

DELIVERING AN IMPORTANT PROJECT

RMS & Baulderstone build the 8.6 kilometre dual carriageway upgrade of the Pacific Highway at Bulahdelah.

MAIN CONSTRUCTION COMPANY : Baulderstone
 DEVELOPER : Roads Maritime Services
 PROJECT END VALUE : \$315 Million
 LENGTH : 8.6km dual carriageway
 COMPLETION : Weather permitting, March 2013



Roads and Maritime Services (RMS) has contracted Baulderstone Pty Ltd to build the 8.6 kilometre dual carriageway upgrade of the Pacific Highway at Bulahdelah.

Planning for the four lane divided road upgrade of the Pacific Highway at Bulahdelah began in March 2000. It took a further seven years to develop the designs and prepare the environmental impact statements. In 2007, the NSW Minister for Planning approved the project.

The Pacific Highway is part of the National Land Transport between Sydney and Brisbane. The bypass will improve safety conditions and reduce travelling time. Previously, the highway passed directly through the town, so the bypass will reduce traffic congestion within Bulahdelah from an average of 11,000 vehicles, to fewer than 2,000 a day.

The \$315 million jointly Federal and State government funded project started work in July 2010.

The \$315 million jointly Federal and State government funded project started work in July 2010. It includes the building of a four lane divided road in the Great Lakes district of New South Wales. There are two lanes in each direction, allowing for the future addition of a third lane on either side.

It is an 8.6 kilometre upgrade in total. The upgrade starts about 4.5 kilometres south of Bulahdelah, and joins the already upgraded section of the highway, about four kilometres to the north of the town. There are major interchanges on either side of Bulahdelah providing safe and convenient access from the highway to the town.

This region on the mid-north coast of New South Wales is known as the Great Lakes District because a series of fresh-water lakes run adjacent to the coast. Part of the project involves the construction of several bridges, including two voided slab bridges, five super T bridges, twin plank bridges, and a steel truss overbridge leading directly to Alum Mountain,

Left The Bulahdelah Bypass has been designed to reduce travelling time and increase safety.

a popular picnic spot overlooking the town and the Myall River Valley.

By its very nature, major building work impacts on a local community, its environment, traffic congestion and the noise created by earthmoving machinery.

Before construction began, every effort was taken to minimise the footprint on the unique environment. There was extensive consultation with the local community, as well as with members of the Karuah Local Aboriginal Land Council. On 24 May 2011, RMS issued a press release which explained, "This work is being carried out with great respect of the significance of Indigenous cultural interests in the area. RMS continually consults with the local community."

The project also addressed issues for the survival, sustainability and translocation of three threatened orchid species which existed within the upgrade site. Extensive research was carried out at the Centre for Plant Biodiversity Research in order to understand the requirements for long-term survival of these orchids.

Then together with CSIRO, the Bulahdelah Bypass Orchid Recovery Project, oversaw the translocation of each species. More than 300 rare plants were relocated to the footslopes of Alum Mountain. When this delicate operation was completed, construction of the bypass could begin.

During construction of the Bulahdelah upgrade, the project team worked closely with the local community. They are kept informed of each stage of the process, including whatever disruptions could be expected. A full-time community relations officer was available to deal with any problems. Furthermore, a toll-free telephone line is set up to address immediate issues.

Probably the biggest disruption to the entire process, and it was one that no one could control, was the weather. Heavy rains caused major disruptions to every contractor involved in the building of the project. In spite of this, at the end of the day, the Bulahdelah upgrade will contribute to making the Pacific Highway a safer road to travel on. The project's completion, due to weather restrictions, is scheduled for March 2013.

For more information contact Roads & Maritime Services, website www.rms.nsw.gov.au

Below Cubic Solutions were contracted to the Bulahdelah Bypass project because of their ability to deal with the drainage problems presented by acid-sulfate soil, which affects the region.

CUBIC SOLUTIONS / ADS PIPE

Cubic Solutions Pty Ltd, trading as ADS Pipe, is an engineering company specialising in sustainable water and energy systems. They were recommended for the Bulahdelah Bypass project because of the ability of their products to deal with the drainage problems presented by acid-sulfate soil, which affects the region. Acid-sulfate soil is quite benign if left undisturbed, but as soon as it makes contact with air it reacts, releasing toxic quantities of iron, aluminium and other heavy metals, including arsenic. When wet, the water becomes contaminated with sulfuric acid, and this then runs the risk of leaching to the surface.

In explaining the problem, Trevor Loffel, a product development engineer at Cubic Solutions, said, "Not only is the water that's entering the pipe have acid sulfate issues, but the water that makes contact with the outside of the pipe is also acidic."

The engineers at Cubic Solutions proposed the ADS HDPE pipe because it has proven that it can safely be in permanent contact with acid-sulfate soil. Loffel says, "We supplied a dual-wall polyethylene pipe system, and presented the system for approval. It is a pipe that can take high loads, and is chemically resistant. We have 900mm dia., 750mm dia., 450 mm dia. and 375mm dia. pipes installed in the project."

The pipes consist of a smooth inner wall surrounded by a corrugated outer wall. With the advancements in polymer science and structural design, the high-density polyethylene (HDPE) pipe incorporates patented technology developed in the aerospace industry. It is engineered with a compound of virgin high-density resins, and has reached a level of sophistication where it actually outperforms and outlasts the more conventional concrete pipe, at a fraction of the carbon energy. The quality and structural strength of a polyethylene pipe has been extensively tested, and performs well at fill heights from 300 mm to more than 30 metres.

This high-tech solution was given approval for the Bulahdelah Bypass, and Loffel explains, "This is the first time the RTA has said 'Yes' to putting a plastic pipe under one of their highways."

Apart from the resistance to chemical attack, HDPE pipes offer many advantages over the conventional pipes. Contractors favour using them because they save time and cost. Unlike concrete piping, which requires the trench be dug to accommodate the bell every 2.4 metres, the HDPE pipe has what Trevor Loffel describes as a 'constant outside diameter'. As such, the in-line bell and spigot joint means the shape of the bell no longer needs to be considered, and this significantly improves the efficiency of the installation.

Furthermore, the pipe comes in long lengths (6.1 metres). The pipe cuts easily and does not need to be bevelled for joining, resulting in 25 less joints than a concrete pipe for every 100 metres laid. The reinforced polyethylene bell minimizes distortion, eliminating chipping and cracking that's commonly found in cement. What's more it's lightweight and thus easily positioned. The lightweight nature and the ability to nest HDPE pipes also translates to freight advantages for the client. But perhaps the biggest advantage is environmental. The greenhouse gas emissions are typically 10 times lower than the standard concrete pipe.

Although this is the first time the RTA has given plastic piping the go-ahead under roads in NSW, Cubic Solutions have used their polyethylene product in much of the work they've done in Victoria. For example, at Anthony's Cutting – a stretch of road between Melton and Bacchus Marsh – the pipes were laid 8 metres deep. They were also used in the construction of the Tullamarine Calder Interchange, a crucial link in Melbourne's arterial road network, which carries more than 170,000 vehicles a day.

Cubic Solutions was started in 1998 and Trevor Loffel says, the company "has experienced engineers and high quality products which are designed to exceed the AS5100 loads and to comply with other Australian Standards such as the AS2566 flexible pipe code". These have been the most significant factors in more widely accepted use of HDPE pipes in numerous applications across the country.

For more information contact Cubic Solutions, 155 Dohertys Road, North Laverton VIC 3026, phone 1300-4-CUBIC, fax 03 9363 6641, website www.cubicsolutions.com.au



EXPERTS IN PIPELINE INSTALLATION

Below Mid North Coast Pipelines and Civil were contracted for the installation of pipelines on the Bulahdelah Bypass.



Mid North Coast Pipelines and Civil carried out the installation of pipelines on the Bulahdelah Bypass. You may be more familiar with the company's other name, Mid North Coast Plumbing, but as the company's business has expanded, they've created an offshoot for their civil work. Robert Fitzalan, the director, says, "We are splitting the company into two. We do a lot of major plumbing developments, but we also do a lot of the civil side, and that is how we got into roadworks." Mid North Coast Plumbing began operating in Dubbo in 1988, but ten years ago it moved its headquarters to Taree.

Mid North Coast Pipelines and Civil used a team of 12 people to lay the drainage and stormwater lines. Robert Fitzalan says the pipes are a mixture of the usual reinforced concrete, "But because of the acidic soil down there we are also using some plastic high-density polyethylene or HDPE pipes."

One of the factors that Mid North Coast Pipelines and Civil have had to be mindful of is the Orchid Conservation Project. Two species of endangered underground orchids, as well as another

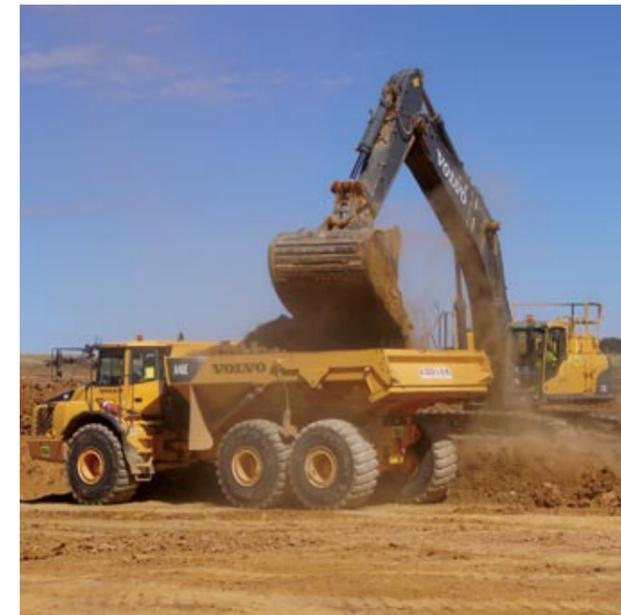
species considered 'vulnerable', had to be translocated before construction on the bypass could begin. Once done, clear exclusion zones were set up around the perimeter in which the pipes could safely be laid.

It turns out that the underground orchids did not present nearly as big a problem as the weather. 2012 saw a summer of endless rain, weather warnings and flood alerts and this wreaked havoc with constructions schedules and pipe-laying work. Despite the forced delays, Mid North Coast Pipelines and Civil continued to work with the utmost professionalism, never taking a day longer than necessary. This level of professionalism can be witnessed in another important pipe laying job they're doing for BMD 120 kilometres south of Bulahdelah at Herons Creek.

For more information contact Mid North Coast Pipelines and Civil, 300 Highlands Drive Forster NSW 2428, phone 02 6552 2894, email mncpipelinesandcivil@gmail.com

THE PREMIER PROVIDER OF ALL YOUR EQUIPMENT NEEDS

Below Kodiak Equipment is supplying the compaction machines necessary for the Bulahdelah Bypass.



Kodiak Equipment, a company that's been in the heavy machinery supply business since 1989, is supplying the compaction machines necessary for the construction of the Bulahdelah Bypass. Kodiak Equipment's business manager James Feller explains, "We are the pre-eminent supplier of compaction equipment in Australia." Feller goes on to say, "Compaction is a definite requirement, in light of the sort of traffic the roadway will have to facilitate over the next 10-15 years - before any further upgrades are done."

Work on the Bulahdelah Bypass is going smoothly, although like everyone involved in the project, Feller says, "The only real challenge that we all face, is the weather."

Kodiak Equipment is also busy on the construction of the 9.5km Holbrook Bypass, near Albury. Although, Kodiak also is supplying some of the compaction to this stretch of road, James Feller says "The majority of our fleet down there is dump trucks, moving earth, building up the roadway." Holbrook is one of the main centres servicing traffic on the busy Hume Highway.

Kodiak Equipment is a family-run company specialising in 25-125 tonne earthmoving machinery. It mainly operates across the eastern states of Australia. However, the sound infrastructure of Kodiak means it's fully geared to supply their clients' projects wherever they may be.

The company prides itself on its flexibility, offering clients a wide range of opportunities to hire, buy, or simply service their earthmoving equipment. Furthermore, this flexibility is extended to allow customers to obtain top-tier machinery specific to their particular projects' requirements. For example, machinery can be hired with or without an operator, with or without fuel, and the machinery can be hired with a rent to purchase option.

This family-run company continues to live up their vision of being the most innovative provider of earthmoving and asset solutions to the civil and mining market sectors.

For more information contact Kodiak Equipment, PO Box 1333 Mudgee NSW 2850, phone 1300 325 527, website www.kodiak.com.au



Kerb & Gutter Extruders



Kerb, Sidewalk Slipformers

ARROW MACHINERY

Proud Supplier of **SLIPFORM KERB MACHINERY** to **BAULDERSTONE** for the **BULAHDELAH BYPASS**

FACTORY:

18 Butterfield Street

Blacktown NSW 2148 Australia

Email: sales@arrowmachinery.com.au

www.arrowmachinery.com.au

POSTAL ADDRESS:

P.O.Box 861 KINGS LANGLEY NSW 2147

Tel: Int 61-2 9672 3100

Fax: Int 61-2 9621 5242



© HTC 2012

Protecting People™

Bulahdelah Bypass, NSW



At Highway Traffic Control (HTC), protecting people is our number one priority. Whether it's our own staff, our employers and their people, co-contractors, or the general public, HTC is 100% committed to keeping everyone safe whilst working on and around the road.

HTC is a wholly owned Australian company founded in 2004 that specialises in traffic management solutions for a wide range of clients across Victoria and South Australia.

With a specialised fleet of over 100 traffic management vehicles and over 250 experienced traffic management staff on call,

HTC is ideally placed to provide you with a tailored traffic management solution to help you achieve your project's goal. Whether your project is the resurfacing of a major freeway, civil works, construction, community street festival, or even a major event HTC has a quality-assured, professional and cost effective solution for you.

Our depots are open 24 hours and are able to provide crews at short-notice for last minute or emergency call-outs.

To discuss how HTC can assist you with your next project, telephone us on: 1300 482 287 or email us at: bookings@htc1.com.au

www.highwaytraffic.com.au