



TBM Kathleen makes history, completing twin metro tunnels beneath Sydney Harbour

History making under-harbour metro tunnels complete

Tunnelling on Australia's biggest public transport project, the Sydney Metro City & Southwest, is now complete after specialised tunnel boring machine (TBM) Kathleen completed twin railway tunnels deep beneath Sydney Harbour.

The TBM's history-making arrival at Blues Point comes just months after TBM Mum Shirl broke through at her final destination at Barangaroo in January after tunnelling deep beneath the Sydney CBD.

It took two months to build the second tunnel – one month faster than the first, due to lessons learned like modifying the giant cutter head and tunnelling process to better deal with the hard clay material at the bottom of the harbour.

The specialised under-harbour machine completed the first of the twin tunnels in October last year, before being retrieved from Blues Point and sent back to Barangaroo, reassembled and re-launched in January to carve out the second tunnel.

Approximately 174,800 tonnes of sandstone, clay and marine sediments were removed to build the tunnels. The tunnels are approximately 40 metres below ground at their deepest point.

A large gantry crane inside the acoustic shed at Blues Point will now be used to lift out each of the TBM's pieces. TBM Kathleen will then be sent back to the manufacturer for future tunnelling projects.

Sydney Metro is Australia's biggest public transport project. It will transform Sydney, delivering more trains and faster services for customers across the network.

Sydney Metro City & Southwest extends the new metro network from the end of Sydney Metro Northwest at Chatswood, under Sydney Harbour, through the CBD, and west to Bankstown.

John Holland CPB Ghella (JHCPBG) is building the 15.5 kilometre long twin railway tunnels between Chatswood and Sydenham and excavating six new metro stations.

Three-month look ahead

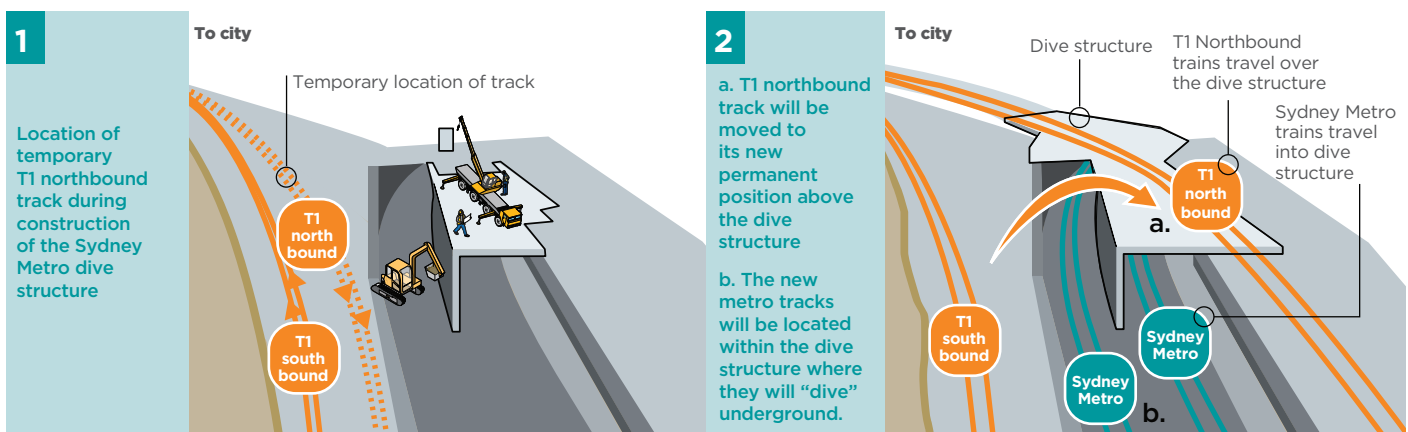
Activity (subject to change)	March	April	May
Excavation and support of embankment in the rail corridor	●		
Removal of some site structures	●		
Piling support for dive structure in rail corridor	●	●	●
Installation of stormwater drains and construction of Berkeley Court cul-de-sac	●	●	●
Delivery and removal of site materials	●	●	●
Construction of concrete capping beams		●	●
Construction of permanent drainage systems	●	●	●

Rail corridor work

Tunnelling contractor John Holland CPB Ghella (JHCPBG) is preparing to begin piling in the existing rail corridor between Mowbray Road bridge and Gordon Avenue. This will connect to the dive structure within the Chatswood site, allowing future metro trains to 'dive underground'.

Once the dive structure is complete, Sydney Metro trains will travel into the dive structure and underground, while T1 Northbound trains will travel over the dive structure. Piling activities will include excavation, installation of piles, pile trimming, concrete pouring and hammering. During construction of the structure, truck movements will continue to deliver materials and pour concrete. Trucks will also remove excavated materials from site.

The infographic below shows the temporary T1 northbound track location while the future metro dive structure is constructed and the relocation of the T1 northbound line over the top of the dive structure once complete.



Northern TBM retrieval complete

After completing the northern section of tunnelling from Chatswood to Blues Point late last year, both tunnel boring machines (TBMs) Wendy and Mabel have now been retrieved from the Blues Point temporary retrieval shaft and loaded onto a ship back to the manufacturer.

A large gantry crane inside the acoustic shed at Blues Point was used to lift each tunnel borer's cutterhead and two front shields about 30 metres up to the surface.

Each cutterhead consists of 38 cutters, which were changed regularly during periods of maintenance while the machine was boring.

Meanwhile, retrieval of the southern TBMs is also underway at Barangaroo after Nancy and Mum Shirl completed tunnelling in December and January respectively. A 330-tonne tower crane is being used to lift both tunnel borers out in pieces.

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