

MAKING TRACKS

MAIN CONSTRUCTION COMPANY : Level Crossing Removal Authority
CONSTRUCTION VALUE : \$481 million



Victoria's Level Crossing Removal Project has ensured the continued safety of pedestrians and road traffic at Blackburn Road and Heatherdale Road. The project involved lowering the train lines, the construction of a new bridge overpass, and associated cycle and pedestrian paths to alleviate peak hour congestion.

The Level Crossing Removal Project is being undertaken by the Victorian Government, and overseen by the Level Crossing Removal Authority, with 50 dangerous and congested level crossings expected to be removed by 2022.

In the past, crossings have been removed one at a time, or in pairs, over a period of time. However the Level Crossing Removal Project ensures a strategic approach to multiple removals and a corresponding financial investment.

Benefits of these removals include safety, easing congestion and creating better connected and liveable communities. The ambitious timetable – 20 crossings removed by 2018 and the remaining 30 by 2022 – is on track and Project Director, Tony Hedley says the removals are actually ahead of schedule.

“There are more than 180 level crossings located around Melbourne and we are removing 50. As part of this project, Blackburn Road and Heatherdale Road crossings were removed,” Tony said. “The key to successful removal is the pre-planning and we were undertaking site specific planning at least 18 months before the actual removal. You find traffic and urban congestion everywhere in Melbourne, so removing the crossings was a challenging job.”

The removals at Blackburn and Heatherdale roads were not without challenges, and the Authority's pre-planning approach meant that when problems were encountered, contingencies kicked in. “We wanted to do as much work in advance as we possibly could,” Tony said

Following the pre-planning stage, an intense construction period of six weeks followed where rail lines within the area were shut down and

traffic diverted. This phase began on the 27th December 2016 and was completed by the 6th of February 2017.

“We did plan around a 24/7 construction cycle and there were a number of shifts that staff rotated through. We had 800 workers onsite during peak construction times,” Tony said.

Removal required the construction of a new bridge at the crossing location, with improved pedestrian and cycle paths, along with appropriate traffic access.

Safety is only one of the reasons for the removal of the level crossings. Research from the local area revealed that at Blackburn Road, the boom gates were down for around 54 minutes in the two-hour morning peak (7-9am). The road is used by some 16,000 vehicles a day, and the crossing was located nearby a busy shopping centre.

With the level crossing now removed, vehicles, pedestrians and cyclists now have priority. Tony explained that the aim “was to have no conflict between road and rail.”



For more information contact Level Crossing Removal Authority, phone 1800 762 667, email contact@levelcrossings.vic.gov.au, website www.levelcrossings.vic.gov.au

Below Subterranean Solutions installed concrete and steel for The Level Crossing Removal Project.

Gavin Spokes established Melbourne based Subterranean Solutions, who specialise in various forms of ground stabilisation works. They employ 14 staff, however work in close collaboration with various other subcontractors in their field, in particular Complete Shotcrete. Subterranean Solutions upscaled its staff considerably for The Level Crossing Removal Project, to approximately 50 onsite staff.

“I project managed our component of the job which was demanding because it had to be completed in tight time frames, but it was rewarding to deliver the project on time, so the trains could begin to run again,” Gavin said.

The project involved drilling and placing dowels, strip drains and hanging mesh in preparation for the shotcrete walls, around 10 weeks. Ground level was excavated to 10m and there was 17,000m² of mesh to hang, and 25,000 holes to drill before dowels could be fitted.

“When you have a large crew working in a confined space with heavy machinery and electricity there are big challenges managing safety, however the whole job was completed without one safety incident,” Gavin said. “Good communication was fundamental to risk management because nothing slows a job down more than a breach of safety.”

“Something like 200,000m³ of earth was excavated to form a very narrow corridor which had to accommodate massive machinery. I had a good working relationship with my crew but I also had to be agile in responding to any problems, and then communicate that with the main contractor. They were very responsive and took the time to have those roundtable discussions to solve any problems.”

The majority of Subterranean Solutions work to date has been in basement construction in Melbourne but there has been a steady increase in civil infrastructure projects.

“I cut my teeth with Geotech, one of Australia’s largest civil contracting businesses and I used that experience as a basis to start my own company. My brother and his business partner began Complete

Shotcrete about six years ago and in 2014 I followed with Subterranean Solutions. We now combine forces,” said Gavin who has a history as a geologist with extensive experience in the mining and construction sectors. His experience in high level project management, and his technical knowledge and experience have helped Subterranean Solutions quickly establish a solid reputation for getting the job done, with safety and quality as priorities.

“I draw on wide experiences in my role at Subterranean Solutions, including as a board member of the national not for profit, the Sharing Stories Foundation. We run self-representational media projects in 18 Indigenous communities across Australia, assisting young people to produce their own stories through various forms of digital media. I’ve been a photographer, a documentary maker and a project manager with the Foundation and my experience with Indigenous communities and Elders has developed and honed my communication skills,” Gavin said.

“I’m pleased to get my foot in the door and we delivered well on The Level Crossing Removal Project. The key to how I run Subterranean Solutions is in commitment to a high level of communication. I listen and evaluate. I think that builds alliances which increases successful outcomes,” Gavin said.

Communication often accompanies team leadership skills and Gavin puts a significant amount of value in his team. “My crew is not scared to have a voice. In our work you need that trust in leadership because there is often risk involved. We also value innovation and encourage our staff to think and constantly work at increasing their personal capacity,” he said.

Subterranean Solutions works across Melbourne and Victoria and doesn’t rule out national work. “The sky is the limit, even though we spend all of our time underground,” Gavin said.

For more information contact Subterranean Solutions, 10 Minnie Street, Yarraville VIC 3013, mobile 0477 893 468, email gavin@subsol.com.au, website www.subsol.com.au





Aquatec, who have offices in Shepparton, Melbourne and Brisbane were involved in The Level Crossing Removal Project from design stage through to commissioning and beyond. The company designs, manufactures and commissions water and wastewater solutions and supplied the pump stations for the project.

“We’re a turnkey service. Our project managers oversee all aspects of the project from design delivery and commissioning to ensure our pump stations arrive on time and within budget,” Aquatec General Manager, Harvey Seeley said. The Aquatec pump stations assist with drainage of groundwater, stormwater or sewage. The company supplies both commercial and residential developments, partnering with water authorities, consultants and developers to provide a solution.

Aquatec pump stations were installed for drainage and groundwater below the surface level of the crossings at Blackburn Road, Main Road, Furlong Road, Mountain Highway and Scoresby Road in Melbourne.

The project was challenging in that it required Aquatec to work within tight space constraints at each site. “We had to be innovative in our design to provide protection for personnel who might work on the pump stations in the future,” Harvey said. “We were able to incorporate

a handrail that was built into pump station lids to establish a safety grate. This handrail will act as a built in safety barrier in the future.”

Aquatec employs a staff of 40 and at least 15 employees were involved in The Level Crossing Removal Project. “It is a high level project in Melbourne and Aquatec is proud to be associated with it,” Harvey said.

Aquatec prides itself on its ‘end to end’ service model. The company was established 30 years ago and is still a family business today, servicing Australasia including providing pressure sewerage systems to Samoa, Vietnam and New Zealand.

“We stand out as a pump station solution provider to the water and wastewater industry with our unmatched business model in providing a complete end-to-end solution. We hold the civil contractors hand through the complete installation process to ensure a successful outcome,” Harvey said.

For more information contact Aquatec, 2 Provincial Crescent, Shepparton VIC 3630, phone 1300 088 555, website www.aquatecenviro.com.au

Fleet Plant Hire provided cartage and plant hire solutions with approximatly 400 trucks per day at the peak of The Level Crossing Removal. During this time, the disposal points were operating 24 hours a day, seven days a week.

“We removed excess spoil, from the new cuttings, some 204,000 solid meters of excavated material,” Fleet Plant Hire Director, Chris West said. “In the lead up to the excavation we provided trucks on an hourly hire basis.”

The disposal sites that accepted the spoil included sites for reuse in construction materials, various urban infill sites and a major brick manufacturer.

“It was a challenging job logistically,” Chris said. “We implemented a new fatigue management system, for our suppliers which met current industry regulations. This ensured the drivers only worked to regulation hours.”

“We also had to deal with high volumes of truck movements through congested roadways in Melbourne, but we met these challenges and are pleased to have our name associated with the project.”

Fleet Plant Hire is a well established business, operating since 1988. It prides itself on its ethical and moral compass and its focus on project delivery. “We negotiate our rates with our clients at contract stage and we don’t vary them. We believe we have skin in the game and what is in the contract, we stick to,” Chris said.

Fleet Plant Hire employs over 20 staff at its headquarters in Scoresby, Melbourne, working predominantly across the city and associated areas in Victoria. “We will go wherever we need to go,” Chris said.

The company is currently working on a number of projects, including the Craigieburn Sewer Hub and the Melbourne Water Treatment Plant.

For more information contact Fleet Plant Hire, 10 Caribbean Drive, Scoresby VIC 3179, PO Box 2659, Rowville VIC 3178, phone 03 9561 3988, fax 03 9561 4988, email fleet@fph.com.au, website www.fph.com.au

Below Access Covers Australia supplied The Level Crossing Removal with precast concrete pits and lids.



Below AF Industrial supplied The Level Crossing Removal Project with hold down bolts for the new gantries.



Access Covers Australia Pty Ltd specialises in the supply and manufacture of access covers and grates, precast concrete products and structural steel components.

“It was a tight schedule and we supplied hundreds of concrete pit lids, all manufactured in Melbourne to Australian Standards,” Access Covers Australia’s Operations Manager, Andrew Paganelli said.

The precast concrete lids provided access to a number of concrete pits that were built into the ground to house pipes and high voltage cables. During peak times, 15 Access Covers Australia staff were employed on the project and a fleet of crane trucks delivered the products to site. “Time restraints meant we had to increase our capacity throughout the project,” Andrew said.

The company began in 1993 and has grown steadily ever since, particularly in the last eight years, with a staff of six increasing to 40 employees today at their Airport West premises.

“We are quality accredited and third party certified. We are also approved suppliers to VicRoads, Citipower, Ausnet Services, Melbourne Water, Yarra Valley Water, City West Water and South

East Water in Melbourne,” Andrew said. Access Covers Australia is currently working on the Mernda Rail Extension for the Level Crossing Removal Authority and the Merri Creek Rehabilitation Project for Melbourne Water.

“We have engineering capabilities and quality processes that ensure high standards of design, manufacturing and delivery,” Andrew said. “We are a one-stop-shop for access covers, grates, structural steel and associated components, and we promote a quality-in-all-we-do attitude and a strong commitment to continuous improvement.”

The company’s quality policies include a focus on client relationships and responsiveness, and marketplace competitiveness.

Access Covers Australia services the Melbourne area and provides delivery of their products by crane truck, as well as same-day delivery for all stocked products.

For more information contact Access Covers Australia, 22-28 Hawker Street, Airport West VIC 3042, phone 03 9335 5355, fax 03 9335 6055, website www.accesscoversaustralia.com.au

AF Industrial knows about civil infrastructure in Australasia. With its reputation for safety and reliability, the company was contracted to supply the hold down bolts on the new gantries for The Level Crossing Removal Project.

A division of Allfasteners, a fasteners supplier to trades and heavy industry since 1994, AF Industrial has been involved in some of Australia’s most significant construction projects. “We provide customised stud bolts for the petrochemical, mining, energy and resources and civil infrastructure sectors,” AF Industrial Director, Jim Strange said.

“We are accredited to ISO 9 001:2008 standard and a certified Achilles supplier. Achilles is a leading provider of quality assurance, supplier risk management services and pre-qualification programmes.”

AF Industrial has supplied the hold down bolts on about eight level crossing removals so far. They source materials and components locally and from QA-approved suppliers, which are then customised at the AF Industrial factory in Keilor Park, Melbourne.

The Level Crossing Removal Project was characterised by tight timelines. “We had fast turnarounds and as soon as the orders were

made, they were delivered to site,” Jim said. “Communication was very important on that job for a successful outcome but we are experienced in the civil infrastructure sector and maintain high quality relationships with our clients.”

AF Industrial between its Australian and US operations (who also directly service the US telecommunication tower sector), employs 60 staff. The company has representatives in all states of Australia. The company is currently working on the Melbourne’s Ring Road expansion, as well as the \$400 million White Rock Windfarm in Glen Innes, New South Wales. “We work nationally and internationally, in South East Asia and the US,” Jim said.

“We have decades of experience in the construction industry, as well as significant inhouse collective knowledge of engineering within the company. Our quality assurance standards mean that any hold down bolt assembly, anchor studs, or any other type of industrial fasteners solution will be compliant and effective.”

For more information contact AF Industrial, 78-84 Logistics Street, Keilor Park VIC 3042, phone 03 9330 0555, fax 03 9338 6434, email enquire@afindustrial.com, website www.afindustrial.com

Below Spatial Technologies provided aerial drone surveying for The Level Crossing Removal sites.

Below Green Power Solutions provided temporary power options for the level crossing sites.



Spatial Technologies employed state-of-the-art surveying technology on The Level Crossing Removal Project to provide cost effective and highly accurate surveying for the Victorian Government. With more than 20 years experience in Geographic Information Systems (GIS) technologies, Spatial Technologies is a 'one-stop-shop' when it comes to combining technology with surveying, living up to their motto 'we do it differently...we deliver the future'.

Spatial Technologies surveyed three sites for The Level Crossing Removal Project and began work in late 2015, completing their portion of work on the project in November 2016.

In the past, traditional surveying required the use of total stations and staff being on ground zero. However drones are smaller, safer and more cost effective. The 3D modelling we produced also allowed the client to monitor progress onsite," Spatial Technologies Director, Anton Van Wyk said. "We have knowledge across all fields of the work-flow which includes stereo imaging from Drones, Survey and GIS technology."

Drones and stereo imaging, provides highly accurate information for clients, however can be limited by uncontrollable environmental factors. "Weather will always be a challenge with aerial surveying,"

explained Anton. "We only have a short window of opportunity at times to capture the data."

The company was founded in 2015 due to a gap in the industry. Anton has a background in stereo imaging and his partner was an experienced surveyor; so Spatial Technologies combines the two: cutting edge technology and software with traditional surveying. "Raw surveying data is transformed into precision data on a software application which means you can spend less time onsite and get more information than traditional surveying, this is known as Reality Data Capture" Anton said.

"We are currently working on the Latrobe sand quarry, as our technology allows for greater safety in surveying as you are not onsite. We are also producing promotional videos for Frankston City Council, capturing imagery to allow the council to monitor development over the next two years," Anton said.

For more information contact Spatial Technologies, PO Box 5143, Mordialloc VIC 3195, mobile 0429 902 229, email contact@spatialtechnologies.com.au, website www.spatialtechnologies.com.au

Green Power Solutions provided biodiesel powered generators and light towers to allow continuous operation on The Level Crossing Removal Project sites. The Thomastown based company works across Melbourne and nationally, creating solutions for the long term. They have been involved with many of The Level Crossing Projects since inception.

"Some of The Level Crossing Removal sites required temporary power 24/7," said Stephan Curtis, Green Power Solutions' Sales Manager. Generators powered site camps compounds and light towers providing temporary power lighting along the train lines, which was more economical than tapping into the existing electricity grid.

Green Power Solutions not only rented generators and lighting for use on the project, they also provided B20 grade diesel to power the equipment.

Offsetting the consumption of diesel by using B20 biodiesel produced by Green Power Solutions (20% biodiesel 80% diesel) equates to 0.53kgs of CO₂ saved for every one litre consumed. As part of the service to its clients, refuelling of all GPS equipment on site is maintained.

Green Power Solutions also looked at innovative solutions while on the project and introduced other technologies such as solar power and batteries to reduce reliance on biodiesel. "On one site we provided a small generator, a battery pack and solar power for traffic lights which operated for three months. At the end of three months, only 100L of biodiesel was used," Stephan said.

The company is a member of the Infrastructure Sustainability Council of Australia (ISCA) and is able to work with clients on their ISCA rating. "Every infrastructure project funded by the Federal Government requires an ISCA rating. When companies use our generators and light towers, they are able to fulfill a component of what they need for the rating," Stephan said.

For more information contact Green Power Solutions, 182 Holt Parade, Thomastown VIC 3074, phone 03 9463 3000, fax 03 9465 9150, email contact@greenpowersolutions.com.au, website www.greenpowersolutions.com.au

Below The Tubeworks manufactured formatubes and steeltubes used in foundations and piers for foundations and concrete columns.

Below CUBIS Systems manufactured and supplied customised pit and ducting products for the entire Level Crossing Removals Project.



The Tubeworks’ expertise in formwork helped the company meet the tight turnarounds for the large scale supply of product, required on The Level Crossing Removal Project. The Victorian based company supplied the formatubes and steeltubes used in foundations and piers, and also in the above ground concrete columns.

“They were different diameters and lengths, ranging from 150mm-1200mm, and 3-4m in size. All were custom made; and we supplied hundreds and hundreds of tubes to multiple Melbourne Level Crossing sites,” The Tubeworks Manager, Jason Burns said.

The Tubeworks has been working on the project for a year, and are still supplying product to level crossing removals across Victoria.

The Tubeworks were required to manufacture 150 of one particular formatube in a week, and were generally supplying around 140 lengths of formatubes a month. Jason recalls however, that at one point they were asked to provide 400 lengths at the drop of a hat. A challenge the team rose to with ease.

“We have more than 29 years of experience in the industry and we have more than 500 different lengths of formatubes in the factory.

We were able to provide the quick turnaround the project required,” explained Jason. “We have the expertise in formwork and can delivery stock the next day, and also work with end users on custom made products.”

New products used on the job included the EPH Voidforme which creates a void in the ground slab. It ultimately protects structures, preventing walls from cracking when there is movement in the slab due to poor soils. The Tubeworks also sell Builders Film poly, and are preparing to release a range of industry standard construction tools.

The company employs eight staff and all products are manufactured in Melbourne. It works across Victoria, and also has supply agents in Queensland and Adelaide. “We also have the capacity to manufacture in Sydney, Queensland and Tasmania,” Jason said.

Current projects include the Glenn Shopping Centre at Glen Waverley, and the Opera and Ivanhoe Apartments, in Melbourne.

For more information contact The Tubeworks, 36-40 Northern Road, West Heidelberg VIC 3081, phone 03 9457 5545, email info@thetubeworks.com.au, website www.thetubeworks.com.au

CUBIS Systems are a global innovation leader in the manufacture and distribution of network access pits and ducting systems, used in the construction of infrastructure projects worldwide. The company has supplied fundamental network access products to The Level Crossing Removals Project which involves the removal of around 50 crossings throughout the greater Melbourne area.

Troy Ware, Southern Sales Manager for CUBIS Systems, said that CUBIS provided a range of access solutions earlier to projects in the level crossing removal programme, like Bayswater Station, and continues to deliver both industry standard and design engineered custom built products as further crossings are removed.

“The rail system requires a variety of ducts and pits for communications and electrical cables, all of which demand a high degree of safety and security. As well as our extensive national approved range, our inhouse engineering specialists have designed and manufactured pits with custom entries and concrete or steel covers to meet the client’s requirements.”

CUBIS have utilised the latest innovation technology, developing a complete range of network access products to meet even the most

challenging of installation requirements. The modular structurally preformed access pit and ducting solutions have been designed to accelerate construction of infrastructure networks, providing robust strength to weight properties. Already installed across major projects and telecommunication networks both nationally and abroad, CUBIS’ range of advanced underground products have gained international accreditations.

The company has multiple manufacturing facilities along the East Coast of Australia, with the global supplier exporting to over 25 countries worldwide. CUBIS’ national distribution services have secured the company’s prominent foothold across all major industry sectors. The products it produces are widely used for defence base and airport upgrades, in the electrical and telecommunications industries, as well as rail and road systems. The company prides itself on their commitment to quality, innovation, and long term partnerships with clients. “CUBIS Systems products are world class and provide sustainable, secure and sturdy solutions for our customers,” Troy said.

For more information contact CUBIS Systems, 73 Ballarat-Carngham Road, Winter Valley VIC 3358, phone 1800 065 356, email salesvic@cubis-systems.com.au, website www.cubis-systems.com.au