

Mandurah Estuary Bridge Duplication



The Mandurah Estuary Duplication Bridge is a segmental incremental post-tensioned launch bridge. The new bridge will be cast and launched from the eastern foreshore (Dudley Park side), across the estuary to the western foreshore (Erskine/Halls Head side).

Bridge construction

What are we building?

The Mandurah Estuary Bridge Duplication project involves building a new 380m long two-lane bridge to provide additional traffic lanes and a new four-metre-wide shared path to help the local community better access recreational activities. A new accessible fishing platform will also be provided close to the eastern foreshore. The bridge is being constructed on the south side of the current bridge. All seven piers for the new bridge will be built in line with the piers of the current bridge.

Works will take approximately two years, with the new bridge to be operating by the end of 2025.

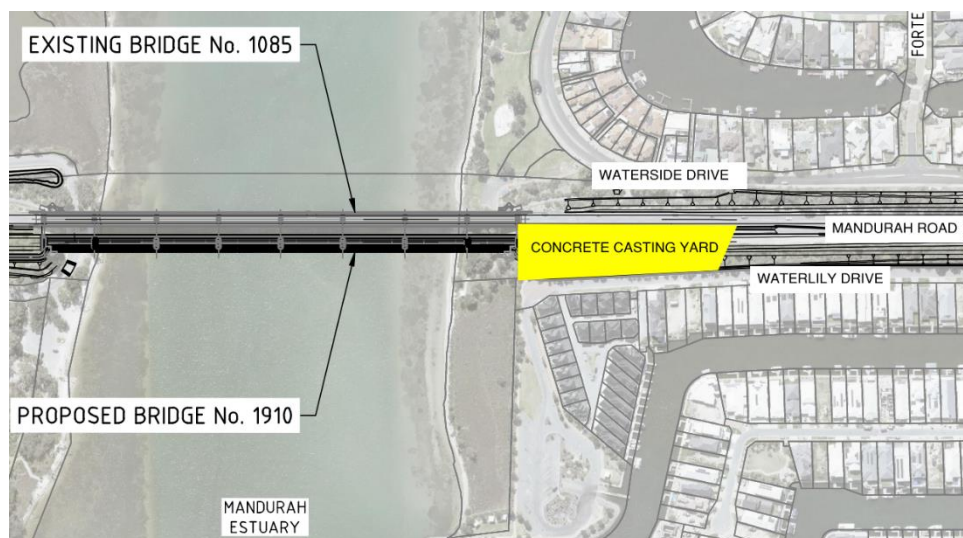
How will the bridge be built?

The new bridge will entirely be constructed in-situ with the bridge segments formed at the onsite concrete casting bed and then incrementally launched across the water from the south-east side of the existing bridge during the next 18 months.

Casting yard preloading

We have been building up the embankment on Waterlily Drive and pre-loading the area, enabling the ground to settle before construction begins. The fill will remain undisturbed for more than a month before a portion is moved

elsewhere on site to assist in construction activities. A dust suppression agent has been applied to the area. structure will be constructed before it gets launched or pushed across the Estuary. The casting area includes the casting bed where the team will form and pour (concrete) the 15 individual bridge segments. These segments are then launched from the casting yard over the estuary until the bridge section has reached the abutment near the eastern foreshore.



**Indicative location*

Construction of working pads

Temporary working pads are being constructed on the bank of the estuary, one on each side, to provide a base from which to build the piers for the new bridge.

Before works start in the estuary for the working pad construction, a silt curtain will be installed around the working pads to contain any silt/sediment disturbed during construction.

The working pads are temporary earth structures that help with the construction of the piers in shallow water. The working pad on the eastern foreshore will be built first, taking approximately four weeks. Access to the foreshore area under the bridge will be closed from late April and will remain closed for the duration of the project.

Casting bed construction

The specially constructed casting bed will be located on the southeast side of the estuary.

The earthworks involve excavating the ground to a lower level, pouring a concrete foundation for the casting bed, constructing crane pads and installing temporary formwork.

From here, the bridge segments will be incrementally launched across the estuary towards the western side.



Example of a casting bed next to residential properties

Piling for land piers and abutments east and west

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Pile caps and piers

Starting from the eastern land-based pier, we will form and pour the pile caps. The pile caps connect the pile group together and provide the foundation for the pier columns which support each bridge segment.

To pour the piers, steel reinforcement is placed on top of the pile caps, followed by surrounding formwork. Concrete will then be poured into the formwork. After each pier is constructed, the formwork will be moved to the next pier and the process repeated.

To assist in the construction of the piers and bridge launching, a floating platform will be established for the construction team to easily move between piers 2 and 4, and piers 5 and 6.

Marine vessels will be present within the estuary for these works; however, the navigational channel will remain open.

Piling for marine piers

For approximately 15 weeks, piling will continue for the five piers which will sit in the estuary. A piling rig will be set up on a barge in the estuary to hammer-drive six large steel-cased piles for each pier into the estuary to a depth up to 40m.

The barge will start on the eastern side (pier 2) and drive each of the 6 pile casings per pier. Precast shells for the pile caps are also intended to be lifted in during this stage. Piling for the new fishing platform will also start around this time.

Incremental launch of bridge segments

The new bridge comprises 15 segments which will be constructed on site at the casting bed and incrementally launched across the estuary from the eastern embankment.

Concrete pours for the segments will happen in the morning, sometimes as early as 3am. Concrete pours must be done during cooler temperatures to ensure strength and integrity of the structure.

The launch nose is a steel structure which will support and guide the bridge segments as they are extended across the estuary. It will be removed at the end of the process once it reaches the western side of the estuary. A launch will be completed approximately every three weeks and will reach up to 28m across the estuary.

Once a launch is completed the construction of the next segment begins.



Example of a launch nose.

How will the works impact the estuary?

The protection of dolphins and other marine life is a high priority for the project, so we have engaged marine mammal observers for piling works and construction activities. Heritage monitors will also monitor works on

What's next?

Once the bridge is launched the working pads will be removed from the estuary. Finishing works include placement of fill and pavement to tie in the road with the new bridge, application of asphalt and the connection of the new pedestrian shared path.

Mandurah Traffic Bridge

Mandurah Traffic Bridge is an example of a bridge that was incrementally launched. A time-lapse video of the construction can be viewed here: www.youtube.com/watch?v=pliD-KmZGs

How can I get more information?

If you have any questions or concerns, or would like to subscribe to updates, please do not hesitate to contact us.

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