

Preparing Modified Local Area Plan for influence area of Pune Metro Corridor

Ar. Susmita Pansare¹,

Ar. Abhijeet Jagtap², Ar. Kunal Gadhavi³, Ar. Naimeesh Joshi⁴, Ar. Nikita Thorat⁵

Faculty of Architecture and Planning, Parul University

ABSTRACT -The increasing population and rapid demand for urban transportation have resulted in the development of the metro-rail corridor in the Pune city implemented by Maharashtra Metro Rail Corporation Limited (MAHA-METRO). Transportation projects in cities can affect the Local area plans or Town Planning Schemes such as land use, land distribution, land values, physical infrastructure needs of the surrounding area, etc. Maharashtra Regional and Town Planning Act, 1966 has given a provision for preparing area plans showing the proposals for the comprehensive development (development or redevelopment of the area) under the Development plan preparation process. These plans should be revised from time to time considering the changes in the surrounding, for example, metro alignment and the changes occurring in land use of the area. Metro corridor in Pune will affect the current Local area plan considering land use and land distribution. The study would present the analysis of past, present and future conditions related to land development for modifying the current situation of the affected area. This study focuses on the effects of the metro corridor on the delineated area, and appropriate measures to be considered while planning development strategies for preparing Local area plans (LAP) or Town Planning Schemes (TPS).

Key Words: Local Area Plan, Metro railway, Transportation, Redevelopment, Landuse, Development Strategies.

1 INTRODUCTION

India, being a developing country is experiencing rapid urbanization over past few decades. As per Census 2011, urbanization has increased from 17.29% in 1951 to 31.6 % in 2011. Urbanization results in rapid economic growth and also it has given rise to the migration from rural area, uncontrolled expansion of urban area, increase in number of urban poor, density of an area and use of private vehicles causing stress on physical and social infrastructure, poor road networks, limited public transport facilities, traffic congestion etc. The demand for vehicle transport is significantly higher than the available road capacity, affecting road safety and inequality which causes social and environmental degradation. This necessitates the need for shift from private vehicles to public transport. To cater the issues of traffic, new modes of transportation Such as Mass Rapid Transit Systems (MRTS) like Metro railways are made available in urban areas. The mass rapid transit system with its direct- indirect benefits and constrains affects the local area development including physical and social infrastructure and planning, Land use, Land values and other public transportation options and carrying capacity of available infrastructure.

This study will focus on the impacts of upcoming metro corridor on the delineated area, the changes that can occur due to metro corridor and the appropriate measures to be considered while planning development strategies for the same.

2 BACKGROUND

Pune is 9th largest city in India 2nd largest city in Maharashtra after Mumbai. Pune is emerging as a prominent location for manufacturing industries, and is also recognized as the IT hub and education hub of the country. The city is spread over an area of 331.3Sq.Km with a population of over 31 lakhs. Pune city is administered by the Pune Municipal Corporation (PMC) which was established in 1950 under the Bombay Provincial Municipal Corporations Act, 1949.

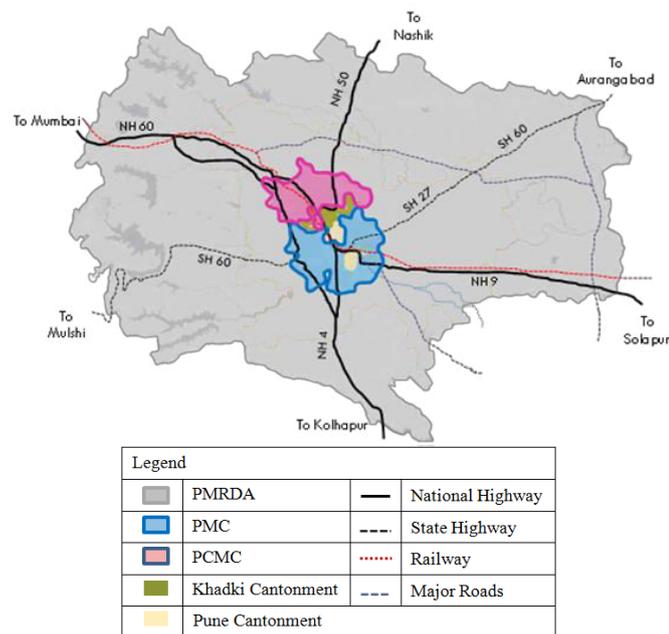
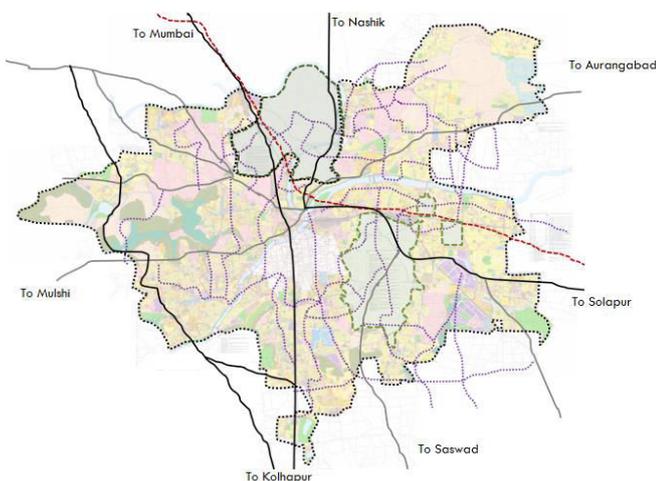


Fig.1PMR with road network

Source: CMP by PMRDA

Pune district is well connected with the state capital and surrounding headquarters through road and railways. The road network includes NH- 4 (Mumbai-Bangalore),



Legends			
	PMC		National Highway
	Khadki Cantonment		Major roads
	Pune Cantonment		Railway
	Internal roads		

Fig.2Road network in Pune (M.Corp)

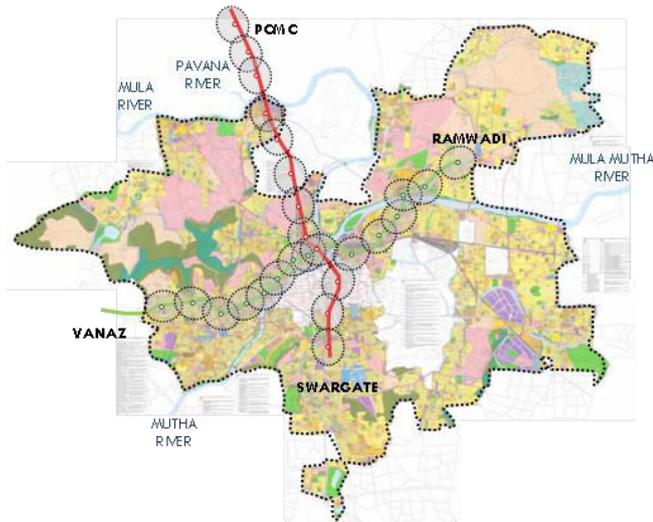
Source: CMP by PMRDA

NH- 9 (Pune-Solapur-Hyderabad) and NH- 50 (Pune-Nashik). Major railway routes including Mumbai-Pune-Solapur, Pune-Miraj, Daund-Baramati

Regular City bus service and BRT System are majorly used transit systems in Pune. As Pune is thickly populated area it experiences increased traffic density; to cater to such issues, Provision of rail-based mass transport in Pune (Pune Metro) is made available reducing inconvenience of the commuters. Pune metro aims at enhancing quality of life of citizen and to become instrumental in overall development of the city(Maha Metro- Pune Metro Rail Project, 2016). Maharashtra Metro Rail Corporation Ltd. is a joint venture company of Government of India (GoI) and Government of Maharashtra (GoM) established under the companies act 2013. Pune’s Metro Alignment includes both elevated and underground Metro lanes(Delhi Metro Rail Corporation, 2015).

Metro is running through the most prominent residential and commercial areas which includes IT parks, Industrial areas and other areas which are under development phase. Major benefits of metro including reduced pollution and traffic issues are the improved connectivity between the residential and commercial areas of Pune, improving productivity by addressing the traffic congestion problems (Maha Metro- Pune Metro Rail Project, 2016).

Pune Metro comprises of 3 routes with their approved extensions. This project will be implemented in 2 phases:



Legend	
	PMC
	Metro line 1
	Metro line 2
	TOZ earmarked by PMC

Fig.3 Metro Route Alignment

Source: PMC Official website

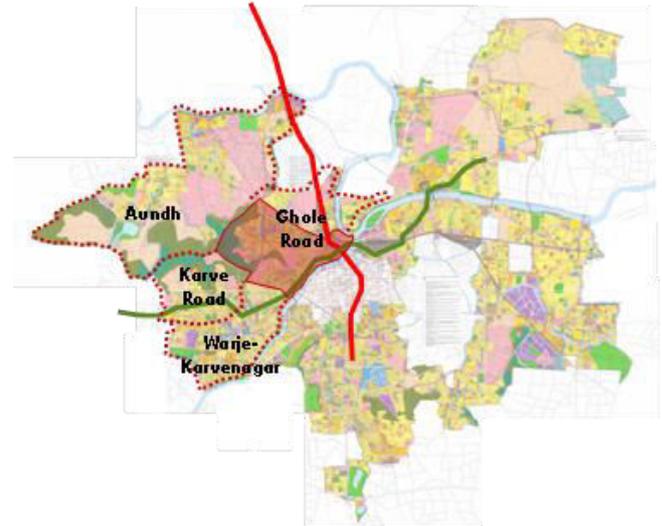
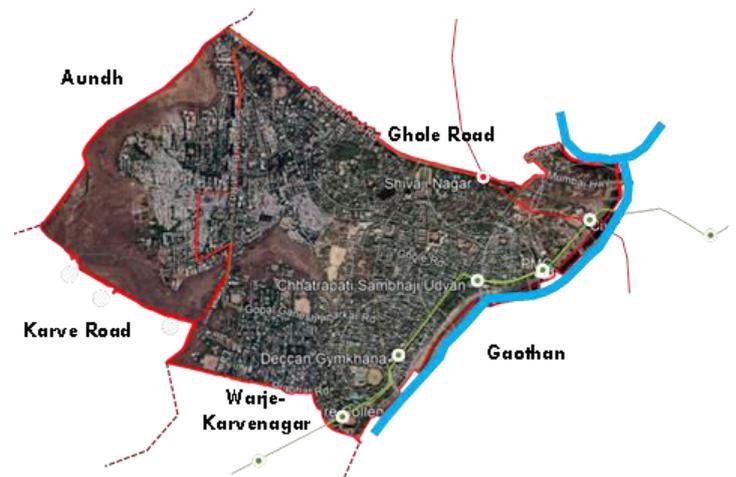


Fig.4 Study area Location

Source: PMC Official website



Legends			
	Study area		Metro rail 1
	TOZ		Metro rail 2

Fig.5 Study Area

Source: Google earth

- Phase 1: Line 1- PCMC to Swargate, Line 2- Vanaz to Ramwadi
 - Phase 2: Line 3- Hinjewadi to Civil court
- Line 1 and 2 are taken up by MAHA Metro and line 3 is taken up by Pune Metropolitan Region Development Authority (PMRDA) under PPP mode.

3 STUDY AREA

Area delineation is based on the potential of the area, Metro route alignments and density of the area.

Ghole road ward is growing IT sector and other industries and so is having more floating population (55,000) in area due to growing economic activities and opportunities, educational facilities, availability of Physical and social infrastructure facilities.

This is one of the dense areas in Pune after Gaothan (kasbapeth, BhavaniPeth etc.)

Location: Shivajinagar and Ghole road ward

Area: 8.20sq.km.

Study area is a part of **Ghole road** Ward. Area is surrounded by Mutha river, Pashan lake, Hill slopes etc.

Gaothan, Khadki cantonment, Karvenagar, Aundh, are the adjacent wards

- Both the Metro railway lines 1 and 2 are passing through this area including **interchanging station (Civil Court station)**
- Railway station, Bus stand, proposed metro stations are present in the ward
- Government and Private Institutes, Hospitals, Government buildings, Public places like Museum, caves, etc. are also present in area

Past and current conditions:

- EWS residential zone in 1987 has been developed as a mixed use area till 2007 and slum was also growing in the area
- Increased commercial and industrial zones in 2007 and preference to Mixed use development was given
- Land values are increased in this decade due to increasing PSP and commercial zone

LAND USE CLASSIFICATION 2011	
Zone	%
Residential	30.52
Commercial	4.42
Mixed use	5.07
Road	14.71
Vacant land	0.19
Public- Semi Public	20.5
Public Utilities	0.17
Hill slope	16.35
Slum:	2.30
Water bodies	1.83
Industrial	0.16
Recreational spaces	4.10

This area is majorly having residential area and PSP area which includes schools colleges and institutes. Mixed use development along wide roads is observed which also has metro route passing through it. Mixed use land is about 5.07% of the total area. Residential area is 0.52% and Commercial land is 4.42%.

Public- Semi Public spaces are more in the area. Around 20.5% of the total land is under PSP.

Metro railway line 1 and 2 are passing through this area including interchanging station (Civil Court station).

Railway station, Bus stand, proposed metro stations are present in the area.



Fig.6 DP 1987

Source: PMC Official website

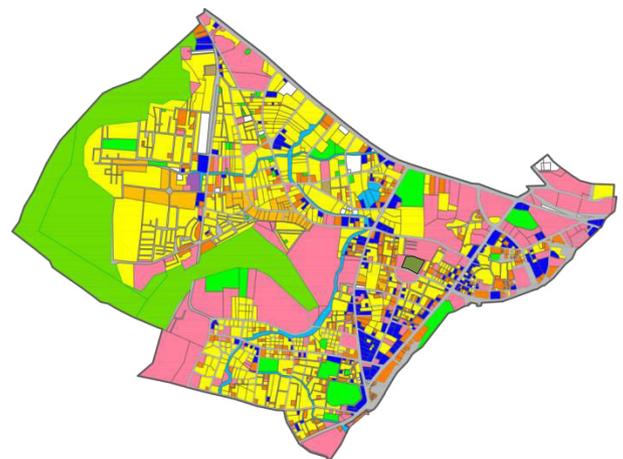
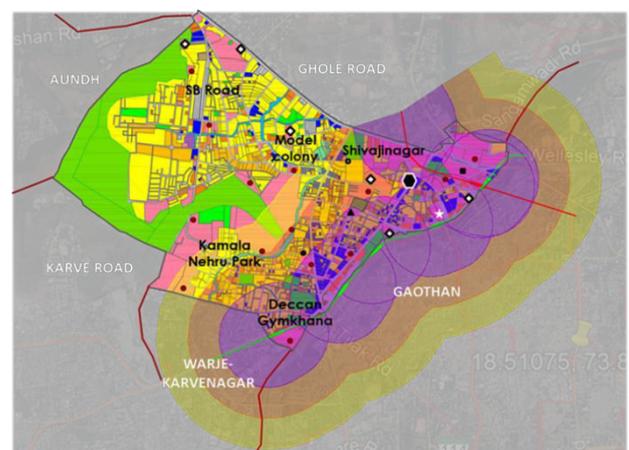


Fig.7 ELU 2011

Source: PMC Official website

Government and Private Institutes, Hospitals, Government buildings, Public places like Museum, caves, etc. are also present in area. IT sector, Industries and commercial spaces are growing at a pace and so residential projects are emerging in nearby areas accordingly.



	High Influence zone 500m		Library
	Medium Influence zone 750m		Caves
	Low Influence zone 1000m		Municipal Corporation
	Community spaces		Civil Court
	Institutes		Police station

Fig.8 Influence zones of metro stations

4 ISSUES IDENTIFIED

- Existing infrastructure facilities like Water, sewage, solid waste management etc. are insufficient for the area
- Metro requires feeder system, hence alternate facilities should be developed
- BRT is poor in terms of frequency and connectivity
- Poor pedestrian facilities.
- Open Spaces and Public spaces should be given preference in development as Metro Stations will have more floating population
- Parking spaces are not sufficient
- Increased FSI (4) will result in increased density
- Being developed area, Densification due to metro and increased FSI will lead to high land values or property values

5 POSSIBLE SOLUTIONS

a. Infrastructure

- Provision of basic services is essential towards making a Local Area Plan (LAP) work.
- Increasing Capacity and improving quality of existing social infrastructure like schools, colleges, hospitals etc. is beneficial considering future growth of the area

b. FSI Distribution

- FSI should be distributed equally so that load of population density can be shared by whole area equally.
- Being a developed area infrastructure stress can also be divided due to equal distribution of FSI

c. Vending zones

- Wide footpaths with allocated vending zones along streets and parking spaces can be provided so as to improve walkability and reduce traffic issues.

d. Parking Space Provision

- Parking spaces around Metro stations and near major roads is required and No-taxi or auto rickshaw zones will increase the no. of metro commuters
- On street and off street parking zones should be developed on all the internal roads, vending zones
- Parking on roads should not disturb the footpaths or walking areas

e. Public bicycle sharing system

- Smart City Mission has launched scheme of Public bicycle sharing system in some parts of Pune.
- Using the same scheme here in the LAP as one of the feeder systems for metro will be beneficial
- Most of the educational buildings are present in this part of delineated area where students can use bicycles and pedestrian friendly streets can be designed here

f. Complete street

- Provision of wide Footpaths- clear access to footpaths so as to have easy entry and exit should be provided
- Street furniture should be provided wherever necessary on internal roads as well as major roads so as to get clear walking space including street lights, zebra crossings on roads, signage, traffic signal poles and bus stop shelters.
- ROW should include bicycle ways as well as footpaths and vending zones wherever necessary

6 CONCLUSION

The LAP focuses on the influence zones of Metro alignment. Efforts for shifting the use of private

vehicles to public transportation can be made for reducing traffic issues and congestion on roads. Metro system directly affects the use of vehicles and so improving quality and frequency of public transportation systems i.e. City bus service and BRTS will be beneficial for development and reduction in traffic issue. Development Control rules has provided Maximum FSI for Transit Oriented Zones but this can be crucial for development as maximum of the plots are small in size and have private owners where redevelopment projects can be difficult to implement. Hence distribution of FSI should be equal and feasible for all the classes of society. Redevelopment projects for dilapidated buildings and slums can be beneficial so as to effectively use FSI and TDR in area. Feeder systems are required for metro and these systems can be public transportation systems and other initiatives like improving walk ability in neighborhood areas, wide footpaths, parking facilities can be provided to increase use of metro. Infrastructure facilities should be improved in quality and capacity for future needs.

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BIOGRAPHY:



Ar. Susmita Pansare

Masters in urban and regional planning
Faculty of architecture and planning

Since joining the Parul University, I have been involved with studies related to urban planning and approaches towards the smart cities challenges



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