

BRIDGING NORTH AND SOUTH



DEVELOPER : Roads ACT
MAIN CONSTRUCTION COMPANY : Fulton Hogan Pty Ltd
ARCHITECT : Calibre Consulting Pty Ltd
ENGINEER : SMEC Australia Pty Ltd
PROJECT VALUE : \$288 million

The \$288M Majura Parkway is an 11.5 kilometre dual carriageway road that will provide a safer and more convenient link between the Federal Highway and Monaro Highway.

In January 2015 a significant milestone was reached when a section of Canberra's new Majura Parkway opened to traffic. In May 2015, Milestone 2 was reached with the opening of the north/south lanes of the parkway from the Federal Highway to Morshead drive. This 10km section of road has a speed limit 100km /hour allowing improved travel times and safety for motorists.

The Parkway is a critical link between north and south of the capital, and will provide a transport conduit for local commuters and heavier freight vehicles.

In total the Majura Parkway will provide 11.5km of faster, safer dual carriageway joining the Federal Highway feeding north of the city and the Monaro Highway in the south. By 2030, the parkway is expected to facilitate movement of 40,000 vehicles and 6,000 trucks daily.

Delivery of this impressive project is in the hands of Fulton Hogan. The ACT and federal governments have invested equally in the \$288

million project, a significant infrastructure upgrade and addition to the region. The works include replication of the smaller, rural Majura Road being upgrade, growing regions and additionally service the adjacent Canberra Airport.

Most of the road represents greenfield construction. However this is not a simple road build project. Brownfield work is also required, there are significant existing traffic flows to accommodate, and engineering challenges include construction of ten bridges. Three of the bridges use a Super T type construction allowing efficient design and rapid build, and the key bridge linking the north and south shores of the Molonglo River have been constructed using the precast segmental launch method.

The Molonglo River bridge is the largest of those along the parkway. The twin bridge (northbound and southbound elements) spans 250 metres across not only the Molonglo River but also across Morshead Drive, a major artery to the city.

"The new bridge is a key feature of the Majura Parkway," states Fulton Hogans' Project Representative. "From an engineering perspective, using the precast launch method requires a rather specialised technique that is not implemented all that frequently across Australia."

Eleven bridge segments were constructed for north and south bridges, each at a special on-site casting yard. Segments are launched across the river using hydraulic jacks and a steel guiding frame at a rate of about 30mm a minute.

"The method was selected because it represented a very safe approach and because the bridge had to be constructed over the top of a very busy road – Morshead Drive. This meant that as well as safety concerns being mitigated, traffic could continue to use the road whilst the parkway was under construction," explains the Representative.

"There are also environmental benefits to this approach, such as less traffic because of casting on-site, and less direct impact on the river itself since the bridge is pushed out from one point on the river bank and activities are confined to that one footprint away from the river."

The Project Representative says that the visually lower profile of the bridge lent itself well to the Canberra environment, where aesthetics are particularly important in an intentionally designed city.

Fulton Hogan are now over half way through the Majura Parkway project, which began February 2013 and is expected to be completed in 2016.

The 80 year old transport and civil infrastructure company, now employing over 5,500 in Australasia and New Zealand, are also engaged in completing the \$329 million Gerringong upgrade. This includes construction of the similar precast launch Omega Bridge over the environmentally-sensitive Werri Lagoon, again with segments cast onsite. They are also working on the Berry Bypass in the same area, another large contract worth \$580 million.

The Majura Parkway is progressing, but it appears there will be plenty to keep Fulton Hogan on the roads long after its completion.

For more information contact Fulton Hogan Pty Ltd, 61 Dunning Avenue, Rosebery NSW 2018, phone 02 8346 9400, fax 02 8346 9444, website www.fultonhogan.com

Below A & A Precast Welding and Rigging installed precast panels and provided welding services on the Majura Parkway.

Below Professional Engineering Service provided civil infrastructure engineering services for the Majura Parkway Upgrade.



With less than 12 months under their belts in business, activity is thriving for Adam Hardy and Alex Kearney, directors at A & A Precast Welding and Rigging. The new company has dual strengths: precast installation and high spec welding, primarily for roads, construction and maritime services.

AAPWR was contracted by Fulton Hogan to deliver two packages for the Majura Parkway project. The packages included the team to install precast panels for bridges along the Parkway as well as providing welding activities.

Hardy considers their expertise in dual, specialised fields to be their strength. “We offer particular expertise in two fields that are complimentary and often go hand in hand. AAPWR use specialised crews and only the best tools on the market, delivering very high quality welding and precast outcomes.” AAPWR is pleased by the positive relationships between the Majura Parkway’s contract principal, Fulton Hogan, as well as with AAPWR’s own suppliers.

“For their efficiency and communication, Fulton Hogan have been great to work with on the Parkway. It’s also a pleasure to work with our suppliers, including Gasweld, Southland Supply Group, Linde Gas and M & G Industrial Suppliers.”

The combination of skills offered by AAPWR led to them assisting with troubleshooting on the Majura project’s installation. “We provided a more efficient and cost saving solution which reduced Fulton Hogan’s forecasted programme time and cut financial outlays,” explains Hardy. He notes that working with the engineers to assist in faster delivery has had positive outcomes for those downstream in the project.

AAPWR are one of only a handful of organisations in NSW and in the ACT qualified to deliver welding to the RMS specification. Other current projects include the Molonglo link bridge and sewer, and further from Canberra work on the water’s edge and main façade at Barangaroo South, and precast installation at the Nan Tien Buddhist Institute in Wollongong.

For more information contact Professional A & A Precast Welding and Rigging Pty Ltd, ACT and NSW

Adam Hardy phone 0430 427 672, email adam@aapwr.com.au
Alex Kearney phone 0402 472 847, email alex@aapwr.com.au

Professional Engineering Service Pty Limited (PES) is a consulting company with a background firmly rooted in major road and bridge engineering projects. When Steve Vine and John Sheldrick established the company in Wagga Wagga 1992, they were engaged overwhelmingly by the (then) Roads and Traffic Authority.

Since then, the company has expanded to service other government departments and advise state and local governments on development of major infrastructure projects. PES’s 40 staff provide civil infrastructure engineering services from planning, engineering design and contract development through to contract administration, management and verification of works including roads, bridges and dams. Their work extends throughout NSW and interstate across the ACT, NT, and QLD.

PES have been engaged on the Majura Parkway to represent the ACT Government as Principal, and began work with Fulton Hogan from the outset in 2012. Eight staff provide contract management, administration and surveillance services, ensuring GC21 Conditions of Contract and the full suite of RMS specification requirements were met. Core to their work was ensuring contractors were cognisant of the RMS specifications adopted for the first time by the ACT – which are quite tight and prescriptive. Use of GC21 Conditions of Contract was also new to ACT and PES brought years

of specific experience and knowledge to the site. GC21 involves a duty for cooperation and communication between the Contractor and Principal, and all parties are striving to adhere to this during the highs and lows.

In 2014, progress was threatened and negative media generated over a dispute centred on contractual arrangements between FH and its major subcontractor. PES assisted in overcoming these contractual stresses. PES have managed critical issues such as this, as well as administering a project that involves some challenging technical components with 10 major bridges including twin incrementally launched bridges, management of traffic volumes during the construction of grade separated intersections and providing service to the adjacent international airport. Public interest in the project is high, it is clearly an icon project for Canberra. Mr Sheldrick described the cooperative work environment around the delivery as “a model project for demonstrating good communications and responding to a wide range of issues. Working with government departments and stakeholder bodies requires coordination and cooperation.”

For more information contact Professional Engineering Service Pty Ltd, Unit 3, 6 St Georges Crescent, Drummoyne NSW 2047, phone 02 9181 2960, John Sheldrick 0438 693483, email johnsheldrick@pes.net.au, website www.pes.net.au

Below Dale & Hitchcock provided core machinery and labour requirements on the Majura Parkway Upgrade.

Below Trade West supplied, fabricated and installed acoustic walls and anti-throw screens on the new Majura Parkway.



Involved since the inception of the Majura Parkway's construction, Dale & Hitchcock provided core machinery and labour requirements via Fulton Hogan to complete the 11.5 kilometre dual carriageway road.

Dale & Hitchcock works included carrying out conduit laying, relocation of services, general excavation works, construction and surfacing. Their dedication was shown through the continuous crew and machines on site as the project was winding down, ensuring all their work was carried out swiftly and successfully.

The scale of the project is impressive, with construction of 3.5 metre-wide traffic lanes, flanked by 2.5 metre wide outside shoulders and 1 metre wide median shoulders. With expenditure on the entire project totalling around \$290 million, this represents a large contract for the company started by 2 construction supervisors in 1990 and now with a workforce of over 55 people.

The majority of Dale & Hitchcock's work is in the Canberra and Queanbeyan region where they house their fleet of 18 excavators, 16 trucks and dogs, 8 rollers, 2 water carts, 2 dozers and 32 utes, alongside graders and associated smaller mobile plant.

Prior to the Majura Parkway development commencing, Dale and Hitchcock were already engaged in work at the site of the new carriageway's construction in the Majura Valley. Contracted to Zinfra Group, they provided the infrastructure servicing giant with machinery to excavate and inspect gas mains.

Dale & Hitchcock specialise in civil engineering and landscaping, with a focus on public infrastructure, roads and paths. They are currently engaged by Queanbeyan City Council to build a new bus interchange and taxi rank, and by Actew Water for whom they are providing services including remodelling and remediating reticulation and ponds at Fyshwick sewage treatment works.

For more information contact Dale & Hitchcock Pty Ltd, 21 Tralee Street, Hume ACT 2620, phone 02 6260 2855, fax 02 6260 1558, email daleandhitchcock@bigpond.com

New South Wales based company Trade West have been designing, building and installing noise walls for roadways, commercial and industrial developments on the East coast of Australia for 25 years. With their own steel fabrication workshop, Trade West manufacture as well as design and install the barriers. Adding to their portfolio, they have recently supplied, fabricated and installed acoustic walls and anti-throw screens on the new Majura Parkway Upgrade.

Trade West installed primarily CSR lightweight hebel noise panels and transparent Plexiglas panels, including on the Molonglo River bridge. Additionally, they provided a pre-cast stock-proof fence and safety fencing for bridges over the new carriageway.

The company also worked on a section that provided a sandblasted etching pattern, adding variety and interest to the acoustic barrier. Varying patterns and applying architectural finishes to the barriers yields a more appealing product and Trade West offer a number of solutions to enhance the aesthetics of their noise barriers. As well as applying different finishes, they can incorporate relief patterns into pre-cast concrete panels, alter panel configurations or types, laser cut patterns on cement sheeting to fix to the face of the panel or use decorative columns to disguise support joints.

Noise barriers can often be taken for granted on large road developments, but probably just as important are the anti-throw screens that line the bridges and overpasses around major roadways. Trade West has core capabilities in design and supply of anti-throw screens to keep items from entering onto the roadway, as well as the acoustic barriers to keep the noises from escaping off it. The anti-throw screens are tough and effective, and like the noise barriers made to be more pedestrian friendly using transparent or semi-transparent Plexiglas or mesh.

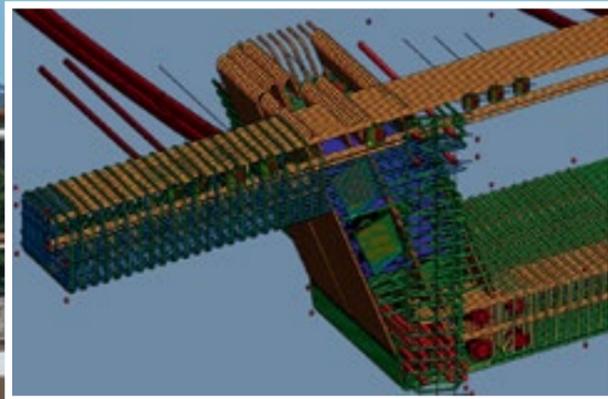
For such a large development as Majura, up to 12 of Trade West's 17 staff have been involved in construction or corollary services that the company offers. This includes reviewing acoustic reports, investigating environmental impacts and certification of all types of anti-throw or safety screens and noise barriers. The Majura Parkway is another significant project that cements Trade West's position as leaders in road and commercial barrier installation.

For more information contact Trade West Pty Ltd, 71-73 Melbourne Road, Riverstone NSW 2765, phone 02 9627 3966, fax 02 9604 4415, email keith@tradewestnsw.com.au, website www.tradewestnsw.com.au

Below BG & E provided engineering consulting services for the design and construct of bridge .1 on the Majura Parkway Project.



Below Cappello Hydraulics and Civil installed 14km of stormwater drainage pipeline to the Majura Parkway Upgrade.



The Majura Parkway project will provide 11.5km long dual carriageways linking the Monaro Highway with the Federal Highway, to the east of Canberra. The Principal has provided construction design and documentation for the project with the exception of the Majura Parkway Twin Bridges over the Molonglo River and Morshead Drive. BG&E Pty Ltd has been engaged to provide design and documentation for the twin bridges to the project contractor Fulton Hogan.

The twin bridges are 205m long structures each comprising 4 span continuous incrementally launched pre-stressed concrete box girder superstructures, on skewed blade piers and abutments. With main spans of 55m and skewed supports at 30 degrees, these bridges push the boundaries of incremental launching techniques. A temporary 32m steel launch nose is required to reduce tip deflection and load actions in the box. Two Ebespacher hydraulic jacks will lift and push the 5700t structures in 200mm increments into their final positions over the river and over the live Morshead drive with no disruptions or road closures.

Together with Fulton Hogan, BG&E developed and optimised the design geometry of the 2 box girders such that they could be cast from the one mould whilst catering for different northbound and southbound road

geometry. The bridges have heavily skewed ends which allow optimum span arrangements by aligning the Northern Abutment with Morshead Drive. The design was carried out using complex space frame and FEA models in parallel in Microstran to capture the bending and torsion behaviour of the concrete box. The skewed supports and beam ends added complexity to the behaviour of the structure, however this was able to be captured using the parallel modelling techniques.

Both bridges were modelled in REVIT and the design geometry was extruded backwards around an off-axis circle to the casting bed area to the south of the bridges final position. This process ensured the correct cast shape was established at the casting bed so as to mould and launch the desired concrete shape into place. Complex areas comprising post-tensioning anchorages and dense reinforcement were also modelled in REVIT. This allowed the design and construction team to perform clash detection reviews to avoid delays during construction. These models also allowed the complex end zones to be better visualised and constructed by the contractor.

For more information contact BG & E Pty Ltd, L2, 8 Windmill Street, Sydney NSW 2000, phone 02 9770 3300, fax 02 9770 3399, email sydney@bgeeng.com, website www.bgeeng.com

Cappello Hydraulics and Civil undertook the major task of installing 14km of stormwater drainage pipeline and associated structures on the new Majura Parkway.

As a critical arterial road in the ACT, Majura Parkway needs to be protected by potential road closures due to inclement weather and major storm events. Construction of the new carriageway required a vast network of pipelines, sumps, guttering, drainage reserves and easements to enable water surface flow, to ensure safety for motorists during these events.

Managing the installation of these stormwater systems on the Majura Parkway was an 18 month task, with a team of up to 20 Cappello staff working on the many different aspects of the project.

With around 40,000 vehicles expected to use the Majura Parkway each day, Cappello ensured they provided the highest standard of hydraulic services to help improve the safety and security of motorists using the roadway during wet weather.

Established in 2003 and operating for 12 years, the company has grown to an impressive size, employing around 70 skilled staff and

boasting a large array of plant and machinery to allow them to cater to a large number of tasks. Cappello are able to customise their team to complete works for major construction projects, civil and infrastructure projects or fit-outs and refurbishments.

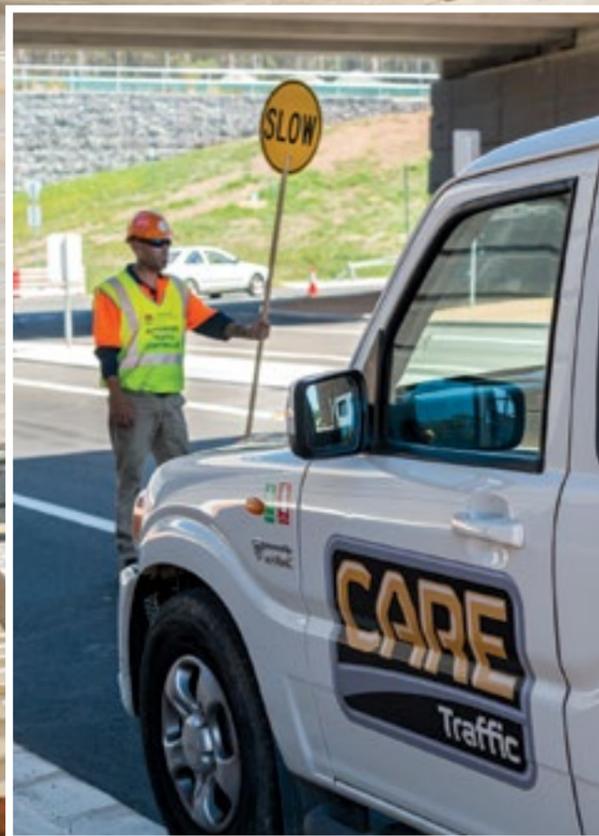
Cappello are specialists in commercial hydraulic services and civil projects and their qualified staff provide varied hydraulic and civil solutions to the construction industry. Not only do Cappello install drainage and hydraulic in-ground services, they also complete earthmoving, bulk earthworks, detail earthworks, concreting and subdivisions.

Although the company's major work focus is in the ACT and surrounds, they also work interstate with current projects including the Orange airport expansion and realignment works at Gocup Road, Abattoir, Gundagai.

For more information contact Cappello Hydraulics and Civil Pty Ltd, 3/57 Dacre Street, Mitchell ACT 2911, phone 02 6242 9420, fax 02 6241 0504, email admin@cappello.com.au, website www.cappello.com.au

Below Care Traffic Control provided traffic control services for the Majura Parkway Upgrade.

Below B & B Asphalt provided temporary asphalt patching and completed repair works on new parts of Majura Parkway.



Care Traffic Control are one of the last contractors on site at the Majura Parkway Upgrade, finishing work as the final contractors move off the huge new Canberra road project. The company has been providing traffic control services to Fulton Hogan, with typically 5 – 8 staff on site and up to 20 at certain periods of construction.

“Implementing Fulton Hogan’s traffic management plans for themselves and involving other contractors has been a very straightforward, easy project,” says Care Traffic’s Adrian Dart. “Unsurprisingly for a large road project such as this, we’ve implemented lots of safety initiatives, and our staff have won principal’s awards for their ideas around safety management and implementation.”

Dart set up the Canberra traffic management company 10 years ago. Since then, Care Traffic Management has risen to be the ACT’s largest traffic control company. “We are by far Canberra’s biggest traffic management company with 60 – 75 employees” states Dart.

The Majura Parkway contract is not the only significant, large job that Care Traffic Control are delivering: they have recently been awarded a contract to provide services for the Bega Bypass construction.

As well as these large jobs, Care Traffic are providing management services to a number of other roadworks throughout southern NSW with the RMS.

A quieter period in the capitol means consolidation in NSW for Dart, who is also currently the NSW Director of the Traffic Management Association of Australia.

“Our big work area is Canberra, but other than the Majura Parkway, current jobs in Canberra are much smaller now because of the ACT economy and the significant investment that’s already gone into the Parkway,” says Dart. Less than a year of work remains on the most significant road project in the capitol however, Care Traffic Control’s presence in the ACT will not diminish.

For more information contact Care Traffic Control Pty Ltd, 26 Geelong Street, Fyshwick ACT 2609, phone 02 6280 9330, fax 02 6280 9331, email belinda@caretraffic.com.au

B & B Asphalt are a small, local Canberra company who provide a variety of services associated with road surfacing primarily in the Canberra and Queanbeyan region. Although with 6 employees and not a large company, B & B Asphalt directors Dave Brown and Rick Barrett overflow with experience, each bringing 25 years of asphalt to the company.

B & B Asphalt have been contracted by Fulton Hogan to provide reliable and prompt asphalt services for the Majura Parkway construction, that larger asphalt contractors are unable to complete.

They provided temporary asphalt patching to the major new road project and have completed repair works on new parts of the parkway build. Describing their work on the Majura Parkway, B & B said “It has been very straightforward, using asphalt from Downer and our standard plant of an 8 tonne truck, rollers, pavers and bobcat fitted with either a profiler or broom.”

Work on the Majura Parkway by B & B was primarily patching, but the company completes a variety of other services including potholing, asphalt driveways, cycle lanes and paths, installing speed humps, priming, keying, painting asphalt and providing labour hire and/or drivers.

B & B Asphalt have been contracted to the ACT government to maintain all bike paths around Canberra, to asphalt roads - in particular Canberra’s bike lanes, and to surface driveways that extend onto nature strips.

As well as providing services to government, B & B complete many private asphalt jobs to both individuals and to commercial developments including basketball/sports courts and car parks.

Having previously asphalted taxiways and apron areas at Canberra airport, B & B were no stranger to the Majura Parkway area. It’s likely there will be plenty more work for B & B in that area in future, with the Parkway set to facilitate further growth in eastern Canberra and airport areas.

For more information contact B & B Asphalt Pty Ltd, 11 Hemmings Crescent, Richardson ACT 2905, phone 02 6292 9050, Dave mobile 0467 332 002, email b-basphalt1@bigpond.com, website www.bbasphaltcanberra.com

Below ECS International Security provided safety and security services during the construction of the Majura Parkway Upgrade.

Below Civil Construction Hire supplied compaction and other vehicles for the construction of the Majura Parkway.



As leaders in security and protective services ECS International's demonstrated track record won them win the contract to provide Total Security Management Services to the \$288 million Majura Parkway Construction site.

ECS International put in place 11 highly trained professional security officers to stop trespassing, theft, maintain safety and control access across the project. Security officers were supported by ECS's elite K-9 dog unit which provided the additional deterrent factor.

The Majura Parkway Project works involved a large geographical area with isolated satellite sites. It was the largest civil project of its kind undertaken in the ACT. This in itself provided challenges to the security team as not all sectors could not be physically secured with a fence line. ECS guards had to be diligent and attentive constantly to prevent security breaches.

Scope of works also included the provision of electronic security services. This provided the ECS Technical Division an opportunity to excel in security design as power and communications services to satellite sites were nonexistent.

ECS Technicians installed back-to-base alarm systems, designed and engineered two innovative, solar-powered CCTV motion systems with continuous 24/7 surveillance and video verification features. The initial set-up took two weeks which involved thorough testing of all technologies and delivering them to a standard the client was pleased with.

Having an active construction site and changing surroundings meant ECS also had to patrol the Majura Forest Area ensuring no subjects went on-site and into the forest. A further test was regular and periodic controlled back-burning which turned the forest into a highly hazardous area. ECS's training in Work, Health and Safety regulations saw their extremely prepared officers prevent any incidents taking place during this time.

ECS International is an Australian owned boutique team-oriented operation, dedicated to the customised provision of total security management services including IT, Electronics, Training, Consultancy, Manpower, Armed Deployments and Investigations. Offices are located in Sydney, Canberra and Fiji Islands.

For more information contact ECS International Security, phone 1300 767 105 or 0411 188 393, email info@ecsintel.com, website www.ecsintel.com

Canberra's Majura Parkway involved constructing 11.5km of new, dual carriageway, as well as associated bridges, underpasses, slip-roads, stock and bicycle crossings. Supplying compaction and other vehicles for the project is Civil Construction Hire, a local Queanbeyan company specialising in providing a range of vehicles, equipment and consumables to civil construction projects.

Civil Construction Hire operates north from Sydney throughout southern NSW, the Riverina, Snowy Mountains and ACT to VIC. Their stock, tools for the civil and building industries, includes a large variety of compaction equipment from small plate compactors to 20 tonne rollers, an extensive selection range of over 40 excavators from 1.5 to 50 tonnes, tipper trucks, compressors, lighting towers and generators through to site accommodation, PPE and a range of smaller products and hand tools. These include traffic lights, message boards and barriers.

At Majura, Civil Construction Hire had supplied the large compactors for the road construction as well as ancillary light vehicles and tipper trucks. "Fulton Hogan, the principal contractors for this project, were particularly pleased with the compaction meters that we supplied in all our large compactors as they allow accurate measurements

of job completion. Additionally, we were able to provide excellent response times, for example in completing tasks and required vehicle maintenance," says Civil Construction Hire's co-owner Brian Johnstone.

Johnstone, co-owners Damian Lowes and Jace Sargent, have over 40 years combined experience in the construction hire industry. "We pride ourselves on keeping up with the latest trends, technologies and best practice," explains Johnstone, "not just the equipment but processes. On a project such as the Majura Parkway, there are daily safety challenges which we are able to meet."

Civil Construction Hire provide comprehensive solutions to meet civil construction needs from project conception to closure. In addition to hardware and consumables, staff assist with project planning around equipment management and advise on appropriate hardware and vehicle specifications.

For more information contact Civil Construction Hire Pty Ltd, 40 Endurance Avenue, Queanbeyan NSW 2620, phone 02 6299 3551, Brian Johnstone mobile 0477 411 813, email brian@civilconhire.com.au, website www.civilconhire.com.au



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A \$288 million 12.5km dual carriageway is not just a lot of road; it's a lot of road markings, road signage and traffic calming. Pre-planning and strategic work is required to ensure a safe and efficient road network for commuters is maintained and implemented in an ever-changing construction environment. A significant part of this work has fallen to Capital Lines & Signs (CL&S), a Queanbeyan based line marking and removal, traffic calming and signage company.

In operation since 2007, the company currently employs 35 staff; up to 20 were directly involved with the project. The company aims on providing high quality and reliability to all clients and jobs. With Majura Parkway, it was CL&S's experience and hardworking attitude that highlighted their dedication to the project and their drive to go above and beyond what was required.

Capital Lines & Signs divide their services into four main areas. Their pavement marking expertise includes provision of marking systems for roads, carparks and courts, using waterborne paint, preform thermoplastics, cold applied plastic, and coloured surface coatings for bus lanes and cycle ways. They have been involved in developing new marking systems, for example a dual-gun wet-night-visible marking system involving water borne paint and glass beads. CL&S's surface coatings are R110 compliant

and transverse markings are skid resistant. CL&S also perform line removal using water blasting. CL&S's second area is manufacture, supply and installation of digitally designed safety, parking and traffic signs for road construction, schools, car parks and offices. Associated with this is CL&S's third function - traffic control. The company offers expertise from development of traffic control plans and approvals management through to implementation and works completion. They also supply devices for traffic calming such as speed humps, wheel stops and bollards. Their fourth area of expertise is the supply and installation of tactile ground surfaces and stair nosings for railway stations, airports, hospitals and health care, education facilities, shopping plazas and public domains.

Capital Lines & Signs have been involved in the Majura Parkway since project inception. The company has supplied all traffic calming devices, both temporary and permanent, from street signage, sign posts and guide posts to completing road and bridge line markings. Their legacy will be the safety of both contractors and road-users, large and small, for years to come.

For more information contact Capital Lines & Signs, 19 Wycombe Street, Queanbeyan NSW 2620, website www.linesign.com.au, phone 02 6297 2222, email cls@linesign.com.au