

SUPPLIERS FOR DESALINATION WORTH THEIR SALT

Background

In 2005, continued drought conditions across south-east Queensland required Gold Coast City Council to make a decision about an emergency bulk water supply that could be ready by the end of 2008.

Desalination was selected for several reasons including:

- it could be implemented within the required emergency timeframe of 18 months
- the alternative, IPR - also known as Purified Recycled Water, requires extensive community consultation and highly comprehensive technical research into the effectiveness of treatment methods for recycled water along with microbiological and chemical testing of water quality
- further scientific studies are required into the effects of combining IPR water with a raw water source such as the water from the Hinze Dam. The significance of nutrient contributions (such as ortho phosphate and soluble unbiodegradable nitrogen) to the overall water eco-system in the dam is not clear and requires further investigation and evaluation

Research identified that desalination was more acceptable to the Gold Coast community. Of 3,823 surveys, 81% of respondents were supportive of desalination.

What is Desalination

Desalination separates dissolved salts and other minerals from seawater or other salty water to provide clean drinking water. Once converted, this water supply would be blended with current drinking water supplies and distributed directly to users.

The major benefit of desalination is that it can continue to deliver high quality drinking water for consumption even if there is no rain. It also provides an alternative source of water supply that will make our overall supply more diverse and less vulnerable to interruption. In addition to these benefits, there are a number of key challenges associated with desalination. These include minimising energy consumption; minimising the cost of plant construction, operation and treatment, and minimising environmental impacts.

Choosing a desalination plant size

Preliminary assessments identified 12 potential desalination plant sites across the Gold Coast. However, due to engineering and planning constraints, the number of potential locations was short listed to three options - Coombabah, Pimpama and Tugun. Tugun was chosen as the preferred site for the desalination plant in February 2006 after community consultation and an extensive assessment of economic, environmental, social and technical parameters.

Tugun was selected because it was:

- considered as having the least environmental impact when compared to other short-listed sites
- the only site to which sufficient power can be provided to enable the facility to be operational within the required timeframe
- aligned with community values and expectations
- compatible with surrounding land use
- close to the ocean and hence requires the shortest intake and outtake pipelines of the three site options

The Opportunity

The Gold Coast Desalination Project, worth \$1.2 billion, is a joint initiative between Gold Coast City Council (GCCC) and the Queensland Government. The project is being delivered by the GCD Alliance which comprises John Holland, Veolia Water Australia, Sinclair Knight Merz and Cardno. Gold Coast City Council and the State Government are, uniquely, co-owners of the project having established a Special Purpose Vehicle: South East Queensland (Gold Coast) Desalination Company Pty Ltd trading as Sure Smart Water. This company manages the GCD Alliance.

Early works for the plant began in September 2006 and included

- purchasing construction items with long lead times
- detailed design for the desalination plant and pipelines
- preparing the site for the future construction of the desalination plant
- the commencement of some early onsite construction activities

The GCD Alliance engaged ICN to develop and implement a Local Industry Participation Plan (LIPP) for the project.

ICN carried out a detailed capability and capacity search using their extensive database and the ICN Network database to identify potential Australian suppliers for equipment or services to the project.

ICN Queensland's Steve Jones says ICN Queensland's role had dual responsibilities. "Through our development of the LIPP, we wanted to maximise the number of local suppliers to the project and minimise the tax paid on internationally supplied items. Our evaluation of 842 contracts for the supply of services and equipment culminated in 58% of the contracts being awarded to Queensland suppliers."

"However there are some things that cannot be viably produced in Australia in the normal course of business, for example seawater intake pumps. For these items, we were able to use the Federal Government's Enhanced Project By-Law Scheme (EPBS) to reduce the amount of import duty the GCD Alliance paid on sourcing. Accordingly, we saved the project up to \$1.5 million," Jones said.

GCD Alliance's Procurement Manager, Mr Terry Casey said ICN Queensland's input to the project was invaluable. "ICN knowledge and expertise in recommending local suppliers was second to none. It was important that the project, which had the potential to be controversial, had local, State and Australian suppliers involved."

"ICN saved us a lot of time too with the assessment of contracts and with input into delivery schedules. ICN Queensland's knowledge of the capability of local industry meant there was better supply and delivery. Their recommendations were invaluable and resulted in more local suppliers accessing to the project and more timely delivery than if they weren't involved," Mr. Casey said.

ICN Queensland recommendations led to a number of Queensland companies successfully supplying to the project.

The Results

Major Metals Queensland (MMQ) specialises in manufacturing large diameter steel pipes used for pile casings in the civil construction industry. Based in Dalby Queensland west of Toowoomba, MMQ supplied the steel pipes for the Intake & Discharge Outlets of the GCD Alliance Project - a contract worth \$2 million.

MMQ General Manager Ina Hirovanaa said the 3100mm diameter intake and discharge outlet pipes were fabricated into 6, 18, 24, 30 and 36 metre lengths from 36mm, 40mm & 50mm Grade 350 Bluescope Steel plate. The weight of the pipes ranged from 22 tonne to 115 tonne per pipe. Boom Logistics arranged the transport of these pipes from Dalby down the Toowoomba range to Pinkenba Brisbane which was a logistical challenge. The GCD Alliance construction team then barged the pipes to Tugun, Coolangatta for installation.”

MMQ is currently supplying pile casing for the LAJV Alliance New Gateway 2 Bridge, the Albem/JF Hull Alliance Houghton Highway Bridge and other projects in Mackay North Qld, Newcastle NSW, Darwin NT and Port Adelaide SA,” said Ina Hirovanaa.

“Supplying to various infrastructure projects like the GCD Alliance facility is important for growing our business and showcasing Major Metals Queensland work.”

Initially a supplier to remote projects in rural Australia, PMT Water Engineering expanded its client base to include companies in the Food and Beverage Industries, Mining, Health Care and Hospitality. CEO Paul Pryor says while the GCD Alliance contract was not PMT’s largest job, it had engineering challenges that added value because of the unique process function of the tank in the project.

The contract, worth over \$500,000, involved the incorporation of hydraulic control devices into the structure with over one million litres capacity. The tank’s function is as a first-pass, permeate receipt tank, storing water extruded from an initial part of the desalination process. Our 17 years experience in providing high-end quality and larger capacity engineered projects equips us well to supply to industrial projects such as this.”

“The tank design utilised glass-fused steel which features a protective glass surface , providing more chemical resistance than if it was purely a metallic surface,” Pryor said.

“We usually construct tanks up to and over an eight million litre capacity, but this contract gave us the opportunity to be involved in a project with specific engineering capabilities and to contribute to an iconic project for Queensland.”

RGE is a major provider of design, manufacture, installation and maintenance services to the chemical processing, water, wastewater, mining and pulp & paper industries, Australia wide and overseas.

RGE supplied two tanks for the project, which RGE’s Keith Ayres notably large and required exacting engineering and fabrication expertise. “Our experience has traditionally been primarily in the mining industry so much of what we do is big. We supplied two tanks with approx 250,000 litre capacity; one 5 metres diameter x 13 metres high and one 5.5 metres diameter x 10 metres high. One tank was used for storing reverse osmosis permeate and the other for the cleaning solution used for the membranes used in the desalination process.”

“As a second tier supplier our direct contact with ICN is limited. However, we recognise some real value in ICN Queensland’s supplier opportunity list on the website and we see that as a real opportunity to gain work.”

Conclusion

The Gold Coast Desalination Plant will provide 125 million litres of fresh drinking water per day and will begin to produce desalinated water by the end of 2008. The original Gold Coast Water Future Strategy identified desalination as a preferred future water source that was not climate dependent and while it was originally planned for around 2030, the project is being implemented earlier, and with an increased size, to provide an emergency water supply to south east Queensland due to the ongoing drought. The plant is part of the broader GCWF strategy to support and acknowledge the importance of a number of key emerging and localised water initiatives to reduce drinking water consumption including greywater, stormwater harvesting, groundwater and Indirect Potable Reuse.

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