BUILDING FOR THE FUTURE

The $618 million Kempsey Bypass project extends from the existing dual carriageway south of Kempsey to the existing dual carriageway at Eungai Rail.

KEMPSEY BYPASS / **ROADS AND MARITIME SERVICES, LEIGHTON CONTRACTORS, ABIGROUP**

Left Kempsey Bypass, the first stage of the 40 kilometre Kempsey to Eungai project, awarded to Leighton Contractors.

Roads and Maritime Services (RMS) has formed an alliance with Leighton Contractors, AECOM and Coffey Geotechnics to design and build the Kempsey bypass. RMS has awarded a separate contract to Abigroup to build the 3.2 kilometres of bridging across the Macleay River and floodplain.

The Kempsey bypass project was approved by the NSW Minister for Planning on 10 July 2008.

The 14.5 kilometre Kempsey bypass project is the first stage of the 40 kilometre Kempsey to Eungai project. The Kempsey Bypass project from the existing dual carriageway south of Kempsey Frederickton.

Funded by the Australian Government's 'Building Australia Fund', the $618 million project includes bypasses at Kempsey and Frederickton, interchanges at South Kempsey and Frederickton, emergency bays and local road overpasses.

The Kempsey Bypass bridge will be Australia's longest road bridge being 3.2 kilometres in length.

During the first year of construction, excavation of over 2,500,000 cubic metres of bulk earthworks was carried out. The innovative screening techniques used on-site have allowed the alliance to re-use much of this material, resulting in major cost benefits for the project.

With environmental issues of concern, certain measures were adopted to manage potential sedimentation impact. In addition, the water quality in the Macleay River was a significant factor and procedures were put in place to minimise the disturbance to local waterways and native habitat. The project has undertaken a two-stage clearing process when removing vegetation to minimise the impact on native fauna. As part of the project, native species will be replanted in the area.

Below Abigroup were contracted by RMS to construct the final stage of the Bypass; the 3,200 metre floodplain bridge.

The main features of the bridge over the Macleay River and Floodplain include:

- A single 22m wide dual carriageway divided by a central concrete barrier.
- 93 pairs of piers; piers 1 to 81 are on floodplain and piers 82 to 94 are in the river and its banks.
- The bridge has 94-spans each of approximately 34m in length
- The bridge has 941, 1500mm deep Super T beams constructed by Australian Precast Solutions at Macksville;
- The floodplain section of the bridge consists of 328 driven 750mm diameter steel piles. These vary in depth from 46m to 19m with an average of 34m below ground surface;
- The river section of the bridge consists of 60 bored piles with a diameter of 1800mm. The depth ranges from 20m to 45m in depth;
- The project is set to use approximately 38,000m3 of concrete.

Contributing to the success of the project, the bridge team were presented with two Golden Boot certificates, and the Golden Boot Award. This accolade was picked up across a competitive field of more than 15 projects currently underway in Abigroup's Central Region with the Kempsey Bypass bridge project being judged the most innovative project for 2012.

The Kempsey Bypass project is due for completion before easter in 2013.

Leighton Contractors is one of Australia's most recognised, diverse and established industry leaders. The company features more than 12,000 people who provide services to the infrastructure, mining, telecommunications, civil construction, industrial, energy, health and services sectors. Leighton Contractors is dedicated to minimising construction impacts on local communities and the environment.

For more than 50 years, Abigroup has been populated by the industry's most passionate professionals and as a result has achieved a reputation for delivering high quality, world-class projects.

For more information on the Kempsey Bypass project, visit the project website on www.rms.nsw.gov.au/pacific or contact Roads and Maritime Services, 21 Prince Street Grafton NSW 2460, phone 02 6640 1027, email: pacific.highway@rms.nsw.gov.au, fax 02 6640 1001

Below Mid Coast Traffic Services was responsible for all manpower, signage, equipment and vehicles required to close down lanes, stop or redirect traffic on the Kempsey Bypass project.

Mid Coast Traffic Services is working on road traffic control for the Kempsey Bypass project, overseen by the Roads and Maritime Services.

MCTS supplies all manpower, signage, equipment and vehicles required to close down lanes, stop or redirect traffic on operating haul roads where work vehicles are crossing from one site to another across public roads and highways.

This road traffic control work is achieved by stage lane closure (monitoring and controlling only one operational lane around a work area) or by setting up a crossing whereby all lanes are closed to permit work vehicles across the highway.

MCTS has a fleet of 40 vehicles, from single cab and dual cab trucks, ranging in capacity from 2 to 6 tonnes and including six 1-tonne utes and is registered category G by the RMS.

Ron Richards, James Bagnell and Michael Jones are in charge of the operating staff of around 20 men plus equipment. They calculate and coordinate the manpower and vehicles required according to the logistics and scope of the project and ensure that the appropriate vehicles and men are deployed daily at each site.

A big challenge on this Kempsey job has been securing the very busy Crescent Head Road. It is an important and potentially dangerous site with 3,500 to 4,000 commuters from the holiday areas of Kempsey and Port Macquarie competing for access with 30- to 60-tonne tip trucks crossing the Crescent Head Road.

Grant Osborne, co-owner, is proud of the professionalism and reputation of his company and its men who provide safety and service under dangerous conditions, often in emergency situations. In January 2012 for example in the sad circumstances of the fatal truck accident at Urunga, MCTS responded quickly to a call by the RMS, providing 12 employees to man a traffic diversion from the area.

Mid Coast Traffic Services is a registered business name of SG & KM Osborne PTY LTD and has been owned by Grant and Kathy Osborne since 2003. Grant had been Operations Manager almost since the inception of the business in 1996 and Grant and Katherine's son Brad Osborne worked for the previous owner and then returned to the family acquired company in 2005. Brad will be taking over the role of General Manager as of July 1st, a natural progression to administration after his extensive on-road experience.

The company employs between 80 and 100 employees every week and many of these employees have in excess of 10 years experience in the contract traffic control industry and in the local area.

Mid Coast Traffic Services is the major supplier of traffic control services on the Mid North Coast, concentrating their work between Port Macquarie and Woolgoolga in order to maintain the exacting standards they have set for themselves. MCTS supplies and provides services to Coffs Harbour, Bellingen, Port Macquarie-Hastings, Nambucca and Kempsey Shire Councils and to major road-building contractors.

MCTS works regularly on a variety of projects from vegetation management to heavy patching for the RMS Port Macquarie as one of their Panel Contractors as well as providing services to Essential Energy at Coffs Harbour, Kempsey, Dorrigo and Nambucca Heads Depots. Mcts is also on Panel Contracts with RMS Ballina and RMS Grafton Bridge Crews.

Recent projects have included the Coopernook to Heron's Creek upgrade under contract to Thiess Australia (and previously on the Coopernook project with Abigroup), the Bonville Bypass with Abigroup (part of the Coffs Harbour to Urunga upgrade) and Traffic Control was supplied for Coffey Geotechnics for investigations on the Urunga to Warrell Creek upgrade.

Other current projects include the Saphire to Woolgoolga upgrade, a joint venture between Leighton Contractors and Fulton Hogan Industries, Woolgoolga to Glenugie geotechnical investigations with RCA Australia and also the same preparations with Aurecon for the Frederickton to Eungai Pacific Highway duplications.

For more information contact SG & KM Osborne Pty Ltd t/a Mid Coast Traffic Services, PO Box 619 (Mail), 19 Yarrawonga Street (Head Office and deliveries) Macksville NSW 2447, phone 02 6568 4811, fax 02 6568 4822, mobile 0427 196 213 (Brad Osborne), email: admin@mcts.net.au

Below Hy-Tec supplied concrete and quarry products to the Kempsey Bypass Project including road bases, drainage rock and armour rock.

Below Ecoflex Civil Constructions provided excavators, rollers and a team of up to five men to build and install work platforms for the Macleay River Bridge.

Since acquiring the businesses that now comprise Hy-Tec NSW in 2007, our work has been predominantly focused on meeting the needs of Pacific Highway contractors. As the Australian Government is calling to tender the next stages between Port Macquarie and Coffs Harbour, Hy-Tec General Manager Trent Alexander is preparing the company and increasing its capacity to deal with the future demand for construction materials.

Hy-Tec Concrete & Quarries have over 70 staff working at 3 quarries and 6 concrete plants in northern NSW. With a fleet of over 35 heavy vehicles and more than 30 haulage contractors, the business has successfully supplied B80-specification concrete for the large bridge spans that comprise the Macleay River Bridge project undertaken by Abigroup.

On the Kempsey Bypass project, Hy-Tec has supplied concrete materials ranging from 32MPa normal class concrete to 40 MPA super-workable piling concrete – there is no specification that Hy-Tec will not have a look at. Hy-Tec also supplied road bases, drainage rock and armour rock to the site.

The people comprising our concrete management team are all specialists in their field and have supplied a number of Pacific Highway projects over the last 5 years. The largest and closest quarry to the site is the renowned Yarrabee Road Quarry. This quarry is a geological deposit of superior meta-greywacke rock, which has a wet strength of over 500 kN (kilonewtons). The material, sometimes known as 'blue metal', has been used to supply everything from rock seawalls to Pacific Highway concrete pavements.

Hy-Tec has also been busy supplying concrete and quarry products to local subdivisions in Brierley Hills Estate and Braeroy Estate in Port Macquarie and for the breakwall repairs at North Haven on the Camden Haven River.

Hy-Tec Concrete & Quarries is a subsidiary of ASX 200 listed company, Adelaide Brighton Ltd.

For more information contact Hy-Tec Concrete & Quarries, Lot 132 Diamondhead Road NSW 2443, phone 02 6559 9834, fax 02 6559 8261, email: rick.gleeson@hy-tec.com.au, website: www.hy-tec.com.au

Working for Abigroup, Ecoflex Civil Constructions has provided excavators, rollers and a team of up to five men to build and install work platforms for the Macleay River Bridge, part of the Kempsey Bypass project. The bridge site is on a soft fully saturated alluvial flood plain and Ecoflex has built approximately 80 crane platforms to withstand pile driving operations and a 300-tonne crane that raises 60-tonne bridge beams into position for the bridge.

These crane platforms, using and reusing 25,000 Ecoflex units, are engineer designed, tested and certified 400kPa and can later be removed and reused on other sites. By using Ecoflex 'E-Pave units' – end-of-life truck tyres in this patented system – the construction team reduced the rock requirements for the crane pads by about 60 percent.

The infill rock of the Ecoflex units can be reused multiple times and for a variety of applications. The system uses recycled materials that would otherwise contribute to landfill, reduces excavation impacts and truck movements to and from local quarries and this in turn reduces carbon dioxide emissions. The Ecoflex System used on the Macleay River and Floodplain Bridge project won the Golden Boot Innovation Award for Environment in 2011. Ecoflex was also used on the Tully Alliance Project, an Earth Awards winner, and has been approved as a 'Resource for Beneficial Use' by the Queensland Government.

Based in Newcastle, ECC is the certified installer of Ecoflex Systems throughout Australia, and are qualified installers of all retaining wall systems including dry stack masonry, crib, wire basket, treated timber, soil nailing and shotcrete facing.

The company has constructed engineer-designed roads through sensitive national park areas, private properties with various farming requirements, many SEP-14 Wetland areas and recently in archaeologically sensitive areas in the Kurri region. In Darwin ongoing erosion protection work is carried out with an Ecoflex supervisor and local labour and machinery.

For more information contact Ecoflex Civil Constructions Pty Ltd, 20 Kalaroo Road Redhead NSW 2290, phone 02 4944 7711, fax 02 4944 9911, email: mail@ecoflexcivil.com.au

Below Allstate Linemarking is responsible for the temporary works and final stages of linemarking on the Kempsey Bypass project.

Below Navin Officer Heritage Consultants (NOHC) conducted the cultural heritage program for the Kempsey Bypass project.

Recording a steam boiler from the former Frederickton Butter Factory

Archaeological test pitting using an auger along a fossil shoreline

An Aboriginal stone hatchet recorded in the local area

Using an auger mud bucket to test deep deposits

Allstate Linemarking was first engaged to complete the line marking on the Kempsey Bypass in 2010. Their installation of temporary works on minor switches has included instating lines using Waterborne Paint with Reflective Glass Beads as well as setting down Retro Reflective Raised Pavement Markers.

Longitudinal line marking machines, transverse marking machines and hot melt adhesive glue pots have been utilised on the Kempsey project to date, with extra preparation time used to ensure all materials, labour and plant requirements are fully realised before the work teams reach the site.

Allstate employs three three-man line marking crews on site and final works will be underway in August 2012. This final stage involves permanent line marking in thermoplastic, a long-life product that turns to liquid when it is heated and back to a rigid state when cooled, perfectly suited to high-traffic surfaces. This phase will require one of Allstate's purpose-built thermoplastic longitudinal machines.

Allstate Linemarking started in 1999 as a small family business and has grown into one of the leaders in the line marking industry with offices in Queensland, New South Wales and the ACT. The company specialises in the application of Waterborne Paint, Preform Thermoplastic, Extruded Thermoplastic, Audio Tactile Line Marking (ATLM), Raised Pavement Markers (RPMs) and Paint Removal.

The roadwork industry demands around-the-clock service, which is amply met by Allstate's crew of 30, managed in-house by their operations team. Allstate custom built trucks that can carry 1,000 litres of paint and a ton of beads and their equipment ranges from hand-held thermoplastic extrusion units to automated thermoplastic machinery.

Allstate is currently helping with the delivery of other jobs that include Natural Disaster Relief Fund works throughout Queensland, the Origin Alliance work on the Ipswich Motorway, the M5 and M7 Motorways in Sydney and the Ballina Bypass.

For more information contact Allstate Linemarking Services Pty Ltd, 42 Motorway Circuit Ormeau QLD 4208, phone 0733861799, fax 07 3386 1899, email: admin@allstatelinemarking.com

Navin Officer Heritage Consultants (NOHC) conducted the cultural heritage program for the Pacific Highway Upgrade at Kempsey. This was commissioned by the Roads and Maritime Service (RMS) and the Kempsey Bypass Alliance. The program started in 2003 and was completed in 2011. The program included archaeological surface survey, test excavations, salvage collection and archival recordings. Working in consultation with the local Aboriginal community organisations, forty one Aboriginal sites were identified in the local area, including camp sites, burials, scarred trees, former missions and story places. Over 100 European sites were recorded including farm houses, butter factories and former jetty sites. Four Aboriginal camp sites, 12 potential archaeological deposits, and five European sites were located within the Upgrade alignment.

Prior to the assessment, the below-ground archaeology of the local area was poorly understood. Following the conduct of 174 test pits, a better understanding has been gained, and a dataset has been created for future research. The significance of sites was assessed in consultation with the local community and management actions (such as salvage collection) were completed prior to construction. All recovered Aboriginal artefacts are to be returned to the local area according to community and legislative requirements. To test the deep deposits next to the Macleay River, NOHC developed a new archaeological methodology using an auger mud bucket. This auger encloses the excavated material within a sheath. The method allowed testing to a depth of 3.5 metres, with reduced sample contamination and minimal disturbance.

The Upgrade required the removal of six trees from the Frederickton, World War I Memorial Tree Avenue. This impact was managed by creating an archival record, and developing a long term conservation management plan. The Plan includes replanting, restoration and the development of signage, and walking tracks. The NOHC team of archaeologists, specialists and assistants, have provided cultural heritage services to proponents across Australia for twenty-three years. These services include stakeholder consultation, archaeological survey, test and salvage excavations, significance assessments, archival recording and management plans.

For more information contact Navin Officer Heritage Consultants Pty Ltd, Unit 4, Kingston Warehouse 71 Leichhardt Street Kingston ACT 2604, phone 02 6282 9415, fax 02 6282 9416, mobile 0419 296 868, email: navinofficer@nohc.com.au