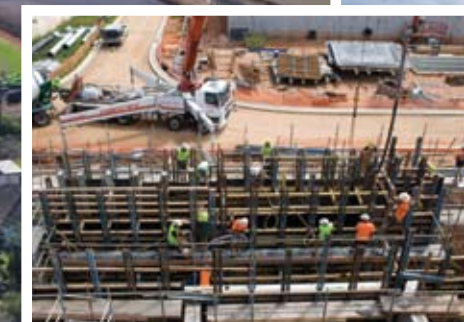




REED CONSTRUCTIONS  
MURWILLUMBAH NSW

# BRAY PARK WATER TREATMENT



## INCREASING CAPACITY AT THE PLANT

The north east region of New South Wales is home to Tweed Shire Council. This area continues to experience substantial development and population growth and as a result, many years ago, the Council realised the need for increased capacity at the Bray Park Water Treatment Plant in Murwillumbah. Tweed Shire then embarked on the long journey of finding funding, designing and selecting a Contractor to build what was at the time, Australia's 2nd largest and NSW's largest ultrafiltration water treatment plant. In September 2007 Tweed Shire Council awarded the construction of the project to Reed Constructions Australia for an estimated cost of \$63.5m. It was at the time, the largest water project to be undertaken by Reed Constructions.

The project consisted of constructing a new plant around the existing facility and this in itself was a challenge. The original plant had a capacity of 50 ML/day and was to be increased to 100ML/day. The design of the new plant has provision for capacity to be increased to 150ML/day. The layout of the new plant consists of a number of buildings each with a unique function. The list of facilities includes

electrical switchrooms, a sludge handling building, a PAC (Powder Activated Carbon) building, a chemical dosing building and the heart of the plant, the membrane building.

Onsite construction began in November 2007 with an original contract period of 88 weeks. Construction tasks undertaken during the works included earthworks, pipelaying, drainage, roadworks, concrete placement, structural steel erection along with finishing trades of cladding, partition work, roofing, glazing, and fitout. Reed's mobilised a diverse range of plant and equipment including excavators, articulated dumpers, tippers, rollers, piling rigs, graders, concrete pumps, crawler cranes, mobile slew cranes, frannas, and boom and scissor lifts to complete the works. An area of innovation by Reed Constructions was to use precast concrete panels in lieu of insitu concrete.

Reed Constructions was faced with a number of challenges during construction. Amongst these were the unusual restriction of working hours, stringent environmental requirements and reporting and the

constant challenge to maintain programme in a high rainfall region. Reed's embraced all the challenges and due to their extensive experience, expertise, can-do attitude and co-operative relationship successfully overcame all obstacles.

Reed Constructions has a successful track record within the water industry and their experience has been drawn from a diverse range of projects including water and wastewater projects, reservoir construction and tunnelling. Previous water projects that Reed Constructions has successfully completed include Bowral Sewage Treatment Plant, Wauchope Water Treatment Plant, Mudgee - Gulgong Water Augmentation, Greystanes Water Reservoir, Evans Head Sewage Treatment Plant and Tumut Sewage Treatment Plant.

Reed Constructions success in sound project delivery, has been with skilled, well credentialed and passionate employees and a willingness to offer clients innovative ideas and redesign where benefits are available. These benefits include minimising project costs and also long term running costs. The Reed Water division is just one of many under the privately owned Reed Group umbrella, which was established in 1979. Each division boasts a high level of expertise and experience and they are

also well known across commercial construction, hospitality, civil, interior fitout, health, defense and development. Their reputation precedes them for completing projects on time, within budget and with quality service and outcomes. Reed Constructions has won many awards though the Master Builders Association of NSW, the Civil Contractors Federation of NSW, and more recently the Wauchope project won awards for Innovation in Sustainable Engineering and Engineering Excellence by Engineers Australia. Reed's are a Best Practice Accredited contractor with the NSW Department of Commerce, and is also recognised by the International Council of Shopping Centres for their attention to detail, quality of design and workmanship.

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# SIEMENS INNOVATIVE TECHNOLOGY SYSTEMS

Siemens was an obvious choice to work on the Bray Park Water Treatment Plant, having been creating and applying innovative technology solutions in Australia and New Zealand for over 135 years. A premium supplier of technologies for water and wastewater applications they are well known within the water utilities markets, and they have worked with Reed Constructions previously on the Evans Head Sewerage Treatment Plant and the Tumut Sewerage Treatment Plant.

Upon winning the Chlorination system for the Bray Park Water Treatment Plant contract, a project engineer was assigned to design the package required for the job—installing a chlorine gas dosing system. Siemens are the premier provider of total disinfection and chemical dosing systems, with a portfolio consisting of Wallace & Tiernan products, which stand for quality and dependability within the industry.

Used to disinfect the water within the treatment plant, using gaseous chlorine supplied in ton containers is proven to be the most economically viable option. Using a remote vacuum operated gas feeder, chlorine is put into solution by utilising a vacuum injector and is diffused at the point of application. Using an all-vacuum principle within their chlorinators means there is a vacuum from the vacuum regulator up to the injector. All their gas feeders are based on the worldwide proven V-notch flow control technology, which provides a wide control range and very high repeatability. 3000C Vacuum regulators and header pipe work, V10K gas feeders, gas monitoring equipment, a chlorine drum shutdown system and medical air breathing apparatus were all supplied and installed by Siemens employees at the Bray Park Water Treatment Plant.

Siemens also provided a Depolox 3+ online residual analyser, which monitors the Chlorine residual levels in the water leaving the Water Treatment Plant.

Siemens can offer a variety of packaged options for the water treatment and water purification industries such as continuous analytical monitoring and control systems for diverse applications, liquid chemical dosing systems, gaseous disinfection and dosing systems for process flow, and UV packaged systems for disinfection of process flow to eliminate the need for chemicals. Customers are offered a range of innovative products that can be adapted to meet their specific requirements, from design, manufacture, install, commission and aftermarket service.

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## QUINNCO TRUE TO FORM

Specialising in the manufacture of infrastructure components for structures, including the design and constructions of formwork, placement of steel and concrete, Quinnco has been in business since 1986.

The business came into fruition in Canberra, at a time when the city was expanding and Quinnco provided much of the infrastructure work for the sub divisions. They then moved to Sydney in 1988, and worked with Theiss on projects such as the Sydney Harbour Tunnel and the expansion of the Parramatta Oil Refinery. The recession of the nineties saw them relocate to Brisbane, which is now their base.

Quinnco's extensive experience assured them the work on the Bray Park Water Treatment Plant upgrade. With up to 80 employees working on the job, they completed all of the structures over a period of 12 months.

Utilising a 50 tonne crawler crane, a 35 tonne hydraulic crane, a 25 tonne mobile franner and concrete pumps ranging from 28m to 50m, they had to build many structures simultaneously due to the confinement of the site. These structures then had to be integrated into the one unit—the treatment plant. Scissor lifts provided safe access and mobility for working at heights for their steel-fixers and form-workers. A unique

aspect of the job for Quinnco was one of the largest continuous wall pours—an impressive 120 Lin/m.

Commissioned for various projects from working for main roads from the M1 to the Gatton bypass, as well as in mines, shopping centres and in the last five years, upgrading many water treatment and recycling plants, Quinnco provide a complete package as a subcontractor—from earthworks to a complete structure that is ready for services to be fitted by others.

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## GROWING PIPES

Pipe Lining & Coating Pty. Ltd. was established in 1991 by owner Charles Russell. With nearly 40 years experience working in the pipe market servicing the Oil, Gas and Water Industries, Charles has been able to develop a sound business designed expressly to service the Water Industry's need for custom made Steel Cement Lined Pipe and Fittings. Located at Rutherford (Maitland) NSW, the company has grown to be a major employer in the Hunter Region with staff numbers now exceeding 70.

After successfully tendering for the Bray Park Water Treatment Plant Project in December 2007, Pipe Lining & Coating were delighted to once again be selected as the supplier to Reed Constructions for their requirements of custom made Steel Cement Lined Pipes and Fittings for the Water Treatment Plant and according to (PLC) Project Manager Adam Debenham, "work on the pipeline went smoothly with the only challenge coming from the tight delivery deadlines required for the on-site installation". For this project, the company produced pipework ranging 300NB to 1400NB.

The company derives its competitive edge from its ability to delivery quality products within short delivery times as it maintains a significant stock holding of base "water industry specific" product including Steel Pipe and AS4087 Standard Flanges. With all manufacturing including Fabrication, Centrifugal Cement Mortar Lining and Surface Treatment being completed "in house", they are in control of every element of manufacture and delivery to the client. As an AS/NZS ISO 9001-2000 Quality Endorsed Company, supplier of StandardsMark Certified product (AS1579-2001) and Potable Water Certified Linings (AS4020-2002) our product quality and integrity is assured.

Initially, the company's prime market was with NSW based customers however in recent years their products have been competitively marketed throughout Australia and as further testament to its development, Pipe Lining & Coating has successfully completed projects in both Vietnam and New Zealand. During 2008, the company built and commissioned its first Mobile Cement Mortar Lining plant which can be mobilized to any location in the country to satisfy future water pipeline projects. This plant has recently completed Cement Mortar Lining 14.7 km of 1400NB Pipe for a major NSW Water Infrastructure Project and is awaiting its next project.

To ensure future domestic growth and to enhance the company's name and image within the Water Industry, Pipe Lining & Coating showcased their products in Melbourne at "OzWater 09". Adam Debenham believes the exhibition was a great success and will assist the company in further development of its market share in both Australia and International Water Industry markets. Adam says, "Due to the significant growth in Water Industry budgets, we are excited as to the prospects and opportunities the market offers". For Pipe Lining & Coating, their employees, suppliers and customers, the future offers the potential to maintain its present growth and development of new products and services and continue to share in this exciting industries growth.

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## DO IT RIGHT THE FIRST TIME

Downer EDI Engineering were selected to provide and install the Electrical and Instrumentation Services for the Bray Park Water Treatment upgrade project, having vast experience on numerous other water and sewerage treatment projects in the past.

Drawing from their skilled workforce both locally and in Newcastle, up to 40 employees were involved in the supply and installation of Motor Control Centres, instruments, control panels, PLC's, Variable speed drives and general lighting and power.

Downer were also required to design and construct the Communication Network, Telephony, Fire, Security, CCTV, and Audio Visual systems for the plant.

Downer's meticulous work and 'do it right the first time' attitude, as well as their specialised skilled workers, guarantee the highest standard of work. With divisions across Australia, Downer are committed to the quality of work they provide and pride themselves on their 'zero harm' policy—ensuring all their employees have regular safety training.



**DOWNER EDI ENGINEERING**

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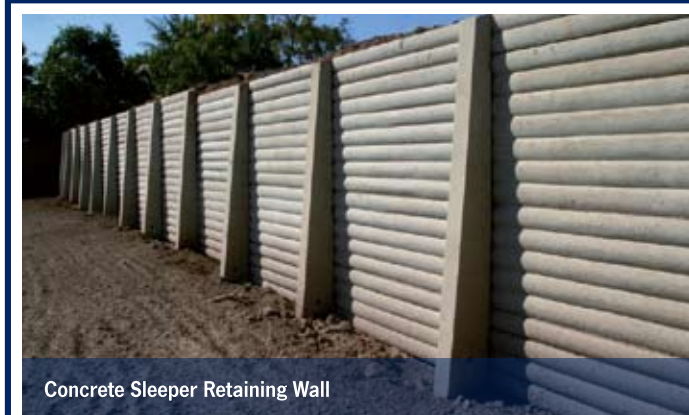
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