

MELBOURNE TO GEELONG PIPELINE

Abigroup has undertaken some of the most technically challenging water infrastructure projects in Australia with the \$80 million Melbourne to Geelong Pipeline being no exception.

VICTORIA / ABIGROUP



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Left The Melbourne to Geelong Pipeline project well underway.

Abigroup has made a major contribution to the long-term water security of Geelong, with the completion of the \$80 million Melbourne to Geelong Pipeline. The works involved the construction of a 59 kilometre underground pipeline and a 16 GL/year pump station, crossing approximately 70 private properties and two major rivers in the process. The project has the capacity to deliver up to 16,000 million litres of water a year, which is equivalent to half of the region's current water usage.

The project links Barwon Water's Lovely Banks Basins in Geelong with the Melbourne system at Cowies Hill near Werribee, giving Geelong water users an assured supply.

The contract to build the pipeline was awarded to Abigroup in August 2010, with final construction to be completed in mid 2012.

The challenges of the project included the extensive length of the project area, which traverses a wide range of soil types, land uses and ecological communities. Extensive community consultation, thorough ecological surveys and ongoing monitoring and complex management plans were required to successfully complete works while protecting the interests of stakeholders, the environment, the workers and equipment.

The project's consultant team included specialists such as wildlife carers to take charge of any fauna encountered during works, heritage consultants, and surveyors defining no-go zones, access tracks and other fine details.

The successful works are a tribute to the integrated skills of Abigroup, which include mechanical, electrical, civil and engineering capabilities. When combined with Abigroup Contractors strengths in civil construction and the company's project management expertise, this multidisciplinary approach delivers turn-key solutions for water infrastructure projects.

The pump station at Cowie Hill is a good example, with Abigroup's construction scope of works including all civil, building, mechanical and electrical works.

The Werribee River crossing was another major challenge. As the entire pipeline is sub-surface, and the works needed to be

inspected by Barwon Water before closing the trench, a means had to be found to hold back the water flows from the actual working area, while still maintaining ecological flows and preventing any sedimentation or pollution entering the river.

Furthermore, the river crossing is the site of the heritage-listed bluestone Cobbledicks Ford. Abigroup ensured the careful removal by hand of each individual cobble, under the supervision of heritage consultants, before works at the river commenced. Once work was completed, each cobble was replaced in exactly the same place, another task requiring great care and attention to detail.

A sandbag levy and bypass pumps were constructed to divert the river flow during construction, with a 10m wide working area created. Construction works were inspected by environmental officers, flora and fauna identification specialists, animal handlers and archaeologists. A secondary outcome of the project's specialist studies and consultant involvement is the addition of a considerable body of new data on the region's flora, fauna and heritage which will benefit future projects in the area and influence the management plans developed in future by land management agencies.

Abigroup is dedicated to creating unique, sustainable and cost-effective solutions for water infrastructure projects in a manner which results in positive social and environmental outcomes. By combining the latest technology with strong operational knowledge, engineering expertise and contracting excellence, clients are assured of projects which continue to deliver on value and performance throughout the project lifecycle.

The range of capabilities includes: mechanical, electrical, civil and engineering turnkey solutions; commissioning and operations management; water and wastewater treatment infrastructure; water recycling and purification; desalination; irrigation and bulk water transmission and network distribution. Abigroup has undertaken some of the most technically challenging water infrastructure projects in Australia, contributing to secure, sustainable and reliable water supplies in South Australia, Queensland, New South Wales, the ACT and Victoria that will flow for many years to come.

Below TGM Group provided their surveying expertise throughout the entire 55km Melbourne to Geelong Pipeline for both design and construction stages.



Below Major Welding and Rigging were responsible for the fabrication and installation of all the structural steel for the Cowies Hill Pump Station.



In surveying for the Melbourne to Geelong Pipeline project, TGM Group staff walked and drove thousands of kilometres. The company's team undertook the initial surveys for the pipeline route and construction corridor, including establishing the control network. They then prepared the plans for titles, the easement plans, route maps for every property, vegetation mapping and construction set out. TGM also did the service location for the project, a complex task given the diversity of information sources and sheer number of service providers with interests in the area.

"This was a very sensitive project with a range of stakeholders, and with very tight protocols for the agricultural areas. Our staff were walking through herbicide baths before entering areas to prevent cross-contamination. We did a lot of walking and driving, travelling up and down the 55km project length hundreds of times," said TGM Surveyor, Ray Dunn. "We established our own tight survey reference which involved multiple observations over hundreds of kilometres. There were also a considerable number of native flora areas to map, which were recorded by GPS, and become added data on the area."

TGM Group had a multi-skilled team of around 10 working on the project, including graduate surveyors, experienced surveyors, licensed surveyors and technical assistants. To give everyone a varied task load, teams rotated

between on-ground work at the site, and the hard yards of uploading and data processing back at the TGM office. The latest GPS equipment was used, including GPS Base Stations, Rovers and Robotic Total Stations. The data resulted in over 100 title plans, hundreds of feature and level plans, and substantial mapping of vegetation, fencelines, bitumen and culverts – all delivered both digitally and on paper.

Completing this task to the highest possible standards of quality and accuracy was facilitated by the fact TGM Group also includes engineering and design divisions, making survey staff familiar with the requirements of this type of project. TGM is accredited for Quality Management System to ISO 9001:2008, Occupational Health and Safety Management System to AS/NZS 4801-2011 and Environmental Management Systems to ISO 14001-2004. Previously, TGM also supplied the surveying services for another vast water infrastructure project, the Wimmera-Mallee Pipeline. Other major projects include surveying sea caves at Port Campbell, dam monitoring in regional Victoria, survey services for Peninsula Link and surveying for the Waverley Park Housing Development.

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Exactness is a requirement for the structural steel on most major projects, and the Melbourne-Geelong Pipeline was no exception. Major Welding and Rigging showed their mettle in the accuracy stakes in fabricating and installing all the structural steel for the Cowies Hill Pump Station in just one month, with no margin for error, as no alterations or rectifications could be undertaken on site.

Their success is proof that their 14 years of experience and high level of trade skills can resolve any steel challenge. Five of their 12 staff worked on the project, safely achieving their scope of works within the very tight timeframe.

"The fabrication was a challenge in itself as a government job demands nothing other than perfection," explained Major Welding and Rigging's Managing Director, Vinko Vidmajer.

"It took roughly two weeks of cutting, grinding and welding to create the necessary components to erect the main section of the pump house, the switch room and the office areas. After this, all the steel was Galvanised and then painted with a two pack paint in Eucalyptus Green."

The erection task involved installing two rows of five columns, creating an 8.3m span tied in with beams running both lengthwise and across. A small beam was welded to the face of each beam to allow bolting-on of the beams which carry the pumphouse's overhead crane. "After the main structure was completed there was a time respite to allow the concrete panels to be erected around the 'skeleton' of steelwork. After these were in place, the rest of the steel was erected in the pump house area, including the rakers and purlins, switch room and office," said Vinko.

The office and switch room's rakers and beams are held in place via panel clips and cleats site-welded to cast-in plates embedded in the precast panels. After the beams were installed, the panel clips were site-welded to the rakers to prevent 'uplift' once the roofing was put on.

Major Welding and Rigging used their own cranes for the job, a 30T for the main section and a 3T crawler for the office and switch area.

The administrative and financial side of the business is handled by Vinko's wife, Josephine Vidmajer, who ensures a smooth running operation.

Other recent major successes include providing fully ticketed riggers to the Craigieburn Train Maintenance Facility and Melbourne Airport projects to assist with Austrustyle's steel installation works in T2's D2 and D20 areas, including the new baggage conveyor walkway; supplying and installing structural steel for the Bob Menzies Building at Melbourne University, and supply and install of structural steel for the Walton office refurbishment.

With superior skills across both structural steel and architectural steelwork, and access to a trusted, reliable network of coatings and galvanising expertise, Major Welding and Rigging can deliver solid results for any project.



For more information contact Major Welding and Rigging, 10 Slater Parade, Keilor East VIC 3033, phone 03 9337 1206, mobile 0409 180 427 email: vvidmajer@hotmail.com

Below Pipecon are specialists in water and sewer pipe installations, and also highly regarded for their skills in civil works, earthmoving and subdivision works.



Below PM Builders were responsible for numerous pit constructions, footings and other concrete works for the pipeline.



Over a period of 18 months, Pipecon installed 30km of 800mm diameter GRP for the Melbourne to Geelong Pipeline, stretching from Tarneit to Little River. It was not an easy task, with the challenges including two open cut river crossings, demanding timeframes and high quality expectations.

The company were one of the two major subcontractors for the project, and had three crews going at different stages, each with up to 12 workers. In addition to the pipe itself, Pipecon supplied and installed the bedding sand, pits and valves as part of their scope.

The major river crossing of the Werribee River at Cobbledicks Ford proved especially complex. Work was undertaken in the middle of winter, with heavy rain before and during the river crossing meaning resources and skills faced an even greater challenge with the river levels peaking. Hard rock was another issue at this site, with over 200 MPA encountered. Further, the crossing had both major heritage and environmental issues, which required an extremely restricted work site and tight timeframe for the pipe installation.

“The team faced extreme pressures at various times and they continued to make us proud with their hands on approach and can do attitude. We maintained a fantastic working relationship through the head contractor and

the client and were extremely pleased with the job undertaken,” said Pipecon Managing Director, Andrew Mahar, who is also CCF Vic President.

Pipecon have a multi skilled team of 45 staff who are specialists in water and sewer pipe installations, and also highly regarded for their skills in civil works, earthmoving and subdivision works, all undertaken according to CCF Integrated Management Systems.

The company has been operating as Pipecon since 1999, evolving out of Andrew Mahar Excavations, founded in 1994, and has completed projects across Ballarat and surrounds, Melbourne and Geelong, with other recent projects including building the Goldfields SuperPipe near Ballarat and stormwater harvesting projects for the City of Ballarat designed to fill Lake Wendouree.

“Our clients are our bread and butter, we listen and we deliver. We have an excellent working relationship with all our clients with an open and honest approach, and we aim to deliver first time around,” said Andrew Mahar.

For more information contact Pipecon Pty Ltd, Unit 7 / 26 Grandlee Drive Wendouree VIC 3355, phone 03 53 353333, fax 03 53 394466 website: www.pipecon.com.au.

With over a quarter of a century of experience in specialist concrete construction, PM Builders had the depth of skill required to rapidly and reliably complete the numerous pit constructions, footings and other concrete works required for the Melbourne to Geelong Pipeline project.

The company’s scope included the Surge Vessel footings, Surge Vessel pit, Melbourne Water flowmeter pit, Barwon Water flowmeter pit, Stacic Mixer Pit, Surge Tank footings, Surge Tank pit, pressure sustaining valve pit, plus a THE WIDE variety of other concrete elements required for such a major piece of water infrastructure.

Devoting the majority of their fifteen-strong team to the task, PM Builders flexibly scheduled their efforts to dovetail with the broader construction program. Working quickly and efficiently, they were able to complete each of the pit construction works within one or two weeks.

“The challenge was meeting the strict deadlines and timeframes to complete works,” said PM Builders Director, Michael Steenhuis.

“Another challenging aspect of the project was ensuring all safety regulations were met in regards to excavations greater than 1.5metres.”

PM Builders undertook their work with care for safety of both their own workforce and other workers in the vicinity of pit works. They also ensured they met all the requirements of the various environmental management plans laid down as part of the development approval.

The company capabilities include all aspects of commercial concreting, including ground slabs, suspended slabs, concrete paving and all aspects of formwork, including unique and challenging configurations.

Their projects to date have crossed sectors, building their reputation as a reliable and expert subcontractor in their field, with work completed throughout the Victorian central highlands district, Geelong and the Greater Melbourne area.

For more information contact PM Builders, Michael Steenhuis (Director) 0409 969 464, Peter Steenhuis (Director) 0428 518 386, email: michael.steenhuis@pmbuilders.com.au

Below Metro Pipe provided the pipeline welding services and supplied the Mild Steel Cement Lined (MSCL) pipe specials for the pipeline and the pumping station.

Surveying the Melbourne to Geelong Pipeline project in Victoria.



As specialist contractors for pipelines all over the greater Melbourne area, Metro Pipe have a thoroughly proven track record in the supply, installation and welding of water supply infrastructure. For the Melbourne-Geelong Interconnector Pipeline project, they provided the pipeline welding services and supplied the Mild Steel Cement Lined (MSCL) pipe specials for the pipeline and the pumping station. Their scope included the welding at both river crossings, also air valves, scours, butterfly assemblies and the supply and install of 2.7km of MSCL in 813mm dia outside with 8mm wall. The work was completed in stages: stage 1, the 813mm pipework to and from the Werribee River Crossing; stage 2 the pipework within the crossing itself; stage 3, the Little River crossing; and stage 4 the pumping facility construction, intake valves and associated pipework.

Two experienced and qualified welders worked on the project during construction phases, ensuring they met the critical deadlines involved in both river crossings, which were complicated by environmental requirements to maintain flows and the necessity of keeping works within a minimal footprint. Another challenge was the high water flows in the tank connection cut-ins. Metro Pipe have been in the business for 23 years, founded by Brian Davis, who has prior experience as a Melbourne Water pipeline fabrication supervisor. The company's core speciality is the supply of high quality fittings, pipeline maintenance and repairs for all the Melbourne area water

agencies. "We use specialised welding techniques and undertake the design of specialist fittings to repair or maintain water infrastructure," said Brian Davis. "We provide fabrication of pipe specials for water agencies and construction companies to WSA (Water Standards Australia) Standards and Water Agency specifications. "We also undertake manufacture welding, and the reinstating of coatings for tapping under pressure offtakes to ISO 3001 across Victoria on behalf of Complete Tapping Services, a Division of Tyco. Our core approach is to keep it simple, and do the job right."

Metro Pipe have completed projects across all major sectors, for agencies, developers, construction companies and others. Their current assignments include 6km of pipe welding at Werribee for Simpson construction on behalf of City West Water. They are also supplying and installing welding and fittings for Barwon Water's Alliance, and also providing direct services for subcontractors involved in this project. With their own manufacturing facility in Epping, a dedicated and mobile workforce, and a comprehensive inventory on hand of diverse sizes of pipework, Metro Pipe are well equipped to provide the means of ensuring reliable, secure water supplies.

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