

- **STUDY OF MOBILITY PLAN IN LIGHT OF UPCOMING METRO RAILWAY IN MEERUT CITY**
- **REROUTING OF CITY BUS ROUTES**
- **ALLOCATION OF DEPOTS OF UPSRTC AND MCTSL**

Authors: SANDEEP LAHA & PARVEZ BASHIR

Introduction

- Meerut, major industrial hub in NCR, 70 km from Delhi.
- Growth of registered vehicles in Meerut city during the year 2001-05 is 33%.
- Growth in registered two-wheelers is 45%.
- Growth in registered four-wheelers is 52%.
- per capita private vehicular ownership (124 vehicle/1000 population)
- AAGR for private vehicular ownership is almost 10 % which is quite high

Mid Term Review

- Collection of data regarding mobility plan of Meerut.
- Collection of data regarding rail alignment and their railway stations, resulting traffic after the starting the metro rail.
- Data regarding PWD, Municipal Corporation, area under MDA (Greater Meerut City).
- Restructuring of route and Depot allocation is under process and will be completed in 15 days.

Objective of the Study:-

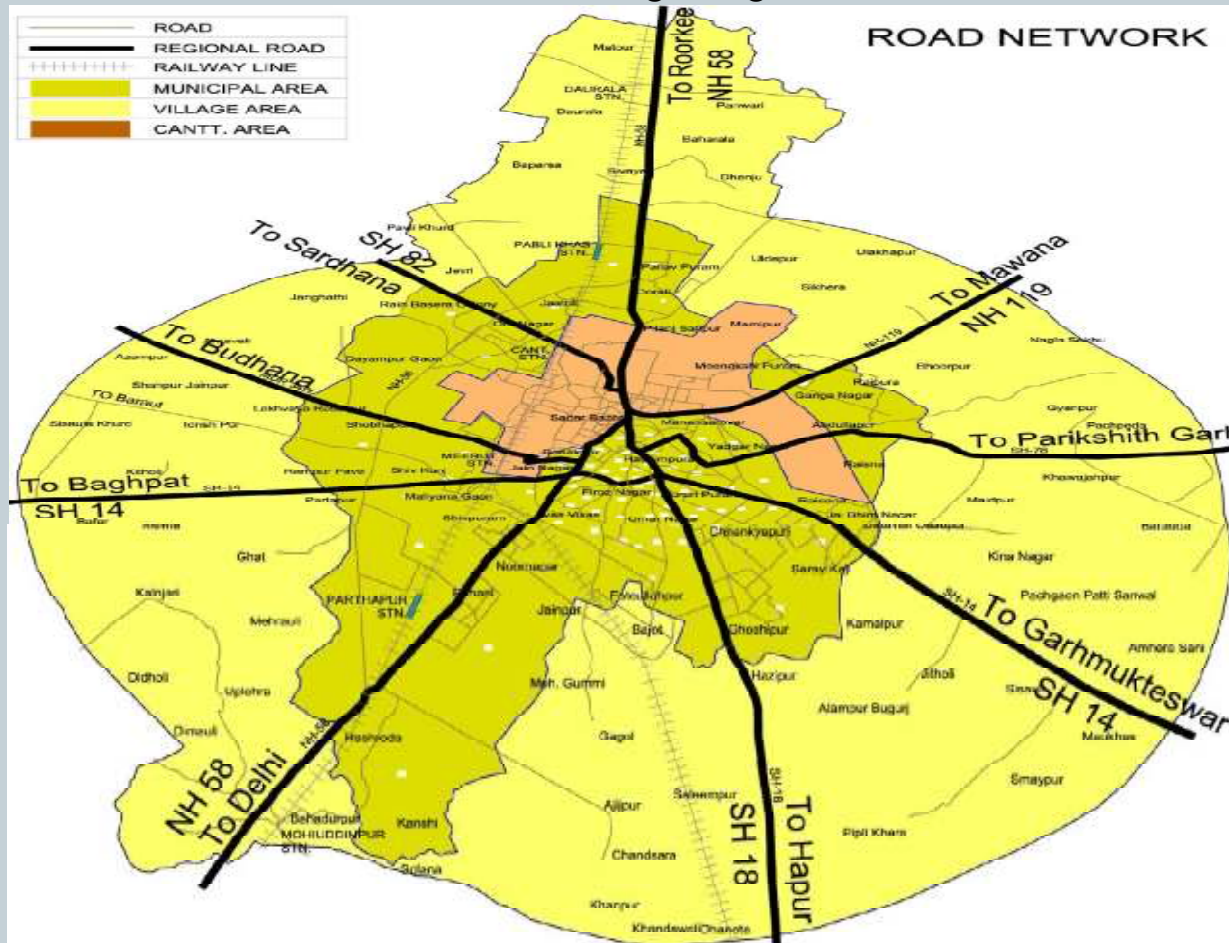
- Ensure excellent regional connectivity of the city while simultaneously reducing the unnecessary impact of regional through traffic on the city's infrastructure.
- Ensure decongestion of the core city area over time.
- Ensure efficient connectivity of future growth areas of the city with the existing parts of the city and regional links.
- Ensure decrease in pollution and increase of safety measures to reduce accidents and improve the quality of life in Meerut.

Focus of the study

- To understand growth pattern of Meerut city and suburban with traffic pattern.
- To restructure the city bus services and relocation of UPSRTC depots.
- Phased expansion of bus fleet.
- Creation of adequate infrastructure in the form of depot, terminals, bus queue shelters and signage's.
- Introduction of high-capacity mass transit on the mobility corridors with increase in passenger demand.
- To reduce overlapping within the city and rural area and proposal to eliminate services running parallel to proposed Metro.
- There is an imminent need to complete the inner ring road network for the city to allow through traffic to bypass the city as well as prevent criss-crossing of intra-city movement through the city centre (Begumpul area). It is equally necessary to remove encroachments, both temporary and permanent from the roads through enforcement to allow better movement of traffic.
- The inter-city bus terminals need to be shifted out of the city to relieve the traffic load on roads in the inner and central areas of the city.
- The traffic intersections in the city need to be freed from encroachment and need to be signalized (or their signals restored where applicable).
- Facilities for safe movement and crossing of pedestrians needs to be provided on the major roads and intersections in the city.
- The parking situation in the inner areas of the city near Begumpul and Ghantaghar is in a critical situation and is also affecting the overall traffic situation to a major extent.

Existing Scenario

- Almost 18% of traffic entering the city is through-traffic on eight radial road, for example Delhi Road, Baghpat Road, Sardhana Road, Roorkee Road, Mawana Road, Parikshit Garh Road, Garhmuktesh Raoad and Hapur Road.
- Narrow Road with encroachments along with divider in major road slows down the speed and causing pollution.
- Absence of a ring road connecting all the 8 radial roads coming from outside and passing through Meerut city creates bottlenecks in the central area, where the regional as well as local traffic converges.
- Too much use of two wheelers, resulting in high accidents rate in Meerut.



Existing road network of the area (Source: PWD, Meerut)

Public transport (PT) and Intermediate public transport (IPT) system

- Public Transport system exists in the form of Meerut City Transport Services Ltd. which is sheltered in a terminal-cum depot at Sohrab Gate presently has a total fleet of 120 buses (10 being low-floor, 40 mini buses, and remaining 70 being ordinary buses) running on 18 routes in the city.
- The frequency of buses in the peak hour varies from 10 min to 15 minutes, while in the non-peak hour it varies from 15 min to 20 minutes.



Passenger alighting from a city bus in the middle of carriageway

- E-rickshaws and Cycle-rickshaws & shared auto-rickshaws together account for about 40% of all peak hour trips and form the life-line of Meerut's city transport system, especially in the inner areas.
- 2 inter-city bus terminal cum depots run by UPSRTC (Corporation Buses 426 and contract buses 355, Total Buses-781) are located in the inner city area which cater to passengers travelling to Delhi, Garhmukteshwar, Kotdwaar, Roorkee, Baghpat, Sonapat, Haridwar and Dehradun. These are Bhainsali bus depot near Begumpul on Delhi road and Sohrab gate bus depot on Garh road.



Presently UPSRTC have three depots in Meerut city. Meerut and Sohrabgate depots operates mostly long distance buses. Meerut to neighboring districts, buses are being operated by the fleet of contract buses of Bhaisali and Sohrabgate Depots.

Link No	Route Name	Route Length	Schedule Buses	Trips Per Day
1	Sohrabgate Bus Stand to Bulandshahr	72	60	240
2	Bhaisali Bus station to Baagpat	52	22	105
3	Bhaisali Bus station to Baraut	58	25	150
4	Bhaisali Bus station to Delhi	67	4	16
5	Bhaisali Bus station to Ghaziabad	47	30	180
6	Bhaisali Bus station to Kaushambi	57	48	288
7	Bhaisali Bus station to Agra	580	6	12
8	Bhaisali Bus station to Muzaffarnagar	57	22	132
9	Bhaisali Bus station to Ghaziabad (Muzaffarnagar)	52	9	54
10	Bhaisali Bus station to Kaushambi	57	38	228
11	Bhaisali Bus station to Saharanpur	127	6	24

Source: UPSRTC, Meerut region, Meerut.

FUTURE GROWTH AND TRANSPORT DEMAND FORCAST

The Master Plan of Meerut outlines the likely growth in various parts of the study area given below in the table.

LANDUSE PARAMETERS

SN	Parameters	2015	2021	2031	2041
1	Population (Lacs)	20.1	23.01	28.05	33.5
2	Employment (Lacs)	6.05	7.13	8.97	11.06
3	School Enrolment (Lacs)	5.24	5.98	7.3	8.7

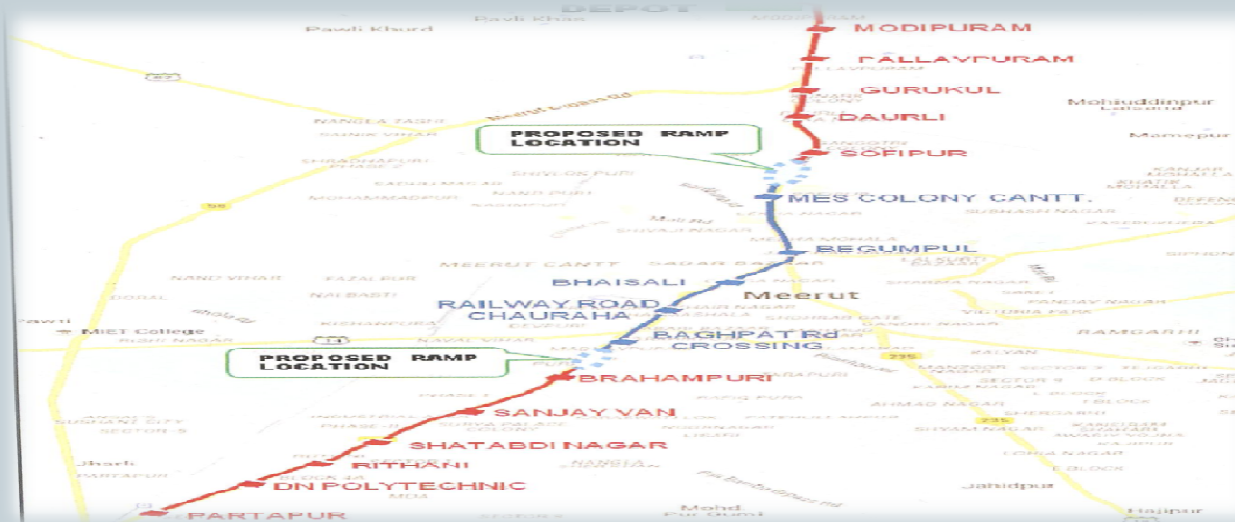
Source: MDA

Mass transits system-Metro rail

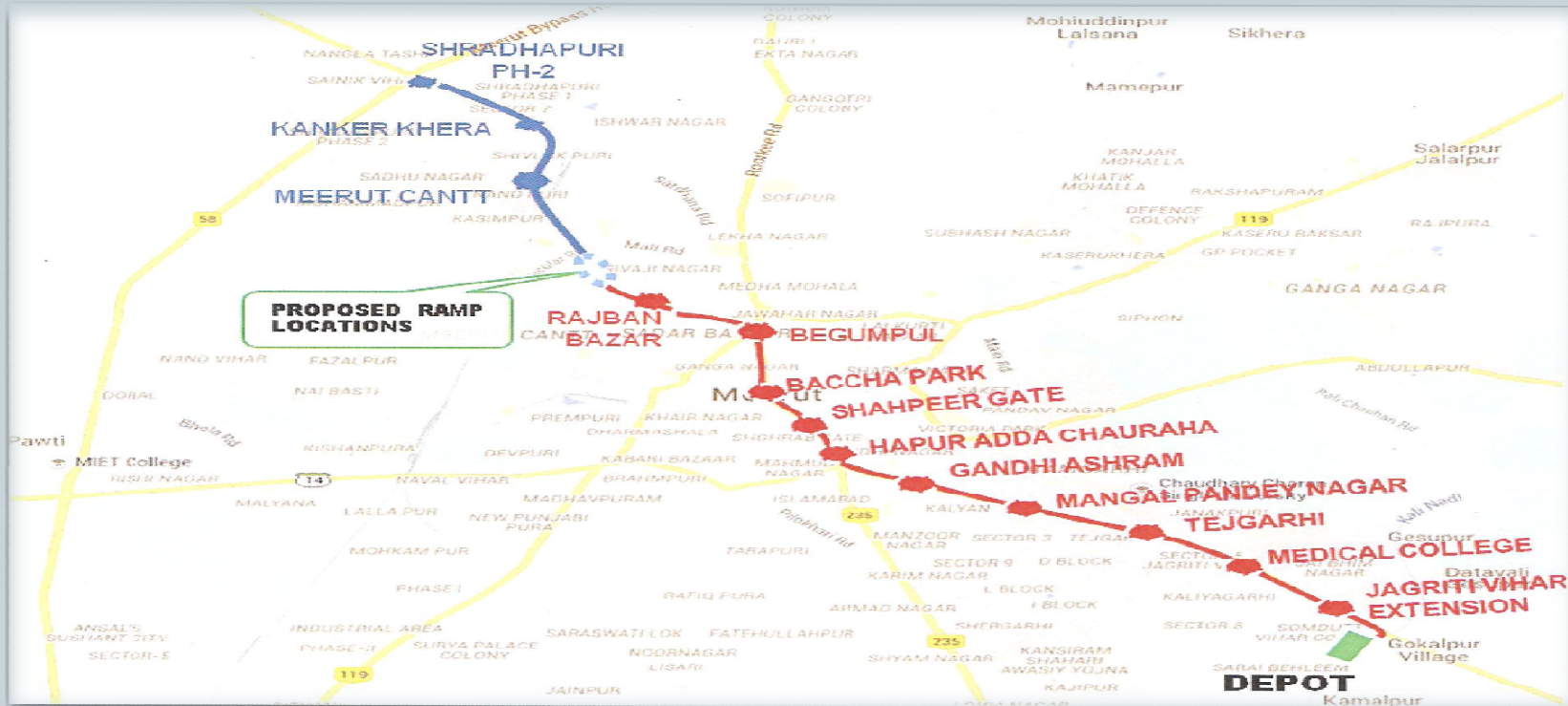
With a view of developing effective and efficient mass transits system, the Government of Uttar Pradesh has decided to introduce an efficient, safe and high capacity public transport system in Meerut and engaged RITES ltd. to prepare 'Detailed Project Report (DPR) for Rail Based Mass Transit System in Meerut.

Proposed metro rail corridor suggested by RITES:

- Modipuram to Partapur



•SHRADHAPURI PHASE-2 TO JAGRITI VIHAR



Estimated Peak hour peak direction traffic.

After surveying MDA has calculated peak hour, peak direction traffic which is as below:-

Present Phase:-

Estimated Peak Hour Peak Direction Traffic of Meerut in Future

S.No	Major Route of Meerut	Estimated Peak Hour Peak Direction traffic (in PCUs)
1.	Rly X-ing to Garh Road	3117
2.	Garh Road to Roorkee Road	4396
3.	Baghpat Road X-ing to Delhi Road	3728

Source: Projection of MDA and RITES

A four stage travel demand model/pattern has been developed by RITES for transport demand forecasting and need of feeder services, connecting metro stations:-

No. of Buses for acquisition	Present Phase (2016)	Phase (2017)	Phase (2017-2021)	Phase (2022-2031)
	120	172	281	225

Note:-**Fleet Composition:** Mini 28 seat 35%, Low-Floor Extended chassis buses-10% and Big Buses 38 Seat-55%.

As per guidelines of the NGT, buses of above ten years of age are prohibited for operation in the NCR, this view of NGT and metro operation in 1921, have been taken in consideration, while making projection of the fleet.

Proposed Public transport infrastructure and operation

To support the public transport system, adequate supporting infrastructure shall be required in the form of bus queue shelters, bus stop signage's, terminals, depots and workshops. Terminal depots and workshops needed to be shifted form the core area to peripheral part of the city to avoid congestion and increasing the average journey speed inside the core area. The terminals of UPSRTC have been so planed that people coming from the neighboring district area can board metro train easily. City terminal also needed to be relocated taking in view of UPSRTC terminals and metro stations. This will also facilitate growth in the outer peripherals of the city.



Traffic
Congestion
at Hapur
Chowk



Congestion
at Entrance
Gate of
Sohrabgate
Bus Depot

Inter-city bus terminals plan for various phases

S. No.	Name of Terminal cum Depot	Location	Phase of Implementation	Remarks
1	Bhaisali-A	Baghpat Road (Outer Ring Road X-ing)	Phase II (2017- 2021)	Shall require land acquisition and land-use conversion
2	Meerut-A	Mawana Road (Inner Ring Road X-ing)	Phase III (2022-2031)	Provision made for in Master Plan 2021
3	Meerut-B	Daurala (on Roorkee Road)	Phase III (2022-2031)	Shall require land acquisition and land-use conversion
4	Sohrab Gate	Garh Road (Inner Ring Road X-ing)	Phase III (2022-2031)	Provision made for in Master Plan 2021
5	Sradhapuri	Meerut Bypass Road (Outer Ring Road X-ing)	Phase III (2022-2031)	Shall require land acquisition and land-use conversion

Meerut City transport infrastructure plan

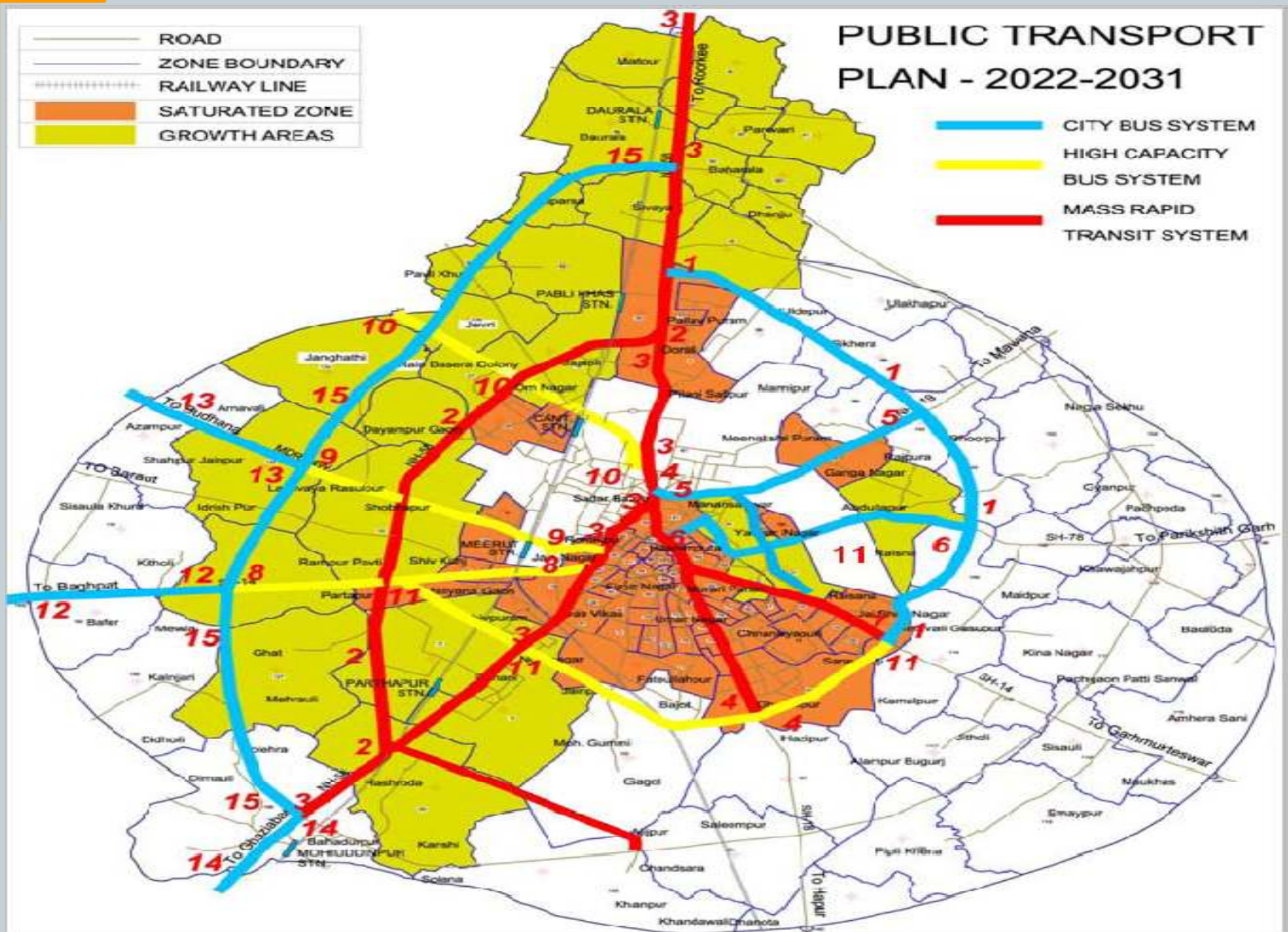
S. No.	Type of Infrastructure	Present Location	Proposed for Implementation
1	MCTSL Depot	Sohrab Gate (on Garh Road)	Existing
2	City Bus Terminal	Begumpul Terminal (Ambala Bus Stand, Begumpul)	To be Implemented by Meerut Municipal Corporation
3	Integrated City Bus Depot cum Terminal al Workshop	Lohiya Nagar land provided by MDA (on Hapur Road)	To be funded by ministry of Urban Transport Utter Pradesh

Future transportation plan in view of expected peak hour direction

Comparative Operation chart have been structure in view of expected Present and Future transportation Public transport system run by MCTSL

S.No	Description of Routes	(PHPDP)		Type of System	Reason
		2011-16	2016-25		
1	Inner Ring Road (Baghpat Road Xi-ing to Modipuram via Hapur Road X-ing and Mawana Road)	630	980	City Bus System (MCTSL)	(Existing)
2	Delhi Road Bye-pass (Partapur to Pallavpuram via Baghpat Road, Budhana Road and Sardhana Road)	700	1840	City Bus System (MCTSL & Private)	High Density Corridor
3	Delhi Road (Partapur to Daurala via HRS Chowk and Begumpul)	800	1650	City Bus System	High Density Corridor
4	Hapur Road (Zero Mile Jn to Inner Ring Road X-ing via Bacchha Park and Old Hapur Adda Chowk)	600	1400	City Bus System	High Density Corridor
5	Mawana Road (Zero Mile Jn to Inner Ring Road X-ing)	470	950	City Bus System	Existing
6	Parikshitgarh Road (Eves Chowk to Inner Ring Road X-ing)	410	910	City Bus System	Existing
7	Garh Road (Old Hapur Adda Chowk to Inner Ring Road X-ing via Medical College)	820	1520	City Bus System	High Density Corridor
8	Baghpat Road (HRS Chowk to Planning Area Boundary via Inner Ring Road Xing)	450	840	City Bus System	Narrow Road (Mini Buses)
9	Budhana Road (City Railway Station to Planning Area Boundary via Inner Ring Road X-ing)	440	1690	City Bus System (MINI)	Narrow Road
10	Sardhana Road (Begumpul to Planning Area Boundary via Inner Ring Road Xing)	410	1480	City Bus System	Existing
11	University Road (Tejgarhi to Jail Chungi)	530	910	City Bus System	Existing
12	Delhi Road (Partapur to Modipuram via Baghpat road, Begumpul, Sofipur and Pallavpuram).	0	3230	Metro Transit System	Upcoming
13	Bypass Road (Sradhapuri Phase-2 to Jagriti Vihar Extension via Kankarkhera, Begumpul X-ing, Hapur Road X-ing, Tejgarhi)	0	2680	Metro Rapid Transit System	Upcoming
14	Outer Ring Road (Delhi Road X-ing to Roorkee Road X-ing via Baghpat Road X-ing, Budhana Road X-ing and Sardhana Road)	0	420	Road under construction	Upcoming

Source: MDA, RITES, RTO, UPSRTC and Annual report MCTSL



Public transport plan for Phase (2022-2031)-Alternate Scenario