



## Public Report

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# Spring Gully Water Treatment Facility Water Quality Discharge Annual Report

(1 July 2011 to 30 June 2012)

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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.

This is the second Annual Report for the SGWTF. This annual report presents a summary of the SGWTF's overall performance for the reporting period 1 July 2011 to 30 June 2012.

## 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 usually 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 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 Duaringa 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 Gyrenda 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.

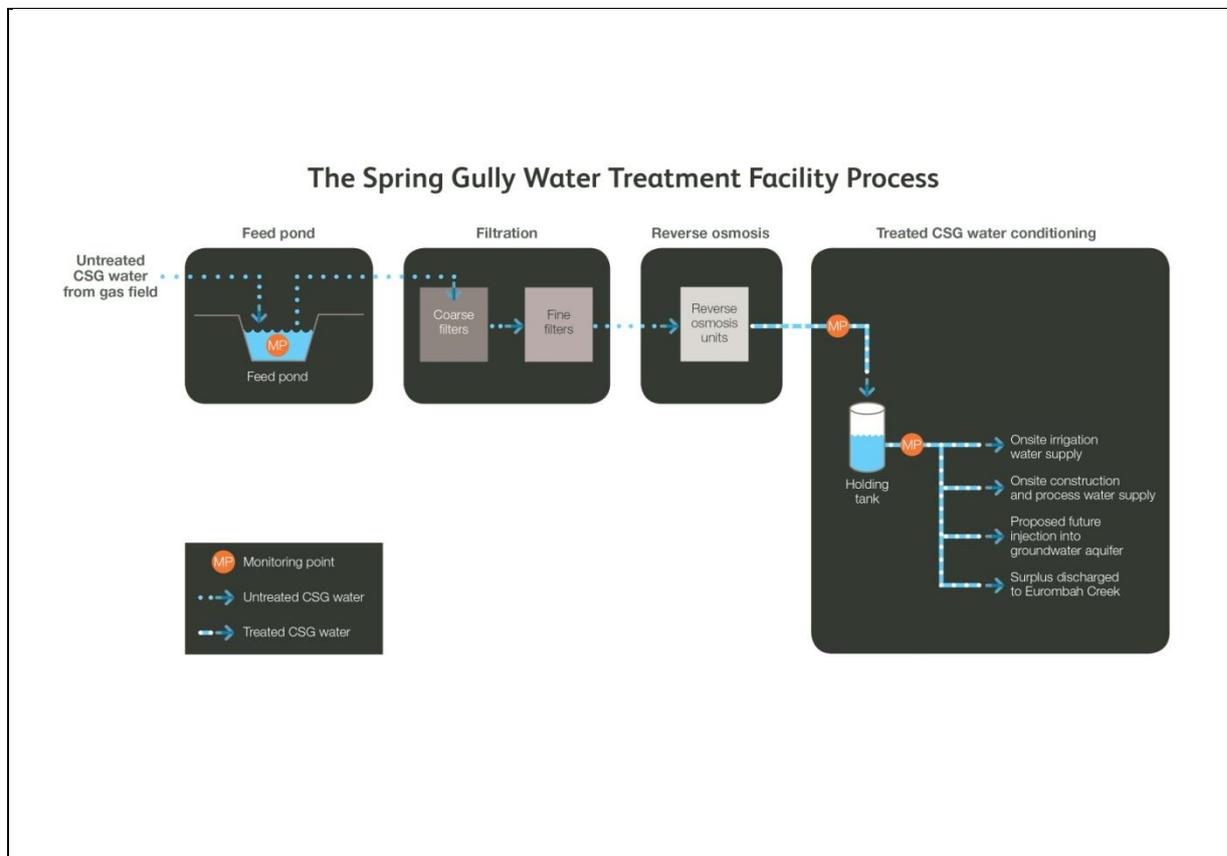
Alternatively, general enquires can be made by email ([contact@aplng.com.au](mailto:contact@aplng.com.au)) or mail to Australia Pacific LNG Pty Limited, GPO Box 148, Brisbane, QLD, 4001.

### **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 Heritage Protection (DEHP). Regular and comprehensive water quality monitoring is currently undertaken to assess 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 was approved for an exclusion decision on 31 July 2012, under the *Water Supply (Safety and Reliability) Act 2008* for the discharge of treated CSG water to Eurombah Creek. This exclusion decision was granted on the basis that DEHP is satisfied that Australia Pacific LNG would not have a material impact on downstream drinking water supplies.

### 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).<sup>1</sup>

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)).

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<sup>1</sup> If there is no access to the release point on the day of sampling this sample is taken from the discharge tank at SGWTF.

This water quality monitoring is undertaken using an industry-wide protocol developed by Standards Australia and DEHP. 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 1210ML of treated CSG water during the reporting period. Approximately 670ML was discharged to Eurombah Creek and 540 ML reused

#### **5.2. Audits completed**

No internal or external audits were required within the reporting period.

#### **5.3. Data summary**

Of the 52 weeks for this reporting period, there were 28 sampling occasions where discharge to Eurombah Creek was occurring. Of these 28 sampling occasions, there were 11 occasions where no safe access to the discharge location was possible due to rain. Samples were taken at the SGWTF discharge 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)).

The quality of treated CSG water discharged to Eurombah Creek, only once did not meet the public health discharge water quality limits during the reporting period (Refer to section 5.4 for details). For the reason outlined below, it is still considered that the SGWTF processes

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are both safe and reliable at treating CSG water prior to its discharge into a source of drinking water.

## 5.4. Public Health Discharge Water Quality Non-conformances

There were no public health water quality non-conformances reported during the reporting period.

## Abbreviations and Acronyms

Term/Abbreviation/Acronym	Definition
Australia Pacific LNG	Australia Pacific LNG Pty Limited
CSG	Coal seam gas
DEHP	Department of Environment and Heritage Protection
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>
OWSR	Office of Water Supply Regulator

This Report has been produced in accordance with the Queensland Government's *Public Reporting Guideline for Recycled Water Schemes* (DEHP, 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.

DEHP 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.

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