

METRO UNDER MITHI RIVER TO BE INDIA'S 3RD UNDERWATER TUNNEL

Pics: Sanjay Hadkar

Work on three Metro tunnels 22 m below Mithi River is set to begin by the month-end. Two of the tunnels will be for normal Metro train movement, while one will be for reversal and parking. Different technologies are being used for the twin-tunnel set and the reversal tunnel. This will be only the third set of underwater Metro tunnels in the country, reports **Manthan K Mehta**



DEADLINE
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THE TECH

TBM | Earth Pressure Balance Tunnel Boring Machines, meant for operation in soft ground conditions, will be used for the twin tunnels (normal train movement)

NATM | New Austrian Tunneling Method will be used to bore the reversal tunnel. NATM is an advanced method where a tunnel is sequentially excavated and supported, factoring in specific rock conditions with the help of sensitive equipment

NATIONAL PIONEERS

Tunnel under Hooghly | Finished in mid-2017, the 520-metre twin underwater tunnel lies 30 metres below the riverbed. For **Kolkata Metro** commuters, the journey through the Hooghly section lasts about a minute

Tunnel under Cooum | When **Chennai Metro's** largest underground station at Central gets operational, trains will plunge into the dark depths of the city and dart under the fabled Cooum river at a depth of nearly 30 metres



1.2 km | Section of tunnel below marshy terrain and under water

1.8 km | Distance between BKC and Dharavi Metro stations

CHALLENGES OF UNDERWATER TUNNELLING

Ground behaviour | Presence of a waterbody affects the ground under it in unpredictable ways. This is despite prior knowledge of soil and rock composition

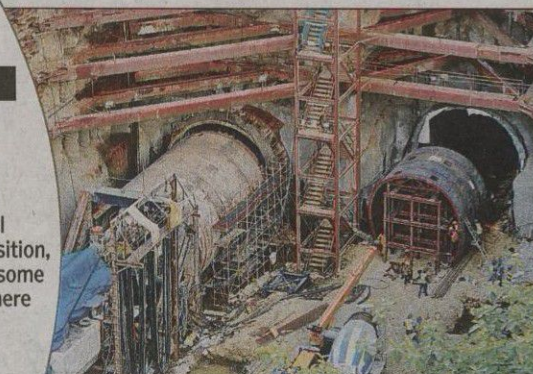


Possibility of leakage | Unlike underground tunnelling, underwater boring must consider the possibility of sudden leakages



Mithi-specific problems | The soil under Mithi is of uneven composition, comprising fragmented basalt—some angular and some weathered. There are also weak points where the composition is silty or gravelly

A COMPLICATED METRO SECTION | There will be two stabling lines at BKC station. One at the south of the station, passing under Mithi River, and the other to the north, beyond the river. Since BKC will be a reversal station, the stabling lines or sidings will facilitate train reversals during hours of operation and for parking during non-operation hours



“ We need to overcome a combination of water and broken rock, to be faced once tunnelling starts **SK Gupta** | DIRECTOR (PROJECTS), MMRC

COLABA BANDRA SEEPZ METRO

Length
33.5km
underground

Stations
27, of which **26** will be underground

Cost
₹23,136cr

Deadline
Dec 2021

Expected daily ridership
13 lakh