

Bridge building fact sheet

Coffs Harbour bypass

February 2024



Transport for NSW acknowledges the Gumbaynggirr people as the Traditional Custodians of the lands on which we work and pays respect to Elders past and present.

The Australian and NSW Governments are funding the \$2.2 billion, 14-kilometre Coffs Harbour bypass project. The bypass will boost the regional economy and improve connectivity, road transport efficiency and safety for all local and interstate motorists.

There are 17 bridges being built as part of the Coffs Harbour bypass. This includes six overpass bridges, four bridges over local roads, five creek and floodplain crossings, one bridge over the North Coast railway near Shephards Lane, and one pedestrian footbridge connecting to the new Korora Bus Interchange.

The new bridges will provide safe local access for the community, including pedestrians and cyclists, and better outcomes for fauna connectivity and flood resilience in the region. Bridges also contribute to the visual amenity of a place and are used as landmarks to provide for placemaking and wayfinding.

The bridges at the Englands Road and Korora Hill interchanges have been designed to create a visual gateway experience for motorists entering and exiting Coffs Harbour. Construction of these bridges is being prioritised to facilitate future traffic changes and minimise impacts to motorists.

Bridge design

All bridges are being built to meet the Transport for NSW (Transport) technical standards for safety and design, and to integrate with the local surroundings. These standards include:

- Consideration of future traffic flow
- An estimated 100 year life span
- Drainage structures to cope with design flood events
- Consistent approach to design.



Artist impression of the Shephards Lane bridge (right) and the bridge over the North Coast Rail Line



17 bridges being built as part of the bypass



The new bridges built as part of the Coffs Harbour bypass will be similar to other bridges along the Pacific Highway. Materials, colours and landscaping around the bridges will be sympathetic to the surrounding environment. Ongoing maintenance and fauna connectivity are also considered and included in the design.

Some of the design measures we have adopted to reduce potential environmental impacts include:

- Reducing the number of bridges across Coffs Creek near the Coramba Road Interchange from four to two which will reduce potential construction impacts on the waterway
- Managing the Giant Barred Frog habitat by building a new bridge across Newports Creek
- Reconfiguring culverts and bridges north of North Boambee Road to address potential flooding and minimise hydrological changes that may affect the Coastal Petaltail Dragonfly.

Key construction activities

Bridge construction will be completed in stages. Our bridges range in length from about 20 metres to 230 metres. In total, we are building 272 piles for our bridge structures. These will be bored (drilled) rather than hammered, reducing noise and vibration impacts for nearby residents. The majority of our bridges are single-span, with precast Super T girders forming the base of the bridge deck and consistent circular piers. Key construction activities for building our bridges include:

- Establishing the site and installing temporary access roads across waterways
- Building the substructure – including bored piles, abutments, columns and headstocks
- Building the superstructure – including girders, deck, pavement, parapets and any barriers or noise walls
- Demolishing existing bridges – including the Luke Bowen Footbridge and the northbound carriageway bridge over Pine Brush Creek.



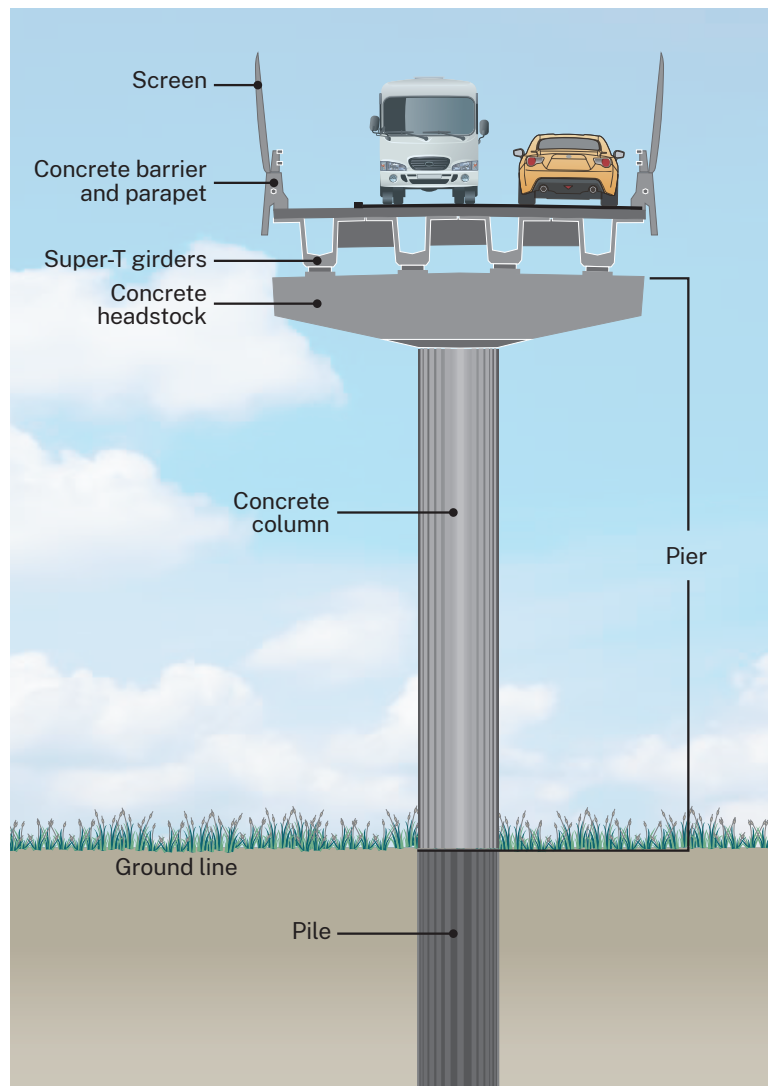
Reducing the number of bridges across Coffs Creek will reduce potential construction impacts

We're using an on-site batch plant to minimise heavy vehicles on local roads

Concrete for bridges will come from the project's temporary concrete batch plant on Englands Road, North Boambee.

Concrete deliveries will be via approved routes and along the alignment where possible to minimise the number of heavy vehicles on local roads.

For quality reasons, our concrete elements require a continuous concrete pour and this may need to be completed earlier or later in the day for optimum temperature conditions. This means we may be required batch and pour concrete outside of approved construction hours at times. Read our concrete batch plant fact sheet at pacifichighway.nsw.gov.au/coffsharbourbypass for more information.



Cross section of bridge components



Construction stages

Site establishment

Site establishment involves setting up additional safety measures and environmental controls to ensure we meet the Minister's Conditions of Approval (MCoA) and Environmental Protection License (EPL) as well as other legislative requirements. During this stage, activities include:

- Geotechnical investigations and testing to understand the underlying geology
- Building pads to create a strong and stable surface for our cranes and piling rigs to work on
- Building temporary access roads across waterways and access platforms.

Construction of the bridge substructure

The substructure is the lower part of the bridge and is built first. It provides support for the superstructure and distributes the load evenly into the ground foundation. It features the more "vertical" bridge elements including the piles, columns, headstocks, and abutments.

- 1. Piling:** is the first major stage of bridge building and involves drilling into the ground, placing steel reinforcement and pouring concrete into the hole. We try to pour the concrete on the same day the hole is drilled to reduce the risk of the hole collapsing. Read our bored piling factsheet at pacifichighway.nsw.gov.au/coffsharbourbypass for more information.

- 2. Columns:** are built on top of the piles and are the poles you can see coming up from the ground. Steel reinforcement is placed inside a temporary tube that gets filled with concrete. The tube is removed once the concrete has set.

- 3. Headstocks:** for our multispan bridges we will have headstocks placed on top of the columns. To build the headstock we install temporary supports and a working platform before preparing the timber formwork, installing steel reinforcement and pouring the concrete.

- 4. Abutments:** these are the supports at either end of the bridge and essentially function as the first and last headstock for the bridge. They provide the transition from road to bridge and are generally made from concrete and built from within the ground environment.

Rubber bearings will be installed between the substructure and superstructure to provide flexibility and facilitate a small amount of movement between the structural elements.

We also have retaining walls incorporated into some of our bridge structures. These retaining walls are used to hold in the dirt / fill of the embankment where we do not have space for a typical batter. The retaining walls for bridges will generally be made from precast concrete panels with steel straps that provide reinforcement back into the dirt.



We're pouring about 19,000 cubic metres of concrete to build our bridge elements



Steel reinforcement and temporary tubes in place for column construction at Korora Hill Interchange





Artist impression of the retaining wall connecting to the Old Coast Road underpass

Bridge superstructure

The superstructure is the top part of the bridge which absorbs and transfers the weight of the traffic. The superstructure features the more “horizontal” bridge elements including the girders, deck, pavement, parapets and barriers.

- 1. Girders:** are concrete planks that support the base of the bridge deck. Our girders are being made in a precast yard with pre-stressed steel and concrete. Onsite, they are lifted into position with a crane.
- 2. Deck:** the deck forms the base of the bridge and is the foundation for the road pavement to sit on. The team will install timber formwork and steel reinforcement before pouring the concrete.
- 3. Pavement:** the entire bypass alignment will be paved with low-noise asphalt. The asphalt will be made at a temporary mobile batch plant and delivered to site by trucks. An asphalt paving machine and rollers will be used to spread and compact the pavement.
- 4. Parapets:** are barriers installed along the edge of the bridge, providing protection for vehicles and pedestrians. They may be topped with additional barriers, screens or noise walls for additional height protection.

The super-T girders and other pre-made concrete elements will be delivered from our precast yard via the Pacific Highway on oversize over-mass trucks with an escort convoy where required. During peak construction, we expect up to five super-T girder deliveries per day. Ideally, each element will be lifted in place on the same day it is delivered to avoid storing the elements on site where possible.

New Luke Bowen pedestrian bridge

The new Luke Bowen pedestrian bridge is the only steel truss bridge being built as part of the bypass. It provides a pedestrian and cyclist connection between Old Coast Road and the extension of Solitary Islands Way, including the new Korora Bus Interchange.

The main span will be made from two 30 metre truss segments which will be built near Newcastle and transported via the Pacific Highway to site where they will be stitched together. We will need to temporarily close the Pacific Highway for about three hours during the night to safely lift the truss into position over the highway. The ramps on the eastern and western sides of the bridge will also be made offsite and delivered.



The new Luke Bowen pedestrian bridge provides a shared user connection across the highway





Artist impression of the Luke Bowen pedestrian bridge

What to expect during construction

Construction on bridges started in September 2023 and will continue through to 2026. As with any major construction activity, there will be some noise, vibration, and dust generated, as well as temporary changes to traffic, and pedestrian and cycling access. We will continue to provide information in advance on planned activities and will work to minimise impacts as much as possible. This includes monitoring noise, vibration and air quality to ensure we are complying with the EPL and MCoA.

Approved construction hours

Bridge building activities will generally be carried out during approved construction hours, with the exception of some concrete batching and pouring. Our approved construction hours are:

- Monday to Friday between 7am and 6pm
- Saturday between 8am and 1pm.

For more information

For more information about our construction activities read our factsheets and newsletters available online at: pacifichighway.nsw.gov.au/coffsharbourbypass.

For any enquiries or complaints, please contact the project team:



Project information and 24-hour enquiries and complaints response line
1800 550 621



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[pacifichighway.nsw.gov.au/
coffsharbourbypass](https://pacifichighway.nsw.gov.au/coffsharbourbypass)



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