

WELL-LAID PLANS DELIVER LONG-TERM BENEFITS

The \$74.6 million Dingley Arterial section of the Dandenong Bypass was completed in Decemebr 2012

MAIN CONSTRUCTION COMPANY : VicRoads / Fulton Hogan
PROJECT END VALUE : \$75 Million
COMPLETION : Early 2013
STRUCTURAL ENGINEER : Hyder
SURVEYOR : MVR Surveys



Ensuring outer suburban populations have access to efficient routes for commuting and commercial freight comes down to a combination of sound planning, solid civil design and engineering, and quality construction. With the new section of the Dandenong Bypass (originally known as the Dingley Arterial) completed in December 2012, VicRoads has succeeded on all these fronts, and together with Fulton Hogan, delivered improved safety and reduced traffic congestion in the Cheltenham Road and Springvale Road area.

The \$74.6 million Dingley Arterial section of the Dandenong Bypass comprises a 3.5km divided road link between Springvale Road and Perry Road, Keysborough, and connects Westall Road to the Dandenong Bypass.

The project also included the construction of a number of structures including a 34m wide and 53m long two-span bridge over Cheltenham Road, which features two tone architectural patterned walls as part of its striking design. Five major culverts designed to cater for 1 in 100 year storm events were also constructed along the alignment. The largest of the five culverts is the "Haileybury Channel" which is a seven cell culvert consisting of 129 culvert units and 48 link slabs. During the tender period this crossing was proposed as a bridge, however the innovative solution proposed by Fulton Hogan and its designer KBR minimised the amount of heavy machinery adjacent to residents in this area and also provided a cost saving to VicRoads.

The project also includes a 3.2km shared bike path which connects to existing paths at the Dandenong Bypass and Springvale Road, giving users safer and more direct access to the EastLink Trail and local sports facilities.

Fulton Hogan undertook the construction works in conjunction with the VicRoads team, who maintained an active role from initial planning and funding stages through to final completion.

"At VicRoads we not only deliver projects on behalf of the State Government, we also plan future projects," said Frank De Santis, Project Director, Eastern Projects, VicRoads. "We were lucky enough to work on the original project planning for the Dingley Arterial, which included the business case to seek funding for the construction of the project. "Members of the team that planned the project also worked on its construction delivery, which is a great experience, and not one that comes around ordinarily.

"The preliminary design was undertaken by our Technical Services division at VicRoads. Upon award of a design and construct contract to Fulton Hogan the detailed design for construction was undertaken by KBR, with proof engineering undertaken by Hyder Consulting. Other designers were also engaged for particular elements of the works including RE-Walls (VSL), Traffic Signals (GTA Consultants) and Service Relocation (Powerplant). We also took advice from our Metro South East Region and Technical Services in a number of specialist areas including bridge design and geotechnical areas."

The project had several key challenges, including a large amount of unsuitable/Class C material that required removal or bridging before pavement construction, and the need for extensive services relocation. Traffic management during construction in existing traffic zones was also an added complexity.

Five months of protracted wet in 2011 also brought civil works to a halt as the greenfields site did not yet have drainage constructed. However, this time was effectively put to use on design tasks and service relocations of gas, electrical, sewerage, telecommunications and water.

"There were a number of issues from previous projects that we considered when constructing the Dingley Arterial. Some of these considerations included using precast materials for bridge elements where time is critical or the site is constrained, and alternative methods for dealing with poor subgrade conditions (removal, stabilisation or bridging)," said Frank De Santis. "We also needed to consider that the site was constrained because the alignment was developed for an earlier set of standards. This required a collaborative approach to determine standards that would be applied to this project."

There were some key innovations on the project in relation to environmental protection, motorist safety and community safety.

"Our aim for the project was to minimise the impact or footprint and ensure that vegetation along the arterial was retained where possible without compromising safety. We used recycled or energy efficient products to reduce the overall carbon footprint where possible and this included recycled concrete for pavements as well as a high proportion of recycled asphalt for the project," said Frank De Santis.

"To improve safety for motorists, culverts were extended beyond the clear zone with forgiving flattened batters, and an open channel in Perry Road located beyond the clear zone removed the need for a safety barrier adjacent to the road.

"The project's shared user path along the full length of the Arterial helps to separate vehicles and pedestrians/cyclists. There are also flat batters adjacent to culverts and open channels which have been fenced on the approaches to large drops, and added safety at a number of median traffic islands which have been staggered and fenced to improve pedestrian storage capacity for crossing the road."

VicRoads held information sessions before construction commenced, to provide an opportunity for the community to provide feedback on the proposed design. Ongoing information about progress and traffic conditions was provided throughout the project via face to face meetings, updates via the VicRoads website, letter drops, regular information brochures, VMS boards and newspaper advertising.

"Despite significant challenges through the project including five months suspension due to wet weather in 2011, the Dandenong Bypass (previously known as the Dingley Arterial) was delivered two months ahead of schedule. The safety record was good with only one MIT in approximately 200,000 man hours. I'm pleased that the project has delivered on its objectives by easing congestion and improving safety for all road users," said Frank De Santis.

The next major VicRoads project for this part of the outer Melbourne area will be the Dingley Bypass. The State Government has committed to providing \$156 million for the project, which is due to commence construction in 2014.

For more information visit VicRoads website, www.vicroads.vic.gov.au

THEY'LL MOVE THE EARTH TO MEET PROJECT MILESTONES

With experienced and highly-skilled workers, and a fleet of plant which includes the latest GPS-equipped earthmoving equipment, Gellie's Earthmoving is in demand for civil projects where safety, quality and timely work are essential.

Recently, the company has contributed to two major State Government funded VicRoads projects, the Dandenong Bypass (Dingley Arterial section) and the Nagambie Bypass.

For the Dingley project, Gellie's Earthmoving provided contractor Fulton Hogan with civil construction services including constructing shoulders and verges for the new 3.5km stretch of six lane divided road; and completing the stripping and placement of topsoil in the road base materials.

The company's plant on this project included a self-propelled elevated scraper, which was used in conjunction with road graders fitted with GPS technology. This increased the efficiency of the task, by eliminating the need for additional surveys and rectification of detailed works. This

efficiency was an extremely valuable aspect of their contribution given the weather challenges faced by the project, which had to halt civil works for four months due to heavy rains. Despite this slowdown, the project was completed two months ahead of schedule, and was under traffic by Christmas 2012.

In October 2012, Gellie's Earthmoving were contracted by Abigroup to work on the final stages of the Nagambie Bypass, a \$188 million project which is part of the upgrading of the Goulburn Valley Highway. Equipment used on the project included, a Komatsu D155AX bulldozer, tractors & laser buckets, two semi side tippers, three water trucks & tip truck. The semi side tippers were used to complete shoulder work on the job, and also to top up the shoulders with top soil.

"A unique aspect of this project was our use of tractors and laser buckets, equipped with GPS Technology. Also, due to the inclement weather, our tractor and scoops were fitted with full floatation tyres, as this covered the ground in an easier manner and minimised erosion and runoff risks. Our

water trucks were also in constant use on the project, with three trucks working consistently on the site.

"We constructed a bund wall to prevent outside water from flowing into the completed borrow pits, which required attention to detail and care for best environmental practice during the construction."

Gellie's Earthmoving has also been contracted on several Victorian sustainable energy projects, including the \$1 billion Leighton / Vestas Macarthur Wind Farm.

For this project, they worked on site preparation works including boxing out road formations for more than 100km of service roads, constructing tower bases for the 140 wind turbines, and substantial cut and fill works. Plant used on this project included two New Holland tractors (TJ425 & TJ450) and laser buckets, for the earthworks; two Kenworth T650's with side tippers; and two bulldozers, a Komatsu D65EX-15 and a Komatsu D155AX-5, fitted with a rock rake.

Gellie's Earthmoving was established in 1983, and has grown from a small owner operator operation into a multi-skilled civil construction and

earthworks team with over 20 highly experienced employees. The fleet of plant includes Bulldozers, Excavators, Loaders, Graders, Dump Trucks, Water Trucks, Semi Side Tippers, Tractors & Scoops, a variety of Floats and a Hi Rail Tip Truck for Rail projects.

In addition to extensive hands-on knowledge of the construction process developed over many years, Gellie's Earthmoving staff are trained in all aspects of safety for civil and infrastructure projects, including having their Track Awareness Tickets & Rail Safety Worker Tickets (Pegasus) for rail projects.

The company provides both direct contracting and wet hire services for projects across construction sectors both around Victoria and interstate. With capabilities ranging from general earthworks, detail excavation and construction, through to rail maintenance work and rail upgrades, Gellie's Earthmoving have proven themselves to be a valuable addition to any major project's construction team.

For more information contact Gellie's Earthmoving, 7507 Mortlake Ararat Road, Maroona VIC 3377, email nedgellie@bigpond.com or phone 03 5354 7542, Ned Gellie 0427 132 216, Jake Gellie 0409 951 411



LIFTING SAFELY AND DELIVERING RESULTS

Behind every safe crane lift is an engineer when Independent Cranes are on the job. For the Dandenong Bypass (formerly Dingley Arterial) project, they provided cranes ranging from small articulated franna cranes through to larger slewing cranes up to 130T, and detailed engineering planning for lifts, crane placements and precast installations.

Independent Cranes also provided a crew of riggers and dogmen who assisted with the placement of the project's multiple precast modules ranging from precast culverts to panelling. In all, the company's manpower and machinery were on site for approximately 12 months.

"In one section, we installed some 140 units for the Hailleybury Channel crossing," said Independent Cranes Heavy Lift Engineer, Anthony Tarquinio.

"As a crane company, challenges existed in the accuracy of the installation for all precast elements, particularly on some larger panels which were labour-intensive to install.

"We provided lift analysis and plans for the installation of elements as required. This was done to ensure all lifts were completed safely and all the ground conditions are suitable prior to lifting. We also produced plans to deliver a feasible option for crane size and installation sequence via our lifting methodology.

"The project was coordinated well by Fulton Hogan, and works were always prepared well before tasks commenced. Fulton Hogan's efficiency and focus on safety allowed our company to assist with no concerns."

Independent Cranes has a fleet ranging from mini crawlers to 250t cranes, and a heavy haulage division, enabling them to provide a complete service across Victoria and beyond 24/7.

While working on the Dingley part of the Dandenong Bypass, Independent Cranes were also at work on the Victorian Desalination Plant providing crane hire and transport, and also on the Peninsula Link Freeway with a broad scope ranging from general lifting to bridge beam and precast installation.

The engineering expertise in house enables them to provide customers with services including engineered lift studies, engineer overviewed Safe Work Method Statements, and CAD drawings of crane set up locations and positioning produced with the aid of the crane-based software package, LICCON Work Planner to determine outrigger loadings and pressure calculations.

Independent Cranes have approximately 50 employees, including project supervision, safety officers, crane operators, civil and structural engineers, riggers, dogmen and mechanical trades. All their equipment is impeccably maintained on a strict schedule to ensure maximum safety and efficiency, and the company is DEEWR accredited for work on Government-funded projects.

With combined management experience of more than 75 years, and over 25 years of successfully providing services across all construction sectors, Independent Cranes can meet the needs of any project for safe, informed and reliable lifting and heavy transport solutions.

For more information contact Independent Cranes, phone 03 9308 8111, email admin@independentcranes.com.au, website www.independentcranes.com.au



CIVIL WORKS ARE IN SAFE AND SKILLED HANDS

When it comes to civil works, experience at the task at hand and complete familiarity with the plant being used to complete it are a must, especially when the going gets tough, mucky, gluggy and water-logged like it did on the Dandenong Bypass (formerly Dingley Arterial Road) project. DJD Earthmoving's operators have tackled all kinds of terrain, so completing the bulk earthworks and road base preparations in less than ideal conditions was a job they were well-equipped to tackle.

From September 2011, DJD provided wet hire excavators, dump trucks and a dozer on the project at various stages until February 2012. The scope of work undertaken included the removal of topsoil, boxing out the subgrade, carting clay fill to build the subgrade up to road level, carting clay fill for bridge abutments, constructing assorted drainage works and the construction of a box culvert causeway.

Each item of plant DJD provided for these works was operated by a DJD staff member who is permanently assigned to that specific machine.

"Our policy is that one person drives one machine, that way they know the machine thoroughly, and it also reduces preventable maintenance issues," said DJD Earthmoving Managing Director, John Lacey, who has many years of experience in the civil contracting field.

"We have 12 operators on staff, all fully ticketed including RISI (rail). Our plant includes excavators from 5 tonne to 50 tonne, D6 Swamp dozers (low ground-pressure dozers), a grader, and a fleet of 35 tonne articulated dump trucks.

DJD provides a wide range of civil contracting services, both as direct contractors and on a wet hire basis. One of their specialities is installing HDPE liners for landfill cell construction, and they have also constructed HDPE-lined evaporation ponds for Defence Industries.

DJD have also worked on the Nunawading and Springvale Road Rail Separation projects; Eastlink; the Hallam Bypass; the South Nerang Rail Project; the Regional Rail Link; and provided civil contracting services to numerous quarries.

"We provide our services anywhere across Victoria and New South Wales – wherever the work takes us," said John.

For more information contact DJD Earthmoving, phone 03 9728 6455, email laceyjd@bigpond.com.au

