Pipeline will each have a free flow capacity of approximately 1,510 TJ/day.

Additional capacity that can be achieved through compression of the Export Pipeline

The Applicant estimates that the total capacity of the Export Pipeline can be expanded to approximately 2,213 TJ/day through the installation of a single 28 MW compressor (ie. the free flow capacity of 1,510 TJ/day plus an additional 703 TJ/day added through compression). This is the expansion that the Applicant currently intends to undertake to provide Walloons CSG with sufficient capacity to supply a third LNG train at Curtis Island.

The maximum achievable capacity of the Export Pipeline that can be created through compression is estimated to be approximately 2,916 TJ/day. This would be achieved by installing four 40MW compressors on the Export Pipeline.

The maximum capacity that can be achieved through compression is restricted by the maximum erosional velocity limit of the pipeline. If gas moves through the pipeline at a velocity in excess of this limit, there is a danger of degradation of the inner steel walls of the pipeline, thus eroding the pipeline. The erosional velocity limit for the QCLNG Pipeline is 19.5 meters per second. If the Export Pipeline is compressed to a capacity of 2,916 TJ/day (ie. sufficient to supply 4 LNG trains) the velocity of the gas at the inlet to the LNG plant will be within 3% of this maximum velocity limit. Accordingly, there will be very little, if any, ability to increase the capacity of the Export Pipeline beyond the capacity required to supply a fourth train at the Curtis Island LNG plant.

Additional capacity that can be achieved through looping the Export Pipeline

Looping is typically used to expand the capacity of a pipeline by alleviating constraints on a pipeline's capacity at specific points along its route. While this is obviously a theoretical possibility with respect to the

[89] MMA Study, p 112.

[90] Cost information in Annexure 1 has been submitted to the Council on a commercial-in-confidence basis

Export Pipeline, the Applicant is unable to predict whether an expansion of this type would be feasible, or whether (or when) such an augmentation might be required. QGC does not currently foresee the need to loop any particular part of the QCLNG Pipeline for the purposes of the QCLNG Project.

The maximum capacity that can be achieved through 'looping' involves looping the entire length of the Export Pipeline. Looping the Export Pipeline with another 42 inch pipeline, without adding compression to either the Export Pipeline or the loop, would produce a maximum capacity of approximately 3,020 TJ/day. If both the Export Pipeline and the loop were fully compressed, a maximum capacity of approximately 5,832 TJ/day could be achieved.

In terms of achievable capacity, there is little difference between 'looping' the entire length of the Export Pipeline and constructing and duplicating the Export Pipeline along a different route. However, from a cost standpoint, 'looping' the entire length of the Export Pipeline is more expensive. An OSD Pipelines report (**Annexure 7**) estimates that the construction costs associated with looping the Export Pipeline would be approximately 1.2 times the construction costs of the Export Pipeline. This equates to approximately 12% of the overall costs of the Export Pipeline. The Frontier Report discussed this more fully in section 3.2.1.The increased cost associated with looping is due to the higher costs of construction in close proximity to the Export Pipeline. For example:

- for safety reasons, constructing a loop in close proximity to the live pipeline requires the live pipeline to be potholed or excavated at close intervals to ensure that its position is clearly identified and that it is not accidentally damaged by excavating equipment. These excavations must be closely supervised;
- again, for safety reasons, heavy equipment cannot cross the established pipeline during construction of the loop. This means that there are additional logistics costs associated with moving pipe and equipment to the work face and in constructing special pipeline crossings to provide access to the worksite while protecting the established pipeline;
- the established pipeline will be constructed using the optimal route. A loop will need to deviate from this route at certain pinch points or narrow inaccessible areas or sensitive areas such as creek crossings. This can increase the length of a loop (although the Applicant has assumed that the Export Pipeline can be augmented with a loop of the same length for the purposes of this Application);
- the established pipeline will, to the extent possible, be constructed on flat areas to minimise the amount of cutting that is needed to create a flat working area. The loop, in contrast, may need to be built on sloped ground in places, which will require additional earth works to create a flat working area; and
- looping the Export Pipeline will involve additional costs to tie the loop into the Export Pipeline, including the installation of additional valves and costs associated with 'hot tapping' where the loop is to be connected to the live Export Pipeline.

At the same time, looping the entire length of the Export Pipeline will still require the Applicant to incur many of the costs that would be incurred in duplicating the pipeline along a different route. For example:

- the existing easement will not be wide enough to accommodate both the Export Pipeline and the loop. Additional costs will be incurred in creating new easements or widening existing easements;
- further environmental approvals will be required to clear the additional work space needed for the loop. Environmental approvals will also need to address access, camp locations, pipeline stockpiles and transportation of pipes.

Capacity of the Collection Header

Like the Export Pipeline, the Collection Header is a class 600, 42 inch steel pipeline. While the Collection Header performs a slightly different function to the Export Pipeline (ie. connecting production fields to the start of the Export Pipeline) it is part of a fully integrated pipeline system for the aggregation and transportation of CSG to Curtis Island. The capacity of the Export Pipeline necessarily limits the volume of gas that can be transported through the Collection Header to the start of the Export Pipeline.

6.6 Satisfying reasonably foreseeable demand at least cost

The reasonably foreseeable demand for the services to be provided over the QCLNG Pipeline, together with the maximum capacity of the QCLNG Export Pipeline, is summarised below.

Maximum Demand for Pipeline Services	**5,000 TJ/day**
Free flow capacity of the Export Pipeline	1,510 TJ/day
Capacity of the Export Pipeline with a single 28MW compressor	2,213 TJ/day
Maximum capacity of the Export Pipeline with compression (four 40MW compressors)	2,916 TJ/day
Capacity of the Export Pipeline if fully looped (without compression)	3,020 TJ/day
Maximum capacity of the Export Pipeline if fully looped and fully compressed (ie. 2 x four 40MW compressors)	5,832 TJ/day

The reasonably foreseeable demand for pipeline services cannot be satisfied by adding compression to the Export Pipeline. Equally, 'looping' the Export Pipeline over its entire length (effectively doubling its free flow capacity) would not create sufficient capacity to satisfy potential demand of up to 5000 TJ/day. A combination of both compression and looping is required to meet the reasonably foreseeable demand. In theory, there is no limit to the capacity that can be achieved through looping a gas transmission pipeline, since additional loops can be sequentially added to the pipeline where required. However, the construction costs involved in looping the QCLNG Pipeline will exceed the construction cost of duplicating the pipeline along a different route due to the factors identified in section 6.5 above. This means that, so long as:

- reasonably foreseeable demand exceeds the maximum compressed capacity of the pipeline; and
- the costs of looping the pipeline exceed the costs of duplicating the pipeline,

it will be less costly to satisfy reasonably foreseeable demand by developing another pipeline to provide the services to be provided by means of the QCLNG Pipeline (see **Annexure 7** – OSD Pipelines Report in this regard).

Frontier Economics, in a report set out in **Annexure 6**, confirms this view. Frontier was asked to consider whether it would be economic to develop another pipeline to provide the services to be provided by means of the Export Pipeline.

For the purposes of conducting this analysis, Frontier was asked to consider a series of options involving duplication of the Export Pipeline with one or more additional 42 inch pipelines. As stated in chapter 2.3, the diameter of 42 inches for the QCLNG Pipeline has been selected as the most cost effective way of meeting QGC's transportation requirements for the QCLNG Project. Frontier compared a range of pipeline configurations (involving both augmentation and duplication of the Export Pipeline) to determine which configuration would satisfy reasonably foreseeable demand at least cost. Obviously, it might be possible to

develop a larger or smaller pipeline (in addition to the QCLNG Pipeline) to satisfy the reasonably foreseeable demand. However, regardless of the optimal size of any additional pipeline, the limit on the maximum compressible capacity of the Export Pipeline still means that it will be necessary to either loop the Export Pipeline or develop a new pipeline of the same capacity to satisfy market demand. Once demand for the services supplied by means of the QCLNG Pipeline exceeds the maximum compressible capacity of the pipeline, diseconomies of scale will start to emerge due to the need to either duplicate or loop the pipeline.

Frontier concluded that minimum efficient scale would be achieved by developing a separate pipeline and adding compression to both pipelines in order to satisfy the reasonably foreseeable demand. While the Export Pipeline could satisfy potential demand with looping and compression, *duplicating* the Export Pipeline is the option that would minimise the overall cost to the community of satisfying the reasonably foreseeable demand for pipeline services, leading to the conclusion that it *would* be economic to develop another pipeline to provide these services.

The above is consistent with the MMA Study which states that *'[s]everal factors suggest that the capacity requirement [to underpin a QLD LNG industry] will be met most efficiently by a series of replica pipelines using the same route, rather than by one very large capacity pipeline'*.[91]

The Applicant submits that this conclusion is applicable to the entire QCLNG Pipeline system. The Collection Header will be capable of serving (either directly or through the interconnection of laterals) a large proportion of the production fields in the area served by the Export Pipeline. This is illustrated in Figure 6 in section 7.4 below, showing the location of the proposed pipeline infrastructure of major LNG projects currently in development. Figure 3 of the RLMS Report also illustrates the overlapping nature of many of the upstream tenements of Arrow, Santos and APLNG in particular (**Annexure 5**).[92]

The capacity of the Collection Header will, by definition, be limited by the capacity of the Export Pipeline into which it flows. As with the Export Pipeline, it may be possible to expand the capacity of the Collection Header through different configurations of compression and looping over specific distances. The Applicant has not attempted to analyse this range of possible scenarios for either the Export Pipeline or the Collection Header, since it would require quite specific knowledge of existing and planned development of CSG reserves by all, or at least the major, industry players. This task is made more complex with respect to the Collection Header, since it also requires a view to be taken as to what type of gathering and systems of laterals might be utilised by upstream producers to aggregate gas over specific sections. The Applicant has, however, produced estimates of construction costs for looping that are in the order of 1.2 times the construction costs of duplicating the pipeline.

6.7 'Private investment' approach

While the Applicant has applied criterion (b) using a 'social cost' approach, the correct approach to the application of criterion (b) has been put in issue in submissions to the Australian Competition Tribunal on the declaration of rail services in the Pilbara region of Western Australia under Part IIIA of the *Trade Practices Act 1974* (see section 6.2 above).

If criterion (b) was applied as a 'private investment' test, it is clear that the criterion would *not* be satisfied by the QCLNG Pipeline. From a private investment standpoint, it is commercially and technically feasible to develop another pipeline to provide the services that will be supplied by means of the QCLNG Pipeline. This is illustrated most clearly by the fact that there are three other major proponents of Gladstone-based CSG to LNG projects proposing to build pipelines similar to the QCLNG Pipeline. The gas transportation services

[91] MMA Study, p 112 (also see section 7.4 below).

[92] Figure 3 in Annexure 5 has been submitted to the Council on a commercial-in-confidence basis.

that are required to underpin LNG production, together with the operational requirements and timeframes for each of the major LNG projects currently in development, make it highly likely that the QCLNG Pipeline will in fact be duplicated and demonstrate that duplication would be economic from a private investment standpoint.

6.8 Conclusion

Consistent with the Council's stated approach, the Applicant submits that, in applying criterion (b) to the QCLNG Pipeline, the Council must consider the following questions:

- First, what is the service to be provided by means of the QCLNG Pipeline?
- Secondly, what is the likely level of demand for this service over the period for which the exemption is sought?
- Thirdly, what is the maximum achievable capacity of the QCLNG Pipeline?
- Finally, what configuration of pipeline infrastructure (including augmentations to the QCLNG Pipeline and other pipelines) will satisfy the likely demand for the relevant service at least cost?

If the reasonably foreseeable level of demand exceeds the maximum achievable capacity of the QCLNG Pipeline, it would be economic to develop another pipeline and criterion (b) would *not* be satisfied.

If, with augmentations, the QCLNG Pipeline could satisfy reasonably foreseeable demand, it is necessary to consider and compare the cost of satisfying this level of demand:

- by augmenting the QCLNG Pipeline; or
- by developing another pipeline.

If reasonably foreseeable demand could be satisfied at a lower overall cost by using or developing another pipeline, it would be economic to develop another pipeline and criterion (b) would *not* be satisfied.

Applying the Council's approach, the Applicant submits that:

- the principal service to be provided by means of the QCLNG Pipeline will be a service for the transportation of gas from the Surat and southern Bowen Basins to Curtis Island;
- the QCLNG Pipeline will not have sufficient capacity to satisfy the reasonably foreseeable demand for pipeline services, either at its free flow capacity or if compressed to the maximum extent that is technically feasible;
- it may be possible to satisfy the reasonably foreseeable demand for pipeline services by looping the entire length of the QCLNG Export Pipeline and adding compression to both the Export Pipeline and the 'loop'. However, the cost of looping the entire length of the QCLNG Export Pipeline with another 42 inch pipeline will exceed to the cost of constructing an identical 42 inch pipeline;
- the capacity of the Collection Header is limited by the capacity of the Export Pipeline. It is therefore likely to be necessary to develop one or more additional pipelines to meet reasonably foreseeable demand for the services to be provided by the QCLNG Pipeline system.

Accordingly, the Applicant submits that it will be economic to develop another pipeline to provide the pipeline services to be supplied by means of the QCLNG Pipeline and that, as a result, criterion (b) is *not* satisfied.

7. Criterion (a) – Promotion of Competition

7.1 Statutory test

The Council must recommend that the exemption be granted if it is not satisfied:

> *'that access (or increased access) to pipeline services provided by means of the pipeline would promote a material increase in competition in at least 1 market (whether or not in Australia), other than the market for the pipeline services provided by means of the pipeline*'.[93]

7.2 Approach to criterion (a)

The Council's approach to criterion (a) is set out in detail in the Coverage Guide. In summary, the Council describes its methodology as follows:

> *'In assessing whether criterion (a) is satisfied, the Council:*
>
> *(a) identifies the relevant dependent (upstream or downstream) markets*
>
> *(b) considers whether the identified dependent market(s) is separate from the market for the pipeline service; and*
>
> *(c) assesses whether access (or increased access) would be likely to promote a materially more competitive environment in the dependent market(s).'* [94]

This approach is based on the approach adopted in previous recommendations of the Council and decisions of the Tribunal. With respect to its assessment of whether access (or increased access) to pipeline services would be likely to materially promote a more competitive environment in the dependent market(s), the Council states that:

> *'Access is unlikely to materially promote competition in the dependent market(s) if the service provider does not have the ability and incentive to exercise market power to adversely affect competition in the dependent market(s).'* [95]

The Council also states that this issue is to be determined using a 'future with and without approach', that is:

> *'... a comparison of the future state of competition in the dependent market with a right or ability to use [the] service and the future state of competition in the dependent market without any right or ability or with a restricted right or ability to use the service.'* [96]

The Council further notes that the reference to 'competition' in criterion (a) is a reference to effective competition rather than to any theoretical concept of perfect competition. Hence, when a dependent market is effectively competitive, the Council's view is that access is unlikely to promote a material increase in competition and an application for coverage that seeks to add to competition in such a dependent market is unlikely to satisfy criterion (a).[97]

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[93] NGL, section 15.

[94] Greenfields Guide, paragraph 4.22.

[95] Coverage Guide, paragraph 5.68.

[96] Coverage Guide, paragraph 5.48, quoting *Sydney Airport Corporation v Australian Competition Tribunal* [2006] FCAFC 146 at [83].

[97] Coverage Guide, paragraphs 5.58-5.59.

An analysis of whether a service provider has both the ability and incentive to exercise market power therefore requires a competitive effects analysis focussed on the factors most relevant to the question in issue. There is no hard or fast rule in conducting such an analysis. Rather, a range of factors may be considered, including, barriers to entry, economies of scale, availability of substitute services, the existence and extent of countervailing power, the risk of co-ordinated conduct, the degree of vertical integration and the commercial incentives of the service provider.

The Council observes that, in conducting this analysis, the Tribunal has made it clear that promotion of competition should not be gauged in terms of either the effect of access on particular competitors (rather it should be focussed on the competitive environment generally) or on the delivery of efficient outcomes.[98]

For the purposes of this Application, the Applicant has adopted the approach described above to the application of criterion (a).

This Chapter of the Application therefore commences by identifying relevant dependent markets (separate to the market for the pipeline services) then considers the ability and incentive to exercise market power having regard to the factors discussed above.

7.3 Identification of dependent markets

Principles of market definition

The approach to identifying dependent markets outlined by the Council in the Coverage Guide is based on the approach to market definition generally applied by Australian courts and tribunals, and adopted by the Tribunal in the EGP Decision.[99]

The Council recognises that markets are typically identified by reference to product, functional, geographic and in some cases temporal dimensions.

The Council goes on to quote the seminal definition of a market given by the Tribunal in *Re Queensland Co-operative Milling Association Ltd*:[100]

> '*A market is the area of close competition between firms or, putting it a little differently, the field of rivalry between them…Within the bounds of a market there is substitution – substitution between one product and another, and between one source of supply and another, in response to changing prices. So a market is the field of actual and potential transactions between buyers and sellers amongst whom there can be strong substitution, at least in the long run, if given a sufficient price incentive…*'

Accordingly, the product and geographic boundaries of a market are determined by reference to the substitutability of different products on the demand and supply sides, and the substitutability of product over a geographic area on the demand and supply side.

Overview of proposed market definition

For reasons discussed in more detail below, adopting these principles, the Applicant submits that there are three dependent markets that are relevant to this application:

- a market for the production and sale of gas in Southern Queensland (the '**upstream production market**');

[98] Coverage Guide, paragraphs 5.69 - 5.71.

[99] *Duke Eastern Gas Pipeline Pty Ltd* [2001] ACompT 2; see also Coverage Guide, paragraphs [5.21] – [5.22].

[100] See *Re Queensland Co-operative Milling Association Ltd* (1976) ATPR 40-012 at [17247].

- a market in Gladstone, Rockhampton and the Wide Bay area (or alternatively, a market in Southern Queensland) involving transactions between gas sellers and domestic users of gas (the '**downstream domestic gas sales market**'); and
- a global market for the production and sale of LNG involving transactions between producers and sellers of LNG and users of LNG (the '**downstream LNG market**').

The upstream production market

Product dimension

While there is some competition between gas and other forms of energy (such as electricity) consistent with previous decisions of the Council and Tribunal,[101] the Applicant does not consider the field of rivalry between gas and other forms of energy at present is sufficient to place them in the same product market. The Applicant submits that the relevant product market for this Application is limited to the market for gas.

In considering the appropriate product dimension, a question may arise as to whether conventional natural gas and CSG (being the gas transmitted by the QCLNG Pipeline) are sufficiently close substitutes so as to be regarded as being in the same market. While there are differences between CSG and conventional natural gas, with limited processing, CSG is sufficiently similar in composition to conventional natural gas to be sold in competition to natural gas and transported through natural gas transmission and distribution pipelines.[102] For this reason, the ACCC has previously found that conventional natural gas and CSG are close substitutes on both demand and supply side and are part of the same market.[103] The Council, in its final recommendations on various pipelines, has not sought to differentiate between CSG and conventional natural gas.[104] For these reasons, the Applicant considers that CSG and conventional natural gas form part of the same product market, being the market for 'gas'.

As noted above, the LNG trains to be built and operated by QGC at Curtis Island are designed to process CSG, which has a narrower specification than conventional gas. The injection of conventional gas into the QCLNG Pipeline will interfere with the operation of QGC's LNG trains unless such conventional gas is processed to meet the gas specification requirements of the QCLNG Project. However, aside from the operational requirements of the QCLNG plant, there is no technical reason why CSG and conventional gas cannot, with appropriate processing, be transported through the same pipeline.

Functional dimension

The Applicant considers that there is a field of close competitive rivalry in relation to the upstream production and sale of gas. There is a range of active competitors, from small producers and sellers to major producers and sellers (some of which are vertically integrated into downstream activities such as distribution, reticulation, wholesaling, retailing or proposed LNG processing/production). Specific participants active in the Queensland region are identified in Chapters 3 and 4 of this Application and the MMA Study. Smaller upstream producers located within 100 km of the QCLNG Pipeline or QGC tenements are specifically identified and analysed in detail in the RLMS Report (attached as **Annexure 5)**.

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[101] See for example, *Duke Eastern Gas Pipeline Pty Ltd* [2001] ACompT 2 at [79]; *Moomba to Sydney Pipeline System Revocation applications under the National Gas Code, Final Recommendation*, National Competition Council, November 2002, paragraphs 7.8 – 7.11.

[102] MMA Study, p 4.

[103] *Santos Limited – Proposed acquisition of Queensland Gas Company Limited, Public Competition Assessment*, Australian Competition and Consumer Commission, 7 March 2007, paragraph 31.

[104] See for example, *Dawson Valley Pipeline Coverage application under the National Gas Code, Final Recommendation*, National Competition Council, August 2005, paragraphs 7.9 - 7.24.

The upstream activities of production and sale of natural gas are functionally separate and distinct from gas transmission through the pipeline and from other activities in the supply chain such as reticulation, distribution, wholesaling/retailing or LNG processing. This conclusion is consistent with previous decisions of the Council and the Tribunal.[105]

Geographic dimension

The demand for gas is often geographically remote from upstream production facilities and distributed across multiple downstream locations, typically clustered around sources of industrial demand or major population centres. From the upstream gas producers' perspective, demand for gas transmission services is a derived demand necessitated by the requirement to physically transport its product to customers in downstream markets. The starting point for defining the geographic boundaries of the upstream production market is to identify the upstream gas production regions from which producers could access downstream markets using the QCLNG Pipeline (either directly or via interconnection). The geographic boundary should be delineated by the region of gas production and sales served by the QCLNG Pipeline; that is, gas producers and sellers within particular gas fields or within scope of feasible interconnection with the QCLNG Pipeline.[106]

Due to the nature of CSG production, the upstream 'point' for the service is not confined to a single geographic location. The Export Pipeline will commence near Wandoan, with the Collection Header connecting to production fields spread over a distance of almost 200 km. A number of existing and proposed gas transmission pipelines in Southern Queensland are capable of feasibly connecting these gas fields to the Applicant's pipeline. Over the period of the proposed greenfields exemption, transmission options are expected to multiply as LNG projects in the Gladstone region underpin construction of additional north-south pipelines on the Surat/Gladstone corridor. Maps of proposed LNG pipelines are set out in Figure 2 in Chapter 3.

The ACCC has previously considered geographic dimensions of upstream gas production markets in relation to the proposed acquisition of QGC by Santos Limited. While the context of that decision is slightly different, the reasoning is relevant to the current application. The ACCC found that: [107]

> *'38. The southern Queensland region covers the area QGC can 'reach' using existing gas transmission pipelines. This market did not extend to include the Australian Eastern seaboard due to the lack of or limited pipeline infrastructure interconnection between southern Queensland and the southern states (including South Australia, New South Wales and Victoria)'.*

With the commissioning of the QSN link (see Figure 5 in Chapter 4), it is arguable that the geographic boundary of the upstream gas production and sales market is wider than Southern Queensland, and would potentially include producers connected to the Moomba hub.

While it is difficult to precisely define the geographic boundaries due to the actual and potential interconnection possibilities, the Applicant invites the Council to assess criterion (a) by identifying an upstream market for the production and sale of gas in Southern Queensland, specifically those gas production

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[105] See for example, *Re Duke Eastern Gas Pipeline Pty Ltd* [2001] ACompT 2 at [77]; *Moomba to Sydney Pipeline System Revocation applications under the National Gas Code, Final Recommendation*, National Competition Council, November 2002, paragraphs 7.12 – 7.16.

[106] This is consistent with Council's approach in *Moomba to Sydney Pipeline System Revocation applications under the National Gas Code, Final Recommendation*, November 2002, paragraph 7.19.

[107] *Santos Limited – Proposed acquisition of Queensland Gas Company Limited, Public Competition Assessment*, Australian Competition and Consumer Commission, 7 March 2007, paragraphs 38 - 41.

areas south west of Gladstone in the Surat and Bowen basins that are capable of being feasibly interconnected directly, or by existing and proposed gas transmission pipelines, to the QCLNG Pipeline.

The downstream domestic gas sales market

Product dimension

For the reasons set out above in relation to the upstream gas production and sales market, the Applicant submits that the appropriate product dimension in respect of this downstream market is gas.

Functional dimension

In the Applicant's view, there is also a field of close competitive rivalry in relation to the domestic sale of gas. Domestic users of gas include large industrial users (such as gas fired power stations, alumina refineries etc) and smaller industrial users and households (where served by reticulated distribution systems). Depending on the size of the user, participants in the domestic gas sales market may include gas wholesalers dealing directly with large industrial customers or gas retailers who act as intermediaries between gas production/wholesalers and small industrial and households (typically served via a low pressure reticulated distribution network).

Thus the functional dimension of this downstream market comprises transactions between gas sellers (which may include gas producers, transmission pipeline owners, gas wholesalers, retailers, among others) and these users of gas. Consistent with the approach adopted by the Council on other decisions, the Applicant does not propose that a further functional delineation between wholesale and retail gas sales needs to be drawn for present purposes.[108]

For reasons discussed below, the Applicant considers that there is a separate downstream global LNG market that is functionally distinct from the downstream gas sales market.

Geographic dimension

As noted above, demand for gas is often geographically remote from upstream production facilities and is distributed in multiple downstream locations, typically clustered around sources of industrial demand or major population centres. From the downstream users perspective, demand for gas transmission services is a derived demand necessitated by the requirement to have gas physically transported to the user's premises (in the case of a large industrial user) or (in the case of a retailer) the premises of customers.[109]

The starting point for defining the geographic scope of the downstream gas sales market is therefore to identify those downstream regions where there is customer demand capable (either directly or via interconnection) of being served or potentially served by the QCLNG Pipeline.

The Applicant has commissioned ACIL Tasman to prepare a report identifying geographic regions that might potentially be served by the QCLNG Pipeline. A copy of that report is attached as **Annexure 4**. ACIL Tasman's conclusion is that the industrial city of Gladstone, Rockhampton and the Wide Bay area (Bundaberg, Maryborough and Hervey Bay) are the main downstream regions capable of being served by the

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[108] See for example, *Moomba to Sydney Pipeline System Revocation applications under the National Gas Code, Final Recommendation*, National Competition Council, November 2002, paragraph 7.18.

[109] Given that it is not expected to make a material difference to the analysis, the application focuses on physical supply options and does not analyse the impact of contractual arrangements such as swaps. However, it has been previously acknowledged by the Council that gas swaps can have an important impact promoting competition in gas sales markets irrespective of the physical interconnection possibilities. See for example, *Dawson Valley Pipeline: Coverage application under the National Gas Code, Final Recommendation*, National Competition Council, August 2005, paragraphs 7.20 - 7.22.

QCLNG Pipeline. Those areas are currently served by the QGP and will in the future also be capable of being served by any gas pipeline built on the Surat/Gladstone corridor. On this basis, it is possible to identify a market for gas sales to customers in the Gladstone, Rockhampton and Wide Bay area.

An alternative, broader approach to the geographic dimension following the Council's final recommendation in relation to the Dawson Valley Pipeline could also feasibly be adopted. In that recommendation, the Council rejected a submission that the downstream gas sales market in Queensland consisted of four geographically distinct market sectors, and instead found that there was a gas sales market in Queensland encompassing the whole of the State of Queensland.[110]

If the Council adopted a similar approach in relation to the present application, the geographic boundary of the downstream gas sales market would also be the whole of Queensland. Certainly if the potential for backhaul services on the QCLNG Pipeline is considered, together with potential interconnection with the RBP, it is possible to see that the relevant downstream market may include other downstream locations such as Brisbane. While this approach may have merit, the Applicant considers that it is appropriate, for the purposes of applying criterion (a), to identify a market for gas sales to domestic customers in the Gladstone, Rockhampton and Wide Bay area. Adopting a wider geographic market definition (ie. locations in Southern Queensland served by the Queensland transmission pipeline system) will not materially affect the analysis of criterion (a) in this dependent market for reasons discussed in section 7.5 below.

The downstream LNG market

Product dimension

While LNG and domestic sales gas originate from the same feedstock (ie gas), the Applicant does not consider it appropriate to include gas and LNG in the same product market.

The Applicant considers that there is a field of close competitive rivalry in relation to the production and sale of LNG that is distinct from the production and sale of gas domestically. While gas is an input to LNG production (and there are thus linkages between the domestic sales gas price and the LNG netback export price), unlike gas, LNG (in its liquefied form) is 1/600th of its volume in a gaseous state and is able to be shipped internationally from production source to customer markets. Further, there is negligible demand for LNG domestically. The Council, in its final recommendation in relation to the Goldfields Gas Pipeline,[111] concluded that gas and LNG were not sufficiently close substitutes to be regarded as part of one downstream market. The Applicant invites the Council to assess this criterion by also identifying a separate downstream market for the production and sale of LNG.

LNG is clearly substitutable in varying degrees with other energy sources in end user markets, having regard to the availability and relative cost of other sources of energy (coal, gas etc) in the relevant end user market. For the purposes of this submission, however, the Applicant considers it appropriate to confine the product dimension to LNG as there is clearly an area of discrete demand for, and competition to supply LNG to, various end users globally.

Functional dimension

The activities of the production and sale of LNG are functionally separate and distinct from gas transmission through the pipeline and from other activities in the gas supply chain, such as distribution or retailing of gas. The Applicant thus submits the appropriate functional dimension to adopt is the production and sale of LNG.

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[110] Ibid.

[111] *Application for revocation of coverage of the Goldfields Gas Pipeline under the National Gas Access Regime, Final Recommendation*, National Competition Council, November 2003, paragraphs 5.48 – 5.71.

Geographic dimension

As noted above, there is negligible demand for LNG domestically. LNG produced in Australia (for example, at Gladstone) is shipped to customers overseas, not domestically. Demand for LNG is, in broad terms, global, with customers often having a number of substitution possibilities and therefore seeking the best terms available from suppliers irrespective of geographic location. The nature of demand in the global LNG market is discussed in more detail in the MMA Study. Among other things, competition is influenced by transportation constraints and costs, which, all other things being equal tend to favour suppliers with geographic proximity to particular end user markets. For this reason, the major export markets for LNG produced in Australia are located in Asia (and include Japan, South Korea and increasingly China). On the supply side, competition is also global in nature with the major LNG suppliers competing against projects located in multiple geographic locations (and often themselves operating or developing projects in multiple geographic locations).

Given the ability of LNG producers around the world (including Australia) to supply LNG to customers in geographically diverse regions, the Applicant considers that the geographic dimension of the LNG market is global. This is consistent with the Council's final recommendation regarding the Mt Newman railway line, where it identified a market for iron ore was global in nature.[112]

7.4 Promotion of competition in upstream production market

Ability to exercise market power

Barriers to entry/economies of scale

The typical concern about market power in the context of gas transmission pipelines is that they are characterised by high sunk capital cost relative to operating costs. It is also often observed that there are significant economies of scale such that unit costs decrease with size. As a result of these factors, merchant gas pipelines are often built with significant existing (ie. uncompressed) or expandable (ie. compressed or, in appropriate cases, looped) capacity in order to maximise returns by catering to market growth over time (or arguably to deter competitive entry by a competing pipeline). Thus, once built, it can be argued that in the absence of substitutable pipeline services for upstream/downstream gas users there is the potential for an incumbent pipeline service provider to exercise market power.

In previous coverage applications, the pipelines in question have typically been found to exhibit economies of scale, and in some cases also exhibit excess existing or expandable capacity. The factual context in which this application is made is fundamentally different to the factual matrix against which most if not all previous coverage (and revocation) applications have been examined.

The QCLNG Pipeline is likely to exhibit *some* economies of scale in the sense that, like most pipelines, unit costs will decline with scale and usage. These economies are examined in relation to criterion (b) and in the Frontier Economics Report. However, as the QCLNG Pipeline is part of an integrated project, the QCLNG Pipeline and other key project components have been optimally designed to meet the specific requirements of the QCLNG Project. Thus, the concept of economies of scale is addressed in the pipeline configuration only in as far as meeting the maximum capacity for the QCLNG Project, not as regards to meeting the market demand, which is characteristic of the way in which a merchant pipeline would be designed.

Two other factors mean that economies of scale are less likely to emerge in satisfying the reasonably foreseeable demand for the services to be provided by means of the QCLNG Pipeline.

[112] *Application for declaration of a service provided by the Mt Newman railway line under section 44F(1) of the Trade Practices Act 1974, Final Recommendation*, National Competition Council, 23 March 2006, pp 113 - 114.

First, the pipeline's free flow capacity will be fully utilised by the QCLNG Project. The pipeline is not being established to serve third party users, and any third party usage is practically limited by the usage requirements of the proponent.

Secondly, unlike previous cases where the existing and expandable capacity of the relevant pipeline has outstripped the reasonably foreseeable demand for the services provided by means of the pipeline, the establishment of an LNG export industry in Gladstone fundamentally changes this dynamic. A LNG export industry will underpin a level of reasonably foreseeable demand for pipeline services on the Surat to Gladstone corridor over the period 2013-28 which is anticipated to both dwarf domestic gas demand and create an environment in which it would be sub-optimal (from a social cost perspective) to expand the capacity of the QCLNG Pipeline to attempt to meet reasonably foreseeable demand in this period. As demonstrated in Chapter 6, it is therefore economic for another person to develop another pipeline to provide the services provided by means of the QCLNG Pipeline within the relevant timeframe. This is exactly what has been proposed by at least three other proponents of major LNG projects in Gladstone.

For completeness, the Applicant also notes that, at the large diameter at which this pipeline is to be built (namely 42 inches) the assumption that significant economies of scale will continue at larger capacities no longer holds and/or become subject to other equally relevant non-price characteristics of customer demand (ie diversification of risk of pipeline failure, difficulties in co-ordinating foundation customer capacity requirements). For example (as noted above) the MMA Study observed that:

> *'Several factors suggest that the capacity requirement [to underpin a QLD LNG industry] will be met most efficiently by a series of replica pipelines using the same route, rather than by one very large capacity pipeline:*
>
> - *The sequential construction of LNG trains and the likelihood that at most 3 or 4 will be committed by the time pipeline design has to be finalised and pipe orders made;*
> - *Significant economies of scale can be achieved by pipelines serving 2-3 trains (450 to 675 PJ/a) with very few further economies to be gained at even greater scales;*
> - *The consequences of pipeline failure are less severe;*
> - *Flexibility to alter the route and design is preserved until further LNG trains and associated gas reserves are committed.'*[113]

These observations are consistent with the Frontier Economics Report (**Annexure 6**) which relevantly concludes that the optimal configuration from a societal point of view is likely to require duplication of the QCLNG Export Pipeline.

Availability of substitute pipeline services

Even if additional proposed export pipelines are not taken into account, access to the QCLNG Pipeline would not materially promote competition in the upstream market due to the alternative commercial options available to upstream producers in the relevant area. A key determinant of the existence of market power is the presence or absence (as the case may be) of economically substitutable services to the pipeline services provided by means of the pipeline. In this case, upstream producers in the relevant geographic production areas have multiple outlets for transmitting the gas produced from their gas fields. The likelihood of additional pipeline capacity being built (primarily to serve particular LNG export projects, but which may have some incremental capacity available at certain times to link the upstream production market to the

[113] MMA Study, p 112.

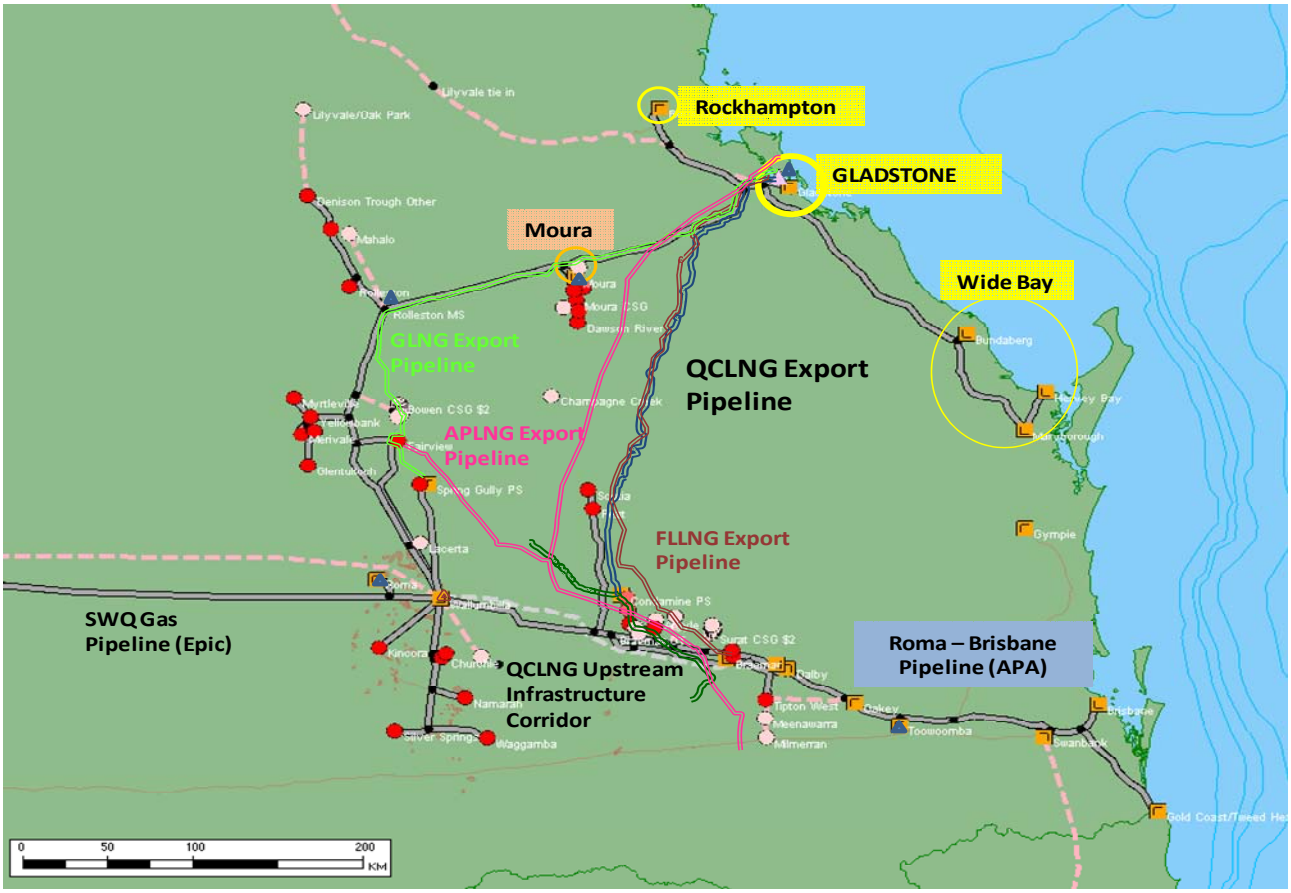
downstream domestic gas sales market), will only further increase the extent and degree of substitution possibilities for gas producers in the upstream production market.

However, the existence of another LNG export pipeline is not critical to a conclusion that access will not promote competition in the upstream market. Due to the existence of a network of existing and proposed gas transmission pipelines over 2013-2028, producers in the upstream production market will have multiple outlets for their gas, with options including:

- domestic users in Gladstone, Rockhampton and Wide Bay area via the QGP, or depending on location of the producer, via a combination of backhaul on the RBP and forward haul on the QGP;
- domestic users in Southern Queensland (including Brisbane and surrounding areas) via the RBP and SWQP;
- domestic gas sales markets in Southern States via the SWQP (using the QSN Link) and Moomba to Adelaide Pipeline or Moomba to Sydney Pipeline (and potentially the proposed Hunter Valley pipeline);
- (at least potentially) domestic users in Gladstone, Rockhampton and Wide Bay areas utilising incremental capacity on the QCLNG Pipeline or one of up to three further LNG export pipelines (assuming the user could meet gas specification requirements and it was economic to do so after considering upstream and downstream tie in costs).

This network of existing and proposed gas transmission pipelines in South East Queensland is shown in the figure set out below.

Figure 6: Existing and proposed South East Queensland transmission pipelines



Source: ACIL Tasman (Annexure 4)

There are also a number of factors which suggest that in so far as domestic sales gas is concerned, the QCLNG Pipeline is in fact likely to be of limited competitive importance as a substitutable transportation service for upstream producers. These factors include technical issues, relative cost and location of likely upstream users.

As previously explained, the operational requirements of the QCLNG Project require that the specification of the gas transported through the QCLNG Pipeline is narrower than the typical specification of conventional gas. Further, as demonstrated below, few small producers (who might, all other things being equal, be more likely to seek to use spare capacity on the QCLNG Pipeline) are located in sufficient proximity to make the QCLNG Pipeline the lowest cost transport option relative to alternative options.

Even if tie in costs are put to one side, the relative cost of the QCLNG Pipeline is likely to be higher than alternatives such as the QGP for transportation capacity used to meet domestic demand. In section 2.7 of its report, ACIL Tasman sets out the results of its modelling of the relative transportation costs of using the QCLNG Pipeline versus the QGP. The conclusion of that analysis is that it will be significantly cheaper to use an existing or expanded QGP for domestic gas transportation from upstream markets to the Gladstone area. Indeed, the analysis suggests that all domestic gas would continue to utilise the QGP in preference to the QCLNG Pipeline.

The location of potential users of the pipeline in upstream markets is also important. The RLMS Report focuses on small independent upstream producers who, all other things being equal may have fewer options for economically transporting their gas to downstream markets.[114] There are very few small independent producers who are sufficiently proximate to the QCLNG Pipeline to consider it among their preferred options. The following table sets out a summary of relevant small independent producers located within 100 km of the QCLNG Pipeline and their most feasible transportation options to access downstream markets.

Table 6: Small independent CSG tenement holders

Company	PL/ATP	Est GIP [PJ]	Potential Recoverable Gas [PJ]	Potential Gas Production [PJ/a]	QGC Pipeline Connection Requirements	Comment
Blue Energy	ATP 818P ATP 896P	2,436 3,435	880-1,760	44-88	95km x 450mm	Eastern Surat. Likely to use RBP
Bow Energy	ATP [A] 1053P	970	145-291	7-15	25km x 250mm	Gunyah Prospect South Dawson Valley Likely to use QGP
Icon Energy	ATP 626P	4,000	600-1,200	30-60	75km x 350mm	South Surat Likely to use RBP
Molopo	PL 94 [N] PLA210/ ATP 564P ATP 602P	1,500 2,500 2,300	945-1,890	47-94	80km x 400mm	Dawson Valley Likely to use existing gas facilities and QGP
Rawson Resources	ATP 893P ATP 901P	NK	-	-	50km – 100km	Area of poor coal/CSG prospectivity

Source: RLMS Report (Annexure 5)

[114] The reference to 'independent' producers, in this Application, is a reference to producers not associated with LNG projects currently proposed for the Gladstone area.

RLMS conclude that none of the small independent CSG tenement holders within 100 km of the proposed pipeline are likely to seek connection, principally because of distance.

Further, ACIL Tasman notes (in section 4.3 of its report) that Molopo and Icon Energy have both entered into gas sales agreements using the QGP, RBP and Dawson Valley Pipeline, suggesting that smaller producers already have practical options for delivering their gas to markets.

The large upstream producers of CSG in upstream markets generally have the same or similar options to smaller producers, but have the additional capacity to participate directly in downstream LNG projects as an outlet for their upstream gas production (of course *all* upstream producers have the option of selling their gas to an LNG proponent to be aggregated by that proponent for LNG production.) For the reasons discussed above, large LNG producers are likely to prefer to develop their own transportation capacity and have the size and scale to do so commercially or in joint venture with other LNG proponents. As a matter of economic and commercial reality, the requirement to have large increments of gas transportation capacity locked in at the time such projects reach their FID milestone mitigates strongly against the QCLNG Pipeline being a feasible commercial alternative for this category of upstream producer.

ACIL Tasman, at pages 56 and 57 of its report, concludes that none of the smaller resource and prospect holders are likely to find that access to the QCLNG Pipeline would offer a commercially attractive means of reaching prospective customers, compared to the alternatives already available. This is principally due to the tie in distances, given that most prospects are closer to the either the QGP (via the Dawson Valley Pipeline) or the RBP. Other factors mitigating against third party use of the QCLNG Export Pipeline include:

- the short term/interruptible nature of the transportation services that could potentially be made available;
- the need for third party users to meet the capital costs of off take facilities; and
- that the QCLNG Pipeline will carry gas to a more exacting specification that the general Australian Standard for conventional gas, which may impose additional processing costs on smaller producers that wish to utilise the QCLNG Pipeline.

The Applicant therefore submits that the extent of existing and alternative substitutable pipeline services means that the Applicant will not have any ability to exercise market power to adversely affect competition in the upstream production market.

Existence/extent of countervailing power

The existence and extent of countervailing power typically depends on the ability of a particular customer to bypass the service provider in question. In the context of upstream gas producers, this may be due to the ability to tie in to an alternative gas transmission pipeline providing access to a downstream market, the ability to exercise countervailing power by contracting in advance (ie. as a foundation customer) to avoid the exercise of market power, or to itself provide the pipeline services or sponsor another provider (either alone or in conjunction with other customers) to bypass the service provider in question.

While the existence and extent of countervailing power will vary from producer to producer depending on location, size of proven and probable reserve and other factors, it is likely to be the case that many upstream gas producers in the relevant area will have significant countervailing power. In particular, as noted in the MMA Study the major gas producers (and LNG project proponents) comprising Arrow, Origin, Santos and QGC (and their joint venture partners) are estimated to control approximately 85% of total Eastern Australian

proven and probable CSG reserves.[115] They therefore have sufficient size and scale to implement a range of alternatives to the services provided by the QCLNG Pipeline in order to transport gas to downstream markets. Indeed, having regard to the discussion above in relation to criterion (b), it should be clearly evident that the Applicant will not have sufficient spare capacity to satisfy this demand at least overall cost. Large upstream producers therefore can be expected to have very significant countervailing power.

With respect to smaller upstream producers who might, all other things being equal, be expected to have less countervailing power vis-à-vis pipeline owners, the RLMS analysis shows that even smaller producers are likely to have a range of viable economic and more commercially attractive transportation options other than use of the services of the QCLNG Pipeline. Indeed, due both to location of small producer gas fields, the different gas specification, the higher transportation costs and the lack of available firm forward haul capacity, in most (if not all) cases the services provided by means of the QCLNG Pipeline are only likely to be of marginal potential use to smaller upstream producers.

Risks of co-ordinated conduct

The Applicant notes that, in certain circumstances, concerns might in theory arise in relation to the risk of co-ordinated conduct between two or more pipeline services providers (even in circumstances where there are two pipelines with excess capacity servicing an upstream or downstream markets). The Applicant submits that such concerns are without foundation in this context having regard to, first, the high expected utilisation of the QCLNG Pipeline and secondly, the number of likely alternative service providers available to gas producers in the upstream market.

Incentives to exercise market power

Even if, contrary to the conclusions reached above, the Applicant is found to have some ability to exercise market power (ie. it is assumed that some degree of market power exists) with respect to upstream producers, it is also necessary to examine whether the Applicant would have an incentive to use that market power to adversely affect or otherwise hinder competition in the upstream production market. While the Applicant regards this issue as essentially moot (on the basis that there is no ability to exercise market power and therefore incentives to do so are irrelevant) for completeness, the Applicant's incentives are examined below.

Extent of vertical integration

The extent of vertical integration is often regarded as an important factor in consideration of whether there are incentives to exercise market power. The main concern is that a service provider with a vertically related affiliate may engage in behaviour designed to leverage its market power into a dependent market to advantage the competitive position of its affiliate.[116]

In this case, the Applicant is vertically integrated in relation to the functional activities of both upstream gas production and sales, and downstream LNG production for export.

QGC commercial incentives

In theory, the Applicant might have an incentive to foreclose pipeline access to other upstream gas producers due to its vertical integration into upstream gas production (ie in an attempt to maximise production and pricing of gas sales in the upstream production market). However, in practice, the Applicant would only have an economic incentive to do so if there was a reasonable likelihood that such a strategy would be both successful and profitable. Having regard to the discussion above in relation to alternative options for major

[115] MMA Study, p 51.

[116] Coverage Guide, paragraph 5.78.

and minor upstream producers in the relevant area, it is clear that such a strategy could be neither successful nor profitable. Upstream gas producers have sufficient bypass opportunities (ie using another pipeline, contracting in advance of development of gas fields, sponsoring new pipeline entry etc) to render that strategy incapable of success. As the only outcome of implementing such a strategy would be to lose the potential opportunity to earn incremental revenue from gas transportation services (to the extent there is any unutilised capacity available) without any offsetting benefit in terms of the volume or price of upstream gas sold, the Applicant has no commercial incentive to seek to foreclose access to other upstream producers.

Indeed, in so far as it has spare capacity to offer after meeting its own affiliate's requirements, the Applicant has an economic incentive to sell spare capacity, earn incremental revenue and improve the return on its investment in pipeline infrastructure that is primarily required to support the Project.

No material promotion of competition in upstream production market

The Applicant submits that it will have neither the ability nor incentive to exercise market power to the detriment of competition in the upstream production market. Accordingly, access to any unutilised capacity available on the QCLNG Pipeline is not capable of promoting competition, far less *materially* promoting competition, in the upstream production market.

7.5 Promotion of competition in downstream domestic gas sales market

Ability to exercise market power

Barriers to entry/economies of scale

The discussion of barriers to entry/economies of scale in the context of the upstream production market is equally relevant when considering the downstream domestic gas sales market. In short, barriers in the nature of economies of scale are only likely to give rise to market power if they operate to deter or prevent the establishment of competing pipeline services. For the reasons set out below, that is not the case in the present context.

Availability of substitute pipeline services

Like upstream producers, due to the existence of a network of existing and proposed gas transmission pipelines over 2013-2028, users of gas in this market will have multiple options to transport gas to their own or their customers' premises in the Gladstone, Rockhampton or Wide Bay areas or other areas of Southern Queensland with options to acquire gas from the Surat/Bowen Basin (or indeed the Cooper/Eromanga Basins) via:

- the existing or an expanded QGP;
- the existing or an expanded QGP together with backhaul arrangements on the RBP and/or the SWQP/QSN;
- the CQGP currently under development (which will link the Moranbah gas fields to the Gladstone area); or
- (at least potentially) utilising incremental spare capacity on up to four LNG export pipelines, including the QCLNG Pipeline.

In relation to users located in downstream areas that might be served by backhaul services (combined with the RBP or SWQP/QSN), the use of those services would not materially increase existing transportation options due to large number of upstream producers (with whom downstream users could contract) who would be able to economically tie directly into the RBP, QGP or SWQP/QSN.

Proponents of LNG projects typically require absolute certainty that they will be able to acquire large volumes of transportation capacity at the appropriate time to underpin operation of their liquefaction facilities (ie. as each LNG train comes on line). As the QCLNG Pipeline is being designed and built to serve the needs of its own integrated production process, with the whole of the free flow capacity required for these purposes, it is highly unlikely that any unutilised capacity that the Applicant could theoretically provide on a limited basis, consistent with its own project requirements, would meet the needs of other LNG project proponents.

In contrast, domestic gas users are likely to require transportation capacity in much smaller increments and potentially some may have more flexibility with respect to duration of firm forward haul services and/or have some demand for the interruptible capacity likely to be available. At least in theory domestic gas users could benefit from the increase in potential transportation links via LNG export pipelines expected to be built in the Surat Basin-Gladstone corridor.

In practice, however, it is likely that there will only be very limited, if any, third party commercial demand for the transportation services of the QCLNG Pipeline to domestic gas sales markets, largely due to the gas specification requirements of the QCLNG Project, the closer proximity of alternative pipeline options and forecast higher transportation costs. The analysis in the ACIL Tasman Report demonstrates that, irrespective of the number of LNG export pipelines built, demand for domestic sales gas in the downstream market will most likely be satisfied using transportation services of the QGP. At page viii of its report, ACIL Tasman states:

> *'the modelling results show that all gas delivered into the Gladstone market is transported via the existing Queensland Gas Pipeline (QGP), rather than the QCLNG Export pipeline. No gas is delivered to the Gladstone domestic market via the QCLNG Export Pipeline — even on a short term basis during the ramp-up to full LNG production — because QGP provides a more economical transport pathway.*'

The most economic origin of gas to supply that region is also likely to be those gas fields located in closer proximity to the QGP than from the potential upstream inlet points on the QCLNG Pipeline. Further, to utilise the QCLNG Pipeline, it would be necessary to develop additional pipeline infrastructure to connect the QCLNG Pipeline to downstream areas of demand.

For these reasons, the Applicant is of the view that due to the existence of more competitive supply options to serve the downstream market, access to its pipeline could not be said to promote or enhance the environment for competition in the downstream domestic gas sales market.

This conclusion is the same even if a wider geographic definition for the downstream domestic market (encompassing the whole of Queensland) were adopted. Competitive conditions in other parts of Queensland (such as Brisbane) will not be promoted or enhanced by access to the QCLNG Pipeline, since customers in these areas are more cost effectively connected to a range of upstream producers by the other existing transmission pipeline systems.

Existence/extent of countervailing power

The existence and extent of countervailing power in the domestic gas sales market will vary from customer to customer in accordance with the bypass options available to each customer. In all cases, it is reasonable to expect that the given the number of alternative substitute services available to customer that there will be strong countervailing power in most cases. This will be enhanced in the case of particular participants in the downstream domestic gas sales market who are able to contract with pipeline service providers in advance of committing to new industrial projects (ie. foundation contracts for new industrial projects etc).

Risks of co-ordinated conduct

The discussion of risks of co-ordinated conduct in the context of the upstream production market is equally applicable when considering whether the Applicant has the ability to exercise market power in the downstream domestic gas sales market. The Applicant again submits that such concerns are without foundation in this context having regard to, first, the high expected utilisation of the QCLNG Pipeline and secondly, the number of likely alternative service providers available to participants in the downstream domestic gas sales market.

Incentives to exercise market power

The extent of vertical integration between the Applicant and its affiliates is discussed above. Within QGC, vertical integration is predominantly between upstream gas production and wholesale/industrial domestic gas sales and downstream LNG processing and export.

QGC is not a significant domestic 'retailer' of gas in the same way that, for example, Origin is. QGC's existing gas sales in Queensland include the sale of gas for power generation and industrial use, accounting for approximately 20% of the gas consumed by Queensland domestic users. QGC also sells gas to retail suppliers for sale in Queensland and elsewhere in Eastern Australia. However, this gas is supplied to customers using existing pipeline infrastructure, separately from any part of the QCLNG Pipeline System. The purpose of the QCLNG Pipeline is to transport CSG to Gladstone for processing and supply into the LNG *export* market. Accordingly, prima facie, even if possible to do so, the Applicant does not have any economic *incentive* to seek to foreclose access to participants in domestic gas sales markets.

Even if it were assumed that the Applicant might have such an incentive, in practice the Applicant would only have an economic incentive to do so if there was a reasonable likelihood that such a strategy would be both successful and profitable. Physical substitution possibilities are obviously different when considered from the perspective of domestic gas users in the downstream market (ie. interactions between market participants involving the sale and delivery of gas in southern Queensland) than the upstream production market (ie interactions between market participants involving production and sale of gas in the upstream production areas located in southern Queensland).

However, like the upstream market, the number of alternative options for downstream participants to physically access upstream production markets mean that any foreclosure strategy could not be successful or profitable in relation to the downstream domestic gas sales market either. Downstream participants also have sufficient 'bypass' opportunities (see discussion above in relation to upstream market) to render that strategy incapable of success. Similarly, as the only outcome of implementing such a strategy would be to lose the opportunity to earn incremental revenue from gas transportation services (to the extent there is spare capacity available) without any offsetting benefit in terms of the volume or price of upstream gas sold, the Applicant has no commercial incentive to seek to foreclose access to those participants.

No material promotion of competition in downstream domestic gas sales market

Users in the Gladstone, Rockhampton and Wide Bay area will have more economical options for accessing upstream gas supply than the QCLNG Pipeline, with the QGP likely to remain the predominant method of transporting gas from the Surat and Bowen Basins. More broadly, domestic users in Southern Queensland will be able to access upstream gas supply though a network of pipelines that includes the QGP, RBP and SWQP. The QCLNG Pipeline is unlikely to be a cost competitive alternative due to lower transportation costs on other pipelines. The Applicant therefore submits that it will have neither the ability nor incentive to exercise market power to the detriment of competition in the downstream domestic gas sales market. Accordingly, access to any unutilised capacity available on the QCLNG Pipeline is not capable of promoting competition, let alone *materially* promoting competition, in the downstream domestic gas sales market.

7.6 Promotion of competition in downstream LNG market

Ability to exercise market power

Barriers to entry/economies of scale

The discussion of barriers to entry/economies of scale in the context of the other dependent market is equally relevant when considering whether the Applicant has the ability to exercise market power in the downstream LNG market. In the context of the downstream LNG market, however, some further considerations are relevant. By their nature, LNG projects require very significant capital investments of a 'lumpy' nature with technical requirements (including pipeline specifications) necessarily committed to in advance.

To maximize efficiencies in LNG processing, they are also typically very large scale projects. Each train of the QCLNG Project will be designed to produce approximately 4 mtpa, which equates to a required transportation capacity of approximately 703 TJ/day (plus linepack). Thus, while there are acknowledged economies of scale involved in gas transmission pipelines, these economies decline in importance in relation to both the size of the pipeline required to support large LNG projects and, also in relation to the other commercial requirements of LNG project proponents.

While in certain circumstances there could be some efficiencies realised by sharing transportation infrastructure with other LNG project proponents seeking to locate their projects in a similar area, in practice there are significant impediments to doing so. Chief among these are co-ordination problems. While the underlying resource base, location and fundamental economics may over time favour development of multiple LNG projects in similar locations, the need to co-ordinate multiple aspects of a project before a FID means that joint decisions to commit to shared pipeline infrastructure will be practically difficult. It is also unlikely that different project timelines will coincide in a way that makes coordination achievable. Other practical difficulties include issues such as cost allocation and priority of use, as well as the increased risk of multiple parties dependent on single piece of transportation infrastructure.

Availability of substitute pipeline services

As discussed, the field of competitive rivalry in LNG production and sales is global in nature. LNG customers seek the most competitive source of supply irrespective of geography. LNG producers typically compete to establish integrated LNG projects involving gas production, pipeline infrastructure, LNG liquefaction facilities and shipping facilities in multiple locations around the world. Accordingly, from the perspective of the participants in the downstream LNG market, there are a wide variety of input services (in addition to pipeline services) that are in this sense substitutable for the services of the QCLNG Pipeline.

Even if the question is focussed more narrowly on the requirements of LNG project proponents in the Gladstone region, the extent of economies of scale in pipeline services will not be an economic impediment to the establishment of substitute pipeline services by other LNG proponents. Given the large increments of capacity required to service another LNG project, combined with the need for certainty in availability and timing of gas transportation requirements, the level of unutilised or interruptible capacity on the QCLNG Pipeline is considered highly unlikely to best meet the commercial needs of another LNG project proponent.

Even if the Applicant is incorrect in this assessment, the application of criterion (a) has been consistently held to require the promotion of 'competition' rather than the promotion of 'competitors'. Thus, even if an argument were made that regulated access to the QCLNG Pipeline may in some way advance the establishment of another LNG project in the Gladstone region, this would not promote competition in the downstream LNG market (which is a global one). As the Council states in its Coverage Guide:

'*Where a dependent market is effectively competitive access is unlikely to promote a material increase in competition and an application for coverage that seeks to add to competition in such a dependent market is unlikely to satisfy criterion (a)*'.[117]

The Applicant submits that the downstream LNG market is clearly already effectively competitive. Even if an extreme assumption were made that regulated access would result in an additional Gladstone LNG project becoming viable, this could have no material impact on pricing or nature of competition in the context of a global market for LNG. This reasoning in relation to markets which are global in nature is supported by and consistent with the recent findings of the Council in examining criterion (a) in relation to the global iron ore market.[118] Indeed, the Council's coverage guide also confirms that in practice it is unlikely that the impact of access would materially affect competition in an international market.[119]

Existence/extent of countervailing power

All of the factors referred to above strongly suggest that there will be a very high level of countervailing power held by potential customers for services of the QCLNG Pipeline who are participants in the downstream LNG market.

Risks of co-ordinated conduct

For the same reasons set out above in relation to the other relevant upstream and downstream markets, this is not considered relevant.

Incentives to exercise market power

Extent of vertical integration

The Applicant is vertically integrated into the downstream LNG market. While, therefore, there is the theoretical possibility that there may be an incentive to foreclose access to other participants in the downstream LNG market, the real question is whether the Applicant would have a practical commercial incentive to do so.

QGC commercial incentives

The Applicant's principal commercial objective for the pipeline is to ensure that it has certainty of access to its own pipeline for the purposes of its LNG project in Gladstone. The Project is highly integrated, involving co-ordination of production and development of upstream capacity, construction of the pipeline element, construction of the LNG plant and associated port facilities for the export of the LNG. Having commercial certainty that the pipeline can transport gas in quantities required for the LNG trains as and when they come on line is of critical importance to the overall viability of the Project. It is for this reason that the Application is being made and why foundation contracts have been established to underpin the Project.

However, provided its own internal needs are met, the Applicant does not have any strong commercial incentives to foreclose access to either participants in the downstream LNG market any spare capacity available from time to time on its pipeline. For the reasons described above, the Applicant faces effective competition both in the market for its pipeline services (due to the availability of pipeline services) as well as effective competition in relevant upstream and downstream markets. Given that no commercial advantage can be gained by foreclosure, subject to first meeting its LNG plant's requirements, the Applicant has a

[117] Coverage Guide, paragraph [5.59].

[118] *Application for declaration of a service provided by the Mt Newman railway line under section 44F(1) of the Trade Practices Act 1974, Final Recommendation,* National Competition Council, 23 March 2006, paragraph 7.159.

[119] Coverage Guide, footnote 58.

commercial incentive to make its pipeline available at competitive market rates to increase the potential return on its sunk investment in the pipeline, or otherwise enter commercial arrangements to maximise utilisation of, and the return on, all its infrastructure (ie. gas fields, pipelines, LNG facilities, etc).

No material promotion of competition in downstream LNG market

The Applicant submits that it will have neither the ability nor incentive to exercise market power to the detriment of competition in the downstream LNG market. Accordingly, access to any unutilised capacity available on the QCLNG Pipeline is not capable of promoting competition, far less *materially* promoting competition, in the downstream LNG market.

7.7 Conclusion

Consistent with the Council's stated approach the Applicant submits that, in applying criterion (a) to the QCLNG Pipeline, the Council must:

- identify relevant dependent markets which are separate from the market for the pipeline service; and
- assesses whether access (or increased access) would be likely to promote a materially more competitive environment in a dependent market?

Access is unlikely to materially promote competition in a dependent market if the Applicant lacks the ability or incentive to exercise market power to adversely affect competition in such a market.

The Applicant has identified three dependent markets which are separate for the market for the pipeline service, namely:

- an upstream production market;
- a downstream domestic gas sales market; and
- a downstream LNG market.

The effect that access to the QCLNG Pipeline would have on competition in each dependent market can be summarised as follows.

- In the **upstream production market**, access to an integrated LNG project pipeline linking the Surat Basin to Curtis Island will not materially promote competition as upstream gas producers will have multiple options for commercialisation of their gas. Upstream producers will be able to access other markets in Queensland (and indeed the rest of Eastern Australia) via the QGP, RBP, SWQP and QSN Link. Larger upstream producers (in particular those involved in LNG production) are likely to require their own dedicated gas transmission pipelines, while the QCLNG Pipeline is unlikely to be an attractive commercial option for small producers due to their location, tie in costs faced by smaller producer, lower transportation costs of using other pipelines, and the gas specification requirements of the QCLNG Project.
- In the **downstream domestic gas sales market**, users in the Gladstone, Rockhampton and Wide Bay area will have more economical options for accessing upstream gas supply than the QCLNG Pipeline, with the QGP likely to remain the predominant method of transporting gas from the Surat and Bowen Basins. More broadly, domestic users in Southern Queensland will be able to access upstream gas supply though a network of pipelines that includes the QGP, RBP and SWQP. The QCLNG Pipeline is unlikely to be a cost competitive alternative due to lower transportation costs on other pipelines.
- In the **downstream LNG market,** competition between major LNG projects occurs within and between countries. LNG is a global commodity with prices set by world supply and demand, with

some regional variations. Regulated access to the QCLNG Pipeline can have no impact on competition in this global market.

Accordingly, the Applicant submits that access to the QCLNG Pipeline will not promote a material increase in competition in any dependent market and that, as a result, criterion (b) is *not* satisfied.

8. Criterion (c) – Health and Safety

8.1 Statutory test

The Council must recommend that the exemption be granted if it is not satisfied:

> '*that access (or increased access) to the pipeline services provided by means of the pipeline can be provided without undue risk to human health or safety*'.[120]

8.2 Application of criterion (c) to the QCLNG Pipeline

The Applicant does not consider that access to the services to be provided by means of the QCLNG Pipeline would result in undue risk to human health or safety.

9. Criterion (d) – Public Interest

9.1 Statutory test

The Council must recommend that the exemption be granted if it is not satisfied:

> *'that access (or increased access) to the pipeline services provided by means of the pipeline would not be contrary to the public interest.*'[121]

9.2 Approach to criterion (d)

The Council describes its approach to this criterion in paragraphs 4.33 to 4.38 of the Greenfields Guide and paragraph 5.144 to 5.171 of the Coverage Guide. The Council approaches this criterion on the basis that it must be satisfied that access is not contrary to the public interest (as opposed to a positive requirement to be satisfied that access is in the public interest).[122] In considering this criterion, the Council has recognised that public interest factors may include:

'(a) ecologically sustainable development

(b) social welfare and equity considerations, including community service obligations

(c) government legislation and policies relating to matters such as occupational health and safety, industrial relations, access and equity

(d) economic and regional development, including employment and investment growth

(e) the interests of consumers generally or of a class of consumers

(f) the competitiveness of Australian businesses, and

[120] NGL, sections 154(2), 15.

[121] Ibid.

[122] Coverage Guide, paragraph 5.149.

(g) the efficient allocation of resources.' [123]

In the context of a greenfields pipeline, the Council has also recognised that:

> *'The discussion of economic efficiency and the regulatory costs of coverage will be particularly relevant to greenfields pipeline projects over the 15 year period of the exemption from coverage.*
>
> *Furthermore, in the context of whether or not to grant a 15-year no-coverage determination, this criterion provides further opportunities for the service provider of the pipeline project to demonstrate that the new entry into the markets sufficiently mitigate market power issues and that the costs and risks of coverage to the investment going ahead are sufficient to make coverage contrary to the public interest. The effect of granting or not granting the 15-year no-coverage determination on promoting and committing investment in the greenfields pipeline project (and greenfields pipeline projects similar to the proposed project) is a matter that is likely to be relevant to this analysis. Accordingly, greenfields pipeline projects may have additional arguments to make in respect of this criterion than existing pipelines.'* [124]

Other factors identified by the Council in its Coverage Guide are:

- efficiency losses resulting from coverage;
- regulatory costs;
- disruption costs; and
- impact on incentives to invest.[125]

9.3 Public interest considerations affecting the QCLNG Pipeline

The Applicant submits that criteria (a) and (b) would not be satisfied with respect to the QCLNG Pipeline. For these reasons alone, the Applicant submits that the application for a 15-year no-coverage exemption must be granted. However, even if the Council considers that both of these criteria are satisfied, the Applicant submits that access to the QCLNG Pipeline would not be in the public interest. There are additional public interest considerations which outweigh any benefits to the public which might be said to result from access to the QCLNG Pipeline.

The QCLNG Pipeline is not a stand alone merchant pipeline. It is an indispensable component of a vertically integrated system for the upstream production of CSG and downstream production and sale of LNG. Without the pipeline, no part of the QCLNG Project can proceed. The benefits to the public which must be considered in weighing the public interest are those benefits to the public associated with the QCLNG Project as a whole. In summary, these are:

- incentives to invest in the QCLNG Project;
- incentives to invest in LNG production generally;
- the development of Australia's CSG and LNG export industries; and
- avoiding the costs of regulation.

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[123] Coverage Guide, paragraph 5.145.

[124] Greenfields Guide, paragraphs 4.37-4.38.

[125] Coverage Guide, paragraphs 5.150-5.171.

In considering each of the above factors, it is important to have regard to the fact that the services that will be available to third party access seekers will be limited. As explained in Chapter 2 above, the entire free flow capacity of the QCLNG Pipeline, as well as a large proportion of future capacity created through expansions of the pipeline, will be utilised by QGC.

This means that, in practical terms, any benefits to the public that could conceivably result from access to the QCLNG Pipeline (in terms of promoting competition in dependent markets and efficient utilisation of infrastructure) will inevitably be extremely limited, and outweighed by the factors identified in this Chapter.

9.4 Incentives to invest in the QCLNG Project

The Applicant submits that this criterion must be afforded additional weight in the context of an application for a 15-year no-coverage exemption.

The Council refers to the decision of the Australian Competition Tribunal in *Re Application by ElectraNet Pty Limited (No 3)*,[126] in which the Tribunal stated (at paragraph [201]) that:

> *'The minimisation of regulatory risk, consistent with the promotion of efficient investment, is one of the tenets that has driven the development of regulatory regimes in Australia. That tenet is reflected in the objective of the Law and in the revenue and pricing principles embodied in the Law.'*

This suggests that the minimisation of regulatory risk is a factor that must be taken into account in making *any* decision made under the NGL to which the National Gas Objective applies, and would certainly be applicable in the context of a coverage application. However, the mere recognition of this fact does not account for the weight that must be given to incentives to invest in the context of a 15-year no-coverage application.

As explained in Chapter 5 above, the regime for granting such a 15 year no-coverage exemption was brought into existence for the express purposes of providing incentives to invest in new pipeline projects. The NGL does not simply rely on the proper application of the coverage and pricing principles in order to create incentives for investment. In the case of greenfields pipelines, the NGL contains additional mechanisms to exempt pipelines from regulation entirely. The need to create incentives to invest in pipelines must be given appropriate weight in the context of a 15-year no-coverage exemption.

As noted in Chapter 2 above, QGC plans to make its final investment decision in early 2010. Whether or not the pipeline faces the threat of coverage is an important factor in this decision. The issue is not simply whether the Applicant will be adequately compensated for giving third party access to the pipeline in accordance with the NGL, but rather whether the threat of coverage of the pipeline, with the resulting risk of hindering QGC's own actual and anticipated usage of the pipeline, will impact on the business case for the QCLNG Project.

9.5 Incentives to invest in LNG production generally

In deciding whether coverage of the QCLNG Pipeline would be contrary to the public interest, the Council should have regard not only to the incentives for QGC to invest in the QCLNG Project, but also the effect on the incentives to proceed with other LNG projects currently in development.

The other LNG projects currently in development are outlined in Chapter 3 above. Several of these projects face the same risks as QGC in terms of the threat of coverage and access regulation under the NGL. Refusing the Applicant's application for a 15-year no-coverage exemption would suggest that the QCLNG

[126] [2008] ACompT 3.

Pipeline may satisfy the coverage criteria, which may not only impact on the business case for the QCLNG Project, but cast doubt on the viability of other LNG developments.

The Parer Review noted the pipeline industry's concern that regulation had resulted in reductions of asset value and shareholder returns with the potential to limit investment in new projects *and potential undersizing of new pipelines to avoid third party access regulation*.[127] In the Applicant's view, requiring access to the QCLNG Pipeline creates disincentives to building additional and expandable capacity into greenfields pipeline projects. In a greenfields context, the effect of refusing a no-coverage determination would therefore be to inhibit the development of additional future pipeline capacity to satisfy potential future demand.

9.6 The development of Australia's CSG and LNG export industries

The development of Australia's CSG and LNG export industries has a number of other benefits including:

- economic benefits;
- environmental benefits; and
- increasing the realisable capacity of Australia's gas reserves through the further development of CSG production.

Access to the QCLNG Pipeline, by undermining incentives to invest in CSG and LNG development, will make the realisation of these benefits less likely.

Economic benefits

The QCLNG Project will generate significant economic benefits for Australia and in particular for Queensland. The projected economic benefits include the creation of new jobs, an increase in Queensland's GSP and significant royalties and tax revenues over the life of the project.

QGC estimates that the Project will create more than 9,500 direct jobs at the peak of construction and about 1,000 permanent positions. The QCLNG Project will also generate indirect employment, primarily in Queensland, by stimulating demand for goods and services during both construction and operation. The increase in demand will be stronger in regional areas and will boost employment opportunities and promote stability of employment in key industries. The QCLNG Project will also provide an opportunity for the Fitzroy and Darling Downs regions to diversify their economies and reduce their dependence on mining and agriculture and support sustained, long term regional growth.[128]

QGC has forecast that the Project will stimulate an increase in Queensland's GSP of up to $32 billion between 2010 and 2021, or approximately $2.6 billion per annum. This estimate includes:

- approximately $2.4 billion in value-added activity in Queensland during the construction phase (2010 to 2013); and
- approximately $29.5 billion in value-added activity in Queensland during the operations phase (2014 to 2021).

[127] Parer Review, p 191.

[128] The Fitzroy region includes the Gladstone, Rockhampton and Banana Shire regions. The Darling Downs region includes the Dalby and Toowoomba regions.

QGC also forecasts that:

- during 2010-2013, up to half the Project's capital expenditure will be spent within Australia, including more than 18% in the Fitzroy and Darling Downs regions; and
- during 2014-2021, it is expected that up to 80% of the Project's expenditure will be within Australia (based on economic modelling).

The Project will generate significant royalties and tax revenues over the life of the Project. QGC has estimated an annual average royalty income for the Queensland Government of between $125 million and $280 million and annual average tax income for the Australian Government of between $800 million and $1.4 billion, depending on oil prices.

It is expected that GST revenues would increase as a result of the Project. Quantifying the additional revenue is complex due to allowable exemptions. However, based on an assumed effective tax rate of 4% (accounting for exemptions) on additional output, annual GST revenues are estimated to increase by approximately $210 million per annum due to additional transactions as a result of the development of the QCLNG Project.

Development of an LNG industry generally

Developing Australia's CSG and LNG export industry will generate significant economic benefits for Australia and in particular, Queensland. MMA estimates that a 28 mtpa LNG industry would increase real GDP by 0.10% over the life of the industry, which is equivalent to approximately $1,034 million real annual GDP per annum in 2007/08 (2005/06 prices).[129] It further estimates that a 28 mtpa LNG industry would contribute approximately $3 billion per annum to the Queensland real GSP.[130]

In the long term, the LNG export industry is also expected to have continuous positive impacts on the Australian and Queensland Governments' budgets through their impact on taxation revenue. The Queensland Government will also receive substantial royalty payments. MMA estimates the annual royalties at a constant $850 million (2008 prices) once the industry reaches its full capacity in 2021.[131]

MMA concludes that the development of an LNG industry would significantly boost employment across Queensland by 0.8%, including 11.1% in the mining industry.[132]

Environmental benefits

The development of the Australian LNG export industry will provide global environmental benefits and assist in emissions abatement.

LNG is widely recognised as a clean, safe and convenient form of energy.[133] It has significantly lower greenhouse gas and other emissions and contains far fewer particulates and other elemental contaminants than both coal and oil.[134] Developing the Australian LNG export industry will contribute to the greenhouse gas abatement measures being undertaken by countries looking for 'greener' sources of energy to replace

[129] MMA Study, p 181. This figure includes both direct and indirect contributions through upstream and downstream industries.

[130] MMA Study, p 193. This contribution represents the direct contribution of the LNG industry to the Queensland mining industry as well as its indirect contribution through upstream and consumer orientated industries in Queensland.

[131] MMA Study, p xix.

[132] MMA Study, pp 194-195. The overall figure includes the direct contribution of the LNG industry to employment in the oil and gas sector as well as the indirect upstream, downstream and other industry contributions outlined in the MMA.

[133] See for example, Parliamentary Research Paper, pp 16 - 17; RET 2009, p 7; APPEA Submission, pp 10-12.

[134] Natural gas is approximately 65-70% less greenhouse gas intensive than either black or brown coal. Parliamentary Research Paper, p 16.

coal-fired electricity generation.[135] According to the APPEA, on the latest lifecycle figures, for every tonne of greenhouse gas emissions associated with Australia's production of LNG from commercial gas, 4 tonnes are avoided in Japan and between 5½ and 9½ tonnes are avoided in China, making the LNG industry one of Australia's key 'clean global contributors'.[136]

Further, on a global lifecycle basis,[137] the production, transport and use of LNG generates lower emissions per unit of delivered energy than other fossil fuels (the lifecycle greenhouse intensity for LNG is approximately 40 percent lower than that of coal).[138] The Curtis Island LNG plant will rank in the top three of the world's most environmentally friendly LNG facilities with technological innovation which will set a benchmark for LNG facilities.

A CSIRO study in 1996 found that North West Shelf LNG, when used for electricity generation in Japan, produced lifecycle emissions of approximately 470kg of carbon dioxide equivalent per megawatt hour equivalent (kg CO_2-e/MWh-e). This was substantially lower than emissions generated from oil produced from the Middle East (around 700 kg CO_2-e/MWh-e) or coal from the east coast of Australia (around 830 kg CO_2-e/MWh-e). These figures illustrate that LNG used in electricity generation has 43 percent lower lifecycle emissions than coal. The CSIRO study concludes that for every tonne of CO_2-e emitted in LNG production within Australia, 4 tonnes of emissions from the coal alternative can be avoided globally.[139]

This work has been updated and validated in 2008 through a report commissioned from WorleyParsons. The study provides a comparison of Australian LNG exports from the North West Shelf Project with Australian east coast black coal exports in terms of lifecycle greenhouse gas emissions from extraction and processing in Australia through to an end use of combustion in China for power generation. It shows that:

- for every tonne of CO_2-e emitted in LNG production within Australia, between 5½ and 9½ tonnes of emissions from the coal alternative can be avoided globally;
- LNG has a substantially lower greenhouse footprint associated with it compared to coal – not just in reference to the combustion emissions, but throughout its lifecycle; and
- lifecycle greenhouse intensity for LNG is approximately 40 percent lower than that of coal.[140]

APPEA states:[141]

> *'The LNG industry therefore stands almost alone amongst emissions-intensive trade-exposed industries as the industry that can make an immediate and substantial contribution to reducing global*

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[135] DEEDI 2009. A number of governments including the Queensland Government are encouraging development of more environmentally-friendly fuels including the natural gas industry as they seek to reduce dependence on oil. The Queensland Gas Scheme requires electricity retailers to source at least 13% of their electricity sales from gas-fired generation. The Government intends to increase this target to 15% in 2010 and allow for further increases up to 18%.

[136] APPEA Submission, p i.

[137] For LNG, this lifecycle includes extraction in Australia, processing/liquefaction in Australia, transport/shipping to the export customer, regasification in customer country, combustion/power generation in that country while for black coal, this includes mining and processing in Australia, transport/shipping to the export customer, combustion/power generation in the customer country.

[138] APPEA Submission, p I.

[139] CSIRO, 'Lifecycle emissions and energy analysis of LNG, oil and coal' (December 1996), as cited in APPEA Submission, pp 11 – 12.

[140] WorleyParsons, 'Greenhouse Gas Emissions Study of Australian LNG' (July 2008), as cited in APPEA Submission, p 12.

[141] APPEA Submission, p 46.

greenhouse gas emissions. Its special case as a 'clean global contributor' must be recognised and supported through the development of the Australian emissions trading scheme.'

Further, over a 100-year horizon, methane has a global greenhouse warming potential 21 times that of carbon dioxide so using CSG which would otherwise be vented into the atmosphere (e.g. as a safety precaution in mining operations) has, according to ABARE, *'unambiguous environmental benefits*'. [142]

Increasing the realisable capacity of Australia's gas reserves

The QCLNG Project will increase the realisable capacity of Australia's gas reserves through the further development of CSG production. This is because reserves which are currently stranded i.e. they are not commercially viable to mine for sale to domestic gas customers may be commercially viable for sale on the global LNG market. LNG prices are indexed to oil prices and are historically much higher than Australian domestic gas prices.

9.7 Costs of regulation

The Council has recognised that the costs of regulation may outweigh the benefits of access. This is reflected in the Coverage Guide,[143] and was recognised in the Council's final recommendation with respect to coverage of the Dawson Valley Pipeline.[144]

On the assumption that the QCLNG Project proceeds in the absence of a 15 year no-coverage exemption, the Applicant estimates that the cost of regulation will be approximately $260,000-$326,000 per annum. This basis of this estimate is set out in **Annexure 3**.

While the costs of regulation are relatively minor in comparison with the scale of the QCLNG Project as a whole, they must be weighed against the limited transportation services that might potentially be supplied to third party access seekers by means of the QCLNG Pipeline and the cheaper alternative transportation options available to smaller producers. When weighed against these factors, the costs that would result from regulation support the view that access to the QCLNG Pipeline would not be in the public interest.

9.8 Conclusion

Consistent with the Council's stated approach, the Applicant submits that, in applying criterion (d) to the QCLNG Pipeline, the Council must determine whether access to the pipeline would be contrary to the public interest. The Council has recognised a range of factors that may be relevant to this assessment.

While the Applicant believes it is clear that criteria (a) and (b) are not satisfied with respect to the QCLNG Pipeline, even if these criteria were satisfied, the Applicant submits that access would not be in the public interest. This is due to:

- the chilling effect that access would have on incentives to invest, both in the QCLNG Project and in CSG and LNG production in Australia;
- the reduced likelihood of realising the environmental, economic and resource development benefits that will flow from Australia's CSG and LNG industries if access to the QCLNG Pipeline discourages further investment; and

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[142] Australian Greenhouse Office (AGO) 1999, National Greenhouse Gas Inventory 1999, Canberra quoted in ABARE 2002, p 18.

[143] Paragraphs 5.158-5.162.

[144] *Dawson Valley Pipeline: Coverage application under the National Gas Code, Final Recommendation*, National Competition Council, August 2005, paragraphs 9.7-9.12.

- the costs of regulation, including financial costs to the Applicant.

When the Council has regard to the limited range of services which will be available for third party access, it is apparent that the detriment (identified above) which would flow from granting access to the QCLNG Pipeline clearly outweighs any potential benefits to the public in terms of the promotion of competition and economic efficiency.

Accordingly, the Applicant submits that access to the QCLNG Pipeline would be contrary to the public interest and that, as a result, criterion (d) is *not* satisfied.

Glossary

Term	Definition
1P	Proved gas reserves i.e. 90% probability of actual reserves being higher
2P	Proved and probable gas reserves i.e. 50% probability of actual reserves being higher
3P	Proved, probable and possible gas reserves i.e. 10% probability of actual reserves being higher
ABARE 2002	Australian Bureau of Agricultural and Resource Economics report on Australian Gas Supply and Demand Balance to 2019-20 published August 2002
ABARE 2009	Australian Bureau of Agricultural and Resource Economics report on Australian commodities published June 2009
ACCC	Australian Competition and Consumer Commission
ACIL Tasman Report	Report prepared by ACIL Tasman dated November 2009
AEMC	Australian Energy Market Commission
APLNG	Australia Pacific LNG Pty Ltd (ACN 001 646 331)
APLNG IAS	Australia Pacific LNG Project Initial Advice Statement published 27 March 2009
APLNG ToR	Draft terms of reference for an EIS (Australia Pacific LNG Project) published August 2009
APPEA	Australian Petroleum Production and Exploration Association
APPEA Submission	Australian Petroleum Production and Exploration Association - Submission on the Australian Government's Carbon Pollution Reduction Scheme Green Paper published September 2008
Applicant	QCLNG Pipeline Pty Ltd (ACN 140 760 612)
Arrow	Arrow Energy Ltd (ACN 078 521 936)
ASX	Australian Securities Exchange
BG Group	BG Group plc
Collection Header	The Collection Header is described in the pipeline description in **Annexure 1**
CNOOC	China National Offshore Oil Corporation and its affiliates
ConocoPhillips	ConocoPhillips Australia Pacific LNG Pty Limited (ACN 132 823 173)
Council	National Competition Council

Term	Definition
Coverage Guide	*Guide to the Functions and Powers of the Council under the National Gas Law, Part B – Coverage, revocation of coverage and classification of pipelines*
CPP	Central Processing Plant
CQGP	Central Queensland Gas Pipeline (Moranbah to Gladstone)
CSG	Coal seam gas
DEEDI 2009	Department of Employment, Economic Development and Innovation - Blueprint for Queensland's LNG Industry published September 2009
EGP Decision	*Duke Eastern Gas Pipeline Pty Ltd* [2001] ACompT 2
EIS	Queensland Curtis LNG Environmental Impact Statement (published July 2009) under the *Environment Protection and Biodiversity Conservation Act 1999* (Cth) and the *State Development and Public Works Organisation Act 1971* (Qld)
EMA	Energy Market Authority
Expert Panel 2006	Expert Panel on Energy Access Pricing report to the Ministerial Council on Energy published 13 April 2006
Export Pipeline	A 340 km (approx) pipeline from the QGC gas fields in the Surat Basin to the LNG plant in Gladstone, including crossing of The Narrows
FID	Final Investment Decision
Frontier Economics Report	Report prepared by Frontier Economics dated November 2009
gas	Conventional natural gas and CSG
Gladstone State Development Area	Approximately 28,000 hectares of land in the Gladstone region suitable for future large-scale industrial development
GLNG	Gladstone LNG
GLNG EIS	Gladstone LNG EIS published 31 March 2009
GPAL	*Gas Pipelines Access Law* (the predecessor to the NGL, to be found in Schedules 1 and 2 to the *Gas Pipelines Access (South Australia) Act 1997*)
Greenfields Guide	*Guide to the Functions and Powers of the Council under the National Gas Law, Part D – Greenfields pipeline incentives*
GSP	Gross State Product
GST	Goods and Services Tax as defined in *A New Tax System (Goods and Services Tax) Act 1999* (Cth)
GTA	Gas Transportation Agreement between Walloons CSG and the

Term	Definition
	Applicant
IEA 2008	International Energy Agency Natural Gas Market Review published August 2008
LNG	Liquefied natural gas
MCE 2005	Ministerial Council on Energy proposal for consultation on the review of the National Gas Pipelines Access Regime published November 2005
MMA Study	McLennan Magasanik Associates, '*Queensland LNG Industry Viability and Economic Impact Study*', Final Report to Queensland Department of Infrastructure and Planning, Brisbane, 2008
mmscf	Million standard cubic feet
mmscfd	Million standard cubic feet per day
mtpa	Million tonnes per annum
National Gas Objective	'The objective of this Law is to promote efficient investment in, and efficient operation and use of, natural gas services for the long term interests of consumers of natural gas with respect to price, quality, safety, reliability and security of supply of natural gas' (NGL, section 23)
NGL	*National Gas Law*
NGR	*National Gas Rules*
Origin	Origin Energy Limited (ACN 000 051 696)
Parer Review	*Towards a truly national and efficient energy market*, Report of the COAG Energy Market Review, November 2002.
Parliamentary Research Paper	Parliamentary Research Paper on Australia's natural gas: issues and trends published 1 April 2008
PC 2004	Productivity Commission Review of the Gas Access Regime published 11 June 2004
PJ	Petajoules (1×10^{15} joules) i.e. 1000TJ
PJ/a	Petajoules per annum
QCLNG Pipeline	The pipeline described in Section 1 of Annexure 1 to this Application
QCLNG Project or Project	Queensland Curtis LNG Project
QGC	QGC Pty Ltd (ACN 089 642 553)
QGP	Queensland Gas Pipeline (Wallumbilla to Rockhampton)
QSN Link	The Queensland-NSW Link, operated by Epic Energy

Term	Definition
RET 2009	Department of Resources, Energy and Tourism: Australian Liquefied Natural Gas (LNG) – Clean Energy for a Secure Future published 2009
RBP	Roma to Brisbane Pipeline (Wallumbilla to Brisbane)
RLMS Report	Report prepared by RLMS dated November 2009
Santos	Santos Limited (ACN 007 550 923)
Shell Australia	Shell CSG (Australia) Pty Ltd (ACN 054 260 650)
Shell Australia LNG Project DIP website	Department of Infrastructure and Planning Project website for the Shell Australia LNG Project
Shell Australia LNG Project IAS	Shell Australia LNG Project Initial Advice Statement published May 2009
Shell Australia LNG Project ToR	Draft terms of reference for an EIS (Shell Australia LNG Project) published October 2009
Surat to Gladstone Pipeline Project EIS	Surat to Gladstone Pipeline Project EIS published 15 July 2009
Surat Basin	An 27,000km^2 area of the Great Artesian Basin in Queensland and northern New South Wales
SWQP	South West Queensland Pipeline (Wallumbilla to Moomba)
TJ	Terajoules (1 x 10^{12} joules)
Walloons CSG	Walloons Coal Seam Gas Company Pty Ltd (ACN 130 344 366)
Wide Bay Pipeline	Marlborough to Gladstone (via Bundaberg) Pipeline

Terminology and units of measurement

This Application (and material referred to herein) use various units of measurement to describe key aspects of LNG production. For ease of reference, these are summarised below:

1 million tonnes of LNG	=	2.127 million m^3 of LNG
	=	53,000 TJ of gas (53 PJ)
	=	51,478 mmscf of gas

A single 'cargo' of LNG produced at Curtis Island will contain approximately 68,000 tonnes (145,000 m^3) of LNG.

In various places, the potential scale of the LNG industry at Gladstone is described in terms of the number of 'trains'. A train is not a unit of measurement. In most cases, it refers to an LNG train producing between 3.5 to 4 mtpa of LNG. However, the size of an LNG train can vary depending in the technical, commercial and operational parameters of an LNG project.

All '$' figures are expressed in Australian dollars unless otherwise stated.

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Annexure 1 – Pipeline description and technical specifications

1. Pipeline Description

1.1 The QCLNG Pipeline

The QCLNG Pipeline is a pipeline system comprised of:

(a) the Export Pipeline;

(b) the Collection Header;

and any augmentations to expand the capacity of the Pipeline following commissioning.

1.2 Route and end points

The Export Pipeline will start at a point in the vicinity of Wandoan, and follow a north north easterly route to its end point on Curtis Island.

The Collection Header will consist of:

(a) the Woleebee Creek Lateral, which will start from a point near the Woleebee Creek CPP and follow an easterly route to the start point of the Export Pipeline; and

(b) the Southern Collection Header, which will start from a point near the Ruby CPP and follow a north westerly route to the start point of the Export Pipeline.

1.3 Diameters of the principal pipes

The QCLNG Pipeline will have a diameter of 42 inches.

1.4 Map of proposed pipeline route

The expected route of the pipeline is shown on the map in section 10 of this Annexure.

The route and description of the pipeline can be found at http://qclng.com.au/uploads/docs/qclng_pipeline_fs_WEB.pdf.

1.5 Basis on which the pipeline is a greenfields pipeline project

The QCLNG pipeline is a greenfields pipeline project as it is a project for the construction of a pipeline that will be structurally separate from any existing pipeline.[145]

As noted by the Council, the concept of a greenfields pipeline captures a very broad range of new pipeline investment, but does not capture 'brownfields' expansions (ie. it involves investment in new infrastructure where there was none before, as opposed to investment in pre-existing infrastructure).[146]

The QCLNG pipeline will be a dedicated CSG pipeline, transporting gas from fields in the Surat Basin directly to processing facilities on Curtis Island. Chapter 2 of the Application describes the pipeline in greater detail.

[145] See NGL, section 149.

[146] Greenfields Guide, paragraphs 2.11, 3.3.

2. Relationship between the Applicant and other relevant entities

It is intended that the QCLNG Pipeline will be owned and operated by the Applicant.

Walloons CSG will acquire gas transportation services from the Applicant under a GTA. The Applicant and Walloons CSG are related bodies corporate (by being subsidiaries of BG Group), and are therefore 'Associates' within the meaning of the NGL.

CSG that is shipped by Walloons CSG to Curtis Island over the QCLNG Pipeline will be consumed by subsidiaries of BG Group for the purposes of LNG production. These subsidiaries and the Applicant will also be 'Associates' within the meaning of the NGL.

The Applicant has no relationship with the owner, operator or controller of any other pipeline serving Curtis Island or surrounding areas.

3. Gas specification

The CSG to be transported by the QCLNG pipeline will meet the specifications set out below.

Note that while this table expresses a range of values for individual components of the CSG to be delivered to the LNG plant, total mol of the CSG must still equate to 100%. For example, if the CSG contains 2.5% nitrogen, 0.25% carbon dioxide and 0.01% ethane, the balance of the CSG will consist of 97.24% methane.

Component		**Design composition mol%**	
		Min	**Max**
Carbon Dioxide	CO_2	0.00	1.00
Nitrogen	N_2	0.00	2.50
Methane	C_1	96.48	100.00
Ethane	C_2	0.00	0.02
Propane	C_3	0.00	0.00
Iso-Butane	i-C_4	0.00	0.00
N-Butane	n-C_4	0.00	0.00
Iso- Pentane	i-C_5	0.00	0.00
N-Pentane	n-C_5	0.00	0.00
C_6+		0.00	0.00

4. Capacity of the QCLNG pipeline

The QCLNG Pipeline will be a class 600 steel pipeline, operating (at commissioning) at a pressure of 10.2 MPa. Once commissioned, the Export Pipeline will have a free flow capacity of 1,510 TJ/day. This will be sufficient to supply two LNG trains at Curtis Island.

The Collection Header will also have an aggregate capacity of 1,510 TJ/day.

The QCLNG Pipeline is capable of transporting gas for an additional two LNG trains through compression. The entire free flow capacity of the pipeline, as well as the compressed capacity, will be utilised by Walloons Coal Seam Gas Company Pty Ltd, an associate of the Applicant.

5. Services to be provided by means of the pipeline

The Applicant will supply Walloons CSG with a firm forward haul service as described in section 2.5 of the Application. While the Applicant has no plans to provide any other service at this time, it is willing to negotiate with other potential users for services that can be supplied within the technical parameters of the pipeline and the operational requirements of the QCLNG Project.

6. Location to be served by the pipeline and other sources of natural gas

The upstream location to be served by the Pipeline is the Surat Basin. Subject to capacity being available, the pipeline may be capable of serving other areas along its route by means of the interconnection of a lateral.

The only downstream location intended to be served by the QCLNG pipeline is Curtis Island, although this point is located close to the city of Gladstone.

The other sources of natural gas available to consumers at Curtis Island and in the Gladstone area are:

- producers in the Surat and Bowen basins (supplying via the QGP and, if necessary, the RBP and Dawson Valley Gas Pipeline); and
- producers in other production areas (eg. the Cooper/Eromanga Basin), connected to the QGP via the SWQP, QSN link and the Moomba hub.

It is expected that consumers in the Gladstone area will also be served by gas producers in the Northern Bowen Basin through the proposed Moranbah to Gladstone Pipeline.

7. Expected demand at downstream locations, expected customer base and expected revenue

7.1 Expected demand and customer base

The expected demand at Curtis Island associated with LNG production is set out in Chapters 3 and 6 of the Application.

The expected demand from domestic and industrial users in Gladstone and surrounding areas, together with a description of this customer base, is set out in Chapter 4 of the Application and Annexure 4.

7.2 Expected revenue

The Applicant's expected revenue will be derived from transportation services supplied to Walloons CSG under the GTA. While the anticipated volumes are described in section 2.5 of the Application, tariffs for this service are yet to be determined, making it impossible for the Applicant co to accurately estimate the expected revenue from these services at this time.

In relation to other LNG project pipelines, it is not possible to estimate expected revenue. Such pipelines only exist as part of a fully integrated CSG to LNG production process, and may not generate any revenue in their own right.

8. Utilisation of the pipeline

Walloons CSG (an Associate of the Applicant) will utilise pipeline services in up to 3 tranches.

- Tranche 1 will consist of an annual maximum quantity of approximately 755 PJ. This tranche will be sufficient to support one LNG train at the Curtis Island LNG plant, with line pack of approximately 50 TJ/day. The Applicant expects that Walloons CSG will begin to acquire Tranche 1 from the commissioning of the pipeline.
- Tranche 2 will consist of an annual maximum quantity of approximately 755 PJ. This tranche will be sufficient to support a second LNG train at the Curtis Island LNG plant, with additional line pack of approximately 50 TJ/day.
- Tranche 3 will consist of an annual maximum quantity of approximately 703 PJ. This tranche will be sufficient to support a third LNG train at the Curtis Island LNG plant. No additional capacity will be utilised as line pack.

These services will be supplied on terms and conditions to be set out in a GTA.

The capacity to supply Tranche 3 will not be built into the pipeline from its commissioning date, but will instead need to be created by expanding the capacity of the pipeline.

Once fully utilised by Walloons CSG, Tranches 1 and 2 will account for the entire free flow capacity of the QCLNG pipeline as commissioned.

Tranche 3 will utilise the entire additional capacity that would be added by the installation of a single compressor (an additional 703 TJ/day, producing a capacity of approximately 2213 TJ/day).

9. Estimated cost of constructing, operating and expanding the QCLNG pipeline

9.1 Expenditure to date

As at 31 October 2009, QGC had incurred construction costs with respect to the Export Pipeline and Collection Header of approximately [c-in-c].

9.2 As commissioned

While the final estimated capital cost of the Export Pipeline is not known, the Applicant estimates that the capital cost of the Export Pipeline will be approximately [c-in-c].

The Applicant estimates that the combined capital cost of the Collection Header will be approximately [c-in-c].

The Applicant estimates that the annual operating costs of the QCLNG Pipeline will be approximately 1.3% of the capex incurred.

These estimates are based on QGC's internal modelling of pipeline costs per km per inch for the proposed route. The estimated cost of constructing the Pipeline may change once QGC has completed tender processes for the Project.

The expected life of the QCLNG Pipeline is 40 years.

9.3 Costs of compression

The Applicant estimates that:

- the capital cost of a single 28MW compressor installed on the Export Pipeline will be approximately USD[c-in-c]. Using an exchange rate of .90, the Applicants estimates that the cost of this compressor, in AUD will be approximately [c-in-c].
- the capital cost of four 40MW compressors installed on the Export Pipeline will be approximately USD[c-in-c]. Using an exchange rate of .90, the Applicants estimates that the cost of this compressor, in AUD will be approximately [c-in-c].

The Applicant has produced these estimates on the basis that the capital cost of compression is USD[c-in-c] per MW. Note however that this is only a method of estimating capital costs and can vary having regard to different factors, including exchange rates.

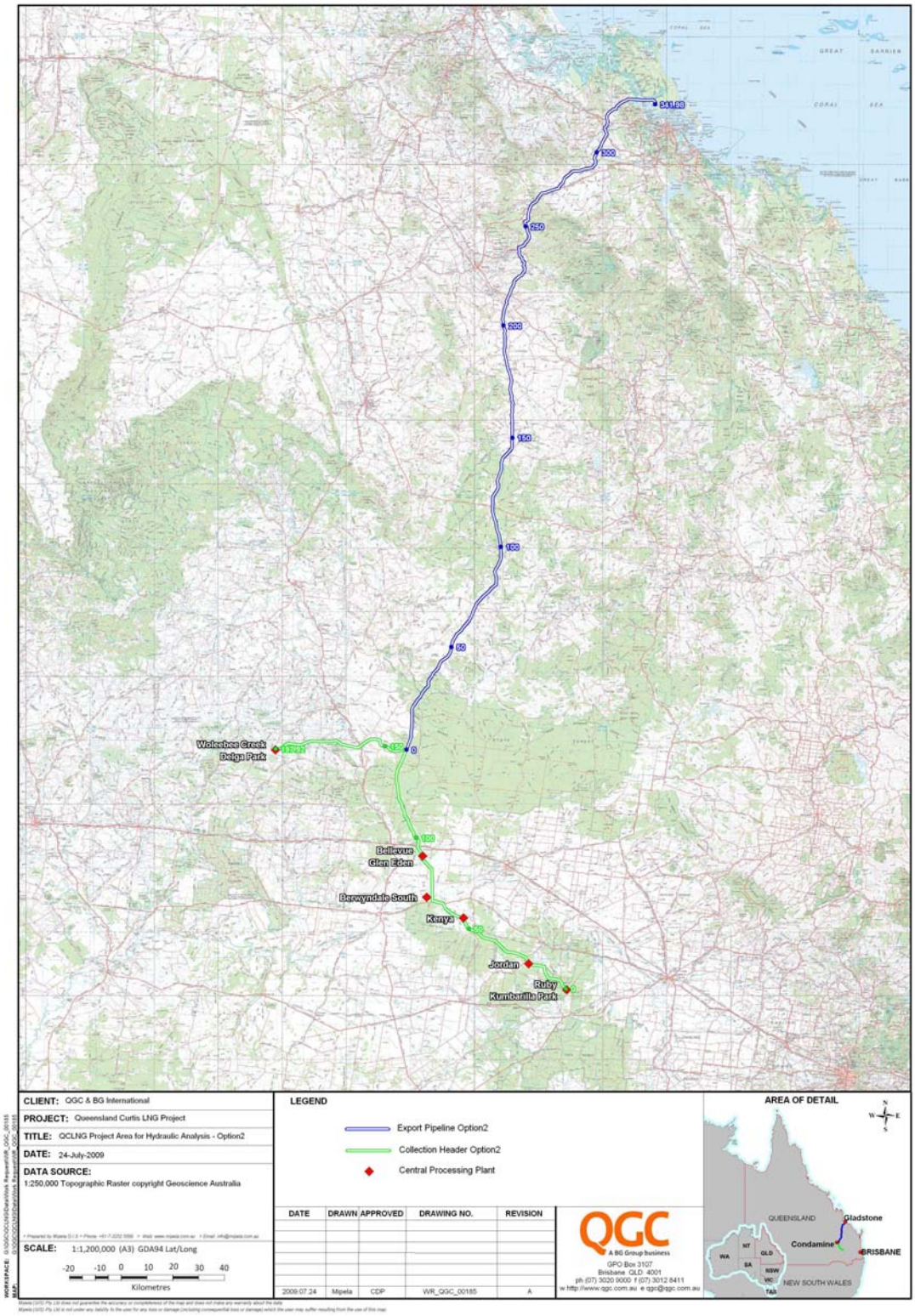
The Applicant estimates that the annual operating costs of the Collection Header will also be approximately 3% of the capex incurred.

9.4 Costs of looping

The Applicant estimates that the construction costs associated with looping the Export Pipeline would be 1.2 times the original cost of construction of the Export Pipeline. The reasons for this estimate are set out in section 6.5 of the Application.

10. Pipeline Route

See over page.


341.98
300
250
200
150
100
50
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Wolcebee Creek
Dalga Park
Bellevue
Glen Eden
Berwyndale South
Kenya
Jordan
Ruby
Kumbarilla Park
CLIENT: QGC & BG International
PROJECT: Queensland Curtis LNG Project
TITLE: QCLNG Project Area for Hydraulic Analysis - Option2
DATE: 24-July-2009
DATA SOURCE:
1:250,000 Topographic Raster copyright Geoscience Australia
SCALE: 1:1,200,000 (A3) GDA94 Lat/Long
-20 -10 0 10 20 30 40
Kilometres
LEGEND
Export Pipeline Option2
Collection Header Option2
Central Processing Plant
DATE DRAWN APPROVED DRAWING NO. REVISION
2009.07.24 Mipela CDP WR_QGC_00185 A
QGC
A BG Group business
GPO Box 3107
Brisbane QLD 4001
ph (07) 3020 9000 f (07) 3012 8411
w http://www.qgc.com.au e qgc@qgc.com.au
AREA OF DETAIL
QUEENSLAND
Gladstone
Condamine
BRISBANE
NEW SOUTH WALES
WA
NT
SA
QLD
NSW
VIC
TAS

Annexure 2 – Other LNG Projects in Queensland

1. Australia Pacific LNG (Origin – ConocoPhillips)

The APLNG Project, a joint project of Origin and ConocoPhillips,[147] is stated to involve a capital investment of approximately $35 billion through to 2020. Gas will be delivered to an LNG plant via a gas transmission pipeline where it will be liquefied prior to export in LNG tankers to international markets.[148]

The proponents have stated that the project will require CSG production to be increased significantly from current levels in the years leading up to the commissioning of the LNG plant, with each nominal 3.5 to 4 mtpa train requiring around 200 PJ/a. The project is aiming to ultimately produce 16 mtpa, requiring 800 PJ/a.[149]

Origin will be responsible for the construction and management of CSG-related activities, including pipeline construction. ConocoPhillips will be responsible for the construction and management of the LNG plant.[150] The project consists of three major components:

- the further development of APLNG's existing CSG fields;
- the construction of a gas transmission pipeline; and
- the development of an LNG plant and associated port infrastructure to export LNG to international markets.[151]

1.1 Gas Fields

APLNG claims it has the largest portfolio of independently certified CSG reserves and resources in Australia, comprising 4,751 PJ of 2P reserves, 10,138 PJ of 3P reserves, and 15,869 PJ of contingent resources.[152]

The gas fields component of the project covers an area of approximately 572,000 hectares extending from Wallumbilla to Millmerran on the Darling Downs.[153]

The gas is planned to be sourced from the expansion of the Walloons gas fields. Gas may also be drawn from APLNG's existing operational sites, including Spring Gully, other non-operated equity areas, and may eventually be sourced from APLNG's exploration areas in other gas fields.[154]

Drilling and completion activities will target 350 wells per year, although at times the development may need to be accelerated to up to 500 wells per year. It is anticipated that the development of the Walloons Gas fields will occur progressively up to a total of approximately 10,000 wells, over 30 years.[155]

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[147] APLNG IAS, p 5.
[148] APLNG IAS, p i.
[149] APLNG IAS, p 1.
[150] APLNG IAS, p ii.
[151] APLNG ToR, p 15.
[152] APLNG IAS, p 1.
[153] APLNG ToR, p 15.
[154] APLNG IAS, p 2.
[155] APLNG IAS, p 13; for further information regarding the development of the gas fields, refer to pp 13 – 16 of the APLNG IAS.

1.2 Pipeline

One or more high pressure gas transmission pipelines will be required to deliver the CSG to the LNG plant. The gas transmission pipeline(s) will be approximately 450 km in length. The final length will depend on the pipeline route selected and the location of the LNG plant. It is expected that the pipeline(s) will run from the northern Walloons area and track north towards the LNG plant.[156]

1.3 LNG Plant

The planned location of the LNG plant is at Laird Point on Curtis Island at Gladstone.[157] The LNG plant will be developed in stages, with an eventual capacity of around 16 mtpa of LNG. The configuration of the LNG plant is yet to be determined but may comprise four trains, each with a capacity of between 3.5 and 4 mtpa.[158]

LNG will be transported by specially designed ships. At 16 mtpa nominal average production, LNG vessels will arrive approximately every two to three days for loading and export. The LNG tankers will have a carrying capacity of between 145,000 and 170,000 m^3. LNG tankers with a capacity up to 215,000 m^3 will also be considered.[159]

1.4 Current Status

No EIS has yet been released.

According to the proponents, it is expected that Front-End Engineering Design will commence in 2009. An FID on train 1 is expected during late 2010, with first train 1 LNG expected to be produced in 2014. An FID on train 2 is expected during 2010 or 2011, with first train 2 LNG expected to be produced in 2015. The first production of trains 3 and 4 LNG is expected to occur after 2015.[160]

2. Gladstone LNG Project (Santos – Petronas)

The GLNG project is a joint venture between Santos, and Petronas, the Malaysian oil and gas company.[161] It is understood Santos has a 60% share in the project, with the remaining 40% held by Petronas.[162] Santos and Petronas stated that they expect to invest approximately $7.7 billion (2007) in Queensland to undertake the GLNG Project.[163]

CSG will be extracted from Santos' reserves in the Bowen and Surat Basins and will be transported via an underground pipeline to the LNG plant, where it will be transformed into LNG.[164] The project is expected to initially produce 3 to 4 mtpa of LNG, with maximum potential production of 10 mtpa.[165]

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[156] APLNG ToR, p 16; for further information regarding the development of the gas transmission pipeline(s), refer to pp 17 – 19 of the APLNG IAS.

[157] Australia Pacific LNG Media Release, 'Site latest milestone for $35 billion Australia Pacific LNG project – analysis predicts major job boost', URL: http://www.aplng.com.au/pdf/asx_APLNG090818.pdf (18 August 2009).

[158] APLNG ToR, p 17.

[159] APLNG IAS, p 23; for further information regarding the development of the LNG plant, refer to pp 19 – 24 of the APLNG IAS.

[160] APLNG IAS, p 5.

[161] GLNG feature from the Gladstone Observer newspaper, 'GLNG: The Project in Detail', URL: http://www.glng.com.au/library/Santos_Gladstone_Observer_%20feature.pdf (August 2008) p 2.

[162] GLNG, 'About GLNG', URL: http://www.glng.com.au/library/A3-GLNG.pdf (March 2009).

[163] GLNG feature from the Gladstone Observer newspaper, 'GLNG: The Project in Detail', URL: http://www.glng.com.au/library/Santos_Gladstone_Observer_%20feature.pdf (August 2008) p 2.

[164] GLNG, 'The LNG Facility', URL: http://www.glng.com.au/library/LNG_facility.pdf (June 2009).

[165] Santos GLNG, 'About the project', URL: http://www.glng.com.au/Content.aspx?p=55.

The GLNG project involves the following major components:

- the exploration and production of CSG in the Surat and Bowen Basin gas fields;
- the construction and operation of a 435 kilometre gas pipeline from the gas fields to Gladstone; and
- the construction and operation of an LNG plant on Curtis Island.[166]

2.1 Gas Fields

Santos has stated that its CSG reserves and contingent resources currently total over 5,000 PJ with significant upside potential. Gas supply of between 170 and 220 PJ/a is expected to be sourced from Santos' CSG fields in Queensland's Bowen and Surat Basins.[167] CSG field development is intended to occur in tenements in Roma, Fairview, Arcadia Valley and part of the Comet Ridge fields.[168]

Santos proposes to drill and complete enough wells to supply about 5,300 PJ of gas to supply the first stage of the LNG plant.[169] This will likely require up to 1,200 wells before 2015 and up to 1,450 wells after 2015.[170]

The proponents state that CSG in quantities beyond 5,300 PJ required for the second and third trains of the LNG plant is likely to be supplied from a combination of the wells referred to above, further development of the Santos operated CSG fields, by utilising Santos' share of gas from fields in which Santos has an interest but is not the operator, and / or from third parties.[171]

2.2 Pipeline

A 435 kilometre long underground pipeline, up to 1070 mm in diameter,[172] is to be built to connect the CSG fields to the LNG plant on Curtis Island. The pipeline is expected to have a design capacity of between 630 and 2,100 mmscfd.[173]

The pipeline is expected to commence approximately 40 kilometres east of Injune and travel north up to the eastern side of Arcadia Valley.[174] Where practicable, the pipeline will parallel the existing Roma to Gladstone pipeline.[175] It is intended it will approach Gladstone from the south-west, entering the Gladstone State Development Area and crossing Port Curtis between Friend Point and Laird Point to Curtis Island.[176]

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[166] Santos GLNG, 'About the project', URL: http://www.glng.com.au/Content.aspx?p=55.

[167] Santos ASX/Media Release, 'Santos proposes multi-billion dollar Gladstone LNG Project', URL: http://www.santos.com/library/070718_Santos_proposes_Gladstone_LNG_Project.pdf (18 July 2007).

[168] GLNG, 'GLNG Field Development', URL: http://www.glng.com.au/library/Field_development.pdf (June 2009).

[169] GLNG EIS, p ES.15.

[170] GLNG, 'GLNG Field Development', URL: http://www.glng.com.au/library/Field_development.pdf (June 2009).

[171] GLNG EIS, p ES.18; for further information regarding the development of the gas fields, refer to pp 3.17 – 3.39 of the GLNG EIS.

[172] GLNG EIS, p ES. 19.

[173] GLNG EIS, p 3.41.

[174] GLNG, 'The Gas Transmission Pipeline', URL: http://www.glng.com.au/library/Gas_pipeline.pdf (July 2009).

[175] GLNG feature from the Gladstone Observer newspaper, 'Three key components to GLNG', URL: http://www.glng.com.au/library/Santos_Gladstone_Observer_%20feature.pdf (August 2008) p 4.

[176] GLNG, 'The Gas Transmission Pipeline', URL: http://www.glng.com.au/library/Gas_pipeline.pdf (July 2009); for further information regarding the pipeline, refer to pp 3.39 – 3.61 of the GLNG EIS.

2.3 LNG Plant

The GLNG project involves the construction of an LNG liquefaction plant at Hamilton Point West on Curtis Island in Gladstone Harbour.[177] The site area of the plant is 190 hectares and trains 1, 2 and 3 are expected to have a footprint of 100 hectares.[178]

The approximate capacity for each train is as follows:[179]

- train 1 will have a capacity of between 3 and 4 mtpa;
- trains 1 and 2 will have a capacity of between 6 and 7 mtpa; and
- trains 1, 2 and 3 will have a capacity of 10 mtpa.

The LNG is to be transported by purpose-built LNG transport ships. These ships would be loaded at a purpose-built jetty adjacent to the LNG facility[180] and may contain between 130,000 m^3 and 217,000 m^3 of LNG.[181] About 50 ship loads will be exported annually. This rate would increase to 160 ships per year when the production rate increases to 10 mtpa.[182]

2.4 Current Status

Santos' GLNG project was announced on 18 July 2007.[183] In early 2009 the GLNG project moved into the Front-End Engineering Design phase for the gas liquefaction plant on Curtis Island.[184] In March 2009 Santos submitted a draft of the EIS for its GLNG project.[185] A Supplementary EIS was released in November 2009.[186]

As at May 2009, Santos and Petronas had ten drilling and completion rigs operating in the Fairview and Roma area developing the gas reserves required to feed the proposed GLNG plant.[187]

FID is expected to be made in the first half of 2010 to enable first cargoes to be exported in early 2014.[188]

Pipeline construction is scheduled to begin in March 2011 and is expected to be completed in early 2013.[189]

The estimated construction schedule for each train is as follows:[190]

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[177] Santos ASX/Media Release, 'Bechtel appointed downstream FEED contractor for GLNG', URL: http://www.santos.com/library/GLNG%20FEED.pdf (22 December 2008); GLNG EIS, p ES. 19.

[178] GLNG EIS, p ES. 19.

[179] GLNG EIS, p ES. 19.

[180] GLNG, 'Shipping and marine traffic, URL: http://www.glng.com.au/library/FS9-Shipping-and-marine-traffic_NOV.pdf (November 2008).

[181] GLNG EIS, p 3.85.

[182] GLNG, 'The LNG Facility', URL: http://www.glng.com.au/library/LNG_facility.pdf (June 2009); for further information regarding the LNG plant, refer to pp 3.61 – 3.98 of the GLNG EIS.

[183] Santos ASX/Media Release, 'Santos proposes multi-billion dollar Gladstone LNG Project', URL: http://www.santos.com/library/070718_Santos_proposes_Gladstone_LNG_Project.pdf (18 July 2007).

[184] GLNG, 'About GLNG', URL: http://www.glng.com.au/library/A3-GLNG.pdf (March 2009).

[185] Santos ASX/Media Release, 'GLNG Completes Environmental Milestone', URL: http://www.santos.com/library/310309_GLNG_EIS.pdf (31 March 2009).

[186] Supplementary EIS, URL: http://www.glng.com.au/Content.aspx?p=96 (6 January 2010)

[187] Santos ASX/Media Release, 'Santos forestry project a ground-breaking solution to CSG water management', URL: http://www.santos.com/library/150509_Santos_forestry_project_a_ground-breaking_solution_to_CSG_water_management.pdf (15 May 2009).

[188] Santos GLNG, 'About the project', URL: http://www.glng.com.au/Content.aspx?p=55.

[189] GLNG, 'The Gas Transmission Pipeline', URL: http://www.glng.com.au/library/Gas_pipeline.pdf (July 2009).

- construction of train 1 is scheduled to begin in 2010 and be completed by 2014;
- construction of train 2 is scheduled to begin in 2014 and be completed by 2017; and
- construction of train 3 is scheduled to begin in 2018 and be completed by 2021.

3. Shell Australia LNG Project (Shell - Arrow)

Shell and Arrow have agreed to work together to investigate LNG developments in Queensland. Shell acquired 30% of Arrow's resources, which include interests in CSG tenements, providing potential gas supply for LNG production.[191] Shell also acquired a 10% stake in Arrow International, a wholly owned subsidiary of Arrow, which holds Arrow's international interests in CSG opportunities.[192] The transaction excludes all of Arrow's downstream assets, such as pipelines.[193]

The Shell Australia LNG Project involves the development of an LNG facility on Curtis Island, Gladstone. The LNG facility is expected to produce up to 16 mtpa, and will involve the phased construction of up to four LNG trains. It will utilise gas resources supplied from CSG developments in the Surat and Bowen basins in South East and Central Queensland.[194]

The project comprises the following components:

- LNG plant;
- LNG loading facility;
- feed gas pipeline from the Gladstone City Gate; and
- ancillary infrastructure, including shipping channels, quarantine and temporary construction facilities and a materials offloading facility.[195]

3.1 Gas Fields

Arrow claims to have the largest CSG acreage position in eastern Australia.[196] The company claims has to have an equity interest in more than 90,000 km^2 of CSG exploration tenements. In late 2008, it was estimated that Arrow had gross CSG resources of 74,224 PJ.[197] Arrow has noted that even if only one third of this resource base can be economically developed, there is sufficient stock for LNG exports of over 20 mtpa for 20 years.[198]

Shell and Arrow jointly own CSG tenements in Queensland, which will supply the Shell Australia LNG Project. The project is designed to allow for expansion from expected additional exploration and production success in the future

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[190] GLNG EIS, p ES. 20.

[191] Shell Australia LNG Project DIP website.

[192] Shell Australia Media Release, 'Shell closes Arrow deal and studies future LNG plant in Gladstone', URL: http://www.shell.com/home/content/au-en/news_and_library/press_releases/2009/shell_closes_arrow_deal_120209.html (12 February 2009).

[193] Oil and Gas Gazette, 'Arrow on target for significant expansion', URL: http://www.arrowenergy.com.au/icms_docs/32988_Arrow_on_target_for_significant_expansion.pdf (15 August 2008) p 2.

[194] Shell Australia LNG Project DIP website.

[195] Shell Australia LNG Project ToR, pp 13 - 14.

[196] Arrow Energy Media Release, 'Arrow Energy announces 109% increase in profit after tax to $37.2 million', URL: http://www.arrowenergy.com.au/icms_docs/35741_Arrow_Energy_announces_109_increase_in_profit.pdf (25 August 2008).

[197] Surat to Gladstone Gas Pipeline Project, p 3 (Part 1).

[198] Arrow Energy Media Release, 'Arrow delivers strong first half performance', URL: http://www.arrowenergy.com.au/icms_docs/45018_Arrow_delivers_strong_first_half_performance.pdf (26 February 2009).

from both the Shell and Arrow CSG tenements, and also potentially from other CSG acreage holders and / or developers.[199]

Arrow announced in October 2009 its plans to expand its operations in the Surat Basis with a major CSG exploration, development and production project. The Surat Gas Project is reported to involve the staged development of approximately 1,500 production wells. Arrow's plans include potential supply to the Shell Australia LNG Project.[200]

3.2 Pipeline

A proposed gas pipeline from the Gladstone City Gate or a new facility nearby to Curtis Island will supply gas to the LNG plant by a route yet to be identified. Two possible routes are being explored:

- a direct route from Fisherman's Landing to near Hamilton Point; and
- an indirect route across The Narrows between Friend and Laird points.[201]

3.3 LNG Plant

The LNG facility is expected to produce up to 16 mtpa, involving phased construction of up to four LNG trains, each with 3 mtpa to 4 mtpa capacity.[202] The foundation LNG train will use approximately 200 PJ/a. Generally, a total of up to 4,000 PJ would be required for a foundation train in the first 20 years of operation. Shell believes that the Shell and Arrow CSG tenements contain sufficient gas resources for a foundation train. Shell has publicly stated it is currently in negotiations with Arrow and others to procure the additional gas necessary to support this project.[203]

Shell has been granted rights by the Gladstone Ports Corporation to investigate a site on Curtis Island for the LNG plant. The site forms part of the 1,500 hectare Curtis Island Industry Precinct of the Gladstone State Development Area.[204] The proposed LNG facility will include tankage, LNG and LPG storage and loading lines. The LNG loading facility, including a jetty, is to be located at either North China Bay or Boatshed Point. A materials offloading facility is also required at either North China Bay or Boatshed Point.[205]

3.4 Current Status

In June 2008, Arrow announced a major alliance with Royal Dutch Shell.[206]

On 12 June 2009, the Coordinator-General declared the project to be a 'significant project' for which an EIS would be required.[207] Shell is currently preparing an EIS to develop the project further.[208]

The proposed development programme for the Shell Australia LNG Project is stated to be as follows:[209]

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[199] Shell Australia LNG Project ToR, p 13.

[200] Arrow Energy Media Release, 'Arrow Energy commences EIS for Surat Gas Project', URL: http://clients.weblink.com.au/clients/arrowenergy/article.asp?asx=AOE&view=4214733 (14 October 2009).

[201] Shell Australia LNG Project ToR, p 14.

[202] Shell Australia LNG Project IAS, p 18 (Part 2).

[203] Shell Australia LNG Project IAS, p 7 (Part 1).

[204] Shell Australia LNG Project IAS, p 3 (Part 1).

[205] Shell Australia LNG Project ToR, p 14.

[206] Arrow Energy Media Release, 'Arrow Energy announces 109% increase in profit after tax to $37.2 million', URL: http://www.arrowenergy.com.au/icms_docs/35741_Arrow_Energy_announces_109_increase_in_profit.pdf (25 August 2008).

[207] Shell Australia LNG Project DIP website.

[208] Shell Australia Media Release, 'Shell Australia CSG-To-LNG Project Declared a Significant Project, URL: http://clients.weblink.com.au/clients/arrowenergy/article.asp?asx=AOE&view=4211148 (12 June 2009).

- baseline studies are planned to be completed between June and October 2009;
- the final EIS submission is to be made in April 2010;
- a supplementary EIS will be released in October 2010;
- the Queensland Coordinator-General's evaluation report will be released in December 2010;
- the Commonwealth Minister for the Environment's assessment report will be released in February 2011; and
- first LNG production is planned to begin in 2014-2015.

4. Other Projects

4.1 Liquefied Natural Gas Limited-Arrow

Arrow is also involved in the development of an LNG plant at Fisherman's Landing, Gladstone, with an initial capacity of 1.5 mtpa, and potential to increase production to 3 mtpa.[210] The proposed LNG plant would be built by Liquefied Natural Gas Limited.[211]

In early January 2010, Arrow signed heads of agreement to develop and take full ownership of a train of 1.5 mtpa and to take a 49% stake in all other site infrastructure, including storage tanks and jetties.[212] Liquefied Natural Gas Limited will have a stake of only 51% in the infrastructure, not including the train.

The project also involves the construction of a 467 km long pipeline[213] and the development of Arrow's CSG fields around Dalby in the Surat Basin.[214]

The proposed pipeline will begin adjacent to the Kogan North Central Gas Processing Facility in the Surat Basin gas fields. The proposed route heads generally north from the Kogan area through the local government areas of Dalby, Banana, North Burnett and Gladstone. Final selection of the pipe diameter has not been made, but the sizes under consideration are 500 mm, 610 mm and 660 mm. It is anticipated that construction will start in 2011. First gas is planned to be supplied to the Fisherman's Landing LNG plant in 2013. The capital cost of the pipeline component of the project is currently estimated at around $600 million.[215]

The initial single train plant will be capable of producing 1.5 mtpa for the first shipment in 2013, with plans for a second 1.5 mtpa train for 2014. It is reported that the estimated construction cost of the LNG plant is US$400M.[216]

4.2 Sojitz Corporation

The Sojitz Corporation has proposed to develop an LNG plant on Fisherman's Landing, Gladstone, to produce 0.5 mtpa of LNG.[217] Stage 1 will consist of a single processing train. The single train will be duplicated for Stage 2.[218]

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[209] Shell Australia LNG Project IAS, p 23 (Part 2).

[210] DEEDI 2009, p 1.

[211] Arrow Energy, 'Surat Gladstone Pipeline', URL: http://www.arrowenergy.com.au/page/Projects/Australia/Surat_Gladstone_Pipeline/&rtemplate=1121 (13 May 2009).

[212] Arrow Energy Buys Into Gas Production Plant, URL: http://www.theaustralian.com.au/business/arrow-energy-buys-into-gas-production-plant/story-e6frg8zx-1225816065261 (6 January 2010).

[213] Surat to Gladstone Pipeline Project EIS, p 7 (Executive Summary).

[214] DEEDI 2009, p 1.

[215] Surat to Gladstone Pipeline Project EIS, pp 7 – 16 (Executive Summary).

[216] Surat to Gladstone Pipeline Project EIS, p 45 (Part 1).

[217] DEEDI 2009, p 2.

The first cargo from this project is planned for the first quarter of 2012. In the second stage, production will increase to 1 mtpa.[219]

4.3 Impel (Southern Cross LNG)

Impel proposes to construct an open-access LNG terminal on Curtis Island, Gladstone.[220] The facility will be built in modules to allow for expansion, and the site has been scoped for three liquefaction trains. Each individual train has a capacity range of 0.7 to 1.3 mtpa.[221] Impel also proposes to construct an open access, 400 km long pipeline (the Southern Cross Gas Pipeline) to Gladstone. Production is expected to start in 2013.[222]

4.4 Energy World Corporation

Energy World Corporation proposes to build an LNG plant at Abbot Point near Bowen. The plant would produce 0.5 mtpa of LNG.[223] The proposal includes:

- the development of Energy World Corporation's tenures in the Cooper Basin near Eromanga; and
- the construction of a pipeline linking the fields to Abbot Point.[224]

Production is expected to start in 2012. In the second stage, production is expected to increase to 2 mtpa.[225] The estimated capital cost of the 2 mtpa LNG facility and the associated pipeline infrastructure is $1.5 billion.[226]

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[218] Sojitz and Sunshine Gas Ltd, 'Project Sun LNG Project, Gladstone – Initial Advice Statement', URL: http://www.derm.qld.gov.au/register/p02412aa.pdf (January 2008) p 10.

[219] DEEDI 2009, p 2.

[220] DEEDI 2009, p 2.

[221] LNG IMPEL Inc, 'LNG Impel Announces Open Access LNG Project in Queensland Australia', URL: http://www.lngimpel.com/?p2=modules/blog/viewcomments.jsp&bid=4 (14 May 2008).

[222] DEEDI 2009, p 2.

[223] DEEDI 2009, p 2.

[224] DEEDI 2009, p 2.

[225] DEEDI 2009, p 2.

[226] Energy World Corporation Ltd, 'Update - Monetisation of Australian Gas Assets', URL: http://newsstore.smh.com.au/apps/previewDocument.ac?docID=GCA00858655EWC&f=pdf (8 July 2008) p 2.

Annexure 3 – Estimated cost of regulation

1. Estimate of Annual Cost of Full Regulation

The estimated cost to the service provider of full regulation is $260,000 – $326,000. This includes:

- one-fifth of the costs of developing and implementing the Access Arrangement and Access Arrangement Information ($52,000 – $64,000);[227]
- the annual costs of complying with the requirements of full regulation; and
- one-fifth of other costs incurred over the first five years of full regulation.

1.1 Estimate of the initial cost of developing and implementing the Access Arrangement and Access Arrangement Information

Obligation	Description	Amount
Preparation of Access Arrangement and Access Arrangement Information		
	legal costs: • addressing preliminary issues with regulator • preparation of access arrangement including capacity trading requirements, changes of receipt and delivery points, extension and expansion requirements and queuing requirements • preparation of access arrangement information including detailed financial and operational information • preparation of confidentiality guidelines • review and preparation of submissions in relation to draft determination • considering and responding to other party's submissions in relation to draft determination	$180,000 – $220,000
	expert report in relation to appropriate reference tariff	$50,000 – $60,000
	management costs • addressing preliminary issues with regulator • director's time	$30,000 – $40,000
TOTAL		**$260,000 – $320,000**
Initial cost amortised over the first five years of coverage		**$52,000 – $64,000**

[227] The costs of preparation of an Access Arrangement will be incurred primarily in the first year of regulation. Any Access Arrangement is unlikely to last for less than 5 years.

1.2 Estimate of the annual cost to the service provider of full regulation

Obligation	Description	Amount
Marketing staff separate from Associate's related businesses		
	cost of hiring one and a half additional employees to carry out marketing responsibilities	$150,000 – $200,000
Keeping consolidated and separate accounts		
	management costs: • company secretarial • maintenance of corporate records	$10,000
Annual reporting to the AER		
	legal costs: • preparation of annual compliance order	$10,000
	management costs: • company secretarial • directors' time	$10,000
	management costs: • maintenance of corporate records • directors' time	$1,000
TOTAL		**$181,000 – $231,000**

1.3 Estimate of other costs incurred over the first five years of full regulation

Obligation	Description	Amount
Annual tariff adjustment		
	management costs: • maintenance of corporate records	$1,000 per year
Access disputes/application[228]		
	management costs	$20,000
	legal costs: • addressing preliminary issues with regulator • preparation of submissions • considering and responding to other party's submissions • review and preparation of submissions in relation to draft determination	$60,000 – $80,000
	expert costs	$50,000
TOTAL		**$135,000 – $155,000**
Annual cost		**$27,000 – $31,000**

[228] The Applicant acknowledges that access disputes are relatively rare. These figures are the Applicant's best estimate of the costs to it of an access dispute, should one occur.

Annexure 4 – ACIL Tasman Report

Annexure 5 – RLMS Report

Annexure 6 – Frontier Economics Report

Annexure 7 – OSD Pipelines Report