

GETTING THE TRAFFIC FLOWING EFFICIENTLY IN AND AROUND CAIRNS



MAIN CONSTRUCTION COMPANY : BMD, Albem
PROJECT END VALUE : \$150 million
COMPLETION : March 2014
ARCHITECTS : Site Architecture

The \$150M Cairns Bruce Highway Upgrade provides an innovative solution that offers improved safety, reliability and functionality.

Queensland's Bruce Highway forms part of the national highway and is the main transport route between far north Queensland and the south. CairnsConnect, a joint venture between leading civil construction firm BMD Constructions and Brisbane-based engineering firm Albem Operations, was appointed by the Queensland Government to design and construct the 3.4km Bruce Highway upgrade between Sheehy Road and Ray Jones Drive, south of Cairns. The design was carried out by engineering consultants, SMEC.

The project was delivered under an Early Contractor Involvement (ECI) contract, with the joint venture team working closely with the Queensland Department of Transport and Main Roads. The \$150 million Australian Government funded project began in October 2011, with a sod-turning ceremony. Practical completion was reached on 14 April 2014.

This section of the Bruce Highway had reached capacity and was performing poorly with traffic congestion during peak times and an associated poor crash history. The Cairns Bruce Highway Upgrade project has relieved congestion on this section, provided motorists with a safer and more reliable route and also improved access to the Cairns Port.

The project involved the grade separation of two major intersections, provision of two new parallel service roads and removal of two open

level rail crossings. The upgrade was designed as a high clearance route catering for heavy and oversize vehicles.

The project scope included construction of a half diamond interchange between the entrance to Forest Gardens Estate at Mt Sheridan and the suburb of White Rock. A new pedestrian path was built from George Cannon Drive to Charlotte Close, a new pedestrian/cycle overbridge now links Woree and White Rock, and an extensive network of new off-road cycle and pedestrian facilities have also been provided.

New service roads were built at key points on the western side of the highway linking George Cannon Drive, Mt Sheridan to Rigg Street, Woree; and on the eastern side of the highway (near the Cairns Golf Course) linking Walters Street to Kowinka Street, White Rock. The Rigg Street intersection has also been upgraded to improve safety and access between the western service road and Ray Jones Drive.

Ray Jones Drive has been upgraded to six lanes through Kate Street up to Chinaman Creek Bridge. The grade separation at Forest Garden Estate and at the Bruce Highway and Mulgrave Road intersection has resulted in a more efficient freight route to the Cairns Port.

Two open level rail crossings have been removed to improve safety. The removal of three sets of traffic signals has improved travel times and the two new service roads have enhanced safety and efficiency for

local traffic movements. The service roads will also provide alternate routes should an emergency require it.

More than 400 jobs were created by the Cairns Bruce Highway Upgrade project, with the majority of the project workforce and suppliers sourced from the north Queensland region, maintaining more than 85 per cent local procurement for the life of the job.

A high level of community engagement helped ensure local residents and businesses were kept up-to-date on traffic changes. While the weather posed some challenges, with close to 4500mm of rain throughout the project, the program maintained a steady momentum. An outstanding achievement was the construction of the project while managing 55,000 vehicles per day through the work site. In the 2.5 year construction period, on average there was little impact on travel times and relatively little adverse comment from the public.

The first two of the project's bridges were officially opened to southbound traffic in May 2013. The overpass at Forest Gardens, which was effectively three bridges in one, opened in September 2013, connecting Mt Sheridan and White Rock.

The major construction tasks also included installing a 136m-long steel girder pedestrian and cyclist overbridge, and building reinforced soil structure walls for all of the project's bridges and interchanges.

Environmental management has been a key focus of the team with best practice controls maintained in the tropical environment. A staged

earthworks approach was used to reduce the areas of exposure and limit any rework. Landscaping was undertaken by JMac Constructions, BMD's landscaping division. In keeping with the project's goals on supporting the local economy and sound environmental management principles, the majority of materials used by JMac (including plants, trees, mulch, fencing and soils), were sourced from local suppliers. More than 70,000 plants have been planted across the site.

BMD apply stringent safety management to all of their civil infrastructure projects, with an approach which prioritises hazard identification by all workers on the site, and promotes a culture of collaborative effort in minimising risk.

This strategy works, and on the Cairns Bruce Highway Upgrade project, resulted in an excellent safety record, with no major incidents. In addition, the project completed more than 450,000 Loss Time Injury (LTI) free hours.

There have been many positive comments received from the public on the benefits delivered by this completed project.

For more information contact BMD, 25 Cambridge Parade, Manly QLD 4179, phone 07 3893 7000, fax 07 3893 1006, email brisbane@bmd.com.au, website www.bmd.com.au

Contact Albem Engineering, Level 34, 123 Eagle St, Riverside Centre, Brisbane, QLD 4000, phone 07 322 96377

INTELLIGENT ELECTRICAL SOLUTIONS FOR FAR NORTH PROJECTS

By bringing together both the electrical and civil aspects of the traffic signals, street lighting and ITS (Intelligent Transport Systems) for a major traffic project like the Cairns Bruce Highway project, i-LEC was able to deliver the works in a cohesive, efficient and flexible manner.

The scope included the installation of all Ergon Rate 2 lighting, approximately 180 street lights, six sets of traffic signals and the maintenance of all electrical infrastructure throughout the project.

i-LEC's integrated approach ensures complete control of the quality and timing of a project, as scheduling is not dependent on subcontractor availability. The company's qualified electricians also supervise all conduit installations, to ensure all the relevant Electrical Safety Act standards and requirements are met.

To complete the civil component of projects, i-LEC have invested in a fleet of specialised plant including excavators, skid steers, rollers, hydro-excavation units and a drill rig for horizontal directional drilling.

The manpower deployed to the Cairns Bruce Highway project included a civil crew of 8 comprising ticketed operators and labourers, and approximately 11 qualified electrical tradesmen and apprentices. All of the team had substantial experience in major transport infrastructure projects, which gave them the ability to respond effectively to changing project needs while still maintaining an effective schedule of the civil and electrical tasks.

The company was founded in 2009 by Phil Young, who had over 15 years prior experience in electrical trades, including a decade with TMR and RoadTek. The company culture of quality, safety and integrity together with their high level of technical expertise has resulted in a loyal client base, and has been also recognised with the award of 2013 Master Electrician of the Year for Far North QLD Region.

i-LEC are proud of their association with Master Electricians Australia, who provide the company with procedural and legislative support, training and regular safety audits, to ensure i-LEC delivers projects to the highest standard. This safety and procedural excellence has been applied to their general electrical contracting works, which have included projects across health, residential, commercial and, retail ranging from multi-million dollar projects to small domestic jobs.

As the company grew and became more involved in traffic systems and traffic infrastructure projects, the business was structured into three interlinked and complementary divisions – traffic infrastructure, civil earthworks and commercial electrical contracting.

Their team can provide full design, construct and maintenance packages for Intelligent Transport Systems, street lighting, and commercial electrical projects across all major construction sectors. i-LEC also holds a Cairns Regional Council maintenance contract for street lighting and traffic signals for a large area of Cairns and surrounding suburbs, and will continue to maintain the signals and street lighting for the Cairns Bruce Highway project throughout the defects and liability period.

The capabilities of the commercial electrical contracting division include shop and office fit-outs; data cabling; hospital and medical industry electrical works, including works as per AS3003 standards Electrical Installations - Patient Areas; regular and on-call maintenance; and large scale projects including re-designs and upgrades.

i-LEC has approval as a registered supplier of Underground Distribution Construction (UDC) for Ergon Energy, allowing them to offer electrical and civil expertise to developers for Design and Construct works.

i-LEC are pre-qualified to carry out Rate 3 works for the Department of Transport and

Main Roads, are a Panel member as preferred supplier with Ergon Energy for delivery of Rate 2 works; and hold Master Electrician Accreditation through the Electrical Contractors Association. The company is also a member of Safety Connect, a third party accredited active safety system, and a member of the UDIA – Urban Development Industry Association.

To ensure their company remains at the forefront of their trade in the far north, i-LEC continually invest in their people. Specialised training is ongoing, in both technical skills and safe working practices. This also ensures the team is a strong and cohesive one, where each member feels valued and encouraged.

With their committed staff, high level of expertise and integrated operation, i-LEC deliver Intelligent Electrical Solutions on time, within budget and with a collaborative, quality-focused approach.

For more information contact i-LEC Solutions, 22 Donaldson Street, Manunda Cairns 4870, phone 07 4031 8498, website www.i-lec.com.au





MINIMISING THE RISKS OF PROGRESS

Hydro-Vac Excavations FNQ (HVE) enables infrastructure projects to proceed with greater safety, certainty and efficiency, through non-destructive location of underground utilities, safe excavation and expert advice for projects like the Cairns section of the Bruce Highway Upgrade.

HVE has been working on sections of the Bruce Highway project for 18 months, locating and exposing services including Optic Fibre, HV/LV Cable, water and sewer lines, and undertaking hydro excavation of footings for signs, traffic lights and street lights. Other services provided included cleaning blocked conduits through pipe ferreting; installation of draw strings in conduit to facilitate cabling installation; and pumping out groundwater from footings prior to concrete pours.

In addition to the two 4mt combo vac units, HVE has recently acquired electronic cable and pipe locating equipment and Ground Penetrating Radar (GPR) which can now be used to ascertain the location of underground utilities prior to potholing.

“We eliminated the risk of damaging underground services by utilizing safe digging methods such as hydro excavation instead of conventional mechanical methods, which carry the risks of not just costly damage to utilities but also the prospect of serious personal injury and associated down time,” said HVE Director, Les Morrison.

“We also have the advantage to be able to excavate and manoeuvre in areas where it was deemed unsafe or inaccessible by conventional excavators”

“This was a big project for a small company such as HVE to undertake, the client had at times strict time frames to work with, but this was overcome through good communications with the principle contractor.”

For the past nine years HVE have been servicing the Cairns area and surrounding regions, including as far west as Mt Isa, as far South as Townsville, and North as far as Cape York and the Torres Straits Islands. Other recent major projects have included Cairns CBD upgrade, Cairns street lighting upgrades, TMR NDRRA project, Lotus Glenn Correctional Facility Redevelopment and Cairns Airport Redevelopment.

“Our units have the unique capacity to vacuum up both dry and wet materials so they are perfect for removing and disposing of materials such as sand, rock and mud. The plant we use also makes it unnecessary for operators to enter confined spaces, as most tasks such as draining pits can be completed from above,” said Les. “We have highly trained and experienced staff who can offer advice in specific hydro vac works which can increase efficiency and reduce costs. Our personnel’s range of qualifications includes Confined Space Access, Level 2 Traffic Control, Senior First Aid and Telstra Accredited Plant Locators.”

“We at HVE take pride in our business and strive to deliver a first class service to our clients.”

For more information contact Hydro-Vac Excavations FNQ, PO Box 65, Trinity Beach, QLD 4879, phone 07 4057 6300, email info@hvefnq.com, website www.hvefnq.com



LIFTING CAIRNS CONNECT TO SUCCESS

From the first day CairnsConnect was on site for the Cairns Bruce Highway upgrade, Century Cranes worked alongside them providing the construction team with safe and cost-effective lifting solutions.

Lifting tasks ranged from unloading the first equipment brought to site through to lifting some of the largest bridge sections in Far North Queensland. Century Cranes provided a range of cranes to suit the various tasks required over the life of the project - frannas to move general construction materials; smaller slew cranes up to 100t capacity for lifting steel frames and retaining wall panels; and larger slew cranes for lifting bridge girders, steel bridge sections and concrete approach ramps.

All cranes were supplied with skilled and experienced operators, and the Century Cranes management team worked closely with CairnsConnect engineers to develop logistical solutions as well as supplying computer-generated lift studies for key tasks.

The scope of works required Century to be onsite daily, sometimes in round-the-clock shifts, and an on-call service was also provided when unexpected tasks required it. One of the key aspects of Century’s approach to the project was the provision of total logistical solutions for daily activities, and the ability to resolve the major lifting challenges reliably and effectively.

“Century has approximately 40 staff, and every staff member worked on this project, from our diesel fitters, doggers, riggers and operators

through to our management team,” said Century Cranes General Manager, Bianca Wilson.

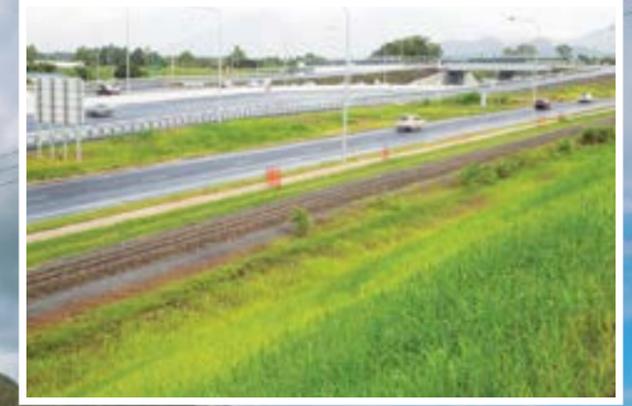
“Cairns Connect was a very organised and adaptable client, from the engineers to the supervisors on the ground.”

The major challenges encountered on the project were the tropical north Queensland weather with its storms and high rainfall, and the live traffic environment of the main highway, with some tasks requiring the closure of lanes and diversion of traffic.

Century have the largest and most diverse fleet of mobile cranes in Far North Queensland, ranging from 13 Tonne up to 200 Tonne, and offer services including wet and dry hire, assistance with project planning, job inspections and computerised lift studies.

Over the past 35 years of operation they have gained extensive experience across all major construction sectors both throughout Queensland and interstate, including civil projects, general construction, the sugar industry and mining projects both in Australia and internationally. Other recent major projects in Far North Queensland have included the Cairns Base Hospital Redevelopment, Lotus Glen Correctional Centre and Lihir Island.

For more information contact Century Cranes, 6 Walters St, Portsmith, QLD 4870, Bianca Wilson – General Manager – mobile 0402 015 085, phone 07 4035 1754, website www.centurycranes.com.au



A DIRECT APPROACH TO MAKING SURE EVERYONE'S ON THE SAME PAGE

Keeping the community informed of major changes to traffic conditions is an important aspect of any major road project, and to do it effectively it requires a multifaceted strategy. For the Bruce Highway Cairns Upgrade, in addition to internet based information and media announcements the CairnsConnect joint venture team relied on CDNA Distributors to ensure that everyone in the immediate project area was kept up to date and engaged with what was going on.

CDNA's team of walkers delivered information on road closures and road works, including maps, construction updates and details of timelines for changes to traffic conditions on a monthly basis for nine months.

CDNA supplied CairnsConnect with the details of the number of houses and businesses which would require information, and also undertook the physical task of preparing the envelopes, collating, folding and inserting the relevant maps, letters and flyers for each distribution run.

A team of 12 CDNA walkers delivered the information to all homes and businesses around the project area, amounting to approximately 7,000 separate addresses. The project information was authorised to be delivered even to letterboxes which specified "no junk mail", due to it being important community information rather than advertising. CDNA's people also hand-delivered the information to local businesses, to ensure it was noted and received.

"Direct distribution gets into the houses, and residents don't have to chase around for the information about impending changes and other important matters," said CDNA Distributors Spokesperson, Debbie Ritchie.

"To ensure the process is effective, we conduct door knocks, and we also check all areas every distribution to ensure the distribution is done – this is something we do for all our clients."

CDNA has been providing letterbox and business distribution services across Cairns and the surrounding region from as far south as Gordonvale to north in Redlynch for six years.

They have 68 walkers – all independent contractors – delivering information, brochures and flyers for local business, government and real estate firms.

In addition to the local distribution provided by CDNA, a second company under the same management operates from the same location, which offers services nationally to projects that need to keep people informed in a direct, reliable and timely manner.

For more information contact CDNA Distributors, mobile 0434 415 278, email debbie@cdnadistributors.com.au, website www.cdnadistributors.com.au

WITH ECOVEG THE GRASS IS ALWAYS GREENER ON BOTH SIDES OF THE ROAD

ECOVEG use the latest hydromulch technology to achieve rapid results for revegetation on projects like the Cairns Bruce Highway Upgrade. Their scope on the project included both hydromulch in the early stages of the job to provide temporary erosion control measures, and hydromulch seeding of a diverse range of species, including grasses, trees and shrubs for long-term revegetation.

Grasses from seed including *Cynodon dactylon* were used on areas such as the road sides and footpath areas. At areas including Red Hill and Sheehy Road, hydromulch seeding of trees and shrubs and grass was undertaken, with the species including *Bothriochloa pertusa*, *Lomandra longifolia*, *Banksia robur*, *Acacia simsii*, *Acacia holosericea*, *Melaleuca viridiflora*, *Syzygium paniculatum*, *Corymbia tessellaris*

ECOVEG also installed Turf supplied by Tropical Lawns comprising *Axonopus compressus* (broad leaf carpet grass) and *Zoysia ZT11* (A hybrid cross between varieties *Matrella* and *Japonica*) around the project's northern overpass. ECOVEG have enjoyed working alongside JMAC's Harry Barker, BMD's Kirstin Lee and Tropical lawns Terry Anderlini and sharing experience and knowledge to achieve the desired results.

"We provide green solutions for all situations including Hydromulching, Seeding, Turf and Planting," said ECOVEG Directors, Rob Wilkinson and Mark Anderlini. "ECOVEG has established strong relationships within the building and construction industry with many companies, and has completed many projects with a range of different species of seed, turf and trees and shrubs.

"Our company is also affiliated with Tropical Lawns, the region's largest turf supplier with 25 years' experience, who offer the largest range of Turf varieties available."

With 20 years prior experience in the turf industry and qualifications and experience as a green keeper, Mark along with co-founder Rob Wilkinson has been able to build a solid team with a well-earned reputation for delivering solutions. The company's manpower includes qualified green keeping and landscaping staff (Certificate 3 level) and qualified mechanical staff.

The company has invested in up to date, high capacity machinery, including a 12 tonne ridged truck with 12500 litre Finn hydromulch unit mounted, an 8 Tonne truck with Hiab crane fitted, and an 8 foot drill seeder and tractor.

Their professional approach and experience with North Queensland's unique conditions enables them to efficiently ensure program timelines and environmental requirements such as revegetation erosion prevention are met. ECOVEG also provides ongoing maintenance services, including fertilization and irrigation regimes, for projects including residential developments, golf courses, sports grounds and mine site rehabilitation projects.

Other recent projects have included BMD Herveys Range military training facility; BMD Silkwood overtaking lanes; BMD Jubilee Bridge Innisfail; BMD Capping of the Cairns dump; BMD Mulgrave River Crossing Gordonvale; Cardwell foreshore upgrade; Northern Peninsula area regional council Bamaga and Injinoo subdivisions; RMS engineering and construction, Kennedy Highway; and Colpo constructions Captain Cook Highway.

For more information contact ECOVEG Pty Ltd, T/A Ecoveg, PO Box 865, Gordonvale, QLD 4865, phone Rob 0429 778 558 or Mark 0409 806 855, website www.ecoveg.com.au



BEST PRACTICE VEGETATION MANAGEMENT

The crew from Corcoran Vegetation (CV) go to great lengths to ensure the work sites and roads at the Cairns Bruce Highway Upgrade are shipshape, often commencing shifts at 2am to sweep away all the dirt, stones and waste which are caused by construction activities and vehicle traffic.

Since July 2012, they have been responsible for both the sweeping contract and for mowing the sides of the road and median strips on a regular basis, maintaining strict management of safety and environmental controls during the course of their work.

Up to four of their operators and plant including road sweeper, slasher and front mount have been used on the project, with works occurring both on call-outs for specific needs and on a daily schedule for routine maintenance activities. All of the staff on the project hold White Cards, and underwent a project-specific safety induction with BMD. The experience of the company's operators and the company's comprehensive work methodology ensured all works were completed efficiently and without incident.

"We have enjoyed working on this project. It has been well run, and the BMD staff have been very easy to get on with, both on site and in the office," said a Corcoran Vegetation Spokesman.

CV have a strong commitment to responsible operation and a detailed Environmental Management Plan, which includes the use of a portable wash down system to ensure noxious weeds are not spread by company equipment.

The company's plant includes Massey Ferguson Tractor and Side Boom Mower and Tractor and EHD Slasher; Iseki Front Mount Mower; John Deere Tractor and EHD Slasher and Front Bucket; Mitsubishi 2 Tonne Dropside Truck; Nissan 4.5 tonne Tilt Tray Truck; Schmidt Street Sweepers; and Isuzu Road Sweeper.

For 29 years CV have been providing professional, cost-effective vegetation management services to local Councils, construction companies, Queensland Rail, Roadtek, Aurizon and a range of State and Local Government authorities. Their ongoing projects include some of the largest road and rail transport corridors around Cairns, with excellent client relationships and the company's demonstrated ability to meet all statutory requirements and work within client frameworks ensuring CV is truly a flourishing business.

For more information contact Corcoran Vegetation Pty Ltd, P.O.Box 360, Manunda, QLD 4870, phone 07 4045 3600, mobile 0418 770 221, fax 07 4045 3611, email corcoranvegetation@bigpond.com