

# Kempsey Shire Bridge Replacement

## Design & Construct McIntyre's and Schmidt's Bridges



## Precast bridges for Bellbrook's future

On New South Wales' mid-north coast, road users will have access to safer and more reliable travel as ageing timber bridges are upgraded as part of Kempsey Shire Council's \$2.2 million Bridge Replacement Program.

Providing safe and direct passage, bridges are essential for economic activity and it is therefore vital to ensure they are constructed with sustainable building materials and maintained in a safe condition.

The Bridge Replacement Program includes the substitution of McIntyre's Bridge and Schmidt's Bridge in the village of Bellbrook. Here, the two worsening timber bridges have both been replaced with a precast concrete solution. Spanning over the Nulla Nulla Creek, both precast bridges are 30-metres long and provide a single lane travel.

National Precast member, Waeger Precast, designed, manufactured, and installed a range of precast elements for McIntyre's Bridge and Schmidt's Bridge.

### FAST CONSTRUCTION SAVES TWO MONTHS' TIME

Waeger's Manager – Bridges, Chris Purcell, says the project's tight timeline demanded a construction method that allowed for simultaneous operations on and off site. The solution, therefore, was a modular precast design that minimised on-site construction.

"Using precast construction allowed McIntyre's Bridge to be completed approximately four weeks earlier than conventional construction methods," Mr Purcell reveals.

"In turn, Schmidt's bridge was also able to be complete about four weeks faster than conventional bridge construction techniques, saving a total of eight weeks off the construction time."

As well, the short timeframe between the completion of each bridge meant the roadwork crews could continue from one bridge, directly to the next without the need to demobilise then remobilise to site.

#### Precaster

Waeger Precast

#### Location

Bellbrook, NSW

#### Client

Kempsey Shire Council

#### Builder

Waeger Bridges

#### Engineer

Bridge Design

[www.nationalprecast.com.au](http://www.nationalprecast.com.au)





## MANUFACTURING THE ELEMENTS

13 abutment retaining wall panels were manufactured for McIntyre's Bridge and 16 of the same specifications were manufactured for Schmidt's Bridge. Reaching one-metre high and up to six-metres long, all panels adopted a Class 2, off-form finish on the visible face and are a tapered shape to match adjacent roadwork batters.

Civil elements included deck units and headstocks. "Spanning 15-metres long, the Waeger Decks were manufactured in special tapered rebates to achieve structural grouted connections between decks and between precast and insitu substructure members," Mr Purcell explains.

"The shape of these connections allows fast construction sequencing due to the mechanical interlock shear profile, rather than reliance on chemical bonds. The deck system can be trafficable for vehicle loading as little as one day after installation of the precast."

Here, four decks have been installed for each bridge, with two per span forming a five-metre wide, 30-metre long bridge. The headstock beams are conventionally reinforced and are 0.75-metres wide by up to 4.5-metres long.

## PRESERVING THE NATURAL SURROUNDS

Named after the large number of Bellbirds that inhabit the dense scrub along the Nulla Nulla Creek, Bellbrook is a heritage village located on the traditional lands of the Dunghutti indigenous people.

With the bridges located in a sensitive natural environment along the Creek, access to the sites was difficult.

"Works were planned around having minimal disturbance to the surrounding trees, but most importantly, without disturbing the natural creek bed levels and flows," Mr Purcell says.



The Bridge Replacement Program is part of the Council's 10 Year Works Program 2017 – 2027 and includes the replacement of 94 timber bridges. Timber bridges constituted 73% of the Council's bridge assets before the program began, with 28% of those being identified in poor condition. It is projected that over the next 25 years all timber bridges will have been replaced with concrete/composite structures or reinforced concrete box culverts.

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