



## Public Report

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# Spring Gully Water Treatment Facility Water Quality Discharge Annual Report

(1 July 2010 to 30 June 2011)

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## 1. Summary

Australia Pacific LNG is a joint venture between Origin, ConocoPhillips and Sinopec, to deliver a coal seam gas (CSG) to liquefied natural gas (LNG) project which will deliver gas to domestic and overseas markets.

Australia Pacific LNG is the leading CSG producer in Queensland, supplying more than 40% of the State's domestic gas requirements.

The Spring Gully Water Treatment Facility (SGWTF) has been designed using the best available technology to treat water produced as part of the gas extraction process so that it can be put to a number of beneficial uses, primarily for irrigation of a 300 hectare pongamia plantation; and operations and construction activities. Any surplus treated CSG water is discharged into Eurombah Creek, which flows in to the Dawson River. Further, Australia Pacific LNG is also proposing to undertake a trial to inject treated CSG water into the precipice sandstone aquifer.

This is the first Annual Report for the SGWTF. Public health based water quality limits for the discharge of SGWTF's treated CSG water to Eurombah Creek were granted by the Department of Environment and Resource Management (DERM) on the 25 November 2010. Therefore, this annual report presents a summary of the SGWTF's overall performance for the reporting period 25 November 2010 to 30 June 2011.

## 2. Introduction

CSG production relies on the removal of water from the coal seams allowing gas to flow so that it can be readily extracted. The removed water is referred to as CSG water.

CSG water is brackish and alkaline in nature and therefore has very few applications for use. However, after treatment through a desalination process, CSG water can be put to effective and beneficial use.

The SGWTF is one of Australia Pacific LNG's major installations where CSG water is treated. The SGWTF uses the best available technologies to treat the water to a high standard. Once treated, the CSG water is used onsite for Australia Pacific LNG's business activities including a 300 hectare Pongamia irrigation plantation and construction activities. This reduces Australia Pacific LNG's reliance on other water resources.

The potential to develop an aquifer injection project close to the SGWTF is also been considered as an alternative use for the treated CSG water. The trials for this project are due to start in the first quarter of 2012.

Finally, the remaining treated CSG water is discharged to the Eurombah Creek, which flows in to the Dawson River. The Dawson River is an essential resource to the local communities and landowners in the region. It is the principal drinking water supply for the Cracow, Theodore, Moura, Baralaba, and Daringa Townships located greater than two hundred kilometres downstream from the SGWTF, as well as being used for agricultural irrigation and to support local industries. Protection is therefore vital to ensure its long term sustainable use. Modelling has shown that the treated CSG water discharged from SGWTF, on average makes up less than 1% of the total flow at the closest drinking water supply (i.e. at the Gylanda Weir).



**Figure 1 - SGWTF Discharge Location**

In presenting this information Australia Pacific LNG honours its commitment to providing transparency and ensuring the community, landowners and other key stakeholders have confidence that the treated CSG water can safely be discharged into a source of drinking water.

All the reporting is publically available and can be viewed and downloaded from the Australia Pacific LNG website at: [www.aplng.com.au/newsroom/publications](http://www.aplng.com.au/newsroom/publications).

Any enquiries relating to this report should be made to toll free number 1800 526 369.

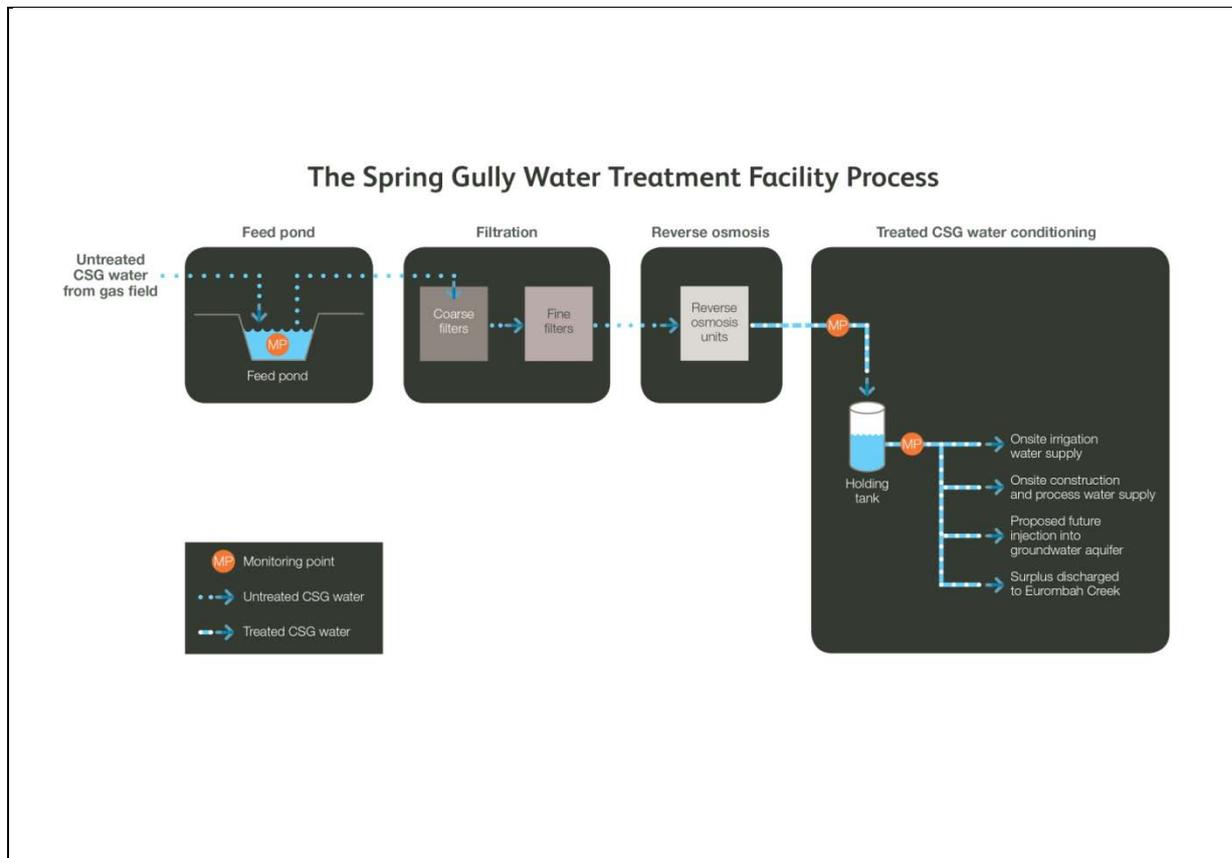
Alternatively, general enquires can be made by email ([contact@aplng.com.au](mailto:contact@aplng.com.au)) or mail to Australia Pacific LNG Pty Limited, GPO Box 148, Brisbane, QLD, 4001.

### **3. Spring Gully Water Treatment Facility Scheme Description**

The SGWTF uses a series of water screening, filtration and desalination processes to remove impurities from the CSG water to ensure its safety and reliability for supply into a drinking water source and beneficial uses.

The key treatment processes include:

- Feed pond;
- Filtration;
- Reverse osmosis; and
- Treated CSG water conditioning.



**Figure 2 – SGWTF Process Schematic**

### 3.1. Feed pond

Untreated CSG water gathered from the gas field is temporarily stored in a feed pond prior to its treatment by the SGWTF. The feed pond holds the CSG water for approximately one to two weeks. This allows the settlement of coarse suspended sediments and provides opportunity for the CSG water to aerate and oxygenate.

### 3.2. Filtration

The CSG water is then passed through a coarse filter and then a fine filter to remove any particles or suspended sediments that have not settled within the feed pond. A disinfectant commonly used in domestic water treatment facilities is also added after the filtration

process to protect the treatment system and membranes used in the following reverse osmosis process.

### 3.3. Reverse osmosis

Reverse osmosis involves passing the CSG water through fine membranes at high pressure. This removes most of the dissolved salts and other trace elements. At this point the water is either transferred to beneficial reuse applications on site or discharged.

### 3.4. Treated CSG water conditioning

The pH and conductivity of the treated CSG water is continuously monitored to ensure it is safe to use or discharge. Where the treated CSG water is discharged to Eurombah Creek, a calcium salt is added. This conditioning is undertaken to ensure a minimum level of this element is present in Eurombah Creek to protect the environment. Calcium is normally present at much higher concentrations in river waters and municipal drinking water supplies.

## 4. Approvals, Monitoring and Results

### 4.1. Approvals

To be able to discharge into a source of public drinking water, Australia Pacific LNG had to gain approval from the Queensland Government's Department of Environment and Resource Management (DERM). Public health based water quality limits for the discharge of SGWTF's treated CSG water to Eurombah Creek was granted on the 25 November 2010. Regular and comprehensive water quality monitoring is currently undertaken to guarantee the ongoing effectiveness of the SGWTF in treating CSG water.

This monitoring includes:

- Periodic external, independent testing of the untreated and treated CSG water quality; and
- Continuous live monitoring throughout various stages of the SGWTF process to ensure operational performance against the plant's design specifications.

Australia Pacific LNG is currently seeking an exclusion decision under the *Water Supply (Safety and Reliability) Act 2008* for the discharge of treated CSG water to Eurombah Creek. This exclusion decision is required as Australia Pacific LNG does not have a material impact on any downstream drinking water supplies.

DERM has approved the use of treated CSG water from the SGWTF for the proposed aquifer injection project trial. The aquifer injection trial is expected to commence in the first quarter of Year 2012.

### 4.2. External laboratory monitoring

The CSG water and treated CSG water is periodically sampled and sent to an independent laboratory for testing. The sampling takes place at two monitoring locations:

- At the feed pond; and
- On exit from the desalination process (immediately prior to discharge).

The samples are tested for a comprehensive range of parameters and a summary of the monitoring undertaken has been previously published in quarterly discharge water quality reports (available on the Australia Pacific LNG website: [www.aplng.com.au/newsroom/publications](http://www.aplng.com.au/newsroom/publications)).

This water quality monitoring is undertaken using an industry-wide protocol developed by Standards Australia and DERM. Following these standards ensures the water samples are correctly obtained, stored and transported to allow accurate and representative testing in the laboratory.

The water is tested at the Queensland Health Forensic and Scientific Services laboratory. This laboratory is independent to Australia Pacific LNG's operations and is National Association of Testing Authorities (NATA) accredited.

*"NATA is the authority that provides independent assurance of technical competence through a proven network of best practice industry experts for customers who require confidence in the delivery of their products and services"* – NATA website.

#### 4.3. SGWTF online indicator monitoring

The SGWTF has a number of online monitoring probes located throughout the treatment process. These provide real-time data about water quality. The online monitoring looks at a number of fundamental indicator parameters including pH, turbidity and conductivity.

It is not practical to continually test all of the parameters that are externally monitored; however the indicators checked by the online system provide a view of the performance of the facility. Should any of these indicators vary from their expected limits, the onsite use and discharge to any source of drinking water supply is suspended immediately until further investigation and monitoring is undertaken and any required corrections made.

## 5. Operational Performance

### 5.1. Review of operations

The SGWTF produced approximately 750ML of treated CSG water during the reporting period. Approximately 530ML was discharged to Eurombah Creek, 210ML was used for irrigation of the Pongamia plantation and 10ML was used for construction activities.

### 5.2. Audits completed

No external audits were required within the reporting period.

### 5.3. Data summary

The quality of treated CSG water, discharged to Eurombah Creek met the public health discharge water quality limits at all times during the reporting period. This confirms the SGWTF processes are both safe and reliable at treating CSG water prior to its discharge into a source of drinking water.

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Public health based water quality limits for the discharge of SGWTF's treated CSG water to Eurombah Creek was granted on the 25 November 2010. Of the 31 weeks for the reporting period, there were 23 sampling occasions where discharge to Eurombah Creek was occurring. Of these 23 sampling occasions:

- On two occasions no safe access to the SGWTF was possible due to regional flooding.
- On nine occasions no safe access to the discharge location was possible due to rain. Samples were taken at the SGWTF holding tank for these occasions.

A summary of the monitoring data collected for the reporting period is provided in the previously published quarterly discharge water quality reports (available on the Australia Pacific LNG website [www.aplng.com.au/newsroom/publications](http://www.aplng.com.au/newsroom/publications)).

## Abbreviations and Acronyms

Term/Abbreviation/Acronym	Definition
Australia Pacific LNG	Australia Pacific LNG Pty Limited
CSG	Coal seam gas
DERM	Department of Environment and Resource Management
LNG	Liquefied natural gas
NATA	National Association of Testing Authorities
ND	Not detected
QLD	Queensland
SGWTF	Spring Gully Water Treatment Facility
the Act	<i>Water Supply (Safety and Reliability) Act 2008</i>

This Report has been produced in accordance with the Queensland Government's *Public Reporting Guideline for Recycled Water Schemes* (DERM, 2011) and the *Water Supply (Safety and Reliability) Act 2008* (the Act). Australia Pacific LNG is currently seeking an 'exclusion decision' under the Act as it is believed that the discharge of treated CSG water from SGWTF to Eurombah Creek will not have a material impact on drinking water supplies.

DERM granted an 'exclusion decision' under the Act on the 21 September 2011 allowing treated CSG water from the SGWTF to be used in the aquifer injection project trials due to commence in the first quarter of Year 2012.

## Document Control

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