





## Road to success

**ABIGROUP** has earned a solid reputation through its professional delivery of a diverse range of projects and developments. The company's core areas of engineering and construction are supported by global expertise and the 'on the ground' technical skills and know how of the local teams involved. Formed in Australia in 1961, Abigroup is now a wholly-owned subsidiary of Bilfinger Berger Australia Pty Limited. This has given Abigroup the increased resources and leverage necessary to achieve success in Australia's highly competitive market well into the future.

Abigroup is very closely involved with the communities and localities in which it works. The success of many developments comes from the relationship between local communities and the construction contractor and this is an area of operations that Abigroup maintains in the highest regard. Being involved in the community through sponsorship of sports and local events has helped Abigroup to understand the desires and aspirations of the communities that will benefit from, or be impacted by, their work. In turn, they have developed and listened to local communities and incorporated them into their projects to instil a sense of ownership and participation that has generated positive returns, not only for the developments but also for the local community.

The \$306 million Craigieburn Bypass is a major infrastructure project that will provide significant benefits to Melbourne and its surrounds. The project highlights many technical achievements and the use of innovative methods of construction. Working closely with VicRoads, the project also displays cooperative development, and the opportunity for major infrastructure to be undertaken successfully without major disruption to the environment. In fact, in many areas the construction of the freeway has ensured the success and continued viability of many rare and endangered species of flora

### Abigroup Contractors

**Length:** 17.5 Kilometres

**Cost:** \$306 Million (Federally Funded)

**Principal:** VicRoads

**Design and Construct:** Abigroup Contractors

**Urban Design Architect:** Taylor Cullity Lethlean (In association with, Tonkin Zulaikha Greer and Robert Owen)

**Principal Consultants:** Sinclair Knight Merz Pty Ltd

**Completed:** Dec 2005

and fauna. Based on a detailed Project Environmental Protection Strategy developed by VicRoads under-freeway crossings were incorporated into the project to allow native animals safe passage past the development and reduce the dangers of road-kill (including the rare Southern Bell Frog), Mesh fences and anti-fox mesh also direct wildlife towards the crossings. Kangaroo fences also prevent kangaroos from accessing the freeway, saving both motorists and the kangaroos from danger.

Stormwater treatment and the creation of wetland ponds, sedimentation basins and grass swales was undertaken to treat the run off during construction, and to trap the oils and dirt associated with a busy freeway once in operation. This management process protects the environment in the process. A feature wetland was also incorporated into the project near the Metropolitan Ring Road.

The project was designed to create a new urban route and entry point from the North of Melbourne to the city and the surrounding suburbs. Now completed, the bypass runs 17.5 kilometres from the Metropolitan Ring Road at Thomastown, to the Hume Highway north of Craigieburn. Freeway works were divided into four separate design and construct contract packages. All four contracts were awarded to Abigroup in an open tender process. The southern section from the Metropolitan Ring Road to Cooper Street was opened to traffic in December 2004 with the entire project being opened in December 2005.

Initial construction involved the extensive use of Global Positioning Systems (GPS) and laser guided technology. These techniques were employed to increase accuracy and safety. Survey pegs were not required and therefore, workers were not needed to be amongst heavy machinery as the grading



progressed. Each operator had access within his cab, to computer screens that gave accurate mapping and directional information. This information allowed them to proceed with clear knowledge of precisely what was required, and as a result it provided significant savings in time, and an increase in the overall accuracy and quality of the works. In some sections of paving graders operated in fully automated mode, guided by radio link from a robotic station that tracked their movement.

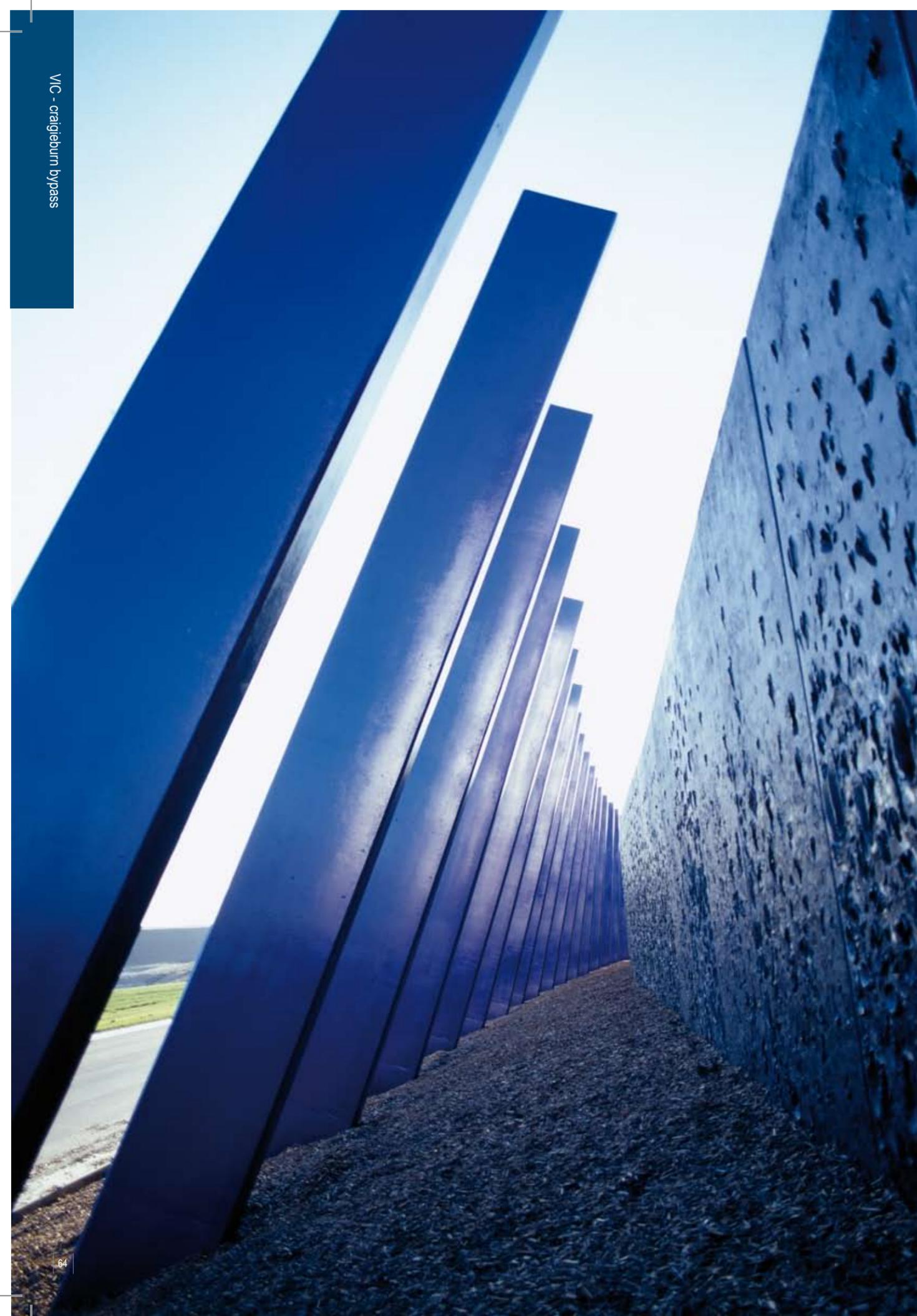
A feature of the freeway are the architecturally designed noise walls along the southern section from the Metropolitan Ring Road in Thomastown to Cooper Street in Epping. Here, three different types of noise wall were employed. Firstly, 901 concrete panels were erected, each 2m by 250mm, from 800mm to 6m in height, along 1.5km of the freeway. These architecturally designed panels incorporate a distinctive and creative pattern. Secondly, steel panels were installed to form another noise wall that runs, like a ribbon of steel for an 800m stretch, around the Cooper St overpass and an 800m stretch up, to the pedestrian bridge where it sweeps into the abutments of the architecturally designed shared use walkway over the freeway. The pedestrian bridge itself is a 70 metre clear span steel truss bridge, clad in Corten Weathering Steel Plate, to provide a rustic look. When driving from the north, the bridge is designed to frame the city of Melbourne in its semi-circular form. The final noise wall choice has become something of its own tourist attraction. The 'Scrim Wall' is made from acrylic panels with louvres placed at different angles to create a varied and interesting appearance. However, it is at night that this section comes to life. Designed to incorporate over 11,000 light emitting diodes (LED), the semi-translucent wall senses the traffic conditions and reacts to it, generating colourful patterns that have been dubbed 'The Northern Lights'.

The innovative nature of the Craigieburn Bypass is an achievement in itself.

However, Abigroup has not neglected the other important aspects of a project of this scale. Extensive OH&S procedures and plans are a firm and solid part of the company's ethic and this project was no exception. Training and education programs were undertaken to ensure compliance and understanding of the project's challenges. Exhaustive quality control programs were also in place to ensure delivery of a high quality transport corridor. Abigroup has become well known for its attention to detail and its dedication to success. The people of Melbourne are sure to benefit long into the future, with decreased travel times, reduced petrol consumption and the environmental benefits of a project that is ahead of its time.

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**Abigroup**  
Constructing Australia's Future



## Sinclair Knight Merz Pty Ltd

**SINCLAIR KNIGHT MERZ** (SKM) is a global professional services company with a particular dedication and ethic: to achieve remarkable success for their clients, their employees, the environment and society.

In fostering success wherever it is to be found, SKM has achieved outstanding results. This is indicated by the impressive array of satisfied clients and successful projects they have been involved with, ranging from internationally acclaimed work on the Olympic Stadiums in Athens and Sydney, through to the decommissioning of nuclear facilities in the UK.

A global company, SKM undertakes projects in a diverse range of markets, including mining, infrastructure, civil works, health care and educational facilities, environmental works, construction and development. They offer professional services in project delivery, engineering, scientific studies, planning, economics, logistics, architecture and geotechnical engineering.

An example of SKM's quality of service is provided by the Craigieburn Bypass Project in Victoria. SKM was engaged by Abigroup as Principal Consultant under its Design & Construct contracts with VicRoads to provide engineering services for all four stages of the Project.

Federally-funded and managed by VicRoads, the 17 kilometre Bypass links the Metropolitan Ring Road at Thomastown to the Hume Freeway at Craigieburn. The Bypass comprises dual lane carriageways whilst allowing for an ultimate six lane freeway.

SKM applied its expertise to many aspects of the \$306m Bypass, such as road design, bridges, drainage, noise barriers and retaining walls.

SKM extensively refined the longitudinal gradeline from the VicRoads concept design. This achieved reduced earthworks quantities, improved the balance of cut and fill, reduced haul distances and addressed the variable nature of excavated material. By reconfiguring the geometry of the Hume Highway interchange, a number of traffic management stages were removed from construction which provided significant time savings. This also significantly improved safety for road users during construction.

A best practice approach to water treatment was adopted for the Project with an extensive network of swale drains, wetlands and bioremediation trenches that removed sediment and other pollutants from freeway runoff. SKM optimised the water sensitive road design outcomes by effectively integrating temporary facilities needed during construction into the permanent works and achieving attractive landscape outcomes that are now a feature of the freeway.

The drainage system also included an innovative solution for dealing with

saline groundwater infiltration in the "Summer Hill" cutting. Drainage blankets were used under the road to collect the groundwater and flows were routed through a salt pan and wetland system to maximise re-infiltration to the water table and significantly reduce salt concentrations in water discharging to Merri Creek.

A critical input from SKM was the design for eight of the Bypass' bridges, including road, rail and pedestrian structures. A significant challenge in designing some of the bridges was the need to protect native grassland areas and environmentally sensitive watercourses. These endangered ecosystems necessitated a low-impact approach, with "no-go zone" restrictions imposed in defined areas that impacted on construction access, span lengths and bridge clearances. SKM worked through these complex issues with Abigroup, the construction contractor, and developed very cost effective bridge designs that "threaded the needle", passing over the most susceptible habitats of threatened reptile and amphibian species.

The cooperative effort displayed between designer and contractor led to economies in construction and an efficient accommodation of all site constraints. The result of SKM's design expertise and effective teamwork and collaboration with Abigroup, VicRoads and other stakeholders, is a freeway link that reduces traffic congestion, improves safety and respects the environments that it passes through.

With the work on the Craigieburn Bypass, SKM demonstrated its ability to embrace a broad range of challenges and resolve them efficiently and effectively. The skill of their consultants and the ability to apply both local knowledge and global resources were undoubtedly major factors in this achievement. But perhaps more important was SKM's continual desire to assist both its clients and the community in achieving remarkable success with every project.

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# First Call Rigging Services



Pedestrian Bridge



Noise Wall

**ESTABLISHED IN 2003** First Call Construction has expanded rapidly, from humble beginnings, they now employ permanent staff who all share the company's founders, Andrew Scott and Ihab Al Azhari's belief in continuous improvement to service and service expertise and their ability to deliver exceptional service and project results. This philosophy is integral to the companies' success, and considered a primary objective of every employee.

First Call is able to provide complete project management for a range of construction projects from simple lifting right through to complex structural ventures, precast and steel erection, as well as extensive lifting and erection consultancy. Utilising a team of experienced project managers, First Call provide programming, delivery scheduling, quality assurance, contract administration, comprehensive safety protocols and guidelines, and coordination with other trades and services. This gives First Call considerable flexibility in working towards a desired result and the ability to adapt and react to the constantly changing environment of any project.

The company was engaged by ABI Group to work on the Craigieburn Bypass, a major infrastructure project on Melbourne's outskirts, in Oct 2003 and have followed through on the project until its completion. Initially they worked on the installation and erection of concrete architectural panels to decrease the noise pollution generated by the traffic flow in the surrounding areas. Supplying the Tadano TL300M MII crane and crew as well as dry hiring a TL500M crane, 901 concrete panels were erected, 2m by 250mm, from 800mm to 6m in height, running for 1.8km along the highway. First Call also erected 409 precast concrete louvres, 1m by 300mm by 10m in height; these louvres were erected between vertical and 30 degrees to the horizontal.

Additionally they were responsible for the installation of 365 steel columns and 195 steel panels that formed another sound barrier for a 1.5km stretch of highway from the Cooper St overpass to the pedestrian walkway. Supplementary to the works already mentioned, First Call completed the installation and erection of the overhead gantry and signage for the freeway includ-

ing supply of crane driver for 100tonne Pinjid (Dry hired by ABI Group) and riggers to install concrete panels for a retaining wall around Merry Creek Bridge.

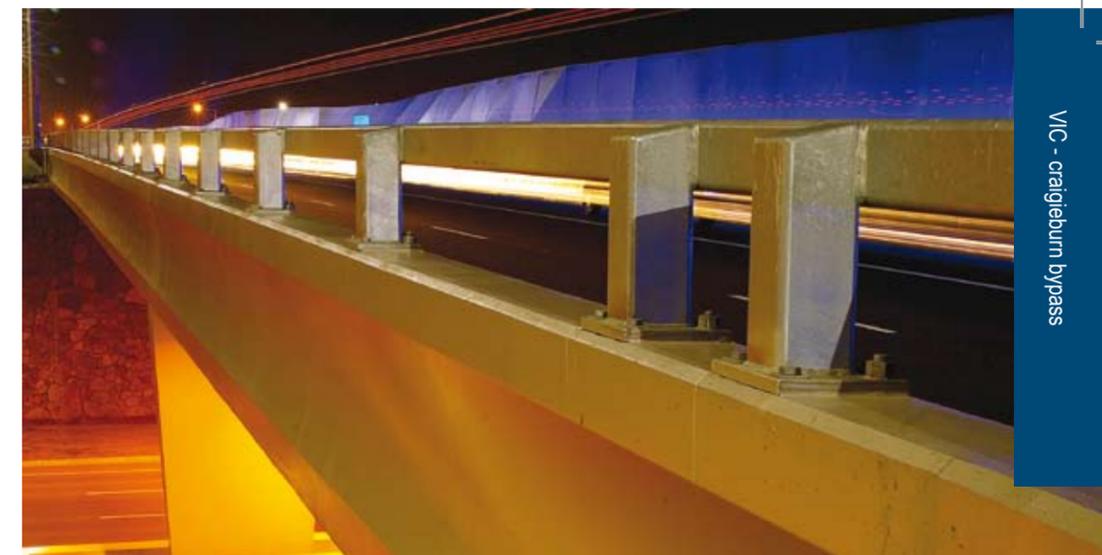
A challenging aspect of First Calls involvement in the project was the Craigieburn Bypass Pedestrian Bridge. The bridge featured an architecturally designed free span, without support of pylons; the 174 tonnes of structural steel was lifted into place, and installed by First Call. In addition, 48 tonnes of steel plate was also installed to create the distinctive 'rusty-look' feature that now traverses the highway.

First Call construction believe in their ability to provide above and beyond, what their clients require. They seek to deliver on every aspect of their work too exacting standards of professionalism and safety. During the construction of the Craigieburn Bypass, First Call Construction demonstrated this to great effect.

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## Versatile Industries

**THE CRAIGIEBURN BYPASS** is a major infrastructure project linking the Hume Highway to the Metropolitan Ring Road at Thomastown in Melbourne. Construction originally began on the A\$306 million project in April 2002 and the project has been predicted to deliver more than A\$1 billion in economic benefits to Victoria in the form of fuel cost savings, time savings and reduced vehicle operation costs and accidents.

Versatile Industries live up to their name in the number and scope of the services they provide. Including, civil engineering, design and construction, the manufacture of dedicated pre cast concrete components for bridges and associated infrastructure, as well as engineering and construction projects, specialist project management and consultation services, which include; advising on design, compliance, project planning, logistics and procurement.

Versatile were engaged by Abigroup Contractors to provide pre cast parapets and off structure traffic barriers for 6 bridges along the 17 kilometres of the Craigieburn Bypass, (a seventh bridge required only the off structure barriers). The scope of the works for Versatile Industries included the preparation of a quality plan and all associated documentation, as well as the manufacture of moulds, pre casting and delivery of the components.

The company has a keen vision that focuses on not only quality, commitment and service, but also on the involvement of their employees in all aspects of the company and the projects they undertake. Through this involvement, and active participation the company is able to deliver on its high standards of workmanship. Each part of the team relies on the others and is therefore dedicated to producing the best results not only for themselves but also in turn for the company and the client. Currently, they are involved in a number of other projects, including the Abigroup (NSW) Albury Bypass,

where they are producing pre cast in the construction of 11 bridges, Supply and Installation of Precast Baffle Walls for Bilfinger Berger Project Services at Altona Meadows.

Versatile Industries are dedicated to generating solutions for their customers that encapsulate ultimate standards of product, service and expertise. Melbourne based, and Australian owned, they have been involved in providing civil engineering services to major infrastructure and government projects for the past 25 years and undoubtedly their success and experience in this area has been a major asset to the Craigieburn Bypass project, of which Versatile Industries are proud to have been involved.

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