Transport for NSW

Fact sheet – tunnel boring machine

Western Harbour Tunnel

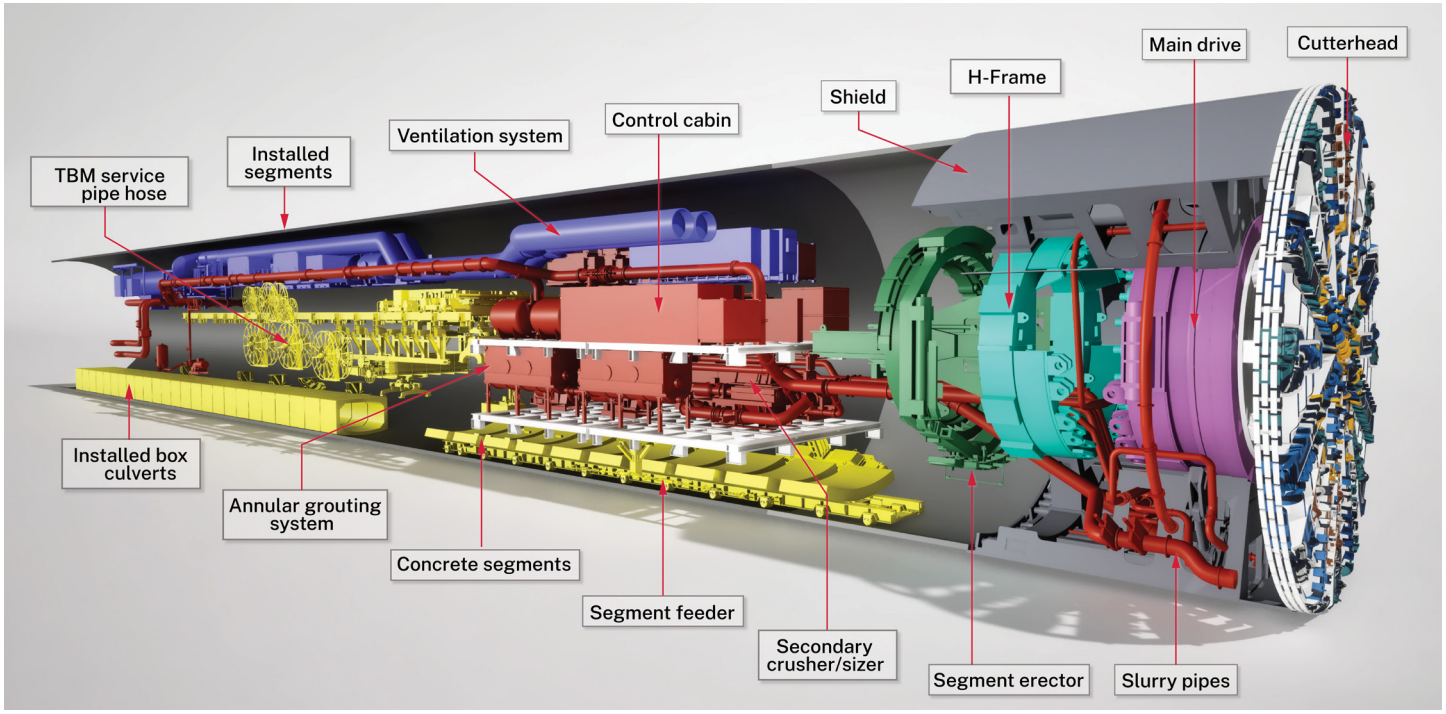
March 2026

We acknowledge the Traditional Custodians of the Country on which Western Harbour Tunnel is being constructed, including the Gadigal, Cammeraygal, and Wangal peoples, as well as the Aboriginal peoples of Emu Plains, and we pay respect to Elders past and present.

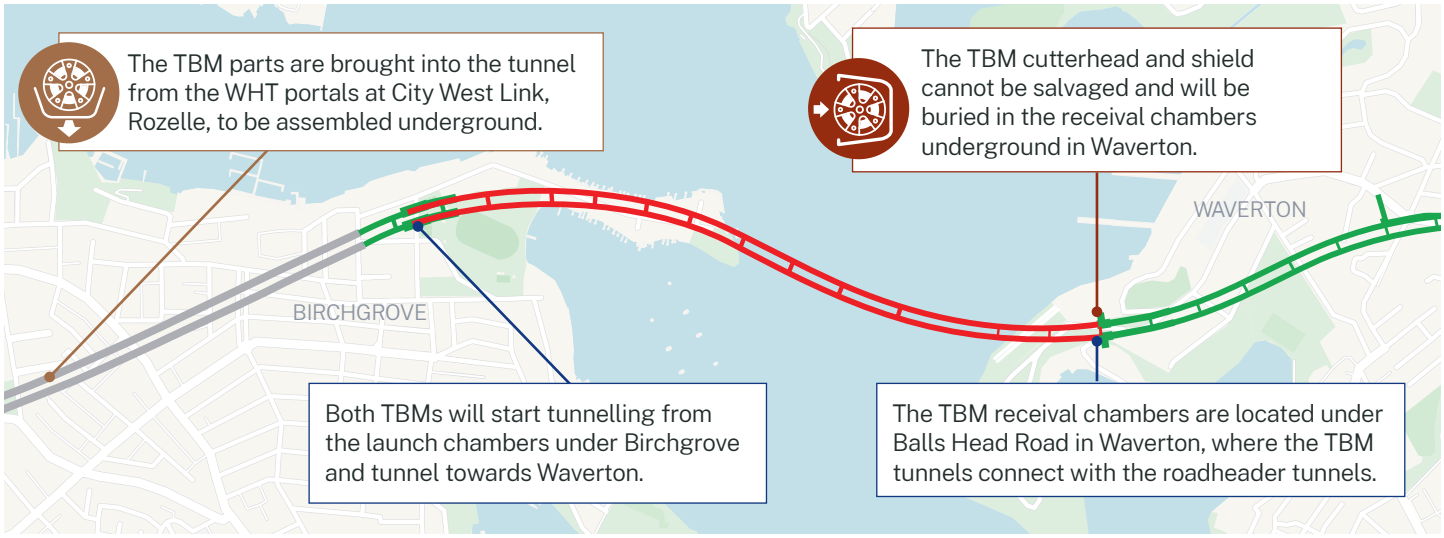
Western Harbour Tunnel is a major transport infrastructure project that will make it easier, faster and safer to get around Sydney.

Why are we using tunnel boring machines (TBMs)?

TBMs are used worldwide and in NSW as a safe and effective tunnelling solution. For the Western Harbour Tunnel (WHT) project, using TBMs significantly reduces the impacts of our work by allowing tunnelling to be carried out completely underground. This removes the need for construction sites and cofferdams at Birchgrove and Waverton and avoids the need for dredging in Sydney Harbour. Two custom designed TBMs, Patyegarang and Barangaroo, will build the twin tunnels. At roughly 16 metres in diameter and weighing 4,350 to 4,400 tonnes, they will be among the largest TBMs in the world. These mix shield or slurry TBMs use the latest tunnelling technology and are best suited to tunnel through the mixed ground conditions beneath Sydney Harbour.



Inside the Western Harbour Tunnel TBM.



How does the TBM work?

Each TBM has a large rotating cutterhead at the front that excavates through the ground. Hydraulic arms then push the machine forward. A trained team operates the TBM from inside the machine while it excavates the tunnels underground. As the TBM tunnels, precast concrete segments are installed immediately behind the cutterhead to form the tunnel floor, ceiling and walls. The excavated material (spoil) created by the cutterhead is mixed with slurry and transported through a pipe to an underground slurry treatment plant. Water is removed from the spoil and it can then be loaded onto trucks and taken off site to be reused or repurposed for other construction related activities.

Where do the TBMs start tunnelling from?

The TBMs are assembled in dedicated launch chambers underground in Birchgrove. No additional surface construction sites are required for the TBMs. Each piece of the machine is transported to the WHT portals at the Rozelle Interchange, and driven to the underground chamber for assembly. Once fully assembled and tested, the TBMs will start tunnelling north beneath Sydney Harbour. The TBMs will move forward by around 11 metres per day and take roughly 10 months to reach the receival chambers in Waverton.

Fun facts

Why is the TBM named?

Naming the TBM prior to starting excavation is traditionally done for good luck on the project ahead. Our TBMs are named Patyegarang and Barangaroo after prominent Aboriginal women in the history of Sydney Harbour.

Why is the TBM a she?

Providing the TBM with a female name dates back to the 1500s when miners and other people working underground looked to Saint Barbara for protection. Saint Barbara is the patron saint of miners and tunnellers.

Contact us

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