



ON THE RIGHT TRACK

DEVELOPER : Queensland Department of Transport and Main Roads
MAIN CONSTRUCTION COMPANY : The Infrastructure Group
CONSTRUCTION VALUE : \$514.3 million

The \$514.3M Houghton River Floodplain Upgrade improves safety and flood resilience across 13.5km of the Bruce Highway and includes replacing the Horseshoe Lagoon, Pink Lily Lagoon and Houghton River bridges and building new crossings of Healey's Lagoon and the Reed Beds curve, two Bruce Highway overpasses, removing existing open-level crossings, and upgrading rural intersections.

In March 2018 design started on the upgrade of 13.5km of the Bruce Highway between Ayr and Giru, across the Houghton River Floodplain. The floodplain is impacted by a variety of factors closing the Bruce Highway, due to flooding, every one to two years. Queensland's Department of Transport and Main Roads (DTMR) awarded the design and construct contract for the upgrade to The Infrastructure Group, a joint venture made up of Albem Operations, Bielby, BMD Constructions and JF Hull.

The \$514.3 million worth of upgrades involves constructing three new wider, higher level bridges over Horseshoe Lagoon, Pink Lily Lagoon and the Houghton River and removing the old bridges. New crossings will be built over Healey's Lagoon and the Reed Beds, replacing flood-prone heavily culverted pavement. The existing open level crossings of the cane tramway will be removed and two Bruce Highway overpasses built.

The works include new approaches to and between bridges, in some areas on a new alignment, upgrading of rural intersections, and wide centre line treatments to increase the distance between oncoming lanes of traffic.

"A key objective was to achieve a substantial reduction in the frequency and duration of highway closures and as a result, many years of detailed hydrology and other studies informed the project design," said DTMR Regional Director of North Queensland, Sanjay Ram. "While still ensuring that our hydrology criteria were met, the number of bridges to be built as part of the project was reduced from 16 to 7; and the length of bridges to be built reduced from the original 3km to 830m, saving more than 2,205 linear metres of bridge structures."

Immediately before the start of the project, the new Australian Bridge Design Standard (AS5100:2017) was released and this effectively introduced design aspects that needed to be tested and confirmed during the project. Most notably the standard required bridge piles to be designed to comply with bridge earthquake design criteria Level 2 (BEDC-02). The project team undertook investigations and, as a result, a non-standard bridge foundation – driven tubular steel piles – was confirmed for the Houghton River Bridge.

"In collaboration with The Infrastructure Group we investigated the suitability of using driven tubular steel piles (with a reinforced concrete pile shaft) for bridge foundations. These innovative foundations meet



departmental requirements, including for updated earthquake and bridge design standards and the process also led to a new DTMR technical specification which will potentially see the piles used in future projects across the state," said Sanjay.

"Given the complexities of the Houghton River Floodplain, we undertook extensive and detailed studies to ensure that the new infrastructure would not create adverse afflux impacts on nearby properties or the downstream community of Giru."

Onsite works commenced in August 2018 with structural works on the new 146m long Houghton River bridge beginning in late February 2020. The temporary access structure, from which the wider and higher Houghton River bridge was built, was then removed in late 2020.

Altogether 10,000m of new road has been constructed with 23,900m³ of concrete generated by the onsite batch plant and used across the project to make 8.7km of culverts and 20km of new open drains.

"As part of the project, about 300,000m³ of hydromulch (dry lands grass seed mix) and 100,000m³ of topsoil is being placed, in areas disturbed by works. We adhere to strict legislative requirements regarding the management of flora and fauna, during both planning for and delivery of road upgrades. The Houghton River Floodplain project was the first major road infrastructure project in North Queensland to receive an Infrastructure Sustainability Council of Australia (ISCA) rating," said Sanjay.

"Traffic has been using the new Bruce Highway since the middle of 2021, under a series of traffic switches. Ancillary works – including final pavement works in some areas, demolition of old bridges and road, as well as highway connections to local roads – will be ongoing until early 2022."

For more information contact Department of Transport and Main Roads, PO Box 1089, Townsville, QLD 4810, phone 1800 625 648, website www.tmr.qld.gov.au

Below Lining Systems Australia completed all of the road marking works for the project.



Lining Systems Australia (LSA) is a family company spanning four generations, lead by Director, Brett Krause (3rd generation) who brings 30 years experience to the table, and Project Manager Beau Krause, (4th generation) with 15 years experience, the company has been delivering accurate and timely road lining systems to meet Australian standards for over 30 years.

LSA carried out all the road marking, including audible works, at the Haughton River Floodplain upgrade. All the different sections of the road require different plans and they follow the plan that has been approved by main roads for each piece of road or intersection. Onsite we applied up to 60km of road marking including centre and edge lines, chevrons, arrows and everything in between as well as Audio Tactile Line Marking (ATLM).

Audible line marking is made by laying thermoplastic material, it creates a raised rib on the road surface and produces a rumbling sound when vehicles drive over it – it's to make drivers aware of changed traffic conditions.

"LSA began onsite in July 2021 with a team of up to eight onsite keeping all machines running. Line marking onsite was completed

using two coats of Damar Waterborne Paint with the ATLM Crystallite Thermoplastic placed over the top of the road marking paint," said Project Manager, Beau Krause. "We are one of the last contractors on a road building job so we do have to wait and move around others. LSA works in these conditions daily and we've learnt to go with the flow and try to achieve as much as possible each day."



LSA work across Queensland where they have been contracted for line marking at main roads and infrastructure projects including major works for local and state government sectors. LSA have completed jobs

with the Department of TMR, Queensland Rail as well as for a number of Queensland's city and shire councils as well as large scale private contracts for mining giants Rio Tinto and Sodexo. LSA have completed works in the Northern territory and have been as far as Broome.

"We enjoy travelling all over Queensland and are not disappointed when required to travel out of Queensland for work. We have completed jobs as far north as Weipa and Cooktown. We enjoy it when we can load up and head out for work. We're a fourth generation line marking family business and pride ourselves in providing a top quality job. We are a team and at the end of the day, working together is the best feeling," said Beau.

LSA carry out all line marking applications across road and highway projects, airports and carparks, for safe vehicle movement to Australian Standards. They also do small area marking on safety walkways, railway platforms, pedestrian crossings and sports courts.

"We can assist with setting out and spot marking to ensure your line marking is to Australian Standards and provides the solution you need," said Administrator, Jaemi-lee Krause. "We have an extensive line of machinery that we use on a daily basis from small

walk/drive and stand up drive machines to large truck mounted line marking machines."

LSA offers a comprehensive service and will also paint customised stencils to match company logos or names. They will remove old paint lines as well as supply and install signage, wheel stops, speed humps and bollards.

Directors, Brett and Susan Krause explained the history and quality operations of LSA. "From humble beginnings with a small line marking machine operating from the back yard, we have built our family business into the successful company it is today. Primed with practiced experience and knowledge learned through time, we've refined our processes, updated our equipment and added special skills to our toolboxes to ensure we deliver efficiency, accuracy and expertise. We pride ourselves on the quality work we deliver and know the importance of a job well done."

For more information contact Lining Systems Australia, 544 Black River Road, Black River, Townsville QLD 4818, email lining.01@bigpond.com, website www.roadmarkingaustralia.com.au

Below Essjay Contracting provided earthworks equipment for the Haughton River Floodplain Upgrade.

Below Koppen Construction were responsible for the manufacture and placement of the plant mixed foam bitumen.



Essjay Contracting is a large scale professional earthmoving business specialising in civil earthworks for major infrastructure projects. At Haughton River Essjay Contracting provided equipment for earthworks to 13.5km of the Bruce Highway as it passes through the Haughton River Floodplain. In April 2019, Essjay Contracting delivered a grader to the site where it remained in use for two years.

“We specialise in supplying high quality plant and people to civil, rail, mining and gas projects throughout Queensland,” said Operations Manager, Stuart Bentley. “The equipment we supply includes graders, dozers and excavators, articulated trucks and tankers. We keep well maintained plant and equipment, all UTS and GPS equipped.”

Established in 2011, Essjay Contracting is a family operated company that has grown to delivering commercial projects valued above \$400 million. They employ 65 staff to service Central and Northern Queensland and have years of experience dealing with the logistics of the harsh environment.

“We have worked on many highway projects with the likes of The Infrastructure Group, RoadTek, BMD, and FKG. We supply equipment, with or without an operator and management staff for

large scale developments on both Highway and Urban projects, along with a number of crews specialising in remote area work.

Major infrastructure projects supplied and operated by Essjay Contracting include the 11km long Ring Road at Mackay, the Warrego Highway Upgrade at Chinchilla, and the three year long upgrade of the Princes Highway at Berry New South Wales, completed in 2021. “We’ve also had over 30 pieces of equipment onsite at Bravus Rail, 700km west of Rockhampton, since November 2019.”

“We also supply equipment and operators to a number of mining and gas infrastructure projects, with plans to expand more into this area,” said Stuart.

Other services offered by Essjay Contracting include self-managed crews for bulk and detailed earthworks for subdivision, road formation and construction including detailed pavement works, drainage and culvert design, mining and rural infrastructure and heavy machinery haulage.

For more information contact Essjay Contracting, 153 Foster Street, Gracemere QLD 4702, phone 0409 065 085, email admin@essjaycontracting.com, website www.essjaycontracting.com.au

Koppen Construction specialises in the manufacture, delivery and placement of foam bitumen gravel pavements. Koppens have the ability to produce plant mixed foam bitumen material or provide in situ services.

In June 2020, Koppen Construction commenced their contract with The Infrastructure Group for the manufacture, deliver and placement of plant mixed foam bitumen at the Haughton River Floodplain Upgrade. The foam bitumen placement is a new pavement construction methodology which provides a longer lifespan for pavements due to its resilience to damage from flooding.

“It was a large scale project and there were challenges involved in the planning of the staging of the works in line with the client’s programme, the logistics of the job and the work around traffic movements,” said General Manager, Callum Koppen. “The project also involved strict lay times and high tolerances to TMR specification and standards and to ensure continuous safety for staff and the general public.”

With up to 15 working onsite Koppens completed the job within 12 months. Koppens have strong expertise in technically complex, large scale projects and perform contracts from local governments, state,

federal and private clients. Koppens perform a number of projects in remote areas throughout Far North and Central Queensland and are especially capable of meeting the requirements and logistics of remote work. Koppens are also experienced in bitumen sealing and lime and cement stabilisation pavements.



For more information contact Koppen Construction, Suite 4, 10 Grafton Street, Cairns QLD 4870, phone 07 4052 2600, email info@koppens.com.au, website www.koppens.com.au

Below Australian Civil Construction Services inspected over 55km of road in a span of four weeks for the project.

Below Skippy Skips supplied up to 20 skip bins, specialist bins and certified lifting bins for the site.



Australian Civil Construction Services (ACCS) have been providing inspections of buildings and roads along with defect reports for over 20 years. In mid-2019, Manager Wayne Parfitt spent four weeks inspecting over 55km of road as well as residences along the route to document their condition prior to the commencement of construction. ACCS then supplied road and building dilapidation reports as well as certification of temporary onsite buildings.

“I took photos and videos to add to the written report,” said Wayne. “It was important to complete the job without interfering with the traffic flow and continue the inspection despite the wet weather.”

ACCS offer pre-purchase building inspections, work-in-progress reports and final inspections as well as expert witness services and pre-construction documentation that can be used for dispute resolution. ACCS have completed many contracts for the Queensland Department of Motor Transport with a recent project including dilapidation reports for up to 30kms of road and 150 structures at the Smithfield bypass.

For more information contact Australian Civil Construction Services, 24 Glasgow Street, El Arish QLD 4855, phone 0402 702 372, email wayne@accsbi.com.au, website www.accsbi.com.au



In 2003 Mike and Julie Carmody took over a small skip business and set about making it successful by providing superior customer service in a highly competitive marketplace, the Townsville region. A hard won record of service and reliability in the domestic market drew interest and demand from the commercial and construction sectors.

The Houghton River Floodplain Upgrade site needed a waste management contractor that could supply and service up to 20 skips at a time, including specialist bins and certified lifting bins for roadwork and bridge construction, all over the 20km site. Locally owned and operated Skippy Skips was the obvious choice for the project and they met every expectation of the lead contractor.

Skippy Skips has made the most of every opportunity to expand their business and earn a solid reputation for immediate response and a seamless onsite service with well trained and experienced staff. The Carmody’s hands on low overhead management efficiency and keen pricing structure also makes Skippy Skips the right choice for project administration and costing. “We take pride in offering immediate delivery and timely servicing of our onsite bins,” said Owner, Mike Carmody.

Skippy Skips has completed a number of contracts for Queensland’s TMR and has become the first choice subcontractor for Townsville’s leading new home builders and renovators as well as being involved with various projects for Tier 1 and 2 builders. Successful projects include the recently completed new multi-storey addition to the Townsville Mater Hospital.

“With over 17 years local experience, five trucks, and 220 skips, Mike and Julie have built the business to a point where we now have the staff, the experience, the trucks and the bins to handle any scale project, but we’re still small enough to care about every job,” said Sales and Operations Manager, Russell Lewis.

For more information contact Skippy Skips, PO Box 795, Helensvale QLD 4212, phone 07 4778 8251, mobile 0408 728 791, email sales@skippyskips.com.au, website www.skippyskips.com.au

Below Stradacon Penna were responsible for the delivery of quarry materials for the roadbase and embankments, including waste concrete for recycling purposes.



Stradacon Penna supply and deliver quarry material for roadbase and embankments across Townsville and northern Queensland. In January 2019 they started the supply contract for the Houghton River Upgrade and continued delivery throughout the project.

The materials quarried and used at the upgrade included 10, 14 and 20mm aggregate bedding used for culvert construction; structural backfill material to bridges and culvert abutments; and rockfill for wet weather access roads. They supplied material used to improve the subgrade layer; unbound and cement modified pavement material; cement stabilised roadbase as well as stone pitching rock for the bridge and culvert abutments.

“Houghton River was an especially large scale job for us,” said Director, David Penna. “However the project demand and scheduling was very suited to our production operation and the site staff worked very well with us in planning and programming supply schedules. Having Spent 30 years in civil construction predominantly building roads and bridges we are able to draw on that experience to assist our customers in day to day planning for material selection, programming, and use.”

Stradacon Penna is an original Townsville born business started by David’s grandfather upon his arrival in Australia in the 1920s. Their first introduction to TMR roadwork was in 1978 when Penna and Company gained TMR pre-qualification. That organisation engaged in civil construction, in particular Main Roads contracts, throughout north and west Queensland up until 2005, when David started Stradacon Penna.

“We can produce a blend of all quarry materials both fresh and recycled whereby the ratios are limited to the customers requirement, desire and imagination,” said David. “We have the ability to retard our cement stabilised products to increase work time and have recently produced a recycled concrete/roadbase blend for use in ground surface stabilisation. We also wash and produce very fine sands and aggregate products for specialist uses such as the North Queensland Cowboys House of Excellence Training Field.”

For more information contact Stradacon Penna, 1 Pats Road, Brookhill Townsville QLD, 4816 phone 07 4410 9618, email office@stradaconpenna.com.au, website www.stradaconpenna.com.au