

CHAPTER 22

CONCLUSIONS





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22.1 Nagpur Municipal Corporation (NMC) had awarded the project titled “Preparation of Master Plan/Perspective Plan for Transportation System of Nagpur City 2031” to **L&T-Ramboll Consulting Engineers Limited in June 2007**. The study aimed to update the long-term transportation strategy for NMC and identify a practicable and effective investment programme up to 2031. Consultants commenced the study in the month of June,2007 and completed in June,2008. L&T Ramboll Consulting Engineers Limited had carried out the Comprehensive Traffic and Transportation Study and prepared Transportation Master Plan for Nagpur city commissioned by NMC. In their report, L&T-Ramboll recommended the under mentioned Metro Corridors :

- Alignment-1 : Pardi Naka to Dahegoan (24.54 km with 25 Stations).
- Alignment-2 : Automotive Square to Dahegoan (23.94 km with 24 Stations)
- Alignment-3 : Transport Plaza to Dahegoan predominantly on NH-7 (27.2 km with 26 Stations)
- Alignment-4 : Transport Plaza to Dahegoan partially on NH-7 (24.2 km with 24 Stations).

DMRC however found that the corridors recommended by L&T-Ramboll were not required in totality but some portions were kept as part of earlier recommended Metro Corridors proposed in Detailed Project Report submitted in July-2013. The corridors recommended in July DPR were namely :

- 1) North-South Corridor(21.833 km) ,
- 2) East-West Corridor (18.266 km)

22.2 FURTHER DEVELOPMENTS

On 03.08.2013, a meeting presided by Shri S K Lohia, JS-MoUD,Gol was held at Nagpur to discuss the DPR. In that meeting, JS-MoUD,Gol expressed that the FIRR of the project



should be at least 8%. Recently, MoUD has also issued advisory that FIRR of Metro Project should not be below 8%.

On 1.10.2013, a presentation on the DPR was made by M/s NIT to The Chief Minister, Government of Maharashtra. He was of the opinion to avoid underground alignment in MIHAN and also construct Maintenance Depot in the land belonging to State Govt Land. Subsequently, on 21.10.2013, a joint inspection of the NS corridor was done by VC&MD-MADC, Chairman-NIT, and Director Business Development-DMRC.

The original alignment of Corridor-I proposed was passing through Khamla Road, Airport Area after Sahakar Nagar and finally was ending at MIHAN. The alignment up to Old Airport Station was elevated, then for a length of 3.30 km, it was underground with one underground station named as New Airport Station and again elevated in MIHAN Area. Since the cost of underground section of the alignment is much more than the elevated section or the section at grade, alternative alignment was suggested for cost reduction, enhancement in PHPDT and to increase FIRR so that project becomes financially and economically viable.

The new proposed alignment suggested in the above inspection, was to pass through a 24m wide road adjacent to London Street after Sehkar Nagar Junction and was proposed to be taken to the east along 24m wide road and London Street up to Wardha Road. From the intersection at Wardha road, the elevated alignment was proposed to be on the central divider on the Wardha Road. After crossing existing intersection point of Wardha Road & Airport Road, the alignment was to be shifted to the MIHAN area. Alignment in this portion was proposed to be at grade and to run parallel to Wardha road upto ROB and abutting railway line thereafter up-to proposed Car depot.

But, while working on this modification of alignment, it was noticed that a very large number of properties were falling along the alignment due to sharp curve at the junction of Sahakar Nagar & 24 m wide road and also at the junction of 24m wide road & Wardha Road. Acquiring of these properties will be very tough and may delay the whole project.

Hence to avoid all such situation, it has been decided to take the alignment on Wardha Road only without going on Khamla Road.

Finally, NS Corridor will pass through Wardha Road after Congress Nagar Metro Station. After crossing existing intersection point of Wardha Road & Airport Road, the alignment will be shifted to the MIHAN area. Alignment in this portion will be at grade and will run parallel to Wardha road upto ROB and parallel to railway line thereafter up-to proposed Car depot. 14m wide stretch of land between the railway boundary line and the road near proposed Container Depot of Container Corporation of India Ltd. will be affected by this proposed alignment of the Metro Rail as the proposed alignment passes through this stretch of land.



73 Ha land is available on the west side of railway line and south of existing flyover near Khapari station. Average width of this land is about 80m and is about 1800m long. This MADC land may be utilized for Car Depot. Similarly, Depot of EW Corridor has also been shifted to SRP Land near proposed Lokmanya Nagar Metro Station.

This has caused deletion of few earlier proposed metro stations on NS Corridor and addition of new stations on the same.

22.3 FINAL ALIGNMENT

Final alignment for both the corridors is as below :

Table 22.1 FINAL ALIGNMENT

Alignment	Detail Route
Alignment-1 North-South Corridor (19.658 km, 17 Stations)	Automotive Square, along Kamptee Road, Wardha Road, Variety Square to Abhyankar Road, along Nag River alignment will fall on Humpyard Road, Rahate Colony Road, Wardha Road, Parallel to Railway Line, Khapri Station and finally in MIHAN Area near concor depot
Alignment-2 East – West Corridor (18.557 km, 19 Stations)	From Prajapati Nagar, along Central Avenue Road, Railway Feeder Road, Munje Chowk, Jhansi Raneer Chowk, North Ambajhari Road, Hingna Road, Lokmanya Nagar

22.4 From the 'Traffic Demand Forecast' it can be seen that peak hour peak direction trips (PHPDT) on the North South Corridor is 10089,1936,12934 and 15729 the year of 2016, 2021, 2031 and 2041 respectively. Similarly PHPDT on East West corridor in the year of 2016, 2021, 2031 and 2041 is 7746, 8460, 9906 and 11882 respectively.

Road-based systems can optimally carry up to a maximum of 8,000 PHPDT. Since the PHPDT arrived on the above corridors exceed 8,000, there can be two options namely 1) Mono Rail and 2) Light Capacity Metro. Mono rail can carry the PHPDT projected but this technology is not a tested one. The operation and maintenance cost is much higher than that of Light metro. The capital cost of Mono rail is also almost same as that of Light Metro. Even in the other countries, the Mono rail is being adopted only for small lengths and as feeder to Metro. Hence, keeping in view the above disadvantages, it is recommended to adopt an stable, tested and reliable Metro technology. However, for Nagpur it will be Light Capacity Metro System.



- 22.5** After examining the various options for execution of Nagpur Metro Rail Project, it is recommended that the project be implemented through government funding through an SPV duly formed namely “NMRC”. This SPV will be responsible for implementation and further operation, maintenance of Metro Network. NMRC will also examine the expansion of Metro Network further in the city and nearby urban areas.
- 22.6** Apart from nearby area of Khapri (MIHAN) and Nagpur Airport, Nagpur also has scope for property development as along the corridor. These areas will get boost in development once the implementation of Metro is taken up. The policy of bringing the part increased cost of the land along the corridor to metro project, to be evolved. City Authorities should also create “City Urban Transport Fund” for financing transport related Infrastructure Development.
- 22.7** For successful implementation of any metro project, which by its very nature is highly technical and complex and requires huge capital investment; there should be a political will and commitment. The decision making process has to be fast and the implementing agency must have the required work culture, commitment to targets, commitments to safety, quality and cost consciousness. Any time overrun will have adverse consequences by way of serious cost overruns.
- 22.8** To avoid delays in processing the clearance for the Project, it is suggested that immediately on receipt of the DPR, NIT should take the State Government’s approval for the project.
- 22.9** SPV should be set up for Nagpur Metro and registered under the Companies Act, 1956. This SPV should be a PSU of GoM and GoI with its name as NMRC as suggested earlier.
- 22.10** After the approval of State Government, DPR to be sent to the Secretary, Ministry of Urban Development, Government of India, advising GOI of the State Government’s intention to take up the Project on government funding basis and requesting for the latter’s “In Principle” clearance to go ahead with the Project.
- 22.11** Since NMRC will not have the required expertise to take forward the project, it is recommended that NMRC may engage Interim Consultants after getting in-principle approval of Ministry of Urban Development. Interim Consultants will transfer the alignment on ground, prepare land plans with the help of local authorities and also finalise General Consultants for further implementation of project. To keep a check on the work of the General Consultants and to ensure that the Metro is being constructed to meet the appropriate specifications and safety standards, the SPV may also need to engage the services of Prime Consultants who will keep over-all watch over the execution of the project.

APPENDIX-1





**APPROVAL BY GOVT. OF MAHARASHTRA WITH SPV
MODAL FUNDING PATTERN (WITH MODIFICATION)**



Nagpur Improvement Trust,

Station Road, Sadar, Nagpur

No. E.E.(Project) / 436

Nagpur, Dated: 30/01/2014

To,


Dear Mr. Sudarshan,
Executive engineer,
DMRC,

Subject: Requirement of Copies of DPR of Nagpur Metro Rail Project.

This is to inform you that Nagpur Metro Rail project is approved by cabinet of Government of Maharashtra on 29-01-2014. The fund sharing for the project approved under SPV model by the state is as per Annexure enclosed. You are requested to either make the changes in the DPR or enclose this change as an Annexure with the DPR. Also as per directions of State Government a total number of 30 copies (25 copies for Government of India and 5 Copies for Government of Maharashtra) is required. You are requested to get the same printed immediately as the same is to be forwarded to Government of India within two days.

Thanking you.

Enclosure : As above


Executive Engineer (Project),
Nagpur Improvement Trust,
Nagpur.

**LETTER FROM NAGPUR IMPROVEMENT TRUST ABOUT
APPROVAL BY GOVT. OF MAHARASHTRA**



Annexure

Particulars	With Taxes & Duties	
	Amount (Rs/Crore)	% of contribution
Equity by GOI	1736.00	20%
Equity by GOM	1736.00	20%
Nagpur Improvement Trust Contribution	434.00	5%
Nagpur Municipal Corporation Contribution	434.00	5%
JICA Loan @ 1.40% PA/Market Borrowing @12%	4340.00	50%
Total	8680.00	100.00%

**SPV MODAL FUNDING PATTERN
(WITH MODIFICATION)**