

LIVERPOOL TO ASHFIELD PIPELINE

LEIGHTON CONTRACTORS
SYDNEY NSW



NO PIPE DREAM

As a major component of the South Western Sydney Sewerage Scheme the Liverpool to Ashfield Pipeline is a \$130M project involving a 24km nominal 1050mm pressure pipeline with associated amplification works at two sewage treatment plants. Completed in July 2008 the pipeline will enable transfer of sewage flows during rehabilitation of the North Georges River Submain, a major sewer carrier transporting sewage to the Malabar Treatment Plant, and in 2010 will be converted to a recycled water pipeline.

When the LAP becomes a recycled water pipeline, it will play an important role in the Government's recycling grid, providing recycled water to at least seven commercial and industrial customers in the Rosehill, Camellia and Smithfield areas as part of the Camellia Recycled Water Scheme. The treated wastewater will also be available for recycling to new homes in infill areas in the Parramatta region and to provide for growth of the Sydney Olympic Park recycling scheme.

Leighton Contractors were awarded the design and construction contract by Sydney Water in late June 2006 and the project has since seen some 220 personnel involved at its peak including 55 Leighton Contractors'

employees. Established in 1949, Leighton Contractors has a proud history as a multi-disciplinary contractor and infrastructure developer in Australia and New Zealand. Having evolved dramatically from the early days of Stanley Leighton building houses and laying pipes on the Snowy Mountains Hydro Electric Scheme they are today part of one of the world's leading construction companies with a proven track record and unique expertise developed over more than 55 years.

With construction starting only four months after award the project featured a range of innovative solutions and initiatives notably the 25m deep Ashfield drop structure connection where the new 1050mm LAP meets the existing 110 year old Western Branch Main Sewer. This was an extremely innovative approach to enable the controlled entry of the 1800 l/s flows from the new pipeline. Construction was carried out in a small corridor and required consideration of future development. Also significant were the reduction of length of the 1km Roberts Road underbore to three smaller bores, the converting of a number of underbores at the concept design stage to dig & lay and the adjusting of the vertical and horizontal alignment to minimise the impact of existing services and other obstacles.

Particularly pleasing for Leighton Contractors was the 930,000 man hours worked on the project with no lost time injuries. This can be attributed to a proactive site safety culture where a number of specific safety initiatives were adopted such as a behavioural based safety program targeting unsafe acts, a young workers mentor program (under 24 years of age) and a young person's representative appointed to the safety committee to act as a voice for young workers. A detailed checklist was also implemented and handrails were installed along trenches in residential streets to prevent fall from heights.

The Leighton Contractors environmental team in conjunction with Sydney Water's environmental group managed a number of sensitive environmental issues including the management of contaminated material and the generation/movement of spoil and waste materials, preserving indigenous and non-indigenous heritage items, acid sulphate soils and working in and around endangered ecological community areas.

From a community perspective, the highly urbanised areas traversed by the project required careful communications planning to ensure

that construction impacts were minimised and the community and stakeholders remained well informed. This involved strong liaison with eight local Councils in addition to Government regulatory authorities such as the RTA and RailCorp and working within schools and park facilities. Working collaboratively with Sydney Water in a relationship contract enabled issues to be discussed and resolved quickly and effectively.

The project achieved defect free completion on 11 July 2008, eight months ahead of schedule which is a remarkable achievement with full credit going to the Sydney Water and Leighton Contractors project team.

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SWETHA IN THE PIPELINE

With their extensive experience in government and private projects, Swetha International was contracted to provide safety staff for the Liverpool to Ashfield Pipeline project.

Constructed by Leighton Contractors for Sydney Water, the project is part of the South Wester Sydney Sewerage Scheme and includes a 24 km pipeline and new pumping stations at Liverpool STP and Fairfield STP

Swetha International provided safety staff for the project to ensure that safe working procedures were in place to safeguard workers and visitors to the sites.

Formed in 1997, Swetha quickly established itself as a market leader in rail work site protection and has broadened its operations to include supply of staff to a range of both public and private infrastructure projects.

Swetha ensure the best and most economical practices are implemented and in addition to supply of staff, the company provide all safe working equipment including radios, Dets, flags and motor vehicles.

In addition to providing safety personnel, Swetha also provides administration and technical services and engineering expertise to clients with both long and short term demands.

Swetha operates under an approved quality management system, paying particular attention to safety, quality and the environment and has

developed binding policies to ensure workplace safety and best work practices are implemented at all times.

As proof of the company's increasing reputation for excellent service, Swetha has an outstanding list of clients which includes Abigroup, Australand, Boulderstone Hornibrook, Bovis Lend Lease, Downer, Leightons, Ansaldo, ARTC, City Rail, the Department of Commerce, Energy Australia, Kell & Rugby, Queensland Rail, RailCorp, RTA, Thiess, Transfield and Ward Civil Engineering.

Recent projects include North Sydney Station Upgrade, Parramatta Rail Link, K2RQ Alliance, SIA Alliance, Sydney Harbour Bridge Fencing, Albury-Wodonga Road Link.

Swetha operates a fair and equitable recruitment policy and ensure all employees are fully trained to carry out the required duties.

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TUNNELLING THROUGH

With many years of experience in major sewage, drainage, water, storm water and gas projects for a variety of government authorities and private industry, Rob Carr Pty Ltd were a natural choice for microtunneling on the Liverpool to Ashfield Pipeline project. Their primary role was to install underground casing pipes (steel or concrete and approximately 1200mm in internal diameter) via microtunneling to allow for the installation of a steel Sintakote pipeline. The work primarily involved tunnelling beneath railways, creeks, bridges and major roads in the Sydney Metropolitan area. The work required intricate coordination of multiple activities which also included the subsequent installation of a 1067mm Sintakote pipe inside the tunneled pipeline.

Up to 10 employees at a time from Rob Carr's roster of around 35 were involved on the project between the months of April 07 and September 2007. The most challenging aspect of the project was working in very dense residential areas which required the placement of equipment in difficult and tight locations.

The company was formed in 1989 in Victoria, working both as a sub contractor and head contractor on sewage, water and drainage works, before relocating to Perth in 1996. There as a main and pre qualified contractor, Rob Carr Pty Ltd performed a multitude of work as part of the Sewage Infill Program. Pre qualification for contracts up to \$5,000,000 is still current and as such has been maintained for 7 years. Until now, Rob Carr Pty Ltd has completed the installation of approximately 160 kilometers of gravity and pressure sewer mains, 8 pumping stations and connected approximately 5000 properties to sewer infrastructure.

For the last 8 years, Rob Carr Pty Ltd microtunneling operations have expanded significantly, with a current fleet of 10 microtunneling machines which operate approximately 20 different TBM heads, including the flagship micro tunnel boring machines, Iseki TCS1200 and Soltau RVS600 DN800. Last year, Rob Carr Pty Ltd formed a secondary

base in Sydney and more recently on the Gold Coast with the view of continuing the rapid growth of the business on the east coast of Australia.

The expertise and construction knowledge of Rob Carr Pty Ltd has seen the company complete several large civil and microtunneling projects for most major government authorities and large private sector companies within Australia. The company has been able to complete many projects including the likes of the Warrnambool WWTP ocean outfall sewer which comprised of a 210m drive of DN1000 pipe through difficult ground conditions and into an ocean outfall channel. The EPB tunneling machine was also designed to be retracted through the recently installed pipeline making it a truly unique project. Other major projects include tunneling and deep shaft construction works on the Gold Coast for Tenix involving the construction of multiple 900 and 1200mm gravity sewers and deep concrete caissons up to 14m in depth. Currently the company is undertaking work in Coomera QLD, which involves the construction of two 1200mm ID bores (270m & 370m) leading into a 20m deep shaft, 6m in diameter and constructed using pre cast concrete segments via underpinning. For more information, please visit the company's website.

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DIGGING IN

With some 24km of pipeline and associated amplification works at the two sewage treatment plants, the Liverpool to Ashfield Pipeline project required extensive excavation work. Removal of a large amount of dirt from the site was the responsibility of Penrith based Mulgoa Excavations Pty Ltd, whose involvement in the project now spans a period of over two years.

Mulgoa deal mainly with contract work, excavating, dirt and waste removal and truck haulage. The company are also involved in site preparation, land clearing, demolitions, rock walls, dams and removal of fill. The current roster consists of 8 employees, 5 of whom were directly involved in the pipeline project. A number of subcontractors were also employed by Mulgoa, with trucks deployed on a daily basis in the removal of dirt from the various sites.

Mulgoa Excavations Pty Ltd were established in February, 2004 and prior to that, the director of the company, Daniel Buttigieg worked as a sole

trader with one excavator only. Since becoming a company, the number of excavators and trucks has increased with the company now offering 3, 12, 13 and 16 tonne excavators.

The company did not face any environmental issues and the most pleasing aspect of their work was their involvement in such a large and beneficial project as well as working for such a prestigious company as Leighton.



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DELIVERING SPECIALIST SERVICES GLOBALLY

Coffey Environments provided environmental advice to Leighton Contractors during the construction of the Liverpool to Ashfield Pipeline project on issues of contaminated soil material. Key services provided include contaminated waste assessment (chemical and asbestos), classification and management.

Being one of the largest environmental service organisations in the southern hemisphere, Coffey Environments is committed to using specialist knowledge to help improve working and living places.

With approximately 600 staff and a turnover in excess of \$100 million, Coffey Environments' business has achieved a strong reputation both nationally and internationally. They have united an array of specialists from across the world to provide clients with a highly specialised, yet comprehensive service, resulting in cutting-edge solutions.

Coffey Environments services all business sectors, including construction, Commonwealth, local and state government, manufacturing, marine, transport, defence, oil and gas, petroleum, property, financial, civil, industrial, resources, mining, health, and education.

Their business is structured into five main consulting arms:

- Environmental Services
- Workplace Health and Safety Services
- Sustainable Engineering Services
- Environmental & Field Ecological Services
- Specialist Waste Management

Coffey Environments regularly provide environmental and OH&S services, such as due diligence, asbestos management, OH&S auditing, safety plans and contaminated site assessments to construction companies such as Leighton Contractors, Brookfield Multiplex, Bovis Lend Lease and St Hillier's.

Competitive Advantages

Coffey Environments:

- Offer clients a business partnership based on quality service, trust and innovation;
- Deliver innovative solutions that are technically feasible, financially sound, easy to understand and practical to implement;
- Are totally committed to extending our range of specialist services and continuing to provide tailored solutions to meet our clients' needs in an ever-changing world; and
- Conduct their work to ensure it fits strategically with client objectives.

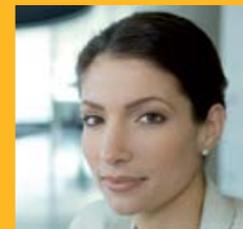
By partnering with Coffey Environments, clients gain the expertise of a multi-specialist organisation delivering extraordinary outcomes.

For further information please contact:

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Extraordinary people.

Doing extraordinary things every day. Delivering safe, healthy, efficient

and sustainable living and working environments is only half the job. At Coffey Environments we also increase business efficiency, ensure best-practice and help you implement risk management strategies for now and for the future. Whether we're providing environmental, workplace health and safety or sustainable engineering services, our worldwide team of specialists are focused on producing real business outcomes that also improve the lives of people throughout the world we live in.



PIPES WITH AN EDGE

Once a small firm dating back to 1991, Pipe Lining & Coating Pty. Ltd. has burgeoned into a sizeable 70-strong team with head office and factory premises at Rutherford near Newcastle in NSW and an office in Sydney.

The firm is coming close to the completion of their pivotal role in the Ashfield to Liverpool wastewater pipeline. The company specializes in the manufacture and supply of custom made fabricated Epoxy/Cement lined and coated pipes and fittings.

According to General Manager Troy Flower, work on the pipeline went relatively smoothly with the only challenge being some last minute to and fro with the design work, "Some angles and dimensions weren't finalized until they punched through the wall". On the pipeline project, the company produced pipework ranging from 200NB to 1500NB (nominal bore).

The company says it has an edge over its competitors in the industry due to our ability to supply the complete package, internally cement lined externally coated pipework customised to suit the clients needs and installation programs.

Owner Charles Russell has quite a resume' with over forty years experience in the oil, gas and water industries. He had success building up other companies prior to starting the Pipe Lining & Coating business after having purchased the Rutherford facility back in 1991.

Pipe Lining & Coating were delighted to be once again partnering with Leighton Contractors after successfully tendering for the pipeline project. Flower says they do a lot of work with Leighton Contractors, "We would like to continue to do work with them in the future", he added.

As further testament to its growth, Pipe Lining & Coating has been broadening its horizons after recently securing an export contract with Vietnam for an oil refinery in addition to its already bedded down business in New Zealand. The company has also recently built and commissioned a mobile cement lining plant which can be mobilised around Australia for any future major water pipeline projects. The plant is currently employed lining 14.7 km of 1400NB pipe for a major NSW water project.

In the past, the company's core business was with Sydney Water in NSW. "There's a lot of action in the Water Industry Nationally due to the water restrictions currently in place in most cities, and a focus on better water management for the future" Flower said.



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