



LIFE IS A HIGHWAY

DEVELOPER : The Department of Planning, Transport and Infrastructure
 MAIN CONSTRUCTION COMPANY : Lendlease
 CONSTRUCTION VALUE : \$867 million

The \$867 million Northern Connector is a six-lane, 15.5km motorway providing a vital freight and commuter link between the Northern Expressway, South Road Superway and Port River Expressway. Predominately constructed from concrete, with a diamond groove finish, the new road took three and half years to complete.

The Northern Connector is one of the largest and most groundbreaking projects in South Australia's history, and has revolutionised travel in the state. Providing a vital freight and commuter link between major arterial roads in the state, the project was a much needed development for the area.

“The project delivers significant travel time savings for road users, an average of 10 minutes depending on the time of day,” said Department of Planning, Transport and Infrastructure’s, Paul Kermode. “This has great benefits for tourism areas north of Adelaide such as the Barossa Valley, which are now perceived as being more accessible. It also makes it quicker and safer for heavy vehicles to deliver goods from the north to the airport, Port Adelaide or the city.”

The Northern Connector is part of the North-South Corridor, which when complete will provide a 78km non-stop motorway between Gawler and Old Noarlunga.

Uniquely for a project of its size in South Australia, the road surface for the Northern Connector has been constructed primarily of

concrete, rather than asphalt, as the concrete pavement is expected to last much longer and have lower ongoing maintenance costs.

A concrete batch plant was constructed onsite specifically for the Northern Connector project, relocated from a previous project in New South Wales, to the rear of the site compound at Waterloo Corner.

The batch plant produced approximately 175,000m³ of concrete for 15.5km of the Northern Connector alignment, excluding the four interchanges which were constructed in asphalt.

Changing to a concrete road surface for the bulk of the motorway also contributed an additional \$11 million to local industry, and assisted in creating 480 full time equivalent jobs each year during the construction.

The project also helped individuals and local businesses upskill, giving them a pathway to future employment or contracts, leaving a lasting legacy especially for Aboriginal workers, northern suburbs workers, people facing barriers to employment, and trainees and apprentices.

The location of the road provided a number of environmental and geographic challenges that needed to be managed carefully during the construction period. A number of systems were put in place to ensure the surrounding environment was protected and included an Environmental Management Plan, regular monitoring of local wildlife by specialists, and sediment control, as well as noise, vibration and dust management.

The project team liaised closely with the Department for Environment and Water (DEW), Environment Protection Authority (EPA), the Natural Resource Management Board, local councils and other key organisations to ensure best practice measures are implemented for environmental protection.

Great care was taken to build over the neighbouring mangrove area, to minimise impacts to the mangrove root systems and the ecosystems of the adjacent wetlands and watercourses. The salt pans also proved challenging, requiring metres of materials to be dug out, refilled and allowed to settle before pavement works on the motorway itself could begin.

Each of the four interchanges (Southern Interchange, Bolivar Interchange, Waterloo Corner Interchange and Northern Interchange) presented the logistical challenge of trying to minimise disruption to motorists, while also maintaining the highest of safety standards for



all workers. With the assistance of experienced contractors, the project proceeded as smoothly as possible.

The Department of Planning, Transport and Infrastructure is currently working on other projects within the corridor, namely the Darlington Upgrade Project and Regency Road to Pym Street Project. Planning work is also well underway on the last remaining section of the North South Corridor, between the River Torrens and Darlington.

For more information contact the Department of Planning, Transport and Infrastructure, website www.dpti.sa.gov.au

Below Lendlease were assigned as head contractor, forming a partnership with a number of local industry partners.

The Lendlease brand is recognised around the world for their creation of outstanding commercial, industrial, civil and social infrastructure. Established in Sydney 62 years ago, they have grown in influence and stature in the global construction industry. Amongst their recent achievements in Australia is the Northern Connector, the first major concrete motorway in South Australia.

The \$867 million project is now open to traffic and provides a vital freight and commuter link between the Northern Expressway, South Road Superway and Port River Expressway.

Funded by \$694 million from the Australian Government and \$173 million from the South Australian Government, the six-lane, 15.5km motorway is a critical component of Adelaide's 78km north-south corridor. The Northern Connector enables an unimpeded journey from Port Wakefield, the mid north, the Barossa Valley and the Riverland to the Port of Adelaide or the length of the corridor, to Old Noarlunga in the south.

This will significantly improve freight access to the Port of Adelaide and the industrial areas of Adelaide's north and northwest, improve road safety and efficiency, reduce travel times for commuters travelling to and from the northern suburbs, cater for forecast traffic volumes which are currently reliant on Port Wakefield Road, and better serve the industrial and commercial sectors along Port Wakefield Road. The many businesses along Port Wakefield Road will benefit from improved traffic flow.

The new motorway will have three-lanes in each direction, a posted speed limit of 110km/ph, and four road interchanges. The project also provides a 16km path for cyclists and pedestrians that will connect with the Northern Expressway's existing 23km path.

To facilitate the Northern Connector project in a manner that would fulfill the objectives of all stakeholders, Lendlease as head contractor formed a partnership with a number of local industry partners, including Catcon, McMahon Services, Intract, LR&M Constructions and SEM Civil.

As well as the obvious engineering and construction aspects, this project has focused on delivering economic benefits to the local South Australian community including creating 480 full time equivalent jobs each year during construction.

The programme had a target of at least 50% of all jobs to be filled by northern suburbs residents and at least 90% of onsite labour hours to be undertaken by South Australians.

Additionally, at least 20% of all onsite labour hours had to be undertaken by ex-automotive industry workers, Aboriginal people, people facing barriers to employment and trainees and apprentices. All these objectives were successfully achieved, with some categories exceeded by a significant amount.

Lendlease has been responsible for some of the nation's most ambitious and complex road and bridge infrastructure projects including a 281km section of the Pacific Highway between Hexham and Tweed Heads in New South Wales which includes the longest bridge in Australia across the Macleay River and flood plain, the Westlink M7 in Sydney and the Gateway Bridge upgrade in Brisbane.

Lendlease also provides long term operational support and maintenance services to public and private road asset owners in Australia.

For more information contact Lendlease, 14/431-439 King William Street, Adelaide SA 5000, phone 08 8202 8888, email info@lendlease.com, website www.lendlease.com



Below Adelaide Brighton provided locally made high quality cement, aggregates and premixed concrete to help build a durable and sustainable road.

Adelaide Brighton has been building a better Australia since 1882. As one of Australia's pioneering construction materials and industrial mineral manufacturing and distribution business', they are agile and always ready to partner with customers and communities to make sure they create a better way of life.

When planning began for the Northern Connector, Adelaide Brighton knew that building a concrete road was the opportunity for them to showcase their local expertise and capability. Partnering with Lendlease they worked collaboratively to solve challenges and supplied over 1.2 million tonnes of construction materials through their trusted local brands of Adelaide Brighton Cement, Penrice Quarry & Minerals, Southern Quarries and Direct Mix Concrete.

With concrete being used for the first time as a road pavement at this scale in the state, Adelaide Brighton's technical expertise and state-of-the-art NATA laboratory played a key role in developing a highly consistent and reliable Type SL (Shrinkage Limited) cement capable of withstanding the wear and tear of tens of thousands of cars every single day.

The sheer volume of material needed for the project meant that Adelaide Brighton had to cover all possible contingencies to ensure it was produced and delivered safely, on time and to the highest quality standards. Adelaide Brighton's solutions-focused mindset led them to align their production schedules to peak construction periods, while its dedicated project team built strong stakeholder relationships based on 'doing what they say'.

In total, over 900,000 tonnes of fill and road base, 310,000 tonnes of sand and aggregate, 42,000 tonnes of cement and slag, and 25,000m³ of premixed concrete was safely supplied to the project.

Adelaide Brighton, an ASX200 company, has strong connections within South Australia with the company founded there nearly 140 years ago. Today, Adelaide Brighton is a leading supplier of construction materials and industrial minerals operating from over 130 locations across Australia and employing over 1,500 people.

Adelaide Brighton is no stranger to the infrastructure sector. They recently played a key role in the \$1.1 billion RAAF Base Tindal upgrade in the Northern Territory supplying aggregates and cement, while in Western Australia they have an extensive history of supplying cement and lime to key oil and gas infrastructure.

The company's integrated business model supplies a full range of construction materials to the infrastructure, mining, residential and commercial building sectors including cement, lime, concrete, aggregates and concrete masonry products.

Each year Adelaide Brighton sells over 4.3 million tonnes of cementitious materials, making it the largest Australian owned supplier in the country.

The company has 95 concrete plants and 44 strategic quarry reserves across Australia including joint ventures. It is also the country's largest manufacturer of concrete masonry products, making it the perfect partner for large infrastructure projects.

The company has invested for a strong future and is always ready for the next challenge. It has constructed a brand-new concrete plant in the Brisbane suburb of Pinkenba to service the expanding south-east Queensland market. The company has also invested in a new quarry at Scotchby Pocket, in the Gympie region of Queensland, further reinforcing their role in the state.

Conscious of its social licence to operate and desire to be part of the community, Adelaide Brighton is committed to a sustainable future. Currently alternative fuels supply 14% of the company's energy consumption, with further enhancements planned.

With a culture of 'Work Safe, Home Safe' the safety of its people is central to everything they do. This year they launched their inaugural Reflect Reconciliation Action Plan to help create a business that is as diverse and inclusive as the communities in which they operate.

For more information contact Adelaide Brighton, phone 08 8223 8000, email adelaidebrighton@adbri.com.au, website www.adbri.com.au



Adelaide Brighton's Birkenhead plant manufactured high quality cement products for the Northern Connector concrete road.



Below Fieldquip installed chain mesh security fencing and noise mitigating fencing to 15km of the Northern Connector.

Below HDS Australia provided independent road safety audits during every stage of the project.



Fieldquip provided chain mesh security fencing to the boundaries of the Northern Connector and safety fences to all bridges and headwalls. With a total project length of more than 15km, Fieldquip's chain mesh security fencing proved to be a cost effective, strong and resilient option for the project's security needs.

Fieldquip's scope of works included the installation of 22,000mm of 1800mm high black PVC coated chainmesh fencing, 5,000m of 2400mm high chainmesh security fencing with bottom rail, safety fencing to bridge abutments & drains, bikeway fencing & balustrading with shoulder rails, light pole footings and concrete works across the project. They also installed noise mitigation fences to a large number of properties surrounding the construction.

Fieldquip's noise mitigation fencing ensured that nearby residents experienced as little impact from the new road as possible. Attractive and practical, these barriers will maintain the privacy and peace of those nearby for years to come. Fieldquip also installed handrails and balustrades to the bridges and overpasses on the Northern Connector.

Fieldquip were challenged by the sheer size of the Northern Connector, which required many kilometres of fencing to keep workers and

members of the public safe, as well as to ensure that construction proceeded on time. The rugged landscape and at times brutal weather conditions were other challenges that required consideration. The team met and exceeded these demands through hard work and determination.

Fieldquip have been in business for 20 years and have 30 employees, with 12 working on this project. The company provides a broad range of fencing solutions, with their own inhouse manufacturing facility in Adelaide allowing them to design, manufacture and install a wide range of chain mesh, sheet, tubular, security, acoustic walling, and gates.

Fieldquip have previously worked on the construction of the iconic Wayville Railway Station and several major housing estates around Adelaide. They're looking forward to working on the North South Corridor Regency to Pym and Flinders Link projects this year, as they further prove themselves to be the experts in security fencing and balustrading.

For more information contact Fieldquip, 2 Mons Avenue, Edwardstown SA 5039, phone 08 8293 2299, email sales@fieldquip.net, website www.fieldquip.net

HDS Australia is a specialist engineering consultancy focussing on traffic engineering, road design, road transport planning and road safety audits. They played a vital role in making sure traffic flowed safely during and after construction of the Northern Connector, with regular road safety audits conducted to ensure the safety of all road users.

"HDS Australia has been heavily involved with the Northern Connector project since design stage road safety audits commenced in February 2017, and it's certainly exciting to see the project completed," said Principal Engineer, Daniel Ahrens. "We specialise in providing independent road safety audits and provided a full review of this project during every stage. The safety of vulnerable road users, such as cyclists and pedestrians, at interchanges and intersections was a key consideration."

"Two of the more significant road safety challenges in the early stage of the project involved design of a shared path along its full length, and design of the Bolivar Interchange. Several workshops, and an on going close working relationship with the design team, main contractor and DPTI representatives, ensured that all safety concerns were addressed," said Daniel. "Similarly, road safety issues associated with construction stage traffic diversions and night time temporary lighting were resolved by close liaison between our auditors and Lendlease traffic engineers."

As an Australian owned and operated business, HDS Australia has forged a strong reputation over the past 30 years as a specialised civil engineering and project management consultancy that provides high quality services to all levels of government, and to the private sector, in a cost effective and professional manner.

"HDS Australia is the major road safety audit provider in South Australia, with similar services offered in VIC and NSW. We currently employ eight senior road safety auditors across the three states. This means we can deliver fast turnaround on complex projects, and also gives us the ability to work on multiple major projects at the same time."

HDS Australia has also been working on another major upgrade to South Australia's transport network for the past four years, while simultaneously undertaking road safety audits and heavy vehicle route assessments on a multitude of medium and small scale transport projects. Successfully handling this large number of projects at the same time is testament to the skills and dedication of the company's road safety team. It has seen the company's reputation grow considerably as a key specialist in road safety.

For more information contact HDS Australia, phone 08 8333 3760, email sa@hdsaustralia.com.au, website www.hdsaustralia.com.au

Below Diamond Contractors completed concrete and bitumen sawing, as well as core drilling, cutting roads and working with expansion joints.



A Clean Sweep with A H Sweeper Hire

Safety and quality was the number one priority for Lendlease and the Northern Connector project. A H Sweeper Hire is a family owned and operated business that's been a valuable part of the South Australian construction community for the past 40 years and were engaged to undertake the projects sweeping and cleaning.

Robyn and Andrew, the company owners and operators, along with their dedicated staff of highly trained professionals, have played a valuable role in keeping public and private areas clean and safe.

A H Sweeper Hire provided a flexible, on demand service throughout the Northern Connector's construction programme, with the final stages requiring up to four road sweepers and their specialised Cmar hot/cold high pressure cleaner with vacuum recovery. Nicknamed 'The Little Sweeper', the machine takes cleaning to the next level for stain removal prior to line marking.

A H Sweeper Hire operates Bucher 652, 651 and 605 sweepers along with their sister company Oz Environmental Services, specialising in industrial sweeping scrubbing, high pressure

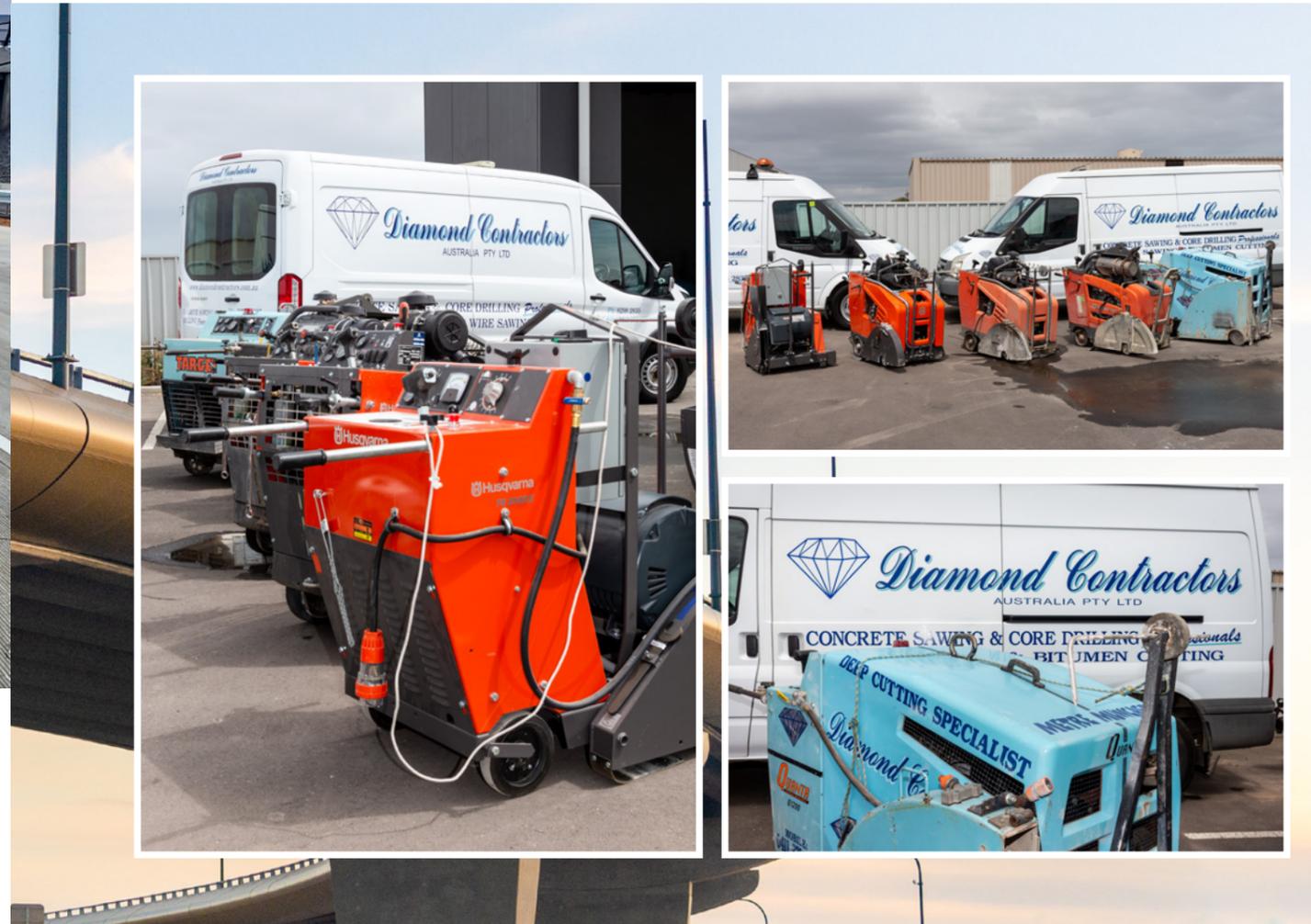
cleaning, graffiti removal, gum removal and soft wash service where a gentle cleaning is required. They also offer general commercial cleaning and wet and dry hire.

AH Sweeper Hire have well maintained vehicles and fully trained operators. They have a great reputation in the construction industry and have worked on many notable projects.

A H Sweeper Hire have conducted project work in New South Wales, Canberra, Northern Territory, along with Woomera, Olympic Dam, Roxby Downs, Leigh Creek and the Maralinga Atomic site clean up. A H Sweeper Hire, along with Oz Environmental Services are committed to their customers, providing a 24/7 service, and no work is too large or too small.

"We provide our service for major projects, developers and construction contractors, government departments and private sector. Our dedication and commitment to our work goes hand in hand with the successful completion of The Northern Connector," said Owner, Robyn Harding.

"Thankyou Lendlease for engaging A H Sweeper Hire."



Diamond Contractors have been providing a high quality concrete drilling services to the Australian construction industry for more than three decades. They worked closely with the developers and other contractors throughout the construction of the Northern Connector to ensure it opened as soon as possible.

There were stringent conditions for the team to meet whilst working on this project and they were happy to rise to the occasion.

"We had the contract for the concrete and bitumen sawing, as well as core drilling, cutting roads and working with expansion joints," said Diamond Contractors', Steve Browne. "Basically, we were there to sort out the day-to-day issues that arise with a project of this scale."

The team at Diamond Contractors needed to quickly respond to tasks that came up at short notice, including emergency rescheduling and night work. "We have a great bunch of guys and made it through. I was really proud of the team work we showed," said Steve.

The world of concrete drilling and sawing is always evolving, and Diamond are always at the leading edge of technology to offer the

most efficient service to their clients and also minimise the effect on the environment, where ever possible.

"We've recently updated our equipment to be more environmentally friendly, with a reduced carbon footprint. This was a requirement for working on the Northern Connector project, but also something we wanted to do as a company moving forward," explained Steve.

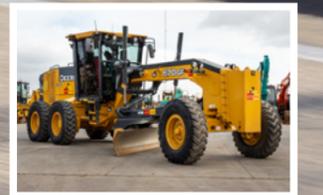
Diamond Contractors have recently finished a 12 month contract on South Australia's Regional Bridges project.

For more information contact Diamond Contractors, PO Box 297, Brighton SA 5048, phone 08 8298 2835, mobile 0411 878 420, email info@diamondcontractors.com.au, website www.diamondcontractors.com.au

A H Sweeper Hire
phone 08 8182 6688
272-278 Grand Junction Road, Athol Park SA 5012

Below Titanium Security supplied a range of security services to the project including static security officers, mobile patrols and alarm responses.

Below A.C.T. Hire provided loaders and rollers, as well as a large number of excavators, tipper trucks and carters to the project for its entire duration.



Titanium Security are leaders in their field, offering an extensive range of security services including guards, mobile patrols and alarm response, crowd control, cash transit, armed security, electronic alarm systems and CCTV.

The Northern Connector project required a vast amount of manpower due to the size of the project and many companies involved relied on their services. “We provided a range of security services to the project,” said Chief Operating Officer, Ian Haylock. “This included static security officers, mobile patrols, alarm responses and electronics throughout the project.”

Titanium were proud to utilise new technology and procedures to keep everyone safe and everything progressing. “We were able to bring state-of-the-art technology into play, such as electronic incident reporting and tracking of vehicles and persons in live time via GPS,” explained Ian.

Titanium Security was established in 2007 and are 100% Australian owned and operated. They have offices in South Australia, where they were founded, as well as New South Wales, Queensland and Victoria.

Titanium specialise in the delivery of individualised, professional security solutions for private, commercial, corporate, local government and industry clientele.

The company are also currently working on South Australia’s \$354.3 million R2P Alliance project. This undertaking comprises a number of motorways and overpasses, intersections and pedestrian facilities.

For more information contact Titanium Security Australia, 14 Bayer Road, Elizabeth South SA 5112, phone 1300 800 667, website www.titaniumsecurity.net

A.C.T. Hire are one of South Australia’s leading providers of Tier 1 compliant heavy machinery, with more than 125 pieces of earthmoving and construction plant. Their extensive range was on hand during the Northern Connector.

“A.C.T. Hire provided loaders and rollers during initial works, and a large number of excavators during the very important lighting process,” explained Business Development Manager, Lindsay Lawrence. “There have been quite a few tipper trucks carting materials. It’s hard to put a definitive figure on how much of our equipment has been used, but it was significant. Some gear has been out there 12 months, some seven to eight weeks, but all of our equipment has played an important role in making this project a success.”

A.C.T. Hire has been in operation since 1986, specialising in the dry hire of compaction equipment, water carts, excavators (from 1.7 tonne through to 30 tonne), wheel loaders, track and wheeled skid steer loaders, site dumpers, graders, tippers and attachments. “The entire A.C.T. Hire team are pleased by the performance and reliability of all the machines we sent out to this project. Most of the gear is relatively new, and we employ a rigorous maintenance and safety programme, so we keep downtime to a minimum,” Lindsay said.

A.C.T. Hire’s range of equipment continues to grow, enabling the company to work on an increasing number of major developments. Their roster of machinery can now be found hard at work at many large construction sites in South Australia.

A.C.T. Hire recently sent a large amount of equipment to the Gawler Rail Electrification Project, and are also involved with the Regency Road to Pym Street project. “We have a reputation for quality equipment and we can be relied upon. We’re all very proud of supplying top equipment for major developments,” said Lindsay.

For more information contact A.C.T. Hire, 348 Cormack Road, Wingfield SA 5013, phone 08 8347 0552, email sales@acthire.com, website www.acthire.com

Below Lincon supplied truck mounted under bridge units for the Northern Connector project, which were dry hired.



Below True Line Kerbing created the kerbs, gutters, median kerbs, median islands on the intersections and bridges, for more than 20km of roadway.



Project safety is always a priority. This is even more critical when working within live traffic and at heights. Lincon are industry leading specialists in height access and safety with world class international brands making up their fleet of specialised machinery.

Lincon supplied truck mounted under bridge units for the Northern Connector project, which was a monumental task given the number of bridges and overpasses within the project. Lincon were able to offer a dry hire option for the client which enabled the overall project costs to be reduced and delivered on budget.

In addition to this, Lincon supplied highly skilled employees for machine delivery, training and servicing during the course of these works.

Lincon's under bridge fleet is made up of a variety of highly capable, versatile and easy-to-operate machines. Notable amongst these are the Barin ABC 60 and 180 Under Bridge Work Platforms, and the Barin AB 16SL and AB22 Under Bridge Inspection Units.

Lincon also offer a wide range of travel towers, road rail combis and insulated travel towers.

"I'm particularly proud of the uniqueness of our underbridge units. They are very cost effective compared to scaffolding or cranes," said Lincon General Manager, Craig Guschal.

The company's fleet is the most modern in Australia, with Lincon boasting a regular fleet replacement programme, and offering OEM maintenance services for their entire range of equipment. Lincon are also the Australasian agent for Palfinger Platforms and Barin.

Lincon was formed in 2001, as the safe height access industry was undergoing rapid change and becoming more specialised and regulated. The Lincon team believed they could source superior machinery than what was then available in Australia, and in doing so changed the industry forever.

Lincon operates nationally, all across Australia. The team work on a huge number of infrastructure construction projects in all states, and also undertake ongoing maintenance work for a large number of clients.

For more information contact Lincon, 17 Westcombe Street, Darra QLD 4076, phone 07 3712 0780, fax 07 3712 0782, email serviceadmin@lincon.com.au, website www.lincon.com.au

True Line Kerbing were in charge of constructing the kerbs and gutters for more than 20km of roadway on the Northern Connector. The extensive project included the creation of six traffic lanes, as well as cycle and pedestrian pathways, and four road interchanges, and bridges, and it proved to be a massive undertaking that tested the skills and resilience of this innovative company.

"Our team have been on most major infrastructure projects in South Australia over the past 10 years, but this was on another level," said Business Development Manager, Harito Chrisakis. "We started in June of 2018 and were contracted to complete all the kerb types for the project. This included kerbs, gutters, median kerbs, median islands, across work on the interchanges and bridges."

A big, fast moving project like the Northern Connector requires a company to employ a variety of methods to get the job done. True Line Kerbing used two main techniques for this project.

"Due to the size of the project, we did a lot of work with our kerb machines, which produces high quantities of kerb in a run, because we had so much to do in such a short amount of time. But we also completed lots of hand work as well, which both can be seen by the

volume and quality of the finished product." True Line Kerbing also worked on many side projects, including the car parks of an adjoining power sub-station, a SA Water treatment plant, as well as many ramps and footpaths in parks surrounding the Northern Connector.

"It was a challenging job because the scope was so big. Each zone had its own set of project managers and engineers to work with, so it was like starting a new job each time we moved to a new section. The Northern Connector was so much bigger than anything we'd ever worked on, but it was very rewarding as much as it was challenging."

True Line Kerbing have previously worked on South Australia's Adelaide Airport, Urban Superway and are currently working on the Darlington Intersection upgrade.

For more information contact True Line Kerbing, 16 Leeds Street, Wingfield SA 5013, phone 08 8349 8360



Below Ward Tipper Hire supplied a range of fit-for-purpose vehicles for the civil aspects of the Northern Connector.



Ward Tipper Hire, a privately owned company, has been supplying vehicles and equipment to construction sites since 2002. On the Northern Connector, the company supplied vehicles from their extensive fleet to help with the civil aspects of the project.

and the Port River Expressway. We look forward to continuing on with these upgrades," said Mark.

"We supplied the project with machines such as wheel loaders, backhoes, skid steers, water carts and tip trucks," explained Ward Tipper Hire's, Mark Ward. "We had a semi water cart made, because this project was spread out over such a large area and we needed the extra capacity. It was the first one in the Adelaide region."

The 15.5km motorway posed a number of challenges due to its size. "We had to deal with the issues of supply and demand, working at short notice, regular night shifts and things like that. But we really enjoyed conquering these issues," said Mark.

Ward Tipper Hire are always willing to meet the high demands and specific requirements of their clients' projects, by expanding their fleet capabilities and company offerings.

"Ward Tipper have worked on many major infrastructure projects around the region, such as the Northern Expressway, Gawler Bypass



For more information contact Ward Tipper Hire, Lot 32, McVann Avenue, Paralowie SA 5108, phone 08 8281 1716, email admin@wardtipperhire.com.au, website www.wardtipperhire.com.au