A. EIS Submissions



Santos | PETRONAS



Submission 1

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3rd August 2009

The Coordinator General
C/- EIS Project Manager: Gladstone (LNG) Santos
Significant Projects Coordination
Department of Infrastructure and Planning
PO Box 15009
City East Q 4002

Dear EIS Project Manager

SUBMISSION: GLADSTONE LNG PROJECT (SANTOS AND PETRONAS)

Herewith my submission. Please do not hesitate to contact me on either of the above telephone numbers or via email or postal delivery, if you require any additional information.

Yours faithfully,

Copy: Hon Anna Bligh MP, Premier of Queensland and Minister for the Arts.
Hon Liz Cunningham MP
Gladstone Regional Council
The Gladstone Observer
Four Corners

EIS SUBMISSION (03.08.09)

GLADSTONE LNG PROJECT

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1. SAFETY – USE OF BUSY SHIPPING CHANNEL TO TRANSPORT LNG

- Gladstone is not a natural deep water harbour. It is a shallow harbour with a dredged channel and a few deep spots.

- Bulk cargo vessels are confined to the dredged channel for entry to/ exit from Gladstone harbour.

- Bulk LNG vessels will use the common-user shipping channel, which includes common-user choke points that cannot be overcome by e.g. duplicate channels.

- The Port of Gladstone records a number of shipping incidents on an annual basis, which could point to problems within harbour operations and the regulatory framework or inherent difficulties with navigating Gladstone Harbour (narrow dredged channels/ big tidal range/ strong winds/ shifting mud and sandbanks). It is predictable to almost the point of near certainty

that over time there will be significant incidents in Gladstone Harbour involving LNG vessels.

- Unlike the Port of Darwin, there will be no exclusion zone around LNG vessels that are using the main Gladstone Harbour shipping channel; they will be accompanied by 2 tug boats and rely on the judgement of the pilots.

- The only exclusion zone will be 200 metres for loading vessels, a distance that is manifestly inadequate given some computer modelling that shows that LNG gas may travel long distances (up to 30 miles?) before ignition and consequent flash fire.

- Given the narrow confines of the dredged shipping channel and the tidal variations and strong winds, it is foreseeable that the availability of tug boats may not be adequate to prevent collisions between an LNG vessel and other bulk vessels.

- The dredged channel is already used by bulk carriers for the import/ export of bulk products including coal, bauxite, alumina, aluminium, petroleum products, cement clinker, magnesia, calcite, etc.

- The dredged channel is forecast to become busier with increases to coal exports and additional new industries including pig iron, nickel, shale oil, import of LPG by an LNG proponent, etc.

- The dredged channel passes close to the following:

    - Within 500 metres - Gladstone CBD, ageing tank farm at Auckland Point (petrol/ diesel/ gas), suburbs of Barney Point and Auckland Hill, R G Tanna Coal terminal, proposed Wiggins Island Coal Terminal; Gladstone marina and associated light industrial area; township of Gatcombe Heads.

    - Within 1000 metres – densely populated urban areas; major heavy industry such as Queensland Alumina Limited.

    - Within 10 kilometres – other densely populated urban areas; heavy industrial plants including explosives/ pressure vessels/ toxic chemicals and gasses (e.g. Chlorine).

- To put this in perspective, some computer modelling indicates that LNG gas may travel long distances (up to 30 miles?) before ignition.

- One of the LNG proponents also plans to import bulk Liquid Petroleum Gas (LPG) to "sweeten" the LNG. The regular (weekly?) bulk LPG

shipments would be an outcome of the Government's approval of the LNG industry in Gladstone Harbour, and would have high volatile/ explosive characteristics.

- A collision between an LNG vessel and another vessel in the dredged shipping channel could have catastrophic consequences for the population centres/ industry close to the dredged channel.

- If there were to be a spillage of LNG on water, the LNG would revert to gas almost instantaneously with probable violent "cold" explosion (a situation known as "rapid phase transition") with resultant evolving gas. If we assume a significant breach of the hull of an LNG vessel (e.g. if T-boned by a coal carrier), the gas from the vessel has the potential to displace the breathable atmosphere and hence asphyxiate everything within a zone of 1 kilometre diameter.

- Depending on wind and other conditions it would be possible to have e.g. a 2 kilometre asphyxiating cloud of gas reaching the city of Gladstone; unless the LNG has been treated with an odorant the first the residents may know of it is when they take their last breath.

- The gas cloud would progressively mix with air, and if it continued to do so in the absence of an ignition source, could propagate a flammable gas cloud over substantial areas of Gladstone.

- In summary, an LNG shipping incident in Gladstone Harbour could result in major loss of life, evacuation of the city, and severe disruption to Australia's international trade and hence Australia's economic wellbeing e.g. disruption to coal exports, disruption to bauxite imports, etc.

- It is therefore submitted that the LNG plant be directed to an alternate location where it will not necessitate the use of the narrow dredged channels in Gladstone Harbour, to avoid the exposure to the devastating consequences an LNG activity could have on Gladstone, the Queensland economy and the national economy.

2. SAFETY – EXPOSURE TO TERRORISM.

- International and domestic terrorism activity is a fact of life in our 21st century.

- Australia, through its participation in international peacekeeping activities, is achieving an international profile that can only make it a more attractive target for international terrorism.

- A significant terrorist attack directed at Australians, resulting in major loss of life, has already occurred relatively close to Australia (i.e. the Bali bombings). There have already been a number of trials of alleged domestic terrorists.

- A terrorist attack that blocked Gladstone Harbour, destroyed or damaged other infrastructure, and affected the workforce that lives in Gladstone and the surrounding area, would have a devastating impact on the local, Queensland and Australian economies.

- The security of shipping in Gladstone harbour, against potential terrorist activity, is minimal. The harbour is overlooked from innumerable vantage points, and all shipping is vulnerable to e.g. suicide or remote controlled craft packed with explosive. Gladstone would in all probability be regarded as a "soft" target for international and domestic terrorists.

- Terrorists do have a habit of hitting where least expected; the potential for a terrorist attack on Gladstone Harbour shipping and environs must be taken seriously.

- The installation of an LNG industry in Gladstone harbour would increase the vulnerably of the local population/ industry to the consequences of international terrorism, and could act as a magnet to attract international terrorists.

- It is therefore submitted that the LNG industry should be directed to an alternate location where a terrorist attack could not have devastating consequences for the Gladstone population, local industry, and the local/ Queensland/ Australian economies.

3. SAFETY – LOCATION OF LNG LOADING FACILITY

- The LNG loading facility will be on the Gladstone Harbour foreshore, close to a busy dredged shipping channel and within 10 kilometres of densely populated urban areas and heavy industry.

- There will apparently be a 200 metre exclusion zone, and a tug standing by during loading operations.

- The 200 metre exclusion zone is apparently based on a risk analysis.

- During loading operations the safety of (a) passing shipping, (b) the LNG plant itself, (c) heavy industry, and (d) densely populated urban areas,

from the consequences of accidental explosion of empty and partially laden LNG vessels (which may be more prone to significant explosion that fully loaded LNG vessels) and fully laden vessels, and the consequent gas vapour (with potential ignition) from those loading LNG vessels, will be completely dependant on the adequacy of the 200 metre exclusion zone. A similar situation would apply in the event of a terrorist attack on the loading facility.

- It is submitted that the 200 metre safety zone is completely and totally inadequate, and seems to have been designed more to allow the continuance of passing shipping than designed to protect people and industry from the consequences of an incident during LNG loading operations.

- It is submitted that the exclusion zone during LNG loading operations should be a minimum of 20 kilometres.

4. SAFETY – LOCATION OF LNG PLANT

- The operating LNG plant will be located:

    - Within 500 meters – passing shipping trade including highly volatile bulk cargoes e.g. probable LPG shipments; densely populated construction camp for plant expansion; sensitive environmental habitat on Curtis Island.

    - Within 10 kilometres - densely populated urban areas; heavy industry.

- All plant safety systems require human intervention at some stage, including the design and installation stage.

- Accidents will happen despite the best safety systems. History is littered with major industrial accidents that were not supposed to happen but did.

- It is therefore submitted that the LNG industry be directed to an alternate location to minimise the exposure of population and other industry to the potential catastrophic consequences of an LNG incident.

- In particular, it is submitted that the construction workforce for plant expansions must NOT be accommodated on Curtis Island, due the risk factors set out in this submission.

5. SAFETY – GLADSTONE EVACUATION PROCEDURES

- If a significant shipping incident involving an LNG vessel occurs in Gladstone Harbour, it is foreseeable that the residents of Gladstone will have to be evacuated as quickly as possible.

- The logistics involved in this necessary safety measure will be expensive and huge, as will the economic impact on local industry etc.

- It is submitted that the LNG industry be relocated to an area where it will not be necessary for LNG shipping to enter busy Gladstone Harbour, and where the LNG plant is sufficiently remote from urban and industrial areas.

6. SAFETY – IMPACT OF LNG FLARES ON AIRCRAFT

- It is projected that the LNG plant will emit a significant flare from a tall chimney stack at irregular intervals. It is projected that this flare will be of such dimensions as to light up the night sky over Gladstone.

- This flare could disorient pilots of aircraft during their landing approach to the Gladstone airport, especially during hours of darkness, and cause the aircraft to crash.

- It is submitted that the emission of large flares from the LNG plant should not be permitted on these air safety grounds.

7. ENVIRONMENT – BREACH OF INTERNATIONAL OBLIGATIONS

- Australia is a signatory to a number of international treaties including:

    - Japan-Australia Migratory Birds Agreement (JAMBA).

    - China-Australia Migratory Birds Agreement (CAMBA).

    - Convention on Wetlands of International Importance (Ramsar Convention).

- Convention on the Conservation of Migratory Species of Wild Animals (Bonn Convention).
- Convention on conservation of nature in the South Pacific (APIA Convention).
- Conservation aspects of the South Pacific Regional Environment Program (SPREP).

- The construction and operation of LNG plants on Curtis Island will effectively place Australia in breach of some of its treaty obligations through the following impacts:
  - Destruction of sea grass beds as a part of the dredging required to accommodate the LNG industry. This will impact on dugongs (the harbour is a listed dugong habitat) and other marine life including turtles, fish, crabs and prawns.
  - Destruction of mangroves as a part of the construction process. This will impact on the life cycle of all marine life.
  - Negative impact on migratory bird life through the construction and operation of an LNG plant. This can occur in many ways e.g. if the projected 200 metre flare causes migratory birds to lift off, the energy so expended in that single event could prevent those migratory birds from e.g. reaching their destinations in the northern hemisphere.
- It is foreseeable that further breach may occur if members of the construction workforce seek to create their own recreation and trespass on fragile wetlands.
- Construction of LNG plants on Curtis Island should be rejected on these environmental grounds.

8. ENVIRONMENT – IMPACT OF CONSTRUCTION WORKFORCE ON CURTIS ISLAND AND THE TOWNSHIP OF SOUTH END

- It is proposed that the LNG construction workforce (some thousands of construction workers) will be confined to and accommodated on the LNG lease on Curtis Island.

- It is proposed that this workforce will work 10 days on/ 4 days off, and will be confined to the LNG lease while on Curtis Island.

- This approach recognises the sensitive environment on Curtis Island (that includes regionally significant eco systems and has listed habitat for species protected under the EPBC and Native Fauna Act), and the lack of roads on Curtis Island.

- The proposed approach is not realistic. It is foreseeable that some members of the LNG construction workforce will take their four wheel drive vehicles to the remote Curtis Island township of South End, and will put in their own roads with consequent potential to significantly degrade the fragile environment that exists in many areas of Curtis Island.

- It is submitted that a construction workforce should not be accommodated on Curtis Island.

9. ECONOMIC - IMPACT ON GLADSTONE OF CONSTRUCTION WORKFORCE ON CURTIS ISLAND

- Accommodating LNG construction workers on Curtis Island will minimise the financial benefits to Gladstone, and reduce house purchases/ rentals, purchase of goods and services, money spent on entertainment, etc.

- It is submitted that a construction workforce should not be accommodated on Curtis Island.

10. ENVIRONMENT - NON INDUSTRIALISED ISLAND/ NATIONAL PARK/ NO GO AREAS

- It is proposed to locate the LNG plant on Curtis Island i.e. a non industrialised sub tropical island.

- Curtis Island contains a National Park. It is submitted that locating heavy industry next to or near to a National Park on a sub tropical island that is only 20 miles long, when there are alternative mainland sites available, is an incompatible activity and should not occur.

- There are environmental "no go" zones on Curtis Island due to the fragility of the environment. It is submitted that locating heavy industry on a sub tropical island that is only 20 miles long, when there are other alternative sites available, should not occur.

- The location of an LNG plant on a non industrialised sub tropical island will create a precedent that will then be used to justify future industrial development of Curtis Island and potentially on other non-industrialised tropical or sub tropical islands. It is submitted that this precedent should not be permitted for all of the reasons outlined in this submission.

11. LOSS OF AMENITY

- Gladstone residents, living in a sea side/ harbour city, already have extremely limited waterfront access – the Gladstone Ports Corporation (i.e. Queensland Government) owns most of the waterfront land (over 30 kilometres).

- The Gladstone Harbour has traditionally been a recreational resource for the population of Gladstone and the surrounding areas for sailing, outriggers, power boating, jet skiing, fishing, crabbing, prawning, etc.

- The advent of LNG bulk carriers can only reduce the harbour amenity currently available to Gladstone residents.

- It is foreseeable that harbour access will be progressively reduced as has happened historically, with consequent adverse impact on the residents of Gladstone and surrounding areas.

- It is therefore submitted that the LNG industry should be directed to an alternate location where it will not adversely impact on the amenity of the residents of Gladstone and surrounding areas.

12. ALTERNATE SITE FOR LNG PLANT

- During a Santos presentation on Saturday 26 July 2008 at South End (Curtis Island) the Santos representative was asked why Santos chose not to locate at the isolated Port Alma area on the mainland at the north end of Curtis Island.

- The Santos representative responded:

"Port Alma was considered but proved not to be economically viable. The land would have required extensive work and stabilisation to make suitable foundations for the LNG tanks. A lot of piling would be needed to stabilise the ground, especially for the LNG tanks. In addition the channel

is too narrow for LNG ships and extensive dredging would have been required. Santos was also offered a site on Wiggins Island but there was not enough land".

- The relevance of the comment relating to "requirement of extensive dredging" is questionable. The Gladstone Ports Corporation is in any event planning to undertake a massive dredging program in Gladstone Harbour associated with LNG; the only question was where the dredging would take place, and hence it should not have been used as one of the reasons to exclude Port Alma.

- In any event there has been a significant change since the above, with the Gladstone Ports Corporation advising that Xstrata is proposing a major coal export terminal at Port Alma (estimates vary from 20 mtpa up to 50 mtpa). This will of course require the dredging of the Port Alma shipping channel that could then be used by LNG (and potentially LPG) shipping.

- There was no mention that proximity to an explosives plant and/ or explosives exports was a consideration in excluding Port Alma as the site for an LNG plant, and one is left with the impression that this was an explanation that was retrofitted to the arguments against Port Alma by the Queensland Government in an attempt to justify the industrial development of Curtis Island. This is particularly the case, given the proximity of the proposed LNG plant (and the proposed Arrow LNG plant) to the Gladstone explosives plant, and the knowledge that a cloud of vaporised LNG from an LNG plant or shipping incident could drift to this explosives plant before meeting an ignition source.

- Whilst cost has been used by Santos as a justification for not locating at Port Alma, saving a corporation money is not an acceptable trade off for putting the safety and well being of the residents of Gladstone at risk.

- It is foreseeable that the world will recover from the current economic downturn, and that the price of gas will follow the price of oil upwards i.e. profits will increase.

- The LNG plant will have an operating life of between 20 and 40 years; the amount of additional money spent to put the LNG plant in an alternate location will be minuscule over the life of the LNG plant.

- It is critical that the location of the LNG plant is correct. There can be no change once the plant is built, although of course the industry may shut down in the event of a significant incident that causes major loss of life.

- We should not repeat past mistakes. With the benefit of hindsight we know that the Barney Point Coal Terminal should not have been located

adjacent to a residential suburb, the R G Tanna Coal Terminal should not have been located adjacent to Gladstone Marina and a short distance from Gladstone residential areas, the Queensland Alumina Refinery should not have been located next to and downwind of Gladstone, and Boyne Smelters Limited should not have been built within a short distance of Boyne Island/ Tannum Sands residential areas and a short distance downwind of Gladstone. Gladstone is paying the price for these errors through actual and potential damage to health, damage to property, and loss of amenity. A similar outcome is predictable from the planned location of LNG on Curtis Island.

- It is submitted that the LNG plant be directed to an alternate location outside of Gladstone Harbour/ away from Gladstone.



Submission 2

Santos | PETRONAS

002

5th August 2009

The Coordinator General
C/- EIS Project Manager: Gladstone (LNG) Santos
Significant Projects Coordination
Department of Infrastructure and Planning
PO Box 15009
City East Q 4002

Dear EIS Project Manager

ADDENDUM TO SUBMISSION: GLADSTONE LNG PROJECT (SANTOS AND PETRONAS)

I refer to my submission dated 3rd August 2009.

The following is an addendum to paragraph 1 "**SAFETY – USE OF A BUSY SHIPPING CHANNEL TO TRANSPORT LNG**".

The Gladstone Observer on 5th August 2009 reported that a (empty) 225m bulk bauxite carrier in the main shipping channel lost control of its rudder and drifted out of the shipping channel before dropping anchor to avoid running aground.

A copy of the relevant news article is attached for your information.

A bulk carrier that so unexpectedly lost control of its steerage could present a major problem for a bulk LNG vessel (and potentially bulk LPG vessel) in the busy narrow shipping channel, especially if both ships were approaching each other and were close to each other when the loss of rudder control occurred. Any accompanying tugs could make minimal or no difference in these circumstances to significantly change the course of the LNG vessel. The outcome, quite frankly, could be catastrophic.

This is just one of the annual shipping incidents involving bulk carriers that occur each year in Gladstone Harbour, and is only one of the multiple scenarios that may occur. It is submitted that a considerable increase in bulk carrier and other shipping movements will occur as a consequence of planned industrial developments in the Gladstone region i.e. the exposure to shipping incidents can only increase.

The above lends weight to the proposition that an incident involving an LNG bulk carrier would be a case of "when", not a case of "if".

It is submitted that you should specifically factor the following into your decision-making on approval/ non approval of this project in its current proposed location:

1. The issue of LNG (and potentially LPG) ships' use of the busy (and to become busier) and narrow Gladstone shipping channel, and

2. Recognition that bulk carriers using that channel have an actual history of multiple annual incidents.

Yours faithfully,

Copy: Hon Anna Bligh MP, Premier of Queensland and Minister for the Arts.
Hon Liz Cunningham MP
Gladstone Regional Council
The Gladstone Observer
Four Corners

Drifting bauxite carrier's power failure rectified

Ship regains use of rudder

By LIAM BUTTERWORTH

A BAUXITE carrier which drifted a kilometre outside the shipping channel after a power failure was repaired and left the harbour yesterday afternoon.

The SS Endeavour River lost power shortly after leaving the South Trees Wharf on Sunday evening, but was repaired and left the harbour at 3pm yesterday.

The 225m carrier lost control of its rudder, and drifted out of the Golding Channel between the S27 and S29 beacons towards sand bars on Facing Island.

The ship avoided running aground after dropping anchor, and five Maritime Safety Queensland (MSQ) tugs were immediately called to the ship's aid.

A MSQ pilot was also flown by helicopter to the ship and after the restoration of partial power, it was escorted to an in-harbour anchorage by 10.45pm.

Australia Maritime Safety Association (AMSA), MSQ and the ship's management, ASP Ship Management, were notified of the occurrence.

Volunteer Marine Rescue and the Queensland Water Police were not involved.

MSQ confirmed yesterday they had received assurances that the problem had been rectified and the ship was ready to go again.

ASP Ship Management did not return calls as to the cause of the loss of power.

The ship has previously run aground in Gladstone Harbour, becoming stranded adjacent from the Queensland Alumina – South Trees West berth in December 2007.

The carrier, and its sister ship, will be replaced by foreign ships and crews.



Submission 3

Santos | PETRONAS

003

7th August 2009

The Coordinator General
C/- EIS Project Manager: Gladstone (LNG) Santos
Significant Projects Coordination
Department of Infrastructure and Planning
PO Box 15009
City East Q 4002

Dear EIS Project Manager

ADDENDUM #2 TO SUBMISSION: GLADSTONE LNG PROJECT (SANTOS AND PETRONAS)

I refer to my submission dated 3rd August 2009 and Addendum dated 5th August 2009.

In 2007 (?) I heard a Queensland Government employee refer to Boston U.S.A. as an example of where LNG shipping operates, in the context of this being justification for LNG operations in Gladstone Harbour.

Please find attached, as a part of my submission to the Gladstone LNG EIS, a print out of an article from the Boston Globe newspaper "*Study spells out high toll on city of LNG attack*".

Note that even overhead aeroplane flights are halted while a ship moves through Boston Harbour.

Many of the concerns outlined in this article are equally applicable to the proposed Gladstone LNG Plant i.e. they do not just apply to shipping.

In Gladstone Harbour the scenario is far worse than Boston because of the proximity of planned LNG plants and the proven record of shipping incidents (the number of incidents can be expected to increase due to the forecast increase in shipping movements in the narrow and busy channel).

I believe (based on my reading of other research/ commentary) that the Boston study is conservative in terms of the potential damage i.e. the loss to life and damage to property may be much worse.

I submit that:

1. The Gladstone LNG Project should not proceed in Gladstone Harbour because of the risks set out in the attached article and in the main text of my submission, and

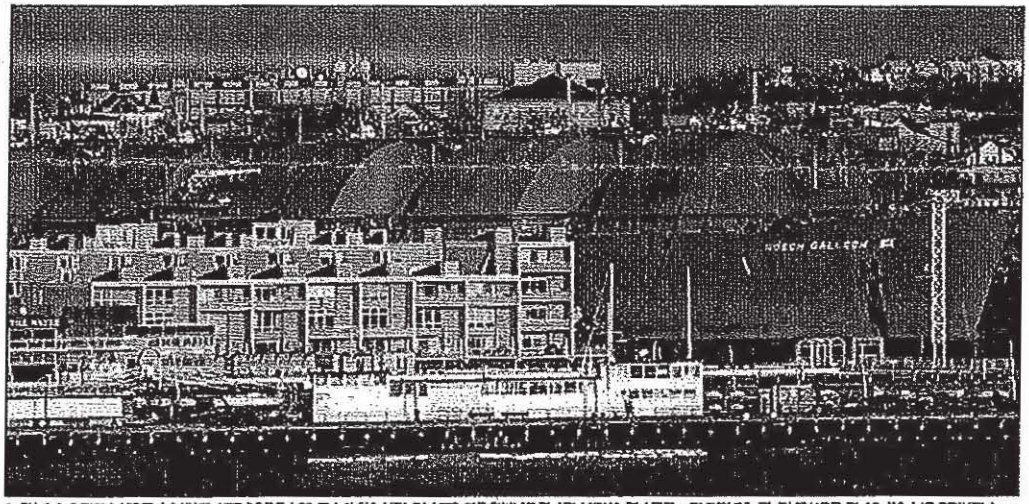
2. That an alternate more remote site be considered as a priority.

Please include this Addendum as a part of my submission on the Gladstone LNG Project.

Yours faithfully,

Copy: Hon Anna Bligh MP, Premier of Queensland and Minister for the Arts.
Hon Liz Cunningham MP
Gladstone Regional Council
The Gladstone Observer
Four Corners





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Study spells out high toll on city in LNG attack

The Boston Globe

By Charlie Savage, Globe Staff | December 21, 2004

WASHINGTON -- A terrorist attack on a liquefied natural gas tanker would cause "major injuries and significant damage to structures" a third of a mile away and could cause second-degree burns on people more than a mile away, according to the most detailed study yet of the ramifications of an LNG disaster.

The study, commissioned by the Department of Energy to resolve differences between earlier studies, indicates that a successful attack on a tanker -- via methods such as internal sabotage, a rocket-propelled grenade, a kamikaze flight, or a USS Cole-style suicide boat ramming -- would create a profound security threat to Boston.

The LNG tankers that service the Distrigas facility in Everett pass within a few hundred yards of the urban core's densely populated shoreline -- placing residents well within the highest risk zone. The ships cross through Boston Harbor under extremely tight security, with flights suspended overhead, but officials including Mayor Thomas M. Menino have declared the LNG shipments too dangerous to continue.

The 166-page study, conducted by Sandia National Laboratories over the past year, represents the most definitive assessment of LNG tanker risks to date and is intended to be used as a basis for all government policies about LNG siting and security going forward. The investigators used new and more sophisticated computer models to analyze new and existing data to reach their conclusions.

Captain David Scott, the director of operations and environmental standards at the US Coast Guard, said the government viewed the Sandia study as "the most objective" yet.

"The Coast Guard considers the Sandia report as a document with great credibility," Scott said. "Some of the previous studies had a preconceived conception and . . . may have been advocates for the industry or those who have opposed it."

The report seemed likely to rekindle public debate over the presence of the LNG terminal near

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Boston Harbor. Immediately after the terrorist attacks of Sept. 11, 2001, the Coast Guard shut the harbor to LNG tankers. Menino sued to prevent the return of tankers, but lost.

Earlier this year, former White House counterterrorism director Richard Clarke revealed that intelligence analysts believed Al Qaeda operatives had entered the country in the years before the attacks by stowing away on LNG tankers in Algeria and jumping ship in Boston. The tankers no longer dock in Algeria.

In assessing possible terrorist dangers, Sandia also produced a classified companion report, which contains information about the exact methods that could cause maximum damage. It also offers suggestions about security measures to reduce that risk.

But the public report, which is to be posted on the Internet at 9 a.m. today at fossil.energy.gov, is rich with information about what would happen in an accidental or intentional spill of LNG over water, a scenario that had not been as thoroughly studied as a problem distinct from a spill on land.

According to a congressional aide who was briefed on the report, the study concluded that attacks on an LNG vessel would create a rupture of between 6 and 39 feet. It used a 16-foot hole as a standard measure.

The study said a spill from a 16-foot hole, if ignited, would create a thermal blast that would set buildings on fire and melt steel out to 1,281 feet and give people second-degree burns up to 4,282 feet away. A 39-foot rupture would burn buildings out to 1,975 feet and burn people up to 6,299 feet away -- well over a mile. The worst-case scenario measured by the report was three 16-foot holes. That would set structures aflame out to 2,067 feet and burn people as far as 6,949 feet away.

The study also determined that a pool of LNG released into the water and then ignited as it vaporized would create a giant fireball that would expand outward to a distance twice the size of the pool itself. It studied pools of between 686 and 1,877 feet.

The congressional aide, who spoke on condition of anonymity, said the report also cites the chance that a fire in one of the vessel's multiple tanks could cause nearby tanks to break down, causing additional fireballs.

The study, however, notes that its conclusions are based on computer simulations. Because there has not been a major LNG accident involving a modern tanker, there is no data from an actual spill of the supercooled liquid gas.

Julie Vitek, a spokeswoman for Distrigas, said the company wanted to read the Sandia report before it would comment on its specific findings, but said that the LNG supplies are critical to New England. The Everett facility, she said, is now delivering enough natural gas to heat more than a half-million homes every day.

Vitek also said that Distrigas and the LNG industry have an excellent safety record.

Seth Gitell, a spokesman for Menino, said the mayor planned to study the report.

"Mayor Menino has long said that LNG entry into Boston Harbor is a profound danger and that the consequences of LNG ignition would be catastrophic," Gitell said.

US Representative Edward J. Markey, the Malden Democrat whose district includes Everett, was briefed on the report yesterday. He called the information "sobering," noting that it considered some factors, such as wave and smoke effects, more seriously than earlier studies. Markey also said it was further evidence that no LNG terminals should be built near heavily populated areas.

But unlike Menino, Markey stopped short of calling for the Everett terminal to be closed, citing New England's dependence on natural gas supplies. The problem requires a long-term solution, such as building a new terminal out in the ocean and piping the fuel in as a safer gas form, he said.

The report does not present an evaluation of the chances a terrorist attack would be successful, given the security precautions taken by the Coast Guard and other law enforcement agencies and the double hulls used by LNG tankers.

In Boston, flights are halted while a ship moves through the harbor, as is traffic on the Tobin Bridge. The Coast Guard boards the vessels and escorts them in, not allowing other ships to come near. Local law enforcement and emergency responders are given advance notice to

coordinate their own stepped-up patrols and preparations.

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GLOBE GRAPHIC: Areas at risk

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Submission 4

Santos | PETRONAS

004

The Coordinator-General
C/- EIS Project Manager:Gladstone (LNG) Santos
Significant Projects Coordination
Department of Inbfrastructure and Planning
P.O. Box 150009 City East Qld 4002

Dear Sir,

Re Submission addressing the GLNG EIS.

Re TIDE ISLAND

After reading your EIS, we are not satisfied with the plans Santos have to address the Noise Pollution and Vibration that will impact on our residence at Tide Island.

Also we are not satisfied with the plans Santos have to address the Visual Pollution that will impact on our residence at Tide Island.

We are also not satisfied with the plans Santos have to address the Air Quality of the proposed Plant that will impact on our residence at Tide Island.

To date Santos have not contacted us with regard to any of these problems since their Public Meeting in Gladstone on the 24th July, 2009.

Yours faithfully,



Submission 5

Santos | PETRONAS

QER Pty Ltd
ABN 48 072 908 966

Level 8, 200 Mary Street
Queensland 4000 Australia

GPO Box 5214 Brisbane
Queensland 4001 Australia

Telephone: +61 7 3222 0600
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Website: www.qer.com.au

The Coordinator-General
C/- The EIS Project Manager: Gladstone Liquefied Natural Gas project
Significant Projects Coordination
Department of Infrastructure and Planning
PO Box 15009 City East QLD 4002

11 August 2009

Submission: Santos Environmental Impact Statement (EIS) - GLNG Project

This submission is made in response to the Environmental Impact Statement (EIS) submitted by Santos for its proposed Gladstone Liquefied Natural Gas Project (GLNG Project) and addresses the proposed pipeline corridor across the Stuart oil shale deposits.

Santos' preferred, and alternative, routes (as suggested 2.2.1.4 of the EIS) to supply and service the Curtis Island LNG Plant traverse the State's oil shale deposits under tenements EPM 3215, MDL 225, MDL 177, ML(A) 80081 and ML 80003 (Stuart oil shale deposit) held by Queensland Energy Resources Limited and its related entities (QER).

Santos' preferred pipeline corridor alignment (which Santos refers to as Option 1) is along Landing Road, Gladstone. The EIS refers to alternatives, noted in Section 2 of the EIS, in particular the Northern Alternative within the GSDA. The EIS also briefly notes the State Government's preference for an "Energy Corridor" for common user infrastructure within the GSDA to the Callide Range.

QER is looking to develop oil shale deposits within the Stuart area and the routes proposed by Santos would sterilise significant portions of the resource or alternatively would require significant additional expenditure (if the deposits were to be exploited) to facilitate future pipeline deviations which might make mining the deposits uneconomic. Further, the details of future deviations would need to be considered and designed for at this time.

As the custodians of the State's Stuart oil shale tenements, QER strongly recommends that the pipeline corridor route be selected so that it causes no sterilization of the oil shale resource or, alternatively, any sterilisation is minimised so far as is practicable.

Landing Road Corridor Option 1 and Northern Alternative within the GSDA Issues

Santos' preferred Option 1 pipeline alignment in the Landing Road corridor would sterilise high value oil shale yielding in excess of 15 million barrels of oil.

As contemplated in Section 2.2.1.4, Appendix H and Appendix AA of the EIS, any of these alignments would sterilise high value oil shale yielding between some 16 million barrels of oil at a minimum and up to and possibly in excess of 100 million barrels of oil.

Because of the significant material impact incurred to the oil shale project's economics should any of these alignments be retained, then those segments of the pipeline located on top of the oil shale deposit will need to be re-routed to facilitate mining. The GLNG

Project will need to engage with QER to plan for the future pipeline diversion and design for initial installation the appropriate future pipeline diversion infrastructure that will need to be incorporated in the design and construction of the Project. This work will be required within the GLNG Project's FEED process.

State Government 'Energy Corridor' Northern Infrastructure Corridor

Given the potential for numerous and separate pipelines to service both the GLNG Project and other Curtis Island LNG proponent's projects, QER has strongly supported the State Government's endeavours to develop a common infrastructure corridor.

The Department of Infrastructure and Planning (DIP) has separately provided to QER preliminary conceptual co-user Northern Infrastructure Corridor routes which would cross the northern or central areas of the oil shale deposit.

As QER has indicated to the DIP, QER has very serious concerns that the potential location for this Northern Infrastructure Corridor alignment might inadvertently sterilise a significant portion of the Stuart oil shale deposit. Accordingly, QER has significantly advanced its resource definition (and has worked with the DIP and its advisors in doing so) to determine a location for a potential 200 metre wide Northern infrastructure corridor crossing of the Stuart oil shale deposits that will minimise any resource sterilisation.

The coordinates for the recommended Corridor crossing the oil shale resource are:

NW	307,364	7,371,781
NE	307,970	7,372,206
SE	308,085	7,372,042
SW	307,478	7,371,617

QER recommends and supports the DIP's approach of developing a common infrastructure corridor to service the LNG industry and recommends that, should a common Northern Infrastructure Corridor across the oil shale deposits proceed, the alignment should follow the above alignment (as described in the attached drawing titled "Preferred Location of the Co-Use Pipeline Corridor crossing the State's Stuart Oil Shale Deposits – Northern Alignment within the GSDA').

QER requests the Project's proponent liaise with QER, during its FEED process, to optimise any pipeline location. Please contact Richard Seton, Manager Infrastructure on 3222 0610.

Yours faithfully

David Pegg

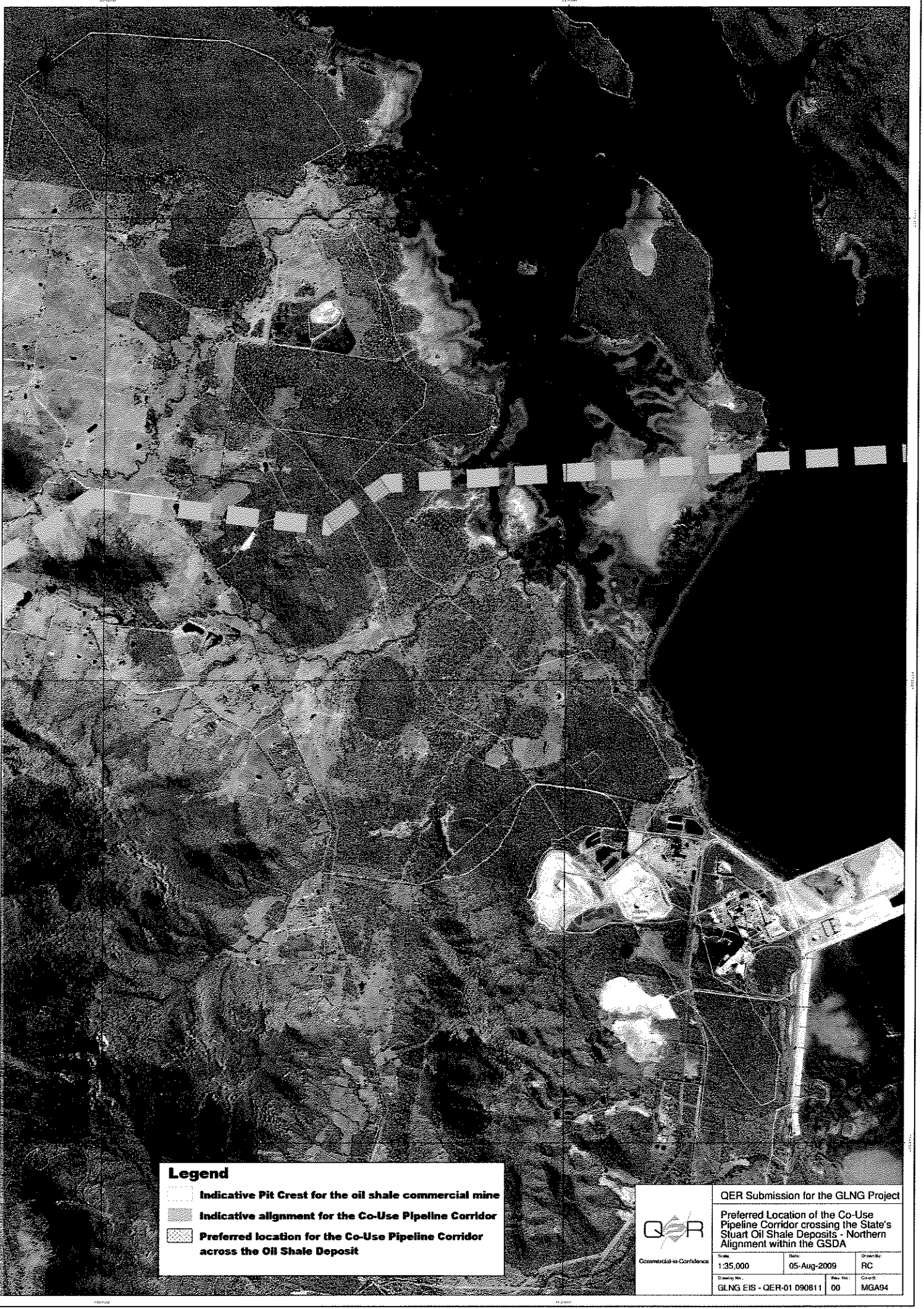
Company Secretary

Queensland Energy Resources Limited and Related Entities.

CC: Mr Neil Clough, Project Manager Pipeline, GLNG

Mr Dan Hunt, Associate Director-General, Queensland Mines and Energy

Mr Donn Berghofer, Executive Director, Department of Infrastructure and Planning



QER Submission for the GLNG Project

Preferred Location of the Co-Use Pipeline Corridor crossing the State's Stuart Oil Shale Deposits - Northern Alignment within the GSDA

Commercial-in-Confidence

Scale:	Date:	Drawn By:
1:35,000	05-Aug-2009	RC
Drawing No.:	Rev No.:	Coords:
GLNG EIS - QER-01 090811	00	MGA94



Submission 6

Santos | PETRONAS

10th August 2009

The Coordinator General
C/- EIS Project Manager: Gladstone (LNG) Santos
Significant Projects Coordination
Department of Infrastructure and Planning
PO Box 15009
CITY EAST Q 4002

Dear EIS Project Manager

ADDENDUM #3 TO SUBMISSION: GLADSTONE LNG PROJECT (SANTOS AND PETRONAS)

I refer to my submissions dated 3rd August 2009 and Addendums dated 5th August and 7th August 2009.

I now attach Addendum #3, which should be read as a part of my Submissions.

Background:

The narrow and busy dredged shipping channel in Gladstone Harbour will be used by full, empty and partially full LNG (and potentially LPG) bulk carriers which will pass within 100 - 200 metres of the South Trees wharves/ aging Fuel Storage Tank(s) and Gladstone Port Central wharves/ aging Petroleum and Diesel Storage Tanks and LPG Storage Facility.

South Trees Wharves:

- The South Trees wharves are within approximately 100 metres of the narrow and busy shipping channel that will be used by LNG (and potentially associated LPG) bulk vessels.

- The South Trees wharves are used for import of bulk bunker oil from vessels across the wharves, and export of bulk bunker oil across the wharves to a ship bunkering vessel.

- The bunker oil is stored in a large (and elderly) tank (or tanks) behind the South Trees wharves and within approximately 150 metres of the wharves/ shipping channel.

- The bulk bunkering vessel based at South Trees wharves uses the narrow and busy shipping channel for access to bunker the passing shipping trade.

- I am advised that the Queensland Government (through their 100% owned Gladstone Ports Corporation) has recently recognised the inherent dangers of fuel bunkering in Gladstone Harbour, and has banned (or given notice of banning) the fuel bunkering vessel based at South Trees wharves from bunkering vessels within Gladstone Harbour.

- It is submitted that this recognition by the Queensland Government of the inherent dangers of fuel bunkering within Gladstone Harbour be extended to the LNG (and potentially LPG) shipping situation.

- It is submitted that LNG (and LPG) should not be permitted to use the narrow and busy dredged shipping channel when that channel is being used by any other shipping.

Gladstone Port Central Wharves:

- The wharves at Gladstone Port Central are within approximately 100 metres of the narrow and busy dredged shipping channel, and within a few hundred metres of residential areas and the CBD.

- The Gladstone Port Central wharves are currently used for the import of bulk petroleum products, and especially petroleum, diesel and liquid petroleum gas.

- The imports of bulk petroleum, diesel and LPG are stored in an elderly tank farm that is within 150 metres of the narrow and busy dredged shipping channel.

- The Queensland Government (through their 100% owned Gladstone Ports Corporation) has apparently already recognised the inherent dangers of fuel vessels in Gladstone Harbour via its ban on the fuel bunkering vessel based at South Trees wharves from bunkering vessels within Gladstone Harbour.

- It is submitted that:

  a) LNG/ LPG shipping be banned from using the narrow and busy (to become busier) dredged shipping channel when that shipping channel is being used by vessels delivering bulk petroleum products to Gladstone Port Central.

  b) In the case of LNG (and LPG) vessels, an exclusion zone of 20 kilometres be placed around Gladstone Port Central when bulk liquid petroleum products are being discharged.

Other cargoes in Gladstone Harbour:

- It is submitted that a review must be undertaken to identify the potential consequences of a potential LNG (and LPG) shipping or plant serious incident on all cargoes entering, transiting and exiting Gladstone Harbour via the narrow and busy dredged shipping channel.

- It is submitted that this review must include, in its scope, the potential consequences of interaction between LPG (and potentially LPG) and all other current and future cargoes.

- It is submitted that this review must be comprehensive and cover all feasible scenarios and include consequences of chemical interaction, consequences of thermal interaction (eg heat from an LNG "pool" fire could cause liquid ammonia imports for the Orica explosives plant to give off toxic fumes including nitrogen oxide and ammonia vapours), etc.

- It is submitted that the outcomes of this review must be factored into any decision on whether or not to approve the LNG Project.

Yours faithfully

Copy: Hon Anna Bligh MP, Premier of Queensland and Minister for the Arts.
Hon Liz Cunningham MP
Gladstone Regional Council.
The Gladstone Observer.
Four Corners.

Submission 7

Santos | PETRONAS

Received
14 AUG 2009

Customer Service **1300 728 500**

www.**wdrc.qld.gov.au**

OUR COMMUNITIES | OUR FUTURE

WESTERN DOWNS REGIONAL COUNCIL

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to the Chief Executive Officer
PO Box 551, DALBY, QLD 4405

info@wdrc.qld.gov.au

ENQUIRIES TO:
Jane Holdsworth
P (07) 4672 1103

FILE REF:
1/3/6

DOC NO:
1117639

JH:FMH

12 August 2009

The Coordinator-General
C/-EIS Project Manager: Gladstone LNG (Santos)
Significant Projects Coordination
Department of Infrastructure and Planning
P O Box 15009
CITY EAST QLD 4002

Dear Sir,

RE: GLADSTONE LNG (SANTOS) PROJECT EIS

We are writing in response to the Santos Gladstone LNG Project Environment Impact Statement (EIS), and raise the following issues:

1. The EIS indicates that the proposed CSG operations will impact the Great Artesian Basin (GAB) aquifers in the area. The Western Downs Regional Council (Council) is deeply concerned about this. In the past, assurances have been given that no such impacts could occur as no linkages existed. Given that the proposed activities are in the "headwaters" of the impacted aquifers and the local impact is "limited" to 3-5 metres, there does not appear to have been any assessment on the very long term impact on the GAB downstream of the CSG operations. Given that the GAB aquifer is very slow moving, such impacts may not be seen until 20-50 years or even longer.

   There are many communities including Wandoan, Miles, Dulacca, Meandarra, Tara, Westmar and Moonie in our regional Council area that are heavily dependent on the GAB water. Whilst they are outside of the impact area for the GLNG project, they are drawing from the same water source. Communities such as these will rely on this water for the long term, and this could be at risk of being affected by the gas industry, which will only be operational in the short term. Therefore any loss or depletion in this resource is considered totally unacceptable.

2. Of major importance is that the groundwater modelling undertaken by Santos has been undertaken in isolation and does not adequately consider the cumulative affect of all CSG developments in the area.

3. Santos has given assurances that 100% of wells being drilled will be constructed in a way that prevents any risk of migration between aquifers. Given the large numbers of wells (2,500+) and the fact that down hole construction outcomes can never be guaranteed, the likelihood of some

leakage is very high. With the level of drawdown proposed, the pressure differentials between aquifers is likely to be significant. Council is concerned that modelling has not considered the impact of inter-aquifer leakage, which can result from the drilling process.

4. Council believes that the amount of monitoring proposed may be insufficient given the magnitude of the development and the impacts on the GAB , both short and long term. Council also believes that there must be a process that reviews the monitoring data and independently interprets that data on a regular and timely basis to ensure that any trends are identified early. The ultrasonic piezometers proposed in the EIS are capable of long term, real time data, but the volume of data needs to be managed so that real trends can be readily identified and not hidden by the volume of data collected. Council believes that increased water quality monitoring from CSG wells should also occur. Given that CSG and GAB waters have substantially different chemical constituents, a wide spread quality monitoring program may be able to detect inter-aquifer leakage in CSG wells. Such data should also be independently reviewed and reported upon.

5. The EIS contains details on the proposed strategies that Santos would implement in the event of loss of capacity in existing wells due to CSG activities. Council believes that the proposed strategies are inadequate given that the GAB is such an important resource and the fact that the resource is contained in aquifers that are very slow to respond to changes.

6. With regards to the "disposal" of produced water from the CSG operation, Council is concerned that Santos does not yet have a comprehensive management plan that clearly identifies where the projected quantities of water will be produced, stored, managed and reused or disposed of. Whilst some information is included, most of the proposal is based on assumptions rather than a definitive strategy.

In summary, we are concerned about the long term impact on the GAB aquifers and the risk to our town water supplies.

There appears to be inadequate consideration in the EIS given to the cumulative effect of all CSG developments in the area and consideration of inter-aquifer leakage.

In our opinion, there is insufficient monitoring and in particular inadequate, detailed and independent reporting of the data.

In respect of the proposed strategies for dealing with the loss of capacity in existing wells, we consider these inadequate when considering the importance of the GAB.

Lastly, the lack of a comprehensive management plan to deal with the proposed disposal of water is unacceptable.

We look forward to your response.

Yours faithfully

Phil Berting
CHIEF EXECUTIVE OFFICER



Submission 8

Santos | PETRONAS

Received
14 AUG 2009

12th August 2009

The Coordinator General
C/- EIS Project Manager: Gladstone (LNG) Santos
Significant Projects Coordination
Department of Infrastructure and Planning
PO Box 15009
CITY EAST Q 4002

Dear EIS Project Manager

ADDENDUM #4 TO SUBMISSION: GLADSTONE LNG PROJECT (SANTOS AND PETRONAS)

I refer to my submissions dated 3rd August 2009 and Addendums dated 5th August, 7th August 2009 and 10th August 2009.

I now attach Addendum #4, which should be read as a part of my Submissions and which is comprised of:

A. SAFETY SUBMISSION
B. ALTERNATE LOCATION (PORT ALMA) SUBMISSION

A. SAFETY SUBMISSION

Background:

- I believe that the project proponents have significantly understated the many ways in which an LNG incident can cause death, injury and property damage to Gladstone residents.

Context:

- Full and empty LNG (and possibly LPG) shipping will pass within 500 metres of urban areas whilst using a narrow and busy (will become busier) shipping channel that has an ongoing history of significant shipping incidents; the LNG plant will be within 10 kilometres of urban concentrations and other industry.

Submission:

- It is submitted that a significant hull breach of a loaded LNG vessel in Gladstone Harbour for whatever reason may result in a violent "cold" explosion as the liquid almost instantaneously undergoes massive temperature change.

- It is submitted that even without an explosion, the initial resulting cloud of vaporised gas from a hull breach could potentially asphyxiate large numbers of people in Gladstone and surrounding areas.

- It is submitted that the cloud of gas may drift over large areas of Gladstone before reaching ignition point; if ignition occurs the outcome will be a flash fire and (where the gas has infiltrated confined spaces), hot explosions. The outcome could be death, injury and property damage (refer previous Addendum relating to Boston, USA)

- It is submitted that the impact of oxygen being sucked into the fire, and concentrations of carbon monoxide after the methane flash fire, are additional considerations.

- It is submitted that similar scenarios can be identified for the LNG plant(s) and LNG loading operations; the LNG gas pipeline will also be vulnerable.

- It is submitted that the possibility of a fully laden LPG (Liquid Petroleum Gas – may be used by one of the LNG proponents to sweeten LNG) bulk carrier being involved in a significant incident within a few hundred meters of urban areas, is dreadful.

- It is submitted that although it can be argued that the above scenarios are highly unlikely and may never occur; history is littered with highly unlikely scenarios that HAVE occurred. The recent loss of rudder control by the "Endeavour River" is a timely reminder of how feasible the above scenarios are.

- It is submitted that the decisions to allow the location of LNG plants in Gladstone Harbour (including on a non-industrialised sub tropical island) instead of at a more remote location, and the use of Gladstone Harbour

for LNG (and possibly LPG) bulk vessels, are not sustainable and must be reversed with LNG plants/ shipping being directed to an alternate remote location e.g. Port Alma.

B. ALTERNATE LOCATION (PORT ALMA) SUBMISSION

Background:

- Santos has apparently selected Curtis Island ahead of Port Alma as the location for an LNG plant because Curtis Island is a cheaper option i.e. there is a perception that profits are being placed ahead of the safety and amenity of the citizens of Gladstone.

- There is a perception that the Queensland Government may have also directed the LNG plant to Curtis Island/ Gladstone Harbour in preference to Port Alma to help justify further development of Government-owned foreshore land, rather than because Curtis Island was the most appropriate location.

Context:

- Santos has consistently stated that Port Alma (a remote location) is a "second choice" because of the requirement for extensive dredging and the need for extensive piling to make the land stable.

Submission:

- It is submitted that the Queensland Government and Santos have chosen to ignore that fact that the proposed Xstrata coal terminal at Port Alma will require a major dredged channel that could be used by LNG (and LPG) shipping without exposing Gladstone residents to the predictable outcomes of plant accidents or shipping accidents.

- It is submitted that using the Port Alma dredged channel would also reduce the risk of serious shipping incidents due to its lower usage.

- It is submitted that the Queensland Government appears to be unaware of the extensive piling installed for the new stockpiles at the 100% Queensland Government owned R G Tanna Coal Terminal, and similarly appears to be unaware of the foundation work required for the massive concrete grain silos at Auckland Point and the Auckland Point tank farm (the land for these facilities is 100% owned by the Queensland Government).

- It is submitted that the Queensland Government also appears to be unaware of the extensive piling that will be required for proposed Xstrata coal terminal at Port Alma.

- It is submitted that Port Alma is a preferred site because it is more remote site and (for the reasons outlined above) a much safer site.

- It is submitted that the selection of Port Alma would prevent the industrialisation of a non industrialised sub tropical island, and hence preserve this amenity for the citizens of Gladstone and future generations.

- It is submitted that the selection of Port Alma would reduce the need for significant dredging in the western basin of Gladstone Harbour, and thereby help preserve the seagrass beds necessary for Gladstone Harbour's dugong population.

- It is submitted that the selection of Port Alma would reduce the need for reclamation of Gladstone Harbour foreshore, and would reduce the need to find places for the storage of the (potentially toxic) dredged material from Gladstone Harbour (it is understood that this dredged material will be dumped on Curtis Island and in a "mud mountain" on tidal mudflats adjacent to the mainland).

- It is submitted that the benefits of locating the Santos LNG Plant at Port Alma far outweigh the supposed benefits of locating the Santos LNG plant on Curtis Island.

- It is submitted that Santos selected the cheapest site (Curtis Island instead of Port Alma) to maximise their future profits – this is a very short sighted view.

- It is submitted that any additional cost to Santos from the selection of Port Alma instead of Curtis Island as the site for an LNG plant would be a minuscule cost over the life of the project (20 – 40 years), and that this cost should therefore be incurred to ensure that the project is sustainable and in the most appropriate location.

- It is submitted that price of LNG will follow the price of oil upwards as the world emerges from the Global Economic Crisis, making any additional cost to Santos from locating the LNG plant in Port Alma even more affordable.

- It is submitted that the selection of Port Alma would correct the current perception of the Queensland Government and major industry apparently colluding to put corporate profits ahead of the safety and amenity for the residents of Gladstone.

Copy: Hon Anna Bligh MP, Premier of Queensland and Minister for the Arts.
Hon Liz Cunningham MP
Gladstone Regional Council.
The Gladstone Observer.
Four Corners.



Submission 9

Santos | PETRONAS

14 AUG 2009

Wildlife Preservation Society of Qld

Upper Dawson

10-8-09

The Coordinator-General,
c/- EIS Project Manager: Gladstone (LNG) Santos,
Significant Projects Coordination,
Department of **Infrastructure and Planning,**
PO Box 15009, City East, Old 4002.

SUBMISSION ON THE GLADSTONE LNG PROJECT

Dear Sir,

On behalf of the above Branch of the WPSQ, we would like to make the following submission. This submission will only cover the (1) Coal Seam Gas Fields and (2) Gas Transmission Pipe Line. We feel that our branch does not have the hands on experience of the coastal environment to adequately judge the resultant specific issues.

ES 6 Project Need

We are aware that the world's energy needs are rising and that gas will be part of a less carbon- intensive solution. However, we are also aware-

(a) That the world's need for food and fibre could double in the next 50 years.
(b) Our natural environment especially our river and coastal systems are already under considerable strain.
(c) That this whole project is a relatively short term one of 25 to 30 years.

Therefore, we vigorously oppose any short term development that will compromise the natural environment and future generation's ability to produce adequate food and fibre.

ES 9 Public Consultation.

This must continue especially at this critical stage and throughout the life of the project.

ES 10.2 Transmission Pipe Line.

There should be as near as physically and legally possible a common corridor for Gas Lines. The environment will be altered and in places, considerably damaged if all the proposals for Gas Lines are not rationalized.

ES 11 & ES 12

These figures and tables show just how large the development will be and therefore the potential to severely damage the natural environment, especially the river systems. As long term land managers, our members are really concerned that so much damage could be done that would be irreversible.

ES 13.2 & ES 13.3

This will have to be gone into in great detail as it is impossible to imagine that all the planned development over such a large area and diverse land systems, will not lead to degradation and fragmentation of ecosystems etc. The EIS and resultant EMP will have to be detailed and strictly adhered to if we are not to leave the area in an extremely damaged condition

ES 13.5

This is closely aligned to ES 13.6 Associated Water. While acknowledging that Santos has installed very sophisticated water monitoring apparatus and programmes, we are still not sure what some of the resultant outcomes will be. To damage the large natural springs would be disastrous.

ES 13.6 Associated Water.

This problem really worries us and we do not feel that it is adequately covered in this Executive Summary. It does not detail how this water will be cleaned eg. Reverse Osmoses or chemical treatment? The figure of 90 ML a day of associated water will have to be cleaned up and managed. This in itself is a challenging undertaking and Santos is going ahead with large scale plans to manage the volume. Care will have to be taken that irrigating with this water does not contaminate the soil. What is of more concern is what will be done with the toxic salts that will

The Wildlife Preservation Society of Queensland – Upper Dawson Branch Inc
PO Box 262 TAROOM QLD 4420 IA35554 upperdawson@wildlife.org.au

be removed from the water before most of it can be used. There is no mention of re-injection of resultant brine underground and the potential long term consequences of this action. More research!!! The three river systems that will be impacted by this proposed development are too precious and necessary for the long term well being of the area to be ruined by short term development. We strongly feel that the project should not be allowed to go ahead until a completely satisfactory answer to the disposal of the resultant toxic salts is found.

ES 13.10

This follows commonsense and good neighbour relationships. It should also include not locating development on Stock Routes, Road Reserves, C & W reserves etc. where this will damage native vegetation. Often this is all that is left of the original landscape in an area and it must be protected.

ES 13.17 Cumulative Impact

If we don't handle this correctly, we could find our rivers and ecosystems overwhelmed and beyond our capacity to repair.

ES 14 Gas Transmission Pipe Line

ES 14.3

The main problems here that have to be carefully planned include:

1. Sighting the ROW carefully to avoid impacting on endangered or vulnerable REs
2. Clearing of remnant vegetation within the ROW to minimize disturbance.

ES 14.4 Surface Water.

These methods of stream crossing are adequate; but will have to be carefully planned. Steps will have to be taken to lesson erosion and disturbance to riparian corridors. These corridors are extremely important for habitat trees and travel between areas for local animals.

ES 14.17 Cumulative Impacts

This must be taken into consideration as this could be the first of many proposals.

ES 16 Sustainability.

Here is where all the cumulative impacts come together and the State and Federal governments must insist on an overall development plan for the basin. Naturally there has been a lot of individual work done already; but now it must all be incorporated into long term planning.

Unless all the development proposals are drawn into this plan, we could end up with the situation where the future productivity of the entire Surat and Bowen Basins are severely degraded for future generations.

Therefore until the following has occurred, we would find ourselves unable to support this EIS in its present form:-

1. This overall planning is done.
2. A solution to the SAFE DISPOSAL OF THE TOXIC SALTS IS FOUND.
3. It is clearly proved that the quality of our rivers will not be compromised.
4. It is proven that the underground waters will not be contaminated or depleted.
5. Adequate offsets have been allowed to mitigate the environmental damage that will occur.

Santos has put a considerable amount of effort and money into drawing up this EIS. They also put a lot of resources and expertise into disposing of the resultant contaminated water. Extensive monitoring equipment has been installed to chart the progress, effectiveness and long term safety of their disposal system.

Still, our position is that the government is obliged to make sure that we, the present generation do not ruin things for future ones.

We trust that you will consider this submission in your deliberations and look closely at the long term implications of all your decisions.

We must remember the wise old land manager's saying " WE DO NOT INHERIT THE LAND FROM OUR PARENTS, WE BORROW IT FROM OUR CHILDREN".

Adam C Clark

Adam C. Clark (Project Officer)



Submission 10

Santos | PETRONAS

14 AUG 2007

14 August 2009

The Coordinator – General
C/- EIS Project Manager:
Gladstone (LNG) Santos
Significant Projects Coordinator
Department of Infrastructure & Planning
P.O. Box 15009
CITY EAST QLD 4002

Dear Sir / Madame

I made a submission to the draft E.I.S. stating that cattle and cattle people were not mentioned in the report. It assumed we weren't part of the environment. Considering that a large part of Santos' activities will involve negotiations with cattle people, they should learn more about the impact of noise, light, dust, people and traffic etc on cattle and cattle people. A large part of the value of our land is the tranquil lifestyle it offers. How can Santos comply with the mining and petroleum act that involves the denumeration of the value of our land if they don't know more about the effect on our cattle, our business and the value of our lifestyle? This is a major oversight in the study and should be rectified.

Also, my son runs an eco-tourism business on the farm and amongst the huge E.I.S. report, I can't see where his business will be protected or compensated for, or the wildlife he encourages will be protected. These issues should be addressed.

Yours faithfully,



Submission 11

Santos | PETRONAS

Received
14 AUG 2007

Your reference: RN 139852/MH31/DIP
Our reference: HS02571/09

Mr Colin Jensen
Coordinator-General
Attention: EIS Project Manager
LNG – Gladstone (Santos) Project
Significant Projects Coordination Division
Department of Infrastructure and Planning
PO Box 15009
CITY EAST QLD 4002

Dear Mr Jensen

I refer to a recent letter from your department requesting the Department of Communities to review and comment on the Environmental Impact Statement (EIS) for the LNG – Gladstone (Santos) project.

The department has reviewed the EIS and notes that the proponent should continue to monitor the following as per the stated intention of Section 9 'Community Consultation':

- That the project presents an opportunity to provide valuable training and work experience for certain groups in the community such as Indigenous peoples, people with disabilities and unemployed youth, among others.
- Investigates any adverse economic, social and cultural impacts on smaller communities affected by the proposed pipeline.

Overall, the department is satisfied that the proponent has addressed its interests and concerns within the EIS. However, the proponent will need to maintain an open dialogue with the residents and businesses in the various areas to keep them informed and consulted where appropriate.

If you require any further information or assistance in relation to this matter, your officers may contact Mr Alan Dick, Director, Private Housing Program, Housing and Homelessness Services, Department of Communities on 322 76223.

Yours sincerely

Linda A Apelt
Director-General

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Brisbane Queensland 4000
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Website www.disability.qld.gov.au
DOC ABN 38 872 506 567
DSQ ABN 25 791 185 155



Submission 12

Santos | PETRONAS

Submission 12 DEWHA Response

Following their review of the EIS, the Department of Environment Water Heritage and the Arts (DEWHA) has requested that further information be provided. A summary of the issues raised are as follows:

- Provide further information regarding (Phase 2) development related impacts, before being able to assess the impacts of the development phase of the project.
- Provide further discussion on threatened and migratory species impacts.
- Provide more detail on proposed protocols to avoid areas of sensitivity.
- Provide further information on Acid Sulfate Soils (ASS) mitigation measures, including triggers for the preparation of management plans.
- Provide further discussion on offsets.
- Emphasise the avoiding of sensitive or listed communities or species.
- Provide more detail on impacts to threatened and migratory species, or threatened ecological communities.
- The development of a Dredge Material Placement Facility water management study/model.
- To quantify the amount of loss of soft coral and impact on sedimentation.
- Provide further detail regarding EPBC Listed Threatened Species for the CSG field.
- Provide specific mitigation measures for sediment loads on seagrass during dredging.
- Provide further discussion of impacts from the construction of the gas transmission pipeline on the Great Barrier Reef World Heritage Area.

All issues raised along with Santos' response are detailed in Part 2 according to which section of the EIS each issue refers to.



Submission 13

Santos | PETRONAS

17 AUG 2007

Name:

Organisation (if applicable):

Address:

Contact details:

Section	Describe the issue	Suggested solution
ES 10.3	Construction Workforce Accommodation – The suggested CAF establishment to be located on Curtis Island to house the Construction workforce. It would not appear that consideration has been given to the sandfly situation on curtis island with regards to the workers being confined to the island 24hours of the day for the duration of their working time. Sandfly repellents whilst can they can relieve this situation are not harmless to the human body. As a resident of Southend I have first hand knowledge of how bad they can get on the Eastern side of the Island and they are far worse on the western side where the camp will be located. The damage done by up to 2000 workers constantly moving about in one area has not been estimated. What has been organised by way of recreation activities for these workers during their rest periods or is it intended to work them around the clock with just enough time to eat and sleep. All of the above are not a recipe for a happy workforce and a restless workforce. These men are not going to be happy couped up in a Sandfly ridden small compound, and when workers become unhappy bosses start to turn a blind eye to them doing things that they would normally be forbidden to do, SUCH AS travelling to the Southend Settlement for a bit of entertainment etc.	That a large CAF not be constructed for the constructed on the Island. Perhaps a smaller camp for emergency and essential employees, however I would strongly argue against a large camp on the Island. I have experienced construction camps during my working life and a camp located at the proposed site would be my worst nightmare. I would recommend that most of the workforce be housed at alternate location either on the mainland or a floating camp (Float-tel) as indicated.
ES 15.10	The small settlement of Southend has been severely underestimated in this EIS. There are 105 dwellings with aproximately 20 permanent residents and up to 300 seasonal residents. Given the inaccuracies of the EIS it would appear that this area has been glossed over and not properly studied.	The small settlement is bursting at the seams when comparing infrastructure with residents during holiday periods. The last thing needed is for additional pressure to be placed on the community by the LNG workforce.
ES 15.13	Construction Workforce – to be accommodated on Curtis Island. Please refer to my notes at ES 10.3 above.	Please refer to notes at 10.3 above
ES 15.9	Noise and Vibration – I acknowledge the comments in this paragraph however we have been told that noise monitoring has show that we do not get any industry noises from the mainland industries. This is in fact false as we get quite a bit of noise especially in the early morning from industry in the upper areas of the harbour. We have no reason to think that the small natural rise of the range mentioned is going to stop noises from the LNG precinct either.	More serious investigation needs to be undertaken considering that certain noises from the proposed Plant could be quite high.

Signature:

Submissions must be received by **5 pm on Monday 17 August 2009** and be addressed to:

The Coordinator-General
C/- EIS Project Manager – Gladstone Liquefied Natural Gas project
Significant Projects Coordination
Department of **Infrastructure and Planning**
PO Box 15009 City East QLD 4002
fax +61 7 3225 8282
SantosLNG@dip.qld.gov.au

This form is the preferred format for a submission. Please use additional pages if there is insufficient space. Submissions will be treated as public documents and copies will be provided to the project's proponent. For further information please contact the Infrastructure and Economic Development Group on (07) 3234 1380.

Submission 14

Santos | PETRONAS

Received
17 AUG 2007

From:
Sent: Thursday, 13 August 2009 7:47 PM
To: GLNG SANTOS

The Coordinator General,
C/- EIS Project Manager: Gladstone (LNG) Santos,
Significant Projects Coordination,
Department of Infrastructure and Planning,
Email: SantosLNG@dip.qld.gov.au7

13th August, 2009,

Dear Sir,

SUBMISSION LNG PROJECT (SANTOS AND PETRONAS)

My first concern is that the LNG Industry being mooted for the Gladstone Harbour should be treated on an individual company basis on the area of their plant footprint and that any other basis for consideration must be on a whole of industry.

1. **The Harbour is being promoted by the Government as a deep water harbour yet just to do the Western Basin will be approximately 50 million cubic metres of spoil. At this stage nothing has been mentioned of the extra dredging to provide a second channel to the entrance of Gladstone outer Harbour that this industry requires for both safety and commercial expedience (proponent has stated that they cannot be held up by other shipping). I was quite dismayed to read that Santos is proposing an alternative to the Gladstone Ports Corporation dredging and have included in their EIS plans to do their own dredging and put this spoil near Laird Point which is bordering Grahams Creek a part of the Great Barrier Reef Marine Park. As per "Curtis Coast Management Plan dated September, 2003 it also consists of "Significant Coastal Wetlands" which includes seagrass beds. I have spoken to a spokesperson of Queensland Curtis LNG (BG) and have found that they also are including plans for their own dredging. I am afraid this smacks of a sleigh of hand by the Ports Corporation on the dredging of the Western Basin. I also note that the Western Basin dredging does not include the area around Boatshed Point**

which is also being mooted as an LNG site. I have grave concerns with regards the wellbeing of Curtis Island. What is in this spoil, what is in the area where it is going to be dumped, what is going to happen to this area when the spoil settles? What affect is all this dredging going to have on North Entrance and other areas of the Gladstone Harbour, especially The Narrows which is heritage listed. I also have to mention the dugong population, Irrawaddy dolphin, turtles, crabs, fish etc.

3. **Air shed is also of concern as Santos has stated that they will produce approximately 900,000 tonnes of CO2 per year during their initial stage of 1 train which equates to a total increase in Queensland's emissions of 3%. This is for 1 train for 1 company. There is a minimum of 10 trains being proposed for Gladstone by a couple of companies therefore increasing the total of CO2 emissions for Queensland is 30%. Where does this leave Gladstone's air quality? Once again this should be a cumulative effect not an individual one.**

3. **The number of ships that this industry will add to the ever increasing number of coal ships is gravely concerning. Gladstone historically has a large recreational use of its harbour and with the proposed coal expansion and LNG industry it would appear that this is going to be seriously curtailed. Surely the citizens of Gladstone deserve better than this.**

From the information that I have read it appears that the LNG industry did not choose Curtis Island but it was chosen for them.



Submission 15

Santos | PETRONAS

Fax 17 AUG 2007

CHRC central highlands regional council

FACSIMILE

DATE:	**17 August 2009**	**FROM:**	**Alexis Aylward**
TO:	**EIS Project Manager: Gladstone (LNG) Santos**	**DEPARTMENT:**	**Strategic Planning**
FAX NO:	**3225 8282**	**PHONE NO:**	**(07) 4982 8307**
NO. PAGES:	**9 (including cover)**	**FAX NO:**	**4982 1354**

Please find attached submission for the Environmental Impact Statement regarding the Santos Liquid Natural Gas Project.

Should you require further information please phone Council's Strategic Planning Department on ☎ 4982 8307.

Regards

Alexis Aylward
Manager of Strategic Planning

This facsimile transmission is intended for the exclusive use of the addressee. If you are not the addressee or an employee or agent responsible for delivering the facsimile transmission to the addressee you are hereby notified that any copying, disclosure, distribution or other use of this facsimile or of the information contained herein is prohibited. You are requested to immediately notify us by telephoning that you have received this facsimile transmission and return to us at the postal address disclosed. Any legal privilege which applies to this facsimile is not lost, waived or destroyed by reason of mistaken delivery of the facsimile transmission to other than the addressee. Thank you for your assistance.

ALL CORRESPONDENCE TO BE ADDRESSED TO THE CHIEF EXECUTIVE OFFICER - ATTN: [CONTACT NAME]
PO BOX 21 / 65 Egerton Street Emerald Qld 4720 General Enquiries: 1300 242 666 Fax: 1300 242 687 Email: enquiries@chrc.qld.gov.au

CHRC central highlands regional council

OUR REF: GLNG Project
CONTACT NAME: Alexis Aylward
TELEPHONE: (07) 4982 8307
FAX: (07) 4982 1354
EMAIL: aaylward@chrc.qld.gov.au
Emerald Office, PO Box 21 Emerald Qld 4720

17 August 2009

The Coordinator-General
C/ EIS Project Manager: Gladstone (LNG) Santos
Significant Projects Coordination
Department of Infrastructure and Planning
P O Box 15009
City East Qld 4002

Facsimile: 07 3225 8282
Email: SantosLNG@dip.qld.gov.au

Dear Sir / Madam,

Re: Comment on Environmental Impact Statement

The Council supports the Gladstone Liquid Natural Gas Project and commends Santos on their initiative in undertaking a resource project of this scale in Central Queensland.

The Council received a copy of the EIS from a Santos representative at a public meeting on the 17 July 2009.

Public Notification

The Department has been overseeing the public notification of this EIS. This has involved notifying stakeholders, including affected local government authorities, of each phase of the application's assessment process. There are five affected local government authorities that contained components of the project and the other four were notified of the release of the EIS no later than the 2 July 2009. It is highlighted that this Council did not receive any notification of the release of the EIS from the Department. The Council did receive earlier notifications in regard to the project and made a submission in relation to the Draft Terms of Reference.

The lack of notification from the Department has had the following consequences:

1. The Council's local publicity network to inform the wider community and make EIS documents available in public offices/ libraries was only activated to a limited extent in early August. There is concern that those members of the Arcadia Valley and Bauhinia Downs communities who are not land owners negotiating with Santos, and in particular those without access to a home computer, were not able to fully avail themselves of the opportunity to review and make a submission on the EIS.
2. This submission is an abridged review of the EIS as Council has been limited by the reduced public notification period and availability of specialist staff that were already otherwise committed. Therefore the focus of this submission is on the operational phase of the project and in particular mechanisms that will

promote community benefit and give affected communities / land holders the ability to influence mitigation of impacts from the project.

Upon review of material associated with this project the following issues regarding the impacts of the proposal are highlighted and raised for your consideration when assessing this development.

Communication Infrastructure

The Acadia Valley and Bauhinia Downs areas are identified as communications black spots as they currently experience a limited access to modern communication technologies due to a lack of communication infrastructure. These limitations include, but are not restricted to, the following examples:

1. Poor or no mobile coverage from any carrier;

2. Reliance on satellite for broad band internet access;

3. Reliance on aging radio phones services; and

4. Inability to support new network dependant services such as a cost effective CORS, RTCM, RTK GPS correction signal network.

The lack of capacity with existing infrastructure currently makes provision of these services uneconomic; the low population density makes major upgrades to existing infrastructure unlikely unless it can be combined with another project. The standard of infrastructure has a detrimental effect on the daily life of residents and detracts from the ability of emergency and essential services to operate within these localities.

The private telecommunications service proposed to be established to service the gas pipeline and CSG field are set out in section 3.6.6.7 of the EIS. The CHRC is separately proposing a Council operated network of communication towers and associated infrastructure with a capability to provide high bandwidth data and voice services that would also be operated within the project area. There is mutual benefit to Santos, CHRC and the community if a cooperative approach to the telecommunication network results in a capacity to incorporate public access. This would involve the CHRC, and other Councils along the route of the gas pipeline, having legal access to the project's communications assets such as towers, buildings and with consideration to access to the spare capacity on the fibre optic cables. Alternatively the Council could install a duplicate fibre that would share the communication assets of the towers and buildings.

The benefits to Santos from such an arrangement are immediate and ongoing as set out below:

1. It is highlighted that one of the proposed telecommunication services is the CORS, RTCM, RTK GPS correction signal network that would be of significant benefit to Santos in a range of areas including surveying and exploration, as well as primary producers, including those upon whose land the pipeline easement is located.

2. The availability of an alternate high band width wireless data service would provide Santos with a backup communications link for telemetry, pipeline operations and staff communications (workplace safety and skype)

A legal agreement and protocol would need to be entered into prior to commissioning of the first pipeline. This agreement would need to stipulate the access regime, maintenance responsibilities, equipment and power among other technical considerations. There are implications in this for the design and dimensions of the towers and buildings to accommodate additional infrastructure. It is understood that the operational needs of Santos would remain dominant in any agreement and or protocol

Road Transportation

A brief review of the Environmental Impact Statement has identified a number of concerns regarding the use of Central Highland Regional Council roads, in particular, the Arcadia Valley Road. This road has not been constructed for the amount of heavy traffic involved in the construction and operation of the gas transmission pipeline.

The review of the document has been limited to the Executive Summary and Section 15 Bridge, Road and Services Environmental Management Plan. The following comments are made and proposed recommendations are suggested.

Section ES 7 covers the EIS Methodology and Phase 1 incorporates an "*assessment of the likely impacts from typical project elements.*" Examples given are wells, pipelines, compressor stations camps etc but surprisingly there is no mention of transportation as an element that will have an impact. The Arcadia Valley Road will, without doubt, be significantly affected by the transport of pipeline materials and it is strongly recommended that Santos arrange for investigation of the existing pavement to determine the current condition from which a pavement suitable for the transport of the proposed loads involved in the project can be designed and constructed with Santos meeting all costs.

Section ES 10.2 identifies a significant section of the Arcadia Valley as a possible pipeline route. Existing roads can be expected to provide access for pipes and other heavy loads even if the pipeline route itself is some distance away. It can therefore be expected that the Arcadia Valley and possibly roads such as Mulcahys' Access Road (between southern end of Arcadia Valley and Carnarvon Highway) will be subjected to a considerable number of large loads and not always in ideal dry conditions.

Pipe delivery is identified as being by either road or rail for transport into the Arcadia Valley the CHRC road provides the only feasible option and the impact of 65 – 70 truck loads per day (140 movements per day) will be very significant. The number and type of vehicle movements associated with other components of the project have not been set out. These include, but are not limited to, the development of the wells in the CGS field, relocation of workers camp(s) and ongoing maintenance of both the pipeline and wells. Ideally the CHRC would expect that travel routes are planned so that maximum use is made of both the Dawson and Carnarvon Highways so that use of CHRC roads is minimized.

Section ES 13.15 Traffic and Transport states;

> *Traffic impacts to the road network by the proposed CSG field development are not expected to be significant because of the relatively low levels of traffic generated over a relatively large area. Additionally, the existing traffic volumes on most roads in the vicinity of the CGS fields are at such low levels that the roads operate with significant spare capacity and the proposed GLNG Project traffic will not trigger capacity upgrades.*
>
> *In combination with the traffic generated by the construction of the gas transmission pipeline, the CSG field development will "bring forward" the need for pavement rehabilitation on two road sections of the Carnarvon Highway, one road section of the Dawson Highway, and one section of the Warrego Highway. These road sections will require pavement rehabilitation works one or more years earlier with the GLNG Project than they would with background traffic only.*

The first paragraph suggests that traffic capacity is the criteria for upgrading. This is only partly correct and ignores the impact of vehicle loading on the pavement. The need for pavement upgrades depends far more on the type of traffic using the road, based on the number of Equivalent Standard Axles (ESAs) that will traverse the road over a defined period. The Santos Project will result in a very significant increase in both the number and frequency of large heavy vehicles using the road network over the period of construction. In the case of CHRC roads there is absolutely no doubt that there will be major pavement distress relatively early in the transport phase and that major strengthening of the pavements will be required before transport of heavy equipment and materials begins.

The CHRC roads likely to be used are either gravel or Minimum Standard Seal (MSS) pavements. These roads are not designed for large numbers of heavy vehicles, particularly over a relatively short period of time such as two years. As noted earlier these roads will require major upgrading before the transport requirements of the Project begin.

It is anticipated that once the road network is known that Council will seek to have those roads identified as being Local Roads of Regional Significance.

Further, once it has been determined which CHRC roads will be used for transport of materials and equipment the existing pavements will need to be investigated to determine current pavement strengths and, based on the expected ESAs to be carried by the roads, or sections of them a pavement design will need to undertaken, followed by construction to the necessary standard. This whole process from investigation brief through to final design should be done by an independent engineering consultancy acceptable to the CHRC. Construction of the upgraded pavement, which should be sealed over the entire length involved (in order to avoid ongoing maintenance of an unsealed pavement during the transport phase) should be carried out by the CHRC or managed by the CHRC with the entire cost of upgrading as a Project cost to be borne by Santos. Since the need for upgrading will be entirely for the Project there should be no cost imposition on the CHRC ratepayers at all.

Consideration should also be given to either an agreement or agreed protocol between Santos and CHRC that would enable a review of level of road usage and maintenance regime throughout the life the project.

State Planning Policy 1/03 'Mitigating the Adverse Impacts of Flood, Bushfire and Landslide' (SPP 1/03)

The pipeline traverses a range of land forms and like all physical structures is vulnerable to natural disasters.

In Tables 10.3.3 ' CSG Field Hazards' and 10.4.3 'Main Pipeline Hazards' fire is identified as both a potential hazard cause and hazard consequence. This risk is also addressed in sections 6.11.5.1 'Potential Impacts and Mitigation Measures: Impacts on Existing Land Uses: Fire Management' regarding the CSG fields and 7.11.5.1 'Potential Impacts and Mitigation Measures: Impacts on Existing Land Uses: Fire Management' regarding the pipeline. The Bauhinia Planning Scheme identifies part of the proposed route as being located in areas of medium or high bushfire hazard. It is also noted that project infrastructure is in close proximity to cropping and grazing land that provides the livelihood of agricultural producers. The safety management strategy includes reference to "Emergency Response Procedures". The State has set out a procedure in SPP 1/03, namely a Bushfire Management Plan that includes site measures to reduce the risk of fire and forward planning to ensure rapid response to a fire. Consideration should be given to requiring the preparation of such a plan for the pipeline and infrastructure associated with the CSG field.

Riverine flood or localised flooding is not identified as a risk to this project. Indeed one of the criteria for selection of the pipeline route is avoidance of flood prone land and as the majority of the projects infrastructure is underground or in a closed system so it is not as prone to flood hazard as are other types of development. However Santos will be reviewing material related to inundation and the Council has a very keen interest in the results of such studies.

All material prepared by Santos in compliance with SPP 1/03 should be made available to Council to assist it in preparation of community counter disaster planning.

Pipeline Construction – Visual Amenity and Route

The Council has previously expressed concern in comments on the draft terms of reference that as part of the construction of the Queensland Gas Pipeline (QGP) there are a number of visually intrusive scars on steep, otherwise vegetated hillsides. Any additional pipelines crossing steep vegetated terrain(s) have a very real potential to create a visual blight.

In the EIS there is support for the option 1 route where the proposed GLNG pipeline shadows the alignment of the existing QGP more the majority of this route. The Council also endorses option 1 as the preferred alternative route as set out in Section 2 'Project Alternatives'. However there is a marked deviation at the point of the Arcadia escarpment between the proposed and the existing pipelines. The reasons for this deviation can be inferred but Council did not find an explicit explanation in the EIS as to why the deviation was necessary. It is identified in Section 7 and Appendix H that this is a very

difficult section of the route that is affected by slope and natural patterns of erosion. It is further understood that it is the intention to clear vegetation and make preliminary provision for a duplication of the pipeline at time of construction of the first pipeline. Given that the exact location of the escarpment crossing and techniques of construction are not yet known the Council would seek that the issues of erosion management, emergency access and visual blight be given high weightings in the determination of the pipeline route and method of construction of the pipeline

Accommodation

There are different accommodation requirements through the life of this project that peak during construction phases and are relatively low and static during operational phases. The workforce accommodation needs were described for the construction phase of the pipeline however the pipeline operational and both the CSG field establishment and operational workforce is not clearly set out. It is acknowledged that within the CHRC section of the project that there limited village settlements and given the isolated route of the pipeline and location of the CSG gas field, temporary workers camps will be required. The proposed criteria to be used to identify suitable sites for these temporary workers camps in section 2.2.3.3 of the EIS raises the same issues as Council if it were to site such a facility. The Council would also have factored in proximity to a recognised rural centre, such as Rolleston or Bauhinia Downs, as over the long term we seek to improve the infrastructure around these local nodes.

There is a qualitative difference between transiting construction workers and permanently based maintenance workers in the operational phase and this should be reflected in the standard and location of the latter's housing. One strategy that has merit is to locate a worker's camp (main or satellite) in proximity to a recognised rural centre and post construction phase retain part of the camp as permanent housing for ongoing maintenance staff in the operational phase. This would assist in strengthening the rural centre and integrating permanent workers into the community.

As the proposed size and location for the construction worker's camps are not known at this point, the Council would appreciate further contact with Santos when they are selecting workers camp locations.

Involvement of Community and Council in Mitigation Strategies

This project will have a significant impact on the economic and social fabric of the Bauhinia and Acadia Valley communities. In a number of sections the EIS comprehensively identifies a range of potential environmental, economic and social impacts and sets out mitigation measures. This is a project that will operate over a number of decades and in the shorter term there are at least two components, namely the duplication of the gas pipe and the development of the CSG field in Acadia Valley, are several years from commencing. In the longer term further exploration leases within the CHRC may be developed to the north west of the current project area. A common mitigation measure response is that the Santos will negotiate, liaise or develop a nominated type of plan with the landowners, the community and or the Council, without any indication of the actual solutions that would remedy the identified issue. The EIS's lack of definitive solutions is a reflection of this long timeframe where so many factors are still unknown.

In this context the Council puts forward two strategies that will ensure that there is an ongoing communication channel between all parties. They also give Santos the ability to proactively address both anticipated and as yet unknown impacts from all aspects of the project.

1. Liaison Officers

The employment of full time liaison officers who are permanently resident in communities along the pipeline and near major project facilities to liaise directly with and owners, the community, emergency services and Council. The liaison officers would be embedded in the community and therefore be readily accessible to all stakeholders enabling them to network within and build up a strong understanding of their community. In turn Santos would benefit from continual feedback as to best practise management of implementing and maintaining the projects infrastructure.

An indication of the type of activities that they may be involved with are set out below:

Land Owners

i Advise of roll outs of infrastructure.
ii Be first point contact for any problems
iii Monitor creeping or accumulative impacts such as noise or dust.
iv Work with individual farm plan to maximise location of infrastructure and farm tracks etc
v Negotiate regarding re use of water
vi Weed management
vii Fire Hazard management

Community

i Identify potential employees or local suppliers
ii Be first point contact for any problems
iii Advise of roll outs of infrastructure
iv Understand and be involved in local counter disaster planning
v Facilitate employee and local interaction at social level.

Council

i Transport infrastructure
ii Communication infrastructure
iii Access to and disposal of any excess water
iv Crossing of stock routes
v Short term use of Council plant
vi Ongoing contact as facilitator with community to resolve any problems
vii Advise of roll outs of infrastructure.

2. Community Benefit Fund

   The establishment of a Community Benefit Fund that is accessible for programmes to the towns, villages and small rural localities that are affected by the project. It would be a tool that could be administered through the liaison officer to foster the communities and address impacts that have been identified in the EIS or as they emerge through the life of the project.

In summary the Council thanks the Department for the opportunity to provide comment on an EIS that provides a very comprehensive overview of the project on the broad scale. The Council looks forward to working with the Department and Santos to implement the mitigation strategies so that the maximum benefit can be achieved from this project. If you need to discuss any aspect of this submission please contact the nominated officer, Alexis Aylward, as per the contact details at the head of this letter.

Yours faithfully



Bryan Ottone
Chief Executive Officer



Submission 16

Santos | PETRONAS

17 AUG 2009

Queensland Government

Your Ref: TN139881
Enquiries: Anthony Walsh
Phone: 07 4938 4305
Fax: 07 4938 4057
Email: anthony.walsh@dip.qld.gov.au

Department of
Infrastructure and Planning

17 August 2009

The Assistant Coordinator-General
Attention: EIS Project Manager
Gladstone Liquefied Natural Gas Project
Significant Projects Coordination
Department of Infrastructure and Planning
PO Box 15009
City East QLD 4002

Dear Sir

Draft Environmental Impact Statement: Gladstone Liquefied Natural Gas Project – Santos

Thank you for the opportunity for the Planning Group to comment on the draft Environmental Impact Statement (EIS) document for the Gladstone Liquefied Natural Gas Project (GLNG Project) proposed by Santos.

Overall the draft EIS is a comprehensive document that outlines concerns about the impacts of the development of the GLNG project and how the proponent intends to minimise and mitigate any adverse impacts.

The following comments are provided to assist in the assessment of the GLNG project:

1. *Regional planning context*
   Since the finalisation of the terms of reference and release of the draft EIS, the Maranoa - Balonne Regional Plan has been approved. The final plan is expected to be officially launched in the next month. Given that the plan is yet to be released these comments are based on the draft regional plan. It is suggested that further assessment of the EIS against the final regional plan is warranted given that there have been changes to the draft based on extensive community consultation on the plan and as a result of the resources summits held in late 2008.

   The draft regional plan identifies the development of energy resources in the Surat Basin as a topical issue that needs to be considered. The plan provides a number of land use policies and aligned strategies designed to address the potential planning challenges that are likely to be experienced with the continued development of this industry sector. It identifies issues such as regional infrastructure, social impacts on rural towns, increased housing demand and water supply availability, etc.

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ABN 25 166 523 889

Section 1.9.3 of the EIS deals with the regional planning context of the proposal, however it does not make mention of this draft plan. It is noted that the plan is mentioned in later parts of the EIS and that a limited assessment against the policies is provided. It is recommended that further information be provided on how the project can address issues raised in the Maranoa-Balonne Regional Plan. Please note that the launch of the final regional plan is currently tentatively scheduled for official launch by the Honourable Desley Boyle MP, Minister for Local Government and Aboriginal and Torres Strait Islander Partnerships in late September.

2. *Coal seam gas fields*

The EIS states that the majority of workers will be accommodated in field based workers camps. The provision of water and sewerage facilities to these camps is important and has not been investigated in detail at this stage. The timely resolution of these servicing issues is critical to the efficient roll out of the pipeline and gas well infrastructure. The proponent should enter into discussions with local government and other service providers at an early stage to determine potential requirements.

The workers camps may not require planning development approvals from the local government where they are located inside the petroleum lease areas. It is therefore important that existing infrastructure is not adversely affected (eg roads, community infrastructure, etc) by these communities and that appropriate assistance is provided to local governments and other service providers to maintain this infrastructure to a standard acceptable to the affected parties.

The strategy adopted appears to be to locate the majority of workers in temporary accommodation facilities to reduce the physical and social impacts on nearby communities. This strategy may assist to reduce some of the physical infrastructure impacts (eg water, sewerage) but it will not ameliorate the potential social impacts. The department needs to be satisfied that the project will not result in detrimental social impacts on the existing communities and addresses the issues raised at the Dalby resources summit. It is noted that social impacts of the proposal are addressed in detail in Appendix Z: Final Report, Santos GLNG Social Impact Statement, February 2009 and provides for a range of mitigation measures.

3. *Gas transmission pipeline*

Delivery of pipeline infrastructure is proposed via train or truck movements (along the Dawson Highway). This will require up to 140 truck movements per day in addition to existing traffic for a period of six months. In addition, construction workers (estimated to be 1 000) are proposed to be located in three main accommodation camps situated along the pipeline route. The EIS does not indicate the location of these camps and states that because these workers are likely to be fly in fly out (or drive in drive out) then the impacts on existing communities and infrastructure will be limited. The department needs to be satisfied that maintenance agreements are in place to ensure that transport infrastructure standards will not be adversely impacted and that other service providers are provided with information about the likely future demand for infrastructure and services.

4. *LNG Facility*

Dredge spoil

The dredge spoil disposal area proposed in the EIS is at Laird Point. A separate project (Western Basing Dredging Project) is examining longer term disposal options for a whole of port perspective. It is noted that the ultimate solution for the disposal of dredge spoil is likely to be part of a supplementary EIS.

Accommodation camp on Curtis Island

It is proposed that the LNG facility, to be located on Curtis Island, will be stick-built and requires all of the construction workforce (3 000 people for train 1) to be located on site at a construction accommodation facility (CAF). The EIS argues that the provision of on site accommodation is an ancillary use of the Industrial Precinct of the Gladstone State Development Area (GSDA). Further advice should be sought from the department's State Development Areas Implementation Branch in relation to this assertion and any assessment under the development scheme for the GSDA.

The provision of a CAF of this size will require significant infrastructure requirements. The location of a CAF on an island in an environmentally sensitive area means that it would be critical that such infrastructure (eg water supply, sewerage, waste management) is designed sensitively and does not adversely impact on the surrounds. It is noted in the EIS that it is not intended that access from the camp will be provided to other parts of the island (eg South End, Black Head). The Department is concerned that any CAF on Curtis Island would provide a catalyst for further residential development on Curtis Island.

Thank you for providing the opportunity for the Planning Group to comment on the EIS. If you have any queries in relation to this matter, please contact Anthony Walsh, Principal Planner, Central Region Division, Planning Group on 4938 4305.

Yours sincerely

Damian Pearson
Regional Director
Central Region Division

Submission 17

Santos | PETRONAS

RECEIVED
17 AUG 2007

17 August 2009

The Coordinator-General
C/- The EIS Project Manager: Gladstone Liquefied Natural Gas project
Significant Projects Coordination
Department of Infrastructure and Planning
PO Box 15009 City East QLD 4002

Dear Sir/Madame,

RE: EIS Gladstone Liquefied Natural Gas project

The dredging of in excess of 8M cubic meters will have impacts within the Port Curtis harbour. Unfortunately we lack the knowledge and the ability to adequately gauge these impacts. Whilst the Port Curtis Integrated Monitoring Program (PCIMP) has been monitoring water and sediment quality and a few other parameters, our knowledge of the Port Curtis ecosystems remains scant.

We know very little about our mangroves, mudcrabs, prawns, and fisheries despite their huge contribution to commercial and recreational fisheries in Port Curtis. We know even less about our dugongs and dolphins and other macrofauna because they are not valued appropriately.

In addition to my concerns about the immediate effects of dredging I have major reservations about the ability to properly manage the acid sulphate soils (ASS) during the medium and long term storage of the huge amount of dredge spoil. The results and plans outlined in the EIS to manage ASS imply an ability to manage potential impacts via lime neutralisation. However I remain skeptical that we have the ability to manage the potential ASS impacts from such large scale dredging and storage.

Unfortunately I am only too aware of how costly mismanagement of sulphides can be from my Masters research of the impacts in the Dee River from the Mt Morgan mine. Many millions of Queensland public money has been spent without any hope of rectifying the problem in the near future. Contemporary mismanagement of ASS in Australia has shown that we have not learned from our mistakes of old.

In the absence of sufficient knowledge of the significant ecosystems of the Port Curtis Harbour and the lack of proven ability to properly manage ASS impacts of such a large scale dredging this project should not proceed.

Yours sincerely,

Submission 18

Santos | PETRONAS

Port Curtis Coral Coast Aboriginal Corporation

ABORIGINAL CORPORATION

Post Office BOX 3074
Bundaberg, QLD. 4670
07 41516999
admin@pcccac.com.au

The Coordinator-General
C/- EIS Project Manager - Gladstone Liquefied Natural Gas project
Significant Projects Coordination
Department of Infrastructure and Planning
PO Box 15009 City East QLD 4002
fax +61 7 3225 8282
SantosLNG@dip.qld.gov.au

Dear Sir

Environmental Impact Statement Submission
GLNG PROJECT
GLADSTONE

Please find attached duly completed formal EIS submission for the above Project.

Our Corporation is the registered Aboriginal Cultural Heritage Body, pursuant to the provisions of the *Aboriginal Cultural Heritage Act. Qld.*

All current Directors of the Corporation are also the Applicants for the Registered Port Curtis Coral Coast Native Title Claimant Group **(QUD 6026 OF 2001)** (PCCC).

As the Authorised Applicants of the PCCC Native Title claim group, we have been engaged in negotiations with Santos on behalf of the GLNG Project Proponents for more than 12 months. A Cultural Heritage Management Plan (CHMP) has been executed; however the CHMP does not deal with the water and area below the low tide mark, which will clearly be impacted by the Project. To date there is no agreement between the parties on how this important area will be utilised and managed.

The project impact area is rich in Archaeological evidence of its use by our PCCC ancestors, and still provides a critical role in the maintenance of our traditional and cultural practices today. The changes in the way the land and is accessed, will impact on our ability to met our cultural obligations to future generations, due the continuing reduction in areas where we can undertake our cultural responsibilities.

Further on this matter PCCC wishes to place on the record its fervent opposition to the construction of any Bridge to Curtis Island in the Laird Point, Kangaroo Island, due to strong PCCC Cultural reasons, the whole area is part of our PCCC Cultural existence and we request ask that you respect and observe our lore on this Project.

PCCC has been unable to secure resources from the Project Proponent, in time, to meet the EIS submission deadline to allow for Independent Experts advice to our Native Title group and as such all submissions by PCCC are prepared without any Expert advice.

This has severely impacted on our ability to provide technical, legal and scientific comments/appraisals in our submissions. We do however observe that there is an extraordinary amount of Project work in the Gladstone Harbour/Curtis Island Precinct and seek assurances that the cumulative impact of all Projects are being monitored in a responsible manner.

There will be extensive dredging, significantly increased marine traffic and this will no doubt have a marked impact on the dugong nursery area, turtles, dolphins and other marine species in the Narrows area. It was also have a debilitating effect on PCCC group members to enjoy and continue our Cultural obligations in the area.

We are aware that this Project will be a world first for its type and as such consider that the Queensland Government should immediately establish an LNG Industry Environmental Management regime, which complies with Commonwealth Government standards.

PCCC people do not oppose the Project, as it will bring much needed employment opportunities and provide an economic stimulus for the general Gladstone community, including PCCC claim group members.

PCCC does however seeks to be able to ensure that the Project impacts are appropriately managed, and that we as PCCC people be able to, in partnership with the Project Proponent seek to ameliorate the potential impacts, if possible, on PCCC Culture and our Cultural Values and its environment..

Yours truly,

Selwyn Appo
Executive Director
Enc.



Submission 19

Santos | PETRONAS

17 AUG 2009

14th August 2009

The Coordinator General
C/- EIS Project Manager: Gladstone (LNG) Santos
Significant Projects Coordination
Department of Infrastructure and Planning
PO Box 15009
CITY EAST Q 4002

Dear EIS Project Manager

ADDENDUM #5 TO SUBMISSION: GLADSTONE LNG PROJECT (SANTOS AND PETRONAS)

I refer to my submissions dated 3rd August 2009 and Addendums dated 5th August, 7th August 2009, 10th August 2009 and 12th August 2009.

I now attach Addendum #5, which should be read as a part of my Submissions.

I have been advised as follows:

1. Some or all Gladstone Harbour dredging required for the Gladstone LNG Project (Santos and Petronas) may now be arranged by Santos instead of by the Gladstone Ports Corporation.

2. It is planned to dump the spoil from the dredging at a site on Curtis Island, possibly outside of the Santos LNG freehold land.

If either parts of the above advice are partially or totally correct, I submit that the Gladstone LNG Project should not be approved for the following reasons:

- It had (to the best of public knowledge) been planned that the Gladstone Harbour dredging would be done by the Gladstone Ports Corporation, and

a change at this late stage is a denial of natural justice to those persons that may wish to make submissions on the Santos EIS.

- The spoil will destroy island habitat in the area in which it will be dumped, thus destroying local eco systems etc.

- The run off from the spoil dump during future tropical storm events will destroy additional habitat/ eco systems.

- The spoil may be toxic, and could leach into surrounding areas, water table, and potable water supplies used by wildlife, thus resulting in dead wildlife and a reduction in local biodiversity, etc.

- It will create a precedent for Curtis Island to become a spoil dump ground for future dredging programs, and be contrary to Government undertakings to look after the environment on Curtis Island and in Gladstone Harbour.

- Using an area close to a National Park as a spoil dump, particularly when that spoil may contain toxic chemicals etc, is inappropriate land use.

Yours faithfully

Copy: Hon Anna Bligh MP, Premier of Queensland and Minister for the Arts.
Hon Liz Cunningham MP
Gladstone Regional Council.
The Gladstone Observer.
Four Corners.



Submission 20

Santos | PETRONAS

Received 17 AUG 2009

Submission on the environmental impact statement for the Gladstone Liquefied Natural Gas project

Name:

Organisation (if applicable):

Address:

Contact details:

Section	Describe the issue	Suggested solution
	"ATTACHED"	

Signature:

Submissions must be received by **5 pm on Monday 17 August 2009** and be addressed to:

The Coordinator-General
C/- EIS Project Manager – Gladstone Liquefied Natural Gas project
Significant Projects Coordination
Department of **Infrastructure and Planning**
PO Box 15009 City East QLD 4002
fax +61 7 3225 8282
SantosLNG@dip.qld.gov.au

This form is the preferred format for a submission. Please use additional pages if there is insufficient space. Submissions will be treated as public documents and copies will be provided to the project's proponent. For further information please contact the Infrastructure and Economic Development Group on (07) 3234 1380.

Section ES3 Project Objective and Benefits

Santos cannot protect environment when they are proposing to emit green houses gases after removing vegetation that absorbs such emissions. So the stated primary objective is not possible and in conflict with the Curtis Island environment.

Curtis Island is a sub tropical island containing a national park and significant NO GO zones due to it's fragile environment and industrial use is incompatible with the existing environmental use.

A statement that the project will generate major benefit has not taken into account the negative effect of higher prices to be paid for toxic LNG by Australian consumers a s a result of this export facility. Neither has the effect of using our toxic LNG reserves for export on future ability to produce power from such a source been taken into consideration. Considering that current estimates indicate 60 to 70 years of supply this is an important factor that must be a part of this document.

The number of employees post construction differs significantly from early estimates of employees in Santos literature and the impact on the economy appears to be substantially enhanced from those numbers and would appear that we need some transparency and honest assessment of this calculation.

ES5 Commitment to Environmental Management

This statement is completely misleading as Santos have been involved with several projects with significant Environmental incidents that do not substantiate this statement
For example the following incidents are a few projects whereby Santos has an involvement that is less than satisfactory and it would be devastating if any should be repeated on Curtis Island.

1. Moomba Gas incident 2004
2. Wangkumarra People environmental damage from seismic testing
3. Failure to report burial grounds for 9 months despite being aware of state legislation
4. Sidoarjo – East java incident 2006
5. Moomba pipeline incident 2008
6. Veranus Island – WA 2008

There needs to be a strict procedure in place and penalty of say $1,000,000 per day per incident to ensure that the environmental management is honestly adhered to in view of the fact that this site is adjoining marine protection and environmentally sensitive areas.
If the information that Santos supplies in this document is correct then they should have no objection to such a penalty.

ES6 Project Need

The issue of Australia's future LNG need also requires serious consideration as Santos interest is only dollars profit and not necessarily in the Australian national interest.
This important aspect has been totally ignored in this document.

ES 10.2 Gas transmission Pipeline

Port Curtis crossing

There is no report on testing of soil in the harbour floor on the proposed pipeline route to consider if there are any toxic substance that could contaminate other areas of the harbour and the Great Barrier Reef should any matters be identified.
This is a serious lack of consideration of the duty of Care that Santos has chosen to ignore and needs to be addressed urgently.

ES 10.3 LNG Facility

Port Location

It appears as if the site at Curtis Island was sold to Santos prior to an alternative site comparison being completed as the information initially supplied to interested parties was very limited and gave the impression that it simply ticked the boxes.

Serious consideration needs to be given to relocation to the Port Alma site to mitigate potential damage in the event of a Veranus Island type incident or worse still if an explosion of a tanker were to occur Gladstone and it's residents could potentially be annihilated and just as devastating would be the serious impact on the economy of the state of Queensland in view of the fact that other industry located in very close proximity would be seriously affected.

Terrorism is a serious threat to such an installation and the recent Australian incident involving plots against the military shows just how vulnerable this site may be.

This toxic LNG facility and in particular tankers would be a prime target for terrorism as it is impossible to protect it from small plane and small boat attacks without serious military type protection that has not been identified in this document.

This document lacks serious consideration of safety as no modeling has been provided to indicate how a Veranus Island type incident would impact on Curtis Island, adjacent industry, and the residents of Gladstone.

This document lacks serious consideration of safety as no modeling has been provided to indicate how an escape of toxic LNG (or other gases stored on site) would plume in all wind and weather conditions and the subsequent impact on Curtis Island, the adjoining industry and the residents of Gladstone

This document lacks serious consideration of safety as no modeling has been provided to indicate how a shipping incident in Gladstone Harbour would affect adjoining industry and the residents of Gladstone.
In particular if the shipping incident ruptured a gas tanker and the resultant damage from such an explosion.

This document does not identify any procedure to handle any of the incidents mentioned above. In the event of any of the above there would be absolute chaos without a plan for the community and industry.
One would expect that a multi national company such as Santos would have considered their duty of care to the community to ensure that considering this is a toxic and dangerous product a strategy would have been developed to handle any of the above possible threats and incidents.

It would appear that if there were additional costs (which at this point have not been proven) to locate at Port Alma then the dollar is more important than safety and well being of the community and the economy of Queensland and this issue needs to be addressed as the Queensland Government should be protecting it's citizens and its future.

There does not appear to be any report on the contents of soil on the harbour floor to ascertain if toxic chemicals or other products are contained in soil proposed to be dredged from the harbour.
Such a report should be mandatory to ensure that the remainder of the harbour and the Great Barrier Reef are not exposed to unnecessary destruction.

No modeling ahs been carried out to show the effect on harbour flows resulting from cutting a deep channel in this shallow harbour that will allow less water to naturally flow to important areas of the harbour that will affect recreational boating along with the marine habitat of the harbour.

No modeling has been carried out to show the flow effect of an additional shipping channel on the Great barrier Reef waters and affect on coral from such flows.

ES13.8 Greenhouse Gas Emissions

Santos toxic LNG plant on Curtis Island will produce greenhouse gases and no modeling has been carried out to include the current Gladstone air table with emissions from the proposed toxic LNG plant.
Santos has a duty of care to ensure that this modeling is carried out to safeguard the residents of Gladstone and ensure that they are not being exposed to air quality levels above WHO standards.

A significant plume burning off toxic LNG is proposed to operate at intervals and will light up the night sky for a significant distance and there has been no modeling to show the effect on the residents of Gladstone. There has also been no modeling to show the effect on the Turtle rookery on Curtis Island as turtles are vulnerable to light when nesting and this could have a significant impact on the turtle population on the east coast of Australia. There has also been no modeling to show the effect on the adjoining national park and endangered species and their flight patterns from such a substantial light and noise source.

General

There has been no mention of decommissioning and return of use of the site after the toxic LNG plant is redundant.
Considering that this plant is expecting a relatively short life this issue should be addressed as there will be significant remedial work required to return this site to it's natural state.



Submission 21

Santos | PETRONAS

Received 17 AUG 2007

Name:

Organisation (if applicable):

Address:

Contact details:

Section	Describe the issue	Suggested solution
ES 10.3	Construction Workforce Accommodation – The suggested CAF establishment to be located on Curtis Island to house the Construction workforce. It would not appear that consideration has been given to the sandfly situation on curtis island with regards to the workers being confined to the island 24hours of the day for the duration of their working time. Sandfly repellents whilst can they can relieve this situation are not harmless to the human body. As a resident of Southend I have first hand knowledge of how bad they can get on the Eastern side of the Island and they are far worse on the western side where the camp will be located. The damage done by up to 2000 workers constantly moving about in one area has not been estimated. What has been organised by way of recreation activities for these workers during their rest periods or is it intended to work them around the clock with just enough time to eat and sleep. All of the above are not a recipe for a happy workforce and a restless workforce. These men are not going to be happy couped up in a Sandfly ridden small compound, and when workers become unhappy bosses start to turn a blind eye to them doing things that they would normally be forbidden to do, SUCH AS travelling to the Southend Settlement for a bit of entertainment etc.	That a large CAF not be constructed for the constructed on the Island. Perhaps a smaller camp for emergency and essential employees, however I would strongly argue against a large camp on the Island. I have experienced construction camps during my working life and a camp located at the proposed site would be my worst nightmare. I would recommend that most of the workforce be housed at alternate location either on the mainland or a floating camp (Float-tel) as indicated.
ES 15.10	The small settlement of Southend has been severely underestimated in this EIS. There are 105 dwellings with aproximately 20 permanent residents and up to 300 seasonal residents. Given the inaccuracies of the EIS it would appear that this area has been glossed over and not properly studied.	The small settlement is bursting at the seams when comparing infrastructure with residents during holiday periods. The last thing needed is for additional pressure to be placed on the community by the LNG workforce.
ES 15.13	Construction Workforce – to be accommodated on Curtis Island. Please refer to my notes at ES 10.3 above.	Please refer to notes at 10.3 above
ES 15.9	Noise and Vibration – I acknowledge the comments in this paragraph however we have been told that noise monitoring has show that we do not get any industry noises from the mainland industries. This is in fact false as we get quite a bit of noise especially in the early morning from industry in the upper areas of the harbour. We have no reason to think that the small natural rise of the range mentioned is going to stop noises from the LNG precinct either.	More serious investigation needs to be undertaken considering that certain noises from the proposed Plant could be quite high.

Signature: _____

Submission on the environmental impact statement for the Gladstone Liquefied Natural Gas project

Name:

Organisation (if applicable):

Address:

Contact details:

Section	Describe the issue	Suggested solution
4 and 7	*Large amount of trucks and other vehicles on unsealed rural roads which Are not designed for that amount of traffic*	*Roads maintained to existing standard, bitumen short unsealed sections where houses are in close proximity to unsealed roads.*

Signature: _____

Submissions must be received by **5 pm** on **Monday 17 August 2009** and be addressed to:

The Coordinator-General
C/- EIS Project Manager – Gladstone Liquefied Natural Gas project
Significant Projects Coordination
Department of **Infrastructure and Planning**
PO Box 15009 City East QLD 4002

fax +61 7 3225 8282
SantosLNG@dip.qld.gov.au

Submission 22

Santos | PETRONAS

Strategic Policy Division

Department of
Community Safety

File No: (ODG/04/0465/P4)
Ref No: (02297-2009)

The Coordinator-General
Attention: EIS Project Manager
LNG – Gladstone (Santos) Project
Significant Projects Coordination Division
Department of Infrastructure and Planning
PO Box 15009
CITY EAST QLD 4002

Dear Sir/Madam

Santos Gladstone LNG Project - Draft Environmental Impact Statement

Thank you for your letter received on 2 July 2009, inviting the Department of Community Safety (DCS) to provide comment regarding the draft Environmental Impact Statement (EIS).

DCS officers have reviewed the EIS and provide the attached comments table (Attachment 1) regarding State Planning Policy 1/03 (SPP 1/03) compliance and emergency response considerations.

The appropriate regional contacts for further operational consultation are also attached (Attachment 2).

Should you require any further information regarding this matter, please contact Mr Peter Mason, Policy Advisor, Policy and Legislative Reform, Strategic Policy Division, on telephone number (07) 3247 8249.

Yours sincerely

Gary Mahon
Assistant Director-General

Enc

Emergency Services Complex
Cnr Kedron Park Road & Park Road
Kedron Qld 4031

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Queensland 4001 Australia

Telephone +61 7 3247 8797
Facsimile +61 7 3247 8865
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ABN 11 577 654 890

Santos Gladstone LNG Project - Environmental Impact Statement
DCS Comments

Policy and Legislative Reform (PLR)

State Planning Policy 1/03

Flood Hazard

The Coal Seam Gas Fields study area is located within the Condamine-Balonne and Fitzroy River Basins. Section 6.2.3 *Potential Impacts and Mitigation Measures* states that *"The climate conditions over the full extent of the CSG fields are prone to periodic, high intensity rainfall events."*

For the Coal Seam Gas Field, Table 6.5.5 (pg. 6.5.17) *Potential Surface Water Impacts and Mitigation Measures* provides mitigation measures associated with Flooding as follows –

- *Schedule construction activities appropriately during wet season to reduce flooding risk.*

For the Gas Transmission Pipeline, Section 7.5.5.1 (pg. 7.5.12) *Flooding* states that –

> *"The possibility of out-of-bank/flash flood rainfall events during construction, presents a risk to workers' health and safety, and may cause erosion and damage to erosion and sediment control infrastructure."*

Mitigation Measures for Flooding associated with the Gas Transmission Pipeline include:

- *Appropriate scheduling of works (or designated packages of works) will occur during the wet season (i.e. from October to April);*
- *Stormwater management measures such as drainage diversions and flood defence bunds (designed to provide an appropriate level of protection - recommended at AEP 0.01 or ARI 100 yr) may be implemented before construction commences; and*
- *Emergency response procedures (including evacuation procedures) and a flood warning system will be established and incorporated into the site's Health, Safety and Environment Plan to protect onsite personnel.*

The summary of Findings (s7.5.6, pg. 7.5.21) concludes that –

> *"A hydrological assessment found flood depths varying from 1.5 m in a 2 yr ARI flood on small ephemeral watercourses, to 16m to 20m in a 100 yr ARI flood on major watercourses such as the Dawson River."*

According to s7.11.3.2 *State Planning Provisions* (pg.6.11.3) for the Gas Transmission Pipeline, *"Flood assessment based on SPP 1/03 is not available for the shires."*

The LNG Facility is in an area prone to high intensity rainfall events associated with cyclones and other storm events. Section 8.2.3 *Potential Impacts and Mitigation Measures* (pg.8.2.10) states that -

> *"Natural Hazards are not considered a major risk for the study area. However, both flood and cyclone associated storm surge may become an issue at some point during the expected life of the LNG facility, with possible closure of the port."*

Table 8.5.2 (pg. 8.5.13) *Potential Surface Water Impacts and Mitigation Measures* provides mitigation measures for the LNG Facility associated with Flooding as follows –

- *Schedule construction activities appropriately during wet season to reduce flooding risk.*

- *Install stormwater management facilities e.g. drainage diversions and bunding.*
- *Facilitate emergency response procedures and flood forecasting.*

Section 8.11.5.7 *Flooding* (pg.8.11.16) states that –

> *A flood analysis of the site* [LNG Facility] *indicates that flood depths in the worse affected drainage channel can vary from 1.1m for a 1 in 2 year flood event to 1.4 m for a 1 in 100 year event…The design elevation of the facility is 13.5m Australian Height Datum (AHD) which is sufficient to protect it from regional flooding. The site's stormwater drainage system will be designed to ensure that local flooding does not occur."*

Section 6.2.3 (pg. 6.2.9) states that *"…an Emergency Management Plan, which will address all foreseeable site specific risks such as fire and flooding including appropriate contact details of emergency services agencies, will be incorporated in the project EMP."*

Comments
That the Emergency response procedures of the site's Health, Safety and Environment Plan will be established and incorporated into the proponent's Emergency Management Plan (EMP). It is advised that the EMP is to be prepared in accordance with the SPP 1/03 Guideline/Appendix 5A/Flood (Page 55) and in consultation with the emergency services agencies as recommended below.

As demonstrated above, the EIS commits to hydrological assessments and flood analysis to facilitate emergency response procedures and mitigation measures. These measures will achieve SPP 1/03 compliance, thus DCS requires no further information regarding flood hazard mitigation.

Regarding Flood hazard Nomenclature – Section 7.5.5.1/Mitigation Measures (Page 7.5.12) The proponent should note that AEP 0.01% is equivalent to a 10 000 yr ARI. Therefore, the equivalence given in the second dot point ("*AEP 0.01 or ARI 100yr")* is incorrect. It is assumed the intended statement is AEP 1% or ARI 100yr. The proponent should confirm this.

<u>Bushfire Hazard</u>
The Rural Fire Service and Queensland Fire and Rescue Service modelled the bushfire risk in the relevant Local Government Areas. These maps identify Roma CSG fields within areas of low bushfire risk with minor areas of medium to high bushfire risk. The Fairview CSG fields comprise more extensive areas of medium to high bushfire hazard.

For the Gas Transmission Pipeline, Bushfire risk areas are identified in s7.2.2.6 (pg. 7.2.8) which states that –

> *"while the gas transmission pipelines will be buried to a sufficient depth to withstand impacts of bushfire, there area facilities associated with the pipeline which will be above ground…The pipeline corridor commences within the Fairview CSG field with lies within extensive areas of medium to high bushfire risk before entering the Arcadia Valley, which is predominately of low bushfire risk. As the pipeline tracks to the north east… the bushfire risk is predominantly low with small areas of medium bushfire risk…as the pipeline extends from Biloela to Gladstone the pipeline passes through mostly low and medium bushfire risk areas."*

Bushfire risk for the LNG Facility on Curtis Island is identified as being predominantly medium bushfire risk (s8.2.2.8, pg. 8.2.9).

Section 6.11.5.5 *Impacts of State Planning Provisions* (pg.6.11.40) states that –

> *"Santos will minimise development in high bushfire and landslide risk areas. Where development is located in these areas, Santos will employ safety management*

procedures to minimise the likelihood of the project initiating or spreading bushfire. Management measures include:

- *Design standards to control risk of fire occurring;*
- *Inspection and monitoring;*
- *Area around well heads cleared of vegetation; and*
- *Emergency response procedures.*

In accordance with s6.2.2.7 *Bushfires* (pg.6.9.9) -

"Bushfire management strategies currently employed by Santos include the provision of water supply for fire fighting, especially near compressors and other project buildings, as well as creating an asset protection zone of at least 20 m to minimise fuel load, especially in medium to high risk bushfire hazard areas."

Comments
As demonstrated above, the EIS commits to bushfire hazard analysis to facilitate safety management procedures, Management measures and strategies. These measures will achieve SPP 1/03 compliance, thus DCS requires no further information regarding bushfire hazard mitigation in addition to consultation with regional officers from QFRS as recommended below in relation to emergency response.

Landslide Hazard
For the Coal Seam Gas Fields, section 6.11.5.5 (pg. 6.11.40) states that -

"Landslide hazard areas within the CSG fields include sections of the Carnarvon, Lynd, Bigge, Expedition, Dawson and Gilbert Ranges. Development of the CSG fields and the associated infrastructure will generally be outside of the landslide prone areas. Santos will employ a range of procedures to minimise the risk of landslide including:

- *investigate alternative sites away from landslide risk areas;*
- *Utilise appropriate construction materials, equipment and techniques;*
- *Cease work during periods of potential landslide activity (e.g. high rainfall events);*
- *Minimise vegetation clearing, stabilise slopes;*
- *Regular inspection and monitoring; and*
- *Emergency response procedures.*

A detailed assessment and identification of bushfire and landslide risk areas will be carried out for each well field development in phase two of the assessment process… This process will include identification and where practicable avoidance of bushfire and landslide risk areas. In the rare instances where avoidance is not possible, Santos will implement appropriate management strategies to minimise these risks."

For the Gas Transmission Pipeline, section 7.11.5.6 (pg.7.11.39) states that –

"The SPP states that landslide hazard areas" include land of 15% and greater slope and other land known of or suspected by the local government as being geologically unstable"

No landslide hazard data are available for Calliope, Banana, Duaringa, Taroom, Bauhinia and Bungil Shires. The town planning schemes for these shires state that the landslide hazard is not mapped but is deemed to involve all land having slope of 15 % or greater.

In determining the gas transmission pipeline corridor, Santos has generally avoided landslide prone areas. Should there be any potential landslide hazard areas that cannot be avoided, Santos will employ a range of procedures to minimise risk of landslide including:

- *investigate alternative sites away from landslide risk areas;*
- *Utilise appropriate construction materials, equipment and techniques;*
- *Cease work during periods of potential landslide activity (e.g. high rainfall events);*
- *Minimise vegetation clearing, stabilise slopes;*
- *Regular inspection and monitoring; and*
- *Emergency response procedures."*

The LNG Facility study area, in particular,

> *"Lots 10D on S220, 7D on S220 and 9D S220 within the project site contain slopes greater than 15% and hence are categorised as a landslide natural hazard management area under the SPP. Earthworks associated with the site's development will level much of the site so that there will be no slopes greater than 15% around the plant. All slopes remaining on the site will be engineered to ensure they are stable."* (s8.11.5.7, pg. 8.11.17)

Comments
DCS is satisfied with the EIS approach to Landslide hazard areas. The range of procedures and management strategies employed to minimise the risk of landslide will achieve SPP 1/03 compliance, thus DCS requires no further information regarding landslide hazard mitigation.

Queensland Fire and Rescue Service (QFRS)

QFRS Input – Comments on Environmental Impact Statement (EIS)

QFRS, Central Region provides the following input in relation to any impact the project may have on service provisions pertaining to information provided in the Environmental Impact Statement (EIS).

- The LNG facility will be located in the south-west section of Curtis Island off Gladstone and will liquefy natural gas to enable it to be transferred to ships for export.

- There is no permanent QFRS urban station on Curtis Island. The response time for an urban response from the QFRS Gladstone Station to Fisherman's Landing would be approximately 15 minutes.

- Due to the geographical location of the LNG Plant on Curtis Island, QFRS urban response times to the Plant could extend up to one hour, which includes the mobilisation of apparatus.

- On this basis, it is reasonable to assume that the owner will establish its own dedicated Emergency Response Team and fire tending apparatus. QFRS support would be on an "as requested" basis.

- There is a volunteer Rural Fire Service brigade established at the south-end of Curtis Island. Travel time for this service to the proposed location of the LNG Plant would be approximately 45 to 60 minutes by 4x4 vehicles. However the capabilities of this brigade would be limited and not suitable to the process risks.

The QFRS notes Section 10 of the EIS – Hazard and Risk:

- Table 10.4.4. Legislative Requirements identifies that where applicable, the requirements of the *Building Fire Safety Regulations 1991* (now 2008), the *Building Act 1975*, the *Fire and Rescue Service Act 1990* and *Fire and Rescue Service Regulation 2001* will be complied with.

- This includes QFRS involvement in emergency planning.

- The project will significantly increase the workforce both in the Gladstone area and on Curtis Island in proposed accommodation villages. The impact of this additional population may result in an increase in the response to both emergency incidents and road crash incidents through greater traffic movement within the Gladstone Area. However this should not impact on the response capabilities of QFRS Gladstone.

A meeting was held at the Gladstone Fire Station on 15 May 2009 and included stakeholders involved in the proposed project. Stakeholders and representatives in attendance at the meeting included:

- QFRS
- Gladstone Regional Council
- Fire and Safety Systems
- Representatives responsible for the fire engineering, procurement and construction.
- Owners representative.

The purpose of this meeting was to present an overview of the project to the regulatory authorities and agree on the building and fire approvals processes. This was specifically in relation to proposed performance based solutions for the possibility of "fire/gas/integrated plant safety systems" and access/egress from process structures", as documented in the meeting minutes.

Queensland Ambulance Service (QAS)

Orientation

- Orientation to be provided of the LNG – Gladstone (Santos) project site for the Area Director and Officer in Charges of the Gladstone region.

- Evacuation and access map of the project for the QAS Communication Centre and the surrounding QAS stations

- Contact numbers of the Duty Safety officers for the Area Director, Officers in Charge and the QAS Communication Centre in Rockhampton.

Emergency Management Queensland (EMQ)

Orientation

- Orientation to be provided of the LNG – Gladstone (Santos) project site for the Area Director Rockhampton, State Emergency Service (SES) Controller and SES Group Leaders of the Gladstone Area.

- Disaster Management Plan of the project to be provided to EMQ Regional Office.

- Contact numbers of the Duty Safety officers for EMQ Regional office, Area Director, Local Controller and Group Leaders.

Central Region Contacts

Queensland Fire and Rescue Service

Assistant Commissioner Telephone Number (07) 4938 4891

Queensland Ambulance Service

Assistant Commissioner Telephone Number (07) 4938 4896

Emergency Management Queensland

Central Regional Director Telephone Number (07) 4938 4981



Submission 23

Santos | PETRONAS

Queensland Government

Enquiries Chris Shaw
Telephone 3872 0993
Your reference TN 139852/ MH31/DIP
Our reference BNE36171

Environmental Protection Agency

17 August 2009

The Coordinator-General
C/- The EIS Project Manager: Gladstone Liquefied Natural Gas Project
Significant Projects Coordination Division
Department of Infrastructure and Planning
PO Box 15009
CITY EAST QLD 4002

Dear Mr Hutchings

RE: SUBMISSION ON THE DRAFT ENVIRONMENTAL IMPACT STATEMENT – GLADSTONE LNG PROJECT

I refer to your letter inviting comment on the draft terms of reference for the Santos Gladstone LNG Project, received on 30 June 2009.

The Department of Environment and Resource Management (DERM) has reviewed the environmental impact statement (EIS) and has identified a number of areas where clarification and further information is required to fully assess the EIS.

There are components of the project undergoing front end engineering design and in many cases this, along with detailed mitigation measures, are required before a satisfactory assessment of the proposal can be made. Additionally, the information provided in the EIS and draft environmental management plans is inadequate to enable the DERM to develop conditions that could be applied to the project, should the Coordinator-General recommend it proceed.

The attached submission provides detailed comments on the EIS and recommends the provision of necessary information.

Due to the substantial material to be assessed across the Department and the timeframes imposed, it may be that other issues will come to light as assessment of the project progresses. However, DERM has made every effort to be comprehensive in its submission. The attachment provides general comments that require further information across all three components of the EIS.

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I trust that the comments are of assistance. Should you have any queries regarding this submission please contact the DERM's project manager, Chris Shaw, on 3872 0993.

Yours sincerely

S D Cameron

Stuart Cameron
Director, Assessment
Environment and Natural Resource Regulation

Department of Environment and Resource Management (DERM) submission on the Gladstone LNG Project Environmental Impact Statement (EIS)

General Comments:

Issue: Western Basin Dredging

The dredging option proposed in the EIS is not consistent with the Port of Gladstone Western Basin Master Plan or the Port of Gladstone Western Basin Dredging Project.

While comments have been provided for the proposed dredging contained in the EIS, it is expected that the dredging will be in accordance with the outcomes of the Port of Gladstone Western Basin Master Plan and the Port of Gladstone Western Basin Dredging Project.

Issue: Front end engineering design (FEED)

Numerous sections of the EIS note that FEED is required to be undertaken before the final details of the proposal can been provided. In many cases the engineering design and associated mitigation measures is required for impact assessment. Examples include:

- material off load facility – the construction method and design of the structure. The construction method and design of the proposed dredge spoil rehandling ponds proposed to be located adjacent to the haul road;
- product off load construction details, particularly across mangroves;
- bridge construction details;
- LNG facility construction details including the design of the reverse osmosis water treatment plant and associated intake and outfall diffuser, the proposed treatment plant to treat sewage and dispose to land during construction and operation; and the waste management of contaminates removed from the CSG prior to liquefaction;
- the construction of the gas transmission across ranges, problem soil areas (43.2% of the route) and water courses which still require detailed geological and soil investigations with engineering design responses to determine if the construction is possible in these areas or how construction will take place; and
- upstream infrastructure design and construction methods such as well drilling, completion and rehabilitation.

Until information is provided on FEED there is insufficient information to adequately assess the EIS. Additionally, this information should provide certainty with respect to the constructability of the pipeline and other aspects requiring further detail.

Where sufficient information cannot be provided prior to the completion of the EIS process, it is unlikely that condition will be able to be developed or recommendations made for all approvals.

Recommendation

Provide sufficient information to assess all components of the project. Plans and maps should be provided showing waste streams and discharge points accompanied with detailed descriptions of the various components. Information should be presented describing the mitigations measures to be implemented during all stages of construction and operation of the project. The basis for these measures should also be included.

Issue: Investigations still required

The EIS identifies many areas that require further or field investigations to be undertaken. For example, soil surveys of problem soils, geotechnical investigations of ranges, and flora fauna studies. This level of detail is required to adequately assess the EIS.

Recommendation

Provide the findings of the further studies, as noted in the EIS. The findings should include a detailed assessment of the mitigation measures provided to prevent and or minimise impacts to environmental values.

Issue: Santos EHS Management System (EHSMS)

In multiple sections the EIS refers to the EHSMS as providing mitigation measures. However, the EHSMS is not included in the EIS document. For those issues, the relevant components of the EIS can not be assessed. In addition, management systems usually operate to support management principles not necessarily set the principles.

Recommendation

Provide the Santos EHS Management System documentation.

Issue: Mitigation measures not identified nor discussed

In multiple sections of the EIS, mitigation measures refer to *"Environmental Authority requirements"* or *"in accordance with the Dredge Management Plan"* to be provided by contractors. This is inadequate. The Terms of Reference (TOR) requires the EIS to:

- Set out acceptable standards and levels of impacts (both beneficial and adverse) on environmental values.
- Demonstrate how environmental impacts can be managed through the protection and enhancement of the environmental values.

The EIS should address these matters in detail, not postpone the assessment to a later approval process.

Recommendation

The EIS should provide a detailed assessment of mitigation measures that will appropriately avoid and or minimise impacts to environmental values identified in the EIS. Such measures should provide for the minimum standard of environmental management to be used by contractors and encourage adoption by contractors of best practice environmental management.

Issue: Mitigation measures

There are inconsistencies with the location within the EIS of mitigation measures presented to prevent and or minimise the impacts on environmental values. Mitigation measures should be identified, discussed and assessed within the EIS document. These measures should then be duplicated, in detail, in the EM plans. Some measures are first identified in the EM plans – this is not appropriate. The mitigation measures need to be adequately discussed and assessed in sufficient detail within the EIS document before their adoption in the EM plans.

Recommendation

Provide a clear reasoned, evidence-based discussion and assessment of all mitigation measures to be adopted by the project. This assessment should take comments in this submission into consideration. As mentioned in other comments in this submission, the mitigation measures should be clear, measurable and auditable.

Issue: Cumulative Impacts

The EIS only provides limited qualitative cumulative impact assessment. Details should be sought for each LNG project and other known proposals to facilitate a more detailed cumulative impact assessment. The Department of Infrastructure and Planning may be able to assist in this regard.

Recommendation

Provide a more detailed cumulative impact assessment addressing the proposed coal seam gas fields, pipeline alignments and the proposed LNG facilities. Such information should include assessments of flora, fauna, soils, air emissions, treated water discharges to ephemeral streams, groundwater impacts and water course crossing impacts of all LNG projects associated with the Surat and Bowen Basins, Curtis Island and Fishermans Landing.

Issue: Environmental offsets

Information is required to show that measures have been taken to avoid and minimise potential adverse impacts of the proposal. The EIS does not included information demonstrating why impacts are un-avoidable. For example, the location of the LNG facility would result in clearing all RE 12.2.2 (Microphyll/notophyll vine forest on beach ridges) located on the proposed LNG facility site. The EIS does not provide a detailed, evidence-based assessment addressing why this potential loss of critically endangered ecosystem cannot be avoided nor mitigated.

Environmental offsets should be proposed to counterbalance any remaining loss of environmental values, consistent with the principles and specific-issue offset policies under the framework of the Queensland Government Environmental Offset Policy 2008 (QGEOP).

Relevant specific-issue policies that should be addressed are:

- Queensland Government – *Policy for Biodiversity Offsets* – Consultation Draft;
- Vegetation management—*Policy for Vegetation Management Offsets*, September 2007, Department of Natural Resources and Water;
- Marine fish habitat—*Mitigation and Compensation for Works or Activities Causing Marine Fish Habitat Loss*, 2002, Department of Primary Industries and Fisheries; and
- Koala habitat—*Offsets for Net Benefit to Koalas and Koala Habitat*, 2006, Environmental Protection Agency.

Recommendation

Provide an offsets proposal covering the whole project in accordance with the QGEOP and specific issue policies.

Issue: *Vegetation Management Act 1999*

The EIS has identified the potential need to obtain approvals under the *Vegetation Management Act 1999* (VMA) and the possible requirement to provide offsets under the "*Policy for Vegetation Management Offsets*" (DNRW, 2007). While DERM encourages voluntary offsets, the EIS should clarify which offsets are a legislative requirement and which offsets are voluntary.

Recommendation

The project should determine which components of the project are petroleum activities as defined under the EP Act and therefore, exempt development under the *Integrated Planning Act 1997* (IPA). The EIS should clarify which offsets are a legislative requirement, specifying the legislation, and which offsets are voluntary.

Issue: Financial Assurance

Financial assurance will be required prior to the issue of environmental authorities (petroleum activities) in accordance with section 312O of the EP Act. However, it is unclear how schedules of disturbance for financial assurance calculations will be determined without specific information regarding the scale of impacts.

Recommendation

The proponent should develop schedules of disturbance for all aspects of the project in accordance with the DERM guideline – Financial assurance for petroleum activities. Information demonstrating that the financial assurance estimates will be adequate for worst-case scenarios (including maximum possible areas of disturbance, maximum proportion of problem soil areas and maximum proportion of environmentally sensitive areas) should be provided.

Issue: Groundwater dependent ecosystems

The EIS does not adequately address groundwater dependent ecosystems (GDEs). These include:

- subterranean ecosystems;
- phreatophytic terrestrial and riparian vegetation;
- springs and other wetlands;
- stream communities dependent on baseflow; and
- estuarine and submarine systems dependent on groundwater discharge.

No information has been provided regarding the environmental values of GDEs or the proposed mitigation or monitoring of impacts on GDEs except for the statement that spring discharge will be monitored.

Recommendation

To ensure that environmental values of GDEs are recognised, potential impacts are fully assessed and appropriate mitigation measures are adopted, a comprehensive whole-of-project GDE assessment is required to include the identification of all types of GDEs, description of the values of identified GDEs, description of likely impacts, options to avoid or mitigate these impacts, and details of proposed monitoring for each identified GDE.

Issue: Information required for application for Environmental Authorities (Petroleum Activities)

The proponents propose to use the Phase One and Phase Two approach of the CSG fields component of the EIS to develop a system for issuing of environmental authorities subject to a management system and constraints mapping approach. The information from the Phase One studies is insufficient in some cases to finalise condition for any tenement. The protocols put forward under the Phase Two component are largely based on EHSMS and lack sufficient commitments and control mechanisms to provide surety that impacts on environmental values will be managed at an acceptable level. There is also insufficient information provided detailing what events will trigger further DERM approvals relating to the project and how the proposed system will facilitate the amendment of conditions in Environmental Authorities as best practice environmental management evolves in the future. DERM expects to be provided with more detailed information on each tenement prior to commencement of production activities – a mechanism needs to be recommended for discussion.

Recommendation

Detailed information on the following aspects will need to be provided prior to grant of environmental authorities:

- Point source air emissions
- Air quality modelling
- Point source noise emissions
- Noise modelling to nearest sensitive receptors
- Water releases to the environment (location, quality, quantity, frequency)
- Effluent irrigation modelling
- Significant and high hazard dam designs and certifications
- Nature and description of activities to be undertaken in environmentally sensitive areas
- Offset proposals.

More detailed protocols under the Phase Two section of the EIS should be provided, detailing exactly what will be done to avoid, minimise and mitigate all impacts on all environmental values in all areas of the project. References to the EHSMS being the sole mitigation measure would not be considered acceptable in these circumstances.

The proponent should also detail what triggers will be included in this approvals process to amend environmental authority conditions as changes in potential environmental harm, the way in which operations are being carried out or changes to best practice environmental management occur.

Issue: Environmental Impacts (General)

The list of Environmentally Relevant Activities (ERAs) likely to be triggered by the project is incorrect and incomplete. More detail is required to allow development of appropriate conditions. Relevant ERAs may include (for the whole project):

- Chemical storage ERA 8
- Hydrocarbon gas refining ERA 9
- Electricity generation ERA 14
- Fuel burning ERA 15
- Motor vehicle workshop operation ERA 21
- Concrete batching ERA 43
- Bulk material handling ERA 50
- Water treatment ERA 64
- Bulk material handling ERA 50
- Regulated waste storage ERA 56
- Regulated waste transport ERA 57
- Waste disposal ERA 60
- Sewerage treatment ERA 63
- Water treatment ERA 64

Recommendation

The Supplementary EIS should identify those ERAs likely to be undertaken and provide sufficient information to adequately assess the proposed ERAs. Information on associated ERAs should include (reference can be):

- Site descriptions for each ERA
- The scale or intensity of each ERA, including clear details of yearly throughput.

- Identify all environmental values and potential impacts from each ERA, at each location, including but not limited to:
  - potential water impacts;
  - potential noise impacts;
  - potential air impacts;
  - potential land impacts;
  - waste management practices.
- Best practice management for each ERA to demonstrate that the potential for harm to the receiving environment is prevented or minimised.
- Resilience of the receiving environment and established acceptable discharge limits that will minimise impacts on environmental values.
- Establish and detail ambient monitoring programs to monitor mitigation measures, compliance with conditions and for potential impacts identified in the EIS.
- Contingency plans and emergency procedures for non-routine or upset situations from each ERA at each location.
- Periodic review of environmental performance and continual improvement

Specific EIS Comments:

Issue: Co-location opportunities

Table 1.7.1 in Section 1.7, Relationship to Other Projects, does not include all proposals to enable consideration of co-location opportunities.

Recommendation

The Surat to Gladstone Pipeline proposal by Surat Gladstone Pipeline Pty Ltd needs to be included when describing the relationship to other projects.

Issue: Federal and State regulatory approval process

Incorrect legislative reference in Figure 1.9.1 for environmental authorities (petroleum activities).

Recommendation

Environmental authorities are issued under the EP Act, not the *Environmental Protection and Biodiversity Conservation Act 1999* (EPBC Act).

Issue: Key approvals required

All potential approvals required under the various acts have not been identified in Table 1.9.1.

Recommendations

1. Under the *Water Act 2000*, include details of potential approvals to take or trade associated water for uses not permitted under the *Petroleum and Gas (Production and Safety) Act 2004* (P&G Act).
2. Under the *Forestry Act 1959,* include details of potential approvals associated with including use of quarry materials and forest products and activities within State Forests and Timber Reserves.
3. Under the *Land Act 1994* and *Land Title Act 1994* an applicant must obtain appropriate tenure, or level of occupation, over all non-freehold land prior to any activity commencing on it. This should include roads or land administered under the *Nature Conservation Act 1992* and or the *Forestry Act 1959.*
4. Under the *Coastal Protection and Management Act 1995,* a development permit is required for works within a Coastal Management District removing or interfering with coastal dunes on land, other than State coastal land, that is in the erosion prone area and above high-water mark. Additionally, where quarry material (material below the high water mark) will be removed and an approved Dredge Management Plan is not in place, an application for an Allocation of Quarry Material would be required.

Issue: Regional planning frameworks

Section 1.9.3 does not address all planning frameworks.

Recommendation

Reference to and consideration of the draft Maranoa-Balonne Regional Plan should be included in the Supplementary EIS.

Issue: Local authority planning schemes

In section 1.9.6, some local government changes due to amalgamations have not been incorporated.

Recommendation

The Roma Regional Council has been renamed *"The Maranoa Regional Council"*; and the Dalby Regional Council has been renamed as *"The Western Downs Regional Council"* and Planning Schemes for the former Taroom, Tara and Murilla Shires should be referenced.

Issue: Sewerage

Section 3.6.6.5 states that further discussion on sewage treatment is presented in section 6.5. This information could not be located.

Recommendation

The proponent should provide detailed information regarding sewage treatment infrastructure, processes, irrigation methods and expected water quality parameters.

Coal Seam Gas (CSG) Fields:

Issue: CSG Field Development Alternatives

Section 2.1.3 discusses the storage of produced CSG but does not identify how the CSG will be transported to the storage sites. The likelihood of additional impacts on environmental values needs to be identified if gas storage results in additional pipelines and other infrastructure.

Recommendation

Clarify whether additional pipelines will be required to transmit gas to the Santos Underground Gas Storage at Ballera and or Moomba, or other depleted fields, as noted in the EIS.

Issue: Nature of Field Development

Section 3.6.2.1 of the EIS mentions that one method of facilitating the ramp-up of gas required to commence liquefaction is the underground storage of gas. Insufficient data has been provided regarding how releases of gas to the environment will be prevented.

Recommendation

The proponent should provide detailed preliminary testing, control measures and monitoring that will be adopted to ensure gas containment will be effective and groundwater aquifers are not impacted by the gas. Contingency measures should be developed to ensure gas is not released to atmosphere should unforseen circumstances arise.

Issue: Borrow pits and Storage Areas

There is no mention of *Forestry Act 1959* approvals for borrow pits nor storage areas.

Recommendation

Include reference to approvals that may also be required under the *Forestry Act 1959* for borrow pits and any quarrying activity located on State Land.

Issue: Stock routes

Table 4.14.2 does not address impacts on stock routes.

Recommendation

Include an assessment of the potential impact on stock routes. Mitigation measures should also be described to prevent and or minimise the potential impacts.

Issue: Groundwater protection

Section 5.4.7, Groundwater Protection, should address the storage of reverse osmosis concentrate as a waste material that has a potential to impact on groundwater values.

Recommendation

Include information regarding the storage of reverse osmosis concentrate in ponds and its potential to adversely impact on groundwater if not properly constructed and maintained. Also detail mitigation measures to be undertaken to ensure groundwater will not be contaminated by leakage of reverse osmosis concentrate from storage ponds. Reference should be made to engineering standards to be adopted and to monitoring and reporting regimes.

Issue: Land mitigation methods and native plants

Sections 6.3, 7.3 and 8.3, Land – Topography and Geomorphology Potential Impacts and Mitigation Methods, of the EIS provided insufficient information on the use of native plant

species in revegetation and landscaping. The use of native vegetation should be considered for use before other options.

Recommendation

The extent of appropriate native plant species during any landscaping and re-vegetation should be described in more detail.

Issue: Acid sulfate management plan

The TOR requires a site-specific Acid Sulfate Management Plan.

Recommendation

Provide the site-specific Acid Sulfate Management Plan as requested by the TOR.

Issue: Land contamination

Sections.3.2, 7.3.2 and 8.3.2, Land Contamination, provide insufficient information to adequately assess contaminated sites.

Recommendation

The proponent should provide detailed information on the expected nature and extent of contamination at each site and a remediation plan and validation sampling for any contaminated site.

The proponent should note that in the event that unexpected contamination is identified, action must be taken to immediately abate the potential harm, and a remediation action plan is developed. If this information is detailed in Management Procedure EHS08, a copy of this document should be provided.

Issue: Land management manuals

Use should be made of Land Management Manuals because appropriate land management guidelines relevant to specific soil types are included in these reference manuals.

Recommendation

Use the following Land Management Manuals to assist in determining agricultural suitability of soils:

- Land Management Field Manual — Roma District;
- Land Management Field Manual — Wandoan District;
- Land Management Field Manual — Dawson–Callide District.

Revise the potential impacts and proposed mitigation measures in accordance with these manuals.

Issue: Agricultural Land Classes, CSG Fields (Southern Section)

Departmental mapping of Good Quality Agricultural Land has not been considered in identifying the agricultural land classes.

Recommendation

Revise the proposed environmental values and mitigation measures after considering the following:

- For Series 34 – CSIRO (1974) mapping, Map code 31 should be included as Agricultural Land Class A while Map code 30 should included as Class B land.

- Identify the source of the mapping for the area south of Miles. Departmental mapping based on the Murilla, Tara and Chinchilla Shires Land Management Manual indicates there are significant areas of Class A and Class B Agricultural land.

Issue: Soil Erosion – General Erosion Control Measures

Section 6.3.1.5 of the EIS has provided desktop assessments of soils in the CSG fields. Detailed soil surveys should to be conducted to identify and avoid problem soils. Where avoidance is not possible specific mitigation measures should be developed to prevent and or minimise the impacts from erosion.

Recommendation

Provide detailed soil survey information including soil types and characteristics mapped to facilitate appropriate location of works and development of effective mitigation measures. The Supplementary EIS should detail how facilities, access tracks and pipelines avoid problem soils. Where such soils cannot be avoided, specific measures should be detailed in the Supplementary EIS to prevent and or minimise impacts to environmental values.

Issue: Over land flow

The Water Resource Plans for the Fitzroy (1999), Moonie (2003) and the Condamine–Balonne (2004) Catchments include provisions adopting the Overland Flows Codes that limit the take of water, and these must be complied with.

Recommendation

Provide detailed information describing how the project is consistent with the Water Resource Plans. Information should include the identification of the potential constraint to 'taking' water in a sediment basin under the provisions of Overland Flow Codes relevant to an approved Water Resource Plan.

Issue: Vegetation clearing

The *Forestry Act 1959* contains requirements regarding millable timber on State lands.

Recommendation

Provide survey information detailing the millable timer to be cleared as a result of the project.

Issue: Sodic and/or dispersive soils

Spoil management should be further addressed because inappropriate disposal of spoil from drilling can result in difficulties in establishing surface cover, resulting in increased erosion risks that has not been identified in Section 6.3.1.5.

Recommendation

Spoil resulting from drilling operations should not be disposed of by spreading over the surface, especially if the soils are sodic. Appropriate mitigation measures should be described to prevent and or minimise impacts to environmental values.

Issue: Agricultural Land Capability

Impacts on Good Quality Agricultural Land (especially Class A and B) should be avoided in accordance with State Planning Policy 1/92.

Recommendation

The proposed methods to avoid GQAL should be discussed and included in the Supplementary EIS. Where there is no alternative to locating wells, pipelines and tracks within cultivation areas, they should be located on the edge of the cultivation area.

Issue: Identification, Monitoring and Management

Surface and groundwater reports can assist in on-going water quality assessments carried out by the Department regionally.

Recommendation

Monitoring reports should be made available to the DERM upon their completion.

Issue: Structures on flood plains

Table 6.3.21 identify structures on floodplains have the potential to divert and/or concentrate flood flows, resulting in increased erosion risks.

Recommendation

Include the following mitigation measures:

- Roads or other structures on floodplains should be orientated and constructed so as not to divert or concentrate flood flows;
- Road heights on floodplains should not exceed 20cm above Natural Ground Level (NGL); and invert levels should not be greater than 10 cm above NGL.

Issue: Problem Soil Areas

Table 6.3.21 identifies that detailed soil surveys should be conducted prior to any construction activities to allow for works to be located in areas that will not require intensive mitigation measures to prevent erosion. Exposing sodic subsoils may lead to severe gully erosion.

Recommendation

Provide detailed soil survey information in the Supplementary EIS detailing the occurrence of problem soils. Specific mitigation measures should be developed depending on the soil characteristics. Also, include the following mitigation measures:

- Pre-construction soil surveys should identify problem soil areas that, where practical, should be avoided for locating facilities, access tracks and pipelines;
- Appropriate construction methods of banks should be used to control runoff in sodic soil areas; and
- Alternative construction methods may be required to avoid exposing the sodic subsoil.

Issue: Water management ponds and reverse osmosis concentrate ponds

The decommissioning and rehabilitation of water management ponds and reverse osmosis concentrate ponds is unclear in Table 6.3.22 of the EIS and in Appendix Q. The EIS should provide a detailed, evidence-based assessment of the appropriate options for decommissioning and rehabilitation.

Recommendation

Provide a detailed, evidenced based assessment for the decommissioning and rehabilitation of ponds.

Issue: Further flora and fauna study commitments

In attempting to protect significant vegetation, habitat and fauna during establishment of gas wells a number of commitments such as identification and marking of trees and remnant habitat are made in section 6.4 (page 6.4.34) and section 11 (page 11.12 and 11.14). Environmental Management Plans (sections 11, 12 and 13) contain related commitments for flora and fauna management. These activities will require expert knowledge in identification.

The commitments are supported. However, the EIS does not make clear who will carry out the necessary identifications, other than a general statement on responsibilities of Santos staff and construction contractors.

Recommendation

The proponent should provide specific information on responsibilities for identification of significant vegetation and habitats.

Issue: Groundwater dependant ecosystems

Sections 6.4.2.1 and 6.4.5.4 of the EIS has provided insufficient information on the environmental values of groundwater dependant ecosystems and where the EIS proposes further investigation on specific matters, the investigation of groundwater dependant ecosystems is not included. Additionally, there are numerous species that are not strictly aquatic species, yet are dependant on their association with shallow groundwater associated with wetlands and waterways (for example River Red Gum, *Eucalyptus camaldulensis*).

Recommendation

To ensure potential impacts are fully assessed and appropriate mitigation measures are adopted, surveys should be expanded to target groundwater dependant ecosystems and terrestrial species that are ecologically dependant on aquifers, wetlands and waterways and therefore likely to be affected by the project. Specific mitigation measures should be assessed, detailed and provided.

Issue: Regulatory framework

Section 6.4.3 of the EIS does not identify areas of endangered regrowth vegetation that are protected under the *Vegetation Management (Regrowth Clearing Moratorium) Act 2009*. However, they are only required to be considered on freehold and leasehold land (agriculture and grazing) and where triggered under the IPA.

The mapped areas are indicative and can be amended should the on-ground vegetation type, extent and functionality of the ecosystem not be an endangered ecosystem. The moratorium mapping can be obtained in digital format from the DERM.

Recommendation

Mapping demonstrating restrictions under the *Vegetation Management (Regrowth Clearing Moratorium) Act 2009* should be obtained. The requirements and constraints with respect to the project should be discussed.

Issue: Flora and fauna management

Sections 6.4.3.1 and 7.4.3 of the EIS do not provide for the requirement for effective fauna and flora management in areas impacted by development of the CSG fields, and construction and operations of the Pipeline has not been adequately discussed in the EIS.

Recommendation

In relation to the development of the CSG fields, and construction and operations of the pipeline, provide more detail on the management of flora and fauna. The following management plans should be developed specifically address this issue:

- Flora and Fauna Management Plans.
- Biodiversity Management Plans

[Note: These plans should be incorporated in the Environmental Management Plan covering the whole project.]

Issue: Weeds and pests

The principles for weeds and pest in the *Land Protection Act 2002* have not been incorporated into the EIS. The *Land Protection Act 2002* also provides for provisions to approve weed and pest management plans.

Recommendation

The principles relating to weeds and pests specified in the *Land Protection Act 2002* should be incorporated into to mitigation measures and included in the Supplementary EIS. Weed and pest management plans should be considered.

Issue: Section 6.4.4.2, Terrestrial Flora

Section 6.4.4.2 of the EIS has recognised the highly fragmented nature of the remnant regional ecosystems of the southern CSG fields and the remaining remnant vegetation is tenuously connected through roadside corridors. Consequently, it is important that clearing remnant vegetation on roads for infrastructure purposes is avoided.

Recommendation

Infrastructure should be located outside road corridors if clearing will reduce the width of vegetation on the corridor to less than 50 metres.

Issue: Water Quality

In section 6.4.4.4 of the EIS the proposed protocols for collecting and interpreting the water quality data do not take account of footnotes attached to the regional guideline values specified in the ANZECC 2000 guidelines pertaining to the following:

- Dissolved oxygen (DO) guidelines for freshwater should only be applied to flowing water, including those with significant subsurface flows. Stagnant pools in intermittent streams naturally experience values of DO below 50% saturation.
- Flow conditions are a critical consideration in application of these guideline values and highly relevant to considering any potential pulse inputs of pollutants.
- The guidelines adopted for freshwaters are for the most part the default ANZECC 2000 guidelines. The Queensland Water Quality Guidelines 2006 (QWQG) recommends that local water quality guideline values be developed from local data.
- Temperature varies daily and seasonally, it is depth dependent and is also highly site specific. It is not possible to provide simple generic water quality guidelines for this indicator.
- Turbidity is likely to be influenced by proximity to obstructions including culverts and road crossings and hence some bias may have been introduced in sampling these locations. Monitoring locations should be revised to avoid potential biased results.

Recommendation

Recommendations for the collection and interpretation of water quality data associated with development of both the gas fields and the pipeline route need to be restated in a manner that is consistent with the QWQG and ANZECC 2000 guidelines.

Issue: Terrestrial flora – Fragmentation of communities

Section 6.5.4.2 of the EIS identifies that remnant vegetation, in some instances, is limited to that within a road reserve. The loss of this vegetation is significant as it may form the last remaining habitat for many species. Road corridors can serve to connect isolated remnant fragments in heavily cleared catchments. The explanation in the EIS that the remaining remnant vegetation is highly fragmented, which appears to be justification for removal of these roadside areas, does not adequately consider the values of such areas in many circumstances.

Recommendation

Areas of remnant and mature regrowth vegetation on roads should be avoided.

Issue: Terrestrial Flora – Vegetation Clearing

The EIS requires more detail on the impacts and mitigation measures related to protection of terrestrial flora.

Recommendation

Include more detail on potential impacts and mitigation measures required with consideration of the following:

- The actual extent and significance of vegetation removal should be discussed in more detail. Include impacts of all development infrastructure (access, pipelines) in addition to that of the well sites.
- Removal of any '*Endangered*' or '*Of Concern*' vegetation may trigger the necessity to acquire an environmental offset. The issue of '*Environmental Offsets*' is mentioned but should be examined in more detail. An offsets package should be provided for assessment in accordance with the QGEOP and specific issue policies.
- There may be a need to obtain a Clearing Permit under the *Nature Conservation Act 1992* to remove and/or translocate plants.

Issue: Terrestrial Flora – Vegetation Clearing

The EIS requires more detail on the impacts and mitigation measures related to protection of terrestrial flora.

No reference has been made to establishing reference sites for monitoring rehabilitation.

Recommendation

At least two reference sites should be selected as benchmark monitoring sites, to provide on-going reference for environmental management and rehabilitation activities. The sites should be selected to represent the major natural ecosystems being significantly impacted by the project, and should be sufficiently removed from the project to be unaffected by the project's activities. The sites should be monitored at the same intervals and with the same methodology as that used for on-site monitoring.

Issue: Terrestrial Flora – Loss of Topsoil

Section 6.4.5.2 is inadequate and requires more information required to ensure topsoil stored for revegetation is suitably managed.

Recommendation

Provide more detail on the removal and stockpiling of topsoil for future use in revegetation work. Storage of topsoil should be minimised. This is important in maintaining fertility, as well as in maintaining the viability of the seed bank. The description of topsoil management should consider transport, storage and replacement of topsoil on disturbed areas.

Issue: Terrestrial Fauna – Loss of Habitat

Section 6.4.5.3 of the EIS does not ensure appropriate revegetation measures are adopted to minimise impacts of CSG field developments on terrestrial fauna.

Recommendation

Include more detail on revegetation methods and procedures with consideration of the following:

- Revegetation should use locally indigenous species, sourced from a local seed bank where possible.
- Revegetation of exposed soils should be carried out as soon as practical after works have been completed.
- Where plantings and screening or landscaping are proposed, details should be provided of the species that will be used, and their provenance. Use of non-native and non-local species should be avoided.

Issue: Terrestrial Ecology Impacts and Mitigation Measures

Table 6.4.6 needs to be a concise compilation of impacts, mitigation measures and objectives.

Recommendation

Provide a more comprehensive assessment of impacts on terrestrial ecology and required mitigation measures. Table 6.4.6 should be expanded to incorporate all recommendations.

Issue: Aquatic Ecology Impacts and Mitigation Measures

The EIS (Table 6.4.7) does not adequately document the aquatic values associated with watercourses and wetland areas on either the gas fields, or along the pipeline route. Information is provided in relation to general values identified from State of the Rivers assessments within the catchment but no specific detail is provided for areas to be directly impacted by the project. Mitigation measures are too generic and not scaled in accordance with any specific identified values.

Recommendation

1. Undertake a detailed assessment of the aquatic values associated with watercourses and wetland areas on the CSG field site and along the pipeline route. The assessment should identify specific values that would be potentially impacted by the project.
2. Develop specific mitigation measures in relation to these potential impacts.

Issue: Aquatic Ecology Impacts and Mitigation Measures – Watercourses

Table 6.4.7 provides proposals for mitigation measures associated with the construction and rehabilitation of permanent creek crossings for pipeline construction make no reference to either AS2885 or the *Australian Pipeline Industry Association Code of Environmental Practice.*

Recommendation

Provide detailed information describing the mitigation measures for permanent creek crossings and other aspects of pipeline construction that are consistent with AS2885 and the *Australian Pipeline Industry Association Code of Environmental Practice*, which documents the approach to be taken when determining the optimal route selection as well as engineering standards that must be applied to the construction.

Issue: Watercourses – Removal of riparian vegetation and soils

Where essential works are to be located adjacent to watercourses, bulldozing can result in erosion and loss of micro-habitats.

Recommendation

Alternative clearing methods such as lopping and hand clearing should be adopted adjacent to watercourses to minimise the disturbance to the riparian soils.

Issue: Section 6.5.3, Regulatory Framework

The Roma CSG Fields are located within Water Resource Plans which have not been referenced.

Recommendation

The following items should be considered as 'key legislation':

- Water Resource (Condamine and Balonne) Plan 2004.
- Water Resource (Moonie River) Plan 2003.

Relevant details of the above plans should be provided, including, respectively:

- Condamine and Balonne Resource Operations Plan, finalised in December 2008, for the upper and middle parts of the Plan, including the Roma Gasfields.
- Moonie Resource Operations Plan finalised in January 2006, including the Eastern Surat Gasfields.

Provide information detailing how the project is consistent with the legislation listed above.

Issue: Section 6.5.3, Regulatory Framework

Gas fields within the Roma and Fairview areas are located in the Great Artesian Basin. Appendix P2 highlights that there will be inter-aquifer transfer and drawdown of other aquifers such as the Precipice Sandstone and Hutton Sandstone formations. It is unclear how these impacts will fit within the scope of the Water Resource (Great Artesian Basin) Plan (2006).

Recommendation

Detailed information should be provided illustrating how the proponent will ensure the outcomes outlined in Section 8 of the Water Resource (Great Artesian Basin) Plan (2006) will be met.

Issue: Section 6.5.3, Regulatory Framework

The pipeline and LNG plant are located in the Calliope Basin and the appropriate Water Resource Plan has not been addressed.

Recommendation

Include reference to the Water Resource Calliope River Basin Plan 2006 and detailed information should be provided showing how the project is consistent with the plan.

Issue: Section 6.5.4.1, Study Area

Incorrect catchment references.

Recommendation

Catchment references should be the Upper Dawson catchment, the Comet catchment, the Moonie Catchment, and the Condamine-Balonne-Culgoa catchment in Queensland.

Issue: Catchment Overview

Section 6.5.4.2 contains conflicting statements that may influence the level of monitoring required.

Recommendation

Clarify the statement in paragraph 2: *"...it is expected that the same environmental values will apply to all streams in the catchment"*. This is also reflected in Table 6.5.1, but conflicts with the statement in Sect. 6.5.6 Summary of Findings (p6.5.21): *".... baseline assessment has indicated that the existing water quality of surface waters ... is variable..."*

Issue: Catchment Environmental Values

Table 6.5.1 contains incorrect reference to aquatic ecosystem protection.

Recommendation

The categories in Table 6.5.1 should be called Protection of ... disturbed aquatic ecosystems (not habitat).

Issue: Potential Surface Water Impacts and Mitigation Measures

Upstream and or downstream gauging is essential for an effective monitoring program. DERM officers can provide advice on suitable locations, and construction methods for gauging stations. These should be sited so as to minimise impacts on flows.

Recommendation

The proponent should install strategically located gauging stations upstream and or downstream of discharge points.

Issue: Surface Water Impacts and Mitigation Measures

With respect to Table 6.5.5, further details should be provided to define "background" quality, set appropriate water quality discharge limits and decide what monitoring should be undertaken. Similarly, information on discharge volumes and relationships with stream flows will be needed to derive monitoring approaches/limits for regulating discharge flows. In general it is preferred that the background water quality is defined based on historical data (and relevant 20th, 50th or 80th percentiles). This can be used as the basis for setting specific end-of-pipe limits in an approval, rather than a statement relating to measured background water quality at the time of discharge.

Recommendation

Provide further information on how "background" levels will be determined for discharge to Bungil Creek (or other creeks) and appropriate discharge limits (or approaches if this is to be determined at a future date) that should be adopted for both water quality concentrations and discharge rates.

Issue: Surface Water Impacts and Mitigation Measures

Associated water has the potential to cause environmental harm to groundwater, surface water and adjacent lands if leakage occurs from the containment structure. Sufficient information has not been provided detailing the measures to prevent leakage.

Recommendation

Include details on the engineering and design standards to be applied to containment structures and for the decommissioning treatment of the reverse osmosis concentrate ponds.

Issue: Surface Water Impacts and Mitigation Measures

There are some potential impacts on streams from the discharge of hydrostatic testing as indicated in Table 6.5.5 and section 7.5. These are most likely due to chlorine, other contaminants or flow effects. The background water quality, hydrotest water characteristics, the proposed water quality indicators, limits and proposed monitoring (or methods for determining these) are required.

Recommendation

The background water quality, hydrotest water characteristics, water quality indicators, limits and proposed monitoring should be discussed and defined.

Issue: Water quality and river health monitoring program

In terms of monitoring the effects of the discharge, the commitment in Table 6.5.5 is that water quality sampling will be undertaken up to 2km downstream of the discharge. However, depending on the nature and size of the discharge, monitoring may be required for a greater distance that 2km downstream.

Recommendation

Provide evidenced based reasoning for the siting of the water quality monitoring station downstream of the discharge.

Issue: Ephemeral stream water quality

Conclusions about the water quality of ephemeral streams, contained in section 6.5.6, are not based on appropriate reference data. The guidelines being used for the comparison are reference-based guidelines from the ANZECC 2000 or the QWQG that have been derived from permanent flowing streams. Most of the streams in the study area are ephemeral and comparison to such guidelines is not really appropriate. Proper assessment would require suitable local reference data (as per the QWQG) to account for local conditions.

Recommendation:

The conclusions and findings of the report about water quality condition in ephemeral streams in the study area should be based on suitable reference data. Any limitations in available reference data should be acknowledged. The collection of relevant reference data should be considered for locations where there is a potential risk from the activity on surrounding environmental water quality.

Issue: Groundwater management

The EIS does not address the Central Highlands Aquifers – Interim Management Policy.

Recommendation:

The proponent needs to recognise that DERM currently has an allocation policy for groundwater in the Central Highlands declared area. The policy uses a volume per hectare calculation to determine entitlement and protect existing users. The policy does allow for larger allocations where the proponent is prepared to complete a hydrogeological report and construct a monitoring network. Impacts on existing users and DERM policy in relation to the Interim Management Policy should be considered by the proponent.

Issue: Section 6.6.1.3, Regulatory Framework

The Roma CSG Fields are located within a number of Water Resource Plans that should be considered in the EIS.

Recommendation:

The following items should be considered as 'key legislation':

- Water Resource (Condamine and Balonne) Plan 2004.
- Water Resource (Moonie River) Plan 2003.

Relevant details of the above plans should be provided, including, respectively:

- Condamine and Balonne Resource Operations Plan, finalised in December 2008, for the upper and middle parts of the Plan, including the Roma Gasfields.
- Moonie Resource Operations Plan finalised in January 2006, including the Eastern Surat Gasfields.

Issue: Section 6.6.1.3, Regulatory Framework

The EIS should recognise the provisions of the P&G Act concerning groundwater monitoring.

Recommendation:

Provisions of the P&G Act require the holder of petroleum tenure to lodge regular monitoring reports, and review reports, on groundwater conditions of the tenure. Details of monitoring to be undertaken to fulfil these requirements should be provided.

Issue: Groundwater

The Gubberamunda Sandstone aquifers are important groundwater resources in the Roma gasfields area that have not been considered in the EIS.

Recommendation:

Provide detailed information and an assessment of the environmental values, potential impact and appropriate mitigation measures to prevent and or minimise impacts on the environmental values identified.

Issue: Section 6.6.1.5, Potential Impacts and Mitigation Measures – *Mitigation Measures*

To avoid sourcing additional replacement water from limited regional water supplies, attempts should be made to isolate wells that may cause drawdown of production aquifers.

Recommendation:

A triggered dewatering result will require shutting down of any wells that have lead to impacts on groundwater aquifers, and should form part of the water replacement plan.

Issue: Groundwater

The EIS should clarify the measures to mitigate potential impacts on the several groundwater aquifers that occur in the CSG fields.

Recommendation:

Clarify this section in view of the following comments:

- It is not clear whether the trigger levels identified are in the context of the requirement under the P&G Act.
- The mitigation measures section should be separated in the context of the shallow groundwater and the deep groundwater. This section is difficult to understand. The report needs to identify that the shallow and deep aquifers may be connected.
- The references to monitoring are not clear and consistent between the text in this section, table 6.6.1 and 6.6.2 and the reports provided in Appendix P.
- There seems to be no discussion on monitoring of the Gubberamunda Sandstone. The report in Appendix P2 indicates that the Gubberamunda Sandstone should be monitored.

Issue: Groundwater – Cumulative Impacts

Clarification is required regarding the understanding of cumulative impacts on groundwater aquifers impacted by the gasfields.

Recommendation:

Clarify comments in this section related to deep groundwater considering that Section 6.6.1 is to address shallow groundwater issues, whereas deep groundwater is discussed in Section 6.6.2

Issue: Groundwater – mitigation measures

It is noted that the EIS is based on desktop assessment – Tables 6.6.1 and 6.6.2. However, monitoring and reviewing of the Hydrogeological Assessment is required to more clearly identify potential impacts.

Recommendation:

A detailed assessment of the potential impacts to groundwater resources should be provided. The proposed mitigation measures, to prevent and or minimise the impacts, should include the following:

- A monitoring program for identified aquifer systems to be approved by DERM; and
- A review of the existing groundwater model using the monitoring data to verify impact predictions should be completed and provided in the Supplementary EIS.

Issue: GAB dependent springs and base flow watercourses dependent on groundwater

While GAB dependent springs on the CSG field areas has been identified in the EIS, those GAB dependent springs and baseflow watercourses off the CSG field that could be affected by changes in groundwater due to the petroleum activity, have not be identified.

Also, the environmental values of the GAB dependent springs and base flow watercourses dependent on the GAB have not be identified.

Further, the EIS acknowledges that the project may impact on the GAB and that these effects maybe long lasting (up to 100years), yet no appropriate means for avoiding or mitigating these impacts are provided.

Recommendation

The EIS should identify and describe GAB dependent springs and baseflow watercourses dependent on the GAB that maybe affected by the project, both on and off the CSG field tenure areas. The environmental values of these springs and watercourses should be fully described.

Potential impacts should be identified (preferably using the study described in Section 6.4 and using the models in Appendix P2) and appropriate mitigation measures described.

Issue: GAB spring mitigation measures

Proposed methods for detecting impacts on springs are inadequate. By the time spring flows change, mitigation measures are unlikely to be effective. Also monitoring spring flows accurately is very difficult if not impractical. Other methods of detecting impacts should be proposed.

Recommendations:

Monitoring methods, capable of detecting or predicting changes in spring flows should be more fully described. This could include using an adaptive management framework containing groundwater pressure monitoring, modelling and frequent review. Mitigation measures, for example the reinjection of treated water into affected aquifers before there is any detectable change in spring flow, should be proposed that are consistent with this adaptive management approach.

Issue: Groundwater

An anomaly exists in dot point 7 of section 6.6.2.5.

Recommendation:

Provide an assessment of the potential impacts on the Mooga and Gubberamunda sandstone aquifers as shown in Appendix P2 (refer Case 1, Case 2). Mitigation measures should be provided avoid and or minimise potential impacts on the identified environmental values.

Issue: Section 6.6.2.6, Summary of Findings

Regular reporting will assist in gauging impacts on licensed stakeholders and assist in meeting the EIS objectives related to groundwater impacts.

Recommendation:

Regular reporting of monitoring results should be provided to DERM.

Issue: Associated Water Management

The associated water strategies presented, in section 6.7 and Appendix Q, do not provide enough detail to be certain that the proposed methods will be adequate to deal with the forecast maximum of 386GL (a forecast that has been previously revised considerably) of associated water production. Assuming a worst case that all the water is treated by reverse osmosis (RO), and the treatment is 80% efficient, this could potentially lead to approximately 80GL of reverse osmosis concentrate to be disposed of over the life of the RFD area. The proposed methods do not provide adequate confidence that the salt will not be deposited in the ground on site. No standards have been provided for storage structures for reverse osmosis concentrate and encapsulation methods for salt and other contaminants.

Recommendation:

The proponent must provide more detailed information on the feasibility of the proposed associated water management options to deal with the entire volume of associated water to be

produced in the RFD. Standards and risk minimisation measures relating to reverse osmosis concentrate storage structures and encapsulation methods must be provided. The proponent should fully assess the disposal of salt and other contaminants.

Issue: Associated Water Management

Section 6.7 and Appendix Q outlines the possibility of discharging treated associated water into the Dawson River for users downstream. The Department has a policy "Watercourses as Conduits Interim Policy" WAM/2006/2402 in relation to using watercourses as conduits which does not allow the use of a watercourse to deliver effluent, wastewater or tailwater for the purposes of supply to any person or for gaining credit for volumes returned to a watercourse. Any water put into a watercourse is therefore vested in the State, regardless of any intent that the water be re-taken at a separate location. However it does not limit the capacity of water users to deliver effluent, wastewater or tailwater to an end user by some means other than via a watercourse, for example through a pipeline.

Recommendation:

The EIS should address the "Watercourses as Conduits Interim Policy".

Issue: Associated Water Management

Section 6.7 and Appendix Q of the EIS indicates that one option for associated water is storage in dams. The Water Resource Fitzroy Basin Plan regulates overland flow. Any dams must be constructed in accordance with the provisions of the Water Resource (Fitzroy Basin) Plan 1999.

Recommendation:

The proponent should be aware that any overland flow dams constructed within the Fitzroy catchment need to be constructed in accordance with the Water Resource (Fitzroy Basin) Plan 1999. The plan does allow for the construction of works that are for stock and domestic, of a capacity no greater than 5ML or to meet the requirements of an Environmental Authority.

There is a current exemption for the take of overland flow for activities authorised under the *Petroleum Act 1923* or the P&G Act. However, the Water Resource (Fitzroy Basin) Plan 1999 is currently under review. This review may result in possible amendments to the overland flow provisions during the life of the project development.

Issue: Water Management Options Constraints Summary

Treated discharge to surface water should not be accepted as a preferred option for ephemeral streams unless there has been substantial evidence demonstrating there are no adverse impacts on aquatic ecosystems.

Recommendation:

The proponent should place a high constraint for treated discharge to surface water, related to anticipated high volumes being discharged to ephemeral streams, particularly for the Roma Gasfields.

Issue: Section 6.7.3, Regulatory Framework

The Roma CSG Fields are located within a number of Water Resource Plans and therefore should be referenced. Any storages constructed to service the proposal to supplement town water and industrial uses with associated water, must be designed to comply with the Water Resource Plans and not take overland flows.

Recommendation:

The following items should be considered as 'key legislation':

- Water Resource (Condamine and Balonne) Plan 2004.
- Water Resource (Moonie River) Plan 2003.

Relevant details of the above plans should be provided, including, respectively:

- Water Resource (Condamine and Balonne) Plan 2004, finalised in December 2008, for the upper and middle parts of the Plan, including the Roma Gasfields.
- Water Resource (Moonie River) Plan 2003, finalised in January 2006, including the Eastern Surat Gasfields.

Issue: Section 6.7.4.5, Fairview Irrigation Scheme

During the recent water quality monitoring within the Nogoa, Mackenzie and Fitzroy River systems Selenium was identified.

Recommendation:

Include Selenium as a potential contaminant in water quality investigations conducted for the project.

Issue: Section 6.7.4.5, Fairview Irrigation Scheme

The success of this scheme presumes that salts left behind in soils around tree crops will remain in-situ indefinitely and that there will be no deep drainage or lateral movement of salt. There are many examples in the State of salts exiting the soil profile around the toe slopes of drainage systems due to percolation after heavy rains, including the Fitzroy. Large amounts of salts will be introduced to the surface of soils if this scheme is implemented. Based on the figures in the EIS of 2g/L TDS and 4 ML/day of irrigated effluent at peak production this equates to 16,000 tonnes of salts per year.

It would be expected that some of this salt will be mobilised to the stream network, even if it takes many years.

Recommendation:

Further investigation is required into the risks associated with salt movement from the irrigated areas to surface drainage and water courses. A suitable model should be used to assess the potential movement. The EIS should describe the model type, parameters used and outputs from the model. The proponent should also include details of any similar existing schemes and monitoring results of salt loads in soils. The mitigation measure should be revised following the detailed investigation.

Issue: Section 6.7.5.1, Cumulative Impacts

It is noted in paragraph 5, APPEA is to *"... undertake a technical and feasibility study for the aggregation of associated water from CSG members from across the region."* Further, that *"... the outcomes from the study is to be available by May 2009..."*

A more comprehensive assessment of cumulative impacts and the potential benefit of an industry wide aggregation strategy is required. The EIS should address the commitments to be made by the proponent.

Recommendation:

The cumulative impacts of associated water production should be further detailed incorporating the findings of the APPEA study. The viability of industry wide aggregation systems should be discussed.

Issue: Roma Field Associated Water Strategy, Storage of reverse osmosis concentrate in containment dams

Management of salts and other contaminants from reverse osmosis concentrate dams must not become the responsibility of individual landholders.

Recommendation

Mitigation measures should be developed that clarify responsibility for the safe removal of salts and other contaminants prior to transfer of reverse osmosis concentrate containment storages to landholders.

Issue: Discharge to Bungil Creek via Campbell Lake or discharge line

Gauging stations need to be strategically located to avoid backwater impacts on adjacent streams and lands.

Changes to the Lake Campbell structure should comply with overland flow conditions of the WRP.

Recommendation

Adopt the following Mitigation Measures:

- A gauging station upstream from Surat must be located so as to not cause backwater effects at the junction of Bungil Creek and the Balonne River;
- Any alterations to the Lake Campbell embankment and spillway must comply with the provisions of the Water Resource (Condamine and Balonne) Plan 2004.

Issue: Emission Rates during normal operation

Up to twelve field compressor stations with an average of eight compressor engines each and generators will be installed along the CSG fields, as identified in section 6.8.5.2. The locations of these units are not given in the EIS. A screening level impact assessment is conducted using the Ausplume model. The compressor's NO_x emissions of 166 mg/m^3 or 0.461 g/s per unit are proposed. For the best practice, this concentration value is compared against the *NSW POEP Regulations 2005* standards of 450 $mg(N)/m^3$ (dry) at 3% O_2. It is stated in Section 6.8.5.2 of the EIS and Appendix S that no correction is applied to the NO_x concentration value of 166 mg/m^3 towards the reference conditions (which is based on moisture and O_2 contents). No data was available at the time when this EIS was prepared (i.e. March 2009). The generators stack specifications and fuel type are also not provided. This information is important for the licence conditions.

Recommendations:

The following information related to the CSG field developments should be provided:

- Predicted locations of the compressor engines and generators;
- NO_x concentration in term of $mg(N)/m^3$ (dry) at 3% O_2; and
- The generators stack specifications and fuel type.

Issue: Noise and Vibration

Sections 6.10.3.1, 7.10.3.1 and 8.10.1.3 provide the assessment of noise and vibration and while there is no construction noise limits specified in the Environmental Protection Policy (Noise) 2008 (EPP (Noise)), DERM would expect the proponent to comply with the noise limits that would be applied to similar proposed developments. Based on the low background noise levels

provided in the EIS, the limits proposed in Tables 6.10.1, 7.10.1 and 8.10.1 would not adequately mitigate the noise impacts from construction and operation.

Recommendation

The proponent should base noise planning criteria (for both construction and operation phases of the project) on the limits specified in the table below:

Sensitive place						
Noise level dB(A) measured as:	Monday to Saturday			Sundays and public holidays		
	7am to 6pm	6pm to 10pm	10pm to 7am	9am to 6pm	6pm to 10pm	10pm to 9am
$L_{A90, adj, 15 mins}$	**lesser of bg+3 or 48**	**lesser of bg+0 or 40**	**lesser of bg+0 or 40**	**lesser of bg+0 or 40**	**lesser of bg+0 or 40**	**lesser of bg+0 or 40**
$L_{A10, adj, 15 mins}$	**lesser of bg+5 or 50**	**lesser of bg+5 or 45**	**lesser of bg+0 or 40**	**lesser of bg+5 or 45**	**lesser of bg+5 or 40**	**lesser of bg+0 or 35**
$L_{A1, adj, 15 mins}$	**lesser of bg+10 or 55**	**lesser of bg+10 or 50**	**lesser of bg+5 or 45**	**lesser of bg+10 or 50**	**lesser of bg+10 or 45**	**lesser of bg+5 or 40**
Commercial place						
Noise level dB(A) measured as:	Monday to Saturday			Sundays and public holidays		
	7am to 6pm	6pm to 10pm	10pm to 7am	9am to 6pm	6pm to 10pm	10pm to 9am
$L_{A90, adj, 15 mins}$	**lesser of bg+5 or 50**	**lesser of bg+0 or 45**	**lesser of bg+0 or 40**	**lesser of bg+3 or 43**	**lesser of bg+0 or 40**	**lesser of bg+0 or 40**
$L_{A10, adj, 15 mins}$	**lesser of bg+10 or 55**	**lesser of bg+10 or 50**	**lesser of bg+5 or 45**	**lesser of bg+10 or 50**	**lesser of bg+10 or 45**	**lesser of bg+5 or 40**
$L_{A1, adj, 15 mins}$	**lesser of bg+15 or 60**	**lesser of bg+15 or 55**	**lesser of bg+10 or 50**	**lesser of bg+15 or 55**	**lesser of bg+15 or 50**	**lesser of bg+10 or 45**

- bg = **background noise level**
- In the event that measured background is less than 25 dB(A), then 25 dB(A) can be substituted for the measured level

If these limits cannot be met, alternative arrangements may be agreed to between the proponent and affected landholders during the construction phase of the project.

Issue: Ambient Noise Monitoring Locations

In Tables 6.10.7 and 7.10.3 it is stated that monitoring sites (Gas & Pipeline) 5, 6 and 9 had to be located up to 300m from the houses due to machinery noise. It is unclear what the source of this machinery noise was and what impact having the monitoring station this distance from the receptor will have on identifying the actual noise levels inside the residence.

Recommendation

The proponent should provide detailed information regarding the source and impacts of the machinery noise on values provided. If the machinery noise is of a temporary nature, information on the predicted noise levels inside the residence without this machinery noise should be provided.

Issue: Draft Maranoa and Districts Regional Plan

Following the amalgamation of several of the former component Shires, the areas of Murilla and Tara Shires have been removed from this Regional Plan.

Miles is in the former Murilla Shire.

Recommendations:

The proponent should note that the Regional Plan has been renamed as the *"Draft Maranoa-Balonne Regional Plan"* and that Miles Town is no longer included in this plan.

Issue: Table 6.11.1, GQAL within the Coal Seam Fields

Overlay Map 1 of the Tara Planning Scheme, (adopted 14 Dec 2005), shows Good Quality Agricultural Land (GQAL) mapping for the former Tara Shire.

Recommendation:

Include GQAL data from the former Tara Shire Planning Scheme.

Issue: Regional Council names

Table 6.11.2 reflects old Regional Council names.

Recommendation:

Note that:

"Roma Regional Council" is now *"Maranoa Regional Council"*

"Dalby Regional Council" is now *"Western Downs Regional Council"*

Issue: Stock route network

These sections 6.11.3, 6.11.4.3, 6.11.5.3, and Table 6.11.8 do not address compliance with the *Land Protection (Pest and Stock Route Management) Act 2002.* Location of pipelines and access roads within the CSG field developments may impact on the Stock Route Network.

Further consideration is required to ensure the Stock Route Network is not compromised by activities related to the development of the CSG fields.

Recommendation

Include relevant details of the Stock Route Network as illustrated in Figs 6.11.9a and 6.11.9b. Appropriate mitigation measures should be provided to prevent and or minimise the potential impacts on environmental values. Include information on how the project satisfies the requirements of the *Land Protection (Pest Management and Stock Route Management) Act 2002.* Consider the impacts of activities of CSG field developments on management and operation of the Stock Route Network, in view of the following comments:

- The stock route network comprises declared stock routes, reserves for travelling stock and other relevant land. The main use is for travelling stock while the network has multiple uses.
- The relevant DERM Senior Lands Officer (Stock Routes) and Local Government stock route officer must be consulted from the early planning stage of activities that may impact on the Stock Route network.
- Associated infrastructure, (fences, watering facilities, access) must be maintained and managed in good condition, and be available for public use.
- Options for temporary diverting stock that may be considered unsafe to travelling stock and drovers (as well as the travelling public) will not be supported.
- Affected parts of the Stock Route network are to be reinstated upon completion of the activities that may interfere with any part of the network.

Issue: Forestry and Millable timbers

Section 6.11.5.1 of the EIS does not address compliance with the *Forestry Act 1959* and identifies an incorrect administering authority for this act.

Recommendations:

1. Note that the Forest Products Section of DERM is the administering authority, not Queensland Primary Industries and Fisheries.

2. The proponent should note that if insufficient notification is provided to DERM to survey and remove millable timber prior to clearing, then compensation for destroyed timber may be required.

Issue: Regional Planning Framework – Draft Maranoa and Districts Regional Plan

Following the amalgamation of several of the former component Shires, the areas of Murilla and Tara Shires have been removed from this Regional Plan.

Recommendations:

The proponent should note that this Plan has been renamed as the *"Draft Maranoa-Balonne Regional Plan"*

Issue: Local Government Planning Schemes

Further information is required to clarify approvals triggered under the IPA. Section 6.11 of the EIS mentions that *"certain types of development applications may not need to repeated"* and is unclear.

Recommendations:

The proponent should identify the applications that will be assessed under the IPA.

Issue: Non-indigenous Cultural Heritage

It is accepted that field surveys were conducted on a targeted basis only across what is a very large project area. However identified potential sites, in sections 6.13.2; 7.13.2 and 8.13.2, that have not been investigated, of non-indigenous cultural heritage interest, should still be considered in the planning phase of the project.

Recommendations:

The proponent should provide a clear process by which identified potential sites which were not located, recorded and assessed in field surveys can be assessed and can be considered in the planning phase of the project, with particular reference to the gas pipeline corridor.

Issue: Water Management Ponds

Section 6.16.4.3 implies that to facilitate surrender of an environmental authority (EA), water management ponds may be used by the landholder upon decommission of the project. However, water management ponds are designed to avoid taking of overland water flow, and would therefore be of limited use to the landholder. If these dams are to be modified to take overland water flow at the completion of the project to enable transfer of the pond to the landholder, it would need to meet other requirements as provided for in the Fitzroy WRP. Written agreement would be required from the landholder and the administering authority of the EA for this process to be accepted as a means of surrender of the EA.

Recommendation

Any dams that are constructed for petroleum activities under an environmental authority should be removed post project unless written agreement is provided from the landholder and the administering authority; and the dam meets the requirements provided for in the Fitzroy WRP in relation to overland flow.

Issue: Appendix K – Section 4.2, Waste Generation

More information is required to assess impacts of all wastes/contaminants proposed to be discharged from site to waters including their chemical composition/contents and volumes. This information is required to develop appropriate discharge conditions.

Recommendation:

Provide details of expected contaminants (e.g. chemical composition, particulates, metals, effluent temperature and pH) in controlled discharges of proposed wastewater and stormwater management systems.

Issue: Appendix L1, CSG Field Terrain Soils and Land Capability – Section 2.5, Land Suitability for the Location of Water Storage Facilities

Placing containment structures on alluvia increases the risk of potential failures.

Recommendation:

The location of storage dams will require careful consideration. Ponds should not be located on alluvia or perched on a toe slope above alluvia where there would be an increased risk of leaking.

Issue: Appendix N4, Section 3.10

Section 3.10 notes that a key limitation of the study was the field data (for example, macroinvertebrates) which was limited to a single, dry-season survey. Given the ephemeral nature of much of the study area, conclusions as to the health of the system based on this data are unreliable.

Recommendations:

As suggested in Section 3.10 of Appendix N4, further surveys are required to adequately assess and describe aquatic communities of the study area (particularly for non-dry periods after rainfall). Until this time, any conclusions made in the EIS based on this data will be speculative and should be appropriately qualified.

Issue: Appendix N4, Section 3.7.1, Aquatic Ecology Impact Assessment – Turtle Communities

The impact assessment states that "purpose built cathedral traps" were used for surveying freshwater turtles. DERM has previously published in a report (EPA 2007c) that the consultants have quoted in their report that the two turtle species of conservation concern in the Fitzroy Catchment (*R. leukpos and E. albagula*) cannot be adequately sampled by this method trapping. The authors also acknowledge this on p129-130 of Aquatic Ecology Impact Assessment report, but did not identify and undertake appropriate alternative sampling techniques for these turtles of conservation interest. *E. albagula* is not difficult to sample using seine netting. Both species can be observed and captured using dip-netting from dinghies or canoes at night around logs and in the shallows.

The generalised descriptions of turtle distribution and habitat use are inadequate and in some places inaccurate.

This impact assessment has not identified any occurrence of nesting banks at any of the stream crossings that they will be impacting.

This impact assessment has failed to adequately identify the occurrence of both *R. leukops* and *E. albagula* turtles and their nesting areas used by the species in the areas that would be impacted in the construction and operational phases.

Recommendations:

Further surveys using appropriate techniques should be carried out to accurately quantify presence and abundance of *R. leukops* and *E. albagula* turtles and subsequently develop appropriate avoidance and mitigation measures to reduce impacts on these species.

Issue: Appendix P2 Groundwater (Deep Aquifer Modelling)

The report states that the modelling incorporated Santos' RFD area as well as the Spring Gully CSG fields operated by Origin Energy. No information is provided on what future development scenario for the Spring Gully Field was used in the modelling.

Recommendation

The proponent should provide information on the future development scenario (including number of wells and associated water quantity assumptions) that was used in the modelling for the Spring Gully fields.

Issue: Appendix P2 Groundwater (Deep Aquifer Modelling)

The report has not provided evidence that other proximally located LNG associated CSG field developments, such as the Australian Pacific LNG project, will not have an impact on deep groundwater aquifers.

Recommendation

The proponent should provide a detailed assessment on the interaction of deep aquifers between this project and other proposed LNG projects.

Issue: Appendix P2 Groundwater (Deep Aquifer Modelling)

The report identifies that CSG extraction has occurred in the Comet Ridge area since the mid 1990s. This would indicate that the present monitoring may not be an appropriate baseline for quantifying impacts on environmental values.

Recommendation

The proponent should obtain groundwater data pre-dating CSG extraction for the area to form a baseline for impact assessment.

Issue: Appendix P2 Groundwater (Deep Aquifer Modelling)

The report states that monitoring of the radial extent and magnitude of drawdown will provide "early warning" of variation of the groundwater system. The potential time lag between aquifer drawdown in the coal seams and the resource aquifers is unclear.

Recommendation

The proponent should provide information detailing the estimated time that would elapse between drawdown of coal seam aquifers and resource aquifers. In consequence, the estimated time between cessation of water extraction from the coal seams and cessation of drawdown in the resource aquifers should also be provide. As a result, the proponent should provide detailed mitigation measures demonstrating an ability to "make good" based on this information.

Issue: Appendix Q, Section 3.4.2

Table 3-2 states that the average sodium value for Fairview is 98. However, the text below the table states that the average SAR value for Fairview is 149.

Recommendation

The proponent should confirm the correct SAR values (minimum, maximum and average) for the Fairview area.

Issue: Appendix Q, Table 3-2 (and elsewhere in EM plans and EIS)

The current EIS reports contaminant levels in effluent in terms of Total Dissolved Solids (TDS). However, electrical conductivity (EC) is a more appropriate parameter that can be readily measured and audited.

Recommendation:

The water quality data should refer to Electrical Conductivity (EC) rather than TDS for inclusion in the mitigation measures, EM plan and approval conditions.

Issue: Appendix Q Table 3-2 (and elsewhere in EM plan and EIS)

The current EM plan (which Santos suggests is the working model at present) gives 90th percentile figures for EC. A maximum EC level should be included. If 340 µS/cm is used as the background natural value, then this should be made clear.

The maximum proposed EC level for any water discharged to streams for the project should be clearly identified as this is not yet evident. The lack of clarity is also increased by the change to using TDS as the main value for releases in the EIS.

Recommendation:

The EIS describe finalised maximum EC levels proposed for release of CSG effluents to river systems.

CSG Transmission Pipeline:

Issue: Gas Transmission Pipeline

Section 7 of the EIS indicates that the proposed pipeline corridor crosses RA18 Proposed Castlehope Dam Site. While the *Central Queensland Regional Water Supply Strategy*, December 2006 (CQRWSS) does not include Castlehope Dam as a preferred option to meet the short term needs (10 to 15 years) identified in the Strategy, this would not preclude it from being developed some time in the future as future reviews of the CQRWSS may include Castlehope Dam. The *Queensland Water Plan* 2005-2010 identifies that Queensland has relatively few future storage sites with development potential and those sites should be protected to ensure their availability. Consequently, the pipeline route should avoid the Castlehope Dam Site.

Recommendation

The corridor crosses the restricted area of the Castlehope Dam site, and the pipeline route should be changed to avoid this area.

Issue: Overall Assessment Methodology

The topography, geology and soils investigation, in section 7.1, for most of the pipeline was confined to "*a drive-through reconnaissance survey of parts of the western and southern sections*" as outlined in section 7.3.2.1 Methodology. Problem soil areas with moderate-high and high rating due to sodic and/or dispersive conditions, salinity and reactive clays are assessed to occur over 43% of the pipeline route from desktop studies, without field assessment. Detailed field investigations are required to characterise the problem soil areas to enable the route selection process to avoid areas where construction may not be possible or impacts are unacceptable. Alternatively, the investigations should allow for the assessment and development of specific and detailed mitigation measures.

Recommendation

Provide information detailing how the pipeline will be constructed in the problem soil areas and areas of difficult topography. The information should include appropriate field studies of sensitive soils and landform along the pipeline corridor identified in the EIS.

Issue: Assessment Methodology (pipeline route selection)

Further information is required to ensure the process of selecting the preferred alignment for the pipeline route has been effective in avoiding, or minimising impacts on the environment, including remnant vegetation, habitat for native fauna, and watercourses.

Recommendation

Include a detailed account of the process used to derive the preferred alignment for the gas pipeline. Specific details of measures and decisions taken to avoid and minimise impacts on the natural environment should be provided. Particular attention should be made to remnant vegetation, wildlife habitat and watercourses and wetlands.

Issue: Section 7.3, Agricultural Land

The assessment of Agricultural Land Classes (ALC) and Good Quality Agricultural Land (GQAL) has been undertaken by DERM on the basis of land system mapping. In addition, DERM is required to administer the provisions of SPP 1/92, *Development and Conservation of Agricultural Land*, using these GQAL datasets.

The role of DERM in determining ALC and GQAL is acknowledged in the EIS. It is further stated that *"the mapping has been modified in parts by the more detailed terrain unit mapping undertaken for the gas pipeline corridor assessment"*. However, the details of where this occurs are not provided nor is there any explanation or justification for the change.

Recommendation

An assessment is required to support the difference of Agricultural Land Classes and Good Quality Agricultural Land datasets and the findings of the EIS.

Issue: Section 7.3.1.4, Existing Environmental Values (Terrain Units and Figures 7.3.6-26 and Figure 7.3.31)

The land system studies of the Isaac-Comet, Dawson-Fitzroy, Balonne-Maranoa and Capricornia Coastal Lands contain a principal source of data used by the Department to make decisions regarding land management, planning and assessment of impacts from development proposals. In section 1.1.2 of Appendix L2, Land – Gas Transmission Pipeline, it is stated that the datasets from these land system studies *"were reviewed and /or used"*. However, there is no cross referencing between terrain units and land systems and the component land units and soils.

Recommendation

The soils in the terrain units described in Fig 7.3.1, of the EIS, should be cross referenced to the land units and land systems in the various land system studies previously undertaken across the area. The proponent should provide a GIS shape file of the pipeline corridor to allow DERM to review the results of the desktop study against existing datasets.

Issue: Pipe bedding & excess material

Section 7, Land, identifies that material may be imported for the pipeline trench and conversely, material, such as rock, may be in excess.

Recommendation:

Provide a detailed description, characterisation, location and method for the import of suitable material and the disposal of excess rock and other waste material. The potential impacts and suitable mitigation measures should also be discussed.

Issues: Section 7.4.4.1, Regional Context - Environmentally Sensitive Areas – Mainland and Curtis Island (World Heritage Areas)

The Great Barrier Reef World Heritage Area is not mentioned in the EIS. The EIS only discusses the Great Barrier Reef Marine Park and incorrectly states that the Commonwealth marine park extends down the western side of Curtis Island whereas it is the World Heritage area that extends across the Port of Gladstone and The Narrows and includes the whole of Curtis Island.

Recommendation

Amend the World Heritage Areas section to refer to the Great Barrier Reef World Heritage Area, and correctly identify the boundary of the world heritage area. Any potential impacts and mitigation measures specific to these areas should be detailed.

Issue: Mitigation measures for *Cycas megacarpa*

In section 7, Nature conservation, *Cycas megacarpa* is identified as a significant species that occurs along the pipeline route. It is noted that further detailed studies are proposed to obtain accurate information on this species. Additionally, there are no specific mitigation measures

developed for this species. However, it is identified that there will be permits required under the *Nature Conservation Act 1992* and EPBC Act where listed plants are cleared.

Recommendation

Provide a detailed investigation and identification of the plants to be cleared for the construction of the gas transmission pipeline. Mitigation measures should also be identified.
Please note that other LNG projects are proposing to propagate multiple *Cycas megacarpa* for each *Cycas megacarpa* cleared. This proposal should be considered in developing mitigation measures.

Issue: Right of Way (ROW) width in sensitive areas

Section 7, Nature conservation, identifies that the ROW width can be reduced for sensitive areas.

Recommendation

Provide the locations of all sensitive areas that are proposed to use a reduced ROW width. Where additional clearing is required, for access tracks etc. around sensitive areas to support the reduced width, identify the location and vegetation to be cleared.

Issue: Clearing vegetation outside of ROW

In section 7, Land, clearing outside of the ROW during construction is identified. However, there is no detail on the scale or location.

Recommendation:

Provide an evidence-based assessment, considering alternatives, of the proposal to clear vegetation outside of the ROW. A detailed description of the vegetation should be included.

Issues: Terrestrial Flora (Vegetation Disturbance)

In section 7.4.5.1 the EIS incorrectly states that remnant regional ecosystems (REs) 12.11.6, 11.10.1, 11.11.15 and 12.11.7 have no current conservation significance under Commonwealth or State legislation. However, all remnant vegetation has protection under the VMA. This includes vegetation mapped as remnant 'Not of Concern'. Unless the clearing activity proposed is currently exempt under a licence, lease or authority, all vegetation must be considered when the clearing of vegetation is proposed, including vegetation identified as 'Not of Concern', 'Of Concern' and 'Endangered'.

Recommendation

Provide information detailing the location and extent of native vegetation proposed to be cleared. This should include all vegetation on state land (road reserves), whether mapped as remnant or not. This should include mature regrowth vegetation.

Issues: Terrestrial Flora

The EIS and section 7.4.5.1 provides insufficient information to assess vegetation clearing. A detailed description of all types of native vegetation is required to for assessment under the EP Act and or VMA.

Recommendation

Provide information detailing the all native vegetation proposed to be cleared. A determination of whether it would be assessable under the VMA should be included.

Issues: Koala habitat

Section 7.4.5.1 identifies that the pipeline route traverses areas identified as Koala Habitat under the *Nature Conservation (Koala) Conservation Plan 2006*. Specific mitigation measures appropriated to Koala Habitat are to be prescribed in relation to any direct or indirect potential impacts.

Recommendation

Provide detail in relation to potential disturbances of Koala Habitat Areas associated with the pipeline ROW and associated infrastructure (i.e. access tracks). Include relevant specific mitigation measures and consideration of habitat offsets that may be required where impacts cannot be avoided.

Issues: Section 7.4.5.1, Rehabilitation of Disturbed Areas (also Section 7.16.3.3)

The EIS has provided insufficient information to ensure the effectiveness of rehabilitation. Reference sites and measurable rehabilitation criteria should provide the basis for rehabilitation of the ROW.

Recommendation

Reference sites should be developed from which to develop benchmarks, and to provide on-going reference for environmental management and rehabilitation activities. The sites should be selected to represent the ecosystem types impacted by the project, and should be sufficiently removed from the project to ensure they are unaffected by the ROW and associated activities. The sites should be monitored at the same intervals and with the same methodology as that used for on-site monitoring of rehabilitated areas.

Issue: Terrestrial Flora (Weeds)

Limited information has been provided on the monitoring of weeds during the construction, operation and decommissioning of the pipeline.

Recommendation

Provide further information on the mitigation of weeds, particularly monitoring and mitigation measures used during the operation of the pipeline.

Issue: Weed mitigation measures

Section 7, Nature conservation, identifies the use of Santos Standards, regional management practice or "DNR&W" (now DERM) pest control sheets. These do not appear to be mitigation measures. Additionally, reference is made to the Santos Parthenium Weed Management Plan (URS, 2008) which is not included in the EIS.

Recommendation

Provide the actual mitigation measures to be implemented that will protect environmental values from weed impacts.

Issue: Fire risk

Cleared and stockpiled vegetation may be a fire hazard and may harbour pest species.

Recommendation

Provide a discussion of the potential fire and pest risk from stock piled vegetation. Suitable mitigation measures should be provided to prevent and or minimise the potential impact to environmental values.

Issue: Freshwater turtle communities

The EIS has failed to provide any details of the occurrence of both freshwater turtles in their area of construction and operations. The deficiencies include:

- Lack of information on *R. leukops and E. albagula* distribution at each stream crossing site proposed for the pipeline.
- Lack of information on the presence of turtle nesting at each of the stream crossing sites for the pipeline. Given that both *R. leukops* and *E. albagula* aggregate their nesting at traditional nesting sites, small localised areas of nesting can be significant for a larger area of stream. Nesting surveys need to be conducted at nesting time for each species. If aggregated nesting is found to occur then actions will need to be planned for local deviation of the pipeline crossing on those streams or alternate mitigation procedures will need to be developed to safeguard the nesting.

Recommendation

Suitably qualified persons should conduct appropriate nesting surveys at nesting times for each species. This information should be provided with appropriate mitigation measures to prevent and or minimise environmental harm to those values identified.

Issue: Water course crossings

Section 7, Surface water, identifies *"...pipelines or other buried services are required to cross water courses..."*. It is unclear if this infrastructure, that hasn't been identified, requires separate water course crossings.

Recommendation

Provide a detailed description and assessment potential impacts for water course crossings required for "other buried services" if applicable.

Issue: Potential impacts on water quality from works near drainage lines and watercourses

Sediment mobilisation has been identified as a potential impact in Table 7.5.2 from earth moving and stock piling, but significant potential impacts will also exist for works near drainage lines and water courses where streams are flowing. These potential impacts will be related to water quality in addition to flow. In such cases, appropriate mitigation measures and monitoring should be undertaken to help reduce such risks. As for the points listed for earth moving/stock piling, monitoring in the planning phase will be required to collected background water quality data to refine mitigation measures and assess impact.

Recommendation

Clearly identify any potential impacts on water quality from works near drainage lines or watercourses and any mitigation measures that will be undertaken to reduce the potential impacts.

Issue: State Planning Provisions

As a statutory instrument, and with the effect of a State Planning Policy, the State Coastal Management Plan is relevant for consideration of development within the coastal zone. The EIS cites the Curtis Coast Regional Coastal Management Plan, which is to be read in conjunction with the State Coastal Management Plan but fails to reference the State Coastal Management Plan itself.

Recommendation

Include the State Coastal Management Plan – Queensland's Coastal Policy 2001 as a relevant State Planning Provision for consideration. Further, the relevant regional policies as identified in Table 7.11.13 should be addressed. Information should be provided to demonstrate how the project is consistent with those and other relevant State and Regional policies.

Issue: Stock route network

The location of pipelines and access roads for the construction of the pipeline may impact on the Stock Route Network. Therefore, additional information is required to meet the *Land Protection (Pest and Stock Route Management) Act 2002.*

Recommendation

Include relevant details of the Stock Route Network similar to those illustrated in Figs 6.11.9a and 6.11.9b for the ROW. An assessment of the potential impacts and mitigation measures is required.

Issue: Millable Timber

The Forest Products Section of the DERM administers the *Forestry Act 1959.* Millable timer survey information is required to define the location and extent of the resource. Where this is not provided prior to clearing, compensation for the destroyed timber may be required. In addition, millable timber occurs on State owned land that includes State Forests and Crown Leasehold land.

Recommendation

Provide information detailing the millable timber to be cleared for the construction of the pipeline.

Issue: Impacts on Cultural Heritage and Native Title

Section 7.11.5.4 of the EIS provides the requirements of Cultural Heritage and Native Title. However, this section fails to recognise the need to gain relevant permissions under the *Queensland Heritage Act 1992.*

Recommendation

Identify the necessary permissions under the *Queensland Heritage Act 1992* for the Santos GLNG Project.

Issue: Non-indigenous cultural heritage sites

The EIS contains no clear commitment to the assessment and mitigation measures identified for the 41 places of potential non-indigenous cultural heritage significance within the planning stage and prior to construction, particularly with respect to the gas pipeline corridor.

Appendix X, Non-Indigenous Cultural Heritage, notes 41 places of potential non-Indigenous cultural heritage significance within the project area and recommends that these places be surveyed, assessed and managed if development is planned in these areas. A number of these potential places occur within the pipeline corridor. Others occur within the gas fields.

However, there is no clear commitment in the EIS to conduct the assessment and mitigation of impacts – e.g. Section 7.13.2.5, (page 7.13.17) in relation to mitigation measures for "Potential Sites" makes general statements only about how significance (most notably Indigenous significance) is assessed.

It is not clear in the main body of the EIS if, and when, these places will be assessed. Assessment of these places should occur within the planning process and prior to construction phase. Whilst

it is noted that those places in the gas fields may only require investigation when the gas fields are developed, those places within the pipeline corridor need to be investigated within the context of the planning phase.

Recommendation

The EIS should clearly identify whether the potential sites are to be the subject of a cultural heritage assessment during the planning stage and prior to construction. DERM would prefer that these studies be included in the Supplementary EIS. The timing of these assessments and the mechanism for reporting these places to DERM in accordance with the requirements of section 89 the *Queensland Heritage Act 1992* should also be identified.

Issue: Coastal Environments

Information should be provided to demonstrate the need for the potential bridge and pipeline crossing to be constructed in the Habitat Protection Zone of the Great Barrier Reef Coast Marine Park (State Marine Park). This is a statutory requirement of the *Marine Parks Act 2004.*

Recommendation:

Sufficient information should be provided to demonstrate the alignment of the pipeline and bridge cannot be located outside of the Marine Park.

Liquid Natural Gas Facility

Issue: Construction description

The construction description is inadequate, possibly due to lack of FEED. The stages of construction and the associated mitigation measures should be provide for the LNG Facility. For example, stormwater controls would be implemented initially and will change depending on the stage of construction.

Recommendation

Provide an illustrated description of the staging of construction and the proposed mitigation measures including monitoring. An example would be the staged construction of the material offloading facility (MOF), including the construction of the dredge spoil rehandling facility (proposed to be located adjacent to the haul road) and associated discharge.

Issue: LNG process description

The operational description of the LNG Facility is inadequate. The EIS is unclear with respect to inputs and outputs of the facility. Section 3.8.3.8 and Table 3.8.6 specify chemicals to be consumed by the plant. However, the fate of these chemicals is not described in this section (3.8.3.8, LNG Facility Inputs and Outputs) or section 5, Waste.

Recommendation

Provide a detailed illustrated description of the LNG process. The description should include all inputs and outputs (as well as fugitive emissions). Where output wastes are to be disposed, their characterisation, the location and the method of disposal should be assessed and described.

Issue: Waste disposal

The EIS is unclear as to the makeup of waste volumes and the disposal options. Disposal options include the utilisation of a Gladstone Regional Council facility. If the Gladstone Regional Council Curtis Island landfill were to be used, a Material Change of Use development application would likely be required to operate at these proposed levels.

Recommendation

Provide details on the disposal method for waste from the LNG Facility in general (including the water treatment plant) and opportunities for waste avoidance and reuse.

Provide information on whether the Gladstone Regional Council Curtis Island landfill is proposed to be used as part of the waste management system.

Issue: Cumulative Impacts

While the EIS states that proposed and associated industry will be located in the area, there is no information on potential cumulative impacts and cooperative management mechanisms which will be put in place.

Recommendation

Report on potential cumulative impacts on water, noise, air, land and waste management from associated industry and proposed industry in the area. The report should include how these impacts will be minimised and managed through an integrated management plan.

Issue: Soil Investigation Results

It is possible that a significant component of the arsenic in groundwater is leaching from the dip site identified in Table 8.3.10. This may then necessitate some level of remediation, unless demonstrated otherwise by further investigation.

Recommendation

Further investigation of the cattle dip area is required, given the high levels of arsenic found in this area as well as in the groundwater.

Issue: Soil mitigation measures

Section 8.3.1.5, Potential impacts and mitigation measures (Site Investigation Conditions), identifies the use of extracted rock as rip rap or rock armouring for soil erosion mitigation measures. However, the soil erosion mitigation measures section does not mention this.

Recommendation

Provide the mitigation measures proposed to mitigate soil erosion at all stages of construction and during operation of the facility.

Issue: Acid Sulfate Soils (ASS) & Potential Acid Sulfate Soils (PASS)

Section 8.3.1.5, Potential impacts and mitigation measures, discusses the occurrence of ASS and PASS. However, no mitigation measures are proposed.

Recommendation

Provide the mitigation measures to prevent and or minimise environmental harm from ASS and PASS. The basis for the proposed mitigation measures should be discussed.

Issue: Identification, monitoring and management

Section 8.3.1.5, Potential impacts and mitigation measures, states that *"...targets to achieve acceptable level for land rehabilitation..."* and *"...monitoring of the success of the impact management strategies and the progress of land rehabilitation..."* However, neither targets nor acceptable levels for land rehabilitation have been identified. Additionally, there is no monitoring of impact management strategies provided in the EIS.

Recommendation

Provide the targets, acceptable levels of land rehabilitation and monitoring requirements as referred to.

Issue: Light emissions

Section 8, Nature conservation, dismisses the impact of altered light horizons on marine turtle nesting and states *"... that there is no direct line of sight from the LNG facility site to these beaches. Hence no light effects from the project on turtle nesting are expected."* The proponents have inadequately assessed the impact of lighting on marine turtle nesting. The turtles do not need to be able to have direct line of sight of the lights. The altered reflected illumination of the night sky above the LNG facilities has the potential to negatively impact on the continued nesting of flatback turtles on Sound End Curtis Island beaches. Depending on the brightness of the skyline inland of the nesting beach even the turtles that choose to nest there may be disoriented and even hatchlings may be disoriented. Flatback turtle disorientation on a nesting beach has been recorded up to 18km away from a brightly illuminated industrial site. There is the potential for light from the LNG plant, including the two flare sites, to significantly alter the light horizons behind the Curtis Island flatback nesting area.

Recommendation

The changes in light horizons should be investigated and defined to determine the potential impacts to the Flatback turtle nesting area. The mitigation measures to prevent and or minimise the impacts should also be defined.

Issue: Migratory fauna and threatened megafauna

In Appendix R1, the Final Report GLNG Marine Ecology Technical Report, Sections 2 and 3 have not used appropriate methods for assessing populations of migratory species and threatened species that inhabit the inter-tidal and sub-tidal waters of Port Curtis in the area that they investigated. In addition, the report has failed to identify the populations of marine turtles, dolphins and dugong that will move in and out with the tides as they forage over the inter-tidal flats. The report has not addressed the common practice of green turtles aggregating to feed among inter-tidal mangroves and remaining there as "basking" turtles at low tide.

There is no evidence of an attempt to survey the distribution and abundance of the migratory fauna and threatened megafauna that occurred within their study area. The report focussed on the benthic community rather than the values that may be impacted upon. There is also no evidence of a detailed literature search of the occurrence of nesting and foraging turtles for the Port Curtis area.

Recommendation

Conduct an investigation assessing populations of migratory species and threatened species that inhabit the inter-tidal and sub-tidal waters of Port Curtis. Such investigations should be conducted by suitably qualified persons. Appropriate mitigation measures should be proposed to prevent and or minimise the impacts to environmental values identified.

Issue: LNG Facility clearing requirements

Section 8.4, Nature conservation, identifies clearing required for the LNG Facility. However, the clearing requirements are not adequately discussed. The clearing results in the removal of "of concern" and "endangered" regional ecosystems including: 12.2.2; 12.3.3; and 12.11.14.

Recommendation

Provide a discussion and assessment of the location of the LNG Facility (within the site) detailing the chosen location. Specific information detailing why impacts on environmental values cannot be avoided should be included

Issue: Water Mouse

Section 8.4, Nature conservation, identifies the potential habitat of the Water Mouse and states that the survey was inconclusive.

Recommendation

Conduct an appropriate and detailed survey to definitively determine the presence of the Water Mouse. An assessment of the proposed mitigation measures should be included where the presence of the Water Mouse is detected.

Issue: Environmental offsets

Section 8.4, Nature conservation, identifies a number of impacts related to dredging and other aspects of the project on the marine environment. There seems to be no proposal to mitigate the loss of seagrass, mangrove and salt flat communities. The project area is part of the Port Curtis Directory of Important Wetlands listing and intersects The Narrows Directory of Important

Wetlands listing. As such, the area should be considered a High Conservation Value Wetland. The draft Queensland Government Policy for Biodiversity Offsets (QGPBO) lists requirements for offsets related to High Conservation Wetlands.

It is noted that the discussion on development of a biodiversity offset strategy and management plan does not include any reference to marine or wetland values.

Recommendation

The EIS should examine opportunities for using offsets for any unavoidable impacts on the marine environment and wetlands.

Issue: Section 8.4.3, Regulatory Framework

The State Coastal Management Plan and the Curtis Coast Regional Coastal Management Plan are statutory instruments that have the effect of State Planning Policies and are relevant to development in the coastal zone.

Recommendation

Include the State Coastal Management Plan – Queensland's Coastal Policy and the Curtis Coast Regional Coastal Management Plan as relevant key planning policies. The relevant State and Regional policies should be addressed. Information should be provided to demonstrate how the project is consistent with the relevant State and Regional policies.

Issue: Section 8.4.3.4, *Marine Parks Act 2004*

The following text from the EIS is incorrect:

> *"...The MPGBRC Zoning Plan regulates the area from the low water mark of the Great Barrier Reef Marine Park to either the high water mark or the seaward edge of significant mangrove forests."*

It should state the GBRCMP Zoning Plan regulates the GBRCMP which commences from either HAT or high water and extends to the extent of Queensland Waters.

Issue: Section 8.4.4.2, Environmentally Sensitive Areas

The Curtis Coast Regional Coastal Management Plan identifies significant coastal wetlands and endangered regional ecosystems within the proposed development area as 'areas of state significance (natural resources)' for the purposes of policy 2.8.1 of the State and Curtis Coast Plans. The Curtis Coast Plan also identifies regionally important coastal habitat for the purposes of Policy 2.8.3, Biodiversity, of the State and Curtis Coast Plans.

Recommendation

The EIS should recognise the significant coastal wetlands and endangered regional ecosystems (areas of state significance (natural resources) as significant vegetation communities and recognise mapped regionally important coastal habitats.

Sufficient information should be provided to demonstrate that the project is consistent with the State and Regional policies.

Issue: Fish habitat area

In consideration of impacts on Queensland Fish Habitat areas (section 8.4) the Fitzroy Fish Habitat Area (north of project) is not discussed in section 8, only the Colosseum FHA is considered. Fitzroy FHA is directly connected to the Harbour through the Narrows.

Recommendation

The EIS should consider the impacts of the project on the Fitzroy Fish Habitat Area.

Issue: Marine Ecology

Section 8.4.5.3 of the EIS has acknowledged these seagrasses in Port Curtis are of regional significance Page 8.4.26). However, insufficient information has been provided to support statements such as "no significant impacts are expected" (page 8.4.52). The report states that seagrasses may be impacted by dredging and the impacts are expected to be minor and limited in extent. Information is required to support this statement. Furthermore, the long-term and potentially irreversible impacts to the marine ecosystem due to the removal of salt pan, saltmarsh, mangrove and intertidal areas have not been addressed.

Recommendation

Provide a detailed assessment to support the statement that "no significant impacts are expected" from clearing saltmarsh or mangrove communities. Information should include the potential impact expected resulting from the increases that TSS will have on the surrounding seagrass meadows.

Issue: Dredging Impacts

Section 8.7.4.1 of the EIS states that dugongs and turtles "may be impacted" due to their reliance on seagrasses in the area.

Recommendation

Provide more definitive information on what types of impacts are expected on dugongs and turtles. Such information (and the modelling) should show the seagrass meadows that are to be impacted by the dredge plume, the duration of the impact and the potential behavioural change of the fauna (e.g. avoidance of the area, and changes in breeding patterns).

Issue: Existing Water Quality

Section 8.5.4.6 states that there is no recognised watercourse on Curtis Island. However, only a qualified officer of DERM can identify a watercourse for the purposes of the *Water Act 2000* and the watercourse surveys have not yet been done.

Recommendation

The proponent should refer the determination of watercourses to DERM for the purposes of the *Water Act 2000*.

Issue: Stormwater management during construction

Section 8.5.5.1 discusses stormwater management; however, it is not adequately addressed in the EIS. Stormwater management plans must be developed prior to any disturbances and stormwater controls are to be in place prior to any subsequent disturbance.

Recommendation

A stormwater management plan is required to be in place prior to construction. The plan should be consistent with the detailed construction information that has been requested.

Issue: Construction Phase - erosion and sediment controls

Section 8.5.5.1 of the EIS states that erosion and sediment controls will be used as mitigation measures. However, it does not state what type of controls will be used, how or when they will be implemented. See earlier comments on Stormwater Management Plan (section 8.5.5.1).

Recommendation

The Supplementary EIS should detail the erosion and sediment control techniques that will be used to minimise sediment movement and potential erosion from construction of the LNG facility.

Issue: Sewage Treatment

Section 8.5.5.2 of the EIS states that plant effluent will be routed to an irrigation system for disposal. However, it does not state the disposal rate or other critical aspects (e.g. chemical composition, disposal area, soil characteristics, flora to be irrigated, long-term acceptance rate for soil to accept effluent etc.). There is currently insufficient information to assess or provided conditions for the proposed treatment and disposal of effluent.

Recommendation

The Supplementary EIS should provide much more detail on the irrigation system for disposal of plant effluent and the associated environmental impacts and mitigation of these impacts.

Issue: Stormwater management during operation

Section 8.5.5.2 of the EIS has not detailed what parameters will be tested and what quality stormwater will be acceptable for release. Unless all contaminants are listed, DERM cannot develop appropriate discharge conditions.

Recommendation

Provide an assessment of the proposed stormwater quantity and quality, which will protect and enhance the environmental values, to be discharged.

Issue: Old versions of GAMS, Calpuff and TAPM used in air impact assessment

It is stated in Section 8.8.4 of the EIS and Appendix S that the air impact assessment was conducted by using the Gladstone Airshed Modelling System (GAMS). It is not clear why old versions of GAMS, Calpuff and TAPM were used in the assessment. It is also not clear why the future known industries proposed for the region are not included in the EIS (for example, information on the Rio Tinto Aluminium Refinery Stage 2 is now available).

Recommendation:

Reassess the potential impacts using the current versions of the Gladstone Airshed Modelling System, Calpuff and TAPM and include all future known industries proposed for the region.

Issue: Formaldehyde and benzene emissions

Volatile organic compounds such as formaldehyde and benzene may be released from the gas turbines and flare at the proposed LNG facility. These emissions can be calculated using gas turbine specification and US EPA AP42 emissions factors or based on a similar facilities operating elsewhere. The formaldehyde and benzene emissions are not provided in the EIS. It is stated in Section 3 of the URS report, Appendix S (page 50) that VOCs such as formaldehyde, benzene, toluene and xylene are very low and have not been modelled. It is not clear what sort of concentration is considered as "a low concentration".

Recommendation:

Specify formaldehyde, benzene, toluene and xylene concentrations and mass emission rates from the release points (stacks and flare) and also mentioned the methodology on how these values are estimated.

Issue: Incorrect listing of Environmental Protection Policy (Air) 2008 (EPP Air)Air Quality Objectives

Queensland Air Quality Objectives have been revised in EPP Air. The EIS considered old EPP Air standards (see Table 3-3 of URS report, Appendix S). The EIS needs to be revised to reflect the new EPP Air. For example, the conclusions in section 3.2.5 of Appendix S should be revised after considering the new standards.

Recommendation:

Use the latest Air Quality Objectives as specified in EPP Air and compare the modelled results against these objectives.

Issue: Wrong interpretation of Protection of the Environment Operations (Clean Air) Amendment (Industrial and Commercial Activities and Plant) Regulation 2005 (POEO Regulation 2005) for NO_x emission standards

The EP Act requires setting stack emission limits based on the best practice emission standards. NSW POEO Regulation 2005 is used in Queensland as the source of the best practice emission standards. The NO_x general standards for gas turbines with a capacity of less than 10 MW is 70 mg(N)/m^3 (dry) at 15% O_2. This is incorrectly quoted in the EIS, as 350 mg(N)/m^3 (dry) at 15% O_2 (see Table 8.8.7 of Section 8 and Tables Table 3-4, 3-9 and 3-10 of URS report, Appendix S). The standard of 350 mg(N)/m^3 (dry) at 3% O_2 is for general activity or plant.

Recommendation:

Please specify the correct NO_x emission standards of individual units proposed for the project.

Issue: Facility design

Section 3.2 of the URS Report (Appendix S, page 44) mentioned that the emission estimates are provided for the two OCP and C3MR design options (see Tables 3-7 and 3-8). The main EIS report in Section 8 (page 8.8.10) provides emission data that may represent OCP process only. It is not clear which process is selected for the final design and what is the final stack emission data. This information is important for the licence conditions.

Recommendation:

Clarify which process (OCP and C3MR) was selected for the LNG facility and the final expected emissions at is the site.

Issue: Concentration values are not referenced to the standards levels.

For some sources, air emissions are provided in terms of mass emissions only and their concentration values are not provided in the EIS. For example one of the major NO_x emission sources for the OCP design is "hot oil heater". The NO_x emissions of hot oil heater are expected to be 1.18 g/s per unit (see Table 8.8.6 of Section 8 and Table 3-8 of Appendix S). The NO_x concentration of this source is not provided in terms of mg(N)/m^3 (dry) at O_2 reference level. This information is important for the licence conditions.

Recommendation:

Specify concentration values of all major emission sources in terms of mg(N)/m^3 (dry) at the O_2 reference level.

Issue: The control technology review process is not finalised

One of the major sources of methane emissions at the facility is nitrogen vent (see Table 3-8 of the URS Report, Appendix S). It is mentioned in the URS Report (page 48) that further

refinement of the facility is currently underway as part of the FEED process with consideration being given to the use of a thermal oxidiser for the nitrogen removal unit to combust methane gases and the incorporation of waste heat recovery units on gas turbines. This report was prepared in February 2009. The EIS should discuss whether any progress has been made in the finalisations of the emission control technologies and the heat recovery units.

Recommendation:

Clarify the status of the proposed methane emission control technologies and the heat recovery units of the gas turbines.

Issue: LNG Facility Discharge Impacts

Section 8.7.4.6 of the EIS provides that the water supply for the LNG facility will be *"provided by the desalination of seawater from Port Curtis"*. Further information on the proposed desalination plant and the mechanisms for approval is required.

Recommendation

Provide the design details of the desalination plant, intake and discharge structures. The approach to the design should be described to show how potential impacts including those due to reverse osmosis concentrate discharge are to be avoided or minimised. Storage and handling of chemical should be addressed. Where impacts are identified, the EIS should detail the proposed mitigation measures to manage those impacts. Clarification should also be made to the approvals required for the plant and associated infrastructure.

Issue: Ability of Cormix to assess near-field mixing of saline discharge and potential stratification

In Section 8.7.4.6 LNG Facility Discharge Impacts, the near-field assessment of the reverse osmosis plant discharge was done using CORMIX. It is stated that CORMIX is an acceptable industry standard model for such applications. However, no information is provided to substantiate this claim or to explain how reliable CORMIX can predict the mixing of the more dense discharge water with the receiving bay water.

Recommendation

Provide information to demonstrate appropriateness of the CORMIX program to model the near-field mixing of the dense reverse osmosis concentrate with bay water. This could include examples of where the model has been successfully used for other similar applications and statements about the reliability of the model in this application.

Issue: Limited information on diffuser design for reverse osmosis concentrate discharge

There is a need for more detail about the reverse osmosis concentrate discharge diffuser design. The diffuser should to be designed to promote mixing in the water column of the dense saline plume and avoid the potential for a denser saline layer to form over benthic communities. This would typically require jets to project upwards from the bottom. The discussion talks about time for the plume to fall to the bottom. However, the design of the diffuser is not provided (for example, the location of the diffuser including the number of jets and their projection angle). A diagram is needed to explain the design and the near field mixing.

Recommendation

Provide further information on the diffuser design including its proposed depth and jet/port angles and an assessment of the suitability of the design.

Issue: More detail on the fate of the reverse osmosis waste stream

The EIS states that the reverse osmosis waste stream from backwash will not be discharged but will be treated and taken offsite. Although this is a preferred option to discharge, the type of treatment and likely fate of the waste stream should be discussed in more detail.

Recommendation

Provide details on the type of treatment and disposal method for the RO waste stream from backwashing.

Issue: No information on chemical use for desalination

The chemicals, such as antiscalents, that will be added to the desalination water should be identified and characterised. The likely impacts on receiving waters from the chemical should be detailed and assessed. Some antiscalents have phosphates or ferric constituents that are potential nutrients in marine waters and could lead to adverse impacts. The mitigation measures for the potential impacts should also be identified.

Recommendation

Provide information on the characteristics and quantities of any chemicals that will be added to the desalination treatment and may be discharge in the reverse osmosis concentrate. The potential impacts on receiving waters should be identified along with the proposed mitigation measures.

Issue: No information on the desalination plant water intake line

The desalination plant in-take line has the potential to cause entrainment or entrapment of aquatic organisms. No information is provided on the location or type of intake method and the measures that will be adopted to minimised entrainment or entrapment of marine organisms.

Recommendation

Provide a detailed description and location of the intake line. Describe the potential for entrainment or entrapment of marine organisms. The proposed mitigation measures to minimise these impacts should be described.

Issue: Section 8.17, Marine Dredging and Marine Placement Facility

It is understood that a Curtis Island LNG facility, associated with another proponent, may be constructed at Laird Point where the proposed Gladstone LNG Project dredge spoil disposal facility is proposed.

Recommendation

Discuss and assess whether the proposed disposal of dredge spoil at Laird Point would impact on future use of the area by other LNG projects.

Issue: Sediment modelling assumptions

The modelling assumptions used in the modelling do not appear to be fully justified. The assumption of 1.5 kg/sec sediment loading into the water (section 8.7.4.1) for cutter suction dredging should be qualified in terms of the rate of dredging, sediment characteristics, and whether dredging involves overflow. It appears that an 'average' sediment type and non-overflow dredging has been assumed. The rate of dredging is unknown at this stage (Appendix R2, 6.4.1). Assumptions about resuspension of sediment over the 14 month dredging program (at least up to an equilibrium point) may be significant and again may be very important for overlapping projects. The settling rate for sediments is assumed to be 1 m/day based on what was

adopted for the WICT modelling. In the absence of any actual supporting data on settling rate, this assumption should be justified. A range of dredging scenarios and weather conditions would be a better approach with a clear statement of all assumptions.

Recommendation

Provide a detailed discussion describing the adoption of assumptions for the dredge plume modelling. A range of scenarios should be used to assess the potential impacts.

Issue: Equilibrium of suspended sediment

The turbidity modelling used a 2 day run up and 2 day operation and presumably is displayed as turbidity increase at the end of this period. No indication is given as to whether this represents an equilibrium state or whether the turbidity will continue to increase as dredging continues. It takes a substantial period of time for the water within Port Curtis to be 'flushed' with full turnover possibly taking a couple of weeks. The dredge plume created by dredging at Hay Point took weeks to build to an equilibrium state. This project may be carried out over 14 months. The equilibrium state and the interaction with multiple dredging operations in the port will provide key information in determining conditions, and identifying potential cumulative impacts from dredging.

Recommendation

Provide further information on the equilibrium state of the dredge plume. This information should be supported by the identification of likely time of other dredging projects for Port Curtis.

Issue: Dredge plume modelling

The dredge plume modelling does not appear to provide any input into mitigation measures to prevent and or minimise impacts on the marine environmental values identified in the EIS.

Recommendation

Provide a detailed discussion on how the modelling results will be used to develop measures to prevent and or minimise the impacts on environmental values.

Issue: Dredge spoil rehandling design

The EIS does not detail the discharge objectives for the Laird Point dredge spoil rehandling facility.

Recommendation

Provide the details of the proposed discharge, including: the characterisation of the discharge; the background water quality; and the proposed mitigations measures to avoid and or minimise impact to environmental values.

Issue: Dredge spoil rehandling

The project description proposes a 120ha spoil storage area with 13.2 million cubic metre capacity to hold 10.7 million cubic metres of spoil. The details of dredging rate and settling capacity at the end of the dredging project are unknown.

Recommendation

Although it is likely that the area can provide adequate settling capacity through the entire project, the EIS should provide objective information in this regard and detail contingency measures if additional storage is needed.

Issue: Dredge spoil for MOF

Table 5.3.1 and Table 5.3.7 only refer to dredge material waste associated with the proposed capital dredging for the channel and swing basin and do not include the dredging for the materials offloading facility.

Recommendation

Discuss the 100,000m^3 of 'waste' material associated with the dredging for the MOF.

Issue: LNG Facility Environmental Values and Management of Impacts

It is unclear whether impacts associated with the dredging for the MOF, and potential beneficial reuse of the dredged material, have been covered in Section 8 of the EIS.

For example, Section 3.10.1.2 refers to an "onshore reception lagoon and settlement pond" potentially located adjacent to the MOF haul road. The lagoon and pond is to contain the 100,000m^3 of material dredged for the MOF. It is unclear whether the vegetation disturbance discussed in Section 8.4.5.1 includes any clearing associated with the dredge spoil facility.

Recommendation

Potential impacts and mitigation measures associated with the dredging for the MOF, and subsequent land-based use of the dredged material, should be discussed.

Issue: Appendix G - Table 2-1

There is no information provided as to the efficacy of proposed mitigation measures.

Recommendation:

Provide information on the effectiveness of proposed mitigation measures to minimise impacts on marine mammals from increased shipping movement from other cases.

Issue: Appendix L4 – Appendix A: Stratigraphic Logs with Acid Sulfate Chemistry, Section A.1 Logs of onshore cores #1 to #54

The borehole logs of onshore cores #41 to #54 are missing. These logs are required to assess the sediment characteristics at these locations for suitability for fill placement and likely acid sulfate soil disturbance.

Recommendation:

Provide missing borehole logs of onshore cores # 41 to # 54.

Environmental Management Plans (EM plan)

Issue: Environmental Management Plan requirements – CSG, pipeline and LNG faciltiy

Section 310D of the EP Act sets out the requirements for an EM plan to help the administering authority decide the conditions of the environmental authority. The EM plans provided in the EIS do not contain all requirements of section 310D.

Recommendation

Amend the EM plans to include sufficient information to meet section 310D of the EP Act.

Issue: Santos Environment Health and Safety Management System

The EM plans for the various components of the project often refer back to Santos' Environment Health and Safety Management System (EHSMS).

Recommendation:

Environmental management commitments and processes should be taken from the EHSMS and incorporated into the Supplementary EIS and EM plans.

Issue: Environmental commitments

The proposed EM plans provide a basis for interpreting the commitments set out in the EIS. However, there are some proposed performance criteria and actions that contain qualifiers such as "wherever possible" and "where practical". It is DERM's experience that interpretation (by construction supervisors and contractors for example) of qualified commitments often leads to them being ignored. The EM plan should state circumstances where the commitments apply.

The EM plan performance standards must be clear, unambiguous and auditable. Qualifying terms such as" 'where possible" or "where practical' and "minimise" should not be used within EM plans.

Recommendation

The EM plans should be reviewed to ensure that all performance criteria and actions that contain qualifiers are re-written to clarify the performance standards expected of contractors and others given the responsibility to implement the plan.

Issue: Environmental Management Plans

The EM plans advise: "It is envisaged that the final EM plan for each component of the project will provide additional, more detailed guidance for construction and operational personnel, regulators and stakeholders prior to the application for the relevant environmental authorities". As described in the EIS (Appendix C) the project will require various approvals including those under the P&G Act, EP Act and the IPA. The content of the relevant EM plan assists in formulating conditions which will apply to the approvals and which are required for inclusion the EIS Coordinator-General's Report.

The EM plans contain insufficient detail to ensure provision of appropriate approval conditions. The EM plans should be refined to provide the planned additions to better facilitate preparation of approval conditions. For an environmental authority for chapter 5A activities, EM plan requirements are defined in s310D of the EP Act.

Recommendation

The EM plans should be amended to provide the planned additional detail to allow preparation of appropriate approval conditions.

Issue: Environmental Management Plans – regulatory environment

The EM plans for the relevant components are not clear in the description of which approvals each plan will apply to. Each EM plan refers to environmental authorities although does not cover the approvals under other legislation. For example, the IPA. These statements do not clearly define the approvals sought for the proposal.

Recommendation:

The EM plans should be revised to provide a clear distinction between various legislative requirements and approvals sought, including those relating to the IPA, P&G Act, EP Act and the *Dangerous Goods Safety Management Act 2001.*

Issue: Environmental offsets

The large and complex nature of the three related project components means that the nature conservation issues involved are equally varied and complex. While the EIS and EM plans for the three related projects make commitments to develop Biodiversity Offset Strategy and Management Plans for each of the aspects of the project, the effectiveness of these plans will depend on the criteria used in establishing the offsets. It is not clear whether the CSG Fields and LNG facility will base their Biodiversity Offset Management Plans on the consultation draft of the Queensland Government Policy for Biodiversity Offsets. This document should be particularly useful since its Appendix 2 addresses a number of issues applicable to the overall project including issues related to terrestrial, marine and freshwater habitats. It is strongly recommended that the guiding policies, principles and requirements of this policy should be applied in designing the Biodiversity Offset Strategy and Management Plans.

The Gas Transmission Pipeline EIS section 7.4 page 7.4.24 states: "A biodiversity offset strategy and management plan will be developed in line with guidelines of the QLD Government Biodiversity Offset Policy".

This is strongly supported and it is recommended that a similar commitment should apply in the other aspects of the overall project.

Recommendation:

The project EM plans should commit to establishing Biodiversity Offset Strategy and Management Plans based on the policy, principles and requirements of the draft Queensland Government Policy for Biodiversity Offsets.

Issue: Corehole and Exploration Drilling

Drilling waste material may restrict rehabilitation of the CSG fields.

Recommendation:

Waste from the drilling operation should not be spread over the soil surface.

Issue: Gas and Watering Gathering System

The EIS needs to demonstrate how the proponent will prevent and or minimise erosion on disturbed areas.

Recommendation:

Erosion control measures such as 'whoa boys' (also known as check, cross or roll-over banks) should be implemented to reduce concentration of water flow along the pipeline and access tracks.

Issue: Clearing and Grading

The EIS needs to further define measures to minimise the risk of erosion during clearing and grading.

Recommendation:

The proponent should adopt the following mitigation measures:

- Clearing should be by hand, or lopped, to protect the bank of the watercourse.
- Retaining the root mass is especially important for sodic soils, to minimise the risk of tunnel erosion.
- Where cleared vegetation is stockpiled, measures should be taken to avoid concentration of overland flows.

Issue: Trenching and rehabilitation

Sodic material can inhibit rehabilitation and increase the risk of erosion.

Recommendation:

The proponent should ensure trench spoil that contains sodic material will not be spread on the land surface.

Issue: Associated Water Management

The associated water management plan required under the Queensland Government's CSG Water Management Strategy is to be incorporated into the EM plan for a Level 1 Environmental Authority (Petroleum Activities).

Recommendation:

An associated water management plan should be included in the Supplementary EIS and CSG EM plan.

Issue: Associated Water Management

The CSG EM plan provides inadequate detail on the operation and effectiveness of proposed associated water management mechanisms in dealing with forecast water qualities and quantities. The feasibility of the listed options does not provide adequate commitments.

Recommendation:

That the proponent should provide additional information detailing exactly how potential water management options will manage the forecast quantities and qualities of associated water (acknowledging that these estimates may vary).

Issue: Containment Ponds

The CSG EM plan should to put in place methods that ensure the management of salts and other contaminants from reverse osmosis concentrate dams does not become the responsibility of individual landholders.

Recommendation:

The transfer of reverse osmosis concentrate containment ponds to landholders should only take place following safe removal of reverse osmosis concentrate and other contaminants from the ponds.

Issue: Access

The access methods should prevent and or minimise risks of erosion.

Recommendation:

The EM plan should detail how erosion control measures will be implemented and how on-farm runoff control works re-instated.

Issue: Fauna management

Marine flora and fauna is not covered in the implementation strategy for the Gas Transmission Pipeline EM plan nor the LNG Facility EM plan

Recommendation:

Include sections in the EM plans on marine flora and fauna.

Issue: Environmental Management Plans

The proposed EM plans provide a basis for interpreting the commitments set out in the EIS. However, there are some proposed performance criteria and actions that contain qualifiers such as "wherever possible" and "where practical". It is DERM's experience that interpretation (by construction supervisors and contractors for example) of qualified commitments often leads to them being ignored. The EM plans should state circumstances where the commitments apply or do not apply.

Recommendation

The EM plans should be reviewed to ensure that all performance criteria and actions that contain qualifiers are re-written to clarify the performance standards expected of contractors and others given the responsibility to implement the Plan. The performance standards should be clear, unambiguous and auditable. This should also ensure that any subsequent EM plan revisions are equally clear.

Submission 24

Santos | PETRONAS

LANDCARE QUEENSLAND

Callide Valley Landcare Group

To the Coordinator General

C/- EIS Project Manager: Gladstone (LNG) Santos
Significant Projects Coordination
Department of Infrastructure and Planning

The Callide Valley Landcare group is generally concerned about the spread of weeds along the pipeline route.

As long as the wash down of vehicles is maintained to a high standard as described at a community consultation in Biloela, where vehicle wash downs occur before and after weed free and known weed areas then this should minimise weed spread.

Possibly wash downs could occur at every property boundary along the route, as sometimes there are species of plant that possibly could be undesirable to a neighbour even though they are not a weed species, and have not been spread due to the shape of the landscape, but with the movement of vehicles along the pipeline route, these species are spread from property to property.

Kind Regards

Kate Johnson
Chairperson

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Submission 25

Santos | PETRONAS

Alan Hutchings

From: Clive Paige [Clive_Paige@health.qld.gov.au]
Sent: Monday, 17 August 2009 3:12 PM
To: GLNG SANTOS
Cc: Uma Rajappa
Subject: Santos EIS Comments

Dear Alan,

The main issues identified by QH in its assessment of the EIS were:

- Dust generation during construction activities for the gas field, pipeline and LNG facility
- Noise and vibration impacts during construction and operation phases - noise mitigation options will need to be considered for gas field, pipeline and LNG facility

QH's written response will be submitted later this week after it has been approved.

If you have any queries, please contact me.

Regards

Clive Paige
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Queensland Government

Queensland **Health**

Enquiries to: Steven Begg
Telephone: 3328 9341
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File Ref: QCOS4718

The Coordinator-General
Attention: Mr Alan Hutchings (EIS Project Manager, LNG – Gladstone (Santos) Project)
Significant Projects Co-ordination Division
Department of Infrastructure and Planning
PO Box 15009
CITY EAST QLD 4002

santosLNG@dip.qld.gov.au

Dear Mr Hutchings

Thank you for the opportunity to provide comments on the Environmental Impact Statement (EIS) for the proposed Santos Gladstone Liquefied Natural Gas (LNG) project. Queensland Health has reviewed the EIS and notes that the proposed environmental measures will ensure that the health risks are appropriately managed. Further comments are provided in the attachments.

Queensland Health is of a strong view that to prevent background creep, the cumulative effects from all industries in the Gladstone region need to be considered and strategies developed to maintain the 24-hour average and the annual average of PM_{10} concentration at levels which are as low as reasonably possible and below those recommended by the EPP (Air) 2008.

Please contact Clive Paige, Principal Scientific Advisor, Environmental Health Science and Regulation Unit on telephone 3328 9339, if you need any clarification on issues raised in this letter.

Yours sincerely

John Piispanen
A/Senior Director
Environmental Health Branch
20/08/08

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Attachment A: Specific Comments

Reference	Comments
Potable water & Recycled water Section 3.6, 3.7, 3.8	*Drinking Water Service Provider status* • The proponent indicates that potable water supplies for the construction camps, Coal Seam Gas Fields and the Liquefied Natural Gas Facility will be supplied from municipal supplies or from mobile water treatment package plants. • The proponent needs to determine whether they are a drinking water provider as regulated by the *Water Supply (Safety and Reliability) Act 2008* and the *Public Health Act 2005*. If the proponent is not a Drinking Water Service Provider, then the proponent needs to develop a management system that will be used to ensure that all potable water consumed on site complies with the *Australian Drinking Water Guideline 2004 (ADWG).* This should include how potable water will be sourced, transported, stored, reticulated and the water quality monitored. *Recycled water* • If recycled water is to be used in the project, the management system for the safe use of recycled water should be described. For example, the proponent should include details on how recycled water will be managed to preclude the potential for direct and indirect contact with humans thereby minimising the potential for water borne disease transmission. • Queensland Health recommends that recycled water activities comply with the *Australian Guidelines for Water Recycling - managing health and environmental risks (Phase 1) (2006)* released by the National Environmental Protection Council, which provides guidance on water quality and management planning for recycled water. This document can be located at http://www.nepc.gov.au/taxonomy/term/39.
Groundwater	*CSG fields* • Queensland Health acknowledges the proponent's commitment to monitor and assess groundwater levels and water quality, as well as implementing mitigation measures. Measures include reducing the quantity of water withdrawn, drilling new bores outside the zone of influence, seeking alternative water supplies, and recharging treated water to groundwater supplies.
Air	*Gas Transmission Pipeline* • During the construction phase Queensland Health notes that dust emissions could pose a potential health risk to workers and sensitive receptors in the vicinity of the construction site.

	• Queensland Health acknowledges that the proposed mitigation measures of minimising clearance areas, revegetation, and water haul roads will minimise potential health impacts. *LNG Facility (Operational phase)* • Queensland Health notes that the PM_{10}, NO_2 and SO_2 emissions during the operation of the facility will be 20-30% of the air quality goals in the EPP (Air) 2008. • Despite this, Queensland Health is of a strong view that to prevent background creep, the cumulative effects from all industries in the Gladstone region need to be considered and strategies developed to maintain the 24-hour average and the annual average of PM_{10} concentration at levels which are as low as reasonably possible and below those recommended by the EPP (Air) 2008.

Noise & Vibration	*CSG fields, Gas Transmission Pipeline, LNG facility (Construction phase)*
	
	• The proponent states that construction work during evening and night-time periods (6.30pm to 6.30am) and on Sunday/Public Holidays will be undertaken in accordance with "best practice" noise management.
	• Queensland Health acknowledges the range of mitigation measures aimed at achieving the noise and vibration goals, including the proposed use of buffer distances will minimise potential health impacts.
	
	• Queensland Health further recommends that:
	  • Blasting should occur between 9:00 am and 3:00 pm Monday to Friday, and 9:00 am to 1:00 pm on Saturday as recommended by DERM.
	  • Buffer distances should be calculated to increase noise attenuation for sleeping areas
	  • Affected sensitive receptors should be consulted and a joint complaint management / resolution strategy should be implemented.
	
	Operational phase
	
	• Queensland Health also notes that the CSG fields and Gladstone LNG facility compressors will require additional noise control as outlined in the EIS.

Waste	*Sewerage Treatment Plants* • The proponent needs to ensure that health risks associated with the disposal and re-use of treated sewerage is assessed and mitigation through primary and secondary treatment and chlorination are effective.
Discharges into the marine environment	• Queensland Health notes that the only discharge to the marine environment is brine waste from the Reverse Osmosis Plant at the LNG facility into Port Curtis. The brine will have a salinity of about double the

	local sea water. The brine will be diluted by a factor of 30 within 3 metres of discharge.
Social & Community Impacts Section 6.14 Section 7.14 Section 8.14	*Health services* • The proposed maximum workforce of 1,500 in the CSG fields, 1,000 people on the Pipeline, and 3,000 people at the LNG facility on Curtis Island has the potential to have a significant impact on the health services and social aspects of nearby communities. • The proponent outlines that medical facilities will be located at all construction camps that aim to address first aid issues. • The proponent should consult with the local Health Service Districts (South West Health Service District, Central Queensland Health Service District) to discuss the capacity of health services to meet the expected demand for medical and emergency services. • The proponent should have in place a procedure or protocol to identify and expeditiously notify Queensland Health where an incident occurs that is likely to impact upon public health or safety.
Sensitive receptors	*Construction Camps* • Construction camps should be considered a sensitive receptor as the residents should be afforded the same air, acoustic and vibration goals as other residents.
Mosquito Management Sections 6, 7, 8 Section 11.16.14, Section 13.16.4	*Preventing or reducing Mosquitoes* • The Environmental Management Plan for the CSG fields and the LNG facility include a mosquito management section. The proponent should develop a "Mosquito Management Plan" for the entire project, including the Gas Transmission Pipeline. A comprehensive plan to manage mosquitoes is essential given the close proximity to towns and the number of itinerant workers/visitors who will be on site for varying periods of time. • Periodic monitoring of ponded waters and rainwater tanks will determine if proposed control measures are effective in reducing mosquito-breeding numbers. • The Queensland Health document *'Guidelines to minimise mosquito and biting midge problems in new development areas'* (http://www.health.qld.gov.au/phs/Documents/cdu/14804dmp.htm) may be of assistance.
Workforce	• Provision of food to the workforce must be in compliance with the *Food Act 2006*, administered by Local Government.

Attachment B: General Information

Reference	Comments
Social Environment Section 6.14 Section 7.14 Section 8.14	*Social Isolation* • The proposed temporary construction camps are located in an isolated location, which will have limited interaction with local communities. • Queensland Health recommends that the proponent undertake a needs analysis to determine suitable social activities that promote interaction with the local community.
Health & Wellbeing	*Safe Service of Alcohol* • In 2009, the Australian Guidelines to Reduce Health Risks From Drinking Alcohol were released. These guidelines highlighted that the risk of hospitalisation for alcohol-related injury increases with frequency of drinking. • Queensland Health recommends that the proponent develop an Alcohol Management Plan to encourage safe and responsible consumption of alcohol. *Tobacco Use* The National Tobacco Strategy has a strategy of eliminating harmful exposure to tobacco smoke among non-smokers and should be taken into consideration in the design of the accommodation camps. If the entire area is to be licensed by the Division of Liquor Licensing, the *Tobacco and Other Smoking Products Act* requires that no greater than 50% of the licensed outdoor area be designated and that other requirements set out in the Act will need to be complied with (ie. smoking management plans, signage). Queensland Health recommends that: • Each accommodation camp should be designed to either be a smoke free environment, or provide for a single smoking area that is located in such a location that it will not impact on other residents at the camp. • Quit Smoking programs be offered to camp residents to assist in helping them to stop smoking.

Submission 26

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Queensland Government

Your Ref:
Our Ref:

Department of
Mines and Energy

The Coordinator-General
C/- The EIS Project Manager: Gladstone Liquefied Natural Gas project
Significant Projects Coordination
Department of Infrastructure and Planning
PO Box 15009
CITY EAST QLD 4002

Dear Sir/Madam

I refer to the Environmental Impact Statement for the proposed Gladstone Liquified Natural Gas Project, currently released for public and advisory agency comment.

Issues of concern to the Department of Employment, Economic Development and Innovation are addressed in the attached submission form.

I trust this information is of assistance. Should you have any further enquiries, please contact Mr Bob Barker, Manager Mineral and Extractive Planning of Queensland Mines and Energy on telephone 323 71422.

Yours sincerely

JIM GRUNDY
Executive Director
Statewide Services

Att

Queensland Mines and Energy
Department of Employment, Economic Development and Innovation
PO Box 15216
City East
Queensland 4002 Australia
Telephone +61 7 3898 0375
Facsimile +61 7 3238 3088
Website www.deedi.qld.gov.au
ABN 24 830 236 406

Submission on the environmental impact statement for the Gladstone Liquefied Natural Gas project

Name: Mr Jim Grundy,
Executive Director Statewide Services

Address: PO Box 15216
CITY EAST QLD 4002

Organisation (if applicable): Queensland Mines and Energy
Department of Employment,
Economic Development and Innovation

Contact details: Phone: 322 70210;
Email: jim.grundy@deedi.qld.gov.au

Section	Describe the issue	Suggested solution
7.11.3.2	*State Planning Provisions:* State Planning Policy 2/07: Protection of Extractive Resources has not been identified or addressed. The proposed pipeline route passes through the Yarwun Key Resource Area KRA20 identified in that policy, and the impact of the proposed pipeline needs to address any impacts on the utilisation of the Yarwun hardrock resource.	Include reference to State Planning Policy 2/07, and consider the potential impacts on the development of the Yarwun resource and mitigation measures.
7.11.5.1	*Mineral resources and extractive industries*: It is noted that northward extension of the Moura coal mining leases have been considered. However, the EIS does not address the impact on, or resolution of issues (such as resource sterilisation) associated with the proposed gas transmission pipeline traversing identified coal resources held under Mineral Development Licence application in the Callide area. It is this Department's view that sterilisation of the State's resources should be avoided to the greatest extent possible.	Assess potential magnitude and economic significance of coal resource sterilisation, and consult with beneficial owner of this resource. Amend pipeline route to avoid sterilisation of coal resources.

7.11.5.1	*Mineral resources and extractive industries*: The proposed pipeline route parallel to Landing Road, across the Stuart oil shale resource near Gladstone is understood not to offer the least possible impact on the oil shale resource. As is the case with coal resources (above)s, it is this Department's view that sterilisation of the State's resources should be avoided to the greatest extent possible.	Ensure that pipeline route avoids or minimises sterilisation of oil shale resources.
7.11.5.1	*Mineral resources and extractive industries*: The proposed pipeline route passes through the Yarwun Key Resource Area KRA20 identified in State Planning Policy 2/07: Protection of Extractive Resources. The impact of the proposed pipeline on the utilisation of the Yarwun hardrock resource has not been addressed.	The EIS should consider the potential impacts on the development of the Yarwun hardrock resource and mitigation measures.

Signature: _____

Submissions must be received by **5 pm on Monday 17 August 2009** and be addressed to:

The Coordinator-General
C/- EIS Project Manager – Gladstone Liquefied Natural Gas project
Significant Projects Coordination
Department of **Infrastructure and Planning**
PO Box 15009 City East QLD 4002
fax +61 7 3225 8282
SantosLNG@dip.qld.gov.au

This form is the preferred format for a submission. Please use additional pages if there is insufficient space. Submissions will be treated as public documents and copies will be provided to the project's proponent. For further information please contact the Infrastructure and Economic Development Group on (07) 3234 1380.

Submission 27

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027

Council Chambers
Cnr Prairie & Kroombit Streets
Biloela Qld 4715

All Correspondence to
Chief Executive Officer
PO Box 412
Biloela Qld 4715

Phone 07 4992 9500
Fax 07 4992 3493
enquiries@banana.qld.gov.au
www.banana.qld.gov.au

Banana SHIRE
SHIRE OF OPPORTUNITY

Your Reference:
Our Reference: RG:wn

17 August 2009

The Coordinator-General
c/- EIS Project Manager – QCLNG
Significant Projects Coordination
Department of Infrastructure & Planning
PO Box 15009, CITY EAST Q 4002

Dear Sir/Madam

Re: Submission – EIS – Gladstone Liquefied Natural Gas Project

Please find attached Banana Shire Council's submission on the above project.

Should you require any further information or assistance in relation to this matter, please do not hesitate to contact Council's Manager Environmental Services on (07) 4992 9500.

Yours sincerely

Ray Geraghty
CHIEF EXECUTIVE OFFICER

Submission on the environmental impact statement for the Gladstone Liquefied Natural Gas project

Name: Banana Shire Council

Organisation (if applicable): Banana Shire Council

Address: Corner of Prairie and Kroombit Street
Biloela, QLD, 4715.

Contact details: (07) 4992 9500

Section	Describe the issue	Suggested solution
Appendix K 5.1 Disposal Options	Disposal of waste at landfills and transfer stations throughout Banana Shire Council is generally for residential and ratepayer disposal. Little waste generated by the proposal will be accepted at Council township landfill facilities. Disposal options will also need to be confirmed through Council, as the acceptance level of each facility will vary throughout the Shire.	Businesses and larger projects are required to dispose of waste at the Trap Gully Landfill, east of Biloela. Any disposal by any part of this project should be directed through Council's Environmental Officer responsible for Waste Management, prior to disposal, as many waste types may or may not be acceptable for disposal according to Banana Shire Council environmental licence – or quantities for disposal to local township facilities may be too large and disposal or stockpiling to Council's larger landfill - Trap Gully Landfill - would be required.
	There are no facilities available in Banana Shire for recycling electrical and electronic equipment.	Recycling of electrical and electronic equipment must be sought elsewhere. Alternatively, disposal is available at Trap Gully Landfill.
	Commercial levels of general/domestic waste from businesses within or visiting the Shire are not accepted at local Council township landfills or waste transfer stations.	Disposal must occur at Trap Gully landfill.
	Recyclable waste may or may not be accepted at local Council township landfills or waste transfer stations. Acceptance will vary depending on location and waste type.	Banana Shire Council encourages the proponent to make contact with Council or community groups involved with recycling specific materials to determine whether recycling is viable. If recycling is not possible, disposal will be available at Trap Gully Landfill. The proponent is advised that glass and aluminium recycling is

		available through Callide Valley Lions (Biloela), Theodore Lions and Moura Rotary. Paper recycling is available at Biloela Transfer Station. Scrap Metal stockpiling occurs at most Council landfills. Other recycling options may be available upon discussion with Council Environmental Officer responsible for Waste Management.
	Disposal of all regulated waste (except asbestos containing material products) is not permitted at any Banana Shire waste facility (Asbestos is accepted at Trap Gully Landfill).	The proponent is advised to seek alternative disposal facilities for regulated wastes. Benaraby Regional Landfill, located within Gladstone Regional Council, would likely by the most appropriate option.
	Banana Shire does not have facilities capable of recycling batteries, oils, drums and tyres. Disposal of these wastes are not permitted within Banana Shire.	Alternative recycling centres located throughout Central Queensland.
Section 5 of EIS 5.3.1.1: Construction Waste from CSG Field	Council advises the following concerns regarding various Waste Streams during construction activities: Drilling fluids: Council's environmental licence is unlikely to accept these drilling fluid wastes at all. General waste: General waste of this nature will not be accepted at local Council township landfills. Waste Oils: Commercial quantities are not accepted at local Council township landfills. Recyclable waste: There is some capability for stockpiling of recycling waste in Banana Shire at local Council township landfills	 Drilling Fluids should be transported to other treatment or disposal facilities outside of Banana Shire. General Waste will only be accepted at Trap Gully landfill east of Biloela. Council advises that waste oils be stored appropriately and transported to treatment or disposal facilities outside of Banana Shire. The proponent should contact Council or local community groups for recycling options, or disposal of waste at Trap Gully Landfill.
5.3.1.2 Operational Waste from CSG Field	Council advises the following concerns regarding various Waste Streams during operational activities: Reverse Osmosis Brine: saline effluent and residues are regulated waste and therefore not accepted at any Banana Shire landfills. Rubber and tyres: regulated waste and therefore not accepted at BSC township landfills. Waste Chemicals/Unused Chemicals are likely to be regulated	All these wastes to be disposed of at appropriate facility outside of Banana Shire Reverse Osmosis Brine: this regulated waste not accepted at Council landfills. Disposal outside Banana Shire. Rubber and tyres are accepted at Trap Gully Landfill for a fee. Disposal outside Banana Shire.

	waste. Liquid type waste would not be accepted at Council Landfills	
	Waste oils and lubricants: Commercial quantities not accepted at Council landfills.	Council advises these wastes be stored and transported for treatment and disposal by a regulated waste carrier.
	Waste solvents: Likely to be regulated wastes and thus can not be disposed of within Banana Shire.	Disposal outside Banana Shire.
5.3.2.1: Construction Waste for the Gas Transmission Pipeline	Council advises the following concerns regarding various Waste Streams during construction of the Gas Transmission Pipeline:	
	Section 5.3.2.1 and the Gas Transmission Pipeline Environmental Management Plan mention dust suppression measures, particularly the use of water trucks. Council asks where dust suppressant water will be sourced.	The proponent should provide details regarding the sourcing of water for dust suppression.
	General and Putrescible waste will not be accepted at local Council Township landfills.	General and Putrescible waste will be accepted at Trap Gully Landfill for a fee.
	Council has some capacity for stockpiling of recyclable waste at local Council Township landfills	Recyclable waste: contact council or local community groups for recycling options, or disposal to Trap Gully Landfill
	Scrap Metal can possibly be accepted at local Council Township stockpiles at landfills.	Scrap Metal, if are large enough quantities, could be collected by a scrap collector.
	Commercial quantities of Waste Oil are not accepted at local Council Township landfills.	Waste Oils must be collected for transport to treatment or disposal facility outside of Banana Shire.
	Hydrotest water: Probably not accepted at Banana Shire facilities.	Check with local council prior to disposal. This material may not be acceptable for disposal with Banana Shire environmental licence.
	Laydown areas: Office and Administration, recyclable wastes and other various wastes may be accepted at council facilities, and others may not.	Paper and cardboard could be recycled through Biloela Transfer Station. Printer toners and cartridges recycled via Planet Ark. Other waste types to be checked with Banana Shire Council's Environmental Officer responsible for Waste Management.

	Contaminated Soil.	Check with council prior to disposal at council facilities.
5.3.1.2 & 5.3.2.1	Sanitary waste: sludge from treatment plants will not be accepted at local Council Township landfills	Check with local Council prior to disposal. May be acceptable at Trap Gully Landfill for a fee.
5.3.2.2: Operational Waste for the Gas Transmission Pipeline.	The proponent does not adequately describe pigging operations, nor give an account of the type of regulated waste it generates.	The proponent should check with Banana Shire Environmental Officer responsible for Waste Management prior to disposal. Disposal within Banana Shire may not be possible.
5.4.3: Waste Separation	The proponent should be aware that not all waste types are collected within Banana Shire, thus making effective waste separation difficult.	The proponent should check what recyclable waste types are able to be recycled through Banana Shire before making efforts to source separate. Possibly could take recyclables to facilities in other shires.
Appendix C – Table 1	The project will most likely require the establishment of temporary camps or Temporary Accommodation Facilities (TAFs) within Banana Shire. Appendix C fails to identify Banana Shire Council as a responsible authority in regards to required certificates of classification for buildings (including temporary camps) under the *Building Act 1975* (Qld)	Acknowledge Banana Shire Council as a Responsible Authority as part of the *Building Act 1975* (Qld). Advise Banana Shire Council of the site specifics and location of buildings, particularly structures and temporary camps.
	The EIS lists the *Dangerous Goods Safety Management Act 2001* (Qld) as an approval source for storage and handling of flammable or combustible liquids. Banana Shire Council will be a responsible authority in charge of licensing such facilities.	The proponent must advise Banana Shire Council of the proposed storage levels, material types and storage locations, with the view to make applications for a license.
	The EIS identifies the need for a license to carry out a food business, specifically for canteens located onsite and at temporary camps. Appendix C fails to identify Banana Shire Council as a responsible authority in regards to obtaining food business licenses.	Acknowledge Banana Shire Council as a Responsible Authority as part of the *Food Act 2006* (Qld). Advise Banana Shire Council of the specifics relating to the operation of the food business with the view of obtaining an appropriate license.
	The EIS identifies the need for approval under the *Plumbing and Drainage Act 2002* (Qld) in relation to temporary camps. Appendix C fails to identify Banana Shire Council as a Responsible Authority in regards to a compliance permit for plumbing or drainage work.	Acknowledge Banana Shire Council as a Responsible Authority as part of the *Plumbing and Drainage Act 2002* (Qld). Provide Banana Shire Council with the appropriate plans and other necessary information in order to receive a compliance permit.
Appendix Z – 7.4.1 CSG Field &	The EIS fails to identify locations for the TAFs within the CSG Field and throughout the route of the Gas Transmission Pipeline. Banana Shire Council is therefore unable to adequately assess the	The proponent should identify the size and location of all TAFs intended to be installed within the CSG Field and throughout the Gas Transmission Pipeline route to enable Council to make an informed

7.4.2 Gas Transmission Pipeline	impacts these facilities may have on the community and various Council facilities, including cumulative impacts associated with other state significant projects currently underway.	assessment of the impacts such facilities will have.
	The EIS fails to provide an appropriate level of detail normally required for the proper assessment of workers' accommodation and that work should be subject to open public review and comment. Consistent with State Government concerns about workers' camps, Council does not support poorly located, designed, constructed and maintained camps. The EIS lists standard considerations, yet fails to provide appropriate plans, site analysis, assessments of traffic, amenity, social and ecological impacts.	Banana Shire Council requires appropriate plans, analysis and assessments be completed and provided for review.
11.16.15: Weed Management Plan & 12.16.9: Weed Management	The proponent provides a brief outline of the proposed washdown procedures to be implemented at both the CSG Field and Gas Transmission Pipeline. However, further clarification is needed in regards to the nature of the washdown facilities intended for use. Will the proponent construct temporary washdown facilities or does it plan to use existing washdown bays?	The proponent should clarify the meaning of 'designated weed washdown area'. If the washdown facilities are to be constructed by the proponent onsite, Council advises that all vehicles, equipment and portable infrastructure, will still be required to washdown at established Shire facilities located in Taroom, Biloela, Theodore and Moura, by a Trained Weed Inspector prior to arrival and leaving the Shire.
	The proposed document does not clearly identify who will issue the Weed Certificates.	The Weed Certificates need to be issued by an authorized officer, under the *Land Protection Act 2002 Part 2 section 244.*
	The EIS at no stage specifically references the Local Government Area Pest Management Plans.	Under the LPA all local government areas are required to have pest management plans (s25-35). The plans are to be developed in consultation with the community and with input from government agencies about lands they manage. The plans must be consistent with state strategies, principles of pest management and guidelines for pest management. Plans remain valid for four years and must be reviewed at least three months before the start of each financial year;
12.16.9: Weed Management	The proponent's operational policy identifies the need to prevent the introduction and spread of weed species in association with the construction and operation of the pipeline. However, the implementation strategy intended for use makes no reference to an ongoing weed monitoring programme over the life of the site.	Banana Shire Council recommends the proponent develop strategies for regular monitoring and control of weeds during the operation phase of the pipeline.
12.16.2; 12.16.3 and	Dust Suppression Methodology, implementation strategy, operational constrains and solutions	It would appear that under section 12 transmission Pipeline Environmental Management Plan the comments and approach to

12.16.15		dealing with dust suppression is repetitive. Although this provides consistency, it by no means addresses the specific constraints and challenges that will be present in the day to day management, access and operation for the pipeline. Common sense would indicate for example, that the majority of Council operated roads, (maintained and managed by Council at the rates payers' expense) are unsealed. With increased volumes of traffic, the roads will become degraded at a greater rate than currently experienced and the dust will become a common event for those residents located along the road verge. There does not appear to be a clear complaint process or non-compliance or mitigation methods surrounding the daily operations should Council or landowners need to communicate with the proponent. As indicated above there needs to be far more detail on the operational techniques. The proponent has sited regularly throughout the document that they will be using 'Best Practice' Council's experience indicated that heavy vehicle movements and workers vehicle movements occur early in the morning as the contractor's progress to the construction site, again in the afternoon when the vehicles have finished work for the day. Considering this a standard and common practice, and judging by the indication that there are to be no 'night works', it would be plausible to ask that on roads, where residents experience high levels of dust and are located within 500m of the road verge, that the water truck be utilised during the morning between 6-7am and again at the completion of either an 8hour or 12hour shift period. This would ensure that any affected residents would be protected for the hour duration of high traffic movements. This would seam a logical and 'best practice' approach. Council feels that dust suppression is a serious issue already highlighted by current mining and gas infrastructure developments. The proposed gas pipeline development will contribute and exacerbate

		the current issues experienced by Council and Councils rate payers. If the proponent could take the time to commit a plausible process where by such environmental considerations are adequately monitored and the community feels empowered enough to communicate its concerns this would result in far better outcomes then those so literally detailed in the EIS.
2.2	Road Infrastructure Maintenance – Given the increased volume of construction traffic required for the project, the capacity for the existing road infrastructure to cater for this increase is limited. Damage to the road network is already being experienced due to construction traffic for a similar project. Any increase, particularly heavy vehicle impacts will greatly reduce the life of Council's assets, hence increase the burden on Council in terms of rehabilitation costs. It should not be necessary for the shire's ratepayer to wear the costs of these impacts. Council are usually the ones who field complaints regarding road matters.	Road Infrastructure:- 1. A dilapidation survey of all sealed and unsealed roads required to carry construction traffic, prior to and following use of the road by construction traffic. 2. Maintenance of the road during construction 3. Reinstatement of the road infrastructure following construction to pre-existing condition or better or: 4. A contribution paid towards the reinstatement of the road infrastructure in favour of the Banana Shire Council. 5. A fee is proposed for the administration of road infrastructure and environmental complaints associated with the project. Road infrastructure includes: • The road surface & pavement • Embankments and cuttings • Culverts, floodways and table drains • Guideposts, signage and line marking • Grids &, gates • Erosion and sedimentation control measures • Kerbing/channelling and stormwater network structures
	Increase in traffic volumes may also introduce public concerns for noise, dust and other environmental issues along roadways.	Environmental Issues: Provision and implementation of a strategy for the management of noise, dust, soil erosion and sedimentation during the project.
	Council's utility services and infrastructure are potentially vulnerable to damage during construction. Loss of water supply or sewerage services is critical and must be restored as soon as possible.	Protection of all infrastructure services such as Water Supplies, Sewerage and Drainage during construction. Close communications with Council in high risk areas is paramount. Provision and implementation of a strategy for the management of damage to water supplies, sewerage and drainage infrastructure.

	The availability of water for construction	Water for construction **will not** be available from Council's treated water supply. Recycled water **will not** be available from Council's sewerage treatment facilities Arrangements for water for construction may need to be organised with the Department of Environment and Resource Management (DERM) or other like authorities.

Signature: _____

Submissions must be received by **5 pm on Monday 17 August 2009** and be addressed to:

The Coordinator-General
C/- EIS Project Manager – Gladstone Liquefied Natural Gas project
Significant Projects Coordination
Department of **Infrastructure and Planning**
PO Box 15009 City East QLD 4002
fax +61 7 3225 8282
SantosLNG@dip.qld.gov.au

This form is the preferred format for a submission. Please use additional pages if there is insufficient space. Submissions will be treated as public documents and copies will be provided to the project's proponent. For further information please contact the Infrastructure and Economic Development Group on (07) 3234 1380.



Submission 28

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C28

Fitzroy Basin Association
PO Box 139
ROCKHAMPTON, QLD 4700
Ph: 07 4999 2800
Fax: 07 4921 2860

The Co-ordinator-General
C/- EIS Project Manager: Gladstone (LNG) Santos
Significant Projects Co-ordination
Department of Infrastructure and Planning
PO Box 15009
CITY EAST QLD 4002

Dear Sir/Madam,

Re: Gladstone Liquefied Natural Gas Project (GLNG) with Santos - Environmental Impact Statement

Thank you for the opportunity to comment on the Environmental Impact Statement (EIS) for the above mentioned project. Please find attached our submission.

The FBA is a community-based organisation committed to long term sustainable regional development, and values healthy ecosystems, a strong regional economy, and prosperous communities. FBA's members represent a broad cross section of the community including representatives from sectors of mining, conservation, education, research, Landcare, and agriculture as well as representatives from Indigenous groups, and local and Queensland Government agencies.

Under the Queensland and Australian Governments' programs, the Natural Heritage Trust Extension (NHT2) and the National Action Plan for Salinity and Water Quality (NAP), FBA and the regional community have developed a regional natural resource management plan, *Central Queensland Strategy for Sustainability – 2004 and Beyond* (*CQSS2*). In partnership with the regional community and other stakeholders, FBA has invested over $26 million of program funds in meeting CQSS2's targets for condition of our natural assets.

Our comments generally relate to the *CQSS2*; a copy of the *CQSS2* is available on the FBA website at www.fba.org.au. As the project is likely to affect the condition of many regional assets and therefore also impinge on meeting targets within the plan, we request that the EIS include consideration of impacts on targets and that the likely effect be documented in the EIS.

In the process of implementing the *CQSS2*, FBA has invested in studies of our natural resources to improve management in a focussed and informed manner. These studies include assessment of salinity risk, water quality, and ground cover, various studies on biodiversity, and investment in improved modelling to project impact of management actions. These studies will be made available on request.

In closure, I would like to make two comments:

1. This particular EIS is an exceptionally lengthy document with many tiers throughout the sections and appendices that cover the 3 areas of the project; the LNG Facility, the Gas Transmission Pipeline and GLNG Gas Field Development. The exceptional length of the document makes it difficult for community groups to read the whole submission and be abreast of all potential issues relative to their interests; community groups generally do not have the staff resources or time availability required to properly evaluate and make submission on such an extensive and large project.
2. FBA would like to offer support to the content of the Capricorn Conservation Council's submission, particularly their supporting information document

produced on Avian (bird) species that are endangered, vulnerable or rare under state legislation.

If you have any questions or comments regarding our comments, please contact Chantelle James on 4999 2814 or 4999 2800 or Chantelle.James@fba.org.au .

Yours faithfully

S Christensen

Suzie Christensen
Chief Executive Officer



Submission 29

Santos | PETRONAS

29

Gladstone Ports Corporation
Growth, Prosperity, Community.

#449512
Our Ref: Sarah Hunter
Your Ref: TN 139852/ MH31/DIP

12 August 2009

The Coordinator-General
Attention: EIS Project Manager
LNG - Gladstone (Santos) Project
Significant Projects Coordination Division
Department of Infrastructure and Planning
PO BOX 15009
CITY EAST QLD 4002

Dear Sir

GLADSTONE LNG PROJECT (SANTOS)
ENVIRONMENTAL IMPACT STATEMENT ASSESSMENT

I refer to your letter received on 1 July 2009, seeking the Gladstone Ports Corporation Limited (GPC) comments on the Environmental Impact Statement (EIS) for the Santos Gladstone LNG Project at Curtis Island, Gladstone

With the GLNG EIS being the first EIS released for the LNG Projects proposed for Curtis Island, it is considered that there is an underlying need to evaluate and approach the overall cumulative impacts on all aspects relating to these projects in a consistent and effective manner. It is acknowledged that there are difficulties for individual proponents in fully assessing their impacts in relation to the impacts of other proposed industries and producing outcomes within the EIS that are acceptable to the community. It is considered that a coordinated approach which is driven by one agency is the best solution to ensure that all cumulative impacts are collectively considered and the impacts are appropriately addressed and resolved.

The following comments are made in respect of the above EIS and have been referenced to the relevant clause within the document provided.

EXECUTIVE SUMMARY

ES 10.2 Gas Transmission Pipeline

- Port Curtis Crossing – There is lack of commitment to a preferred option for pipeline crossing delivery in accordance with the discussions undertaken with government agencies.
- Pipe Delivery – There is a lack of commitment to the delivery of pipeline from the port to the hinterland. The option for truck transfer introduces an increased traffic demand at Port Central and through the road network in Gladstone.

ES 10.3 LNG Facility

- Construction Techniques – There is a lack of commitment to the construction option. The option to stick-build has a significant impact on the workforce numbers.
- Construction Workforce Accommodation Alternatives – Should the option not to accommodate the workforce on Curtis Island be the ultimate decision, then the traffic volumes generated through Port Central will require a review.

- Dredged Material Placement Facility – The option of placement of the dredged material into areas on Curtis Island has been eliminated by combined consideration by GPC and Government agencies. This conclusion is due to the need to retain the site at Laird Point for the development of future industries and the proposal to use this area as an access corridor which will include access to the GLNG site and the ultimate development of the GSDA LNG Precinct and the proposed Hamilton Point port development.

ES 15.16 Traffic and Transport

- Ferry Operations – The option to utilise the marina for the commencement of ferry operations is not acceptable to the Port due to the increased traffic operation through the marina and the limitation on vehicle parking areas.

SECTION 2 PROJECT ALTERNATIVES

2.2.1.4 Alternative Deviations from Preferred Route

- Northern Alternative – Commitment is required for the pipeline to be routed through the northern alternative identified within the GSDA. The primary option within the GSDA introduces issues around the crossing of the mining leases to be developed by QER and as identified within this section is currently routed through the constricted Yarwun Neck. The alternative northern deviation removes issues around the congestion of pipelines and removes the need to relocate the pipeline as the QER site is developed. With a number of LNG proponents seeking to access Curtis Island with gas pipelines, it is important that a coordinated approach is undertaken to minimise impacts on the development of the GSDA.

2.2.3.2 Pipe Delivery

- Comparison of Options – as is noted in this option summary, utilising rail for the delivery of pipe from the port to the respective construction sites removes the need for up to 140 truck movements pre day not only through the Gladstone community but also through the Calliope township and the relatively high population in the links between the communities.

2.3.2 Construction Options

- The indecision over the type of construction to be utilised for the LNG Facility has a significant impact on the workforce to be employed during the initial construction phase. For stick build the workforce is nominated at 3000 personnel and for modular construction this reduces to 2000 personnel.
- There is a significant flow-on effect from this decision to areas such as community facilities in Gladstone and issues around the development of a workers camp on the island or the mainland and the transportation of personnel to and from the site. Both daily

commuter impacts and impacts at the time of changeover of workforce in the camp needs to be considered.

- Commitment should be made as to the type of construction or approvals conditions around a review of the respective socio-economic and transport impacts of the final decision.

2.3.4.2 Barge/Ferry Operation

- The consideration of the alternative sites in Table 2.3.6 needs to give further consideration to the availability of the existing facilities within the Gladstone Marina for both marine traffic and land traffic to support the options associated with either of the two construction methodology.
- The option for Fisherman's Landing needs to account for the potential construction activities for both LNG Ltd and the development of the bunded area for dredged material disposal both of which would occur in parallel to the construction timeframes under consideration by GLNG.

2.3.9 Dredged Material Management Alternatives

- The options considered for on shore displacement should be reviewed and the impacts on other developments noted.
- The option for disposal at Laird Point impacts significantly on the site nominated for APLNG. The greater percentage of the site is impacted by unconsolidated material that would require a significant period from placement to use for industrial purposes due primarily the depth to which the material is placed and the associated need to dewater the site for consolidation.
- The Valley on Curtis Island option impacts on the preferred corridor nominated for access for the LNG Industry Precinct. This corridor is being designed to accommodate the gas pipelines, services and transport infrastructure associated with the proposed industries on Curtis Island. It should also be noted that the issues identified in the above dot point regarding the timeframes for dredging material to consolidate also relates to this site.
- It should be further noted within the disadvantages identified for the Offshore Disposal option that the dredging would require 100% deployment of Trailing Suction Hopper Dredgers and that to undertake efficient dredging these units rely heavily on overflow dredging which results in significant plume generation when compared with Cutter Suction Dredgers. The increased marine traffic associated with offshore disposal needs also to be considered with respect to current marine traffic operations and interaction with construction related marine traffic.

SECTION 3 PROJECT DESCRIPTION

3.7.3.20 Watercourse Crossings

- Port Curtis Crossing – Consideration should be given to the reduction of the excavated depth associated with the pipeline crossing. Figure 3.7.7 shows and effective trench depth of 3 metres with a protective covering of sands and gravels placed over the pipeline. The completed crossing remains effectively at the original seabed profile.
- By reducing the depth of the excavation to 1.5 to 2 metres it may be possible to retain the same effective protection to the pipeline through the placement of rock on the surface of the pipeline crossing and having the final crossing profile approximately 1 metre above the natural surface. This will result in less dredging of the seabed material and may effectively reduce the separation distance for subsequent crossing.
- The reduction in the channel cross-section does not significantly reduced the natural depths of 12 -14 metres which occurs in the main channel at low water.
- The reduced excavation quantity would also result in a reduction of the impacts from suspended solids on the adjoining eco-system.

3.8.2.5 Construction Equipment and Materials

- The quantum of materials imported to site, as nominated in Table 3.8.2, appears to be low. There is insufficient information available to determine whether the materials sourced on the island are suitable for the construction of the facility.
- When consideration is given to a haul road from the MOF facility to the site, an allowance of 80,000m^2 results in approximately 8,000m^3 of roadbase. This would not account for pavement work within the site.
- Initial advice from other sources would indicate that 30,000m^3 of concrete is required for the construction of a cryogenic tank for an operation of this size. A total of 37,330m^3 of concrete has been quoted as the total concrete needed for the LNG Facility.
- No allowance appears to be made for the quantity of fuel that will be required for the construction for the combination of power generation and mobile equipment.
- With the final design yet to be completed to FID stage and the quantities quoted being subject to review, approvals associated with the transport of materials should be conditioned subject to the proposed final quantities being determined. The impacts with transportation of material from the mainland will flow in to the utilisation of the road network within the city.

General

- It would appear that the issues associated with the transfer of petroleum products to and from Curtis Island for both the construction and operational phases may have not been addressed in the EIS. Both safety issues and potential pollution issues should be identified. Traffic generation on the harbour would be impacted should special conditions apply to the transfer of petroleum products from the mainland to the island.

SECTION 4 TRANSPORTATION

4.5.3.1 Construction Deliveries

- The quantum of fuel to be transferred to Curtis Island would appear low when consideration is given to the needs for power generation for the camp, earthworks activity (in particular that associated with site levelling and the dredged material placement facility) and general construction activities.

4.5.3.4 Traffic Movement Patterns

- It is mentioned that the LNG facility Operation Personnel will be barged from Auckland Point. It should be noted that the barge facility at Auckland Point is only a temporary fixture for the duration of the construction phases. Therefore an alternative permanent solution for a barge facility will need to be considered and addressed.

4.5.3.5 Traffic Generation

- It is unclear from Table 4.5.6 whether the traffic generation combines the traffic associated with the construction workforce to Curtis Island and the transportation of pipes from the port to the hinterland. Both activities are undertaken on the Port Access Road and may occur simultaneously.

General

- It is not clearly identified what the cumulative impacts of the maritime traffic associated with the development are. Vessel movements will include ferries, barges (mainland to Curtis Island) and heavy lift vessels (lift-on/lift-off, roll-on/roll-off) and support vessels (dredgers, survey vessels, etc). This should be clearly identified and the issues associated with controls around scheduling of movements and interaction with existing commercial traffic due to the number of crossings of the main shipping channels and constricted waterway adjacent to Auckland Point Wharves should be addressed.

SECTION 5 WASTE MANAGEMENT

Table 5.3.1 Summary of Estimated Quantities for Waste Generated for the Project

- It is unclear from the table as to whether the recyclable waste associated with the construction activities on Curtis Island are included in the general waste quantities in this table.
- With a major accommodation camp on Curtis Island the quantity of recyclable waste would be significant.

5.3.3.1 Construction Waste

- It is noted that the majority of waste generated during the construction phase will be transferred to local landfills and licensed facilities. It is assumed that these facilities are located on the mainland and have the capacity to cater for the increase in waste.
- Some waste can be accommodated as back loads for the trucks delivering product to the island, however it would be thought that some of the waste generated will require specific transport modes requiring the containers to be hauled both to and from Curtis Island (sewerage, general waste)
- What allowance has been made for the transportation of these waste products from Curtis Island and what impact will result in the increased traffic generation?

SECTION 8 LNG FACILITY ENVIRONMENTAL VALUES AND MANAGEMENT OF IMPACTS

8.12 Visual Amenity

- Considerations need to be given within this section for the potential of Hamilton Point being developed into port related industries and what this impact will have on the visibility of the proposed LNG Facility . Hamilton Point has been identified within the GSDA Development Scheme and GPC 50 year Strategic Plan as being developed for bulk, container or break bulk trade. Therefore Hamilton Point will not be a long term solution for a visual buffer to the LNG Facility and a long term visual pollution solution needs to be developed.

8.14 Social and Community - Cumulative Impacts

- It is acknowledged that there is a requirement within the Terms of Reference for any EIS to address the cumulative impacts of the proposed development. However it is becoming apparent that as more and more industries move into the Gladstone region that a coordinated approach from a regulatory authority is necessary to ensure that an acceptable community outcome is achieved.

8.17 Marine Dredging and Material Placement Facility

- A detailed review has not been undertaken of this section due to the commitment of Government to assess the dredging of the Western Basin under a separate EIS process currently being undertaken by the Gladstone Ports Corporation.

8.17.3.3 Dredge Material Pipeline

- The route nominated for the material pipeline along the foreshore would not be acceptable to the adjoining land owner (QGC) in the event of simultaneous construction activities.

SECTION 10 HAZARD AND RISK

10.3.3 Shipping

- The quantitative risk assessment undertaken to establish safety zone around the LNG carrier at berth has not been made available for review. (Appendix FF)
- This appendix is required to understand the basis of the risk assessment and allow comparison with other studies undertaken (LNG ltd and QGC) that have identified larger exclusion zones. An industry wide approach is required for the determination of the risk contours associated with marine activities.

General

- It may be appropriate for additional risk reviews to be undertaken on the extensive use of ferries for the transfer of personnel to and from Curtis Island for both the construction and operational phases of the project. Mitigation measures with respect to emergency response for potential vessel sinking should be incorporated into the EIS.

SECTION 14 MARINE FACILITIES – ENVIRONMENTAL MANAGEMENT PLAN

14.15 Environmental Management Plans

- It may be appropriate for a management plan to be developed around the operation of the small commercial craft being deployed for the transfer of personnel and goods to and from Curtis Island.

General

- It would be appropriate for GLNG to create an EMP for the material lay down and personnel transfer areas at Port Central. It is essential that GLNG assess the cumulative impact that this activity is going to have on existing GPC facilities and their regulatory monitoring requirements. Of particular importance are the potential environmental impacts and mitigation measures that the EMP should cover. The following points are recommended subjects which should be addressed in the EMP.
  1. Air - Port Central is in a particularly community environmentally sensitive area, of which dust is a major concern. Given the proposed trucking and vehicular requirements there is a high concern about potential dust generated from these movements. The EIS should outline the construction options for the site designed to eliminate dust generation and the EMP should address the dust control measures to be deployed in the event of dust generation.
  2. Noise - The EIS should address the potential noise sources and operational constraints to minimise the impacts and an EMP developed to counter any noise issues.
  3. Light - Lighting will need to be outlined for the Port Central activities, and mitigation measures and the cumulative impacts will need to be addressed.

Thankyou for the opportunity to comment on the above matters. If you have any questions relating to any issues raised above, please do not hesitate to contact GPC's Planning Officer, Mrs Sarah Hunter on 49761 287.

Yours faithfully



IAN DRURY
PORT PLANNING & DEVELOPMENT GENERAL MANAGER

Submission 30

Santos | PETRONAS

Submission on the environmental impact statement for the Gladstone Liquefied Natural Gas project

Name:

Organisation (if applicable):

Address:

Contact details:

Section	Describe the issue	Suggested solution
4 and 7	*Large amount of trucks and other vehicles on unsealed rural roads which Are not designed for that amount of traffic*	*Roads maintained to existing standard, bitumen short unsealed sections where houses are in close proximity to unsealed roads.*

Signature: _____

Submissions must be received by **5 pm** on **Monday 17 August 2009** and be addressed to:

The Coordinator-General
C/- EIS Project Manager – Gladstone Liquefied Natural Gas project
Significant Projects Coordination
Department of **Infrastructure and Planning**
PO Box 15009 City East QLD 4002

fax +61 7 3225 8282
SantosLNG@dip.qld.gov.au

The EIS gives scant regard to rural roads, only Gladstone problems are mentioned.
Currently the Jemena gas pipeline is being constructed nearbye.
The unsealed section of the Council road used as access to the line easment is deteriorating rapidly and the dust created by
The extra heavy traffic is atrocious. It is making a frightfull mess in our houses, which are in close proximity to the road, and polluting the environment.
Council inspectors have verified the problem
The Santos line is projected to require between 6 and 10 times the volume of traffic because of the much larger pipe..
Because of the terrain this line will also have to be constructed during the dry season. The problem will therefore be multipled many times.
An occasional water truck will not solve the problem. As the fines blow away and the stones are left with nothing to bind them.
We are extremely fearful of the result if this problem is not seriously addressed.

There is something lacking in a system which allows large companies to use and degrade facilities provided by the Council , and not pay toward there upkeep. This pipeline is intended to be profitable for the company for many years. The landholder will continue to pay the rates on the land which the pipeline uses and there is no indication that the pipeline companies will be required to make any contribution even although they wii have staff continually patrolling the line.



Submission 31

Santos | PETRONAS

Submission on the environmental impact statement for the Gladstone Liquefied Natural Gas project

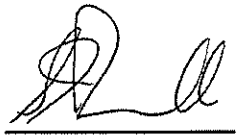
Name: Stuart Randle

Organisation: Maranoa Regional Council

Address: PO Box 42 Mitchell 4465

Contact details: stuartr@maranoa.qld.gov.au

Section	Describe the issue	Suggested solution
Waste	Assumptions in the report are not correct. (refer attached)	Santos to negotiate with Maranoa Regional Council on waste disposal
Associated Water	Santos preferred options of associated water use do not reflect the best interests of the community (refer attached)	Modify the priorities to reflect the interests of the community
Social Impact Assessment	SIA section of the EIS is grossly inadequate (refer attached)	Reject SIA and require a genuine assessment of social impact
Groundwater	Does not adequately address concerns of impact on water supply (refer attached)	Conditions of approval required to safeguard water supplies
Transportation	Transportation section does not address impacts on local roads (refer attached)	Rewrite or condition of approval to safeguard Local Government assets.

Signature: 

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This form is the preferred format for a submission. Please use additional pages if there is insufficient space. Submissions will be treated as public documents and copies will be provided to the project's proponent. For further information please contact the Infrastructure and Economic Development Group on (07) 3234 1380.

maranoa
REGIONAL COUNCIL

Santos GLNG EIS Submission

1. Summary

Maranoa Regional Council considers that the Santos Environmental Impact Statement generally addresses most areas of concern. There are however several aspects that need further work or careful control.

Note: Italicised text throughout this submission represents extracts from the EIS.

1.1. Minor concerns:-

1.1.1. Waste – the method of waste disposal will have to be determined in conjunction with Local Government personnel. The EIS contains several assumptions that are incorrect, but fortunately are of limited consequence.

1.1.2. Associated Water –
The preferred options for use of the associated water are not considered to represent the best or most likely options. In particular the proposal to create forests of Chinchilla White Gum is of significant concern to Council because of the potential to lock up productive grazing land for an uncertain future purpose.

1.2. Major concerns:-

1.2.1. Social Impact Assessment – The social impact assessment is grossly deficient in terms of detail, focus and logic. This lack of attention is farcical in the context of the overall EIS and suggests a level of contempt for the local community. The section must be totally rewritten to enable the various levels of government and the local community assess the impacts of the project on the critical areas of employment, housing, community facilities and services. In particular the revised social impact statement should focus on;

- population and employment
- health
- education
- emergency services
- community facilities

Irrespective of the content of the revised Social Impact Assessment the Maranoa Regional Council requires conditions of approval that provide for;

1. Restriction on development within the areas zoned residential or rural residential.
2. Santos to enter into an infrastructure agreement with the Maranoa Regional Council to provide for contributions to the upgrade of community facilities including the Roma Airport.
3. The location of TAFs in existing town areas.

1.2.2. Groundwater – It is Council's position that the State Government must ensure that the supplies are safeguarded by the following measures.

1. Conditions of approval that require Santos Ltd. to enter into an infrastructure agreement with Maranoa Regional Council to provide for augmentation of the urban supply infrastructure to increase the factor of safety in terms of storage and supply capacity, or
2. Conditions of approval that reflect the potential severity of impact and impose tighter control on any activity in the vicinity of urban water supply aquifers and
3. Conditions of Approval to require the use of independent third party monitoring and assessment of the Santos "early warning" system to ensure that decision making processes cannot be compromised.

1.2.3. Transportation – The Transportation section of the EIS is heavily biased toward the LNG plant portion of the project. Consideration of transportation issues for the gas fields only considers the impact on State Controlled Roads. Council considers that this aspect of the report is misleading and grossly inadequate.

To address the grossly inadequate transportation section of the EIS requires either of two options;

1. Engagement of a consultant with an understanding of local road configuration and maintenance issues to prepare a new impact statement that addresses the local roads issue, or
2. Conditions of approval that require Santos Ltd. to enter into an infrastructure agreement with Maranoa Regional Council for the life of the project to provide for the upgrade and maintenance of local roads as necessary to mitigate the impacts of project related traffic.

2. Detailed Discussion

2.1. Waste

Section 5.4.2.1 "Once volumes of recyclable waste generated by the construction and operation phases of the project are known, an assessment will be undertaken to assess market demand for these recyclable waste streams. This will be dependent on the availability and capacity of local facilities."

Maranoa Regional Council operates refuse tips and recycling facilities throughout the region. The recycling operation is carried out as a service to residents but is not commercially viable. Recyclable materials generated by the GLNG project would be received at the landfill sites, but commercial refuse charges would apply.

Social Impact Statement ES 1 "Santos intends to house its construction and operations workforce in temporary accommodation facilities throughout the CSG field. These TAFs will be established within reasonable driving distance of active areas in order to situate workers as close to their work areas as possible."

Waste Management table 5.3.3 On site treatment and disposal by irrigation. Sludge from treatment plant will be disposed of at a local licensed facility.

Disposal of effluent by irrigation will generally be acceptable but a contingency plan may be necessary in wet weather.

How Council receives waste material such as sanitary sludge, effluent and waste oil will depend on the method of delivery, quantities and frequency of delivery.

2.2. Associated Water

2.2.1. Roma Fields

Associated Water Management Table 6.7.2

Option	*Town Supply*	*Industrial Supply*	*Irrigation (Crops or Agroforestry)*	*Treated Discharge to Watercourse*
Preferred	*22%*	*12%*	*66%*	*0%*
Alternative 1	*22%*	*12%*	*51%*	*15%*
Alternative 2	*0%*	*0%*	*100%*	*0%*

The quantity and temporary nature of the associated water makes the ultimate use problematic. Maranoa Regional Council is most supportive of agricultural uses that increase the value of regional product or diversify the economy.

Town supply, while of interest to Council, has a lesser potential economic benefit and so is considered to be of lower priority. While the addition of associated water to the urban reticulation system would provide respite for the Roma aquifer, the likely cost of treated water would make the town and industrial supply options economically unviable.

The preferred option and alternative 1 are considered to be unlikely to proceed.

Alternative 2 will depend entirely on the availability of water at a price that encourages agricultural investment. Maranoa Regional Council is concerned that

unless rapid progress is made on this option, then discharge to watercourse will be the only remaining option in the short term.

2.2.2. Fairview Field

Option	*Treated and Desalinated Irrigation (Leucaena)*	*Treated (for SAR)Irrigation (Chinchilla White Gum)*	*Treated Discharge to Watercourse*	*Other Local Uses*
Preferred	*12%*	*88%*	*0%*	*0%*
Alternative	*12%*	*68%*	*10%*	*10%*

As with the Roma field options, Council prefers the options that promote economic growth and diversification. The proposal to use treated water for irrigation of Chinchilla White Gum is of significant concern to Council. Changing the use of productive grazing land to hardwood forest is a long term commitment with no ultimate guarantee of a beneficial outcome. In the short to medium term, the change will reduce the value of the regional product and in the long term (20 years plus) will only make a positive contribution if the scale of the operation is sufficient to guarantee the viability of a local hardwood milling industry.

2.2.3. Arcadia Valley Field

Option	*Treated and Desalinated Irrigation*	*Treated Discharge to Watercourse*	*Untreated Discharge to Watercourse*	*Other Local Uses (road works, stock watering)*
Preferred	*100%*	*0%*	*0%*	*0%*
Alternative	*80%*	*20%*	*0%*	*0%*

Maranoa Regional Council supports the preference for irrigation and also recognises that the option to discharge on an occasional basis to Arcadia Creek is of benefit principally to sustain Lake Nuga Nuga. The EIS identifies that discharge at grade is not sustainable for other than short periods and it is on this basis that it would be supported by Maranoa Regional Council.

2.3. Social Impact

The Social Impact Statement provided as part of the EIS is unsatisfactory. While there are no issues of concern regarding the demographic information compiled as part of the SIA, the argument employed in establishing a level of impact is simply not credible. It would appear that in preparing the EIS, Santos has solely focussed on mitigating or defending potential negative impacts. This approach has precluded any assessment or recognition of the potential positive social impacts of the project other than the direct economic benefit. Maranoa Regional Council is of the belief that one of the best opportunities for mitigating negative impact is through planning the project in a way that optimises the potential positive impacts.

2.3.1. Negative Impacts

Social Impact Assessment 9.1.1 "...a prediction of the number of employees who may move to the study area over time would require too many unknown variables." While this may be correct, it is not acceptable to use such an argument as a reason for not undertaking a reasonable analysis. Rather than providing a best guess analysis of the whole workforce, the report focuses on the staff for the Roma office that will make up about 3 percent of the workforce. The logic is flawed. To suggest that this is a reasonable sample size or that the impacts will be representative of the whole project is incomprehensible and treats the reader with contempt.

- Impacts on population and employment – "*Social Impact Statement 9.1.3 Adding more demand without supply could prove problematic*". With the lowest regional unemployment in the country this region cannot absorb additional demand. There is no reasonable likelihood that the project will proceed without impacts on the local employment market. The assessment dramatically understates the problem and it is difficult to accept that this understatement has occurred unintentionally.

  Impacts on the local accommodation market have also been ignored. The flawed logic of the SIA methodology suggests that there will be no impact on accommodation availability or cost. There is no reasonable likelihood that the local accommodation market will be unaffected.

- Impact on Health – was assessed on the basis of the impact associated with the long term Roma office based positions only. The anticipated 1500 field employees have not been considered. This is clearly an unrealistic analysis and cannot be accepted.

- Impact on Education – as above, disregards growth in the community associated with field activities which results in an unacceptable assessment of impact.

- Impact on Emergency Services – assumes all emergencies will occur on site and as above disregards growth in the community.

- Impact on Community Facilities – "*Social Impact Statement 9.1.10 ...it is in Santos's interests to make a contribution to facility development to ensure that quality of services and facilities is maintained...*" Impacts on the Roma Airport are acknowledged in table 9-2 of the SIA but not discussed elsewhere. It is encouraging to note that Santos recognises the need to contribute to community facilities which in the absence of separate discussion presumably includes the Roma Airport. The Roma airport issue is further discussed below.

RISQUE Assessment

- Increased Road Traffic – The Santos effort to date in addressing impact on roads has been commendable. Workplace Health and Safety and productivity incentives will provide motivation for Santos to continue to address road issues in keeping with past practice.

- Demand on Local Services and Facilities – In contrast to the remainder of the Social Impact Assessment, there is an acknowledgement in 9.1.13.9 of the SIA that the project will result in increased use of local services including health, education and social services and facilities. *"There is a potential for a high degree of use of local services and infrastructure during construction of the project as more people are required to develop the CSG field"*. This acknowledgement highlights the inadequacies of the remainder of the SIA.

- *Visual Amenity – Social Impact Statement 9.1.13.8 Given the proposed nature of the development, including well spacing, use of current infrastructure, upgrading and enhancement of local infrastructure visual amenity is not anticipated to be a significant issue in the CSG fields.* Maranoa Regional Council appreciates the efforts that have been directed toward engagement of the rural landholders. The CSG fields do however encroach on urban areas so the potential for conflict is significant.

- *Excessive Noise – Social Impact Statement 9.1.13.17 Wells will be at least 300m away from a house due to the noise from the pump on the well.* While this is clearly intended to prevent problems, the potential for conflict in urban areas should not be underestimated. Maranoa Regional Council believes that wells should not be developed within the areas that are zoned residential or rural residential.

Roma / Injune airports. – The project will be staffed with 90% FIFO workers who will, along with subcontractors, be accommodated in temporary accommodation facilities. *Traffic and Transport Appendix J 2.1.3 "Primary access to the CSG fields will be via the existing state controlled road network and existing commercial flight services from Brisbane to Roma..."* Estimated workforce projections suggest that the number of passengers using the Roma Airport will increase substantially, perhaps by as many as 35,000 passengers. This level of increase is beyond the capacity of the Roma Airport and could not be accommodated through Injune Airport. Cumulative effects associated with other projects will only serve to amplify the lack of capacity to cater for project associated demand.

The lack of any assessment of impact on the airport facilities is of concern and may have been an oversight in the preparation of the EIS. In any event, further work is required.

2.3.2. Positive Impact

The project has enormous capacity to provide a positive impact for the community. This can be achieved if the negative impacts are satisfactorily mitigated and if aspects of the project such as accommodation are managed in a way to support growth within the various communities in the gas field area.

Social Impact Statement 7.4.1 "During construction Santos has estimated that approximately 90% of imported construction workers will stay in TAFs..." While Maranoa Regional Council accepts that the short term nature of the construction phase precludes long term accommodation options, the location of the TAFs will have a significant bearing on the way the project impacts on the community. Santos has indicated that the preference is to locate the TAFs away from the existing town areas in order to minimise impact. Maranoa Regional Council has a conflicting view that recognises the opportunity for positive impact. Locating the TAFs within the existing town areas provides the opportunity for social integration and maximises the potential for sustainable growth and optimal use of community services and facilities.

2.4. Groundwater

Groundwater 6.6.1.5 "no town water supply bores are likely to be impacted as a result of groundwater withdrawal in the Roma, Fairview or Arcadia Valley Fields"

Despite the best of intentions, detailed engineering studies and ongoing monitoring, the critical nature of town water supplies makes it impossible to fully alleviate concerns that the project has the capacity to adversely impact on quality of life in the region.

The concerns emerged from comments in the EIS about the potential for "drawdown" of aquifer water levels as a result of CSG and associated water extraction. SANTOS's position in relation to these matters is contained in the SANTOS EIS GLNG "Appendix P2 – Groundwater" which was produced by consulting firm "Matrixplus" for SANTOS in February 2009.

The comments in this submission are also based on a briefing by SANTOS Officers James Purtill (Manager Community & Environment) and Shaun Davidge (Manager Water Strategies), to officers of the Western Downs Regional Council, the Maranoa Regional Council the Chair of the Great Artesian Basin Working Party, Agforce Queensland, and the Department of Environment and Resource Management (DERM) in Dalby on 30 July 2009.

SANTOS has taken steps to underpin its research into the potential impacts on aquifers by implementing a comprehensive water monitoring program which involves the establishment of some 350 water monitoring bores within the CSG fields. Piezometers located in each separate aquifer throughout the strata are monitored remotely and measure the slightest variances in water levels.

Using this "early warning system" SANTOS will be able to measure accurately whether their activity has exceeded expectations and raise an alarm accordingly. This was explained in detail at the Dalby meeting to everyone's satisfaction and was also supported by the DERM officers present.

The flow from one aquifer to another through bore leakage and permeation between aquifers when pressure variances occur was identified as another concern. This was accounted for in that the type of bore construction using oil grade steel and Industrial grout which is forced into the entire bore lining under pressure and then tested to known standards will prevent any leakage and this also seemed satisfactorily to all in attendance in Dalby.

2.4.1. Risk

The Petroleum and Gas (Production and Safety) Act 2004 (P&G Act) commenced on 31 December 2004. The Act covers a wide range of areas including exploration and production of petroleum, including coal seam gas, the upstream pipeline industry, management of water produced during petroleum production, and issues arising from interactions of petroleum activities and coal exploration and mining activities.

In enforcing this act the Queensland Government Department of Environment and Resource Management (DERM) requires that resources extraction operators

provide timely reports about these types of impact. Due to the migration of responsibilities from one Government department to another, accountabilities for reporting has not been as tight as it could be over recent years. This has given rise to the following weaknesses:

1. There has been no accurate benchmark of water levels (*"trigger threshold"*) established over the past 5 years of resources extraction in the study area. Accordingly the datum point for measurement has not been defined.

2. Reporting to Government and policing regimes are not yet clear nor is there any mention of third party monitoring of aquifers in the EIS.

3. No mention was made about what specific action would be taken if aquifer levels were affected (cessation of drilling etc), and the act is ambiguous about such matters. The ACT leaves room for perhaps too much interpretation see attachment "A": The above leaves much to interpretation and provides options for the petroleum lessee and SANTOS continually refer to their obligation to comply with the ACT, however the ACT may divest a certain amount of control in the lessee when taking remedial action to the detriment of the damaged party.

4. The ACT does not also factor what might be considered to be "satisfactory" remedial actions in the opinion of the land owner or authority.

The cumulative impacts of the combined gas industry activities will be the only measure as it will be very difficult to measure individual impacts. Given that SANTOS shares the gas fields with ORIGIN and other operators, it will be difficult to accurately identify and hold to account any one operator for their share of cumulative effects. As ORIGIN's Initial Advice Statement highlights similar impacts on the environment in the same area it can be assumed that ambiguity about which company did what damage will be commonplace and fairly argued.

Social Impact Statement table 9-2 "Depending on the location of gas wells, dewatering activity has the potential to impact negatively on existing bores supplying water to the Roma township area. Potential Severity of Impact – moderate to high negative. Any reduction in subsurface water sources may negatively impact the long term sustainability of the town's water supply."

This comment in the Social Impact Statement appears to identify a greater level of risk on the potential for negative groundwater impacts than the discussion contained in the Groundwater section of the EIS.

In light of the above concerns Maranoa Regional Council believes that the proposed mitigation measures are inadequate to safeguard water supplies. It is Council's position that the State Government must ensure that the supplies are safeguarded by one of two measures.

1. Augmentation of the supply infrastructure to increase the factor of safety in terms of storage and supply capacity, or

2. Conditions of approval that reflect the potential severity of impact and impose tighter control on any activity in the vicinity of urban water supply aquifers and
3. Conditions of Approval to require the use of independent third party monitoring and assessment of the Santo "early warning" system to ensure that decisions making processes cannot be compromised.

2.5. Transportation

2.5.1. Road

The transportation section of the EIS focuses exclusively on the declared road network in the gas field which is built to a relatively high standard and disregards the local road network which is generally constructed to a lower standard and therefore less likely to be able to cater for the impacts of the project.

The methodology adopted is entirely inappropriate for consideration of the local road impacts. Traffic capacity and bring forward analyses are irrelevant considerations and suggest that the consultants have little comprehension of the condition of the road network in the gas fields, nor does it appear that they have any understanding of the role of the local road network in connecting the state controlled roads to the gas fields.

Local roads in the gas fields are generally constructed to low standards of geometry and pavement as they cater for very low traffic volumes and so will be adversely impacted upon by even modest amounts of project traffic. Given that the report forecasts 6.7 million trips generated in the gas fields over the life of the project it is difficult to understand why some attention has not been paid to the impact on the roads at the end of the journey.

To address the grossly inadequate transportation section of the EIS requires either of two options;

1. Engagement of a consultant with an understanding of Local road configuration and maintenance issues to prepare a new impact statement that addresses the local roads issue, or
2. Conditions of approval that require Santos Ltd. to enter into an infrastructure agreement with Maranoa Regional Council for the life of the project to provide for the upgrade and maintenance of local roads as necessary to mitigate the impacts of project related traffic.

2.5.2. Rail

The EIS doesn't comment on the use of rail to transport materials to the gas fields. This is a worrying exclusion given the current condition of the Warrego Highway.

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Santos | PETRONAS

Queensland Government

Department of **Transport** and **Main Roads**

17 August 2009

The Coordinator-General
Attn: EIS Project manager
LNG – Gladstone (Santos) Project
Significant Projects Coordination Division
Department of Infrastructure and Planning
PO Box 15009
Brisbane City East Qld 4002 Australia
Attn: Mr Alan Hutchings

Department of Transport and Main Roads Response: Comments on Environmental Impact Statement (EIS) – Santos Gladstone LNG Project

Dear Mr Hutchings

Thank you for inviting the Department of Transport and Main Roads to comment on the Environmental Impact Statement (EIS) – Santos Gladstone LNG Project. The Department has reviewed the EIS and is generally supportive of the overall content.

The EIS includes much of the necessary information and analysis to adequately assess the impacts and proposed mitigation measures of the project. However, some additional assessment is required in relation to road related matters. Suggested amendments are set out in Attachment A and represent a coordinated departmental response which includes Rail, Ports and Freight, Maritime Safety Queensland and Roads.

The Department of Transport and Main Roads would like to work closely with the proponent and their consultant about the level of detail required in the assessment of impacts and mitigation strategies. Departmental contacts and their respective areas of expertise are also included in Attachment A.

Should you have any queries regarding these comments, please contact Brent McLean of Development Leadership, (07) 3137 7687.

Yours sincerely,

Tom Orr
Principal Advisor (Development Leadership)
Enc(1): Attachment A. Transport and Main Roads Response: Comments on the Environmental Impact Statement (EIS) – Santos Gladstone LNG Project.

Integrated Transport Planning
Development Leadership
Floor 21, Hitachi Building, 239 George Street
Brisbane, Queensland 4000
GPO Box 1412 Brisbane Queensland 4001
ABN 57 836 727 711

Our ref 890/00294 P80851 SH
Your ref TN139852/MH31/DIP
Enquiries Brent McLean
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Website www.transportandmainroads.qld.gov.au

Queensland Government

Department of **Transport** and **Main Roads**

File No: 890/00294 P80851 SH

C/c

1. **General Manager**
Rail, Ports and Freight
Department of Transport and Main Roads
GPO Box 1549, Brisbane Qld 4001
Attn: Mr. Greg Hollands

For your information.

2. **General Manager**
Marine Safety Queensland
Department of Transport and Main Roads
GPO Box 2595, Brisbane Qld 4001
Attn: Ms. Cathy Beadley

For your information.

3. **MR RD Fitzroy Region / Rockhampton Office**
Department of Transport and Main Roads
PO Box 5096 Central Qld Mail Centre 4702
Attn: Mr. Chris Hewitt;
Mr. Chris Murphy

For your information.

Tom Orr
Principal Advisor (Development Leadership)

17 August 2009

Attachment A
Queensland Department of Transport and Main Roads Comments:
Submission on the Gladstone Liquefied Natural Gas (GLNG) Environmental Impact Statement (EIS) – Santos – Curtis Island

Rail, Ports and Freight			
Name:	Mr Lawrence Hannah, General Manager (Rail, Ports and Freight)		
Address:	GPO Box 1549, Brisbane Qld 4001	**Contact:**	Mr Greg Hollands, Senior Advisor (07) 3306 7376

Section	Describe the issue	Suggested amendments	Additional Information / Level of detail when undertaking S/EIS
Section 3 Project description Subsection 3.7.3.19 Railway crossings Page 3.53	This section discusses the processes to be used for the gas pipeline to cross railway lines. There are various upgrade projects proceeding along the Moura Line and this section of the EIS should note that discussions with QR Limited should include any rail upgrade projects.	This section of the EIS should note that prior to any details being finalised discussions with QR Limited will include any rail upgrade projects on the Moura Line. Reference to this note should also be made in section 7.11.4 which details a list of railways to be crossed by the gas transmission pipeline.	
Section 4 Transportation Subsection 4.5 Proposed development, 4.5.2.1 Construction deliveries - Pipe Transport Page 4.18	Paragraph 3 states that: "Approximately 37,000 pipe sections (pipe joints) will be required for the 435 km pipeline." That: "The pipe sections are to be 12 – 15 metres in length." And later in relation to ship delivery of pipe sections that: "Ships are estimated to carry approximately 6,000 pipe joints, at an estimated delivery rate of one ship per month." Previously in Section 3 Project Description, 3.7.3.23 Transport, it was indicated that the pipe sections for the	That Paragraph 3 of subsection 4.5.2.1 includes an additional sentence that confirms that there is sufficient laydown area at Auckland Point wharves to receive and store the pipes in preparation for transport to their subsequent laydown areas along the pipeline corridor.	

Section	Describe the issue	Suggested amendments	Additional Information / Level of detail when undertaking S/EIS
	gas pipeline would be received by ship at Auckland Point, for transport either by truck or by rail to a number of pipe laydown areas along the pipeline corridor. We could not find anywhere in the document a confirmatory statement that, upon receipt of a ship load of 6,000 pipe sections there was sufficient immediate laydown area to store the shipment of pipes at Auckland Point.		
Section 4 Transportation Subsection 4.5.3.7 LNG Shipping through the Great Barrier Reef - GLNG Shipping Page 4.24	Section 4 with the heading *GLNG Shipping* (page 4.28) is preceded by a Section dealing with *LNG Shipping through the Great Barrier Reef (page 4.24 -)*. The *GLNG Shipping* section goes on to cover *Risks to the Environment* and *Marine Incidents in the Region*, but it provides little emphasis on safety and risk management measures covering the management of shipping operations while approaching the Port of Gladstone, and during entry and exit of the Port of Gladstone, and transit to and from the Curtis Island LNG Facility. While it is recognised that later on, Section 10 Hazard and Risk deals more comprehensively with these issues, residents of Gladstone and port-side industries would likely appreciate an	Within the GLNG Shipping Section, Paragraph 3 states: "These ships will navigate through the Marine Park within the designated shipping area before entering the Port of Gladstone, and again navigate through the Marine Park Shipping Area when leaving the Port of Gladstone." We suggest adding something like the following sentences after Paragraph 3: "LNG ships transiting the Marine Park Shipping Area and the Port of Gladstone will be guided by a Pilot. Within the Port of Gladstone LNG ships will be under active (tethered) tug escort during the transit through the port (inbound and outbound)."	

Section	Describe the issue	Suggested amendments	Additional Information / Level of detail when undertaking S/EIS
	increased description of some of the safety measures in operation within this Section.		
Section 7 Gas transmission pipeline environmental values and management of impacts Subsection 7.11 Land Use and Infrastructure 7.11.4.1 Current Land Use Table 7.11.5 Location of infrastructure and services Page 7.11.22	Table 7.11.5 shows the various infrastructure which the gas pipeline will cross. This table does not make reference to the pipeline crossing of the disused Dawson Valley Branch railway (between Moura and Baralaba).	Insert a new line in the railway section of table 7.11.5 stating that the gas pipeline will cross the disused Dawson Valley Branch railway (between Moura and Baralaba) which is under the direct control of the Department of Transport and Main Roads. The specifications of crossing of this corridor should be the same as applied to the operational QR rail lines. To arrange an approval for the crossing of this corridor, contact should be made with: Mr Noel Thompson Rail Ports and Freight Division Department of Transport and Main Roads GPO Box 1549 Brisbane Qld 4001 Tel 3306 7443	

Maritime Safety Queensland			
Name:	Captain John Watkinson, General Manager (Maritime Safety Queensland)		
Address:	GPO Box 2595, Brisbane Qld 4001	**Contact:**	Ms Cathy Beadley, Senior Maritime Advisor (07) 3120 7445

Overall:

Maritime Safety Queensland (MSQ) considers the Gladstone Liquefied Natural Gas (GLNG) Environmental Impact Statement (EIS) submitted by Santos to be a most comprehensive and professionally prepared document. We have every confidence in the proponent continuing to liaise closely towards resolution of any identified matters. These comments have been approved by the Regional Harbour Master Gladstone, Pilotage Manager Gladstone, and Director Maritime Services on behalf of Captain John Watkinson, General Manager MSQ.

General:

Maritime Safety Queensland (MSQ) as a State agency within the Department of Transport and Main Roads must be recognised as the appropriate concurrence authority for maritime matters as they relate to safety of navigation and prevention of ship sourced pollution. The proponent and their consultant's should continue to work closely with the relevant MSQ contact (as noted above) regarding the level of detail required in ongoing assessments and marine related aspects of the project.

Section	Describe the issue	Suggested amendments / solution	Level of detail when undertaking S/EIS
Executive Summary Section ES 12 Project Schedule Table ES12.1 Major project parameters – LNG Facility; LNG Shipping; Site access (i.e. ferries / barges)	MSQ must manage the cumulative impact of competing demands from other port users including the impact of concurrent port development projects. To ensure an appropriate assessment of the proposal, clarification is required on the interaction with existing vessel traffic as well as anticipated impacts from other port projects which have been approved but may not yet have begun operation.	To ensure safety of navigation risk assessments must apply to the interaction of large foreign going trading vessels, smaller commercial and fishing/charter craft and recreational vessels to ensure safety of navigation. These results should also be appropriately reflected throughout the EIS, its findings and recommendations. Port simulation modelling which includes	Whilst large foreign going LNG vessel simulation exercises have been undertaken by MSQ master mariners with LNG proponents including Santos, this did not fully explore the heightened risks arising from the interaction with smaller vessels. Management of commercial craft such as ferries and barges associated with the LNG facility construction requires further exploration to meet MSQ safety of navigation requirements.

Section	Describe the issue	Suggested amendments / solution	Level of detail when undertaking S/EIS
Page ES.20 Section ES 15.16 Traffic and Transport: Ferry Operations; Barging Operations; Shipping Page ES.45-47 Section ES 15.17 Hazard and Risk Page ES.47-48 **Section 1 Introduction** Subsection 1.7 Relationship to other Projects Page 1.16-20 **Section 4 Transportation** Section 4.5.3 LNG Facility 4.5.3.1 Construction Deliveries	The general flow of existing vessel traffic, broadly speaking, follows an east west direction of passage, whereas LNG facility construction barge and ferry traffic will move against this flow in a more north south bound direction to Curtis Island. This is a major safety risk which needs to be mitigated through additional port safety initiatives which may require port simulation modelling. The Regional Harbour Master will develop Port Procedures to regulate and schedule the flow of vessel traffic for all port users. Whilst the EIS provides information on barge/ferry vessel numbers and activity patterns, additional detail is needed to enable MSQ to develop appropriate vessel traffic procedures to ensure safety of navigation for all port users. Close liaison will be required with the Regional Harbour Master to achieve a successful outcome.	a cumulative risk analysis of how this project integrates within projected shipping activity increases in the port of Gladstone is relevant to assessment of this proposal.	

Section	Describe the issue	Suggested amendments / solution	Level of detail when undertaking S/EIS
4.5.3.2 Operation Deliveries 4.5.3.3 Dredge Material Placement Facility 4.5.3.4 Traffic Movement Patterns 4.5.3.5 Traffic Generation 4.5.3.7 LNG Shipping through the Great Barrier Reef GLNG Shipping Page 4.21-24 **Section 10 Hazard and Risk** 10.3.3 Shipping Page 10.20-22			
Section 3 Project Description Subsection 3.10 Dredging and Dredged material	The project related activities detailed in Section 3 should also cover the requirements of project specific maritime infrastructure, for example, Aids to Navigation (AtoN), such as, buoys,	Further clarification of the requirements for maritime infrastructure is required regarding the relevant sections identified.	MSQ is the responsible agency for safety of navigation which is supported by provision of VTS (Vessel Traffic Services) which manage vessel activity such as the barges/ferries and their

Section	Describe the issue	Suggested amendments / solution	Level of detail when undertaking S/EIS
Management Page 3.88-89 Subsection 3.11.3 Ferry/Barging Operation Page 3.96-98	beacons, and Vessel Traffic Services (VTS) (radars etc). This is required to ensure consideration of all impacts on safety of navigation within the port. The decision on the location and number of project related AtoN is a MSQ responsibility. Provision of relevant information by the proponent will assist MSQ in this regard. MSQ is not funded to provide these AtoN. The exact location and number of AtoNs is yet to be determined by MSQ. A related 2008 cabinet decision determined '*infrastructure for the LNG industry is not to be funded by the State'*.		interaction with other waterways users. The number and location of AtoN will be determined by MSQ and may include temporary structures during the construction phase as well as permanent fixtures. Gladstone Ports Corporation (GPC) or the LNG proponents will be required to fund project related safety of navigation maritime infrastructure. GPC will manage future apportioning of funding contributions amongst all LNG proponents once approval processes have been completed.
Section 1 Introduction Subsection 1.9 Project Approvals and Legislative Framework, 1.9.1 State legislation Page 1.25-34 **Section 4 Transportation** Subsection 4.5.3.7 LNG Shipping through the Great Barrier	MSQ's regulatory role in administering the *Transport Operations (Marine Safety) Act 1994* (TOMSA) and the related *Transport Operations (Marine Pollution) Act 1995* (TOMPA) needs to be addressed more comprehensively and consistently in the EIS by the proponent. In Section 1 Introduction, subsection 1.9 Project Approvals and Legislative Framework, 1.9.1 State legislation, page 1.31, only one regulation under TOMSA is mentioned. In Section 4 Transportation, subsection 4.5.3.7 LNG Shipping through the Great	Review the identified sections to ensure they appropriately reflect the legislative obligations under the *Transport Operations (Marine Safety) Act 1994* (TOMSA) and the related *Transport Operations (Marine Pollution) Act 1995* (TOMPA).	The proponent and their consultant's should work closely with MSQ regarding regulatory requirements under the *Transport Operations (Marine Safety) Act 1994 and the Transport Operations (Marine Pollution) Act 1995.*

Section	Describe the issue	Suggested amendments / solution	Level of detail when undertaking S/EIS
Reef Page 4.24 **Section 10 Hazard and Risk** Subsection 10.2 Regulatory Framework Page 10.1 **Section 14 Marine Facilities – Environmental Management Plan** **Subsection** 14.15.6 Shipping Page 14.13-14	Barrier Reef, no mention is made of either TOMSA or TOMPA. The Great Barrier Reef extends to within the coastal waters 3 nautical mile limit and State legislation applies in these waters. In Section 10 Hazard and Risk, subsection 10.2 Regulatory Framework, reference should be made to TOMSA or TOMPA. In contrast to the above comments under Section 14 Marine Facilities – Environmental Management Plan, subsection 14.15.6 Shipping, references to TOMSA and TOMPA indicate a sound understanding of the scope of the legislation and relevance to the project.		
Executive Summary Section ES 15.16 Traffic and Transport Section ES 15.17 Hazard and Risk Page ES.45-48	To ensure an appropriate assessment of the proposal in relation to the potential hazards and risks, and the associated emergency response arrangements, further clarification is necessary. Section 4 Transportation, subsection 4.5.3.7 LNG shipping through the Great Barrier Reef – Oil Pollution and spills, page 4.29, notes *' The likelihood of a*	These sections need to more appropriately highlight the potential hazards and risks of bunker spills from collision or other accidents, including the arrangements for investment in maritime infrastructure tools to mitigate the safety of navigation and ship sourced pollution marine incidents.	The proponent should continue to work closely with MSQ regarding the level of detail required in further assessment of impacts and development of mitigation strategies in relation to safety of navigation and ship sourced pollution. The proponent needs to be made aware that the control of all shipping movements both large & small in the

Section	Describe the issue	Suggested amendments / solution	Level of detail when undertaking S/EIS
Section 4 Transportation Subsection 4.5.3.7 LNG shipping through the Great Barrier Reef – Oil Pollution and spills Page 4.29 **Section 10 Hazard and Risk** 10.3.3 Shipping 10.3.3.1 Shipping in the Great Barrier Reef Page 10.20-26 **Section 14 Marine Facilities – Environmental Management Plan** Subsection 14.15.6 Shipping 14.15.8 Waste Management	*bunker spill is almost non-existent.'* MSQ does NOT support this risk assessment statement. Section 10 Hazard and Risk, subsection 10.3.3 Shipping, dot point two, page 10.20 notes *'However Gladstone Port is extremely safe, with navigation features, support systems and redundancy all contributing towards a low risk of an incident occurring during transit; and ....'* MSQ considers given the volume of increased shipping movements anticipated through the Port of Gladstone the words '*extremely safe'* is an over ambitious assertion. It would be more appropriate to highlight how the proponent seeks to ensure effective mitigation of safety of navigation and ship sourced pollution marine incidents through appropriate investment in maritime infrastructure tools, such as, additional Vessel Traffic Management services (eg radars) and Aids to Navigation (eg buoys and beacons).		Pilotage Area is the responsibility of MSQ through the Regional Harbour Master (RHM), not GPC. MSQ, through the RHM will establish or amend existing shipping protocols and procedures to regulate the safe passage of all vessels in the Pilotage Area. This authority is outlined in MSQ's regulatory responsibilities under the Transport Operations (Marine Safety) Act 1994 (TOMSA). Ship sourced pollution prevention and emergency response arrangements should also include vessels in transit through port waters and their relationship to existing public/private sector maritime emergency management arrangements. For marine aspects of this assessment references to *the TOMPA* and the *Transport Operations (Marine Pollution) Regulation 2008* should also address the National Plan (The National Plan to Combat Pollution of the Sea by Oil and other Noxious and Hazardous Substances) as they apply to this project. In regard to providing information on product spill contingency plans MSQ requires, in accordance with *the*

Section	Describe the issue	Suggested amendments / solution	Level of detail when undertaking S/EIS
14.15.10 Emergency Response Page 14.13-18			*Transport Operations (Marine Pollution) Act 1995*, that any support vessels such as dredgers, barges or ferries dredge(s) employed on this project have appropriate oil spill contingency plans. Emergency response planning should support and integrate with existing emergency management arrangements under the National Plan (The National Plan to Combat Pollution of the Sea by Oil and other Noxious and Hazardous Substances) as they apply to this project. These plans should include in addition to Oil Spill Contingency Plans, Cyclone Contingency Plans and emergency response plans for incidents other than oil spills & cyclones such as fire, sinking, collision, grounding, passenger evacuation etc.
Section 10 Hazard and Risk Table 10.3.5 LNG Facility Hazards Page 10.18-20	Section 10 Hazard and Risk, Table 10.3.5 LNG Facility Hazards, lists *'sea surge'* under the 'Cause' column, however no mention is made of cyclonic weather impacts. It should be noted that the Regional Harbour Master will close the Pilotage Area to all maritime traffic in the event of cyclonic threats. This authority is outlined in MSQ's regulatory responsibilities under the Transport Operations (Marine	The hazards and risks associated with 'Cyclonic weather' should be appropriately reflected throughout the identification of potential 'causes' of LNG Facility Hazards.	

Section	Describe the issue	Suggested amendments / solution	Level of detail when undertaking S/EIS
	Safety) Act 1994 (TOMSA).		
Section 10 Hazard and Risk 10.3.3 Shipping Page 10.22	Subsection 10.3.3 Shipping, page 10.22 notes *'Gladstone Ports Corporation (GPC) is aware of the expected harbour traffic and is planning for the potential cumulative impact of increased shipping….GPC's work on a maritime traffic strategy will ensure the harbour can sustain the expected increase in demand from shipping movements'*	This section could better reflect MSQ's regulatory role and responsibility for safety of navigation and management of vessel traffic. This statement should be placed in context by recognising GPC's maritime traffic strategy work as a valuable decision support tool rather than imply it is the panacea to address what is a complex challenge requiring a number of risk mitigation strategies.	

Main Roads			
Name:	Mr Chris Hewitt, Manager (Corridor Land Management & Operations)		
Address:	PO Box 5096, Central Qld Mail Centre 4702	**Contact:**	Mr Chris Murphy, Senior Engineer (Civil) (07) 4931 1616.

Overall:

The comments provided by the former Department of Main Roads on the Draft TOR for the Gladstone Santos LNG project requested that the proponent and their consultants work closely with the department in the development of the EIS. Unfortunately, to our awareness, no contact was made by these parties to the department which has resulted in some significant issues in regards to the traffic reports methodologies and resultant assumptions. Therefore the proponent and their consultants are strongly encouraged to meet with the above Main Roads contacts to discuss the level of detail necessary in the further assessment of traffic impacts and negotiation of impact mitigation strategies, and to present the Supplementary EIS (S/EIS) prior to submitting the final S/EIS for assessment. The applicant should also provide details of any proposed staged upgrading including timing of upgrades etc.

Section	Describe the issue	Suggested amendments	Additional Information / Level of detail when undertaking S/EIS
Appendix J - Traffic Report Section 6.0 Intersection Impact Assessment Subsection 6.5 Intersection Analysis Page 81-104	Section 6.5 of the Traffic Report identifies (in part) intersections that fail due to background traffic and are made significantly worse by the proposed development. Many of the proposed mitigation measures only take the intersections back to the pre-development Degree of Saturation (DOS) but still in a failed state. For example, section 6.5.9 identifies that the intersection of Dawson Highway/Blain Drive/Herbertson Street fails due to background growth and that the intersection is made worse by the proposed development. Mitigation options provided suggest that	Identify and analyse upgrading options for all failed intersections that bring the operational performance of the intersections back to acceptable standards. These further details and analysis should be included in a S/EIS. Provide Conceptual or Preliminary layouts of the proposed/required upgrades, demonstrating how the required/proposed upgrades "fit in" with current and future layouts. Propose a methodology and/or monetary contributions to mitigate the impacts of	The applicant is requested to prepare estimates of the required upgrades in 2009 dollars.

	the intersection will operate "no worse" than it would have done under background traffic without the proposed development. In reality, the proposed mitigation measures will not ensure satisfactory operation of the intersection post-development, in fact the analysis indicates that the intersection will still not operate satisfactorily or within acceptable limits after the proposed mitigation measures are implemented. The intersection will simply operate in a state that is technically "no worse" in terms of DOS than it would have been otherwise (without the development). The project will result in an increase in traffic, including that of heavy vehicle traffic. This poses safety risks to all road users and returning the network to an equivalent 'failed' state is not acceptable from a safety perspective.	the proposed development on the relevant intersections. This methodology and/or any monetary contributions should be negotiated with DTMR prior to submission of the S/EIS.	
	Many of the identified required upgrades have either not been planned and/or funded under the current Roads Implementation Program (RIP) and as such bring forward costs are not relevant and do not apply.	Propose an alternative strategy to deal with those required upgrades that are not on the current RIP, such as construction of the proposed works or a monetary contribution in lieu of works.	
Appendix J - Traffic Report Section 7.0 Roadway Link Capacity Impact	Adopting nominal roadway link capacities based on Urban/Rural road designations and the number of lanes without looking at lane widths, shoulder widths, lateral clearances, speeds, horizontal and vertical alignment, levels of service or	Reassess the existing roadway link capacities for individual affected sections based on available data rather than nominal capacities based solely on Urban or Rural designation and number of lanes. These details should be	The applicant is requested to prepare estimates of the required upgrades in 2009 dollars.

Assessment Page 109-113	degree of saturation etc. is considered too general. Details on road AADT's, lane and shoulder widths etc. are available for use in estimating road link capacities on individual sections.	included in a S/EIS. Propose a methodology and/or monetary contributions to mitigate the impacts of the proposed development on the relevant roadway links. This methodology and/or any monetary contributions should be negotiated with DTMR prior to submission of the SEIS.	
	If any of the identified required upgrades have either not been planned and/or funded under the current Roads Implementation Program (RIP), bring forward costs are not relevant and will not apply.	The applicant should propose an alternative strategy to deal with those required upgrades that are not on the current RIP, such as construction of the proposed works or a monetary contribution in lieu of works.	
Appendix J - Traffic Report Section 3.0 Existing Road Network Subsection 3.3 Crash History Page 28-32	Section 3.3 of the Traffic Report pertains to Crash History. This section of the report contains statements such as "*The above sections of road should be investigated further by DMR to determine possible crash trends and whether there are any road improvements that could be implemented to reduce the likelihood of crashes occurring. If any deficiencies are noted, then these are existing deficiencies and not attributed to development traffic*". With respect, the purpose of carrying out a review of crash history as part of an overall safety review is to determine any existing deficiencies and also to identify any impacts the proposed development is likely to have, whether mitigation measures are required, what these measures may be	Whilst there may well be some deficiencies on the existing road network, the applicant has made no attempt to quantify the impacts the proposed development will have with respect to road crashes. Given the volume of traffic the proposed development will add to the existing road network and in particular the volume of heavy vehicles, the applicant should carry out a comprehensive road safety review and submit it as part of a S/EIS.	

	and who and how will they be implemented.		

Submission 33

Santos | PETRONAS

Wildlife Preservation Society of Qld

wildlife.org.au

The Coordinator –General
c/- EIS Project Manager Gladstone (LNG) Santos
Significant Projects Coordination
Department of Infrastructure and Planning
PO Box 15009
City East Queensland 4002

17 August 2009

via email: SantosLNG@dip.qld.gov.au

Dear Sir

Re: Draft Environmental Imapct Statement for the Proposed Gladstone Liquefied Natural Gas Project (GLNG) 2009.

I have been directed by the State Council of Wildlife Preservation Society of Queensland (Wildlife Queensland) to provide comment on the draft EIS –GLNG.

Wildlife Queensland is one of the most respected wildlife-focused conservation groups in Queensland. With over 3500 supporters spread across numerous branches throughout Queensland, Wildlife Queensland is a strong voice for our wildlife and its habitat.

Wildlife Queensland is apolitical. Our aims include;

Preserve the flora and fauna of Australia by all lawful means

Educate the community in an understanding of the principles of conservation and preservation of the natural environment

Discourage by all legal means, the possible destruction, exploitation and unnecessary development of any part of the natural environment.

Encourage rational land use and proper land planning of existing and future development, and the use of the natural environment and its management.

Wildlife Queensland appreciates the need for development but emphasises the need for that developed to be ecologically sustainable. There must be the correct balance between development, society needs and conservation of our natural resources. Wildlife Queensland welcomes the opportunity to make comment. Wildlife Queensland will confine its comments to those sections of the draft EIS of particular concern to our society. If Wildlife Queensland elects not to comment on a topic or aspect, this should not be construed necessarily as support for the view presented.

While Gladstone and its immediate environs is recognised as a key industry precinct and containment of further industrial development does have merit, there is significant ecological values particularly marine that must be protected and conserved. Wildlife Queensland refers to mangroves and saltmarshes, turtles and dolphins as well as other species of interest. In addition Curtis Island has particular historic value to botany as it was a significant site where Robert Brown collected in the early 1800s.

Wildlife Queensland appreciates that this is a significant project under the *State Development and Public Works Act* 1971 and that a number of its components are "controlled actions" under the Commonwealth *Environment Protection and Biodiversity Conservation Act* 1999.

General Concerns about the Project.

This is but only one of such future project. There are several similar proposals gathering momentum. A major concern is what is the cumulative effects of all these projects on the environment and biodiversity of Queensland. It is suggested that this is unknown and there has been no apparent attempt by the Queensland Government to model what the total impact will be. Wildlife Queensland appreciates that it is not the role of the proponents of this project to undertake such a task. However it would appear that adequate consideration of the total cumulative effects of the various components of this project alone has not been given appropriate consideration. Wildlife Queensland would encourage the proponents to minimise the footprint of the project wherever feasible, at the gas extraction sites, the pipe and the plant itself.

Santos Limited and its partners have made considerable effort to address the challenges and threats this project presents and have operated within the guidelines provided or permitted by government agencies. However some of the practices in place associated with the extraction of coal seam gas pose questions as to if the imminent risks to biodiversity and the environment can be reduced to reasonable levels. Already some surplus extracted waters with extremely poor water quality are being reinjected into aquifers housing waters of far better quality. Other surplus waters following treatment are being used to irrigate introduced pasture plants that have a know ability, if not adequately controlled, to invade natural ecosystems disrupting the balance and impacting on native habitat.

The project need is established primarily on relatively short term economic gain. It is acknowledged that LNG is capable of meeting some energy needs with reduced greenhouse gas outputs. Has the long term loss of prime agricultural land to produce food and fibre been adequately considered?

By their own admission (page 6, ES7), the full extent and location of wells and infrastructure is not known and will evolve over time. The cumulative effects are an unknown. Once this project has approval, what pressures will be bought to bear for it to continue regardless of any environmental harm.

The choice of Curtis Island and its environs is a concern. However it is noted that a range of alternatives have been considered. Wildlife Queensland would have preferred the plant to be located on the mainland.

The Nature Conservation section recognises that the project area supports a range of conservation significant values including flora, fauna and regional ecosystems. Although the environmental values of watercourses are considered relatively low they are still significant to the wildlife that inhabits these streams.

Contamination of shallow or deep groundwater aquifers is not acceptable. It is appreciated that significant monitoring programs are to be put in place. It is recommended that public access to those programs is considered so that there is confidence in any reports. Furthermore such monitoring should be undertaken by independent authorities and not any companies linked to the proponents.

Santos is to be commended on its approach to indigenous cultural heritage. There are other organisations more appropriate to comment on this aspect than Wildlife Queensland.

More specific concerns

Terrestrial.

Clearing and disturbance of vegetation on any site is a major concern. Much vegetation within the project area is already fragmented and any further fragmentation should be avoided, reduced and mitigated. The maintenance of biodiversity and ecological processes so essential for the continued existence of our wildlife must be one of the highest priorities.

Impact on endangered or of concern regional ecosystems should be avoided. It is appreciated that government offset policy and legislation permits the disturbance of such vegetation for mining and other selected industries. Should the offset policy be triggered then it should be like for like, like or better condition and it must be protected for perpetuity. In addition there must be proactive management of any offsets to ensure that predevelopment stability of the ecosystem is achieved free from weeds and feral animals. Also periodic flora and fauna surveys should be carried out to confirm management objectives are being achieved. The commitment to a target ratio of up to 3:1 in terms of vegetation protected in offsets is a minimalist approach. In most situations as a matter of last resort Wildlife Queensland prefers offsets though habitat restoration and enhancement of comparable ecosystems but this may not necessarily be always the best option in this situation. The offset policy does permit the payment of funds to be purposefully directed for the benefit of conservation. Should this approach be considered by proponents that may provide a significant positive outcome for conservation improving the environment.

Regardless of the above there is a need to rehabilitate, restore and establish local wildlife corridor functions to facilitate natural movement of wildlife and the continued existence of plant species if the site becomes operational.

Weeds and feral animals are probably second only to loss of habitat in threats to our biodiversity. It is apparent that practices are to be put in place to avoid the spread of weeds. There is a need to have eradication and or containment strategies activated from the initial implementation phase of this project.

Fire management plans need to be developed not only to protect infrastructure but also the vegetation. Ecologically sustainable fire regimes need to be implemented as and when required.

Finally there is a concern about the decommissioning of infrastructure and rehabilitation of mine sites after operations cease. While this has been addressed, Wildlife Queensland is of the opinion that the Queensland Government must have adequate financial arrangements in place with the proponents to ensure appropriate rehabilitation can occur if there is failure by the proponents to do so.

Marine.

Wildlife Queensland has major concerns about the total impact and effect on the regional marine species and associated habitats including mangroves and saltmarshes.

Some of these species have not only national but global significance. Six marine turtles occur in the area. The risk and threat to nesting and foraging population is significant. Construction with its associated lighting may result in much higher predication than normal and it is suggested that additional lighting be kept to a minimum during nesting and hatching times. Sedimentation and habitat degradation will occur during crossing Port Curtis with the pipeline although Wildlife Queensland supports the preferred option if construction has to occur on Curtis Island. Inshore dolphins are also at risk.

The threats to these species have not been adequately addressed.

Conclusion

Although the proponents have put considerable research and effort into the draft EIS more is needed to reassure the community that environmental harm will be minimal, there are no significant adverse effects on biodiversity and the loss of prime agricultural land is justified.

Thank you for the opportunity to comment.

Yours faithfully



Des Boyland
Policy & Campaigns Manager



Submission 34

Santos | PETRONAS

034

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The Coordinator-General
C/-EIS Project Manager: Gladstone (LNG) Santos
Significant Projects Coordination
Department of Infrastructure and Planning
PO Box 15009
City East Qld 4002
Australia

17th August 2009

Dear Coordinator-General

We appreciate the opportunity to comment on the ***Environmental Impact Statement for the Proposed Gladstone Liquefied Natural Gas Project (GLNG), 2009.***

WWF-Australia is the world's largest independent conservation organisation, at work in over 100 countries and supported by more than five million people. In Australia we have over 80,000 supporters. We achieve solutions to complex environmental problems through an approach that is rational, practical and science-based.

Gladstone is well known as a precinct for industrial development. However, its marine environment supports a wide range of marine ecosystems including saltmarshes, seagrass beds and mangroves that are rich in biodiveristy. Six of the world's seven marine turtles are known to occur in the region as well as the rare and endemic Australian Snubfin Dolphin.

WWF-Australia's position on the GLNG development and key concerns about the Proposal

WWF-Australia would like to acknowledge the efforts made by Santos Limited to address the likely threats presented by the Gladstone Liquefied Natural Gas Project. We do not doubt the determination of Santos and other joint venturers to manage these risks but are concerned that no amount of goodwil and effort will reduce the imminent risks to a reasonable level.

We would like to confirm the WWF-Australia is not opposed to LNG production in principle, we see LNG an important source of energy as the global economy begins its transition to sustainable sources of energy.

We are interested in minimising the footprint of development in this region and would encourage the Queensland and Australian Governments to help proponents to better achieve this.

We would like to make it clear that this *submission in no way should be read as a summary of the full range of concerns that WWF-Australia has with this proposal* – it does not attempt to be encyclopaedic. Instead we focus only on those concerning impacts on key marine species (marine turtles & inshore dolphins).

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Conclusions and Recommended Actions

- It is WWF-Australia's view that the Environmental Impact Statement (EIS) fails to adequately assess the direct and cumulative impacts to globally and regionally important marine species such as the flatback turtle (*Natator depressus*), green turtle (*Chelonia mydas*), Snubfin dolphin (*Orcaella Heinsohnii)* and Indo-Pacific Humpback dolphin (*Sousa Chinensis*) associated with the Curtis Islands and the Gladstone Region.

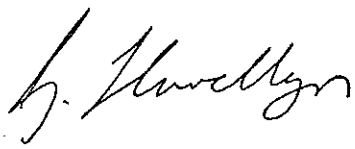
- 8 million cubic meters of sediment planned to be dredged to allow for a Materials Offloading Facility (equivalent to the entire annual sediment flow onto the Great Barrier Reef) - it is WWF-Australia's view that the EIS fails to adequately assess the risk from dredging and sedimentation on the marine benthic community and coastal and nearshore habitats, including appropriate modeling.

- Long term research and monitoring is recommended to adequately assess they status of key marine species in the area including distribution, abundance, movement patterns and genetic structure. Further consideration of the EIS should be postponed for at least an additional six – twelve months to allow this important information to be integrated and risk assessments revised based on current concerns.

- Overall there are a number of other proposed industrial development projects planned for the Gladstone port region, including Curtis Island. WWF-Australia recommends that an overarching Strategic Environmental and Cumulative Impact Assessment is developed to adequately address cumulative impacts.

Please do not hesitate to contact Ghislaine Llewellyn 0406380801 and Lydia Gibson on 0406382498 to discuss any matters we have raised in this submission.

Yours sincerely



Dr Ghislaine Llewellyn
Manager of Conservation Programs

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- **Light** during construction and operation is likely to cause flatback turtle hatchling disorientation in nesting beaches. This poses a risk through disorientation of hatchlings, potential disorientation with respect to their return to their natal nesting beach as adults, and potentially increased predation of hatchlings. With respect to risks associated with light pollution Section 8.4.6.4 of the EIS states '*that construction activities will occur on the port side of Curtis Island, as the nearest turtle nesting beach is on the seaward side of Curtis Island – no impacts on turtle nesting is expected'*. However with this Hodges and colleagues (2007) have shown light induced disorientation to occur even when the light source is 18km away from the nearest nesting site[6]. Therefore whilst EIS underscores the risks associated with light pollution it does not adequately attempt to mitigate the potential impacts from the proposed development when fully operational.

- **Underwater noise** associated with the construction, possible blasting and on-going operation of the proposed Development is likely to affect the dolphin, dugong and flatback turtle nesting population and foraging individuals[7] using the anticipated result as reduced nesting frequency. The Narrows and Calliope River have been identified as major foraging areas for Green Turtles, the noise and seabed disturbance associated with laying the gas transmission pipeline and developing the LNG facility is likely impact this behaviour[6]. This stressor and its impact have not been adequately addressed in the documentation and studies.

1.2 Inshore Dolphins

The GLNG EIS specifies records of mortalities and stranding data to indicate the potential presence of the rare and unique Australian Snubfin Dolphin *(Orcaella Heinsohnii)* and Indo-Pacific Humpback Dolphin *(Sousa Chinensis)* in Port Curtis.[8] However, WWF-Australia's understanding is that a long-term research project is under way to examine isolated dolphin populations along Queensland Coast, including the Gladstone/Curtis Island region. The project is being led by Daniele Cagnazzi, a PhD student with Southern Cross University's Whale and preliminary results could indicate a number of small, isolated populations of humpback and snubfin dolphins along the Queensland Coast are facing the real threat of extinction. [9]

In 2008 The World Conservation Union (IUCN) Redlist of Threatened Species upgraded the status of both Snubfin and Indo-Pacific Humpback dolphins to "Near Threatened".[10]

---

[6] Hodges et al (2007). Cited from http://www.environment.gov.au/cgi-bin/sprat/public/publicspecies.pl?taxon_id=59257

[7] Samuel, Y; Morreale, SJ; Clark, CW; Greene, CH; Richmond, ME , 2005. Underwater, low-frequency noise in a coastal sea turtle habitat. *J. Acoust.Soc. Am.*.Vol. 117, no. 3, pt. 1, pp. 1465-1472.

[8] Santos Ltd (2009). Section 8.4.37

[9] http://discover.scu.edu.au/2008/issue4/index.php/5/

[10] IUCN Red List (2008). Sourced http://www.iucnredlist.org/details/136315/0/full

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Submission on the Gladstone Liquefied Natural Gas Project

This submission focuses on the potential impacts of the proposed development on key marine species (marine turtles & inshore dolphins).

1. Impacts on Key Marine species

It is WWF-Australia's view that the Environmental Impact Statement fails to adequately assess direct and cumulative impacts on globally and regionally important key marine species including marine turtles (*Natator depressus* & *Chelonia mydas*) and inshore dolphins (*Orcaella Heinsohnii* & *Sousa Chinensis)* populations associated with the Curtis Islands.

1.1 Marine Turtles

Six of world's seven marine turtles are known to occur in Port Curtis[1], including the Leatherback turtle (*Dermochelys coriacea)* which has recently been uplisted from vulnerable to endangered status under the Environmental Protection and Biodiversity Conservation Act 1999 (the EPBC Act)[2] and is facing imminent extinction globally. The Curtis Islands have also been identified as home to one of the major eastern Australian breeding aggregations for the globally and regionally important flatback turtle (*Natator depressus)*[3] and occasional nesting sites of Green Turtles (*Chelonia mydas)* and Loggerhead turtles (*Caretta caretta).* [4]

WWF-Australia assesses the risk to the collective Curtis Island marine turtle nesting and foraging populations as ***major*** (local, long-term or widespread, short-term impact leads to loss of local population/s and reduced viability) and ***likely***.

WWF-Australia assesses the major stressors as....

- **Habitat degradation, sedimentation and physical disturbance,** is an **almost certain major impact** on the marine turtles known nest and forage in the area (e.g. *Natator depressus & Chelonia Mydas).* It is proposed that 8 million cubic meters of sediment will be dredged to accommodate a Materials Offloading Facility. This is equivalent to the entire annual sediment flow into the Great Barrier Reef [5] and is therefore likely to alter the basin to mainly soft sediments and silts. These impacts alongside the associated construction of the bridge, road and service corridor to Curtis Island and its frequent use by large vessels represents a significant impact, particularly on the foraging habitat of the marine turtles.

---

[1] Santos Ltd (2009). Marine Turtles in Port Curtis. Table 8.4.4.
[2] Ministerial media release (18th July 2009) http://www.environment.gov.au/minister/garrett/2009/mr20090118.html
[3] Limpus, C.J (2007). A biological review of Australian marine turtle species. 5. Flatback turtle, *Natator depressus* (Garman)
[4] Limpus, C.J & Gilmore, K. (1999). Queensland Turtle Conservation Project, Curtis Island Marine Turtle Nesting Study 1998-1999. Unpublished Report to Gladstone Port Authority and Queensland Parks and Wildlife Service.
[5] Brodie, J. et al (2003) Sources of sediment and nutrient exports to the Great Barrier Reef World Heritage Area Australian Centre for Tropical Freshwater Research, Townsville, Australia, Report No. 03/11

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The GLNG EIS states that '*boat strike, entanglement in fishing gear and incidental capture in QDPI& F shark control nets poses the greatest threats'* to these species in the region.[8] However, WWF-Australia is concerned that we still know very little about the extent to which certain threats pose to key population and subsequently the impacts of habitat destruction and degradation arising from the proposed development is being severely overlooked and inadequately addressed in the EIS.

WWF-Australia assesses the risk to the Snubfin dolphins and Indo-Pacific Humpback Dolphins as ***major*** (local, long-term or widespread, short-term impact leads to loss of local population/s and reduced viability) and ***likely***.

- **Habitat destruction and degradation** Section 8.4.61 states that '*due to the migratory nature of whales, dolphins it is expected that they will not be impacted from increased turbidity or sedimentation generated from capital or maintenance dredging'*. However, WWF- Australia would consider it an **almost certain major impact** based on the current scientific knowledge relating to the Snubfin and Indo-Pacific Dolphins. Both species exhibit preference for the inshore estuarine, mangrove and seagrass environment. Habitat destruction and degradation arising from coastal development such as sedimentation and physical disturbance to these habitats combined with the associated noise and chemical pollution could have a major impact on the species[11]. One of the critical features of the Snubfin dolphin is that they exist in small and highly localised groups, making them particularly vulnerable to site-specific threats.[12] For example, the loss of seven Snubfin dolphins from Ellis beach during the period from 1996-2001 seems to have eliminated this local population.[11]

Conclusions and Recommended Actions

Whilst the EIS identifies '*direct impacts for whales, dolphins dugongs and turtles from vessel movements and general operations through boat strike, entanglement in lines or being captured by suction pressure associated with the dredge head*' The EIS fails to assess the indirect impacts of habitat destruction & degradation and the cumulative impacts of all activities on the long term survival of these key marine species.

WWF-Australia maintains that these risks to a globally and regionally important listed marine species have not been adequately addressed for the proposed development. **On the basis of this level of risk, approval for the proposed development on Curtis Island should be denied.**

---

[11] Ross, G.J.B. (2006) Review of the Conservation Status of Australia's Smaller Whales and Dolphins. Australian Government

[12] Parra et al., (2006) Biological Conservation 129: 167-180

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Long term research and monitoring is recommended to adequately assess they status of key marine species (eg marine turtles, inshore dolphins and dugongs) in the area including distribution, abundance, movement patterns and genetic structure. Further consideration of the EIS should be postponed for at least an additional six –twelve months to allow this important information to be integrated and risk assessments revised based on current concerns.

Overall there are a number of other proposed industrial development projects planned for the Gladstone port region, including Curtis Island. WWF-Australia recommends that an overarching Strategic Environmental and Cumulative Impact Assessment is developed to adequately address cumulative impacts.



Submission 35

Santos | PETRONAS

Gladstone Area Water Board

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NCS INTERNATIONAL CERTIFIED ENVIRONMENTAL MANAGEMENT SYSTEM ISO14001

NCS INTERNATIONAL CERTIFIED QUALITY MANAGEMENT SYSTEM ISO9001

NCS INTERNATIONAL CERTIFIED SAFETY MANAGEMENT SYSTEM AS/NZS 4801

Reply please quote ref: JG

19 August 2009

The Coordinator-General
C/- The EIS Project Manager: Gladstone Liquefied Natural Gas Project
Significant Projects Coordination
Department of Infrastructure and Planning
PO Box 15009 City East QLD 4002

Dear Mr Jensen

Gladstone Liquefied Natural Gas Project – Environmental Impact Statement (GLNGP EIS)

Thank-you for the opportunity to make comment upon the GLNG EIS in accordance with the provisions of the *Sate Development and Public Works Organisation Act (1971).*

I note that GAWB has been provided an extension of 2 days by your office to lodge this submission (ie from 17 to 19 August). GAWB has reviewed the EIS. GAWB's submissions relate to impacts in the Gladstone region including Curtis Island.

1. About GAWB

Gladstone Area Water Board (GAWB) is a Category 1 Water Authority and a registered Service Provider established under the *Water Act (2000)*. It operates as a commercialised statutory authority responsible to the Minister for Natural Resources, Mines and Energy and Minister for Trade. GAWB owns and operates the Awoonga Dam on the Boyne River with a network of delivery pipelines, water treatment plants and other bulk water distribution infrastructure in the Gladstone Region. The main function of GAWB is to carry out bulk water activities in accordance with the requirements of the *Water Act 2000.*

Under the *Boyne River Basin Water Resource Plan*, GAWB has an interim allocation from Awoonga Dam currently set at 70,000 Ml pa. This Allocation increases to 78,000 Ml pa when the dam first reaches its full supply level at EL40m AHD. GAWB is currently committed to supply approximately 50,000 Ml pa.

GAWB's raw and potable water supply network has the capacity to supply additional customers. GAWB understand from the EIS and discussions with the Proponent, that the raw water demand for the operating phase of the project is in the order of 1,000Ml pa. Currently GAWB's network ends at the Fisherman's Landing area, a short distance from the proposed GLNP gas pipeline crossing to Curtis Island (refer to attached drawings of treated and raw water delivery systems).

2. Consultation

Representatives from GAWB have met with representatives of the Project's Proponent on a few occasions in the last twelve months, but most relevantly on 15 July 2009.

At this meeting:

- GAWB noted that the EIS detailed how the water needs of the Project, potentially both in construction and operation, were intended to be met by an on-site desalination facility; [1]

[1] See sections 3.8.2.6 for Construction Water Supply and 3.8.3.9 for Operational Water Supply.

- GAWB noted that there appeared on the face of the EIS document no analysis of the comparative environmental or economic benefit that would accrue to the Project and the Gladstone Region from accessing GAWB's water supply network; and
- It was agreed that further work be undertaken by the proponent and supplied to GAWB, to better understand these matters to inform subsequent meeting/s, but also to assist GAWB in the drafting of this submission.

This work has not yet been supplied to GAWB.

3. Key Issues of Concern

Without the benefit of additional data or analysis, GAWB is concerned that the following matters have not been adequately assessed:

3.1. Environmental Impact – a fresh water source would be expected to have a much reduced environmental impact than a desalination facility for the following reasons:

3.1.1. The provision of raw water from GAWB's distribution network will require substantially less energy than the operation of desalination plant over the life of the asset. This would reduce the impact associated with the release of greenhouse gas emissions.

3.1.2. The Proponent advises that brine (reverse osmosis concentrate) will be discharged into Port Curtis Bay due as a consequence of the operation of the proposed desalination facility. It concludes, however, that this discharge will be dissipated by tidal flow such that no detectable changes in water quality will accrue. This is based upon its hydrodynamic modelling.[2]

3.1.3. GAWB would submit the provision of raw water from its distribution network will avoid the need to release brine into Port Curtis Bay removing *any* risk of adverse environmental impact.

3.1.4. GAWB would further submit that in assessing environmental impact of brine release into Port Curtis Bay, consideration should properly be had as to the cumulative effect of the discharge, taking into account other developments that are planned to occur on Curtis Island that will require stand alone desalination facilities and their associated brine discharge.

3.1.5. Further, that in assessing environmental impact of brine discharge into Port Curtis Bay, regard must be had to the impact of such releases over their planned life. The 50 year plan of the Gladstone Ports Corporation forecasts substantial increase in shipping traffic, presumably being associated with growth in unavoidable discharges.

3.1.6. The reduction, where practicable, of unnecessary discharges into Port Curtis Bay is considered most critical when the cumulative impacts of these discharges are assessed over the life of their planned operations. The provision of common user fresh water connection would prevent all such future releases.

3.1.7. Should construction of the pipeline linking the LNG facility with GAWB's existing water delivery network occur concurrently with the works associated with the crossing of the gas pipeline of Port Curtis Bay and the construction of the road on Curtis Island, there should be virtually no additional environmental impact associated with the provision of this connection.

---

[2] See 8.7.4.6

3.2. Economic Impact – the provision of water from GAWB's existing network would be likely, in the absence of further analysis, to represent the least cost method to provide for the water needs of Curtis Island to support sustainable economic development in the region:

3.2.1. A 'once-off' opportunity to minimise the cost of constructing the pipeline linking Curtis Island with GAWB's existing water delivery network would occur at the time the gas pipeline is being constructed. An example of the cost savings is the incremental cost associated with the crossing of Port Curtis Bay. This connection to GAWB's network could then serve all future development on Curtis Island into the future.

3.2.2. GAWB's commercial framework, based upon recommendations of the independent economic regulator (the Queensland Competition Authority), has its cost of operations being recovered in its prices from all of its customers. These prices are determined for the provision of the water source on a postage stamp basis and for the delivery (and optional treatment) of water on a linear nodal basis.

3.2.3. In general terms, the greater the utilisation of GAWB's assets (ie aggregate demand) the lower the unit price to all customers.

3.2.4. The delivery of a fresh water supply to Curtis Island would require expenditure upon an extension of GAWB's existing pipeline network and (most likely) the construction of an additional pump station and reservoir. In the absence of detailed analysis, GAWB believes that the Capital Expenditure related to these works would be of a comparable level to the expenditure required to construct the desalination plant proposed by the Proponent to meet its operational needs.

3.2.5. GAWB believes that the operational expenditure related to the provision of a fresh water source to be significantly lower than that which is required to operate a desalination facility.

3.2.6. Importantly, the recovery of expenditure necessary to provide a fresh water supply to Curtis Island will be capable of being spread across all users, using a 20 year planning horizon. This is to be contrasted with stand alone desalination facility that is not proposed (nor capable) to share costs between users, resulting in duplication of such facilities by subsequent proponents, which is economically inefficient and avoidable.

4. Connection to GAWB's Network

GAWB understands that the Proponent's water requirements are approximately 1,000Ml pa and that the other projects that are currently proposed for Curtis Island would independently have similar requirements. GAWB's allocation of 70,000Ml pa, of which some 50,000 Ml pa is committed by supply agreement, allows sufficient allocation (circa 20,000Ml pa) available to meet all projects planned for Curtis Island.

GAWB's raw and potable water distribution network ends at Fisherman's Landing area, only a short distance from the proposed GLNP pipeline crossing (refer to URS figure ES4, attached). GAWB's raw and potable water networks have capacity to supply Curtis Island customers from this point.

GAWB has discussed with the Proponent, at a concept level, the following works that would be required to connect is water delivery network to Curtis Island:

- Upgrading the existing Boat Creek Pump Station to provide sufficient pressure to transport water to a reservoir on Curtis Island;
- Construct raw and/or potable pipeline to reservoir/reservoirs on Curtis Island;

- Install a pipeline/pipelines within the GLNP trench across the Narrows to Curtis Island;
- From the reservoir/s on Curtis Island distribute water to GLNP and other customers.

The existence of a connecting pipeline to Curtis Island would have the additional benefit to GAWB, if at some future point it chooses to construct a desalination facility. A desalination facility on the eastern (ocean) side of Curtis Island has been assessed by GAWB as being superior from a water quality perspective (both in take and out take) than sites on the mainland or the western side of Curtis Island.

5. Conclusion

As noted earlier, there exists a 'once-off' opportunity to minimise the (economic and environmental) cost of constructing the pipeline linking Curtis Island with GAWB's existing water delivery network, by aligning its construction with the construction activities of the Proponent (especially the crossing of the Narrows).

GAWB believes that the connection of Curtis Island to its existing water network would produce:

- A lower adverse environmental impact for the Project than by the operation of a stand-alone desalination plant;
- A much lower aggregate adverse environmental impact on Curtis Island, having regard to the impact of the operation of multiple stand-alone desalination plants;
- In the absence of detailed analysis, the likelihood of a lower cost to the Proponent; and
- The likelihood of substantial cost savings achievable by the utilisation of common user infrastructure to meet the future water needs of Curtis Island, supporting sustainable economic development in the region.

Accordingly, it is submitted that there is merit in the Proponent (in consultation with GAWB) producing an analysis of the comparative environmental and economic impact should it meet its water supply requirements (both construction and operation) from GAWB's water supply network, as opposed to from a stand-alone desalination facility.

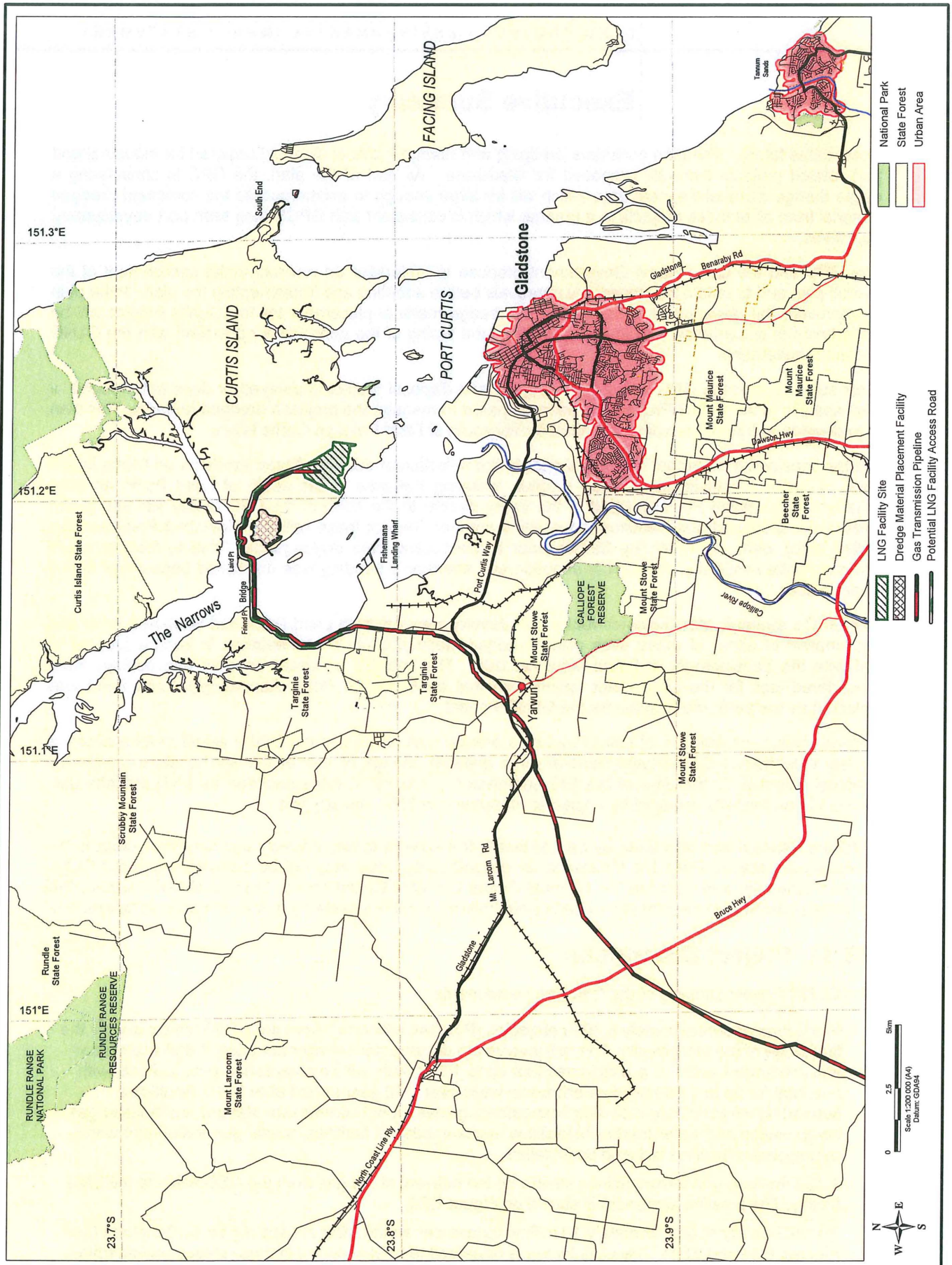
If you have any questions in relation to GAWB's position on these issues, please contact me on 07 4976 3050.

Yours faithfully

For M. Lund.

Jim Grayson

Chief Executive Officer



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Client	Project	Title
URS	GLADSTONE LNG PROJECT ENVIRONMENTAL IMPACT STATEMENT	**GLADSTONE REGION**

Drawn: CA	Approved: JB	Date: 12-03-2009	Figure: **ES4**	Rev:A
Job No: **4262 6220**	File No: 42626220-g-1034.wor			**A4**

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Fishermans Landing Pipeline

Boat Creek Pump Station

Mount Larcom

Gladstone - Mt Larcom Rd

GPA

Gladstone

ORICA

Yarwun WTP

To Mt Larcom

East End Reservoir

MT.Miller 50ML Reservoir

NRG

Gladstone WTP

East End Mine Site (QCL)

Bruce Hwy

Larcom Creek

South Gladstone Reservoir

South Gladstone Booster Station

Boyne Is.

South Gladstone to Toolooa

To Boyne Reservoir

Tannum Sands

Calliope River

Calliope Pump Station

Benaraby Pump Station

Dawson Hwy

Calliope

Golegumma Reservoir

Gladstone - Monto Rd

Bruce Hwy

Pump Station Supply

Recreation Area Supply

Awoonga

LEGEND

- Treated Pipeline
- Treated Infrastructure
- 40m FSL
- Road Reserves
- Waterways

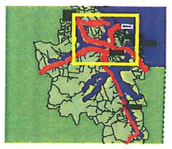
N

SCALE

0 2 4

Kilometers

LOCALITY



Compiled by Wayne Boyd
Date 17 August 2005

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GLADSTONE AREA WATER BOARD

GLADSTONE AREA WATER BOARD
TREATED WATER DELIVERY SYSTEMS

Stuart Oil Shale Project

QCL Plant

450 Dia. Pipeline

Serrant Rd Main

100 Dia. Pipeline

500 Dia Pipeline

COMALCO (CAR)

300 Dia Main

Gladstone

375 Dia Main

50ML Reservoir

16ML Reservoir

600 Dia pipe

To QAL

375 Dia Pipe

Toolooa to Mt Miller Main

Boyne Is.

Toolooa Reservoir (50ML)
& Future WTP Site

To: BSL Plant

Calliope River

Calliope

1440 Dia Main

Callide Pipeline (Sun Water)

700 Dia Main

Gladstone - Monto Rd

Awoonga Pump Station

Awoonga Dam

Legend

- 40m FSL
- Road Reserves
- Waterways
- Raw Water Infrastructure

N

0 2 4

Kilometers

SCALE =

Printed by: Wayne Boyd
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PROJECTION
UTM Zone 56 (Datum GDA94)

GLADSTONE AREA WATER BOARD

Gladstone Area Water Board

Raw Water Infrastructure

Submission 36

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A BG Group business

18 August 2009

The Coordinator-General
C/-EIS Project Manager: GLNG Santos
Significant Projects Coordination
Department of Infrastructure and Planning
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By Email: SantosLNG@dip.qld.gov.au

Dear Sir

Comments on GLNG Project Draft Environmental Impact Assessment

QGC Limited (QGC), operator of the Queensland Curtis LNG Project (QC LNG), welcomes the opportunity to comment on the GLNG Project Draft Environmental Impact Assessment (GLNG EIS).

We provide the following general and specific comments on the GLNG EIS below.

GENERAL COMMENTS

Strategic development of LNG Industry

1) QGC supports the strategic development of a major CSG-to-LNG industry in Queensland. Our analysis, which is supported in the GLNG EIS, indicates significant potential demand in Pacific Basin LNG markets, particularly for those projects which can supply LNG commencing between 2012 and 2015. We also believe that Queensland faces considerable competition for this uncontracted demand from projects under development or in advanced planning in Western Australia, the Northern Territory and competing countries.

2) The GLNG Project along with the QC LNG Project are currently the only two projects of the several proposed for Queensland with significant LNG supply contracts in a market where new LNG contracts are increasingly harder to secure. QGC believes that these two projects represent the most commercially advanced and engineered projects of the several that have been proposed in Queensland. The GLNG and QC LNG projects are in the best position to proceed and to meet the critical LNG supply window identified for uncontracted LNG demand.

Cumulative Impacts

3) As indicated above, QGC believes that the most likely cumulative development scenario for the Gladstone-based CSG-to-LNG projects is the concurrent construction and operation of the GLNG and QC LNG projects. Therefore, realistic cumulative environmental impact assessment should be focussed on the potential development of these two projects involving construction of gas field infrastructure, pipelines, LNG plants and ancillary infrastructure in Queensland between 2011 and 2015.

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4) QGC notes the recent release of the Draft Port of Gladstone Western Basin Master Plan (August 2009) and Development Scheme for the Callide Infrastructure Corridor State Development Area (June 2009). We believe that these two significant documents contain certain assumptions regarding the rate and scale of the LNG industry in Queensland which are not consistent with QGC's analysis of the LNG market opportunities available. We also note that these planning documents have the potential to significantly affect the location of infrastructure for the GLNG and QC LNG projects, the assessment of their individual and cumulative impacts, and development outcomes.

SPECIFIC COMMENTS

LNG Plant Development – CAF on Curtis Island

5) QGC notes that GLNG's preferred option for a Construction Accommodation Facility (CAF) is to develop one on Curtis Island. GLNG has indicated "that there are good town planning, environmental, safety and security reasons to establish the CAF on Curtis Island as opposed to other alternatives." QGC supports the view that the best location for CAFs associated with Curtis Island LNG facilities is on Curtis Island.

LNG Plant Development – LNG Jetty Location

6) QGC notes that the location of the GLNG Project LNG load-out jetty appears to have been moved further north on the site than that detailed during shipping operations simulation work by QC LNG, GLNG and Gladstone Ports Corporation earlier this year. QGC is concerned that the acceptable quantitative risk assessment (QRA) risk contours may exceed the GLNG site boundaries and potentially impinge on the QC LNG site.

LNG Plant Development – Marine Transportation Option

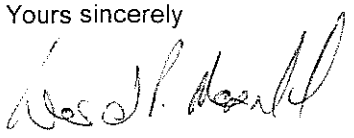
7) QGC notes that GLNG has indicated its preferred option for access to Curtis Island during construction and operation is via development of marine transportation operations between Gladstone and the island. QGC supports this view on the relative benefits and disadvantages of marine transportation versus construction and operation of a bridge.

LNG Plant Development – Dredged Material Placement

8) QGC note that GLNG has proposed to place dredge spoil on Laird Point on Curtis Island. This disposal option involves pipelines either traversing the QC LNG Project LNG Facility site or the marine areas directly in front of the QC LNG site. QGC believes that these options would potentially interfere with QGC's proposed development works which are proposed within the same timeframe as the GLNG Project.

We thank you for the opportunity to comment on the GLNG Project EIS. We will be very happy to discuss further any aspect of the EIS or any questions arising from this letter.

Yours sincerely



David P. Maxwell
Senior Vice President

Cc: Rick Wilkinson, Santos



Submission 37

Santos | PETRONAS

RECEIVED
20 AUG 2007

18th August 2009

The Coordinator General
C/- EIS Project Manager: Gladstone (LNG) Santos
Significant Projects Coordination
Department of Infrastructure and Planning
PO Box 15009
CITY EAST Q 4002

Dear EIS Project Manager

SAFETY ISSUES ATTACHED TO GLADSTONE LNG PROJECT (SANTOS AND PETRONAS)

On the morning of Tuesday 18th August 2009 I made a verbal presentation to the Gladstone Regional Council and tabled the attached letter (including attachments) with Council for their consideration and response.

The Council CEO suggested that notwithstanding the closure of submissions to the Santos EIS, I should forward the attached letter (including attachments) to the Office of the Coordinator General for consideration and appropriate action.

Please do not hesitate to contact the writer should you require any additional information.

Yours faithfully

Copy: Mr Graeme Kanofski, CEO, Gladstone Regional Council

17th August 2009

Councillors
Gladstone Regional Council
C/- Mr Graeme Kanofski
Chief Executive Officer
Gladstone Regional Council
101 Goondoon Street
GLADSTONE Q 4680

Dear Mayor and Councillors

RE: REQUEST FOR COUNCIL TO COMMISSION AN INDEPENDENT STUDY ON "WORST CASE" SCENARIO FROM AN LNG SHIPPING INCIDENT ADJACENT TO (A) THE CITY OF GLADSTONE, AND (B) ALL OTHER POINTS ALONG THE GLADSTONE HARBOUR SHIPPING CHANNEL

Please find attached, for your information, a copy of the following documents:

1. Resolution offered by Boston (USA) City Councillors dated 12.07.06 that "the City Council joins Mayor Menino in expressing its deep concern over LNG tankers in the Boston Harbour." (Attachment 1).

2. Resolution by the Council of the City of Philadelphia (USA) dated 16.02.06 expressing "its unqualified opposition to any project that would create an LNG shipping terminal within the city of Philadelphia". (Attachment 2)

3. Paper "Liquefied Natural Gas: A Potential Terrorist Target?" updated 27.02.06. Page 2 refers to report by a firm "Good Harbor Consulting" on the proposed LNG terminal in Providence Rhode Island that predicts a successful terrorist attack on a tanker "could result in as many as 8,000 deaths and upwards of 20,000 injuries" (worst case scenario). (Attachment 3)

4. Resolution by the Rhode Island Emergency Management Advisory Council (USA) dated 10.05.05 "opposing expansion of the KeySpan LNG terminal in Providence, RI and the creation of a terminal in Fall River, MA." (Attachment 4)

5. Boston Globe (USA) article dated 21.12.04 "Study spells out high toll on city in LNG attack". This article also refers to the opposition of the Boston Mayor to LNG tankers in Boston Harbour. (Attachment 5)

6. Paper "Spills and Fires from LNG tankers in Fall River (MA)" by Professor James A FAY, Massachusetts Institute of Technology, dated 26.08.03. This paper sets out the dangers of LNG shipping close to urban areas. (Attachment 6)

Having regard to the above, which recognises that other Councils are trying to protect their residents from potential deaths, injuries and property damage from LNG terminals and shipping, it is requested that the Gladstone Regional Council:

1. Request copies of any existing studies of worst case scenario arising from an LNG shipping/ plant incident adjacent to (a) the city of Gladstone, and (b) all other points along the Gladstone Harbour Shipping Channel, and make a copy of those studies available to the ratepayers and residents of Gladstone. These studies have presumably already been done by the Australian Maritime Safety Authority, the Gladstone Ports Corporation, the Queensland Government, etc.

2. Commission an independent expert study to identify the worst case scenario arising from an LNG shipping/ plant incident adjacent to (a) the city of Gladstone, and (b) all other points along the Gladstone Harbour Shipping Channel, and

3. Communicate the outcomes of this independent expert study to the ratepayers and residents of Gladstone.

Yours faithfully

Copy: The Gladstone Observer
The Australian.
The Courier Mail
ABC News
WIN TV News
Four Corners

(1)

Search the City Council Meeting Minutes

search again

A regular meeting of the City Council of the City of Boston was held in the Christopher A. Iannella Chamber, City Hall at 11:45 on Wednesday, July 12, 2006

Councilors Present: President Flaherty in the Chair- Absent Councilors Arroyo and Kelly.

Clergy: The meeting was opened with a moment of silence and the pledge of allegiance to the flag.

The following were received:

Docket	Short Description
0918	Message and order authorizing the Police Commissioner to accept and expend a grant of $3,000.00 from the Massachusetts Department of Public Health, for the purposes of collecting and reporting data. On motion of President Flaherty, the rules were suspended; the order was passed.
0919	Notice was received from the City Clerk in accordance with Chapter 6 of the Ordinances of 1979 re: actions taken by the Mayor on papers acted upon by the City Council at its meeting on June 7, 2006. Placed on file.
0920	Notice was received from the City Clerk in accordance with Chapter 6 of the Ordinances of 1979 re: actions taken by the Mayor on papers acted upon by the City Council at its meeting on June 21, 2006. Placed on file.
0921	Councilor Tobin offered the following: Order for a hearing to discuss the feasibility of implementing a program re: hundreds of cases each year of fire extinguishers vandalized and misused in public schools. Referred to the Committee on Public Safety.
0922	Councilor Flaherty for Councilor Murphy offered the following: Order for the appointment of temporary employees Bernadette Lally, Seth Andrea McCoy and Thomas M. McDonough in City Council. Passed under suspension of the rules.
0923	Councilor Flaherty for Councilor LaMattina offered the following: Order for the appointment of temporary employee John J. Sepulveda in City Council. Passed under suspension of the rules.
0924	Councilors Ross and McDermott offered the following: Order for a hearing to discuss the safety of rooftops within the City. Referred to the Committee on City and Neighborhood Services.
0925	Councilors Murphy, Feeney, Kelly, LaMattina, McDermott and Yoon offered the following: Resolution that the City Council joins Mayor Menino in expressing its deep concern over LNG tankers in the Boston Harbor. Referred to the Committee on Public Safety.
0926	Councilors Murphy, Feeney, Ross, Yoon, Consalvo and Turner offered the following: Resolution that the City Council urges the Speaker of the House Dimasi, President of the Senate Travaglini and other legislative leaders to secure passage of H.4127, in addition to H.3167, in time to save High Point Village as affordable housing. Referred to the Committee on Housing.
0934	The Chair stated that, in absence of objection, 3 late-filed matters would be added to the Agenda. No objection being heard, the following matters were added: Councilors Turner, McDermott, Ross, Yancey, Tobin, Yoon, Flaherty and Murphy offered the following: Order for a hearing to discuss the planning to prevent terrorist attacks on shipments to and from the Bio 4 Laboratory. Councilor Ross in the Chair. President Flaherty in the Chair. Councilor Yancey offered a friendly amendment that the Boston Transportation Department and Emergency Medical Services be invited to attend hearing. Councilor Murphy suggested the NIH also be invited. Councilor Turner accepted the friendly amendments. Referred to the Committee on Public Safety.
0935	Councilor Turner and Yancey offered the following: Order for a hearing to discuss the effect of the State Budget on revenues available to Boston. Referred to the Committee on Ways and Means.
0936	Councilor Flaherty for Councilor Ross offered the following: Order for the appointment of temporary employee Sita M. Smith in City Council. Passed under suspension of the rules.
0843	Councilor Consalvo called Docket #0843, message and order approving a supplemental appropriation of $5,126,049.00 for School Department FY06 to cover the increased cost of utilities during FY06, from the Committee on Ways and Means. No objection being heard, the matter was before the body. On motion of Councilor Consalvo, the rules were

suspended; the order was passed; yeas 11, nays 0. Absent or not voting Councilor Arroyo and Kelly.

0844 Councilor Consalvo called Docket #0844, message and order approving a supplemental appropriation of $6,180,240.00 for nine departments FY06 to cover the increased cost of energy during FY06, from the Committee on Ways and Means. No objection being heard, the matter was before the body. On motion of Councilor Consalvo, the rules were suspended; the order was passed; yeas 11, nays 0. Absent or not voting Councilor Arroyo and Kelly.

0927 The Chair moved adoption of a Consent Agenda containing the following matters: Councilor Consalvo offered the following:Resolution congratulating Gareth P. Kinkead. Jr.

0928 Councilor Arroyo offered the following:Resolution congratulating Lic. Veronica Grajeda.

0929 Councilor Tobin offered the followingResolution congratulating Margaret McKenna.

0930 Councilor Yancey offered the following:Resolution congratulating Winston-Woodward Family Reunion.

0931 Resolution congratulating Jonathan King.

0932 Resolution congratulating Louis D. Brown Institute.

0933 Councilor Feeney offered the following:Resolution congratulating Christopher Doiron. The matters contained within the Consent Agenda were severally adopted. President Flaherty moved the when the Council adjourn today, in memory of his grandmother Peg McGlone on her 13th anniversary, Kay Whalen, Melana DaValle, Danny Katowski, Ernesto R. Whittington, Marie Espanza LaCoste, to meet again on Wednesday August 2, 2006 at 11:30 p.m. The motion was carried. Adjourned at 1:00 p.m., to meet again on Wednesday August 2, 2006 at 11:30 a.m. The papers acted upon at the foregoing meeting of the City Council, which contain action requiring the approval of the Mayor, were deposited in the Mayor&#65533;s Office on July 14, 2006. Attest: Rosaria Salerno City Clerk

(2)

http://www.actionpa.org/lng/

RESOLUTION

Memorializing Council's opposition to the proposed project to expand PGW's Port Richmond liquefied natural gas (LNG) facility into an import terminal facility, and expressing Council's intention not to enact any legislation needed to implement that project, and further expressing Council's unqualified opposition to any project that would create an LNG shipping terminal within the City of Philadelphia or that would cause loaded LNG tankers to regularly traverse the Delaware River alongside the City of Philadelphia.

WHEREAS, The Philadelphia Gas Works (PGW) has issued Requests for Proposals for a project that would expand PGW's Port Richmond liquefied natural gas (LNG) facility into an import terminal facility that would receive regular shipments of LNG from tankers that would traverse the Delaware River all along its Philadelphia frontage; and

WHEREAS, The potential risk created by terrorists targeting LNG shipments has been well documented. The Sandia National Laboratories, in a report entitled "Guidance on Risk Analysis and Safety Implications of a Large Liquefied Natural Gas (LNG) Spill Over Water," concluded that a terrorist attack on a LNG tanker, in the worst case scenario, could cause second-degree burns to people more than a mile away from the tanker. Further, a report issued in May 2005 by national security analyst Richard Clarke, at the request of Rhode Island Attorney General Patrick Lynch, concluded that such a terrorist attack was consistent with the demonstrated intent and capability of known terrorist organizations; that there "is also a basis to judge that likely enhanced security measures would not significantly reduce the risk," and that there is "significant grounds to conclude that a high risk exists of catastrophic damage from the types of attacks terrorists are capable of mounting"; and

WHEREAS, It is difficult to imagine a worse location for an LNG shipping terminal than Port Richmond. The proposed terminal would require loaded LNG tankers, on a regular basis, to travel along the Delaware River close to areas of high population density, close to the Philadelphia International Airport, close to refineries, close to the professional sports stadiums and the large crowds those stadiums attract, close to Center City Philadelphia, and close to the housing, commercial and institutional development the City of Philadelphia and the City of Camden have attracted and seek to attract to their waterfronts; and

WHEREAS, While a successful terrorist attack on an LNG tanker or an LNG shipping facility may never occur, the reality in the post-9/11 world is that if the Port Richmond LNG shipping terminal is built, the City and the region will need to incur extraordinary expenses to prevent terrorist attacks and to be ready to respond to the unimaginable should preventive measures fail; and

WHEREAS, It is difficult to believe that the City could successfully transfer all the current and future costs of preventing and responding to a terrorist attack to a private developer. Moreover, the people of the City and the region will incur non-financial costs that can never be compensated, from the inconvenience created by regular bridge

closures (as is done for LNG facilities in other areas), to living with the knowledge that regular LNG shipments are an inviting target for terrorists; and

WHEREAS, There are four LNG terminals in the continental United States, the closest being Everett, Massachusetts, a suburb of Boston, which has similar demographics to Philadelphia. It costs the City of Boston approximately $80,000 every time makes a trip to its harbor. Once a tanker enters the harbor, the Coast Guard maintains command and control. The state Police and Boston Police Department as well as agents from the Massachusetts Environmental Police meet the LNG tanker for escort. A state police helicopter hovers above the LNG tanker and all bridge and maritime traffic cease. Flights must also be redirected to and from the airport; and

WHEREAS, Boston PD is forced to take regular patrol units out of service and place them alongside the shoreline for added security. Prior to the tanker's arrival at the import terminal, a team of nine state police dive the pier and adjacent waters. While the ship is in port, both the state and city police maintain a 24-hour detail inside the LNG import facility and its surrounding area; and

WHEREAS, Unlike other municipalities, which are preempted from regulating LNG shipments and are at the mercy of federal regulators who will decide whether LNG projects will be built in their areas, the City of Philadelphia is in the unique and enviable position, as proprietor of the Gas Works and owner of the Port Richmond facility, to say "no" to LNG tankers sailing up the Delaware River and unloading in Port Richmond; now, therefore,

RESOLVED, BY THE COUNCIL OF THE CITY OF PHILADELPHIA,

THAT The Council hereby memorializes its opposition to the proposed project to expand PGW's Port Richmond LNG facility into an import terminal facility, and expresses its intention not to enact any legislation needed to implement that project.

FURTHER RESOLVED, THAT the Council expresses its unqualified opposition to any project that would create an LNG shipping terminal within the City of Philadelphia, or that would cause loaded LNG tankers to regularly traverse the Delaware River alongside the City of Philadelphia.

February 16, 2006

JOAN L. KRAJEWSKI
6TH DISTRICT

FRANK DICICCO
1ST DISTRICT

ANNA C. VERNA
2ND DISTRICT

http://www.cfr.org/publication/9810/

Liquefied Natural Gas: A Potential Terrorist Target?

Author: Eben Kaplan

Updated: February 27, 2006

- What is Liquefied Natural Gas (LNG)?
- Is LNG safe?
- Are LNG ships and terminals potential terrorist targets?
- What safety precautions are taken to prevent such attacks?
- What are the security implications of the rising demand for LNG?
- Where do LNG shipments arrive in the United States?
- Where does most natural gas come from?

What is Liquefied Natural Gas (LNG)?

When natural gas is cooled to -260°F, it condenses into a liquid. In this liquid state, natural gas can be shipped and stored in large quantities via refrigerated tankers before being converted back into gas and distributed through pipelines. In the absence of a pipeline, the only way natural gas can be shipped is in this liquid form. Such shipments are likely to increase: According to the Energy Information Administration, global natural gas consumption is expected to increase 70 percent from 2002 to 2025. Over the same time frame, natural-gas consumption in China is expected to more than quintuple. Today nearly a quarter of U.S. energy comes from natural gas, and within twenty years it could be responsible for as much as one third of American energy consumption. The percentage of liquefied gas imports to the United States is expected to rise sharply in that period.

Is LNG safe?

In the absence of foul play, LNG is quite safe. Over four decades, the U.S. LNG industry has operated without incident, the tankers that transport LNG have safely logged more than 100 million miles over 45,000 voyages.

Natural gas is at least 90 percent methane, which is combustible. Though in its liquid state natural gas is not explosive, spilled LNG will quickly evaporate, forming a vapor cloud, which if ignited can be very dangerous. Yet the likelihood of this happening is somewhat remote: In order to for a vapor cloud to combust the gas-to-air mixture must be within the narrow window of 5 percent to 15 percent. Furthermore, the vapor is lighter than air, and in the absence of an ignition source, it will simply rise and dissipate. Under windy conditions, which frequently exist on the waters where LNG tankers sail, the likelihood of such a cloud forming is further lessened. Nevertheless, should one of these

vapor clouds catch fire, the results could be catastrophic, says James Fay, professor emeritus at the Massachusetts Institute of Technology [MIT]. Describing one scenario, he says that a hole in an LNG tanker could result in liquid leaking out of the storage vessel faster than it would burn off, resulting in an expanding "pool fire." A 2004 study by the Sandia National Laboratory, a division of the Department of Energy, suggests that such a fire would be hot enough to melt steel at distances of 1,200 feet, and could result in second-degree burns on exposed skin a mile away. "This would be bigger than any industrial fire with which we have experience," Fay says. "There's no way to put out that kind of fire." A pool fire will burn until all its fuel is gone, which takes five to eight minutes, but it could ignite a rash of secondary fires on such a large scale that they may cause more damage than the initial blaze.

The only notable LNG accident in the United States occurred in 1944 in Cleveland, Ohio, when a full storage tank burst. The LNG spilled out, quickly evaporated, and ignited, scorching some thirty acres of land and killing 128 people and leaving 225 injured. Since this incident, cold-storage technology has made significant advances, and experts say the likelihood of such an incident repeating itself is remote. In 2004, a boiler at an LNG-production plant in Skikda, Algeria exploded, resulting in a gas leak and a larger secondary explosion and a fire that left two dozen people dead.

Are LNG ships and terminals potential terrorist targets?

Yes, because of LNG's explosive potential, experts say. Al-Qaeda, for example, has specifically cited LNG as a desirable target, says Rob Knake, senior associate at Good Harbor Consulting, LLC, a homeland-security private consulting firm. Pipelines are not as attractive because the flow of gas can quickly be cut off and an explosion easily contained. Terminals make better targets because an attack could result in a massive fire that could potentially kill scores of people. They are also good targets because "if you take out those terminals, you could have a significant disruption [in the U.S. gas supply,]" Knake says.

But an attack on an LNG terminal might not be so damaging. Terminals are equipped with emergency fire detection mechanisms designed to minimize the impact of fires resulting from terrorist attacks or accidents. The most attractive targets are the boats: 1,000-foot tankers with double hulls and specially constructed storage tanks that keep the LNG cold. A report, put out by Good Harbor Consulting assessing the risk of a proposed LNG terminal in Providence, Rhode Island, concluded that a successful terrorist attack on a tanker could result in as many as 8,000 deaths and upwards of 20,000 injuries. It is important to keep in mind that this is the worst case scenario. A report on LNG safety and security by the University of Texas' Center for Energy and Economics explains LNG "tanks require exceptionally large amounts of force to cause damage. Because the amount of energy required to breach containment is so large, in almost all cases the major hazard presented by terrorists is a fire, not an explosion."

The Sandia National Laboratories report assesses four potential ways terrorists may target an LNG tanker and the worst potential outcomes:

- **Ramming:** Terrorists may attempt to drive another vessel into an LNG tanker or to divert a tanker into a stationary object. Unless the tanker is struck at a very high speed or the object striking it is very sharp, it is unlikely that a breach of the hull will occur. However, if such a breach did occur, there is a chance LNG would spill out and cause a massive fire.
- **Triggered Explosion:** Explosives, such as mines, may be placed in the path of an LNG tanker or on the tanker itself. If powerful enough, such an explosion could cause the cargo to spill and ignite.
- **External Attack:** There are several ways terrorists may attempt to assault an LNG tanker. The 2000 U.S.S. Cole attack, in which terrorists detonated explosives after pulling alongside the warship in a small vessel, is often cited as an example of such an attack. Other possible methods of attack include firing missiles or rocket-propelled grenades at a tanker and or air strikes. Tankers are particularly vulnerable as they traverse inland waterways en route to their destinations. The impact of an assault would vary depending on the size and location of the attack, the worst-case scenario being a massive explosion.
- **Hijacking:** The most catastrophic scenario involving an LNG tanker involves terrorists taking control of an LNG tanker, sailing it toward a major population area and detonating the cargo.

What safety precautions are taken to prevent such attacks?

LNG tankers approaching U.S. waters must provide ninety-six hours' notice, allowing the Coast Guard to provide a small flotilla to safely escort the boat to its destination. Added security detail includes local police boats, divers, firefighting tugboats, and a helicopter. Bridges along the tanker's route are closed and nearby airports suspend flights. Any private vessels that drift too close are sternly turned away. Tankers are inspected and screened for explosives before they are allowed to approach land, and tanker crews must pass a security check before being allowed to board the vessels. At LNG terminals, there is also a heavy security presence; access to the terminals is controlled, and security personnel perform regular threat-response drills.

Because of its low cost and high impact, a U.S.S. Cole-style attack remains an important security concern for defense planners. "It's not a difficult thing to do if you're determined to do it," Fay says. "It doesn't require trained experts to evade the Coast Guard." When a passenger jet enters restricted airspace over a nuclear plant, it is the U.S. president, Knake says, who must decide whether to repel the plane with force. Yet when a private craft drifts too close to an LNG tanker, "you could have a petty officer in the Coast Guard making this call," he says.

What are the security implications of the rising demand for LNG?

Simply put, more LNG means more targets, which require more security. Rising demand and economies of scale are likely to put larger quantities of LNG in a single place. Fay expects the size of LNG tankers to double in the coming years, which could make an attack even more catastrophic. As the number of incoming tankers continues to rise, experts question whether the Coast Guard can continue the intimidating display of force

it currently provides for all incoming shipments. According to Stephen Flynn, CFR Senior Fellow for National Security Studies and a retired Coast Guard Officer, the service's fleet of vessels and aircraft ranks among the oldest in the world and have been operating at a far higher tempo since 9/11. The number of emergency repairs and the cost of maintaining this fleet are growing significantly, yet the program to replace them will take an estimated twenty-five years to complete based on the current acquisition budget model. Flynn adds that the time to detect and intercept a rapidly moving small boat in a harbor could be as little as two to three minutes. "A 'bolt-out-of-the-blue' fast boat loaded with explosives and suicide bombers is likely to evade most small Coast Guard patrol crafts, which were designed primarily for safety patrols, not armed combat," he says.

Where do LNG shipments arrive in the United States?

There are currently only five LNG terminals in the United States. Four of these are onshore terminals, located in Everett, Massachusetts; Cove Point, Maryland; Elba Island, Georgia; and Lake Charles, Louisiana. A fifth, offshore terminal is the Gulf Gateway Energy Bridge in the Gulf of Mexico. The Elba Island and Everett terminals are near the population centers of Savannah and Boston, respectively.

These five terminals hardly have the capacity to handle the projected increase in LNG imports, experts say. Thus, there are nearly forty proposals to build new LNG terminals along the coastline of the United States. Most of the proposed terminals are along the Gulf coast, with the remainder located in the Northeast and southern California. Many of the proposed land-based terminals are encountering local opposition over security concerns, and the Federal Energy Regulatory Commission (FERC) expects that as few as a dozen of the proposed terminals will actually be built.

Proximity to market is a major factor in determining the location of new LNG terminals, meaning that many of the proposed terminals would be near large population centers. On-land proposals are reviewed by the FERC with almost no oversight from the Department of Homeland Security. Knake says in terms of security, "we lack any strategic sense of how we should be placing these terminals." Proposals for offshore LNG terminals are reviewed by the Coast Guard, and are generally considered less of a security risk. "Landing LNG tankers far off shore removes the possibility of attacks on the populations," Fay explains.

Where does most natural gas come from?

In 2004, Russia, which holds the world's largest reserves, accounted for nearly 29 percent of world exports. Canada, which accounts for 15 percent of global exports, sends the bulk of its natural gas to the United States via pipelines, which pose less of a security risk than tankers. Forty-five percent of the world's natural gas reserves are found in the Persian Gulf, with Iran, Qatar, Saudi Arabia, and the United Arab Emirates holding the most gas. Of these nations, Qatar, which has a bilateral defense treaty with the United States and enjoys friendly relations with the West, is ramping up its production in an attempt to become a major supplier of natural gas in the years to come.

(4)

RHODE ISLAND EMERGENCY MANAGEMENT ADVISORY COUNCIL

Resolution opposing expansion of the KeySpan LNG Terminal in Providence, RI and the creation of a terminal in Fall River, MA

WHEREAS, KeySpan LNG, L.P. proposes to convert its existing LNG storage tank at Fields Point in Providence to a marine terminal capable of receiving an estimated 50 LNG supertankers each year; and

WHEREAS, KeySpan LNG, L.P. proposes to construct a marine terminal at Weaver's Cove in neighboring Fall River, MA, along with a 50 million gallon storage tank capable of receiving an estimated 70 supertanker shipments each year; and

WHEREAS, the proposed projects are located in urban areas within close proximity of elementary schools, major interstate highways, centers of commerce, residential neighborhoods, or Rhode Island Hospital, the only Level I Trauma Center for southeastern New England; and

WHEREAS, the financial cost of compensating victims and rebuilding damaged or destroyed facilities following a catastrophic attack on an urban LNG facility and/or LNG tanker would likely exceed any insurance carried by the owners and operators of the LNG facility and tanker; and

WHEREAS, an expanded LNG capacity poses a number of substantial environmental concerns, including disruption to ecological systems in Narragansett Bay; and

WHEREAS, a security risk management analysis by Richard A. Clarke found that a terrorist attack on such a terminal is consistent with demonstrated intent and capability and the consequences of a major attack could include fires that would damage homes, hospitals, schools, fuel storage, a chemical plant, and other infrastructure; and

WHEREAS, the passage of LNG terminals and tankers in Narragansett Bay will place serious strains on the State of Rhode Island, including, the disruption of tourism and recreational boating industries, increased traffic caused by bridge closings, effects on the fishing and boating industries, costs to state and local law enforcement, and risks to plans for waterfront development; now be it hereby

RESOLVED that the Rhode Island Emergency Management Advisory Council opposes any expansion of the KeySpan LNG, L.P. terminal in Providence or the creation of a terminal in Fall River due to the extraordinary environmental, economic and public safety concerns associated with proposals in such densely populated urban areas.

Proposed by: Lt. Gov. Charles J. Fogarty, Chairman

Rhode Island Emergency Management Advisory Council

MINUTES

May 10, 2005
2:00 PM
The Rhode Island Emergency Management Headquarters
645 New London Ave. – Cranston, RI

Agenda

I. Call to Order/Attendance

The Chairman called the meeting to order at 2:05 PM. In attendance were:

Representative Raymond E. Gallison, Jr.
Cathy Duquette, HARI
Joe Salter, TSA
William O'Neill, DHS
Steven J. Kenney, Naval Undersea Warfare Center
John Soscia, RIEMA
Albert Tardie, Gov. Commission. on Disabilities
Al Araujo, Pawtucket EMA
Leo Kennedy, Cranston Fire
Audra Dolan VCRI
Peter Popko, USCG
Walter Combs, DOH
Tom Gardner, TSA
Col. Darren Delaney, RISP
Representative Peter Ginaitt
Carolyn Cronin, WPRO
John Jackson, NE Gas Co
Janice McClanaghan, RISEO
Jim Ball, RIDEM
Douglas Brown, RIPTA
James Lanni, RIDPUC

II. Approval of Minutes from March 22, 2005

The chairman requested the approval of the previous meeting minutes from March 22, 2005 pending any corrections. The minutes were approved.

III. Introduction

A. Comments from the Chairman
Lt. Governor Charles J. Fogarty

Chairman Fogarty began the meeting by introducing Attorney General Lynch to discuss the Richard Clarke report on the KeySpan LNG proposal. He acknowledged the Attorney General's hard work to ensure this issue is looked at for what is best not only in terms of energy but public safety, health and welfare as well.

General Centracchio pointed out that federal homeland security funds cannot be used to pay for the cost of any local or state police that would be used as security for the tanker delivery. Representative Ginaitt then asked if it were true that funds were being taken away from smaller cities and rerouted to bigger cities with a greater risk for attacks. General Centracchio confirmed this and stated that RI lost about 37% of funds because it is not considered "high risk." The Attorney General noted that Rhode Island is the second most densely populated state in the nation.

Chairman Fogarty presented a resolution opposing the expansion of the KeySpan facility. A motion was made and seconded, the resolution passed. The United States Coast Guard and the TSA abstained from voting.

II. **End of Season Energy Update** – Janice McClanaghan, *Rhode Island State Energy Office*
Janice McClanaghan reported that heating oil is 50-cents higher than the average last year at this time. RIHEAP program has 26, 697 clients during the last season. Emergency Fuel Program 64,019 households and provided over 5,600 emergency deliverers costing RI $1million. The office is still waiting for legislation on the affordable heating program to be introduced in the House and Senate. They are anticipating high gas and electric shut offs this summer due to the high prices. The Chairman stated he wanted to study closely the issue of shut offs because the State doesn't have the resources to handle the problem on its own.

III. **Domestic Preparedness Subcommittee Update** – John Soscia, *RIEMA*
The DPS met last month regarding the rollout of the FY05 grant process. The state homeland security planning has approximately $10.2 million available for equipment, planning, exercise and training. Approximately $8.2 million of that was set aside for local programs. Approximately $6 million was allocated using a formula to each and every jurisdiction in the state. The remainder was used for local programs such as the state and regional response teams, hospitals, and homeland security initiative. Approximately $970,000 of the state portion will be distributed through a competitive grant process to state level agencies and non-profit agencies. The law enforcement terrorism prevention program, a total of $3.7 million, $2.9 million of which comes out of the 80% that goes to the locals with cooperation of the police chiefs association, commit $2 million to interoperable communications and the 800mhz project. The remaining $900,000 will go to training for law enforcement deterrent, detection and prevention of terrorism programs. $700,000 for state initiatives, distributed through competitive grants to law enforcement agencies at the state level. The citizens core program, at $130,000 will be retained at the state level, there is no minimum pass through to administer and coordinate at the state level citizens core initiatives.

This year the state took a 37% cut in the total grant awarded from $21 million to about $16 million. It is important to note that two additional programs were wrapped under that umbrella. So from 2004-2005, $21 million dropped to closer to $14 million in 2005. The allocations have been made to jurisdictions. The end of April completed a federal requirement to forward initial spending implementation plans to the department of homeland security which indicates where every penny of this money will go and where it will be spent in the next year and a half. Awards will be handed out in the beginning of June.

Chairman Fogarty reiterated a concern that General Centracchio has from the very beginning. Rhode Island has some very real needs and we must increase state funding on top of federal funding.

IV. **Adjournment**
The Lt. Governor motioned to adjourn and the motion was seconded. The meeting adjourned at 3:20 P.M.

IV. **KeySpan LNG Proposal**

A. Attorney General Patrick C. Lynch – Clarke Report
B. Representative Raymond E. Gallison, Jr.

The Attorney General began by thanking the chair and vice-chair for their hard work in helping to make sure that the best and safest decision is made when it comes to the LNG proposal. He then briefly reviewed some of the highlights of the proposal by KeySpan and Richard Clarke's findings.

General Lynch then noted that the Clarke Report is available in its entirety online at (http://www.riag.state.ri.us/LNG_Good%20Harbor2.pdf). He reviewed the path of the LNG tankers up Narragansett Bay to the proposed site. It was noted that the path for the tanker to the Fall River site is 26 miles, 23 miles of which are Rhode Island waters. Sixty percent of the Mount Hope Bay is Rhode Island waters. It is 29 miles up the harbor to Providence. The deliveries will come during both the day and night, the schedule for delivery will be according to high tide. Security must be maintained for the tanker on the way in, on the way out and during the dislodging process, which takes 24 hours. The tankers range from 900-1,000 feet long. Because of the security zone, when the tanker is travelling up the bay, it shuts down the waterway. In comparison, when a tanker goes into Boston, it must travel up a bay of similar width for 6 miles of coastline, compared to 23+ miles for Providence and Fall River. A draft EIS statement has been issued by the Federal Energy Regulatory Commission, the final statement has not yet been released.

Representative Gallison was introduced to share information on the LNG proposal. The Representative noted that former Director of Homeland Security Tom Ridge stated the importance to not provide new targets of opportunity for terrorists. The Coast Guard has already said that they cannot guarantee the safety of the port or the tankers coming up the bay, given the capability of the terrorists. Gangs have now joined with the Al Qaeda network, providing some of the legwork for the terrorist activity. The terrorists have already stated that they want to hit our urban areas, disrupt our economic system, try to disrupt our oil and gas lines, in order to cause major devastation. Clearly, an expansion of the KeySpan facility and the tankers that come along with the expansion provide a new and larger target of opportunity for terrorists. Both the Representative and the Attorney General agreed on the need for LNG, but for it to be delivered in the right place. There are viable alternatives and they need to be explored. The floor was opened up to questions.

Chairman Fogarty asked what the timetable was for FERC's decision on the expansion proposal. The Attorney General said that if he had to pick a number today, that it would be within the next 30 – 60 days. Chairman Fogarty then asked who is responsible for security of the transport and who would be paying for the security. The Attorney General responded that in Everett, the cost is $8,500 - $10,000 for each tanker arriving. FERC has the most authority in who controls the security. Chairman Fogarty asked if an economic disruption analysis has been performed on the KeySpan proposal. The Attorney General responded that there is no hard number that he knows of, but that it is a good idea because of the future potential for development.

General Centracchio stated that in emergency planning and homeland security, you must assume that the possibility is 100% that you could have a catastrophic scenario. As our resources stand today, the security necessary for such a facility requires an inordinate amount of resources. An attack on a tanker or expanded facility would immediately exhaust consequence capability in all of our hospitals, as well as our ability to evacuate on the highway and air. In General Centracchio's opinion, it would be absolutely irresponsible to locate this facility in an urban area. It clearly exceeds our capacity to bring to bear the resources that would be required not only to mitigate it, but also to deal with consequences. General Centracchio stated that positioning of this site in the Port of Providence is not feasible and if the intent to commit a suicide attack is there, the (terrorist) will succeed and we will have to deal with the consequences.

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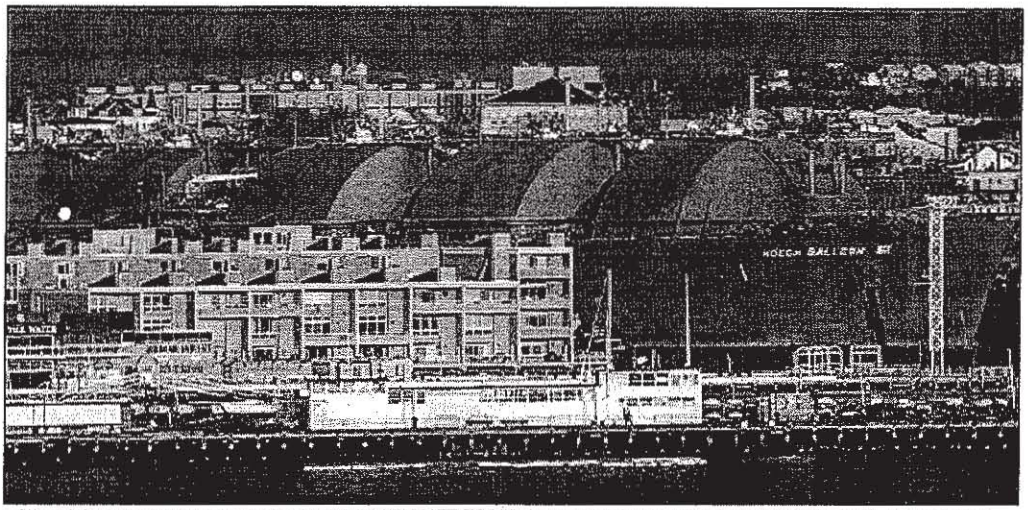

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Study spells out high toll on city in LNG attack

The Boston Globe

By Charlie Savage, Globe Staff | December 21, 2004

WASHINGTON -- A terrorist attack on a liquefied natural gas tanker would cause "major injuries and significant damage to structures" a third of a mile away and could cause second-degree burns on people more than a mile away, according to the most detailed study yet of the ramifications of an LNG disaster.

The study, commissioned by the Department of Energy to resolve differences between earlier studies, indicates that a successful attack on a tanker -- via methods such as internal sabotage, a rocket-propelled grenade, a kamikaze flight, or a USS Cole-style suicide boat ramming -- would create a profound security threat to Boston.

The LNG tankers that service the Distrigas facility in Everett pass within a few hundred yards of the urban core's densely populated shoreline -- placing residents well within the highest risk zone. The ships cross through Boston Harbor under extremely tight security, with flights suspended overhead, but officials including Mayor Thomas M. Menino have declared the LNG shipments too dangerous to continue.

The 166-page study, conducted by Sandia National Laboratories over the past year, represents the most definitive assessment of LNG tanker risks to date and is intended to be used as a basis for all government policies about LNG siting and security going forward. The investigators used new and more sophisticated computer models to analyze new and existing data to reach their conclusions.

Captain David Scott, the director of operations and environmental standards at the US Coast Guard, said the government viewed the Sandia study as "the most objective" yet.

"The Coast Guard considers the Sandia report as a document with great credibility," Scott said. "Some of the previous studies had a preconceived conception and . . . may have been advocates for the industry or those who have opposed it."

The report seemed likely to rekindle public debate over the presence of the LNG terminal near

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Boston Harbor. Immediately after the terrorist attacks of Sept. 11, 2001, the Coast Guard shut the harbor to LNG tankers. Menino sued to prevent the return of tankers, but lost.

Earlier this year, former White House counterterrorism director Richard Clarke revealed that intelligence analysts believed Al Qaeda operatives had entered the country in the years before the attacks by stowing away on LNG tankers in Algeria and jumping ship in Boston. The tankers no longer dock in Algeria.

In assessing possible terrorist dangers, Sandia also produced a classified companion report, which contains information about the exact methods that could cause maximum damage. It also offers suggestions about security measures to reduce that risk.

But the public report, which is to be posted on the Internet at 9 a.m. today at fossil.energy.gov, is rich with information about what would happen in an accidental or intentional spill of LNG over water, a scenario that had not been as thoroughly studied as a problem distinct from a spill on land.

According to a congressional aide who was briefed on the report, the study concluded that attacks on an LNG vessel would create a rupture of between 6 and 39 feet. It used a 16-foot hole as a standard measure.

The study said a spill from a 16-foot hole, if ignited, would create a thermal blast that would set buildings on fire and melt steel out to 1,281 feet and give people second-degree burns up to 4,282 feet away. A 39-foot rupture would burn buildings out to 1,975 feet and burn people up to 6,299 feet away -- well over a mile. The worst-case scenario measured by the report was three 16-foot holes. That would set structures aflame out to 2,067 feet and burn people as far as 6,949 feet away.

The study also determined that a pool of LNG released into the water and then ignited as it vaporized would create a giant fireball that would expand outward to a distance twice the size of the pool itself. It studied pools of between 686 and 1,877 feet.

The congressional aide, who spoke on condition of anonymity, said the report also cites the chance that a fire in one of the vessel's multiple tanks could cause nearby tanks to break down, causing additional fireballs.

The study, however, notes that its conclusions are based on computer simulations. Because there has not been a major LNG accident involving a modern tanker, there is no data from an actual spill of the supercooled liquid gas.

Julie Vitek, a spokeswoman for Distrigas, said the company wanted to read the Sandia report before it would comment on its specific findings, but said that the LNG supplies are critical to New England. The Everett facility, she said, is now delivering enough natural gas to heat more than a half-million homes every day.

Vitek also said that Distrigas and the LNG industry have an excellent safety record.

Seth Gitell, a spokesman for Menino, said the mayor planned to study the report.

"Mayor Menino has long said that LNG entry into Boston Harbor is a profound danger and that the consequences of LNG ignition would be catastrophic," Gitell said.

US Representative Edward J. Markey, the Malden Democrat whose district includes Everett, was briefed on the report yesterday. He called the information "sobering," noting that it considered some factors, such as wave and smoke effects, more seriously than earlier studies. Markey also said it was further evidence that no LNG terminals should be built near heavily populated areas.

But unlike Menino, Markey stopped short of calling for the Everett terminal to be closed, citing New England's dependence on natural gas supplies. The problem requires a long-term solution, such as building a new terminal out in the ocean and piping the fuel in as a safer gas form, he said.

The report does not present an evaluation of the chances a terrorist attack would be successful, given the security precautions taken by the Coast Guard and other law enforcement agencies and the double hulls used by LNG tankers.

In Boston, flights are halted while a ship moves through the harbor, as is traffic on the Tobin Bridge. The Coast Guard boards the vessels and escorts them in, not allowing other ships to come near. Local law enforcement and emergency responders are given advance notice to

coordinate their own stepped-up patrols and preparations.■

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GLOBE GRAPHIC: Areas at risk

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Report on LNG Spills and Fires by Prof. J. Fay

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Spills and Fires from LNG Tankers in Fall River (MA)

By Professor James A. Fay, Massachusetts Institute of Technology

August 26, 2003

Introduction:

The events of September 11, 2001 have raised concerns about the potential for terrorists attacks on the energy system infrastructure of the United States. In particular, the possibility of the use of a boat bomb, such as was used against the USS Cole in 2000 and the oil tanker Limburg in 2002, to attack a marine liquid fuel tanker in a U.S. harbor, was publicly discussed in Massachusetts, where both LNG (liquefied natural gas) and oil product tankers land cargoes in Boston harbor. The consequences of such an incident could be severe, and present a potential problem of great magnitude for public safety officials.

The safety concerns for the public stem from the effects of the burning of the tanker's combustible liquid cargo, which would certainly escape from cargo holds punctured by the force of an explosion. The ensuing fire can spread on the sea surface toward nearby shorelines, and its thermal radiation could produce bodily harm to exposed individuals on shore and possibly set fire to shoreside buildings.

The fire that would ensue from a boat bomb attack on a tanker would be of unprecedented size and intensity. Like the attack on the World Trade Center in New York City, there exists no relevant industrial experience with fires of this scale from which to project measures for securing public safety. Lacking such experience, we must rely on scientific understanding to predict their characteristics, based upon laboratory and field experiments of much smaller fires.

The author has developed a mathematical model for the spills and fires from liquefied fuel marine tankers which is based upon published scientific papers in peer-reviewed journals (Fay, *Model of Spills and Fires from LNG and Oil Tankers*, Journal of Hazardous Materials, B96, 171-188, 2003). The purpose of this article is to apply this research to the case of Fall River (MA) harbor.

Weaver's Cove Energy LLC has proposed to construct and operate a marine LNG import terminal on the Taunton River in Fall River (MA) (Weaver's Cove Energy LLC, *Weaver's Cove Energy LNG Import Terminal*, Fall River, June 30, 2003). To reach this terminal, ocean-going LNG tankers must move through Narragansett and Mount Hope Bays and enter the Taunton River, passing within 1000 feet of downtown Fall River waterfront and near commercial and residential areas. A tanker spill fire at any location along this route would have serious consequences for persons

and property on the shore adjacent to the stricken vessel.

LNG Tanker Spills and Fires:

The liquid fuel carried in sea-going LNG tankers is stored in separate holds, each of which may be as large as 25,000 cubic meters holding 10,500 tons of cargo. A powerful explosion close along side the tanker can puncture at least one hold and allow the cargo to drain out upon the surrounding sea surface. The upper part of the cargo fluid that is higher than the sea surface level will first leak out, but additional cargo may also be ejected. Given an explosively formed hole of sufficient size, such cargoes can be disgorged within minutes.

LNG is lighter than sea water. Once spilled, it floats, unmixed, on the sea surface. Most importantly, it speedily spread sideways, exposing the fuel to the air above. Once ignited, as is very likely when the spill is initiated by a chemical explosion, the floating LNG pool will burn vigorously. The time to burn spills of the size mentioned above can be less than five minutes.

Fires that burn thousands of tons of fuel in a few minutes are extraordinarily large, lying well outside the range of domestic firefighting experience. Such fires can be damaging to people and can set afire combustible buildings.

Maximum Pool Size and Fire Duration:

To illustrate the characteristics of such spills in Fall River harbor, we consider a typical spill of LNG. (The relevant spill parameters are listed in Table 1.) The LNG spill volume is 14,300 cubic meters or 3.8 million gallons. Provided the vessel hole area is greater than ten square meters, the maximum pool fire area is 180,000 square meters (44 acres) and radius is 340 meters (1115 feet), while the fire duration is 3.3 minutes.

Table 1: Physical parameters of a typical LNG tanker spill	
Spill volume	14,300 cubic meters = 3.8 million gal.
Fire duration	3.3 minutes
Maximum pool area	180,000 square meters = 44 acres
Maximum pool radius	340 meters = 1115 feet
Average heat release rate	1,500,000 megawatts
Distance to average heat flux of 5 kilowatts per square meter	1100 meters = 3600 feet

The pool fire, initiated at the time of the explosion, grows in area in proportion to the time since initiation, reaching maximum extent at the end of the burning process. Maximum pool size for an LNG spill located at the proposed LNG terminal: the outer edge of pool fire extends to both east and west shores of the Taunton River. For a spill anywhere along the path of an LNG tanker approaching the terminal, the pool fire would reach Fall River shore. It is most certain that combustible buildings long the waterfront would be ignited by contact with the pool fire.

The extent of the pool fires, which spread to distances greater than the ship length in a short time, would make it impossible to move the stricken vessel away from the waterfront areas. The potential for retarding the pool spread is nonexistent.

Pool Fire Thermal Radiation:

Burning LNG emits thermal radiation that, if intense enough, can cause skin burns on humans exposed to the radiation and can ignite combustible materials on buildings. The more intense the radiation, the shorter is the exposure time needed to cause a skin burn or combustible material ignition.

For human skin exposure to flame thermal radiation, a thermal flux of 5 kilowatts per square meter will result in unbearable pain after an exposure of 13 seconds and second degree burns after an exposure of 40 seconds. Exposure to twice that level, 10 kilowatts per square meter, for 40 seconds is the threshold for fatalities (K.S.Mudan, *Thermal radiation hazards from hydrocarbon pool fires*, Progress in Energy Combustion Science, 10, 59-80, 1984). Wood can be ignited after 40 seconds exposure at a thermal flux of 5 kilowatts per square meter.

We have chosen a thermal flux of 5 kilowatts per square meter a a criterion for the limit for significant damage to humans and combustible materials and have calculated the distance from the spill site at which that flux would be experienced (These distances are based upon an analysis contained in Fay, *Model of large pool fires*, submitted to the Journal of Hazardous Materials). As listed in Table 1, this distance is 1100 meters (3600 feet or 0.68 mile) for an LNG spill.

For an LNG spill, the thermal radiation damage zone encloses 940 acres, including about 400 acres of land area in Fall River. Within this zone, extending 3600 feet from a spill site in the main channel of the Taunton River, skin burns to humans exposed for only a fraction of a minute will occur, and building fires can be induced. Beyond the shorefront, at 1600 feet from the spill site, where the thermal radiation flux is 10 kilowatts per square meter, fatalities can ensue.

One cannot exaggerate the thermal intensity of the LNG pool fire. It's average heat release rate is about twice the average thermal power consumption of all U.S. fossil fuel electric power plants.

Conclusion:

The analysis summarized in this report, based upon studies published in peer-reviewed scientific journals, sets forth the physical characteristics of the fires to be expected from a boat bomb attack on an LNG tanker in Fall River harbor. The major conclusions are:

- The magnitude of the resulting liquid cargo pool fires are unprecedented in scale. There is no possibility of ameliorating the fire's effects, much less extinguishing it, during the short time (several minutes) of burnout.
- At any point along the inner harbor route of ship travel from sea to berth, pool fire thermal radiation that can burn and even kill exposed humans, and ignite combustible buildings, will be experienced along and well inland from the waterfront.

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Submission 38

Santos | PETRONAS

Submission on the environmental impact statement for the Gladstone Liquefied Natural Gas project

Name: Coordinator: Janet Barrett
Project Officer: Allan Briggs

Organisation **Capricorn Conservation Council**

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Section	Describe the issue	Suggested solution
1.7	**Relationship to other projects**: **cumulative impacts** CCC feels there is inadequate consideration of the cumulative impacts of all major projects (including other LNG plants) in Gladstone. These projects and any relational aspects are very generalised in the EIS (e.g. overlapping construction phases). There are many references to quantitative cumulative impacts being 'unknown at this stage' (e.g. Section 4.4.4). Cumulative impacts are a major consideration in assessing whether development will be ecologically sustainable. For example: the cumulative impacts of constructing 4-5 separate gas transmission pipelines between Friend and Laird Points are considerable. There will be an enormous impact on the marine environment (e.g. dugongs, turtles, dolphins, fish species, invertebrates, seagrass beds, saltmarsh and mangrove communities). More specifically, sediment mobilisation into The Narrows and Graham Creek, increased turbidity, pipeline construction noise, risk of acid sulfate soil mobilisation, and upheaval of the harbour floor on each of the 4-5 occasions is simply unacceptable, particularly if cumulative impacts have not been considered.	The cumulative impact assessment associated with these combined projects needs to be far more robust. The cumulative impacts of the LNG projects and other industrial projects, will affect air quality, nature conservation, climate change, marine environment, and community quality of life. This project should not proceed until a detailed assessment of cumulative impacts (short term and long term) is completed and communicated to the public. The Precautionary Principal should be used fluidly in this case: *The precautionary principle is that lack of full scientific certainty should not be used as a reason for postponing a measure to prevent degradation of the environment where there are threats of serious or irreversible environmental damage*. (Section 391, EPBC Act) The onus of proof rests with Santos/Petronas (and other LNG companies) to prove that dugong and turtles etc will not be harmed. Risk and uncertainty must be taken into account. Cumulative impact assessment is imperative and as yet, seemingly not done. For example, fugitive hydrocarbons from oil spills are likely to build up in Dugong fatty tissue over time. Cumulative impacts resulting from constructing 4-5 separate gas transmission pipelines within the Friend Point and Laird Point area can

		be substantially reduced if all were constructed at the same time.
2.1.3	**CSG field development alternatives**: The four scenarios and alternatives listed to supply peak deliverability capacities, only meet the requirements of one train. The project indicates a second and third train will likely be constructed. Will other CSG fields be opened to accommodate supply post 2034?	Publish scenarios and production yields from CSG fields that will supply a second and third train. Location of additional fields (including estimated quantity of wells), and sustainability of production and supply should be included.
2.1.5	**Market alternatives:** There should be some requirement that a proportion of the LNG produced is used for local consumption in order that it can replace more polluting forms of energy such as coal. Currently the EIS states (Section 1.2) that the joint venture partners (Santos and Petronas) will, '*Undertake all marketing activity, accessing PETRONAS' well established customer base in the three largest Asian LNG markets of Japan, Korea and Japan*.' In other words, the LNG will be sold to the highest bidder and Australia will not benefit environmentally from the use of its own assets.	Require that a percentage (10-15%) of the LNG production be sold within Australia at a price that is competitive with other forms of energy such as coal and oil.
2.2.2.2	**Construction technique alternatives**: The preferred route of the gas transmission pipeline crossing of Port Curtis is located inside the Great Barrier Reef Marine Park. This placement risks the viability of marine and terrestrial ecosystems at the southern end of the Narrows and is inside a World Heritage protected area. The preferred 'trench and back-fill' option to accommodate the pipeline on the harbour floor will disturb the seabed and risk the viability of marine and terrestrial ecosystems, specifically a vibrant intertidal zone that is habitat for dugong, turtle, fish species, invertebrates, seagrass, saltmarsh and mangroves.	Move the gas transmission pipeline crossing south and outside the Great Barrier Reef Marine Park. Use the HDD design option to place it under the sea floor. This is acknowledged as the most environmentally friendly option with a reduced 'subtidal disturbance footprint'.

2.3.1	**Site alternatives:** CCC objects to Curtis Island being used for industrial development on such a large scale. The Colong Foundation is the longest-serving community advocate for wilderness in Australia and Curtis Island is listed in their red index - last remaining wild areas which are nominated for their wilderness values. CCC would prefer to have this island protected from industrial development and high impact use and its National Park and conservation areas increased. It is covered by regionally significant ecosystem (RE) and is essential habitat for several species protected under the EPBC and NC Acts - high environmental values. Remnant vegetation coverage is significant.	Santos nominates other site alternatives which are located on the mainland (within the Gladstone State Development Area). Shipping access could be facilitated through, for example Fisherman's Landing Wharf or other. There are large amounts of unallocated land available on the mainland.
2.3.4	**Access options: bridge option** The environmental impacts of constructing a bridge between Laird Point and Friend Point that links Curtis Island to the mainland, are simply not acceptable. The disturbance to mangrove, seagrass, sub/inter/low tidal zones in general, and the seabed will be huge - all within the Great Barrier Reef Marine Park. Additionally, this disturbance would impact greatly on a range of marine and other species (dugong, turtle, fish, invertebrates, terrestrial flora and fauna etc). Also relates to Section 4.5.4.	CCC supports the 'no bridge' option.
2.3.6	**Power supply alternatives to LNG plant:** Energy to power the liquefaction process on Curtis Island will generate significant greenhouse gas emissions. Santos promotes LNG as a transition energy as the world moves towards a lower-carbon economy. However, if the high amounts of energy needed to cool the gas to -162°C for all three proposed LNG trains is not from renewable sources, CCC suggests the proponent is not 'fair dinkum' about their responsibility to lower GHG. There is no mention of the fuel source for the LNG carriers.	If Santos intends to self-generate power using gas-fired generation units for one train, it should be done for all three proposed trains. This would produce significantly lower greenhouse gas (GHG) emissions, and assist Queensland in reaching any GHG abatement targets in the future. Nominate a fuel source for LNG carriers.
4.5.3.7	**LNG shipping through the Great Barrier Reef:**	Comprehensive EMPs to mitigate against oil spills/leaks and other

	Despite the best risk analysis and safety practices, shipping incidents do arise. CCC reminds the proponent that these incidents seriously compromise the health of marine ecosystems. LNG ships will berth and manoeuvre in a Dugong Protection Area, the Great Barrier Reef Marine Park, and a World Heritage Area. It is very difficult to mitigate these potential impacts.	contaminants, anti-fouling systems, ballast/waste discharge, collisions with marine mammals, groundings and collisions with other vessels, anchorage destruction of seabed, erosion and seabed disturbances, and finally and very importantly, safe transportation of LNG. The proponent must adhere to all regulative and legislative requirements both nationally and internationally.
4.5.4	**Curtis Island access road and potential bridge construction:** See Section 2.3.4 comments above.	
6.4.4.	**Existing environmental values: coal seam gas fields** Regarding Ramsar Wetlands of International Significance: Narran Lake Nature Reserve, Shoalwater Bay and Corio Bay are located in catchments that have CSG fields located in them. While they may not be under threat now, what condition is there that they will not be impacted in the future by drilling? Similarly, nationally important wetlands in the CSG fields' investigation area include Boggomoss Springs Wetland and Lake Nuga Nuga Wetland.	The aquatic functioning of these pristine, protected areas (EPBC Act) is vital to their continuance and to the many ecosystems they support. They must be protected at all costs. The proponent must stipulate now, how their future protection will be managed.
6.4.4.2	**Terrestrial flora: coal seam gas fields** Regional connectivity of remnant vegetation in the northern CSG fields is stated as, 'reasonably continuous'. There are ten regional ecosystems listed as endangered vegetation communities from multiple legislative positions: Qld VM Status, Qld Biodiversity and EPBC. Clearing these communities for roads, pipeline corridors and 'right of ways' will seriously fragment them. Edge effects and fragmentation compromises the viability of supporting ecosystems and reduces their connectivity.	Prevent clearing that will create edge effects and fragmentation. Leave corridor links to enhance connectivity.
6.4.4.3	**Terrestial fauna: coal seam gas fields** *Onychogalea fraenata (*Bridled Nailtail wallaby) is an endangered species (NC Act and EPBC Act) and occurs within the CSG investigation area. The EIS has not considered how the fragmentation of this wallaby's habitat for access roads, pipelines	Conduct a study that addresses how the impact of habitat fragmentation will affect the Bridled Nailtail wallaby in the CSG investigation area.

	and drill sites will impact them.	
6.4.5.5	**Biodiversity offsetting:** Biodiversity offsetting can't replace what is being destroyed on Curtis Island and the impacts that this destruction will have on surrounding systems. Offsetting is simply a convenient tool that does not address localised destruction. (Eg. Clearing and then offsetting the endangered RE 12.2.2 and 12.3.3 removes them forever from that location).	As a 'second-best' option, CCC supports Santos in securing protection such as conservation covenants and other initiatives listed in the EIS. However, offset areas should be localised so that regional species remain viable in that area. The same suite of plant species must be used in RE types being offset.
7.4.4.3	**Terrestrial Fauna: Curtis Island habitat values** Endangered RE *Eucalyptus tereticornis* supports koala populations (listed as vulnerable under the NC Act). On Curtis Island, this Eucalyptus species was found to be 'generally mature with a large number of habitat hollows' with good understory assemblages of wattles, sheoaks and other juvenile trees that support arboreal fauna, birds, insects etc. Clearing all of it will destroy the habitat of several significant species. **Terrestrial Fauna: Mainland gas transmission pipeline fauna diversity** The platypus (*Ornithorhynchus anatinus*) is known to occur in the Calliope River and other creeks crossed by the pipeline. It is highly secretive and very sensitive to noise so may not have been recorded during fauna surveys.	Retain the RE for species' habitat. Develop an EMP that monitors and protects the platypus in creek crossings disturbed by construction of the gas pipeline.
8.4.5.3	**Marine ecology: capital dredging** Disturbance and displacement of marine ecosystems will occur with Santos' capital dredging and reclamation activities. The placement of dredged spoil on 35ha of saltpan, saltmarsh and mangrove areas on Curtis Island will create some impacts. This area is visible from Gladstone Harbour. The mixing of different benthic compositions will change species' structure and biodiversity. Several vulnerable species that occur in Gladstone will be impacted by capital dredging works and construction of a bridge:	Time the capital dredging works to coincide with GPC's Western Basin Dredging/Reclamation Project or other LNG companies' dredging activities. This would spatially reduce the disturbance. The proponent must explain the impact that dredging and bridge construction will have on the mollusc *Gyrineum jucundum*, *Urocampus carinirostris,* and the green sawfish that occur in the harbour.

	the mollusc,*Gyrineum jucundum;* and two EPBC-listed marine species, the Hairy pipefish (*Urocampus carinirostris)* and green sawfish.	
8.4.4.4.	**Terrestrial fauna: significant fauna species** Disturbance to beaches, tidal zones, sand and mud flats at Friend Point and China Bay will affect local and migratory bird species such as Little Tern (endangered), Beach-stone Curlew (vulnerable), Sooty Oystercatcher (rare), Lathams Snipe and Little Curlew that are two species of migratory shorebirds reliant on marine wetlands. Please refer to supporting information document.	China Bay • Prevent access to beach and mangroves during construction and during facility operation. • Monitor the impact of the LNG facility on species' use of the location. Friend Point • Rehabilitate any disturbance to beaches and intertidal sand and mud flats to pre-pipeline/bridge conditions. Cumulative impacts • Assess the feasibility of constructing only one shipping terminal to service all four LNG projects to reduce the environmental impact. Require that all four pipelines crossing the narrows be constructed at the same time and in the same place to reduce the environmental impact.
8.4.4.4	**Terrestrial fauna: significant fauna species** Clearing of vegetation in the area of the LNG facility will destroy habitat used by the Powerful Owl for hunting and for nesting and the Glossy Black Cockatoo for feeding and nesting. Please refer to supporting information document.	LNG facility and pipeline • An offset equivalent to the area cleared should be provided in an area adjacent to or near to the LNG facility. This will provide the owls and cockatoos with secure habitat that will assist in their relocation and for their survival in the future. • While mitigation measures are supported (8.4.47) the site will nevertheless cause significant loss of habitat. Every effort must be made to minimise unnecessary clearing and reduce fragmentation. Cumulative impacts • Coordinate the construction of all four LNG facilities and pipelines to reduce fragmentation of the landscape and retain habitat corridors throughout.
8.4.5	**Terrestrial flora:** 40 ha or 87% of the Regional Ecosystem (RE) 12.3.3 will be cleared. 100% of the 'critically endangered' (EPBC status) RE	The proponent should provide alternatives to clearing these RE's. Preference should be given to leaving RE 12.2.2 in tact and the critically endangered community protected.

	12.2.2 will be cleared for the LNG site. The former RE is essential habitat for the koala, a vulnerable species. There appears to be no alternative option to clearing these communities.	No details are provided as to the 'biodiversity offset strategy and management plan' for these endangered communities.
16.2.4	**Principles of ESD: long term/short term economic… considerations:** The environmental impact of exporting LNG overseas should be factored against the environmental benefits of domestic use.	Emissions generated in exportation (shipping, trucking etc) should be determined and an environmental cost calculated that can be compared against the environmental benefit of domestic use.
16.2.4	**Principles of ESD: the precautionary principle** The principles of ecological sustainable development (ESD) as provisioned in the EPBC Act (Section 3): *to promote ecologically sustainable development through the conservation and ecologically sustainable use of natural resources; to promote the conservation of biodiversity.* Coal seam gas is a non-renewable resource. More will be needed to sustain the LNG industry - more land will be given up in the future to drill and supply it. With the onset of climate change (an undeniable scientific fact), where are the environmental and moral considerations that should be underpinning decision-making processes within energy companies such as Santos and Petronas?	A key concept of ESD is the Precautionary Principle. It should be adopted legally and morally when assessing whether this project is ecologically sustainable. The Precautionary Principle is provisioned at the Commonwealth level in the EPBC Act and at a state level in the Integrated Planning Act (Section 1.2.3.) and as such, is very enforceable.
16.2.4	**Principles of ESD: inter-generational equity** The concept of Inter-generational Equity includes the conservation of biological diversity and ecological integrity. That is, ensuring the health, productivity and diversity of the environment is maintained for future generations. Of a highly conflicting nature then, is the proponent's intention to almost wholly clear (87%) the endangered RE 12.3.3 and fully clear RE 12.2.2 from Curtis Island to be offset at other (as yet unknown) displaced locations.	Modify site plans to retain RE's 12.2.2 and 12.3.3 on Curtis Island.
16.2.4	**Principles of ESD: improved valuation, pricing and incentive mechanisms**	Consider the likely impact of an emissions trading scheme on the Australian demand for LNG, determine the expected size of that

	The impact of a an Emissions Trading Scheme on the price of coal and the expectation that 60% of the energy for coal fired power stations will be sourced from LNG has the potential to drive gas prices higher and erode the price advantage currently held by gas. (An example to illustrate these effects exists in WA where an LNG export industry already exists. Export gas prices in WA are currently double that on the eastern seaboard and this is before an ETS is introduced. This will be a major factor inhibiting a transition to cleaner and less polluting energy sources such as LNG.)	demand and require that a proportion of the LNG production is reserved for domestic use to meet that demand and prevent unnecessarily high price increases.

Signature: _____

Submissions must be received by **5 pm on Monday 17 August 2009** and be addressed to:

The Coordinator-General
C/- EIS Project Manager – Gladstone Liquefied Natural Gas project
Significant Projects Coordination
Department of **Infrastructure and Planning**
PO Box 15009 City East QLD 4002
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This form is the preferred format for a submission. Please use additional pages if there is insufficient space. Submissions will be treated as public documents and copies will be provided to the project's proponent. For further information please contact the Infrastructure and Economic Development Group on (07) 3234 1380.

Supporting information concerning submission to EIS on the Gladstone Liquefied natural Gas project

This submission is concerned with avian species

Submitted by Capricorn Conservation Council

Background to submission

While mitigation measures are supported (page 8.4.47) the GLNG project nevertheless has the potential to have significant impact on several bird species that use beaches, mangroves and intertidal sand and mud flats. Every effort must be made to minimise unnecessary disturbance.

One of these species is listed as endangered under the Queensland Nature Conservancy Act, three are listed as vulnerable, one as rare and a further two migratory shorebirds that are listed as of least concern but are reliant on marine wetlands.

One of the major concerns is that the GLNG project is one of only four that are planned for the Curtis Island section of the Gladstone State Development Area and the cumulative impacts of these developments are not being considered. There is considerable scope for the cooperative development of infrastructure between all projects that would result in a significant reduction in environmental impact.

Section 8 page 8.1.14 of the GLNG EIS makes the following statement.

In the overall sub-region industrial development and clearing within the Gladstone region has greatly reduced the presence of integral continuous strands of vegetation. Significant gaps exist between dense strands of vegetation surrounding Gladstone, where remnant vegetation appears to be restricted to the Rundle Ranges and Mt Larcom Range in the north and Mount Stowe State Forest and Calliope Forest Reserve to the immediate south-west. The remnant vegetation of Curtis Island thus represents a significant area of integral habitat at a regional scale, although connectivity to the mainland is significantly disrupted by The Narrows, a naturally occurring estuarine passage.

There are four nationally important wetlands associated with Curtis Island: North East Curtis Island, Port Curtis, The Narrows and the Great Barrier Reef Marine Park (EPS, 2007b). The intertidal area surrounding the proposed LNG facility therefore play an important role as a significant local ecosystem providing habitat connectivity between each wetland. The islands surrounding Curtis Island also act as vegetative corridors for local and migratory birdlife.

The intention to clear large areas of woodland in the GLNG site on Curtis Island will destroy valuable feeding and breeding habitat as well as fragment what is currently an integral habitat. The disturbance to beach, mangrove and intertidal sand and mud flats adjacent to the LNG facility will disturb local bird and migratory species that use these areas. The removal of mangroves, beach and intertidal sand and mud flats at Friend Point for the construction of the pipeline will disturb local bird and migratory species that use these areas.

While our submission is concerned with the environmental impact of the GLNG project we would urge a much broader consideration of the cumulative impacts of all projects within the Curtis Island section of the Gladstone State Development Area.

Little Tern *(Numenius miniatus)* – Status under the Qld Nature Conservancy Act: Endangered

Threats	Impact of construction of the LNG facility and pipeline	Qld Government recommended recovery actions	Recommended actions
Threats known to affect the little tern include coastal recreational activities such as 4WD vehicles on the beach, trail bike riding and walking that can crush eggs and chicks. Foxes, wild dogs and uncontrolled pet dogs are the most serious predators, along with cats, rats and silver gulls. Human disturbance is also a major cause of nest failure. Loss of suitable nesting habitat occurs because of recreational use or development. Little terns are potentially susceptible to pesticides and contamination of estuaries by oil spills and heavy metals.	Beaches and intertidal sand and mud flats at Friend Point and China Bay **Cumulative impacts of four LNG projects on Curtis Island** It is unknown where the other three LNG project pipelines and shipping terminals will be located but there construction will inevitably impact on the beaches that are used by this species	Items as listed on the Qld Government web site at http://www.epa.qld.gov.au/nature_conservation/wildlife/az_of_animals/little_tern.html • *Major breeding sites in Queensland need to be identified or verified.* • *Feral animals, including cats and foxes, need to be controlled at known sites.* • *Education (including signage) at known sites is essential so that visitors aware of the impacts of their activities. Drivers of vehicles on beaches are requested to stay clear of nesting areas.*	**China Bay** • Prevent access to beach during construction and during facility operation. • Strict enforcement of containment measures for any run off from the site. • Monitor the impact of the LNG facility on species use of the location. **Friend Point** • Rehabilitate any disturbance to beaches and intertidal sand and mud flats to pre-pipeline conditions. **Cumulative impacts** • Assess the feasibility of constructing only one shipping terminal to service all four LNG projects to reduce the environmental impact. • Require that all four pipelines crossing the narrows be constructed at the same time and in the same place to reduce the environmental impact.

Reference page in EIS: 8.4.17

Beach Stone-curlew *(Esacus neglectus)* **– Status under the Qld Nature Conservancy Act: Vulnerable**

Threats	Impact of construction of the LNG facility and pipeline	Qld Government recommended recovery actions	Recommended actions
Loss of habitat and pollution due to residential and industrial development. Feral cats, dogs and pigs are also a threat due to predation of adults, chicks and eggs. Boats, off-road vehicles and beach-combing can also severely impact on the natural behaviour of beach stone-curlews (Qld Govt 2009). As the species occurs at a low density in an essentially linear habitat, local extinctions could easily become regional ones, although the historical expansion of range south suggests that such extinctions do not represent genetic barriers (Garnett, 1992).	Mangrove communities, beaches and intertidal sand and mud flats at Friend Point and China Bay **Cumulative impacts of four LNG projects on Curtis Island** It is unknown where the other three LNG project pipelines and shipping terminals will be located but there construction will inevitably impact on the beaches that are used by this species	Item 1 as listed on the Qld Government web site at http://www.epa.qld.gov.au/nature_conservation/wildlife/az_of_animals/beach_stonecurlew/ *Protect important habitat areas from urban and industrial development, and pollution.*	**China Bay** • Prevent access to beach and mangroves during construction and during facility operation. • Monitor the impact of the LNG facility on species use of the location. **Friend Point** • Minimise removal of mangroves to the absolute minimum required for pipeline construction. • Rehabilitate any disturbance to beaches and intertidal sand and mud flats to pre-pipeline conditions. **Cumulative impacts** • Assess the feasibility of constructing only one shipping terminal to service all four LNG projects to reduce the environmental impact. • Require that all four pipelines crossing the narrows be constructed at the same time and in the same place to reduce the environmental impact.

Reference page in EIS: 8.4.17

Sooty Oystercatcher *(Haematopus fuliginosus)* **– Status under the Qld Nature Conservancy Act: Rare**

Threats	Impact of construction of the LNG facility and pipeline	Qld Government recommended recovery actions	Recommended actions
Most of this species population occurs on islands where they breed and are not greatly affected by human disturbance. The presence of this species in the development area indicates that it is using the area for feeding and disturbance needs to be minimised.	Beaches and intertidal sand and mud flats at Friend Point and China Bay **Cumulative impacts of four LNG projects on Curtis Island** It is unknown where the other three LNG project pipelines and shipping terminals will be located but their construction will inevitably impact on the beaches that are used by this species	None	**China Bay** • Prevent access to beach and mangroves during construction and during facility operation. • Monitor the impact of the LNG facility on species use of the location. **Friend Point** • Rehabilitate any disturbance to beaches and intertidal sand and mud flats to pre-pipeline conditions. **Cumulative impacts** • Assess the feasibility of constructing only one shipping terminal to service all four LNG projects to reduce the environmental impact. • Require that all four pipelines crossing the narrows be constructed at the same time and in the same place to reduce the environmental impact.

Reference page in EIS: 8.4.17

Powerful Owl *(Ninox strenua)* - **Status under the Qld Nature Conservancy Act: Vulnerable**

Threats	Impact of construction of the LNG facility and pipeline	Qld Government recommended recovery actions	Recommended actions
Although the population size and area occupied by Powerful Owls have declined as a result of widespread clearance for agriculture and pastoralism (Debus and Chafer, 1994, Webster *et al.*, 1999a), over half the habitat remains intact, with population densities probably little different from the pre-European times. Similarly, although intensive forestry practices remove old-growth forest, and owl densities in remaining forest may eventually be affected by a reduction in the availability of suitable nest hollows and den sites for prey (Kavanagh *et al.*, 1995, Gibbons and Lindenmayer, 1997, Webster *et al.*, 1999a), studies in New South Wales suggest Powerful Owls can persist in logging mosaics, by nesting in un-logged patches and hunting in logged areas. There was no difference in frequency of owl detection between heavily logged, lightly logged and un-logged forest (Kavanagh *et al.*,	Clearing of vegetation in the area of the LNG facility will destroy habitat used by the Powerful Owl for hunting and for nesting. **Cumulative impacts of four LNG projects on Curtis Island** The clearing of four separate areas in the GSDA on Curtis Island will cause significant loss of habitat and uncoordinated fragmentation of the landscape	None	**LNG facility and pipeline** • An offset equivalent to the area cleared should be provided in an area adjacent to or near to the LNG facility. This will provide the owls with secure habitat that will assist in their relocation and for their survival in the future. • While mitigation measures are supported (8.4.47) the site will nevertheless cause significant loss of habitat. Every effort must be made to minimise unnecessary clearing and reduce fragmentation. **Cumulative impacts** • Coordinate the construction of all four LNG facilities and pipelines to reduce fragmentation of the landscape and retain habitat corridors throughout.

Reference page in EIS: 8.4.17

Glossy Black Cockatoo *(Calyptorhynchus lathami)* **– Status under the Qld Nature Conservancy Act: Vulnerable**

Threats	Impact of construction of the LNG facility and pipeline	Qld Government recommended recovery actions	Recommended actions
The northern subspecies of Glossy Black-Cockatoo is likely to be sensitive to any habitat clearance or fragmentation that exposes the birds to competition for nest hollows from open-country cockatoos, such as Galah *Eolophus roseicapilla*, Little Corella *Cacatua sanguinea* or Sulphur-crested Cockatoo *C. Galerita* (Crowley *et al.*, 1998, Garnett *et al.*, 1999). The northern subspecies of the Glossy Black- Cockatoo lives in eucalypt forests and woodlands that have a sub-canopy of their major food plants *Allocasuarina littoralis* or *A. torulosa.* They lay a single egg in a large hollow in a live or dead tree (Garnett *et al.*, 1999).	Clearing of vegetation in the area of the LNG facility and along the pipeline will destroy and fragment habitat used by the Glossy Black Cockatoo for feeding and for nesting. **Cumulative impacts of four LNG projects on Curtis Island** The clearing of four separate areas in the GSDA on Curtis Island will cause significant loss of habitat and uncoordinated fragmentation of the landscape	None	• An offset equivalent to the area cleared should be provided in an area adjacent to or near to the LNG facility. This will provide the cockatoos with secure habitat that will assist in their relocation and for their survival in the future. • While mitigation measures are supported (8.4.47) the site will nevertheless cause significant loss of habitat and loss of connectivity that will particularly affect this species. Every effort must be made to minimise unnecessary clearing and reduce fragmentation. **Cumulative impacts** Coordinate the construction of all four LNG facilities and pipelines to reduce fragmentation of the landscape and retain habitat corridors throughout.

Reference page in EIS: 8.4.17

Latham's Snipe *(Gallinago hardwickii)* **– Status is Least Concern but is reliant on marine wetlands**

Little Curlew *(Numenius miniatus)* – **Status is Least Concern but is reliant on marine wetlands**

Threats	Impact of construction of the LNG facility and pipeline	Qld Government recommended recovery actions	Recommended actions
Current threats in Australia are drainage, water division and urban development ((Weston, 1998).	Beaches and intertidal sand and mud flats at Friend Point and China Bay **Cumulative impacts of four LNG projects on Curtis Island** It is unknown where the other three LNG project pipelines and shipping terminals will be located but there construction will inevitably impact on the beaches that are used by this species	None	**China Bay** • Prevent access to beach and mangroves during construction and during facility operation. • Monitor the impact of the LNG facility on species use of the location. **Friend Point** • Rehabilitate any disturbance to beaches and intertidal sand and mud flats to pre-pipeline conditions. **Cumulative impacts** • Assess the feasibility of constructing only one shipping terminal to service all four LNG projects to reduce the environmental impact. • Require that all four pipelines crossing the narrows be constructed at the same time and in the same place to reduce the environmental impact.

Reference page in EIS: 8.4.17



Submission 39

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QUEENSLAND POLICE SERVICE SUBMISSION ON THE GLADSTONE LIQUEFIED NATURAL GAS PROEJCT (GLNG) ENVIRONMENTAL IMPACT STATEMENT

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Section	DESCRIBE THE ISSUE	SUGGESTED SOLUTION
	INTRODUCTION The issues identified in this submission highlight areas of concern to the QPS as identified in the EIS. This submission provides discussion on matters which have been excluded from the EIS or where further information is sought from the proponent. The Central Region Projects Group has attended a number of community advisory information sessions held by the proponent Santos over 2008 and 2009. The Project Group has also been engaged in discussions with other LNG proponents (BG Group) regarding community concerns and impacts to police service delivery. GLNG is the first of several LNG projects proposed for Gladstone. The LNG industry is an emerging industry in Australia. The development of the LNG industry in Gladstone coupled with other manufacturing, mining,	

	energy and infrastructure projects will have a considerable impact on the capacity of police resources and significant planning will be required to ensure the Service is best positioned to manage the growth associated with the various projects.	
ES 17	*Environmental Management Plans are preliminary.*	QPS to be provided with final EMPs with project approval.
ES 13/14/15	*Re Hazard and Risk*	Refer to emergency Response Plan, Climate, Risk Management and Consultation sections below.
12.16.16 11.16.27	**TRANSPORT AND TRAFFIC MANAGEMENT** Development of the Traffic Management Plan with Department of Main Roads and other relevant local authorities. GLNG will have substantial impacts on the management of traffic and road safety. QPS is responsible for road safety, traffic crash investigation and traffic enforcement. No reference to QPS role in Transport and Traffic Management Sections for all components of the Project. See below re 2009 Inquest Findings – Fatal Truck Crash Warrego Highway and TORUM Legislation Explanatory Notes.	The proponent should engage with the Queensland Police Service in the development of the Transport and Traffic Management Plan. The appropriate member to provide input is the Officer in Charge, Gladstone District Traffic Branch through the District Officer, Gladstone Police District. Incidents and complaints regarding traffic and transport movements should be forwarded to the Officer in Charge, Gladstone District Traffic Branch to ensure the appropriate strategies are developed for prevention, consultation and enforcement where necessary. In delineating the traffic movements, the proponent should provide a breakdown of traffic movements associated with contract works for the Project. This should also be considered when assessing traffic volumes and their impact on transport, road safety and traffic management.
Section 4 Transport 4.14.1.2	**TRAFFIC** *Wide Load / Over-dimensional Vehicle Escorts* The movement of oversize / over-dimensional vehicles is not delineated in the EIS between heavy vehicle and oversized vehicles. The provision of QPS resources (vehicles and assets) to support the movement of wide load escorts (over-dimensional vehicle movements) is not undertaken as part of 'core policing' and therefore the impact on	The proponent should provide detailed breakdown of the number of over-dimensional vehicles that will be used in all components (CSG Fields, Pipeline, LNG Facility) and in all phases (construction and operational) to enable the QPS to determine resourcing requirements. This should include a schedule that details those over-dimensional heavy vehicle movements that require police escort.[iv]

	police resourcing is significant. The QPS will require additional vehicles at minimum to undertake wide load escorts for all components of the project during both construction and operational phases but in particular during construction phases as demand will be exacerbated due to other LNG and major projects progress.	It is anticipated that the QPS will require an additional 4 marked police vehicles in the Gladstone District to ensure capacity for movement of wide loads is maintained. As the provision of wide load movements is not a core policing responsibility and an essential nexus is identified with road safety and traffic management, a contribution from GLNG toward funding for vehicles is sought.
	Road Safety – Traffic Crashes The number of heavy vehicle movements for the project in all phases is extraordinary and the EIS acknowledges the impact to traffic, in particular heavy vehicle movements in all components and both phases of the GLNG. The QPS Strategic Priorities in line with Government Priorities focus significantly on road and community safety. Fatal traffic crashes involving heavy vehicles have been the subject of a number of coronial inquests. See below Inquest into the Death of Vanessa Louise Kingston and recommendations. The routes for the project include major highways (Carnarvon, Warrego and Dawson with Bruce Highway crossroad intersection) and critical network roads. The traffic impact will require additional resourcing for mobile patrols and enforcement to cope with the additional traffic volume. Most heavy vehicle crashes are also work-related deaths/injuries and result in an investigative jurisdiction beyond transport operations and into the criminal and civil jurisdictions. The State Coroner is leading a research project with Queensland Police, CARRS-Q and the Transport Workers Union associated with heavy vehicle fatalities due to the increase of heavy vehicle crashes in recent years. The Warrego Highway is one of the major transport routes for the pipeline construction. It is a major roadway from Dalby to Chinchilla and beyond. It is part of the national highway linking Brisbane to Darwin. During an inquest into the death of Vanessa Louise Kingston on 29 June 2009 the Coroner made comments regarding traffic volume and contributing factors to road fatalities:	QPS will need to review strategic planning for traffic and road safety responsibilities in the Gladstone District. It is accepted there will be increases in injury traffic crashes involving heavy vehicles. There will be an increase in calls for service related to these functions. Additional resources (over and above standard growth in assets and resources) will be required to ensure service delivery is maintained. Vehicles supplied for wide-load movements would supplement current fleet requirements and support growth in other Calls for Service areas associated with GLNG. Additional staffing (2) for traffic enforcement capability in the Gladstone District Western Cluster would meet operational needs associated with GLNG.

	The highway carries a large volume of heavy vehicles. Constant truck traffic appears to have caused significant erosion at the edges of the road. The volume of traffic in the area has significantly increased over the three years leading up to the crash. Heavy vehicles appear to make up an increasing proportion of the traffic along the road. In 2004 the average daily vehicle movements along the highway was 1802. Of these vehicles on average 405.4 were trucks. In 2005 the average daily vehicle movements along the highway was 1981. Of these vehicles on average 528.9 were trucks. In 2006 the average daily vehicle movements along the highway was 2237. Of these vehicles on average 621 were trucks. This illustrates that in the space of two years the average daily traffic of heavy vehicles had increased by more than 50 percent.[i] The Coroners Findings also relate specifically to the roadway. Two of the relevant recommendations are below: • *I recommend that the volume of traffic generally and heavy vehicle traffic be monitored in this area to ensure improvements to the roadway are carried out as required.* • *I recommend that a review be conducted of the roadway to determine if the roadway needs to be widened to accommodate the growing level of heavy vehicle traffic.*[ii] Articulated heavy vehicles such as **road trains, b-doubles and b-triples have a fatal crash rate 18 times higher than that of cars.** Recent increases in fatal crashes involving trucks can be attributed, in part, to increases in the amount of truck travel on Queensland roads. It is estimated that, as a consequence of Queensland's strong economic performance, the use of trucks to transport freight will double between the years 2000 and 2020. Without tighter regulation of the road freight industry, this has the potential to significantly impact on Queensland's future road toll.[iii] *Curtis Island*	Consideration should be given to the development of additional 'Park Up' areas for wide load and heavy vehicle trucks. These park-up areas should be on the Dawson, Warrego and Carnarvon Highways.

	A permanent workforce of more than 2000 is proposed for the CONSTRUCTION ACCOMODATION FACILITY on Curtis Island. It is reasonable to assume workers will have access to vehicles on the island. At present island traffic increases during holiday periods only. Police provide a presence during holiday periods either through Water Police or designated patrols.	The proponent should provide further information on traffic volumes for the island. This will assist in determining the need to establish a permanent police presence on the island. A contribution to accommodation costs for police required to attend the island for traffic or other responsibilities will assist in managing the long-term response to calls for service on the island.
13.16.15 11.16.26 12.16.20	**EMERGENCY RESPONSE PLAN (ERP)** Reference to legislation pertaining to management of an incident and investigation of fatal or injury related incidents or other matters that may involve criminal acts should be included. Legislation: • Public Safety Preservation Act 1986 • Police Powers & Responsibilities Act 2000 • Transport Operations (Marine Safety) Act 1994	EIS should include reference to Queensland Police Service with outline of roles and responsibilities as incident command and investigation. Queensland Police Service should be engaged as an Agency Stakeholder in the development of the ERP. The appropriate contact is the District Officer, Gladstone Police District. The EIS should also detail the connection between the nominated legislation, responsibilities and Emergency Response Plans as well as specific Environmental Management Plans for GLNG.
All components	**CLIMATE** This section does not delineate between a natural disaster and incident. Natural Disasters and management of same are managed under the Disaster Management Act, while incidents (including environmental, criminal, accidental) are managed under a variety of legislation.	EIS should include reference to District Disaster Management Group responsibilities and defined understanding of the difference between disasters and incidents and emergencies. The Emergency Management Plans should provide guidance as to the response, investigation, command and control and recovery for both Natural Disasters and other disasters/emergencies and incidents.
13.16.16	**RISK MANAGEMENT** Security Planning, in particular that relating to a maritime security planning, does not consider the impact of terrorist or criminal activity. There is no evidence of consideration for planning, management and response to protest activity. The propensity for increase in protest activity, in particular toward multinational companies in the energy industry is growing. The	LNG Manager to engage QPS in development of security plans to ensure consistency with QPS objectives and core responsibilities in so far as counter terrorism and criminal act response and investigation is concerned. This engagement should extend to detailed discussion of the role of Gladstone District Water Police and proponent expectations regarding safety exclusion zones.

	development of intelligence and integration of planning and response to protest incidents with the proponent, Harbour Master. Queensland Police Service and other agencies will be essential. QPS is the agency responsible for the policing of exclusion and safety zones and marine enforcement activity with both commercial and, in particular, recreational craft.	 The Queensland Police Service should be engaged and included in desktop or other planning and response exercises related to security and incident / emergency management. (see Port of Brisbane Emergency Plan and Security Plan).
	CONSULTATION The Queensland Police Service has been engaged as an Advisory Agency. In this capacity the QPS has attended 3 community consultation sessions. The QPS has twice attempted to engaged directly with SANTOS Government Liaison however to date contact has not been returned. The QPS considers this imperative to the Project and Policing responsibilities. The areas that require engagement and consultation and considered of significant risk include: *Traffic and Transport* • Over-dimensional Vehicles • Heavy Vehicle Movements • Road Safety • Enforcement • Gladstone Traffic Plan • Road Networks – Dawson Highway & Gladstone CBD • Resourcing impact – Traffic Patrol Vehicles/Wide Loads • Fatigue Management • Security of Vehicle Parking (for ferry CONSTRUCTION ACCOMODATION FACILITY workforce) *Water Police* • Ferry and Barge Movements • Marine Safety • Marine Enforcement Activity • Safety Exclusion Zone (similar to warship exclusion zones) • Impact on recreational Craft • Impact on commercial craft	The proponent should engage in consultation with QPS regarding a range of issues for both planning and response associated with impact of the GLNG project. This will assist the QPS in determining policing impacts, strategic planning, resourcing and how the QPS can best support the development of mining, energy and infrastructure projects and service delivery to affected areas. QPS Environmental and Strategic Planning assessments of GLNG impact identify that the current Water Police Facility is inadequate to meet growth in CALLS FOR SERVICE and specific taskings associated with GLNG. The construction of a new facility (Admin/storage/workshop) with an additional RIB vessel will support service delivery requirements associated with GLNG. Areas of growth include general recreation craft and marine safety enforcement, policing of the safety exclusion zone, water/community safety

	• Marine Crashes • Resourcing Impact – Requirement for new Facility NB – Gladstone has the highest level of recreational water craft per capita than anywhere else in Queensland. <u>*Disaster and Incident Management*</u> • Disaster Management Act (Natural Events), planning response, recovery and DDMG. • Incident Management (Spills/Fire/Explosion/Marine Crash etc) • Counter Terrorism & Security Planning • Protest Activity and Security <u>*Curtis Island*</u> • Policing increased calls for service • General Police Inquiries at the facility • Impact on traffic on the island • CONSTRUCTION ACCOMODATION FACILITY – Wet Mess and Calls for Service (assaults/public disorder / complaints)	impacted by significant increase in barge and ferry movements. Strategic Planning has considered the multiplier effect of GLNG and demographic data relevant to planning for impact.
	<u>CUMULATIVE IMPACT</u> • Lessons from Bowen Basin • Traffic • Housing The Cumulative Impact discussion in the EIS is specific about the impact of the three components to one another and to a lesser extent other LNG projects as a cumulative effect, but provides little detail regarding the cumulative effect of other significant and major projects in the area. Acknowledging the difficulty in assessing cumulative impacts when other LNG projects are yet to prepare their EIS, there are a number of other mining, energy and infrastructure projects in the Central and Southern Police Regions that have not been considered as part of the cumulative assessment.	The proponent should engage in consultation with QPS regarding a range of issues for both planning and response associated with impact of the GLNG project. This will assist the QPS in determining policing impacts, strategic planning, resourcing and how the QPS can best support the development of mining, energy and infrastructure projects and service delivery to affected areas. The QPS should be provided with all Environmental Management Plans once finalised subsequent to project approval. A more critical and broad review (including consultation) of cumulative impact of industry development in Gladstone District would assist in determining resource requirements and development appropriate service delivery and crime investigation strategies that meet the needs of the community.

	Examples: 1. Surat Basin Rail Project 2. Wandoan Coal Project 3. Nathan Dam and Pipelines 4. Central Queensland Gas 5. Fishermans Landing Port Expansion 6. Waratah & Hancock Mining Projects – Galilee Basin	The provision of a measurable baseline for cumulative impacts taking into account existing, planned and committed projects based on both historical data and strategic planning will enable agencies such as the QPS to more accurately measure, assess and respond to project impacts. There are a number of cross-agency impacts – the management of transport and traffic for example will impact on Department of Main Roads, Queensland Transport, Queensland Ambulance and other agencies in addition to the QPS. The development of a measurable baseline may not necessarily sit with the Proponent for this Project but rather an overarching authority may need to consider the development of this concept.
	Police Resourcing (Staffing / Equipment / Capital Infrastructure) The capacity of the QPS to respond to the magnitude of growth associated with the development in the Surat Basin and Gladstone in particular the LNG Industry is limited. Mitigating measures for resourcing may be funding for additional police and administrative positions, capital infrastructure (stations) and funding for a new water police establishment including staff, vessels and equipment. Funding will also be required to be sourced for the development of radio and communications infrastructure in Southern Region and Central Region.	The EIS will need to scope the requirement for additional police resources, including staffing increases to the Central Police Region, new police stations, specialist resources and other equipment required.
Not discussed in EIS	***Community Safety*** • Domestic & Family Violence • Crime Prevention Community consultation with other proponents of various projects has identified a significant community safety concern with the recent murders in Gladstone (4) where victims and/or perpetrators were identified as being employed by companies in developing and expanding industrial development in the Gladstone Community.	GLNG engagement in crime prevention projects with QPS and other stakeholders.
	Radio Infrastructure Network	

	Due to the increase in water craft, ferry movements and activity on Curtis Island the QPS will need to construct an additional radio site ($50,000) in the Curtis Island area subject to survey work. An additional two radio sites will be required in strategic locations to support secure radio communications in the pipeline construction locations. Due to the considerable increase in traffic volume in particular heavy vehicle movements (and including cumulative traffic impacts) it will be essential for improvements to the network in particular black spot locations along the Dawson and Warrego Highways. Two additional radio sites will cost $100,000.	GLNG contribution to the construction of 3 additional radio sites in the Gladstone Police District.

Signature: _____

Submissions must be received by **5 pm on Monday 17 August 2009** and be addressed to:

The Coordinator-General
C/- EIS Project Manager – Gladstone Liquefied Natural Gas project
Significant Projects Coordination
Department of **Infrastructure and Planning**
PO Box 15009 City East QLD 4002
fax +61 7 3225 8282
SantosLNG@dip.qld.gov.au

This form is the preferred format for a submission. Please use additional pages if there is insufficient space. Submissions will be treated as public documents and copies will be provided to the project's proponent. For further information please contact the Infrastructure and Economic Development Group on (07) 3234 1380.

[i] http://www.courts.qld.gov.au/Kingston_findings.
[ii] http://www.courts.qld.gov.au/Kingston_findings.
[iii] Explanatory Notes - Road Transport Reform (Compliance and Enforcement) Bill 2003
[iv] Transport Operations (Road Use Management) Act, Transport Operations (Road Use Management – Road Rules) Regulation, QPS Traffic Manual s 10.

Submission 40

Santos | PETRONAS

Contact Officer: Mrs Krebs
Our Ref: Mr Schuler:CLK:LU6.6/Project File
Your Ref: 09/16946

17 August, 2009

The Coordinator-General
C/- EIS Project Manager: Gladstone LNG (Santos)
Significant Projects Coordination
Department of Infrastructure and Planning
PO Box 15009 CITY EAST QLD 4002

Attention: EIS Project Manager

Dear Sir,

DRAFT ONLY
RE: ENVIRONMENTAL IMPACT STATEMENT FOR THE GLADSTONE LNG PROJECT

I refer to the Environmental Impact Statement (EIS) for the Gladstone LNG project (Santos/PETRONAS), electronic copies of which were provided to Council for review and comment on 24 June, 2009. Whilst submissions were required to be provided on 17 August, 2009, it is noted that Council sought an extension of time to allow a report on the EIS to be tabled at the Council's General Meeting held on 18 August, 2009. Council places on record its appreciation to you in allowing Council this extension.

In relation to Council's overall position on the EIS report, I advise that Council has centred its comments on those aspects of the Project which are generally within local government jurisdiction, and within its local government area. As a consequence, it is to be expected that other agencies will be providing comment on matters within their specific field upon which Council has not provided a response. It is on this basis that Council requires that the Coordinator General takes the following into consideration when carrying out the assessment of the EIS.

Furthermore, Council's comments have been provided based upon the information supplied in the EIS. Council is aware that there appears to have been changes proposed to the project, in particular the proposals relating to the construction workforce, which are now different to those stated in the EIS. Any changes to the proposed methods of housing for imported and local workforce will have a far reaching affect upon the assumptions and conclusions as stated in the EIS. As such major alterations to the assessments for transportation, social/community, and to a lesser extent infrastructure demands will need to occur in the provision of a supplementary EIS. The fact that Santos are now proposing these changes also highlights the inadequacies of the EIS as detailed in the following pages.

SOCIAL IMPACTS ASSESSMENT

Throughout the assessment of social impacts the EIS document poses inconsistencies and is based largely on what Council considers to be ill conceived ideas, particularly in respect of the development of a construction accommodation facility (CAF) on Curtis

Island. The result of this concept within the EIS document is that effectively the EIS is saying that the proposal poses no social impacts to the Gladstone Region.

Many assumptions have been made about how Santos are going to house the workers and the suggested mitigation measures use these assumptions as 'fact', meaning they will not be responsible for any impacts. The assumptions range from 65% of workers (2000 in total) will need to be imported into the region for the construction phase and that 35% of workers (1080 in total) will be locally based. The availability of the number of local workers is brought into question on the current situation, let alone the cumulative impact of the significant potential for further large scale industrial projects to occur at the same time or at least overlap by a period of time. Also, if the proponent expects local workers to also live in the CAF whilst on roster, then they are even less likely to be able to reach this total.

The reality of the matter is that Council believes the imported worker figures will be far higher, and these are then to be supposedly 'exclusively housed' in the CAF on Curtis Island. Combine that with the statement in the EIS '*The CAF would have a capacity of **around** 2,000, which would enable the full workforce to stay on the island during their work roster.'* (Appendix Z page 205), is concerning. Also Appendix Z page 206 details that *'the CAF development will involve a lengthy fabrication and construction process which could be as long as 18 months … [and] Santos will need to commence arrangements for CAF development [**now**] to be ready in time.'* The timeframes (December 2010 - 1414 in total workforce) appear to be far too tight to be considered realistic and when they are unable to be achieved the accommodation required will have to be sourced in the local market. No mitigation measures have been detailed other than the proponent would look further a field for accommodation e.g. Rockhampton, Biloela & Bundaberg. It is unsure what capacity those markets have to house additional workers (and potentially families) and not to mention the flow on effects to such an approach including transport.

Appendix Z, page 205 states that the report has assumed that few families/partners of the imported workforce will accompany workers into the area. Given that construction could extend for a period of up to twelve years with potential opportunities for work on other projects as well, it is considered that this is an unrealistic expectation.

Appendix Z, page 209 details a statement that *'some of the imported workers, construction workers, will be accompanied by family & families … [and] though not directly associated with the GLNG project will generate the largest demand for housing in the Gladstone area',* and on Appendix Z page 226 there is an assumption that there will be a further 10% flow-on due to increased employment opportunities created within the community. Again no mitigation measures have been identified, not just in terms of housing, but across the spectrum of social and community services.

The issues associated with a proposed CAF of this size on an island without access to the mainland are varied and extensive, such as but not limited to, the psychological impact upon the workers and their families (particularly locals), restricted access to emergency services, and lack of social infrastructure. Not only are there potential for considerable issues within the camp itself, but the impact on existing residents of Curtis Island is considered to be significant. Council considers that there will be no economic benefits to local small business from the FIFO/DIDO workers from the island.

It is considered that ultimately the stated CAF camp proposal is flawed, based on unrealistic assumptions, and is not acceptable.

More importantly though is how the EIS uses this accommodation assumption to justify everything else in the Social Impact Assessment. Appendix Z page 301 states *'the construction workforce is likely to place limited demand or impact on Gladstone's facilities and services as workers will stay in the CAF on Curtis Island, which are fully self-contained'.* No mention of the family, friends or 10% flow-on that **will** increase the demand on all facilities and services. The accommodation strategy is considered to be ill conceived, with little grasp on the social reality of the situation.

Further, since the EIS states the project will have little or no impact on housing / accommodation, social services or facilities, the proponent has not accepted any responsibility for any of the expected results on the community and in no way addressed the possible cumulative impacts. Within Table 9.8 (Appendix Z page 306-307 Potential Impacts and Mitigation Measures) the inherent risk rating for 'Strain on Local Facilities and Services' has been identified as "**extreme**" during the construction phase. The listed Mitigation Strategy is in the main to "consult" (talk), "provide an opportunity for local services to expand" (by what means and commitment?), and house all workers on Curtis Island, which will then have a residual risk rating of "**low**" as their objective is to utilise local services and facilities without affecting the normal supply to the local community.

Overall the only commitment the proponent has appeared to have flagged is on page 301 (Appendix Z) *'a need to invest in sport and recreation clubs has been identified, as sport is struggling with low quality facilities and a high degree of competition for revenue and resources'.* It is considered that this can only be viewed as a good public relations stunt (trying to convince the community to be happy that Santos came to town) and will not address in any form the impacts on the social infrastructure (soft or hard) or stress and strain on the social 'fabric' of the Gladstone community. It is for these very reasons that the Social Infrastructure Strategic Plan is being prepared i.e. to ensure that funding is applied in an equitable and consistent manner across social and community services in order to effectively and efficiently manage the impacts of large scale industrial projects.

Unfortunately those, at-risk and vulnerable, whether that be due to youth, being aged, gender, low income / unemployment, poor health, homeless etc are not even considered in the social impact statement because there will be no impact on services and facilities / housing as according to the EIS it will not happen since all workers will live on Curtis Island. This is unacceptable and in the long run, particularly during the construction phase potentially very detrimental for the Gladstone community.

Finally, it is well known that Santos engaged the Hornery Institute to undertake a Community Well-Being Study, not as part of the EIS process, but *'to gather some secondary data for the SIA'* (Appendix Z page 24) which has been referred to throughout the document. This document is yet to be released publicly and it is of particular concern that Santos are unwilling to release what is understood to be a comprehensive study (based on the methodology and consultation undertaken as part of the study) until after all submissions regarding the EIS have been lodged. This leaves the impression that Santos is concerned about what was identified and what may not be addressed (or they did not want to address) in the findings of the Social Impact Statement. It is considered essential that Council receives a full version (not an abbreviated form) of this comprehensive study, to be aware of findings and recommendations that the Hornery Institute has made.

Another aspect of the project not adequately addressed is the impacts upon recreation facilities. Appendix Z section 5.3.4 - 5.3.5 of the EIS - In terms of impacts on recreational clubs and sporting activities there are several throw away lines regarding

the shortfall and the poor standards of the facilities. However the EIS offers no solutions or even hint at Santos becoming and integral player in the recreational community. The information used is outdated (2004) and is based purely on Gladstone city. This is interesting when the EIS states that the proponent will have to look further afield to provide services for their workforce.

Appendix Z section 10.5 - The issue of the cumulative effects of the project on the recreation and facilities have been totally ignored. In the final paragraph there is mention of a social management plan to mitigate social impacts. However there are absolutely no details of this process or plan. Also in section 10 the EIS mentions the Hummock Hill project however there is no mention of other projects such as Tannum Waters which would be far more beneficial in terms of accommodation.

Conclusions

Overall the social impacts assessment is considered to be an extremely poor assessment of the potential impacts of the project. This is considered of particular concern not only for the project alone, but when the cumulative impact of other large scale industrial projects is properly assessed, of an even more heightened concern. The accommodation strategy is based on an ill conceived concept for a camp on Curtis Island which is considered an unrealistic and inappropriate solution. Since the assessment of social impacts has been largely based on the premise of a large scale CAF, all impacts on social and community services is effectively considered to be nil, which is a preposterous presumption.

The Social Infrastructure Strategic Plan being developed in conjunction with the GEIDB, State Government and Council is aimed specifically at ensuring a consistent and effective strategy to addressing the social impacts of large scale industrial projects. In the absence of the completed Model, it is considered essential that the likes of the Hornery Institute's 'Community Well Being Study' prepared for Santos, not only be released but the findings be incorporated into the EIS document itself.

As currently presented in terms of social impacts it is considered that the EIS is fundamentally flawed and essentially needs to be rewritten. It is considered that ultimately the stated CAF camp proposal is flawed, based on unrealistic assumptions, and is not acceptable. Furthermore it is considered appropriate that Council insists on the release of the full 'Community Well Being Study' prepared by the Hornery Institute and that the Supplementary EIS incorporate key findings and recommendations from that report for Council to consider.

TRANSPORT ISSUES

Council's primary interests in regard to the transport component of this EIS relate to the following stages of the proposed development process, as expanded upon below:

- Gas Transmission Pipeline Construction; and
- LNG Liquefaction and Export Facility.

Gas Transmission Pipeline Construction

The EIS identifies that it is proposed to ship the gas pipeline components to Gladstone for unloading at the Auckland Port wharves. From the wharves the two feasible options stated for delivery of the pipes inland are either transportation by train or by truck. Regardless of the option selected, appropriate management plans should be in place

for the unloading and loading of the pipes at the wharf, to ensure that amenity impacts on third parties such as air and noise pollution are minimised and scheduled within appropriate daylight hours.

1. Transportation by train

Council considers that this is the only realistic transportation option for the reasons identified below:

- Existing rail infrastructure will deliver the pipes to the three laydown areas with dispersed impacts on the region's road infrastructure, users and surrounding development.

- In the section of the Traffic Report prepared by Cardno Eppell Olsen titled *"Material by Rail" Option*, the authors identify the following benefits in transporting materials by rail:

"The benefits of the "Material by Rail" option are the reduction in heavy vehicle traffic using the road network, especially within Gladstone and along Dawson Highway. Also, whereas not all deliveries of pipe by road can be eliminated, the distance travelled by road is significantly reduced by transporting pipe by rail from Gladstone as far as Moura. It is estimated that a reduction in 14,500 trips and approximately 3,671,600 vehicle-km travelled will occur with the "Material by Rail" option, the majority of which will occur between 2010 and 2011.

The reduction in vehicle movements has operational benefits in that less heavy vehicle movement will occur along the Dawson Highway and side road delivery routes. This has the potential to make the Dawson Highway marginally safer from a road safety perspective due to less conflict between trucks and other vehicles. An additional advantage is that heavy vehicle movement will not occur across the Calliope Range where major deviation works are proposed during the pipe delivery period."

2. Transportation by truck

Council has significant concerns about the implications associated with this option including:

- The impacts resulting from up to 140 additional daily heavy truck movements within the city of Gladstone and out along the Dawson Highway which include:

  i. Safety concerns for other road users and pedestrians;
  ii. Reduced flow efficiency for local roads;
  iii. The cumulative wear on road infrastructure; and
  iv. Amenity impacts on surrounding development;

- The proponent has not identified any advantage in pursuing this option against transportation by rail.

It is strongly recommended that the proponents be required contribute towards extension of the Port Access Road (Stages 2 and 3) through to the Blain Drive area to take traffic pressures off the Glenlyon / Hanson Road areas. If the proponent wishes to pursue the transportation of pipes by truck option this would be imperative to separate the heavy vehicle movements from urban traffic to ensure a safe traffic environment for

the community. A contribution should also be made towards grade separation at the Dawson Highway/Don Young Drive intersection.

LNG Liquefaction and Export Facility

Council's interests in terms of transport/traffic extend to the construction and the operational phases of the LNG facility at Curtis Island. In each phase, the proponent has provided two alternative means of access to Curtis Island from the mainland; namely by road via a possible future bridge or alternatively via barge and ferry options. Council's areas of concern for each of these alternatives are expanded upon below:

1. *Road access to Curtis Island via bridge*

- *Bridge Construction*

Council recommends that an appropriate management plan be provided which for the period of bridge construction limits the hours of construction and associated heavy truck movements to appropriate daylight hours.

- *Construction Phase (LNG Liquefaction and Export Facility)*

The Traffic Report addendum to the EIS, prepared by Cardno Eppell Olsen, states that the possible bridge linking Friend Point (mainland) with Laird Point (Curtis Island) is unlikely to be operational until after Train 1 of the LNG facility has been completed. While this will mitigate additional heavy traffic movements in Gladstone, it will result in significant boat movements at the peak construction period when construction worker numbers are greatest (please refer to 'Barge/ferry option – construction phase' comments below).

- *Operational Phase (LNG Liquefaction and Export Facility)*

If the proposed bridge is constructed, it will result in estimated heavy traffic movements (for construction traffic alone) in the order of 40,573 one-way trips (Cardno Eppell Olsen Traffic Report addendum). Council also understands that there are height constraints along the heavy traffic routes in Gladstone specified by Queensland Transport. Council would insist that only those heavy vehicles with loads exceeding the identified height restrictions along the heavy traffic routes be diverted through alternative access routes so as to minimise the impacts on Gladstone's urban environments.

Additionally, should the bridge option proceed, Council would encourage the provision of buses by the proponent for the transport of workers to and from Curtis Island during the operational phase for Train 1 (and the construction and operational phases for Trains 2 and 3). This would minimise vehicular movements across the bridge, decrease the need for parking infrastructure and improve access safety.

Details regarding vehicle movements through the Curtis Island LNG Liquefaction and Export Facility site (via the bridge or barge), including turning circles and parking infrastructure has not been provided. Council would recommend that these details be obtained along with a management plan (which includes details on emergency vehicle access to and through the site) to ensure safe and efficient vehicle operations at the site.

2. *Barge/ferry option*

Council would expect that barge and ferry operations utilised by the proponent would be subject to regulation and monitoring by the appropriate authority.

- *Construction Phase (LNG Liquefaction and Export Facility)*

The EIS states that the construction workforce during the above stage may initially peak at 3,080 over the first 4 years. The workforce will be employed on rosters of 10 days on and 4 days off with all workers returning to the mainland (Gladstone) at the conclusion of these rostered periods.

Table 12.2 in the Traffic Report addendum prepared by Cardno Eppell Olsen, states that the required number of 'personnel ferry movements' for the initial 4 year construction period of Train 1 will range from 195 to 535 ferry movements per annum (based on yearly peak personnel numbers of 1,120 to 3,080 - which is inconsistent with the figures in the EIS).

Assuming a peak of 3,080 personnel, divided over a 14 day roster period, equates to an average 286 personnel leaving and 286 returning to Curtis Island (totalling 572 personnel) per day. The number of ferry movements required is therefore dependant on the capacity of the ferry(s) utilised by the proponent. At the construction peak it is considered that there would have to be more than an average of 1.5 ferry movements per day.

Notwithstanding the capacity of the ferry(s) to move these numbers of personnel, Council's chief concern here relates to the logistics and implications of moving this number of people through the Auckland Port Wharves on a daily basis. Matters which have not been adequately addressed in the EIS include:

- Moving this significant number of people through a working port; the potential for conflict of use; and safety implications;
- Appropriate passenger handling facilities are not currently available at Auckland Point.
- Ease of access for this number of people in regard to the existing security measures and other site constraints;
- The provision of secure car parking areas, drop-off and pick-up zones and delineated areas for commercial traffic (taxis and bus); and
- The capacity of the port, the extent of works needed and a management plan to address the above concerns.
- Noise impacts upon the residents of Auckland Hill and the CBD area.Whilst it is acknowledged that there are few alternatives where all tide access is available for this type of facility, however, the area needs to be appropriately planned and managed.

It is also suggested that the proponents would need to bus their workforce to the ferry terminal to alleviate pressure on the road network. Careful consideration needs to also be made to the proposed locations for vehicle parking at the bus pick up points. Past experience has highlighted the issues with locating these points in areas where parking creates a traffic hazard or consumes spaces otherwise available for the general public. It would best serve the community to have a permanent multi-level car park provided in a location that would remain for use by others. Potentially the carpark could be located away from the port and workers transported to and from the wharf by bus. (e.g. Build secure multi-level parking at the airport or Central Lane behind the CBD rather than temporary car parking on the port precinct.)

Table 12.1 in the Traffic Report addendum prepared by Cardno Eppell Olsen estimates that 2,500 (round trip) barge movements are also required for the first four years of the construction stage to deliver construction materials to Curtis Island. These (additional to required personnel transfer) vessel movements go through the 'Materials Off-loading Facility' (MOF) identified, which would be the sole receiving/dispatch point for all personnel and construction material movements.
Ideally, Council recommends that separate receiving/dispatch points (MOFs) be provided to:

- minimise the number of movements through a single point;
- remove the inherent conflict between personnel movements and materials deliveries; and
- ensure acceptable levels of operational safety.

- *Operational Phase (LNG Liquefaction and Export Facility)*

Although there will be substantial decreases in worker numbers and material movements, Council recommends that appropriate measures remain in place to ensure the safety and ease of access for workers moving through the Auckland Port Wharves and the Curtis Island MOF.

AVIATION IMPACTS

Council has the right to expect the project proponent to adopt an approach which is aimed at minimising the potential aviation impacts of the proposed LNG Facility. The approach that appears to have been adopted in the EIS is contrary to this and appears simply to be aimed at providing the Civil Aviation Safety Authority (CASA) with the necessary plume rise details required to evaluate the aviation risks of the proposal.

Acknowledging that there are risks is commendable but taking the view that CASA will deal with them is not.

Past history shows that CASA will deal with perceived aviation risks by limiting access – either by regulation or by formal warnings – to volumes of airspace predicted to be subject to plume rise disturbance. Limitations of this sort have may have a direct impact on the accessibility of Gladstone airport. These limitations are determined solely by CASA and cannot be influenced by the airport operator.

The area of plume rise disturbance is the volume of airspace in which the average vertical velocity of the plume is likely to exceed 4.3m/s. As the calculation has to take account of the full ambit of local weather conditions, vertical velocities of this magnitude will be experienced both above and downstream of the site.

The plume rise assessment prepared by URS indicates that significant plume impacts are likely and these are a major concern to Council in terms of the consequent impacts on accessibility to Gladstone Airport. This in turn impacts on the long term economic value of the asset.

Council's Airport Services has reviewed the plume rise assessment and notes the following:

- at this stage only preliminary design parameters are available for the site;
- the LNG facility will comprise three separate gas liquefaction "trains" when operating at full capacity;
- the fist stage of development consists of one train;

- the site impacts on both Gladstone Airport and the future site reserved on Kangaroo Island;
- in normal operation each train provides a number of buoyant plume sources including a purge gas flare with an exit temperature of 1000°C; and
- additional flare emissions associated with maintenance or emergency venting could result in a flame length of 50-100m and height/diameter much greater than the purge gas flares.

The plume rise assessment prepared by URS is deemed deficient by Council as it makes no attempt to quantify the extent of the maintenance/emergency venting flare. It simply notes their infrequent nature and suggests that they "would most likely warrant further investigation to provide CASA with information relevant to aviation risk and feasible mitigation measures".

Council rejects this approach and considers that the proponent should be required to fully evaluate this scenario, and then have CASA advise the mitigation measures it deems feasible so that the full extent of the impacts on aircraft operation in Gladstone Airport airspace can be evaluated.

Modelling results for the buoyant plume sources present during normal operations are themselves a matter of some concern to Council. These are modelled separately and then to illustrate their cumulative impacts over the site. This creates a worst case scenario as the plumes merge and provide enhanced buoyancy.

Some airspace restrictions are inevitable if the individual or merged plume rise exceeds the height of the obstacle limitation surfaces (OLS) associated with an airport and/or the height of the PANS-OPS surfaces which are established to protect an aircraft engaged in an instrument approach procedure to a specific runway. The height of the critical OLS/PANS-OPS surfaces at the LNG Facility is 164.5m for the existing airport and 145m for the planned runway on Kangaroo Island.

Modelling results presented by URS for individual plumes show:
- a minimum height of 108m and minimum diameter of 43m;
- an average height of 109m and average diameter of 59m; and
- a maximum height of 727m and maximum diameter of 137m.

While the maximum dimensions are significant further detail are presented by URS to show that the height of the critical OLS/PANS-OPS surfaces for the existing airport is exceeded only 1.7% of the time, and for Kangaroo Island only 3% of the time. This may well be tolerable.

Results for the merged plume rise however, show a dramatic difference with:
- a minimum plume height of 68m or 105m (one train or 3 trains) and minimum plume diameter of 96m or 256m;
- an average plume height of 116m/232m and average diameter of 232m/464m; and
- a maximum plume height of 969m/1460m and maximum diameter of 396m/776m.

While the <u>average</u> plume height may well be tolerable the critical OLS/PANS-OPS surfaces for the existing airport will now be exceeded either 9% (1 train) or 74% (3 trains) of the time, and for Kangaroo Island either 12% or 89% of the time. This is likely to have critical implications on airspace utilisation for both airport sites.

The significant message form this analysis is the potential for even greater plume impacts and airspace restrictions should plume merging be possible from adjacent developments which are mooted in the same general locality. This requires the LNG industry or state government to adopt a holistic view of the potential aviation risks. Council as the operator of Gladstone Airport objects strongly to the current proposal at least until the design elements are more advanced. In advancing the design, the proponent should be required to investigate all possible measures to reduce the individual and merged plume impacts at the site.

Given that further facilities are being planned for this part of the GSDA, Council does not recommend approval of any one development until such time as a realistic cumulative impact assessment on aviation airspace can be undertaken of both this and all other proposed LNG facilities. If the State Government does not deem it appropriate to require the proponent to do this modelling, other arrangements should be made for modelling to be done independently of, but prior to, approval of these projects.

It is unclear from the EIS as to whether the project includes emergency helicopter landing capabilities, particularly if the no-bridge option becomes reality.

In relation to the Kangaroo Island airport site the proposed bridge creates an unacceptable obstacle to the proposed runway and Council objects to this element of proposed development until such time as appropriate compensation has been made for the economic loss associated with the inability to utilise this site for an airport in the future.

CONSTRUCTION ACCOMMODATION FACILITY (CAF)

The findings and assumptions of the EIS rely greatly upon the use of a Construction Accommodation Facility (CAF) on-site at Curtis Island. There is very little detail itself in the EIS regarding the CAF and its impacts and infrastructure demands. On this basis Council considers that the Coordinator-General should not consider this facility as an ancillary use to the LNG project. Furthermore, it is understood that the Departments position to date in relation to construction accommodation facilities is that they will not be permitted within the GSDA. Council's view is that should there be a CAF, it should be located on the mainland. The proponent should note that there are existing sites with approvals in place for workers accommodation on the mainland (within the Calliope area). It should also be noted that in the past Council has promoted the development of such a facility in the Aldoga Precinct of the GSDA.

A further aspect worthy of consideration in relation to the CAF, is that Council believes that there will be very little benefit to the local economy from such a facility. Small businesses in the area are likely to be excluded from servicing the CAF and therefore not be a part of the economic benefits of the project. Council considers that general support staff (e.g. local cooks, cleaners, maintenance etc) for the CAF should be sourced locally ('local buy' contracts) so there are benefits for local businesses. This will be difficult if it is located on Curtis Island.

Council has not attempted to pre-empt what might be the infrastructure impacts of the CAF on Curtis Island, only to highlight that it appears to have been left out of the EIS. Given that there are known vector issues in this area (Curtis Island and the Narrows), the establishment of construction accommodation in this location is not considered suitable.

Page 8.5.7 states that sewage from the accommodation facility will be treated to a secondary standard at an on-site package sewage treatment plant. It then states that treated effluent will be loaded into tankers and barged to the mainland for disposal at an existing wastewater treatment plant.

It is not clear from a review of the traffic impact assessment that these tankers have been quantified and vehicle trips have been incorporated in the traffic impact assessment.

Council does not support this method of disposal of treated effluent. Sewage should be treated on-site to Class A standard such that it can be reused as irrigation water, and non-potable water supply for construction.

The water demand estimates for the construction phase of the project also do not appear to account for the expected water consumption by the CAF. This in turn has an impact upon transportation because the EIS transportation section at Table 4.5.4 assumes that both potable and raw water will be transported to the site in 20,000 litre tankers. The 125,000 litres/day potable water demand estimate is grossly inadequate if it is to cater for a 2,000 person CAF. Water demand is more likely to be in the order of at least 300,000 litres per day for the 2,000 person CAF, without including water demand for site construction. If this is in turn transported to the facility via tankers from the mainland it will have an impact upon the transportation estimates and impacts in the EIS. (This is in contrast to other parts of the EIS that state that a temporary desalination plant will be used for construction.)

- Rainwater tanks should be used to supplement rainwater supply from construction accommodation. Whilst this is generally not a reliable source it does assist in the reduction in stormwater runoff and at certain times of the year can reduce water demand from other sources.
- There is no mention of the power supply for construction accommodation in the EIS. Will energy come from diesel generators? If so, will the accommodation then be powered by the gas turbines once Train 1 is complete? What is the staging of power supply for the project?
- Energy efficient design (e.g insulation, orientation, lighting, water ratings) should be incorporated into the design of any construction accommodation.
- Little information is provided on the final use of the construction accommodation. Again no detail is provided on the built form of the use or what its potential future uses might be.

MARINE HABITATS

Council has general concerns regarding marine plant interference, habitat destruction for fisheries and impacts on a sensitive coastal environment. In relation to dredge material disposal Council considers that the dredge material disposal needs to be in line with the Western Basin Dredging and Disposal Project. Council considers that there should be no dredge spoil deposited at Laird Point.

REGULATORY FRAMEWORK

The EIS should refer to the *Public Health Act 2005* and *Land Protection (Pest and Stock Route Management) Act 2002,* as appropriate.

LNG LIQUIFICATION AND EXPORT FACILITY

Water Supply (Operational Phase)

It is noted that potable water source is proposed by desalination (reverse osmosis) plant. The plant should be designed to cater for the combined needs of all proponents of LNG plants on Curtis Island to obviate the need for multiple/separate reverse osmosis plants being established.

Wastewater (Operational Phase)

The EIS does not give any indication of the size of the proposed sewage treatment plant for operations. There is mention of irrigation of treated water from facility but no detail on the required area or its location on the site. This should be required from the proponent.

Waste Management

Waste generation figures for general waste mentioned in Table 5.3.1 require clarification. This states that 12,500m^3/yr of general waste (including putrescibles) will be created during construction and 52,000 m^3/yr during operation. These figures appear high and discussion is required with Council to ensure that the landfill has the capacity for this waste. The EIS mentions disposal at a 'local landfill', however the proponent should note that the Benaraby landfill is the only suitable facility in the region. The supplementary EIS should state this. The proponent is responsible for transportation of the waste to the appropriate facility (i.e Benaraby Landfill), not a waste transfer station. An agreed management approach with Council is required for all waste management issues. Furthermore, Council will not support a landfill site being developed on Curtis Island.

Weed Management p7.4.22 12.21

Limited information has been provided in the EIS with regards to weed management from the facility. A copy of the weed management plan has not been provided in the EIS, nor provided in response to a request by Council officers. Council has concerns regarding weed species moving on and off Curtis Island. There are species on Curtis Island that should not be introduced to the mainland and vice versa.

Mosquito and Biting Midge Management

Limited information has been provided in the EIS on proposals for vector control especially in relation to the Laird Pt dredge disposal area. Notwithstanding Council's previously stated position in relation to the Laird Pt dredge disposal area, Santos needs to work with Council with regard to an agreed management plan for both the LNG facility and the dredge disposal area. The management plan needs to be proactive rather than reactive. Council reiterates that with the known vector issues in this area (Curtis Island and the Narrows), the establishment of construction accommodation in this location is not considered suitable. There will also be issues for worker comfort during construction.

Flora

The EIS states that some endangered plants will be removed from the LNG project site. What is the proposed management plan for any endangered species? Will they be transplanted to another site? Council suggests that it would be best to relocate these plants to the within environmental area of the GSDA on Curtis Island, subject to agreement by the Department of Environment and Resource Management.

Energy/Climate Change/Sustainability

The EIS indicates that a temporary (and how long is temporary?) desalination plant will be constructed for the construction phase. What will be the energy source to power the desalination plant – gas turbines or diesel generators or other?
What is the staging of desal plant? When will it be constructed and what is the proposed water source before this comes on line?

Public Access

Council has concerns regarding the loss of recreational use and amenity of Laird Point. It is currently used by many residents and tourists for various recreational activities. This recreational area must remain open to public use.

The Gladstone Harbour Protection and Enhancement Strategy and Curtis Coast Regional Coastal Management Plan highlights the need for maintaining public access to coastal areas. There needs to be consideration for public access for fishing, boating and other recreational activities.

GAS TRANSMISSION PIPELINE

Council supports the further investigation of the northern pipeline alternative route to alleviate issues associated with multiple user location in the GSDA materials transportation corridor and of potential construction impacts upon the Yarwun community.

It is evident from a review of this EIS that there needs to be more land use planning for the GSDA prior to the identification of a site as being 'suitable' and even encouraged for LNG facilities. Strategically, the planning for the provision of services and infrastructure should be undertaken in much the same manner as is required for Council planning schemes and policies. The EIS process of having individual proponents come up with responses for their individual projects is flawed in that they will inevitably fail to properly account for cumulative impacts. This EIS in particular appears to be centred on strategies to reduce the accountability of the proponents without recognition of the reality of what will occur. Council expects that evidently a supplementary EIS will be required and in fact expects that complete sections such as social impacts and transportation will need to be rewritten as a result.

If the State Government expects this community to support the continuation of developing industries in the region and accept the environmental impacts which will occur, then the region should be receiving much more infrastructure assistance (both hard and soft) to enable the community to be sustained. The community should also be given the opportunity to realize the potential economic benefits from the construction phase of these projects.

Council once again thanks you for allowing an extension of time in which to provide the final response, noting that a draft submission was provided on the original due date of 17 August, 2009. Should you have any queries please contact Council's Development Services section (Calliope office) on (07) 49758131.

Yours faithfully,

GI KANOFSKI

CHIEF EXECUTIVE OFFICER



Submission 41

Santos | PETRONAS

Queensland Government

Department of
Employment, Economic Development and Innovation

Please quote: MN=105360
Contact officer: Ms Lara Tabua
Contact telephone: (07) 3224 4671

2 SEP 2009

RECEIVED 4/9/09

The Coordinator-General
C/- EIS Project Manager: Santos Gladstone LNG Project
Significant Projects Coordination
Department of Infrastructure and Planning
PO Box 15009
CITY EAST QLD 4002

Dear Mr Jensen

Thank you for the opportunity to provide comment on the Environmental Impact Statement for the Santos Gladstone LNG project.

The Department of Employment, Economic Development and Innovation recognises the potential benefits of the LNG industry to the regional development of Queensland. The proposed development will contribute to the Queensland Government's job creation target, both through direct employment in construction and operation, and through flow-on employment in the supply chain. The project will increase the value of regional exports and generate income through purchasing goods and services across the region.

We look forward to working closely with the Department of Infrastructure and Planning to maximize the regional development benefits and minimize any negative impacts from the project.

This proposed development is a major catalytic development and will contribute to sustainable regional economic development and diversification in both the Roma and Gladstone regions. This will provide significant flow-on effects to supply chain businesses from mining services and other sectors including construction, infrastructure, transport and logistics. Regional economic impacts are comprehensively described and appropriate mitigation strategies provided. The proposed development will contribute to the delivery of Queensland Government initiatives including Centres of Enterprise and Queensland and Australian Government regional development strategies.

Employment and Indigenous Initiatives division of the Department of Employment, Economic Development and Innovation notes that section 6.15.5.2 and 8.15.5.2 of the Environmental Impact Statement for the Gladstone Liquefied Natural Gas Project contains

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ABN 97 406 359 732

references to the workforce, including the estimated size of the workforce required during the construction and operational phase of the project in the Roma and Gladstone area.

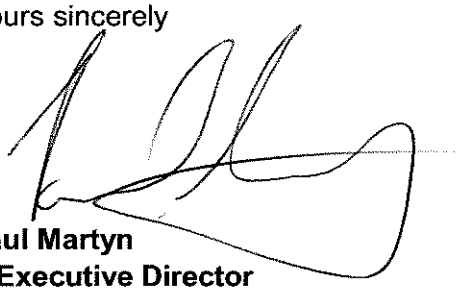
Subject to a recommendation by the Coordinator-General that the proposed development should proceed, it is recommended that the proponent liaise with the Department of Employment, Economic Development and Innovation in relation to employment strategies and support. A key focus of the project should be the maximization of employment opportunities for local disadvantaged job-seekers, under-employed people and indigenous people including support for job preparation and training.

Relevant contacts are Mr Ron Weatherall, Regional Director, Central Queensland and Wide Bay region on telephone (07) 4938 4821 or via email ron.weatherall@deedi.qld.gov.au in regards to assistance in the Gladstone region. For assistance in the Roma region, please contact Mr David Lucas, Regional Director, South-West Queensland on telephone (07) 4687 2872 or via email david.lucas@deedi.qld.gov.au.

For assistance in maximizing the regional development potential of the project, please contact Maree Parker, Director, Office of Regional Development on telephone (07) 3224 6612 or via email maree.parker@deedi.qld.gov.au.

If you require further information on our response please contact Ms Lara Tabua, Senior Industry Development Officer, Project Development and Facilitation Unit on telephone (07) 3224 4671.

Yours sincerely



Paul Martyn
A/Executive Director

Submission 42

Santos | PETRONAS

Cathy Warbrooke

RECEIVED
31/8/09
CW.

From: Alan Hutchings
Sent: Wednesday, 2 September 2009 11:11 AM
To: Cathy Warbrooke
Cc: Denis Wayper
Subject: FW: Review - GLNG EIS (Santos/Petronas)

Importance: High

Attachments: 090828.Final submission.doc

Cathy

Additional (internal) GLNG submission for recording.
Has this already been received, or forwarded to Santos?
If not, it will need some internal review before we forward on.
Regards
Alan

Alan Hutchings
Project Manager
Significant Projects Coordination
Infrastructure and Economic Development
Department of Infrastructure and Planning
Queensland Government
Ph 323 41380 Fax 3225 8282 Mob 0438 160 911
mail to: alan.hutchings@dip.qld.gov.au

From: Steve Mill
Sent: Monday, 31 August 2009 1:08 PM
To: Alan Hutchings
Cc: Denis Wayper
Subject: FW: Review - GLNG EIS (Santos/Petronas)
Importance: High

Hi Alan

FY attention

Cheers steve

From: Donn Berghofer
Sent: Monday, 31 August 2009 9:00 AM
To: Steve Mill
Cc: Kim Mahoney; Felicity Schubert
Subject: Review - GLNG EIS (Santos/Petronas)
Importance: High

Steve

As per earlier discussions with Kim, please find attached a submission from the State Development Areas Implementation Branch (SDAIB) with respect to the GLNG EIS. Submission follows a meeting with Significant Projects Coordination Division staff on 14 August 2009.

Regards
Donn



090828.Final submission.doc (6...

Donn Berghofer
Executive Director, State Development Areas
Department of Infrastructure & Planning
Telephone (07) 3224 2020 or 0412 578 134
Email: donn.berghofer@dip.qld.gov.au

Submission to the GLNG Project Environmental Impact Statement

Please find herewith a submission relating to the Environmental Impact Statement (EIS) for the Gladstone Liquefied Natural Gas Project (GLNG Project) proposed by Santos Limited and PETRONAS. The submission is aimed to ensure the project is consistent with the planning for the Gladstone State Development Area (GSDA) and associated infrastructure.

The components of the project relevant to the GSDA include:

1. The gas transmission pipeline within a designated gas pipeline corridor, which in part crosses through the GSDA;
2. The bridge and road access across Port Curtis (or The Narrows) between Friend Point and Laird Point; and
3. The LNG facility and associated Construction Accommodation Facility (CAF) located on Curtis Island in the Curtis Island Industry Precinct within the GSDA.

The key issues for the State Development Areas Implementation Branch (SDAIB) include:

- Ensuring the proposed gas transmission pipeline is consistent with the proposed infrastructure corridor currently planned through the GSDA and on nearby land, and particularly the crossing across The Narrows to Curtis Island; and
- The proposed bridge and road access is consistent with planning for the proposed extension to the GSDA to accommodate an infrastructure corridor across The Narrows, and therefore minimising potential environmental impacts; and
- That workers accommodation is appropriately located to be consistent with planning policy and will not be detrimental to achieving the intent of the GSDA.

These issues will be discussed under the relevant sub-headings below.

Proposed gas transmission pipeline

The EIS details three options that were identified for the proposed gas transmission pipeline through a route selection study. The preferred route is parallel to the existing Queensland Gas Pipeline route from the northern end of Arcadia Valley to Gladstone, with two alternative deviations at Gladstone, one of which includes a northern deviation through the GSDA.

It is noted in the EIS that the proponent has indicated that further route refinement studies are to be undertaken to confirm whether either potential alternative deviation would be selected.

Response:

As acknowledged in the EIS, the Queensland Government's preference is for gas transmission pipelines for all LNG facilities proposed for Curtis Island to be located in a common pipeline corridor across the GSDA.

The SDAIB has been planning an infrastructure corridor and since April 2009, work has been undertaken to identify a preferred infrastructure corridor route from Callide to the GSDA and across to Curtis Island, to accommodate gas pipelines. Following a study undertaken by Resource and Land Management Services Pty Ltd (RLMS) on behalf of the Department and preliminary on-the-ground assessment, the preferred alignment of the proposed infrastructure corridor is being finalised. The investigations have taken into consideration the physical constraints, including the significant shale oil resource, and have selected a route that minimises impact on land owners, the environment, and selected the most direct route to minimise costs.

Whilst ongoing consultation has been undertaken by the Department with Santos/PETRONAS representatives throughout preparation of the study prepared by RLMS, it would be expected that the GLNG project would use the multi-user infrastructure corridor to accommodate its gas transmission pipelines. The work undertaken to date should be recognised during route refinement for the GLNG project and in any Supplementary EIS.

The provision of a single multi-user corridor from Callide to Curtis Island was part of the Premier's election commitment during March 2009 to support the LNG industry.

Work is continuing in relation to the crossing of The Narrows including preliminary discussions with DERM and DEWHA to better understand the environmental constraints in relation to the proposed infrastructure corridor and to discuss measures to minimise potential environmental impact.

Bridge and road access across The Narrows

Two options have been selected for a possible bridge alignment between Laird Point and Friend Point, one option being within the State Marine Park and the second being outside the State Marine Park. The preferred option is a compromise of these two options. The EIS indicates the bridge crossing is influenced by several factors, one including the potential future infrastructure to be provided within the Curtis Island Infrastructure Corridor as identified in the Gladstone Land Port Rail Road Infrastructure Study (2007). At this point in time, it is apparent there is uncertainty whether the bridge will be constructed.

Response:

The location of the preferred bridge crossing, between Laird Point and Friend Point is situated near the infrastructure corridor's proposed crossing across The Narrows. The infrastructure corridor is proposed to be situated immediately adjacent to the State Marine Park southern boundary.

Given there are constraints relating to this crossing and the need to minimise environmental impacts, future planning for the proposed bridge crossing should generally be aligned with the infrastructure corridor as reasonably practicable. However, given the expected timing for the construction of a possible bridge and road access, infrastructure located within the proposed infrastructure corridor will need to be protected. Further refinement studies on the alignment would be recommended.

Workers accommodation

The EIS has indicated that no decision has been made on how the LNG facility is to be constructed which has implications on the provision of workforce accommodation. The two options for construction for the LNG facility include:

1. Conventional construction requiring materials to be barged to Curtis Island and assembled on-site. It is noted this option would require a construction workforce to be located on-site with an estimated peak of 3,000 workers.
2. The pre-assembly of major items of equipment off-site and then shipped to site for installation. It is noted this option would result in the requirement for ocean-going barges to deliver large pre-assembled modules (PAMs) directly to the site. The use of PAMs would require a reduction in on-site construction employees to a peak of up to 2,000 workers.

With regard to option 1, it is understood several alternatives have been considered for the location of the Construction Accommodation Facility (CAF) with the preferred alternative being to develop a CAF on Curtis Island at the GLNG project site. This is to be a temporary facility with the capacity to accommodate the entire construction workforce.

During operation, a smaller short-term accommodation facility is proposed to be located on the GLNG project site to accommodate workers for plant upgrades and maintenance programs, as well as emergency accommodation (portable roll-out bedding) which is to be used in the event that weather conditions prevent transfers from Curtis Island.

The development of accommodation and associated facilities is considered by Santos to be an ancillary use to the development of the LNG facility, on the basis that it is not an independent use but is subordinate to the LNG facility and is necessary for the development of the LNG facility. Within the EIS the location of the CAF on Curtis Island is further justified on the grounds of safety and socio-economic reasons, and the logistics of daily ferrying of large numbers of the workforce to and from the mainland which would result in additional cost from a 3.5 hour return commute.

Response:

Consistency with the GSDA development scheme:

The SDAIB appreciates the logistics associated with the LNG facility being located off the mainland for workforce access; however, the SDAIB would not support workers accommodation being located within the GSDA.

The two precincts located on Curtis Island include the Curtis Island Industry Precinct (CIIP) located on the west coast of southern Curtis Island (to provide for the liquefied natural gas industry) and an Environmental Management Precinct (EMP) situated to the east of the CIIP. The workers accommodation is proposed to be located in the CIIP on the GLNG project site.

The objectives of the GSDA, as outlined in the development scheme, include:

- Providing land and planning for significant industrial development and complimentary industrial, infrastructure and service uses; and
- Ensuring the integrity and functionality of the GSDA is maintained and protected from incompatible land uses and activities that may adversely affect the continued use of the GSDA.

The purpose of the CIIP includes preventing the establishment of uses that may be incompatible with, adversely affect, or constrain existing or future LNG processing operations within the CIIP. The purpose of the EMP includes protecting and maintaining areas of high ecological significance and to restrict incompatible land uses from establishing near the Industry Precinct.

Workforce accommodation is not considered to be a complimentary or compatible land use with industry and is not consistent with the GSDA development scheme. With reference to Schedule 7 and Schedule 9 of the GSDA development scheme, workers accommodation would be a use that is considered likely to compromise the purpose of the land use designation within the CIIP.

Notwithstanding that the accommodation is proposed to be a temporary facility in terms of being demobilised at the completion of construction activities, the expected duration of this use (approximately 12 years in total depending on demand from 2010 to 2022 when the facility is expected to be at ultimate capacity) and the size of the workforce community that would result from the accommodation is not short-term or considered compatible.

Workers accommodation as an ancillary use:

The CAF has been considered by Santos as an ancillary use to the proposed LNG facility.

From a strategic perspective and given the workers accommodation is a form of residential activity that will not be fundamental to the operation of or use of the land for an LNG facility, the SDAIB cannot support the CAF as an ancillary use to the LNG facility. Additionally, as discussed above, the CAF is proposed to operate for approximately 12 years depending on demand and therefore is not strictly considered to be "temporary" or "short-term".

Strategically, part of Curtis Island has been included in the GSDA to accommodate high impact industry due to its strategic location near the Port of Gladstone and its remoteness from sensitive receptors. This location provides competitive advantages for Gladstone and whilst the industry in the CIIP is intended primarily for natural gas (liquefaction and storage), other LNG proponents or compatible industry may seek to locate in the CIIP.

Developing workers accommodation within the CIIP would constrain surrounding land as temporary accommodation would be considered a sensitive receptor, which would require other industry to provide separation distances and potentially restrict hours of operation. As the Department is working with other LNG proponents seeking to locate significant projects on Curtis Island, potentially the allowance of incompatible land uses such as workers accommodation could sterilise large portions of the CIIP land dedicated to industrial land uses of regional, State or national significance.

Accordingly, locating workers accommodation within the GSDA on Curtis Island would reduce the integrity and functionality of the GSDA, which is not consistent with the GSDA development scheme.

Clarification of the CAF capacity:

It is noted there appears to be a mismatch in terms of workforce numbers and accommodation to be provided, with the CAF to accommodate up to 2,000 workers (as indicated in ES11), however the estimated peak workforce is indicated to be 3,000 workers for option 1. Further to this, Table 2.3.8 indicates the CAF is to be a 3,000 person accommodation facility. Clarification of the capacity of the CAF should be provided.

Potential impacts associated with the CAF:

To accommodate a construction workforce of between 2,000 and 3,000 people and to be completely self-sufficient as stated in the EIS, would require significant support infrastructure and result in an isolated community with limited access to a broader range of services and facilities provided in Gladstone.

The EIS has indicated that providing workers accommodation on Curtis Island has benefit in terms of a reduced potential for worker interaction with the Gladstone community. Broadly, the SDAIB recognises that this isolation may have some negative impact on Curtis Island from an environmental perspective within the adjoining Environment Management Precinct. Whilst the EIS states that the facility is to be contained within the GLNG project site and access to other parts of Curtis Island will be restricted, in reality it would be difficult to manage in the order of 2,000 to 3,000 workers during their leisure time (14 hours between shifts) to be wholly contained within the GLNG site.

Notwithstanding the incompatibility of the CAF with industry as discussed above, the proposed CAF could set a precedence to other LNG proponents or industry seeking to locate on Curtis Island. As the Department is aware of at least four other parties interested in establishing LNG facilities on Curtis Island, hypothetically if all proponents established workforce accommodation on Curtis Island, a

community in the order of 10,000 to 15,000 people would result, which would have a significant impact on both industry and the environment and the integrity of the GSDA.

Request:

For the location of the proposed CAF to be reviewed and located outside the GSDA to ensure the objectives of the GSDA development scheme are maintained, particularly with regard to:

- Preserving industrial land for operations of national, State or regional significance; and
- Preventing incompatible land uses establishing within the CIIP which would adversely affect or constrain other future LNG processing operations or industrial development.
- Ensuring the integrity and functionality of the GSDA is maintained

Whilst it is acknowledged that the Department cannot stop an application for workers accommodation from being lodged for assessment, significant justification for its location within the GSDA and demonstration that extensive investigations for alternative sites has been undertaken would need to be provided with the application.

It is understood that the position of Santos is supported by consultant studies and advice, but this information was not included in the EIS as the information is being treated as commercial in confidence. These studies should be made available to the SDAIB should an application be lodged.

Recommendation to the proponent

The recommendations are as follows:

- The alignment of the proposed gas transmission pipeline is reviewed as part of route refinement studies or a Supplementary EIS to be consistent with the planning for the proposed infrastructure corridor being undertaken by the Department
- Given the proposed timing of construction that further refinement studies be undertaken on the alignment of the bridge and access road, assuming the infrastructure corridor will be in use
- To further investigate accommodation options including:
  - to seek an alternative location for the CAF outside the GSDA
  - opportunities to coordinate accommodation needs with other industry proponents



Submission 43

Santos | PETRONAS

32200765

RECEIVED 3/9/09



Liz Cunningham MP
Independent
Member for Gladstone

PO Box 1952, Gladstone. 4680.
Phone: 49784650 Fax: 49784459
Email: Gladstone@parliament.qld.gov.au

The Co-Ordinator General,
c/- EIS Project Manager,
Gladstone LNG (Santos) Project,
Significant Projects Co-ordination,
Department of infrastructure and Planning,
PO Box 15009,
CITY EAST. QLD. 4002.

Attention: EIS Project Manager.

Dear Sir,

Reference is made to the Environmental Impact Statement for the Gladstone LNG Project. I would make the following comments in response to the EIS document circulated which are due to close on September 4th, 2009.

Social Impacts

It with a great deal of concern I note that the EIS document concludes that there will be virtually no social impacts on Gladstone City and its surrounds on the basis that the document asserts that all impacts will be contained on Curtis Island at the proposed construction accommodation facility.

Not only is this statement without proper foundation, it remains in my view completely unrealistic given the number of workers involved; assumptions made in relation to fly in/fly out; drive in/drive out; assumptions in relation to the number of families who will relocate to Gladstone for the duration of the construction period (and potentially for some, the operational phase); and assertions that workers will not want to access services on the mainland for recreational, health or social service purposes.

On that basis, I believe there is a significant under estimation of impacts on services such as health; community services; housing; recreational facilities; education; transport; social infrastructure (built and support services).

There continues to be a lack of information in relation to exclusion zones necessary for the movement of ships as well as at loading times. This information is essential for

residents to property understand impacts on one of this regions most popular recreational activity – fishing.

Given the number of workers proposed, impacts on the local hospital will be significant and should be addressed in the document.

Transport

Initially this project proposed a bridge crossing to facilitate the movement of equipment and workers. This appears now to be less accepted with all equipment and personel being moved by ship. Again there appears to be little real understanding presented in relation to vessel movements; mooring requirements and parking requirements for workers located on the mainland.

If the bridge is re-introduced as part of the infrastructure requirement, adopted construction must accommodate commercial and recreational vessel passage into the Narrows.

The Gladstone and Calliope regions have a population which, for many years has been willing to accept and support heavy industry development. Unless Government and Industry identify, accept and fund appropriate infrastructure for the projected development of LNG (and other) industries, this community could rightly resent development.

Conversely, with investment by Government and industry in infrastructure areas such as health, housing (aged care and affordable), social infrastructure (build and services), road, rail, recreation and environmental protection – indeed all facilities and services necessary to a fast growing community, this community will continue to facilitate industries which enhance this State and Nation's economic strength.

Kind regards,

Liz Cunningham

Liz Cunningham
Member for Gladstone.



Submission 44

Santos | PETRONAS

SANTOS - Gladstone LNG Project Advisory Agency Comments

Queensland Primary Industries and Fisheries (Department of Employment, Economic Development and Innovation)

Due 17th of August 2009

These comments were prepared in consultation with the following QPIF (DEEDI) Staff:

Name	Position	Location	Phone	Email
Veronica Slizankiewicz	Senior Regional Development Officer	Toowoomba, Tor St Complex	07 4688 1583	veronica.slizanciewicz@deedi.qld.gov.au
Kev McCosker	Senior Project Officer	Rockhampton, Parkhurst Complex	07 4936 0326	kevin.mccosker@deedi.qld.gov.au
Jane Morton	Senior Project Officer	Brisbane, Mineral House	07 3247 5552	jane.morton@deedi.qld.gov.au
Dan Mayer	Manager – Planning and Assessment	Deception Bay, Southern Fisheries Centre	07 3817 9505	dan.meyer@deedi.qlg.gov.au
Vern Rudwick	Manager – Sustainable Agriculture	Brisbane (PIB)	07 3225 1650	vern.rudwick@deedi.qld.gov.au
Carly Waide	Principal Policy Officer	Brisbane (PIB)	07 3239 3023	carly.waide@deedi.qld.gov.au
Michael Ross (Coordinator for the GLNG Project EIS)	**Policy Officer**	**Brisbane (PIB)**	**07 3247 5545**	**michael.ross@deedi.qld.gov.au**

Introduction

QPIF generally supports the intent of the project and the significant economic, employment, and regional development outcomes it will deliver amongst a number of other Coal Seam Gas projects to be developed in the near future. However, with these positive opportunities also comes a significant risk for primary industries, fisheries and biosecurity. Throughout the following assessment, a number of recommendations are made with the purpose of minimising the risk of serious impacts whilst capitalising on any opportunities for the following:

- Natural resources such as soil, water, aquatic and terrestrial ecosystems which primary industries and fisheries rely upon
- The profitability and productive capacity of agricultural operations in the region
- The social fabric of associated rural and regional communities which provide the foundation of primary industries

Primary Industries

Beneficial re-use and management of CSG water – *EIS Section 6 and 11*

CSG associated water represents both a potential opportunity for, as well as an impact on, agricultural activities in the region, and the following points should be considered when assessing the project.

Associated Water Storage

- Surface evaporation ponds for the purposes of water disposal are not supported by the Government and are not an option for proponents. Where it is necessary to store un-treated water or brine for an extended period of time (ie. associated with drilling/construction phase, storing before treatment at aggregation points, or disposal/crystallisation of brine) the following recommendations should apply:

  - **Recommendation:** In terms of pond construction, QPIF supports the recommendations/conditions of DERM, such as the lining of temporary dams to avoid any impacts on the surrounding soils and groundwater, all of which may sterilise those resources for agricultural purposes during operations or in the future.

  - **Recommendation:** In addition to the points in *Section 11.16.11* of the EIS, QPIF recommends that where large water storages are required, such as those at water aggregation points, that the proponents avoid Class A – GQAL, and areas with a high connectivity with groundwater. This can be achieved both through field development planning using GQAL and aquifer mapping, but also through early engagement with landholders to negotiate suitable sites.

Associated Water Irrigation

- **Recommendation:** QPIF supports the provision of treated water for beneficial re-use on the condition that the water is suitable for the proposed use and that any application has regard to avoiding soil/groundwater degradation (ie water quality is consistent with acceptable standards outlined in the Australian and New Zealand Environment Conservation Council (ANZECC) Water Quality Guidelines).

QPIF is supportive of a continual monitoring and reporting process, with the implementation of an adaptive management plan to be included in the Associated Water Management Plan, particularly for water discharged to surface waters (which may be used by downstream agricultural users for irrigation), reinjected into aquifers, or irrigated, as outlined in *Section 11.16.11* of the EIS, with the addition of the following recommendations.

Santos Use

- **Recommendation:** Where associated water will be used to irrigate agricultural land for the purposes of disposal, the proponents should comply with an Associated Water Management Plan that includes monitoring and compliance requirements, and which will contain an adaptive management plan as information on the impact of the associated water on resources is monitored.

Landholders Use

- **Recommendation:** As a condition of its provision to landholders by the proponent, any associated water supplied for agricultural activities must be accompanied by a complete water quality analyses (which must include an evaluation of sodicity and salinity risks for locally prevailing soil types as well as other relevant water quality information) and an evaluation of the expected quantity of this water and the duration of its availability.

The intent is that potential users must have the information necessary to make informed decisions on how best to take advantage of the opportunity, and manage risks accordingly. This information must be clearly articulated to the users to ensure they are able to make informed management decisions regarding how they integrate the use of CSG water into their business operations for the following reasons:

- Knowledge of water supply reliability/availability is required when investing in on-farm water infrastructure

- Knowledge of water quality is required to avoid inadvertently using associated water in a manner which has potential to adversely affect agricultural soils, impact water tables, or affect health of livestock. For example, irrigated forestry and cropping can pose salinity and/or sodicity risks if water is not treated sufficiently or if used in a manner not appropriate for specific soil types, application methods, and plant species.

<u>Other Disposal Mechanisms</u>

- **Recommendation:** Where water is used in operations such as dust suppression (both public and private access roads or along the transmission pipeline corridor) it is recommended that the water be treated and applied in such a way to minimise the accumulation and concentration of runoff in adjacent areas to avoid the contamination of farm soils and nearby water storages.

- **Recommendation:** QPIF support the reinjection of surplus associated water and brine into disused wells, or geological formations respectively, provided that it can be clearly demonstrated that this process will not affect the water quality of surrounding aquifers.

Future Use of Associated Water Infrastructure

- Where possible QPIF support the use of existing or future infrastructure (ie, abandoned pipelines) to transport associated water for beneficial re-use, provided that these are free from any contaminants that may alter the quality of the water transported though them.

Impacts on Primary Production/Farm Operations – CSG Fields and Transmission Pipeline - Cumulative Impacts – *EIS Section 6, 7, 11, 12*

A significant proportion of the CSG fields encompasses land classed as Class A – GQAL **(approximately 366 703 ha in the CS Fields + 94 ha in the Transmission Pipeline)** as defined by Guideline 1 SPP1/92 The Identification of Good Quality Agricultural Land. This Class A - GQAL is concentrated in the areas identified in section *6.11.4.1* of the EIS and includes some of the most important cropping areas for the region. This land is either currently cropped or has the potential to be cropped and represents *the* most valuable and extremely limited soil resource for primary industries.

Exploration, construction and operational activities associated with the CSG wells and transmission pipeline can interfere with the use of farm land as is alluded to in section *6.11.5.1* and section *2.2.2 - Appendix V* for cropping and to a lesser extent grazing/livestock production. To quote the relevant section in the EIS:

> *"...the GLNG will potentially affect the ability of farmers to use the land during the different stages of the project, careful consideration of how to minimise these impacts needs to be given".*

Restrictions and changes to farm/land use, impacts on agricultural soils and the effectiveness of rehabilitation, impacts on farm operations, changes to landholder time management of farm activities, and impacts on the quality of life of farmers will not only affect primary industries within the SANTOS project areas, but extend to the numerous other potential future CSG projects, which may impinge on the productive capacity in the region as a whole. This is particularly pertinent to cropping and a lesser extent grazing/livestock production for various reasons which have been partially explored in the relevant section of the EIS.

It is important to recognise that whilst they may seem insignificant on a property by property, or project by project basis, even small reductions in the impacts or improvements to mitigation/rehabilitation measures in related to the CSG industry (including the GLNG Project) will result in a much greater positive cumulative outcome for primary industries in the region overall. QPIF accepts the impacts that

this project will have on primary industries as outlined in the EIS with the following recommendations:

- **Recommendation:** QPIF recommends that the preferred option for reducing impacts on Class A – GQAL should be avoiding these areas. Where avoidance is not possible, impacts should be minimised in terms of the size of land impacted, and also the level of impact through using alternative techniques or construction methods to avoid impacts. Restoration of impacted areas must then be completed to the best standard possible (see comments below on Sections 11 and 12 regarding Rehabilitation).

- QPIF is supportive of and encourages future investigations of strategies which reduce the overall footprint of the GLNG Project such as improvements to the construction and planning of drilling pads, and directional drilling to reduce the number of wells necessary.

- QPIF generally supports the mitigation strategies outlined in section *6.3 & 6.11* and *7.3 & 7.11* with the addition of the following points:

    - The proponent should be taking all steps possible to avoid impacting farm business operations and minimise any reduction in farm productivity across the entire project. While many details about how this occurs need to be negotiated on a property by property basis, there are some general principles and practices that the proponent can adopt to avoid impacts generally which are as follows:

        - **Recommendation:** Burial depth and placement of pipelines, roads and wells should not adversely impact (unless negotiated with the landholder) on specific farm/soil management practices which include but are not limited to: soil tillage, the placement of farm infrastructure such as the farm irrigation pipelines, construction of fences, erosion management structures like contour banks and grassed waterways, water storage facilities, and current and future cropping activities.

        - **Recommendation:** Minimum pipeline burial depth of 1200mm as a standard in cropping areas as outlined in the EIS. Any requirement for greater burial depth can be established after consultation with individual landholders.

        - **Recommendation:** Wherever possible pipeline routes and access roads should avoid traversing *currently* cropped areas unless specifically negotiated with the landholder. Design of pipeline routes should ideally involve consultation with landholders.

        - **Recommendation:** Where erosion management structures are impacted they should as rapidly as possible be reinstated, or alternative structures should be erected to retain a functional

state. This applies to the pipelines associated with the CSG fields as well as the larger transmission pipeline.

- Emphasis should be placed on *early engagement/negotiation* as this would best occur before the proponent commits to a field development plans and pipeline routes, to provide the landholder with a greater flexibility to provide his preferences for the location of pipelines, roads and wells on his property.

- In *Section 11.16.10* and *Section 12.16.7* where rehabilitation is discussed, the proponent's objective is to restore land back to the surrounding land use as far as practicable, and that success will be assessed based on land cover and species composition when compared with adjoining areas. However this does not necessarily apply to agricultural soils as the soil should be returned to the previous soil capability to match the rest of the paddock/property (can support certain crops etc) *"as far as practicable"* if the proponent is to meet the Operational Policy or Management Objective in *Section 11.16.10*.

Recommendation: QPIF recommends that the preferred option for reducing impact on Class A – GQAL soils should be avoiding these areas. Where avoidance is not possible, impacts should be minimised in terms of the size of land impacted.

Recommendation: Restoration of Class A - GQAL should be completed to the best standard possible. QPIF recommends that the proponent provide existing examples (in other Santos projects) or undertake pilot studies to demonstrate to the affected landholder that the proposed rehabilitation measures will be effective before soil disturbance/excavation from the laying of pipelines, construction of access roads, drilling pads and water storages has occurred where Class A – GQAL areas are impacted. Careful consideration should be given to effective classification of soil structure and soil capability before and after operations and turnaround times to re-establish this prior condition as the Operational Policy or Management Objective in *Section 11.16.10* stipulates.

Impacts on Rural and Regional Communities

There are a number of potentially positive and negative flow-on effects from cumulative impacts of the potential CSG industry beyond the GLNG Project on rural and regional communities, but of most relevance to primary industries is the:

- increased strain on services available to primary producers (particularly freight)
- reductions in labour availability to primary industries as the CSG industry partially absorbs the local workforce if labour is sourced locally. Importantly this can be a positive impact on the community by offsetting losses in agricultural enterprises in challenging economic or climatic conditions.

- The higher salaries payed by CSG companies will place pressure on producers to match those salaries to retain or attract skilled workers, further impinging on the economic viability of agricultural enterprises.

Recommendation: Mechanisms to address these issues should be included in the proposed Social Management Plan as per *Section 11.16.25* of the EIS.

Fisheries

General Comments – *All Sections of the EIS*

QPIF could not support the existing proposal on the information submitted within the EIS.

It is unclear which components of the proposal are required to be addressed in this EIS. The EIS does identify approvals are being sought for:

- The CSG Gas Field
- Transmission pipeline
- Curtis Island LNG facility, product loading facility (PLF), materials offloading facility (MOF), a swing basin and access channel, a dredge material placement facility at Laird Point and workers accommodation.
- Access via a bridge across the narrows or a ferry.

A number of components have identified broad impacts to be addressed by future design. Certain components of the project contain activities that are not supported by QPIF and are contrary to QPIF published policies or guidelines.

It is understood that the LNG facilities might be justified on local, regional and state economics and employment. However, QPIF is concerned that the impacts on tidal fish habitat from the proposals are not suitably avoided, minimised or mitigated, and that these areas appear to be targeted for impact.

QPIF would raise serious concerns with the lack of qualified justification for the impacts and suggested dismissal of those impacts based upon percentage of total areas in Port Curtis. The components of the proposal by their very nature must impact to some degree upon the tidal lands and fish habitats of Port Curtis.

- **Recommendation:** QPIF would recommend greater attention should be given to the minimisation of these impacts and further investigation of alternatives. Results of the alternatives investigation should include a list of the impacts and comparison of those impacts.

Legislation and Approvals – *EIS Sections 6-8, 11-15*

- **Recommendation:** That the proponent notes the following approvals required for development of this project:
    - The QPIF Code for Self Assessable development - Temporary waterway barrier works Code number WWBW02, may be applicable for the construction of temporary waterway barriers associated with the proposal.
    - Any waterway barrier works not meeting the criteria of the self Assessable code associated with the crossing of a waterway by the

proposal would require specific approval for waterway barrier works through QPIF. The applications for these approvals are made at the operational works stage.

- Approvals would be required from QPIF for any operational works for the disturbance of marine plants associated with this proposal. Applications for operational works for disturbance of marine plants must be lodged at the MCU or RoL or held before MCU or RoL decision (Section 3.2.2A *Integrated Planning Act*). Approvals from QPIF would require identification and quantification of the location, areas and extent of the impacts (direct and indirect).

CSG Gas Field – *EIS Section 6 & 11*

The volume of associated water generated will be significant. The water will have elevated salt content. Santos is considering irrigation of salt tolerant crops or desalination for local community use. A water management plan will be developed.

- **Recommendation:** QPIF would request that a condition be imposed by the Coordinator General to ensure no discharge of contaminated waters capable of adverse impact upon the health of fish or the health of any receiving waterway or water body. To reinforce this, QPIF would support the recommendations of Department of Environment and Resource Management in regard to the water quality criteria.

- QPIF Code for Self Assessable development Temporary waterway barrier works Code number WWBW02 may be applicable should the water management or pipe works for the water movement involve waterway crossings.

- Any waterway barrier works not meeting the criteria of the self Assessable code associated with the crossing of a waterway by the above would require specific approval for waterway barrier works through QPIF.

Gas Transmission Pipeline to Gladstone – *EIS Section 7 & 12*

The method of waterway crossing will be confirmed during the detailed design, with 3 route options investigated. The majority will be trenched (dry or low flow) but open trenching with flow diversion (higher water volumes and flows) and horizontal directional drilling (major water courses). Horizontal dredging is proposed for the Dawson and Calliope Rivers and possibly the Arcadia Valley Escarpment.

- QPIF Code for Self Assessable development Temporary waterway barrier works Code number WWBW02 may be applicable to proposed waterway crossings.

- Any waterway barrier works not meeting the criteria of the self Assessable code associated with the crossing of a waterway by the pipe or the pipe construction would require specific approval for waterway barrier works through QPIF. Construction works in tidal sections of waterways may require approvals through QPIF for the disturbance of marine plants.

- **Recommendation:** QPIF would recommend and support that any major waterway including the Dawson and Calliope River crossings should be underground and undertaken by directional boring techniques.

Gas Transmission Pipeline from Gladstone to Friend Point/Curtis Island – *EIS Sections 8 & 13*

Port Curtis will be crossed between Friend point and Laird Point by trenching to a depth of three metres to allow two metres of rock to be placed above the pipe to the sea floor. This is approximately 1.5 kilometres in length north of the potential bridge location.

The following options were considered:

1. Laying pipeline on sea floor – potential risks to pipeline from vessels, difficulty in laying.
2. Trenching the pipeline
3. Suspending the pipeline from the proposed bridge
4. Horizontal directional Drilling beneath the sea floor.

- QPIF can not support this component of the proposal on the information submitted within the EIS.

- Plans within the EIS suggest that marine plants are within the pipeline route to Friend Point and across the Narrows. Approvals would be required from QPIF for any disturbance of marine plants associated with this crossing and works.

- It is noted that several options were considered and open trenching preferred with final design to be undertaken in the future. Horizontal Directional Drilling has been dismissed as an option for such a large pipe over the distance and the lack of area available for entry pits and stringing the pipe.

- The EIS does not appropriately identify the habitats within or adjacent to the construction footprint to Friend Point and across the Narrows, the impacts of this construction technique upon those habitats or how these will be appropriately avoided or minimised.

- **Recommendation:** Impact comparison and greater information should be provided for the alternatives or a combination of the alternatives to justify the preferred option.

LNG Facility Curtis Island – *EIS Section 8 & 13*

The facility will include:

- A PLF
- A MOF and a heavy haul road for transferring equipment and personnel from the MOF to the construction site.
- Access channel channels and swing basin for the PLF and MOF.
- Dredged material placement facility on Curtis Island at Laird Point.
- Bridge access in the long term if approved.
- Ferry and barge access in the short term and the long term if the bridge access is not approved.

Train 1 will commence construction in 2010. Construction of the overall facility is expected to take four years. The work force will peak approximately 3,000 people.

Alternative Ports and locations within Gladstone were considered.

Product Loading Facility

- An approximate 300 metre long by 3.5 metre wide piled trestle over the water for pipes to connect the onshore plant to the offshore loading platforms
- Loading platform with 4 loading arms to load LNG onto shops
- Marine operations platform for marine terminal (possibly moved onshore at a later stage)
- Building, electrical room, firewater pumps and stand by generators (possibly moved onshore at a later stage)
- Six mooring and four breasting dolphins

Final location, length and orientation will be determined at a later stage. The proposal includes over water areas for facilities that may be moved onshore at a later stage. The overall width of the jetty head will be 372 metres. The processing area platform will be approximately 50 metres.

- Plans within the EIS suggest that marine plants are within the vicinity of the proposed facility. Approvals would be required from QPIF for any disturbance of marine plants associated with this facility and construction works.

- **Recommendation:** The EIS has not appropriately identified the impacts of the facility or construction or shown that these impacts have been minimised or avoided. QPIF recommends an appropriate buffer should be provided between tidal fish habitats and facilities not requiring access to tidal lands.

Material Offloading Facility

Constructed at Hamilton Point and is expected to include:

- Three (3) separate berths to accommodate vessels for delivery of materials and personnel
- Wharf Structures, moorings and breasting dolphins

- Material laydown area
- A quarantine area

Detailed design has not been determined but a concept plan suggests reclamation and dredging. A temporary pioneer dock will be constructed first to allow the landing of equipment and personnel for construction of the MOF.

- **Recommendation:** The EIS does not appropriately identify the habitats within or adjacent to the construction footprint, the direct and indirect impacts of this facility upon those habitats or how these will be appropriately avoided or minimised. Impact comparison and greater information should be provided for the alternatives including piled structures or movement of the facility back to terrestrial lands with no reclamation.

- Approvals would be required from QPIF for any disturbance of marine plants associated with this facility and construction works.

- QPIF would raise some concern with the concept of this facility. The concept plan suggests reclamation of tidal fish habitat lands.

Haul Road from MOF to LNG facility

A concept plan of the route is provided but no further information. Plan suggests the route is located on tidal claypan and marine plant (mangrove) lands.

- **Recommendation:** The EIS does not appropriately identify the habitats within or adjacent to the construction footprint, the impacts of this facility upon those habitats or how these will be appropriately avoided or minimised. Impact comparison and greater information should be provided for the alternatives including location on non tidal lands. The ability to minimise impacts by sharing arrangements for these MOFs should be investigated and discussed.

- Approvals would be required from QPIF for any disturbance of marine plants associated with this facility and construction works.

- QPIF would raise concern with the concept of this facility. The concept plan suggests reclamation of tidal fish habitat lands.

Water Supply

A desalination plant is likely as part of the water requirements for the facility. The desalination units will use RO Technology and return the brine to the sea.

- **Recommendation:** The EIS does not identify the location of this plant or the inlet and outlet structures, the impacts of these and ability of the receiving location to mix or dilute the high saline water discharge or alternatives. It is recommended that the proponent provide this additional information to allow QPIF to accurately assess impacts.

- Approvals would be required from QPIF for any disturbance of marine plants associated with this facility and construction works.

Stormwater

Stormwater will be managed to minimise the potential for contaminants to be mobilised in off-site runoff. Stormwater running onto the site will diverted around the site away from processing areas.

- **Recommendation:** Appropriate stormwater management is fully supported by QPIF. Stormwater outlets should not discharge into tidal fish habitats. Outlet structures should be located on the landward side of terrestrial vegetation buffers for final buffering before sheet flows into tidal fish habitats.

Sewerage

A package sewage treatment plant will be installed with treated effluent disposed of by irrigation.

- **Recommendation:** QPIF supports alternatives to effluent disposal into tidal fish habitat waters. The irrigation area and supporting retention pond should be large enough and managed appropriately to ensure no discharge to adjacent areas. The irrigation area and retention pond should be buffered to provide a safe guard between the irrigation area and tidal fish habitats.

Bridge Construction

The bridge from plans appears to have abutments on the tidal lands in the Narrows and will be 1.5 kilometres in length. The bridge will not be public but residents of South end may be allowed access. The bridge will extend from northern end of Landing Road at Fisherman's Landing above high water mark along the coast for approximately 2.5 kilometres then north east across an intertidal area to the southern tip of Kangaroo island (Friend Point) to the western end of the proposed bridge. From the eastern end of the bridge the road will continue along the southern side of Graham Creek for approximately 2.5 kilometres then turn south east to Hamilton point. Total length of the road is approximately 15 kilometres. The road will be two-lane two way carriage-way, 10 metres wide and cater for 200 vehicles per day.

- The western section of the road minimises impacts on existing marine vegetation by using an alignment between two linear mangrove communities.

- The road across the intertidal area will be fill to a 5.5 metre AHD level. The natural surface level of the intertidal lands is 1.7 to 1.8 metres AHD. MHWS is 1.56 and HAT is 2.34 metres. Inundation occurs from both sides of the proposed route.

Dredging and Spoil Disposal – *EIS Section 8 & 13*

8,000,000 cubic metres of material will be dredged for the access channel and swing basin for berth pockets. . Material will be disposed to Laird Point.

The channel will be 200 metres wide and approximately 2 kilometres in length from the Targinie Channel to the PLF with a proposed dredge depth of -13.5 metres Lat and a maintained depth of -13 metres at LAT. The existing channels in the port are all deeper than -13metres at LAT.

100,000 cubic metres of material will be dredged for access to the MOF. Material will be pumped to an onshore settlement pond (yet to be determined size) adjacent to the haul road. A part of the dredge spoil material may be used for construction of the MOF and laydown area. The unsuitable material will be retained in the pond or pumped to the Laird Point facility.

The Qld Govt and GPC are presently reviewing the dredged material management plan for Port Curtis for the long term dredging and dredge spoil disposal for the Port in the foreseeable future. GPC is considering a single dredge material disposal area. If this does not proceed the LNG facility will develop a dredge spoil disposal area at Laird Point. This will require approval from the Coordinator general for a material change of use. The area has not been formally acquired by the LNG project .
The Laird Point dredge spoil disposal facility will require a 4 kilometre pipeline with booster station located on shore at Hamilton point. The laird Point facility will be constructed by placement of a rock bund across an embayment (small waterway and claypan) south of Laird Point. The delivery pipeline may be off shore or on shore. Plans suggest that the onshore route will involve laying of pipes at the landward edge of the tidal lands and across claypans. The area will be 120 hectares and provide space for 13,200,000 cubic metres of dredged material with bunds up to 18 metres in height. The area will accommodate the capital dredging and possibly some maintenance dredging of the access channel and swing basin. Maintenance dredging is likely to require a further area in the future. A causeway out to LAT will be constructed for access of machinery to construct the bunds and spoil facility. The facility will require a work force of 50.

Alternative sites were investigated at Boatshed Point (reclamation of the Bay), Valley on Curtis Island (terrestrial) 153 hectare Fisherman's Landing proposal (insufficient area), offshore (existing offshore disposal site does not have capacity, new site would require negotiation with GBRMPA). Laird point and Boatshed point also would create useable land.

<u>Swing basin and access channel dredging to PLF</u>

- QPIF understood this dredging was to be included within the Western Basin dredging and dredge spoil disposal EIS.

- **Recommendation:** The EIS does not appropriately identify the direct and indirect impacts of this dredging and this must be undertaken to accurately assess impacts.

<u>Access channel dredging to MOF</u>

- **Recommendation:** With 100,000 cubic metres of spoil, the EIS does not appropriately identify the direct and indirect impacts of this dredging and this must be undertaken to accurately assess impacts.

PLF swing basin and access channel Dredge Spoil disposal

The EIS identifies a tidal creek south of Laird Point as the spoil disposal site. The EIS advises that this will require a separate approval from the CoG for a material change of use. This is an alternative should the Gladstone Ports Corporation proposal for a single dredge material disposal area not proceed.

- **Recommendation:** The EIS does not suitably address alternatives or the direct and indirect impact of the spoil disposal or the causeway into the Narrows and this must be undertaken to accurately assess impacts. Please note QPIF does not accept that deep water dumping is a last alternative or that introduction of saline soils and water to terrestrial lands should be avoided.

- Approvals would be required from QPIF for operational works to disturb marine plants and to construct waterway barrier works for this proposal.

- QPIF would raise concern with this proposal. The proposal involves reclamation of tidal fish habitat lands.

MOF access channel dredge spoil disposal

The EIS identifies that this spoil material will be pumped to an onshore settlement pond (of yet to be determined size) adjacent to the haul road. A part of the dredge spoil material may be used for construction of the MOF and laydown area. The unsuitable material will be retained in the pond or pumped to the Laird Point facility.

- **Recommendation:** The EIS does not suitably address alternatives the impacts of this proposal and this must be undertaken to accurately assess impacts. It is noted that tidal fish habitats are adjacent to the haul road.

- Approvals may be required from QPIF for operational works to disturb marine plants for this proposal.

- QPIF would raise concern with this proposal should the construction of the MOF or the spoil disposal area should reclamation of tidal fish habitat lands be involved.

Marine Habitat Offsets – *EIS Sections 8 & 13*

The EIS does not address offset for the impacts to tidal fish habitats.

- **Recommendation:** All impacts to tidal fish habitats should be identified and suitably offset in keeping with the Queensland Government Environmental Offsets Policy and QPIF Fish Habitat Management Operational Policy

FHMOP005 Mitigation and Compensation for Works or Activities Causing Marine Fish Habitat Loss. QPIF has published Fisheries guidelines for fish habitat impact/ offset calculations (marine plants and other tidal fish habitats and declared Fish Habitat Areas) to assist offset considerations. Please note the estuaries ecosystem services fish habitat mosaic value has been identified as up to $940,000 per hectare over a 20 year production cycle. Ideally the offset should be the addition of a greater area of and similar tidal fish habitats than that lost or impacted.

Biosecurity:

General Comments – *All Sections of the EIS*

The mitigation and management of Biosecurity risks (weeds, pest animals, contaminants, diseases, pathogens) is a high priority for the protection of Queensland's economy, environment, social amenity and human health.

Invasive species have major impacts on natural resources, the environment and conservation of biodiversity, and the economic and social benefits (way of life) from their use. They destroy the functioning of terrestrial, freshwater and marine ecosystems through competition, predation, contamination, spread of diseases and erosion. Successful invasive species management will depend on shared ownership and responsibility for action across government, stakeholders and the community.

According to the Queensland Biosecurity Strategy 2009-14 Biosecurity means mitigating the risks and impacts to the economy, the environment, social amenity or human health associated with pests and diseases. Biosecurity deals with the risks from pests and diseases that impact on:

- Plant and animal industries including agriculture, horticulture, aquaculture, fisheries, forestry and racing
- Biodiversity and the natural environment (terrestrial and aquatic)
- Cultural heritage, recreation, sport and social amenity
- Infrastructure and service industries, including power, communication, shipping and water supplies
- Tourism, lifestyle and pleasure industries
- The built environment
- Human health through the transfer of diseases from animals to humans

The goals for biosecurity in Queensland are to:

- Prevent exotic pests and diseases from entering, spreading or becoming established in Queensland
- Ensure significant pests and diseases are already in Queensland are contained, suppressed or managed
- Contribute to the maintenance of Australia's favourable national and international reputation for freedom from many pests and diseases, market access for agricultural commodities, product safety and integrity, and diverse ecosystem sustainability.

Preventative measures need to be put in to reduce the Biosecurity risk of the spread of weeds, pest animals, plant pest diseases and animal pest diseases in the GLNG project site.

Corridors, be they roads, easements, channels, railroads or utility rights of way can act as conduits to the movement of pest species (including weeds, introduced animals such as foxes and plant diseases such as Phytophthora cinnamomi).

The Gladstone Liquefied Natural Gas Project Environmental Impact Statement provides reasonably detailed information on weed and pest animal control and mitigation in Sections 6.4, 7.4, 8.4, 11, 12, 13 & 14 of the GLNG EIS. The terrestrial and aquatic flora and fauna survey work in Appendices N1, N2, N3 & N4 captures the presence of weeds and pest animals in the GLNG pipeline area.

Recommendation: The use of Biosecurity Queensland's Annual Pest Distribution Survey 2008 data and predictive pest maps available on the DEEDI website:
http://www.dpi.qld.gov.au/cps/rde/dpi/hs.xsl/4790_9824_ENA_HTML.htm
http://www.dpi.qld.gov.au/cps/rde/dpi/hs.xsl/4790_9827_ENA_HTML.htm
should be utilised in conjunction with Queensland Herbarium naturalised flora data for the GLNG project.

Biosecurity risks – *EIS Sections 6-8, Appendices N1- N4.*

Pest plants

Sections 6.4, 7.4 and 8.4 highlights the weeds of concern for the GLNG project. Although the species described are important to focus preventative and control efforts, there are other weed species that should be considered across the whole of the GLNG project site.

Other Declared weed species of interest

There are a number of Declared plants that are not present in the project site (Appendix N1, N2, N3 & N4) yet are present in the local government areas impacted by the GLNG (Table 2). These species are potential Biosecurity risks to this region and consequently mitigation of spread and raising awareness of these species will reduce the threat.

Table 2: Declared plants not present (Appendix N1, N2, N3 & N4) that are found in the local government areas of the GLNG EIS that pose a Biosecurity risk to the project.

Class	Common name	Scientific name	Local Government Area
2	bellyache bush	Jatropha gossypiifolia and hybrids	Banana RC Central Highlands RC Gladstone RC
	rat's tail grasses with the following names—		Gladstone RC Banana RC Rockhampton RC
2	hymenachne	Hymenachne amplexicaulis 'Olive'	Rockhampton RC Central Highlands RC Gladstone RC Rockhampton RC Central Highlands RC Dalby RC Roma RC
2	American rat's tail grass	Sporobolus jacquemontii	
3	fireweed	Senecio madagascariensis	Roma RC
2	giant Parramatta grass	Sporobolus fertilis	Dalby RC
2	giant rat's tail grass	Sporobolus pyramidalis and S. natalensis	
2	Parramatta grass	Sporobolus africanus	

Contentious non Declared weed species of interest

Two contentious species (species with commercial value but with weed risk) were identified as abundant or common (Appendix N1, N2, N3 & N4) in sections of the GLNG project site (Table 3). Both guinea grass and buffel grass are not declared under the Land Protection (Pest and Stock Route) Act 2002 (The Act) and there is no legal obligation to be vigilant in reducing the spread of these species. It is important to note that there is a great deal of social conflict between pastoralists and environmentalists over both of these species and it would be appropriate to mitigate the risk of new introductions of these species within the GLNG project site.

Table 3: Non declared weed species that are present (Appendix N1, N2, N3 & N$), not listed as weeds of concern in Section 6.4, 7.4 and 8.4 of the GLNG EIS that may be potential threats through weed seed spread on project.

Common name	Scientific name
guinea grass	Megathyrsus maximus var. maximus
buffel grass	Cenchrus ciliaris (Pennisetum ciliare)

Non Declared weed species of interest

Two non Declared plants that are not present in the project site (Appendix N1, N2, N3 & N4) yet are present in the local government areas impacted by the GLNG (Table 4). These species are potential Biosecurity risks to this region and consequently mitigation of spread and raising awareness of these species will reduce the threat.

Table 4: Non declared weed species not present (Appendix N1, N2, N3 & N4) that are found in the local government areas of the GLNG EIS that may be potential threats through weed seed spread on project.

Common name	Scientific name
African love grass	Eragrostis curvula
Coolatai grass	Hyparrhenia hirta

Recommendation:
1) All potential weeds as described above must be considered in the Weed Management Plans for each existing or proposed operational area in the GLNG project site.
2) A Weed Management Plan is developed for Section 13 and an overview of this plan incorporated into Section 13

Pest Animals

Sections 6.4, 7.4 and 8.4 highlight the pest animals of concern for the GLNG project. Although the species described are important to focus preventative and control efforts

on there are other pest animal species that should be considered across the whole of the GLNG project site.

There are a number of Declared pest animals that are not present in the project site (Appendix N1, N2, N3 & N4) yet are present in the Gladstone Regional Council area (Table 2). These species are potential Biosecurity risks to this region and consequently mitigation of spread and raising awareness of these species will reduce the threat.

Common name	Scientific name
Red imported fire ant	Solenopsis invicta
Asian green mussel	Perna viridis

Recommendation:
1) A Pest Animal Management Plan is developed for pest species of concern and potential pest animal species for each Section 11, 12, 13, 14 & 15 in the GLNG EIS. An overview of this plan needs to be incorporated into sections 11, 12, 13, 14 & 15 of the GLNG EIS. (Note Section 15.15.5 could be used in each Section for Red Imported Fire Ants).

Local Government Areas

There are six Local Government Areas within the GLNG project site. The Act specifically requires local governments to coordinate the development, implementation and periodic review of pest management plans for their areas as part of an integrated planning framework for managing pest plants and animals across the state. Local governments can also declare and prioritise under their local laws pest species not listed in the Act and these species are often included in the LGAPMP.

Any assessment of the weed and pest animals within the GLNG project site should also include the weed and pest animal species locally declared under the Local Government model laws.

Recommendation: All locally declared weed and pest animals species must be considered in the Weed and Pest Animal Management Plans for each existing or proposed operational area in the GLNG project site.

Guidelines/Codes of conduct for Petroleum and Mining and Exploration groups

The Draft Code of Conduct being developed by the Land Access Working Group http://www.dme.qld.gov.au/mines/land_access_working_group.cfm indicates the obligations of mining and exploration groups for the prevention of spread of declared pests.

Advisory guidelines are also available for the Petroleum Industry (including coal seam methane gas) to minimise pest spread.
http://www.dpi.qld.gov.au/documents/Biosecurity_EnvironmentalPests/IPA-Minimising-Pest-Spread-Advisory-Guidelines.pdf

Plant pest diseases and animal pest diseases

There is a duty of care obligation to prevent the establishment or spread of plant and animal diseases during the development of the GLNG project.

Recommendation: The development of a Plant and Animal Disease Management Plan is recommended to identify potential risk areas and mitigate risk of spread within the GLNG project site.

Marine pests

Section 14.5.5 of the GLNG EIS provides a reasonable overview of the Marine Facilities Environmental Management Plan for Marine Pests. There is a duty of care obligation to prevent the establishment or spread of marine pests in the Port Curtis precinct.

Two infestations of Asian green mussel (Perna viridis) have been detected in the Gladstone harbour area in the past. Asian green mussel (Perna viridis) is a Declared pest animals under the Act. These species are a potential Biosecurity risks to this region and consequently mitigation of spread and raising awareness of these species will reduce the threat.

The management of marine biosecurity in Queensland is the responsibility of Biosecurity Queensland. Marine biosecurity is stopping the establishment of marine pests in Queensland. Marine pests are most likely to come through ship movements either from other states or territories or overseas. Marine biosecurity is focused on the prevention of pests reaching Queensland and early detection. The prevention of marine pests entering Queensland is achieved by control of their movement by ships and other vessels. This is achieved by exchanging ballast water (water used to stabilize the ship) during their sea voyage or potentially by chemical or physical treatment of the water and by management of biofouling (organisms attached to the hull and other places in contact with water). These techniques limit the likelihood of a pest incursion but do not totally eliminate the risk.

All dredges and associated vessels need to:

- maintain an effective antifouling coating appropriate to the vessel's operating profile and docking cycle, including regular inspection, scheduled drydockings, and cleaning and maintenance as necessary to ensure hulls are free of biofouling and associated marine pests.
- anchors and cables are cleaned after use and checked clear of mud, sediments, biofouling or entangled biofouling (such as seaweed) before stowage
- cable lockers are checked and if necessary cleaned clear of mud, sediments, and entangled biofouling before transit of the dredge to another area
- internal seawater system strainers are inspected and decantation tank/s (if fitted) are emptied prior to transit to Abbot Point to insure that these areas are free from marine pests.

Recommendation: The proponent should develop an Asian Green Mussell Management Plan to identify potential risk areas and mitigate risk of spread within the Marine facilities of the GLNG project site.



Submission 45

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The Coordinator-General
C/-EIS Project Manager: Gladstone (LNG) Santos
Significant Projects Coordination
Department of Infrastructure and Planning
PO Box 15009 City East Qld 4002 Australia
Fax: +61 7 3225 8282
Email: SantosLNG@dip.qld.gov.au

Dear Sir/madam

Environmental Impact Statement Submission
GLNG PROJECT
GLADSTONE

Please find attached duly completed formal EIS submission for the above Project.

Our Corporation is the registered Aboriginal Cultural Heritage Body, pursuant to the provisions of the *Aboriginal Cultural Heritage Act. Qld.*

All current Directors of the Corporation are also the Applicants for the Registered Port Curtis Coral Coast Native Title Claimant Group **(QUD 6026 OF 2001)** (PCCC).

As the Authorised Applicants of the PCCC Native Title claim group, we have been engaged in negotiations with Santos on behalf of the GLNG Project Proponents for more than 12 months. A Cultural Heritage Management Plan (CHMP) has been executed; however the CHMP does not deal with the water and area below the low tide mark which are areas of significance to PCCC and which will clearly be impacted by the Project. To date there is no agreement between the parties on how this important area will be utilised and managed.

The project impact area is rich in Archaeological evidence of its use by our PCCC ancestors, and still provides a critical role in the maintenance of our traditional and cultural practices today. The changes in the way the land is accessed, will impact on our ability to me e t our cultural obligations to future generations, due to the continuing reduction in areas where we can undertake our cultural responsibilities and practices.

Further on this matter PCCC wishes to place on the record its fervent and absolute opposition to the construction of any Bridge to Curtis Island in the Laird Point, Kangaroo Island areas , due to strong PCCC Cultural reasons, the

whole area is part of our PCCC Cultural existence and a significant area and we request that you respect and observe our lore on this Project.

PCCC has been unable to secure resources from the Project Proponent, in time, to meet the EIS submission deadline to allow for Independent Experts advice to our Native Title group and as such all submissions by PCCC are prepared without any Expert advice.

This has severely impacted on our ability to provide technical, legal and scientific comments/appraisals in our submissions. We do however observe that there is an extraordinary amount of Project work in the Gladstone Harbour/Curtis Island Precinct and seek assurances that the cumulative impact of all Projects are being monitored in a responsible manner. The lack of information and access to experts has affected our ability to fully understand the cumulative impact on our culture.

We note there will be extensive dredging, significantly increased marine traffic and this will no doubt have a marked negative impact on the dugong nursery area, turtles, dolphins , seagrasses, mudflats, mangroves and other marine species in the Narrows area. It was also have a debilitating effect on PCCC group members to enjoy and continue our Cultural obligations in the area.

We are aware that this Project will be a world first for its type (that is CSG to LNG) and as such consider that the Queensland Government should immediately establish an LNG Industry Environmental Management regime, which complies with Commonwealth Government standards.

PCCC people do not oppose the Project, as it will bring much needed employment opportunities and provide an economic stimulus for the general Gladstone community, including PCCC claim group members.

PCCC does however seeks to be able to ensure that the Project impacts are appropriately managed, and that we as PCCC people be able to, in partnership with the Project Proponent seek to ameliorate the potential impacts, if possible, on PCCC Culture and our Cultural Values and its environment..

PCCC also formally wishes to advise that we have relied on all statements and assurances made by Santos representatives during the various CHMP and ILUA negotiation processes.

Yours truly,

Submission on the environmental impact statement for the Gladstone Liquefied Natural Gas project

Name:

Organisation (if applicable):

Address:

Contact details:

Section	Describe the issue	Suggested solution
8.7	*Management of cumulative impact on the survival of a plethora of marine life, including, Dugong, Turtle ,sea snakes, Squid, Sea Horses, Dolphins/Porpoises, Shell fish, like crabs ,oysters, mussels and other crustaceans all of which have important cultural meaning and purpose to our group* Culturally and environmentally important animal and plant habitats being impacted, include, sea grass beds, Mangroves, Mud Flats and tidal flat areas. Changes to food intake of PCCC group members due to over fishing, with a total workforce on the project expected to exceed 3,000 people the area faces the prospect of being exhausted in record time. *Ensure there are appropriate measures in place having regard to the potential cumulative, continuing and consequential impacts on the project area for the life of the project and beyond.* The project impact area is rich in Archaeological evidence of its use by our PCCC ancestors, and still provides a critical role in the maintenance of our traditional and cultural practices today and is an area of significance to the PCCC people.. The **changes in the way the land** and water **and restricted acces, will**	*Immediate involvement of the Commonwealth Government to ensure all relevant Commonwealth legislation is complied with, including, but not limited to, the EPDC Act.* *Establishing Queensland Government Legislative LNG Industry Environmenta standards for the Gladstone LNG Precinct that satisfies Commonwealth Government legislative requirements.* *Introduce a total ban on fishing, crabbing activities to all Project Contractors, sub Contractors and Employees in the area from Hamilton Point to the start of the Protected area. near Grahams Creek starting immediately..* *Provide appropriate resources and additional information to PCCC and access to experts for advice to determine if the impact can be ameliorated.* **The Santos GLNG Project in its current proposed form cannot comply with the environmental legislative requirements.**

	impact on our ability to meet our cultural obligations to future generations, due to the continuing reduction in areas where we can undertake our cultural responsibilities and practices.	
14.11	*Ensure there are appropriate measures in place having regard to the potential cumulative, continuing and consequential impacts on the project area for the life of the project and beyond.* The project impact area is rich in Archaeological evidence of its use by our PCCC ancestors, and still provides a critical role in the maintenance of our traditional and cultural practices today and is an area of significance to the PCCC people.. The changes in the way the land and water and restricted access, will impact on our ability to meet our cultural obligations to future generations, due to the continuing reduction in areas where we can undertake our cultural responsibilities and practices.	*Establishing Queensland Government Legislative LNG Industry Environmenta standards for the Gladstone LNG Precinct that satisfies Commonwealth Government legislative requirements.* *Provide appropriate resources and additional information to PCCC and access to experts for advice to determine if the impact can be ameliorated.* **The Santos GLNG Project in its current proposed form cannot comply with the environmental legislative requirements.**
14.11.2	*Ensure there are appropriate measures in place having regard to the potential cumulative, continuing and consequential impacts on the project area for the life of the project and beyond.* The project impact area is rich in Archaeological evidence of its use by our PCCC ancestors, and still provides a critical role in the maintenance of our traditional and cultural practices today and is an area of significance to the PCCC people.. The changes in the way the land and water and restricted access, will impact on our ability to meet our cultural obligations to future generations, due to the continuing reduction in areas where we can undertake our cultural responsibilities and practices	*Establishing Queensland Government Legislative LNG Industry Environmenta standards for the Gladstone LNG Precinct that satisfies Commonwealth Government legislative requirements.* *Provide appropriate resources and additional information to PCCC and access to experts for advice to determine if the impact can be ameliorated.* **The Santos GLNG Project in its current proposed form cannot comply with the environmental legislative requirements.**
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14.15.11	Dealing with important and sensitive cultural heritage matters associated with the Narrows, Kangaroo Island water and general foreshore area. The project impact area is rich in Archaeological evidence of its use by our PCCC ancestors, and still provides a critical role in the maintenance of our traditional and cultural practices today and is an area of significance to the PCCC people.. The changes in the way the land and water and restricted access, will impact on our ability to meet our cultural obligations to future generations, due to the continuing reduction in areas where we can undertake our cultural responsibilities and practices	Loss of enjoyment of cultural practices and inability to provide cultur maintenance *Provide appropriate resources and additional information to PCCC and acc to experts for advice to determine if the impact can be ameliorated* **The Santos GLNG Project in its current proposed form cannot comply with the environmental legislative requirements.**
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8.445	Culturally important animal and plant habitats being impacted, include, sea grass beds, Mangroves, Mud Flats and tidal flat areas. The project impact area is rich in Archaeological evidence of its use by our PCCC ancestors, and still provides a critical role in the maintenance of our traditional and cultural practices today and is an area of	*Establishing Queensland Government Legislative LNG Industry Environme standards for the Gladstone LNG Precinct which comply with Commonwea Environmental standards.* *Provide appropriate resources and additional information to PCCC and acc to experts for advice to determine if the impact can be ameliorated*

	generations, due to the continuing reduction in areas where we can undertake our cultural responsibilities and practices	
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14.15.7	*Ensure there are appropriate measures in place having regard to the potential cumulative, continuing and consequential impacts on the project area for the life of the project and beyond.* The project impact area is rich in Archaeological evidence of its use by our PCCC ancestors, and still provides a critical role in the maintenance of our traditional and cultural practices today and is an area of significance to the PCCC people.. The changes in the way the land and water and restricted access, will impact on our ability to meet our cultural obligations to future generations, due to the continuing reduction in areas where we can undertake our cultural responsibilities and practices	*Establishing Queensland Government Legislative LNG Industry Environmenta standards for the Gladstone LNG Precinct which comply with Commonwealth Environmental standards* *Provide appropriate resources and additional information to PCCC and access to experts for advice to determine if the impact can be ameliorated* **The Santos GLNG Project in its current proposed form cannot comply with the environmental legislative requirements.**

	significance to the PCCC people.. The changes in the way the land and water and restricted access, will impact on our ability to meet our cultural obligations to future generations, due to the continuing reduction in areas where we can undertake our cultural responsibilities and practices	**The Santos GLNG Project in its current proposed form cannot comply with the environmental legislative requirements.**	

Signature:

Submissions must be received by **5 pm on Monday 17 August 2009** and be addressed to:

The Coordinator-General
C/- EIS Project Manager – Gladstone Liquefied Natural Gas project
Significant Projects Coordination
Department of **Infrastructure and Planning**
PO Box 15009 City East QLD 4002
fax +61 7 3225 8282
SantosLNG@dip.qld.gov.au

This form is the preferred format for a submission. Please use additional pages if there is insufficient space. Submissions will be treated as public documents and copies will be provided to the project's proponent. For further information please contact the Infrastructure and Economic Development Group on (07) 3234 1380.

Submission 46

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17 AUG 200

Submission on the environmental impact statement for the Gladstone Liquefied Natural Gas project

Organisation (if applicable):

Contact details:

Section	Describe the issue	Suggested solution
8.7	*Management of cumulative impact on the survival of a plethora of marine life, including, Dugong, Turtle ,sea snakes, Squid, Sea Horses, Dolphins/Porpoises, Shell fish, like crabs ,oysters, mussels and other crustaceans all of which have important cultural meaning and purpose to our group* Culturally and environmentally important animal and plant habitats being impacted, include, sea grass beds, Mangroves, Mud Flats and tidal flat areas. Changes to food intake of PCCC group members due to over fishing, with a total workforce on the project expected to exceed 3,000 people the area faces the prospect of being exhausted in record time. *Ensure there are appropriate measures in place having regard to the potential cumulative, continuing and consequential impacts on the project area for the life of the project and beyond.*	*Immediate involvement of the Commonwealth Government to ensure all relevant Commonwealth legislation is complied with, including, but not limited to, the EPDC Act.* *Establishing Queensland Government Legislative LNG Industry Environmental standards for the Gladstone LNG Precinct that satisfies Commonwealth Government legislative requirements.* *Introduce a total ban on fishing, crabbing activities to all Project Contractors, sub Contractors and Employees in the area from Hamilton Point to the start of the Protected area. near Grahams Creek starting immediately..*
~~14.11~~	~~*Ensure there are appropriate measures in place having regard to the potential cumulative, continuing and consequential impacts on the project area for the life of the project and beyond.*~~	~~*Establishing Queensland Government Legislative LNG Industry Environmental standards for the Gladstone LNG Precinct that satisfies Commonwealth Government legislative requirements.*~~
14.11.2	*Ensure there are appropriate measures in place having regard to the potential cumulative, continuing and consequential impacts on the project*	*Establishing Queensland Government Legislative LNG Industry Environmental standards for the Gladstone LNG Precinct that satisfies Commonwealth*

	area for the life of the project and beyond.	*Government legislative requirements.*
14.11.3	*Ensure there are appropriate measures in place having regard to the potential cumulative, continuing and consequential impacts on the project area for the life of the project and beyond.*	*Establishing Queensland Government Legislative LNG Industry Environmental standards for the Gladstone LNG Precinct that satisfies Commonwealth Government legislative requirements.*
14.11.4	*Ensure there are appropriate measures in place having regard to the potential cumulative, continuing and consequential impacts on the project area for the life of the project and beyond.*	*Establishing Queensland Government Legislative LNG Industry Environmental standards for the Gladstone LNG Precinct which comply with Commonwealth Environmental standards.*
14.14	*Ensure there are appropriate measures in place having regard to the potential cumulative, continuing and consequential impacts on the project area for the life of the project and beyond.*	*Establishing Queensland Government Legislative LNG Industry Environmental standards for the Gladstone LNG Precinct which comply with Commonwealth Environmental standards.*
14.15.1	Significant amount of dredging material as well as water disturbance from operating of dredges.	Creating an effective Turbidity Control Plan *Establishing Queensland Government Legislative LNG Industry Environmental standards for the Gladstone LNG Precinct which comply with Commonwealth Environmental standards.*
14.15.3	*Ensure there are appropriate measures in place having regard to the potential cumulative, continuing and consequential impacts on the project area for the life of the project and beyond.*	*Establishing Queensland Government Legislative LNG Industry Environmental standards for the Gladstone LNG Precinct which comply with Commonwealth Environmental standards.*
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14.15.5	*Ensure there are appropriate measures in place having regard to the potential cumulative, continuing and consequential impacts on the project area for the life of the project and beyond.*	*Establishing Queensland Government Legislative LNG Industry Environmental standards for the Gladstone LNG Precinct which comply with Commonwealth Environmental standards*
14.15.7	*Ensure there are appropriate measures in place having regard to the potential cumulative, continuing and consequential impacts on the project area for the life of the project and beyond.*	*Establishing Queensland Government Legislative LNG Industry Environmental standards for the Gladstone LNG Precinct which comply with Commonwealth Environmental standards*
14.15.11	Dealing with important and sensitive cultural heritage matters associated with the Narrows, Kangaroo Island water and general foreshore area.	Loss of enjoyment of cultural practices and inability to provide cultural maintenance
14.15.13	Dealing with important and sensitive cultural heritage matters associated with the Narrows, Kangaroo Island water and general foreshore area.	*Establishing Queensland Government Legislative LNG Industry Environmental standards for the Gladstone LNG Precinct which comply with Commonwealth Environmental standards*
8.13	Dealing with important and sensitive cultural heritage matters associated with the Narrows, Kangaroo Island water and general foreshore area. Culturally important animal and plant habitats	*Establishing Queensland Government Legislative LNG Industry Environmental standards for the Gladstone LNG Precinct which comply with Commonwealth Environmental standards.*



Submission 47

Santos | PETRONAS

RECEIVED
17 AUG 2007

From: GLNG SANTOS
Sent: Tuesday, 18 August 2009 7:50 AM
To:
Subject: FW: SUBMISSION

From:
Sent: Monday, 17 August 2009 2:19 PM
To: GLNG SANTOS
Subject: SUBMISSION

The Coordinator General
C/- EIS Project Manager: Gladstone (LNG) Santos
Significant Projects Coordination
Department of Infrastructure and Planning
PO Box 15009
CITY EAST Q 4002

Sent by email: SantosLNG@dip.qld.gov.au

Dear EIS Project Manager

ADDENDUM #6 TO SUBMISSION: GLADSTONE LNG PROJECT (SANTOS AND PETRONAS)

I refer to my submissions dated 3rd August 2009 and Addendums dated 5th August, 7th August 2009, 10th August 2009, 12th August 2009 and 14th August 2009.

I now supply Addendum #6, which should be read as a part of my Submissions.

I draw your attention to the paper Liquefied Natural Gas: A Potential Terrorist Target? dated 11.02.06. Page 2 refers to report by a firm Good Harbor Consulting on the proposed LNG terminal in Providence Rhode Island that predicts a successful terrorist attack on a tanker could result in as many as 8,000 deaths and upwards of 20,000 injuries (worst case scenario).

IF-1

A copy of this paper can be found on line at:

http://www.sbck.org/pdf/TTargets.pdf

I submit that the scenario above is even more relevant to the Gladstone LNG Project because of the amount of other shipping in the narrow and busy Gladstone Harbour shipping channel i.e. a major hull breach in an LNG vessel could as easily be caused by a collision with another bulk carrier as it could by a terrorist attack.

I submit that if the Good Harbor Consulting report is even 10% relevant to Gladstone, that would still mean a worst case scenario of upwards of 800 deaths and 2,000 injuries. If the study is even 1% relevant to Gladstone, that would still mean a worst case scenario of 80 deaths and 200 injured. Society would not accept death/ injuries on this scale!

I therefore submit that this project should not proceed unless the following prerequisites have been met:

1. Worst case scenario from a Gladstone (Santos) LNG plant accident/ terrorist attack or an LNG shipping accident/ terrorist attack in Gladstone Harbour, to be identified using an independent source i.e. NOT the project proponents (Santos, Petronas, Q ueensland Government etc.).

2. Ma nagement plan formalised to (a) prevent any death of or injury to Gladstone residents, and (b) demonstrate specific (not general) preparedness for coping with the LNG worst case scenario.

3. Input on the identified worst case scenario and proposed management plan to be sought from all stakeholders including all relevant Federal and State Government agencies e.g. including Department of Health & Safety, Department of Environment & Resource Management; State Emergency Service; Gladstone Regional Council; ra tepayers and residents of Gladstone; etc. etc.

In conclusion, I submit that the above transparency should be an integral part of the approval process.

Yours faithfully

Submission 48

Santos | PETRONAS

Queensland Government

Treasury

Our Reference: TRX-09634
Your Reference: TN 139852/MH31/DIP

14 AUG 2009

Mr C Jensen
Director-General
Department of Infrastructure and Planning
PO Box 15009
CITY EAST QLD 4002

Dear Mr Jensen Colin

I refer to a recent letter from Mr Steve Mill of the Department of Infrastructure and Planning inviting comment on the Environmental Impact Statement (EIS) for Santos Gladstone LNG Project.

I wish to advise that Treasury Department has no comment on the EIS.

I would appreciate your department keeping Treasury informed of developments regarding the Santos Gladstone LNG Project. Mr Vincent Hickey, Treasury Analyst, Transport, Infrastructure and Government Services Branch, is Treasury's primary contact for this matter. Mr Hickey can be contacted on telephone (07) 3225 1408.

Yours sincerely

Gerard Bradley
Under Treasurer

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