



MMRC

ADDING NEW DIMENSIONS

METRO CUBE

A MUMBAI METRO RAIL CORPORATION NEWSLETTER

MD Speaks

Ms. Ashwini Bhide, IAS

We are happy to inform all our readers that the Hon'ble Bombay High Court considered MMRC appeal and vacated the stay on Piling/drilling and tunneling work in front of J.N. Petit Institute, D N Road. Hon'ble High Court also gave respite to project implementation by allowing muck/construction debris up to 12 am (Mid-night). This will surely accelerate construction activities in South Mumbai. Though Hon'ble High Court order is specific to Cuff parade station, project activities elsewhere are being hindered by residents and activist by referring to the same. MMRC appeals for cooperation of local residents in early completion of project. Despite these hurdles, the civil works have now reached a steady progress stage on all fronts; 2 more TBMs (6 out of 17 nos) have arrived in Mumbai, tunneling activity has commenced from Naya Nagar, that will be followed by tunneling at Azad Maidan. Construction activity has started at all Under-ground stations except Kalbadevi. Some communities raised concerns about the Metro 3 construction close to their religious structures, which being addressed by MMRC sensitively and seeking their cooperation in moving forward.

Govt. of Maharashtra has approved the proposal of change of land-use for 33 ha. land at Village Prajapur in K-East ward as Metro Car depot and allied uses; as part of Sanctioned Development Plan 2034. This approval has been granted with a condition to mitigate environmental impact (if any). With this, we hope that all arguments about legality of Depot works at Aarey would be settle and MMRC will now be allowed to implement the project focused way.

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MD Speaks

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Further 554 Sq.m. municipal school land at Tardeo reserved for construction of Grant Road Metro Station has also been handed over by MCGM. The compensation committee has also started finalizing the awards for Private Lands to be acquired (through negotiations). Awards for 3 parcels were passed and lands are being taken over for project works. These outcomes are the results of persistent efforts by our planning and lands teams.

Proposal for JICA second Tranche has been taken up by the Govt. of Japan and JICA fact finding/appraisal mission has recently visited Mumbai and project progress and fund requirement. JICA mission has conveyed their overall satisfaction and confirmed that the second tranche loan processing will be completed by March 2018.

We are looking forward the arrival of bulk of TBMs and start of Tunneling in remaining 3 launching sites before end of the calendar year 2017. We also expecting full cooperation from Citizens and authorities to fast track the implementation to the extent possible.

Controlled Blasting

The excavation of soil or rock for station and tunnel construction works can be done either by TBMs or by blasting the unit quantity of rock. If the rock is very hard and abrasive in nature, the mechanized excavation takes longer time due to increase in the down time for replacement of cutting tools and parts in the machines. Hence, to conserve the time required for tunnelling, controlled blasting methods are preferred over conventional mechanized method of excavation. Choice of the excavation methods i.e. blasting and mechanized tunneling using Tunnel Boring Machines (TBMs) depends on various factors like route length, nature of the rock mass, economic framework and construction period. Controlled blasting can be carried out only after receiving statutory permissions, such as -

- **Police department NOC** - after scrutiny of safety and security of the premises.
- **Permission from Petroleum and Explosives Safety Organization (PESO) {formerly known as Department of explosives}** obtained on verification of the credentials of the company executing the blasting operations.

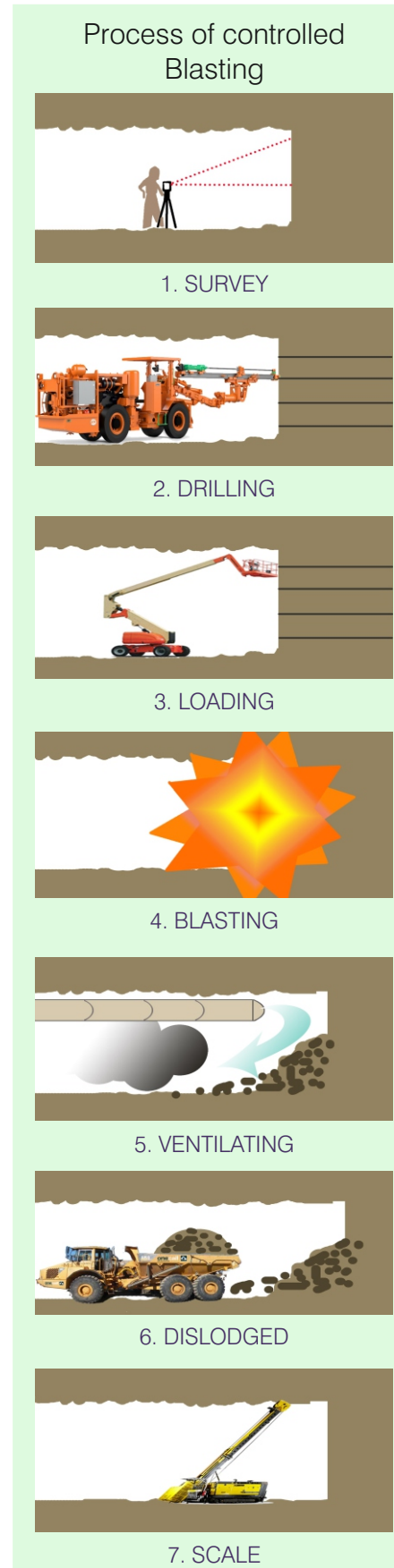
Transfer of explosion energy to the rock is a function of both the characteristics of explosives used and the characteristics of ground/rock strata. When the charge and blast diameter are almost equal, shock pressure delivered to the sides are maximum. If the charge diameter is less than blast hole diameter then this shock pressure on the sides will decrease exponentially. This principle is used in the design of blast to reduce the over-break. In controlled blasting, Muffling (process of covering blast holes properly before blasting) is carried out to prevent fly rock (debris which is ejected through air by explosive blast).

Controlled Blasting has been planned at following stations

UGC 01, 02, 06 Proposed at all stations

UGC 04 Proposed at Shitaladevi Metro Station

UGC 07 Carried out at the launching shaft (Pali Ground)



CCTV

CCTV, also known as video surveillance has emerged as an indispensable technology in modern security system. Technology Closed Circuit Television (CCTV) cameras transmit analog information through coaxial cables to a Digital Video Recorder (DVR), which further can be efficiently archived, searched and analysed. There are different types of CCTV cameras that can be tailored to fit a variety of indoor and outdoor applications.

The use of cameras based on CCTV technology has proven effective in increasing the confidence of the community in public transport and improving the protection of commuters, employees, railcars, and critical infrastructure. The CCTV system captures and records images, videos of passengers and entire Rail environment including tunnels, and is monitored both locally at each station and remotely from the OCC.

The CCTV system backbone shall be based on IP technology and shall consist of a mix of Fixed Cameras and Pan/Tilt/Zoom (PTZ) Cameras. Cameras shall be located at areas where monitoring for security, safety and crowd control purpose is necessary.

In Metro-3 all metro stations will be under CCTV surveillance with provision of monitoring in centralized security control room along with station security room and computer access to internet.

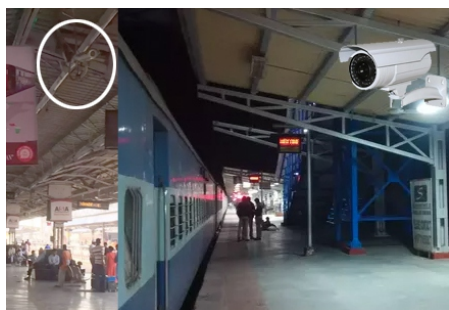
In Metro - 3 CCTV cameras are used for:

1.Security

- Monitor, identify, apprehend and prosecute offenders for criminal offences, criminal damage, public disorder, accidents and harassment.

2.Operational Assistance

- To help train operation in curved sections of platforms and tunnels
- Collect passenger and transport data to monitor and support network planning objectives and initiatives.
- Provide assistance in dispute mediation, complaint resolution, accident investigation, employee monitoring, etc.



Fixed Camera (installed in Mumbai Suburban Stations)

Fixed cameras/immovable cameras provide specific views only, generally installed at entry and exit points. After installation, fixed CCTV cameras remain affixed in one direction at all times.



PTZ Camera

PTZ Cameras/movable type of cameras are generally used to cover wider fields of views and are quite flexible in their coverage. It can provide circular view of particular area.



CCTV Surveillance

The cameras are generally installed at stations, platforms, tunnels, customer service areas lobbies, ticket vending machines, fare collection gates, warehouses and may other places.

Latest technologies

The technology available today provides operators with links to other on-vehicle devices such as brakes, electronic ticketing machines (ETMs), DVD quality images, which can be downloaded conveniently via Wireless LAN, 3G, USB or Ethernet. The digital recorder system (where the operating system is stored) has shock proof, solid state memory and stores images/videos in a separate unit to improve image retrieval and security.



Know Your Station - Acharya Atre Chowk Station



BDD Chawls



MCGM Engineering Hub



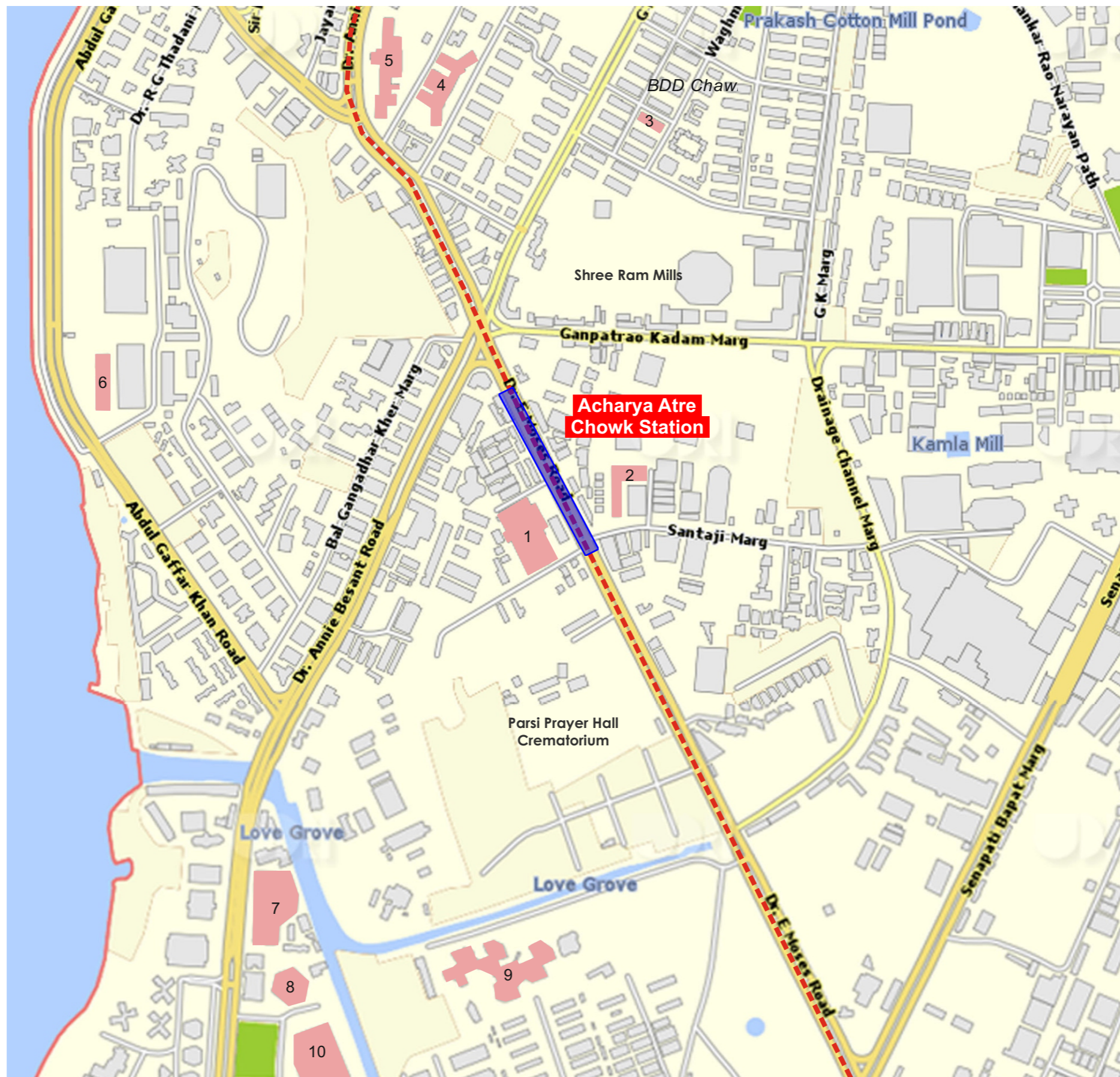
Nehru Science Centre



Podar Medical College and Hospital



High end Multistoreyed Development near Proposed Acharya Metro Station



Worli, originally was a separate island, among the 'Seven Islands of Bombay' which were ceded by the Portuguese to England in 1661. It was linked up with the other islands in the 19th Century to form the island city of Mumbai. Acharya Atre Chowk Station on Metro 3 is located at the junction of Dr E Moses Road, Dr Annie Besant Road, G M Bhole Marg and Ganaptrao Kadam Marg, popularly known as Worli Naka. The station is an entry point to Worli precinct which extends from Haji Ali to Prabhadevi in the North. Currently, Worli is accessed by Mahalaxmi, Lower Parel and Elphinstone Road Stations on Western railway and Curry Road Station on the Central Railway. With the commencement of the Metro 3, Worli area will be directly served by underground metro stations, Acharya Atre Chowk being one of them.

Worli has been one of the busiest office areas of South Mumbai since 1970, and continues to be a preferred choice of many companies to house their establishments even now. The proximity to Worli sea face adds an elegance and value to the properties located along Dr E Moses Road and Dr Annie Besant Road such as GSK Pharma, TATA motors and many more. Besides the corporate houses, Worli is characterised by the presence of Nehru Centre and Planetarium, Nehru Science Centre, Podar Medical College and Hospital, MCGM Engineering hub.

The famous BDD Chawls are located in close proximity to Acharya Atre Chowk Station and are of prime redevelopment potential in Worli. With the redevelopment of old chawl housing into apartments, Worli is also emerging as a destination of high end housing for many high-profile buyers.

- 1. MCGM Engineering Hub**
- 2. Ambe International Humane Resource**
- 3. RTO - Regional Transport Office**
- 4. Employees State Insurance Scheme (ESIS) Hospital**
- 5. Podar Medical College and Hospital**
- 6. Dairy Development Department**
- 7. Atria Mall**
- 8. Nehru Planetarium**
- 9. Nehru Science Centre**
- 10. Nehru Centre**

Baseline Environmental Monitoring Observations

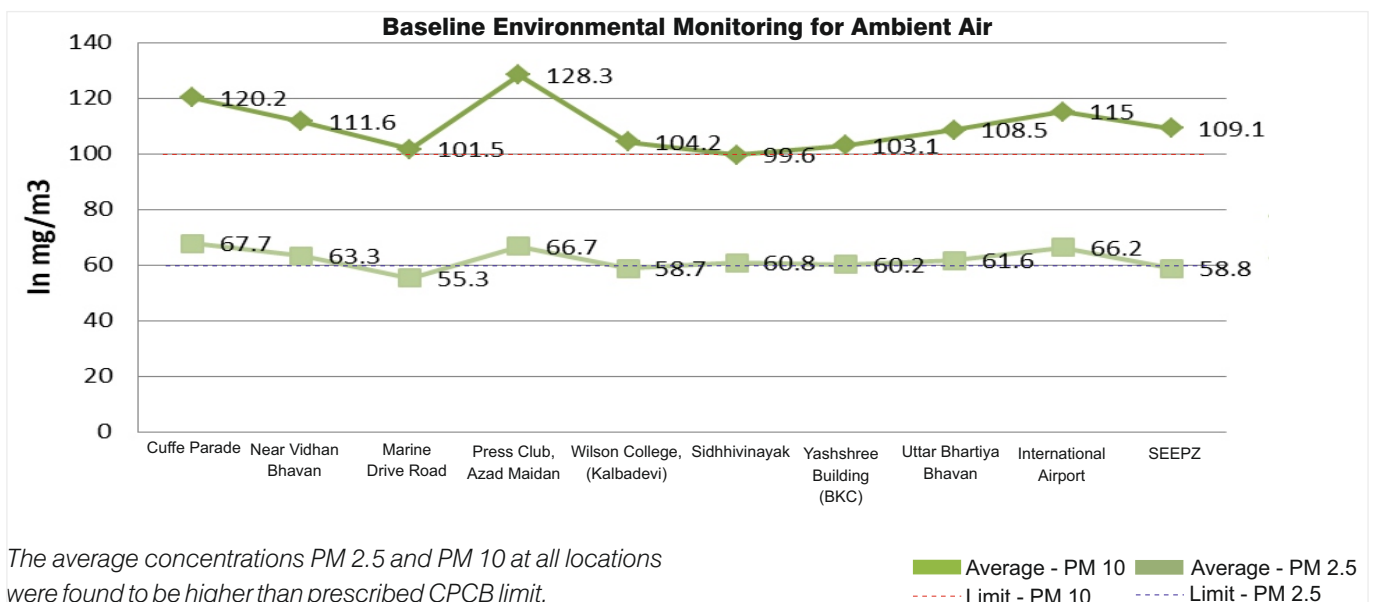
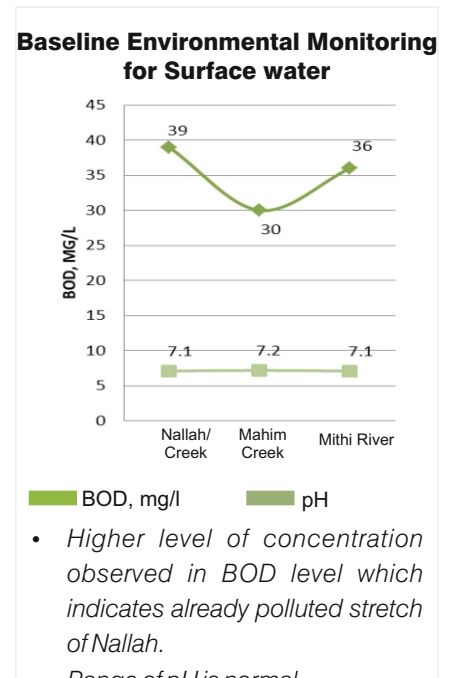
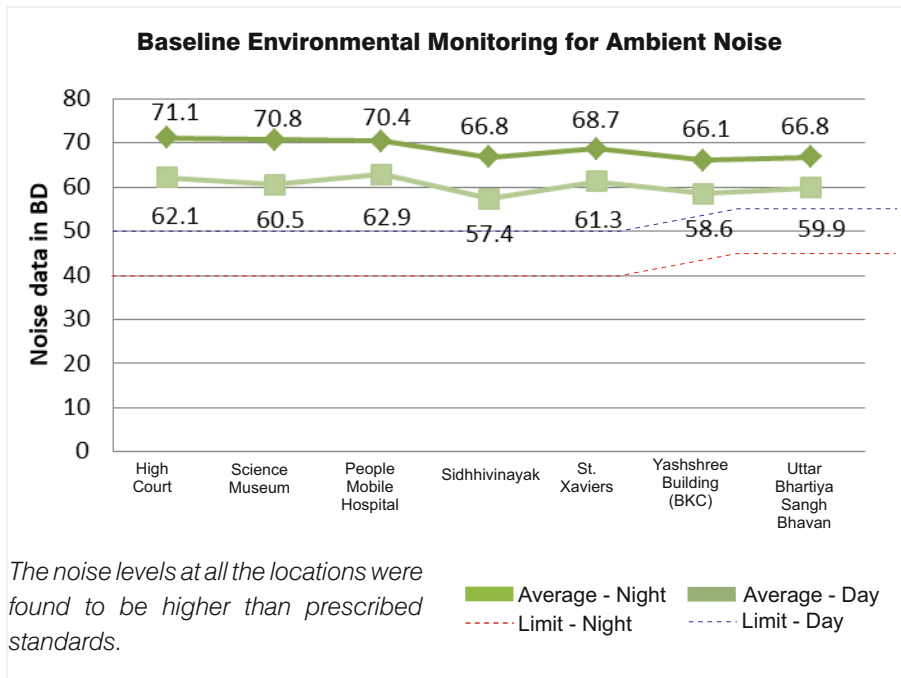
Baseline environmental monitoring provides reference and benchmark data which is useful to compare environmental conditions during construction and operational phase of the Metro-3. The observations generated are useful to predict environmental impacts of the project, which in turn results in identifying the effective mitigation measures.

The baseline environmental monitoring was carried out by MoEF&CC approved laboratory appointed by General Consultant for one season, which is from mid-November 2016 to mid-February 2017.

Baseline Environmental Monitoring has been carried out to set up baseline benchmark data for:

- Ambient air
- Ambient noise
- Surface water
- Ground water.

The baseline status of ambient air, noise and water were established at different location.



In-Situ Rehabilitation

Kalbadevi and Girgaon Station

6th and 7th underground station of Metro-3 is planned at Kalbadevi and Girgaon respectively. For construction of these two stations, approximately 19 buildings are affected consisting of around 277 residential units and over 346 commercial units. Following the initial consultation process of MMRC with the Project Affected Families (PAF), the PAFs demanded for rehabilitation close to their current premises. On consideration of the suggestions of PAFs, MMRC appointed M/s Catapult Consultants to prepare the scheme for in-situ rehabilitation action plan under the provisions of DCR 1991 33(7).

Govt. of Maharashtra accorded its approval as per the proposed Redevelopment Action Plan prepared by M/s. Catapult and necessary circular has already been issued for special exemption that are granted with the approval of State Government. MMRC has held multiple public consultation meetings to acquaint the project affected people with MMRC's rehabilitation policy. Multiple suggestions/ objections of the PAFs through letters, e-mails have been considered by MMRC in formulating the rehabilitation policy. PAFs have been provided options of rent or transit accommodation for temporary shifting at Pimpalwadi until the allocation of permanent alternate accommodation.

Following table shows various activities involved in In-Situ Rehabilitation and their current status.

Activities	Status
Negotiations with land owners of private properties for land compensations	Ongoing
MHADA surveys for cessed buildings	Out of total 15 cessed buildings, survey for 13 buildings is completed
Submission of cessed building dataset to MHADA for NOC	Out of total 15 cessed buildings, submission for 10 buildings is completed
Signing of agreements for Permanent Alternate Accommodation and handing over of premises to MMRC	11 Agreements have been executed
Integration of proposed redevelopment with above ground Metro Requirements	Architectural and PMC JV of G.D. Sambhare and Mahaimtura along with GC and MMRC Project and Planning team are working on designing process towards integrated development



Signing of Agreements with PAFs Possession of Premise from one of the PAFs

TBM Update

FAT-UGC 07

Factory Acceptance Test for High Performance Dual Mode Rock Tunnel Boring Machines (TBM) designed and manufactured by the STEC-MC, a manufacturing unit of Shanghai Tunneling Eng. was successfully completed on 14th November 2017.

MMRC, General Consultants (MAPLE) and L&T-STEC JV officials inspected the machine at STEC-MC Yard at Shanghai, China. All factory tests were conducted to the satisfaction by inspection team. Two other refurbished TBMs of STEC-MC are also ready after FAT and one has already reached the site at Pali Ground.



JICA Mission Inspection



L&T – STEC JV visited Shanghai for FAT



STEC TBM different parts received and successfully unloaded at Pali Ground



MD Site Visit

MMRC Control Room

Contact us @ 8291751545 to report monsoon related grievances pertaining to Metro-3 construction work.



Website Link

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