

# SPRINGVALE ROAD RAIL SEPARATION

MAIN CONSTRUCTION COMPANY : John Holland  
PROJECT END VALUE : \$140 million  
AREA : Nunawading, VIC  
COMPLETION : Early to mid 2010  
ARCHITECTS : Grimshaws  
ENGINEERS : KBR and Arup  
SURVEYOR : RE & LM Gertzel P/L

## HOW SPRINGVALE ROAD RAIL SEPARATION ALLIANCE BEAT THE CLOCK

With thousands of Greater Melbourne's road and rail commuters passing through their site daily, the Springvale Road Rail Alliance (SRRA) faced an incredible logistics, staging and safety task. The project's scope was to remove the at grade Nunawading level Railway Crossing and replace it with a safer six lane road bridge for Springvale Road with trains passing beneath and construct a new Nunawading Station. All this while trains continued to run. The project offered a myriad of design and site challenges, which were solved by the combined skills of some of the industry's best personnel.

"During the selection workshop process the consortium of John Holland, KBR and Arup proposed a number of design alternatives from the reference design. The alternatives included a central island platform in lieu of two stand alone side platforms. Also, shifting the alignment to the north further away from the live tracks meant more work could be done with trains running. The design changes were driven around performing more work upfront of the main shut, which was locked in over the Christmas break for a period of 5 weeks. Performing more work upfront meant reducing the amount of work to be done in the shut period and thus reducing the shut duration. As a result of the new design and shift in track alignment the shut period was achieved in 9 days. All changes during the life of the project was focused around minimising disruption to the Springvale Road users, rail commuters and the wider general public," said SRRA General Manager, Joel Allan.

"As the reference design changed significantly designers were under pressure from day one to meet the accelerated construction timeframes. Piling was the first activity to commence, even though the design was only partially completed. The project team knew that if this

major activity could commence early then all other activities would be brought forward as a result."

"VicRoads commenced a number of activities prior to awarding the contract which helped with the accelerated programme. In addition a number of approvals were streamlined due to the fact that VicRoads and MTM (formerly Connex) were part of the Alliance team."

Service authorities involved in the project, Telstra (communications and data), Jemena (lighting), AGL (gas) and Yarra Valley Water (water and sewerage) also accommodated the pace of works by responding efficiently to the required design and construction staging.

One of the features of this project was the need for a highly focused collaborated workforce for the crucial October/November period leading up to the shutdown. Over 140 key suppliers and subcontractors were involved in the SRRA, a large proportion were engaged for this stage. During the peak operations a workforce of over 200 was working around the clock plus numerous plant operators and trucks, over three eight hour shifts.

"The construction of the Springvale Road Bridge was initially proposed to be completed in 3 stages, whilst maintaining 3 lanes in both directions during peak times. This was programmed to be completed over 12 weeks, 4 weeks per stage. It was thought that it would be less disruptive to close Springvale Road completely for a lesser duration. The Alliance undertook extensive network traffic modelling to compare the impact and then proposed to VicRoads to close Springvale Road for 10 days, with approval granted"

"Once approval was granted the Alliance explored a number of ways in which to accelerate the works to hand back Springvale Road under the 10 days. One of those ways was to steam cure the top of the bridge deck post placing concrete to reduce the specified curing time. With the assistance of Boral and VicRoads Engineer, Fred Andrews-Phaedonos a mix was designed and trialled with approval granted to strip in 3 days. In addition to other innovative construction techniques, the bridge was constructed, cured and reopened to traffic in 5 days."

The Alliance solved some other engineering and construction challenges, including constructing bored piles within 3.5m from live running rail, making a vertical cut of 5m adjacent to the live rail, negotiating through unknown services within the rail corridor and handling major service relocations. Furthermore the use of prefabricated station buildings was a major influence on achieving the accelerated programme.

As the site was a major collector point for runoff from Springvale Road, three 50,000 litre tanks were installed to capture site water runoff for reuse during construction. As there was no room for sedimentation ponds, a local sump was constructed which pumped site run off to the tanks, where it was treated with a biodegradable flocculant with the treated water used for road cleaning and dust suppression.

Another environmental management task was the need for removal and remediation of hazardous materials both on the site in the form of asbestos in ballast and in-ground contaminants from a service station which was demolished along with the old Station, itself contaminated with asbestos.

"Nunawading station remained live for the majority of the pre-shut works. The site was required to maintain access to the station at all times which significantly limited the work that could be done. Pedestrian safety was also managed as a high priority as the public effectively walked through our site. A purpose built footbridge accommodated commuters to cross the site from north to south whilst the project excavated beneath," said Joel.

A fulltime Community and Stakeholder team undertook a range of consultation and information activities, assisted local businesses and facilitated community and project interaction over the entire programme from design to final completion.

"The project received numerous positive compliments from residents, traders and other stakeholders during the project. Most staff would agree that this was a fantastic project to work on as it set a benchmark, not only for construction, but for the way in which an Alliance model can deliver a complex project successfully. There was a real sense of team work, wanting to get the job done properly and to leave something for the community that will be beneficial," said Joel.

On Saturday 9th January 2010 the first test train travelled through the station, with the first passenger train running through at 7:16am on Sunday 10th January. The new Nunawading Station was in operation on Monday 11th January with the first passenger train arriving at 4:57am and was officially opened by the Premier of Victoria Mr. John Brumby and other dignitaries later that morning.

Once the trains were on track, the site crews continued to install architectural finishes such as bluestone paving, balustrade glass and cladding. Additional car parking was constructed and close out items addressed. Landscaping is currently underway, with all works due to be complete by June 2010.

The Springvale Road level crossing was the first rail crossing removed as part of the State Government's \$38 billion Victorian Transport Plan, and was jointly funded by the Australian and Victorian Governments.

### SPRINGVALE ROAD RAIL ALLIANCE

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# DIRT-RELATED DEEDS DONE QUICKLY AND CLEANLY

Whether there's earth to be shifted, a landfill to cap or drainage infrastructure and leachate ponds to construct, Landmark Contracting have the skills and the equipment to get the dirty work done effectively and efficiently. Springvale Road Rail project called them in for bulk excavation, final trim of sub grade and tunnelling under Springvale Road.

Landmark provided round the clock shifts of men and machinery to complete the work, which was given extremely tight timeframes. Landmark utilised the following equipment: Hitachi ZX450 Excavator, Volvo EC460 Excavator and 35 tonne A35E Volvo articulated dump trucks, and their skilled operators worked wonders, completing all work on time, injury free and to the high standards required by VIC Roads.

"Landmark Contracting Pty Ltd is highly regarded in the industry as we pride ourselves on completing projects within the set timeframe, within the set budget and always to an extremely high standard. Our equipment is reliable and is operated by fully qualified operators who can work with minimal supervision," said Landmark's Managing Director, Sharron O'Donoghue.

Formed in 2001, Landmark brings together the talents and experience of civil engineering and construction veterans, and applies them to a wide range of civil infrastructure projects. Managing Director, Sharron O'Donoghue has 20 years experience in the industry, and heads a team who are focused on providing the most efficient and cost-effective solutions for the sites they encounter.

"Landmark has extensive experience in the construction of landfill cells and landfill caps, which in addition to general earthworks, involves the construction of compacted clay liners under stringent quality control procedures of Level 1 geotechnical supervision and environmental auditor verification. Landmark has undertaken these construction works at some of Victoria's largest landfills including current on-going works for Transpacific Waste Management Pty. Ltd one of Australia's largest waste management companies," said Sharron.

"This experience in the construction of landfill cells and caps also extends into the construction of geosynthetic liners, landfill drainage infrastructure as well as leachate ponds and treatment lagoons. Our ongoing work in the waste industry provides us with vast experience in



Noel Butcher Photography

the handling, transportation and disposal procedures of waste material, as well as a thorough understanding of the needs of clients to comply with environmental management requirements, such as minimising dust, noise and odour throughout the life of the works."

In addition to landfill cell and capping projects, Landmark has provided all general excavation works for a variety of high profile projects, including bulk excavation and road preparation. They also have expertise in managing environmental issues, with a solid track record in site rehabilitation as well as management of slimes and sludge, contaminated soil removal and remediation.

An example of their recent work in the field is the Fraser Road landfill project for ongoing client, Transpacific Waste Management. Landmark constructed the forced evaporative leachate pond, a task comprising landfill cap restoration, installation of geogrid and

subgrade stabilisation, construction of the leachate pond's compacted clay liner system, installation of soil moisture system within clay liner, assisting with geomembrane liner installation works and installation of topsoil, mulch and vegetation layers around outer pond side wall batter slopes.

Landmark has contributed their skills and machinery to other recent major Vic Roads civil construction works, including East Link, Deer Park Bypass and Hallam Bypass.

Having years of experience working in Sand and Rock Quarries carrying out production loading, sand extraction, slimes removal, stripping of overburden and rehabilitation puts Landmark in an excellent position to undertake all aspects of earthworks, including ongoing maintenance works and post-close down site stabilisation for borrow pits and other temporary dump and quarry operations.

Dealing with most of a project's ground-level hazards as they do, Landmark has developed a stringent and effective Occupational Health and Safety policy, which includes safe work method statements and risk assessment procedures, and also undertakes to abide by any site or client specific health and safety procedures.

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## PHENOMENAL FLEET FOR SWIFT SHIFTING



2010 started for Fleet Plant Hire with 25,000 m<sup>3</sup> of material needing to be carted in 72 hours, starting at midnight January 1 2010. Fleet Plant Hire mustered 105 truck and trailers and 55 tandems (rigid) to shift the excess soil and demolition materials from the Springvale Road Rail project site, working round the clock.

Of the thousands of meters of materials carted from the SRRA site, Fleet Plant Hire achieved a materials recycling rate of approximately 75 per cent: timber and steel from old platforms, bridge concrete and clean fill were all dispersed to appropriate re-uses. In total, over the course of the entire project, roughly 80,000 m<sup>3</sup> of earth was excavated of which roughly 50,000 m<sup>3</sup> was re-used at the Latham's Road overpass project, being completed by BMD Constructions.

Fleet Plant Hire provided contract cartage and plant hire services to the project throughout. Their organisational model, as an agency for approximately 1,500 owner operators, means they can assist any job, of any size, for any duration, and their service is on-call 24 hours a day.

"As a young and innovative company, we bring a high level of energy, enthusiasm and professionalism to all projects we are involved in," said Fleet Plant Hire General Manager, Chris West.

"Our plant available for hire includes but is not limited to bobcats, excavators, dump trucks, backhoes and trucks of all configurations.

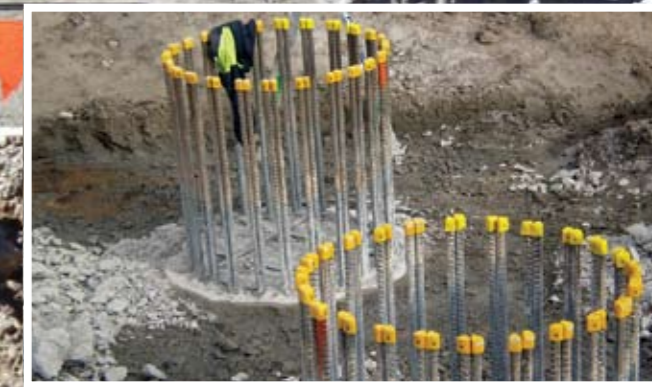
We can remove or supply material, and assist any project which has a shortfall of machines. Springvale Road Rail project was one of the more challenging projects we've undertaken, in terms of the time frames, tight access and logistics."

Chris brings 14 years plant hire experience to the business, and all other staff have particular strengths that allow Fleet Plant Hire to be leaders in their field.

One of the key factors in Fleet's appointment to the S.R.R.A. project was the supply of a Load Volume Scanner to the project. This is a portable scanning system which accurately measures the loose volume of spoil in a truck body without the drivers leaving their cab. This assists drivers to know they are running at legal capacity and the client to know they are running at optimum efficiency. Developed in New Zealand, the Tally Clerk is utilised on other projects Fleet Plant Hire are engaged on.

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## PILES OF PROFESSIONALISM



TrimPile are Victoria's only pile-trimming, jackhammering, and concrete-breaking service, and they certainly showed their mettle on the Springvale Road Rail Separation project.

"The challenge of this project was that there were numerous activities on site all happening simultaneously, and our work was time crucial. We were initially given only six hours to trim back the piles on the deck on Springvale Road," said TrimPile founder and Director Danny Allen.

"Our aim has been to provide clients with a truly professional service. Honesty, integrity and safe working practices are the norm, not the exception. Even our choice of hammer reflects how ergonomics, combined with expertise, produce the best result. The size of our workforce is tailored to each specific project so that our clients can remain on time and on budget."

For the Springvale project, six TrimPile workers completed a variety of work at the site, the bulk of it trimming piles for capping beams. There were approximately 60 – 70 piles on the deck, each about 900mm diameter. The trimming process itself starts with an air saw being used to do a cut roughly 30mm deep into the pile at the designated cut-off level. This is used to guide the jackhammers used for removing the excess concrete around the rebar. The skill shows in TrimPile's ability to leave the reinforcing and remaining concrete undamaged, ensuring

pile integrity, and the scabbled finish on the exposed pile face. A water hose connected to the air saw mitigates any dust issues, and the removed concrete is added to general site material disposal facilities.

TrimPile was established in 2006, and has Principal Director Danny Allen's 30-plus years in the building and piling industries, coordinating its operations, which include projects across all sectors. The company's client list includes Thiess John Holland, Hansen Yuncken, Vibropile, Brady Constructions, Fulton Hogan, Pellicano Builders, Fitzgerald Constructions, L.U. Simon, Toorak Formwork and Frankipile as well as many other construction and engineering contractors. Currently, they are at work on Southern Cross Railway Platforms, Pipeline Alliance at Frankston and Werribee, warehouse facilities at Mitcham and a new school building at Albert Park Secondary College.

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