

MAIN CONSTRUCTION COMPANY : Leed Engineering & Construction
CONSTRUCTION VALUE : \$47 million
COMPLETION DATE : August 2014
DESIGN ENGINEER : MWH Australia

DYNAMIC DELIVERY

The \$47M Macquarie Orange Pipeline project involves construction & operation of a water transfer scheme comprising 39KM of pipeline & associated infrastructure to transfer an average of 1,616ML of water per year to the Suma Park Dam.

Leed Engineering and Construction (Leed) were engaged by Orange City Council as the Head Contractor for the construction of the 39km Macquarie Orange pipeline project which includes 3 Pump Stations, an intake structure, discharge structure, access roads, electrical and telemetry works, testing and commissioning.

The Macquarie Orange pipeline project follows years of planning and community consultations to ensure the best possible outcome for the region. This extensive project will see a link from the Macquarie River to the Suma Park Dam in Orange comprised of approximately 39 kilometres of underground pipeline.

The project presented several difficult areas of steep terrain and tight construction corridors. These areas required careful planning to ensure the safety of the work crew, the public and to provide minimal

impact to the environment. In some areas Leed proposed specific minor alignment changes to reduce the safety risk involved, minimize the environmental footprint and improve the long-term maintenance and operability of the pipeline.

There were also some areas of extremely hard rock that required drilling and blasting. The team at Leed were able to find a solution for all challenges that arose throughout the duration of the project.

Close to 20 kilometres of fencing has been erected along the pathway of the pipeline. Landowners of private properties were consulted as to the best type of fencing to suit their land. Extensive work was also carried out to upgrade the power capability in the area. Essential Energy were appointed to install new power poles and upgrade the existing poles and infrastructure

Leed have an impressive history successfully working with intricate civil infrastructure works. Their capabilities include:

- Pipelines
- Pump stations
- Water and wastewater treatment plants
- Water storage, including reservoirs, tanks and dams
- Bulk and detailed earthworks
- Structural concrete
- Road works, drainage and services

Founded in 2001, Leed has successfully grown to become a contractor of choice with offices in Adelaide, Melbourne and Bendigo. Their works spans metropolitan, regional and remote areas of Australia. Leed is a dynamic, award winning, privately owned Civil Engineering and Construction Company specialising in complex infrastructure projects.

The company has acquired an admirable reputation for delivering projects on time and working in a collaborative way with clients, stakeholders and the wider community.

Their experience, capability, financial stability, proven team and impressive track record make Leed an ideal associate on all infrastructure projects. Other Leed projects include:

- Glenelg to Adelaide Parklands Recycled Water
- Lower Lakes Irrigation
- Cooma Water Supply Augmentation
- Gallipoli Underpass
- Goldfield Superpipe
- Lake Manchester Dam Upgrade

With a commitment to providing turnkey solutions, Leed boasts an extensive plant and equipment fleet with more than 200 items of plant and vehicles thus allowing them to control resources and provide clients with complete confidence on all projects.

For more information contact Leed Engineering and Construction, Corey Bourne phone 0417 166 024, email cbourne@leed.net.au, website www.leed.net.au



KEEPING THE FLOW

Leed Construction invited Hunter Alliance to provide their services for the Macquarie Orange Pipeline project. The experienced team from Hunter Alliance was responsible for installing the equipment associated with the intake screen cleaning and monitoring, which ensures that the water intake screens are clear of debris prior to each pumping event.

Due to the environment in which the equipment operates, careful selection of components and apparatus was essential to ensure longevity and reliability in the pump room conditions.

Temperature and humidity extremes required close consideration and measures were implemented to limit the effect that the variances would have on the system. Based on the engineering incorporated into the design, and construction of the system and its components, the offer of extended warranties was available to the client on the individual products and the system installation.

As well as undertaking installations of equipment such as the components associated with the screens and cleaning system for

the Macquarie Orange intake screens project, Hunter Alliance also produced dewatering systems for municipal and industrial waste applications, along with a line of packaged wastewater treatment and recycling systems.

For projects such as the Macquarie Orange intake screen system and the Young Sludge Dewatering project undertaken with Leed Construction, Hunter Alliance produced custom components to enhance the operational ability of the mainstream components utilized within the systems.

Company director Reg Chaponnel states “being a smaller company we can provide a more personalized service where we can work closely with the client to ensure they are delivered the product they require” he goes on to say that “this type of service has allowed us to develop good working relationships with companies such as Leed Construction, FKG, Hastings Deering, Tricomms Construction and Santos. We are always available to supply assistance where possible for your waste water projects offering our range of water treatment systems, filter presses and sludge dewatering and handling systems we feel sure we will have a design to suit most applications”.

For more information Hunter Alliance, 110 Grays Road, Doonan QLD 4562, phone 07 5471 0081 or Systems Engineer Reg Chaponnel phone 0408 671 671



HANDLING THE GROUNDWORK

Hort Enterprises has been working with Leed Engineering to provide welding inspection & testing services for the Macquarie Orange Pipeline project. After a brief consultancy period with LEED site engineers and the welding contractor to make sure welding procedures and welder qualifications were in order, inspections began on the MSCL (Mild Steel Cement Lined) pipes.

On site welding began in mid-December with the MSCL pipe being laid along the Long Point Road section of the scheme, towards the Macquarie River. The team was averaging 100 meters of pipe per day, despite the hot, and extremely dusty conditions.

Pipes were fabricated, spark tested, installed, welded, inspected, shrink-wrapped and buried with minimum amount of exposed trenches to ensure the highest safety and environmental standards were observed. Local Orange Council Inspectors carried out regular site visits to ensure works were progressing smoothly and offer assistance if needed.

The Ophir Road section of the pipeline began in late February, and proved to be a difficult section of the scheme for pipe laying, with creek crossings having to be negotiated, and several sections of solid bedrock blocking the way. This made excavation almost

impossible. Inclement weather at times also made welding in wet conditions difficult, and special marquees were erected to allow welding to continue.

Detailed inspections involved Visual Examination and Magnetic Particle Testing to AS1554.1 & AS1171, to ensure the quality of welding was maintained throughout all welded sections of the pipeline. Along with welding inspection, weld joint locations were recorded and photographic evidence gathered of each welded joint for weld mapping purposes. Detailed inspection reports were prepared for each day's inspection and provided to LEED for their quality records.

This has been a very important project for Hort Enterprises. It demonstrates their technical capabilities, which are of the highest industry standards, along with their ability to provide a quick and reliable service to customers.

For more information contact Hort Enterprises Pty Ltd, 258 Clergate Road, PO Box 696, Orange NSW 2800, phone 02 6391 4100, fax 02 6361 3244, email sales@hortenterprises.com.au, website www.hortenterprises.com.au



WORKING WITH THE BEST

Based in Geelong, Victoria, Uptime Services Management (Uptime) was established in 1997 to supply quality technical support in the production plant maintenance field. Since then, Uptime has become an ISO Accredited company and has grown to become a leading provider of fabrication, installation and maintenance services.

Uptime specialise in managing multi-disciplinary projects end to end whilst delivering the highest level of customer satisfaction, by providing superior levels of installation, fabrication and operational support in all areas of manufacturing, public infrastructure and utilities. The company boasts an experienced, multi-disciplined and flexible team that can react quickly to all requirements.

For the Macquarie Orange Project, Uptime supplied LEED Engineering the MSCL (Mild Steel Cement Lined) pipefittings for the pump station. The scope of works involved taking standard lengths of MSCL pipe, cutting and welding them into different fittings (ie bends, Tees, forks etc). Off takes were also welded on for scours, pressure refill valves and fire hydrants etc. The cement lining is then reinstated and the pipe is epoxy coated.

The welding standards employed by Uptime are of an extremely high compliance and welds are x-rayed to check for any defects. Uptime has enjoyed working with LEED Engineering on the Macquarie Orange Pipeline project along with many others.

The team has collectively worked with various notable companies and organisations, including regional water authorities, to produce successful outcomes.

Some of Uptimes other works include:

- Glenmaggie Dam
- South Australia Northern Interchange
- Barwon Heads Sewerage Pump Station
- Storage Tank Access Platforms, SA Water

Boasting an impressive resume of working with high compliance manufacturing of large bore pipe fittings and also water infrastructure works (dam outlets, structures, regulators, weirs etc), Uptime have extensive capabilities including:

- Working within tight delivery programs
- “First time through” product manufacture
- Urgent turnaround capability
- Remote location capability

All staff are highly skilled and experienced working with a range of materials including steel, aluminum and stainless steel.

For more information contact Uptime Services Management Pty Ltd, 35 – 37 Hume Reserve Centre, Bell Park VIC 3215, phone 03 5277 2580, fax 03 5278 9521, email info@uptime.com.au, website www.uptime.com.au



ENABLING GROWTH

Envirowest Consulting provide geotechnical and environmental services along with advice for developers, businesses, homeowners, local council, government departments and others. The company features a professional team experienced in assessments of land to enable structural design and compliance with building regulations.

Just recently, Envirowest Consulting was commissioned to undertake geotechnical assessment along the corridor of the Macquarie Orange pipeline project. The assessment was to enable the corridor location to be planned and identify any limitations to construction. The pipeline corridor was walked by an experienced senior geologist, who collected data and information on soils, rock strata, rock outcrops, cobbles, waterlogging, slope and erosion.

Boreholes and test pits were constructed to assess soil profile, and representative soil and rock samples were evaluated for engineering properties by the testing of index test, electrical resistivity, UCS, point load and aggressiveness.

A contamination assessment was also undertaken along the pipeline corridor to evaluate potential issues. Old mine shafts, farmland and naturally occurring asbestos is located in areas along the corridor. The report also included information on soil erosion and water management.

Access along the corridor was restricted in many locations due to slope, poor tracks, trees and topography. Access to the difficult locations was achieved with a track minidigger fitted with a drilling mast. This enabled narrow and steep areas to be accessed for sub-surface investigations.

Natural occurring asbestos was identified in some areas. Excavation in the naturally occurring asbestos required supervision and air monitoring during construction.

Envirowest Consulting's material testing laboratory is National Association of Testing Authorities (NATA) registered. Other areas of investigation include contaminated site assessments, service station and wastewater assessments.

Other recent projects include:

- Orange Regional Museum
- Nestle Expansion, Blayney

For more information contact Envirowest Consulting Pty Ltd, 9 Cameron Place, Orange NSW 2800, phone 02 6361 4954, fax 02 6360 3960, email admin@envirowest.net.au, website www.envirowest.net.au





GEOLYSE PROVIDES AN ENVIRONMENTAL ROLE

Geolyse is a multi-discipline consulting firm with offices in Orange and Dubbo that provides project assistance in the fields of Civil, Structural and Environmental Engineering, Planning, Surveying, Architecture and Environmental projects.

The team at Geolyse are committed to providing clients with professional and innovative solutions across all market sectors regardless of complexity. The most unique asset of Geolyse is the holistic solution offered to its clients taking projects from the 'vision' stage through to Government approval and on site supervision.

The Macquarie River to Orange pipeline project is an important project for Orange's water security and as a local consultancy Geolyse was well aware of the project history and the issues involved. The final project approval contained many conditions which the project needed to meet both during construction and operation.

One condition of the project approval required Orange City Council to appoint an Environmental Representative prior to the commencement of construction. Geolyse was appointed to provide this service for the project.

The role of the Environmental Representative was defined in the project approval and included being the principal point of advice in relation to environmental management of the project. The need to demonstrate compliance with all environmental obligations associated with the project commitments and conditions, in an independent and timely manner, was important for the project's success.

Providing an effective Environmental Representative role for the project required not only an appropriate skill set, but a commitment and capacity to respond immediately to issues as they unfolded and a flexibility to work closely with the project Superintendent.

Geolyse is proud of its involvement with the Macquarie River to Orange pipeline project during the construction phase and is continuing the Environmental Representative role through the initial operational stages of the project.

For more information contact Geolyse, 154 Peisley Street, Orange NSW 2800, phone 02 6393 5000, website www.geolyse.com



GREAT CAPABILITIES

Blayney Crane Services has extensive experience in all facets of the crane industry. To be more specific, their main areas of expertise include:

- mining construction and maintenance
- concrete panel erection
- heavy plant maintenance
- bridgework
- road and rail construction
- general building works

Blayney Crane Services has set impeccable standards for delivering safe and effective crane services, on time and on budget to industries throughout the country.

Given their industry expertise and resources, Blayney Crane Services were chosen to carry out work on the recent Macquarie Orange Pipeline project in New South Wales. Orange City Council selected Leed Engineering and Construction to carry out the construction works.

As an industry leader in integrated heavy lifting services, Blayney Crane Services portrays a long-term commitment to customer service

and are always looking to establish new innovations. The company boasts an extensive fleet of road-registered cranes capable of servicing projects of any size.

With an ongoing investment in people and equipment, Blayney Crane Services guarantees the finest and most cost-effective service for their clients. The company is committed to delivering the ongoing, and effective, safety and quality standards.

Blayney Crane Services plans to add new additions to their fleet in the near future so they can easily deliver the entire range of Lift services. Their existing fleet of trucks and cranes extends from small carry Franna Cranes, to site based Rough Terrain Cranes along with heavy lift capacity All Terrain Cranes. The current lifting capabilities range from 3T to 130T.

Blayney Crane Services look forward to continuing to do what they do best and maintain the future longevity of the business.

For more information contact Blayney Crane Services, 4070 Mid Western Hwy, Blayney NSW 2799, phone 02 6368 2008, fax 02 6368 3646, website www.blayneycranes.com