

# CLEAN AND GREEN

DEVELOPER : Roads and Maritime Services (RMS)  
MAIN CONSTRUCTION COMPANY : OHL York JV  
CONSTRUCTION VALUE : \$235 million



The Woolgoolga to Halfway Creek section is part of the \$4.36 billion Woolgoolga to Ballina Pacific Highway Upgrade and is jointly funded by the Australian and NSW governments.

**The Pacific Highway Upgrade is one of the largest infrastructure projects in New South Wales.** The highway upgrade spans over 657km from Hexham to the Queensland border. The Woolgoolga to Ballina section is the final 155km of upgrade and is expected to be open by 2020.

The Woolgoolga to Halfway Creek part of the Woolgoolga to Ballina upgrade starts about 6km north of Woolgoolga and involves the construction of about 14km of new four lane divided road. This section of the upgrade is mostly to motorway standard (Class M) and to some arterial standard (Class A).

The upgrade of the Pacific Highway is about improving safety by providing a four lane divided road. As a result of the upgrade travel times will be reduced, with improved transport efficiency and more consistent and reliable travel.

The highway upgrade supports regional development and provides improved amenity for local communities.

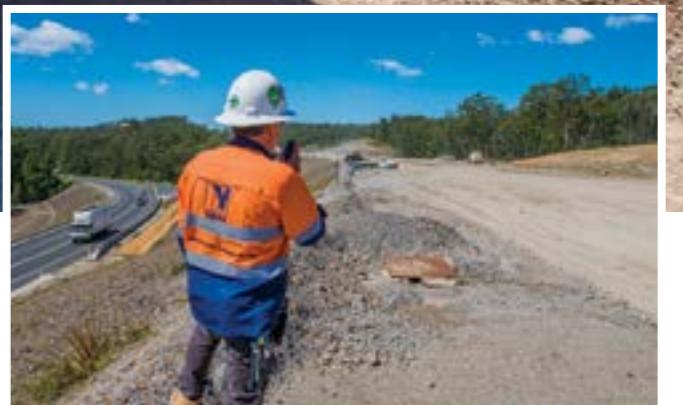
The key features of this section of the upgrade include providing a new rest area near the Arrawarra Interchange, to encourage drivers to take a break while driving long distances, a new twin bridge over the Corindi floodplain, a new interchange at Range Road and improved intersections for local roads including new overbridges at Sherwood Creek Road and Kangaroo Trail Road.

OHL/York(Joint Venture) has been contracted by Roads and Maritime to deliver the infrastructure works for this project that also involves environment, traffic and community management. Construction started in June 2015 and involves working to a Construction Environmental Management Plan (CEMP) and associated plans, which ensure compliance with the Minister for

Planning's Conditions of Approval for the Woolgoolga to Ballina upgrade. The purpose of the CEMP is to provide a structured approach to the management of environmental issues during construction of the project. Implementing the CEMP effectively will ensure that the project team meets regulatory and policy requirements in a systematic manner and continually improves its performance.

The project also has a Threatened Flora Management Plan for the protection and management of flora species and a Threatened Frog Management Plan and Threatened Mammal Management Plan for the protection of management of species like the Rufous Bettong.

In December 2016, the projects environment team successfully assisted three Spotted-tail Quolls that were discovered living near the existing highway, by relocating them further away the road to a safer location within their range. As part of the projects Fauna Connectivity Strategy, structures are being installed across the project to assist animals to cross under or over the highway safely.



York Civil was established in 1990 with only ten employees and is now a prominent engineering and construction company delivering major infrastructure projects throughout Australia for government and private sector clients with over 360 personnel. The company offers multi-disciplinary project delivery for local, national and international companies working within Australia.

For more information about the project go to [www.rms.nsw.gov.au/pacific](http://www.rms.nsw.gov.au/pacific) or call 1800 063 092.

**For more information contact York Civil,** The Binary Centre, Building 1, Suite 1.04, 3 Richardson Place, North Ryde NSW 2113, phone 02 9919 0200, website [www.yorkcivil.com.au](http://www.yorkcivil.com.au)

**Below** Protrim battled coastal weather to provide trimming operations to the Pacific Highway Upgrade.

**Below** Ingall Civil Products supplied Flexfence WRSB TL4 road safety barriers to the Pacific Highway Upgrade.



**Protrim was contracted to work on the initial change over and realignment of the Pacific Highway Upgrade from Woolgoolga to Halfway Creek.** The company was responsible for decreasing the time frame of the trimming operations during Stage 1 of the realignment. Their involvement and efficiency was critical for the first 3km of the project.

Protrim began work on the Pacific Highway Upgrade in July and finished in September 2016 with three people allocated to the site. Despite their small team, Protrim achieves large results. Projects span nationally from Western Australia to New South Wales including Warrell Creek to Nambucca Heads, Pacific Highway Upgrade and Mining Hall Roads in Weipa.

Protrim was challenged during their work on the Woolgoolga to Halfway Creek upgrade as the project required the achievement of accurate tolerances.

Additionally, the company had to battle coastal weather including large amounts of rain. Fortunately their use of Topcon Machine Control allowed them to reduce the time frame for trimming operations and progress the project within allocated timelines.

The project became a well oiled machine with management providing daily tasks for Protrim to ensure that each aspect was completed on schedule.

Protrim has a Terex fine grade trimmer and have utilised this machine on various road, rail and pond projects nationally. Typical results are better than a 5mm average tolerance with standard deviation of 3mm with a surveyor's conformance and operator included.

The Terex can trim to a very fine tolerance and is most suitable to trimming at least 20mm of material and up to 150mm whilst producing a consistent resulting conformance. Furthermore, Terex removes trimmings and conveys into trucks for placing forward or can be used as conditional backfill thus reducing waste material.

*For more information contact Protrim, PO Box 499, Ormeau QLD 4208, mobile 0414 227 901, email john.m@prosurv.com.au, website www.prosurv.com.au*

**Ingall Civil Products is the leading manufacturer and supplier of safety barrier systems for the Pacific Highway Upgrade from Woolgoolga to Halfway Creek.** The upgrade involved the construction of approximately 14.7km of roadway to median separated dual carriageway and a 300m long twin bridge.

Ingall Civil Products is part of a large network of companies that specialise in engineered steel products and galvanising services that employ over 8,000 people in more than 20 countries, making a large contribution to the safety of our roads.

The company supplies road safety barriers, carpark and industrial barriers, and workzone safety products to a variety of projects including the Pacific Highway, Halfway Creek to Glenugie, Oxley Highway to Kundabung and Kundabung to Kempsey.

Flexfence WRSB TL4 was supplied specifically to the 14.7km of roadway from Woolgoolga to Halfway Creek to ensure the safety of road users. The clean lines and superior design of Flexfence Wire Rope Safety Barrier, Test Level 4, has increased popularity in median applications to prevent cross median accidents with some of the lowest occupant impact severities for any type of safety barrier.

Easy installation and tensioning is achievable from the straight alignment of the cable barrier ropes. Installation was carried out by Protection Barriers Pty Ltd, one the leading dedicated installers of road safety barriers in New South Wales. Working with the designers, Head Contractor and Installer, Ingall Civil Products, provided the type of quality products and service the industry has come to rely on from Australia's number one supplier of road safety barriers.

The company also supplies Ezy-Guard 4, a product recently accepted by RMS, New South Wales, it is the first W-Beam barrier system in Australia to receive acceptance at NCHRP-350 TL4 and MASH TL3 containment levels, this is containment and redirection of an 8,000kg truck and an 2,270kg utility.

Ingall Civil Products develops, designs and manufactures quality assured road safety barrier systems including the Ezy-Guard range of innovation for improving safety on roads throughout Australia and the world.

*For more information contact Ingall Civil Products, 57-65 Airds Road, Minto NSW 2566, phone 02 9827 3333, email sales@ingalcivil.com.au, website www.ingalcivil.com.au*

**Below** Mageba (Australia) manufactured the custom bridge bearings for the Pacific Highway upgrade.

**Below** Supercut Concrete Services provided soft cutting and joint sealing services on the project.



**Manufacture, supply and testing of laminated elastomeric bridge bearings, attachment plates and accessories in accordance with AS5100.4 RMS B281, for the Pacific Highway Upgrade from Woolgoolga to Halfway Creek was handled by Mageba Pty Ltd.** As global specialists and manufacturers of high end structural bearings, expansion joints, seismic protection and structural health monitoring systems, Mageba offers high quality solutions and systems economically that are both technologically advanced and customer orientated.

Mageba (Australia) commenced work on the Pacific Highway Upgrade in April 2016, manufacturing and testing of the non Standard bridge bearings within their factory and NATA accredited testing facility and supplying to the site by November 2016. The company has also worked on prominent structures such as the Swan River Bridge in Western Australia, M2PP in New Zealand and the Toowoomba 2nd Range Crossing in Queensland.

During 2015, Mageba (Australia) took over the manufacturing and National Association of Testing Authorities Australia (NATA) accredited testing facilities at St Marys in Sydney. The company now has a purpose built and one-of-a-kind laboratory in Sydney

that consistently maintains quality under Australian/New Zealand and all relevant major international Standards and quality certified to ISO9001:2008, supplying to Australia, New Zealand and the surrounding Pacific Islands.

Mageba was established in Bulach, Switzerland in 1963 and today has approximately 800 employees worldwide. The Australian Subsidiary company recently established in Blacktown and integrated the Ludowici Engineer Rubber Products into the group.

Mageba (Australia) is equipped with the necessary resources and experience for designing and developing the key components of bridges in Australia and would like to assist the designers and construction companies involved in such projects. Mageba (Australia) offers high quality solutions and systems that are optimally engineered to reduce lifecycle costs by fulfilling Australian Standard requirements.

*For more information contact Mageba (Australia) Pty Ltd, Unit 8, 42 Peter Brock Drive, Eastern Creek NSW 2766, phone 02 8188 5850, email [info@mageba.com.au](mailto:info@mageba.com.au), website [www.mageba.com.au](http://www.mageba.com.au)*

**Supercut Concrete Services is a Sydney based company with first hand experience working on several highway upgrades within Australia.**

With many large commercial projects to its name, Supercut Concrete Services has recently provided soft cutting and joint sealing services in association with York Civil for the Pacific Highway Upgrade from Woolgoolga to Halfway Creek section.

Supercut Concrete Services are one of the original and larger companies in New South Wales Core Drilling and Concrete Sawing Industry with 18 specialist operators who are fully equipped to handle the smallest to the largest project required.

Michael Holdsworth of Supercut Concrete Services said that the company has been working on this project for the last six months.

Soff cut machines are used on concrete pavement to prevent random cracking. Soft cutting allows for the concrete to be cut earlier than traditional wet cutting. It is also cut dry, so slurry is not a problem or water use. Then once the concrete has enough time to cure, the joints are cleaned and the joint sealant applied.

Supercut Concrete Services have been the major contractor for soft cutting and joint sealing on road projects for the last 10 years, and for traditional sawing and sealing for the last 30 years.

Supercut Concrete Services is committed to providing a complete and professional service to the construction industry by using their expertise and industry knowledge. They can cut to a depth of 800mm with their hydraulic equipment, 625mm with their road saws and drill up to 1,000mm diameter core holes.

The company is also working on the Pacific Highway Upgrade for Lendlease, namely the Oxley Highway to Kindabung and also for CMC on the Glenugie to Halfway Creek project.

*For more information, contact Supercut Concrete Services, 2B Brunker Road, Greenace NSW 2190, phone 02 9707 3088, website [www.supercut.com.au](http://www.supercut.com.au)*



Pacific Highway Upgrade, New South Wales



**Below** BPE Contractors constructed trimming and catchment drains on the Pacific Highway Upgrade.



**BPE Contractors provided excavators, cut and fill works, heavy haulage fleet and paving equipment for the Pacific Highway upgrade from Woolgoolga to Halfway Creek.** The company is based on the north coast of New South Wales and began working on the project at the beginning of the upgrade.

Since 1988, BPE Contractors have specialised in heavy haulage fleets and trailers with a focus on the eastern seaboard and south east Queensland. The company strongly focuses on sustainability and the environment and utilises Komatsu Hybrid excavators to provide fuel efficient and environmentally friendly earthmoving machinery. The hybrid's have also been used on the Sapphire to Woolgoolga Pacific Highway upgrade that was completed in early 2014.

Batter trimming and catchment drain construction were completed by the hybrid which is also able to complete work on steep inclines, due to the power in its electric slew.

BPE Contractors was established in 1988 with a crawler loader and then began working in government funded projects. The company is now involved in a variety of road construction projects throughout northern New South Wales from Sydney to southern Queensland

with a fleet of low loaders, wheel loaders, dozers, side trippers and concrete agitators.

As a family run business, Brad Pemberton and his son Tyler specialise in the civil construction industry. Tyler finished his heavy vehicle plant equipment apprenticeship before becoming the maintenance coordinator and now holds the position of operations manager.

Each situation, each route, each road is unique and that's why a heavy haulage fleet is required that's multi-purpose, consistent and manufactured for harsh conditions. BPE Contractors can provide heavy haulage, cut and fill works, excavators and paving equipment solutions for any requirement and are heavy haulage specialists that can assist you with your civil construction needs.

*For more information contact BPE Contractors, 6 Alex Pike Drive, Raleigh NSW 2454, phone 02 6655 7600, fax 02 6655 3027, email office@bpecontractors.com.au*

**Saferoads was contracted to provide the safety barriers for the Pacific Highway Upgrade from Woolgoolga to Halfway Creek.** As a safety equipment specialist with more than 15 years experience, the company has developed, tested and supplied road safety barriers to the Australian market.

From humble beginnings in Warragul, Saferoads has grown to a publicly listed company on the Australian Stock Exchange with an extensive national sales network.

Over 200km of T-Lok concrete barriers have been supplied to Australia by Saferoads for local government, small to large contractors, hire companies and joint ventures. The T-Lok barriers they installed can stretch for 7-10km, such as north and south of the Clarence River. This precast concrete barrier is a well-established, versatile system with a range of applications for the wider Australian infrastructure market.

The Triton water filled barrier, the Ironman and Ironman Hybrid steel barriers are also examples of the substantial contribution Saferoads has made to the Australian Road Safety market. Saferoads' products have significantly improved work zone safety and have reduced work zone related accidents and fatalities.

T-Lok barriers are manufactured in 5.4m and 3.6m lengths to provide the client with solutions for bends, curves, logistics, maneuvering and deployment ease. Since 2006, 40,000 T-Lok barriers have been deployed across all states and territories in Australia, with excellent safety results reported.

Each barrier must adhere to specific criteria in accordance with A53845.1 and set out by the road authorities and the Australian Safety Barrier Assessment Panel, which include dynamic deflection, occupant impact velocity, ride down G-forces, redirection of errant vehicles and vehicle stability during impact.

T-Lok is a sought after crash protection device that can be manufactured within tight project deadlines and time constraints to ultimately create safer roads and work zones where more lives will be saved.

*For more information contact Saferoads, PO Box 2030, Pakenham VIC 3810, phone 1800 060 672, email sales@saferoads.com.au, website www.saferoads.com.au*

**Below** Techni-Clean, with 26 years of experience, provided soft wash and graffiti protection on the project.

**Below** Coffs City Cranes provided drainage, pits and pipes, framework shutters, culvert rotation and installation.



Techni-Clean Australia were engaged by OHL York on the Woolgoolga to Halfway Creek Pacific Highway Upgrade to provide their specialised service of soft washing and application of graffiti protection to bridge columns, parapets and sound walls.

Established in 1994, Techni-Clean provides asset maintenance services to a variety of clients, ranging from residential, commercial developers and large government agencies including the City of Sydney Council and the ACT government. The company services the east coast of Australia from Brisbane to Melbourne and Bondi to Bourke.

With their 26 years of experience, specialising in hard surface cleaning and protection, they have been involved in the Darling Harbour and Barangaroo redevelopments and the Liverpool Macquarie Mall upgrade. Their most renowned graffiti removal was the 'No War' slogan on the Sydney Opera House. Techni-Clean is focused on providing a universal solution for all public domain and asset cleaning, sealing and graffiti management requirements within the community.

For more information contact **Techni-Clean**, Unit 1/89 Derby Street, Silverwater NSW 2128, phone 1800 465 732, fax 02 8088 6050, website [www.techniclean.com.au](http://www.techniclean.com.au)



Coffs City Cranes specialise in mobile cranes, rigging, crawler crane operators, trucks transport and Hiab Operations. They worked on the Pacific Highway Upgrade from Woolgoolga to Halfway Creek and were involved in all craneage aspects throughout the project from drainage, pits, pipes, formwork shutters, culvert rotation and installation, twin rail, parapets and supply or crawler crane operators.

Coffs City Cranes installed various culvert systems where the culverts were transported on their lids which required a single slew crane and unidirectional rail lifters to rotate the culverts in a three step rotational process for the final installation position.

The company's crane fleet consists of 20t – 28t Franna's, 55t up to 220t mobile cranes, Kenworth prime movers, various semi-trailers, B-doubles, extendable trailers for either wet or dry hire.

With projects varying between infrastructure, civil works and structural building developments. Working with local engineering companies, local tourism industry and the National Broadband Expansion, they pride themselves on being open and honest in their relationships and communication with their employees, clients and suppliers, consistently delivering on commitments.

Lendlease NH2U, Civil Mining Construction (CMC), HWC2G, ZintraGroup Power Exchange, General Hire Tilt Up Panel Installation, Big Banana Slides, Local Council Works, RMS Direct Works, Essential Energy Sub Works, Vision Stream Communication Towers and Glen Innes Wind Farm are just a few examples of Coffs Cranes' ability to provide safe quality and efficient services.

Offering rotating shift work with day and night crews are available to assist with the clients' programme delivery.

Established in 1999, the family owned and operated company has more than 40 years experience in the crane industry. Coffs City Cranes support their community by employing locals and provide honest, reliable, safety improved management systems and can assist all of their clients with cost forecasting for all project requirements with a number of depots to suit customer requirements.

For more information contact **Coffs City Cranes & Rigging**, 4/10 Industrial Drive, Coffs Harbour NSW 2450, mobile 0407 531 487, fax 02 6651 1448, email [emma@coffscitycranes.com.au](mailto:emma@coffscitycranes.com.au), website [www.coffscitycranes.com.au](http://www.coffscitycranes.com.au)

**Below** Gosling Electrical relocated power lines, installed intelligent transport solutions and constructed fauna crossings and glider poles.

**Below** Environdata Weather Stations have installed 28 weather stations across the Pacific Highway Upgrade project.



#### Gosling Electrical was contracted to work on the Pacific Highway Upgrade from Woolgoolga to Halfway Creek, as part of the four part upgrade that stretches to Ballina, New South Wales.

The company is family orientated and has serviced the mid-north coast area for over 40 years as a Level 1, Level 2 and Level 3 Authorised Service Provider. Gosling Electrical specialises in design, supply and installation of electricity infrastructure for overhead and underground, subdivisions and transformers, power poles, street lights and metering.

The Pacific Highway Upgrade has involved the electrical relocation of high and low voltage power across existing and future highway routes, installation of Intelligent Transport Systems (ITS and VMS) and the construction of fauna crossings and glider poles.

Roads and Maritime Services research has shown that animals including koalas, potoroos and other arboreal species use a range of structures to successfully cross upgraded sections of the Pacific Highway.

Working with OHL/York Joint Venture, the Woolgoolga to Halfway Creek Upgrade contained some extremely challenging terrain that includes swamp and both hilly and lowland terrain.

Gosling Electrical were required to work around highway traffic and to negotiate vegetated areas in a safe manner that strictly adhered to EPA requirements.

The company delivered, installed and commissioned over 10km of overhead and underground cable, numerous power poles and transformers, street lighting and connections with Essential Energy.

Gosling Electrical covers a footprint from Taree in the south, the Queensland border in the north, and as far west as Moree. Our strength is open communication, integrity, problem solving with creativity, and achieving deadlines...every time.

For more information contact **Gosling Electrical**, 62 Industrial Drive, North Boambee Valley NSW 2450, phone 02 6652 3283, email matt@goslingelectrical.com.au, website www.goslingelectrical.com.au

**One of Australia's leading designers, manufacturers and installers of commercial weather stations, Environdata Weather Stations Pty Ltd, is helping contractors and subcontractors improve their bottom line on the Pacific Highway Upgrade project.** "Particularly in the road construction industry, weather impacts what activities can be undertaken on a day-to-day basis. There's clauses in contracts for rain delays as there's obvious impacts on construction programs and safety, heat stress for human capital on the project, or to monitor potential runoff, for erosion and sediment control," said Matthew Probets, Environdata Weather Stations' Sales and Marketing Manager.

By the end of June his company installed 28 weather stations across the Pacific Highway Upgrade project, under a number of contracts for several different construction firms plus directly to the Principle. Most stations have a 10m mast and they all meet Australian standards and the RMS QA Requirements for these works. "The contractors can't just go down to a local hardware store to buy these. They have to be supplied by a verified weather station panel member, so the device and its sensors meet exacting standards for quality, accuracy and reliability. We're totally Australian made – that means we are in the best position to provide ongoing support and maintenance," said Matthew.

The weather data can be viewed on a web-based browser on a laptop, desktop or mobile device and users can customise the format, and receive alerts and notifications. With updates from each weather station every minute, your ability to respond to the weather is truly immediate. Importantly, the data has to be accurate and be relied upon to stand up in court if there are environmental issues.

"We pride ourselves the web interface is very user friendly and intuitive. It's not written for a techie. It's designed to be easy to use for all of our users. We provide your weather data where you need it, when you need it and how you need it and it's very secure," Matthew said.

Environdata Weather Stations was established in 1982 and currently employs 11 people from its Queensland base but operates across Australia and overseas. They have a service department with staff constantly on the road installing weather stations and calibrating equipment around the country for construction, industrial and mining clients.

For more information contact **Environdata Weather Stations Pty Ltd**, 42-44 Percy Street, Warwick QLD 4370, phone 07 4661 4699, email sales@environdata.com.au, website www.environdata.com.au