Jawaharlal Nehru National Urban Renewal Mission (JNNURM)

Consultancy Services for Preparation of the City Development Plan (CDP) for Meerut in the State of Uttar Pradesh under JNNURM

• Meerut City

August 2006

City Development Plan

Final Report

BCEOM
INDIA PRIVATE LIMITED

in association with

CRAPHTS
Consultants (I) Pvt. Ltd

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ABBREVIATION	EXPLAINATION
AWC	Anganwari Centre
BCEOM	BCEOM Societe Francaise D'Ingenierie
CAA	Constitutional amendment Act
CAGR	Compound Average Growth Rate
CBO	Cantonment Board
CBO	Community Based Organisation
CDP	City Development Plan
CDS	Community Development Society
CFC	Citizen Facilitation Centre
CIP	City Investment Plan
CMO	Chief Medical Officer
CPCB	Central Pollution Control Board
CTP	Chief Town Planner
CWR	Common Water Reservoir
DCR	Development Control Regulations
DP	Development Plan
DUDA	District Urban Development Authority
EWS	Economically Weaker Section
FDI	Foreign Direct Investment
FSI	Floor Space Index
FY	Financial Year
GDP	Gross Domestic Product
GIS	Geographical Information System
GoUP	Government of Uttar Pradesh
HDHC	High Density Housing Complexes
HH	Households
HIG	Households
HRA	High Risk Area
IHSDP	Integrated Housing and Slum Development Programme
IRBTS	Integrated Rapid Bus Transit System
IT	Information Technology
IVRS	Interactive Voice Response System
JNNURM	Jawaharlal Nehru National Urban Renewal Mission

ABBREVIATION	EXPLAINATION
KL	Kilo Litre
LIG	Low Income Group
LOS	Level Of Service
LPCD	Litres Per Capita per Day
MAN	Municipal Area Networking
MDA	Meerut Development Authority
MGD	Million Gallons per Day
MIG	Middle Income Group
MIS	Municipal Information System
MLD	Million Litres per Day
MNN	Meerut Nagar Nigam
MVA	Mega Volt Ampere
NCR	National Capital Region
NCT	National Capital Territory
NGO	Non Government Organisation
NHC	Neighborhood Community
NHG	Neighborhood Group
NMAM	National Municipal Amendment Manual
NOIDA	New Okhla Industrial Development Authority
NSDP	National Slum Development Plan
OHT	Overhead Tank
PPP	Public Private Participation
PWD	Public Work Department
RCC	Reinforced Cement Concrete
RRTS	Rapid Rail Transit System
RTO	Regional Transport Office
SJSRY	Swarna Jayanti Shehri Rojgar Yojana
STP	Sewerage Treatment Plant
SUDA	State Urban Development Authority
SW	Storm Water
SWM	Solid Waste Management
SWOT	Strength Weakness Opportunity Threats
T&D	Transmission & Distribution
TCPO	Town and Country Planning Organisation
TDS	Total Dissolved Solids

ABBREVIATION	EXPLAINATION
UCD	Urban Child Development
UG	Under Ground
ULB	Urban Local Body
ULCRA	Urban Land Ceiling regulation Act
UPHDB	Uttar Pradesh Housing Development Board
UPPC	Uttar Pradesh Power Corporation
UPPCB	Uttar Pradesh Pollution Control Board
UPSIDC	Uttar Pradesh State Industrial Development Corporation
USP	Unique Selling Point
VAMBAY	Valmiki Ambedker Avas Yojana
VRS	Voluntary Retirement Scheme
WPR	Work Force Participation Rate

Executive Summary

Executive Summary

1.0 Introduction

Meerut is a city having abundant history, limited present and potentially prosperous future. Depending on person's view point, Meerut is a city in history, a city of nallahs or a city with future. The historical background of the city has always been its USP. However, a clear understanding of urban growth, clarifies that it is not the city that made history but history that made the city gain importance.

Due to its location & setting, nearness to the National capital and rich agricultural activity in the surrounding region, Meerut city presently acts as a major distribution center for the diverse agriculture produce such as sugarcane, food-grains etc. It is the largest manufacturer of Musical Instruments in the country and is also one of the largest suppliers of sports goods. There are several large scale industries located in Meerut.

In spite of the various facts highlighting the importance of the city in the region it faces challenges of unplanned and organic growth. Infrastructural deficits in almost all the sectors coupled with an un-proportionately large poor class population limit the growth potential of the city. However the city holds potentials that are inherent in its character; such as a vibrant trade and commerce sector and cottage industry, the rich agricultural land and favorable geographical conditions around the city areas, numerous higher education institutes, availability of adequate skilled and semi skilled work force, proximity to Delhi etc. In addition to the stated strengths of the city, the proposed decentralization of NCT via the NCR formation and resultant spill over of activities should be a major factor in giving a boost to the city's future.

To take advantages of these factors that hold promise for the city, it is of prime importance that the city improves its infrastructural provision and addresses these infrastructural deficit fulfillments through a socially fair manner. Meerut is one of the city selected under JNNURM being a city with more than a million population.

M/s BCEOM India has been appointed to prepare the city development plan (CDP) for Meerut. The proposed City Development Plan (CDP) attempts to address these deficiencies and deficits, potentials and promises.

2.0 City Development Plan

A CDP is both a perspective and a vision for the future development of a city. It presents the current stage of the city's development. The CDP aims to set out the direction of change for the future development of Meerut based on a thorough assessment of current stage of the city development and interaction with different stake holders namely government agencies, parastatal agencies, NGOs, Residential Welfare Associations and participation of different weaker sections of the communities. This further provides a logical and consistent frame work to identify thrust areas, selecting best strategies, interventions, action plans and investment decisions to attain the envisaged vision for the city.

The Multistage exercise of preparation of CDP for Meerut has been carried out following the guidelines as per the toolkit prescribed under JNNURM. Various stages involved in the preparation of JNNURM are presented in the figure 1:

3.0 City Profile

Meerut city, the head quarter of Meerut District, situated 70 km from Delhi, has been a place of historical, cultural and adminstrative importance since the time imemeorial. The city plays a significant role in different areas of economy in the modern times that includes trade & commerce, tourism & pilgrimage, transportation & distribution.

The city lies south of the cantonment, and owes its modern importance to its selection by the British government as the site of a great military station. The cantonment, established in 1806, was the headquarters of the 7th division of the northern army. The administration of the cantonment area and running of its urban and other functions is still outside the jurisdiction of Meerut Nagar Nigam.

Unplanned development of the cities marked with the falling far below the norms in terms of service levels in delivering citizen services whether good roads or clean environment. Municipalities/ULBs vested with authority to plan and implement infrastructure schemes also lack in co-ordination among them. These factors are resulting in the falling levels of service delivery.

Meerut is a major part of NCR on the basis of its industrial and location base. NCR board is playing a major role in strengthening the financial aspect of the city by proving funds and loans for the development of the city. The main emphasis by NCR board for Meerut is on the proposal of **Ghaziabad - Meerut Express way** for improving the road connectivity of the city on the basis of importance of NCR. Further consideration of proposing IRBTS and RRTS for Meerut is under process for improving the connectivity and accessibility of Meerut city.

3.1.1. Population Profile

As per 2001 Census the city of Meerut has attained the status of a metropolitan city i.e. million plus population city. In exact terms the population was recorded to be 11.61 lakhs which was less than 5.5 lakhs in 1981 and nearly 8.5 lakhs until 1991.

During the decades 1951-61 and 1961-71, the population in the city grew by 23.14% and 26.08% respectively against the national growth rates of 26.14% and 38.23% during the same periods. Between 1971 and 2001, there has been a rapid increase in population in the city which exceeded over 58% in the 70s, when the population growth in Meerut surpassed the national average.

The increase in population rate during the decade of 1991-2001 was 37.8%, which was less than that of the previous two decades and a little more than the national average of 36.17%. It is evident from the above analysis that the population rate decreased steadily in the recent years. The drop in population growth in Meerut can be attributed to the development of new housing areas in several competing towns in the neighboring areas which are indeed equipped with better and modern infrastructure facilities such as NOIDA, Ghaziabad, Greater NOIDA and Gurgaon. Meerut on the other hand could not continue the phase of infrastructure development started in late 60's and 70's.

The main reason for this phenomenon was the creation of numerous housing and industrial development plans by various development authorities, development of infrastructure facilities and the arrival of the green revolution in the agricultural sector in several parts of the west Uttar Pradesh, which resulted in immigration of population from

the villages. Due to various administrative policies encouraging industrial development, many industrial units were set-up which in turn created new employment opportunities and increased the population.

Certain areas of the centre city have a population density of more than 2000 people per hectare. By studying the distribution pattern of population density ward wise as per the 2001 census, it is clear that in the old areas of the city close to Garh road, Hapur road and Delhi road, the population density is more than 500 per hectare.

High population density and increased economic activities in the inner city areas have resulted in excessive stress on existing infrastructure and urban services causing unhealthy and unhygienic living conditions.

3.1.2. Access of the Slum Dwellers to Basic Services

The slum dwellers and urban poor are similar terms and are used interchangeably in the context of equitable urban development. The existing scenario in Meerut has got two distinct dimensions. City's slum dwellers & urban poor constitute over 40% population of the city. As per DUDA's latest records there are 4,71,581slum dwellers in the city of which less than 50% have an access to the water supply ands drainage system and only a quarter have an access to the sewerage system.

3.1.3. Economic Base

Meerut's advantageous geographical location and availability of abundant productive rich fertile land form the basis of a strong economical growth for the city. Traditionally the core economic activities in Meerut had primarily been trade and commerce, manufacturing of musical instruments, sports equipment, scissors, publication and printing, textiles & garments, engineering equipments and machine tools, gold jewellery, etc.

Business and commerce activities are the primary employment generator in the city which accounts for over 21.06% of the total employment in the city, while other services account for nearly 30% of the total workforce in the city. Of the total workforce employed in industries nearly 94% is employed in the small and cottage industry. The overall contribution by different Industries operating in the city is estimated to be around Rs 250 crores annually which also earn a foreign exchange worth Rs 80 crores.

The work force participation rate (WPR) or the share of working population in the Meerut city as per 2001 is 33.75% as against district average of 26.54% and state average of 27.11%.

3.1.4. Housing

The no. of residential buildings has increased considerably in the three decades from 1971 to 2001 in Meerut in 1971, for a population of 371,760 there were 54,914 residential buildings, where 62,158 families were living. In 1981 as a result of the new housing colonies developing by the Housing and Development Board and Meerut development Authority, the no. of residential colonies went up to 101,222 to house for families. There has been a rapid increase in the house building activity; by 2001 almost the no. of colonies rose to 174,595.

3.1.5. Educational Services

Meerut is an important education centre for Western UP. Meerut serves not only the higher education requirement for the city but also the entire region and the rural population surrounding it. In Meerut city, there are 645 primary schools, 104 junior high schools, 74 higher secondary schools and 12 secondary schools. For higher education there are 2 universities, 1 medical college, 4 ITI and 8 other such higher education institutions. By State government, higher education policy, private institutions are encouraged and many private companies are setting up institutions there. This city is evolving and re-evolving as an important educational centre for the entire northern India.

3.1.6. Health Services

The health and hospital services in the city include there are 1 medical college, 2 state level hospitals, 8 health care centers, 104 nursing homes and several private clinics. Besides these, there are hospitals for each armed force in the cantonment area, for police personnel in police lines and for railway staff in railway lines. There are adequate number of modern health centers and hospitals available in Meerut city imparting quality medical facilities that make Meerut an important centre for health and medical care in northern India. Majority of these services are provided by private establishments.

3.1.7. Fire Fighting Services

For Meerut city and adjoining rural areas there are 2 firefighting stations with a fleet of 6 fire trucks. One is located in the old area near Municipal Corporation of Meerut and the other in the new area near central police lines. Besides these two stations there is 1 firefighting station in Meerut cantonment area. There has been a major fire disasters in the city recently which exposed the city's disaster handling capabilities. The fire fighting services in the city are not fully equipped in order to control fire on high rise buildings cropping up in the city.

3.1.8. Electricity

Uttar Pradesh Power Corporation (UPPC) has established two power stations of 22KV and 132KV which supply electricity to the entire Meerut city. For this there are about 15 sub-stations having a capacity of 238 MVA. Currently there are 123,405 residential, 34245 commercial and 5379 industrial connections.

4.0 Stake Holders' Participation

The interests, experience, understanding of local know how and skills of each stakeholder and representatives of members of community in large, are the most important resources. Participation of different stake holders have helped in identifying priorities in different sectors of development and their problem and prospect with respect to development of Meerut, which will evolve issues such as infrastructure bottlenecks, service deficiencies, and management needs. Also, by doing this it will be possible to understand the over-lapping needs and interests of each group, areas of conflicts, root of the problems and their likely solutions. Moreover by mobilizing these groups, Meerut City as whole is more likely to count on its local resources during implementation of various identified strategies in the subsequent phases.

5.0 SWOT Analysis

Based on the above situation analysis and stakeholders participations a SWOT analysis for the Meerut city has been carried out which aims to identify the potential and problem sector that calls for an immediate attention to achieve the envisaged vision for achieving a balanced development of the city of Meerut.

Strong and diverse economic base flourishing for long time; Proximity to Delhi, Meerut being an important part of NCR, efficient road and rail network, rich Tourism & Cultural heritage linkages of the surrounding areas, large number of active NGOs and CBOs are identified some of the prime core strengths of the city

The Large Slum population, a huge gap in the demand and supply of various urban services in all the sectors including water supply, sewerage, solid waste management, Housing and traffic & transportation etc; deteriorating pollution levels in water bodies, Rivers, ground water and Air causing serious health hazards and making the quality of life really worse for the local population are identified as major weaknesses of Meerut City.

Meerut as potential recipient of various spill over activities from Delhi, various upcoming projects such as Expressway connectivity, high speed rail connectivity will open great opportunities for adjoining cities in the vicinity of Delhi including Meerut, presence of numerous Education & Research institutes in the city, the city acts as a gateway to a whole region dotted with numerous places of historical religious and cultural importance within a radius of 40 km, ample unexplored land are some of the opportunities for Meerut.

Dominance of various upcoming cities in the NCR in the proximity to Delhi namely Gurgaon, Noida, Greater Noida, Jhajjar, Sonipath etc. where large number of mega developmental projects and SEZs, townships are already in place, The political will and political instability in the state, lack of any charismatic political leader from Meerut (an important factor in intra state affairs in large states in India) are some of the key threats that may cause Meerut to lose out to other regions and cities within NCR and Upstate.

Sub Mission 1 – Urban Infrastructure and Urban Governance

6.0 Urban Infrastructure

Urban Renewal (Inner City Area)

- Non Conforming Land uses (Commercial and Shopping Complexes)
- Polluting and Nuisance Creating Commercial activities such as dairy, slaughtering and tyre re-treading
- Contamination of ground water in places like Peth area, Nand puri, Ashok puri etc. due to the presence of distillery
- Encroachment/ Narrow Street – Identification of critical road stretches
- Lack of pedestrian facilities
- Problems due to mix traffic
- Large number of critical parking locations
- Large number of critical junctions

Water Supply

- Water Crisis is due to growing population in different area.
- Most of the tube wells are either situated in colonies or old city. Lack of proper planning regarding water treatment.

- Large part of City depends on ground water leading to over exploitation of Ground water.
- Inadequate storage capacity
- Lack of treatment facilities as ground water is used for supply for drinking purpose.
- The gross average per capita supply in the city is 175 lpcd. At the same time ward numbers 1, 2, 3, 4, 5, 6, 23, 30, 40, 44, 48, 66 and 70 are partially covered and ward no. 7, 8, 10, 12, 16, 18, 19, 28, 31 are yet to be covered therefore there is high inequality in distribution of water.
- Contamination of water due to cracks in old service connections.
- The transmission and distribution losses accounts for 20-25% of the total supply.

Sewerage

- The existing network needs to be extensive rehabilitation.
- At various places the existing sewer lines are damaged resulting in falling sludge into existing nalas.
- Replacement of a part of the network is required due to hydraulic inadequacy at the forecast flow regime, provision has been made accordingly.
- Untreated sewerage disposal is a critical area.
- Mixing of sewerage with storm water drain.
- The current sewerage system does not serve a substantially large proportion of the population

Drainage

- Poor maintenance, weed growth and blockages on the Nalas lead to flooding, hygienic and filthy living conditions during rainy season in low lying areas.
- Mixing up of the sewerage into Nalas increases the vulnerability to various health hazards.
- Disposal of solid waste into Nalas is a poor practice.
- Many nalas in the City are under severe dilapidated condition.

Solid Waste

- Method of disposal is not scientific disposal of bio-medical waste
- Inadequate capacity collection system of solid waste
- Present sites for waste disposal totally exhausted.
- Segregation of solid waste and recycling not managed adequately.
- Bio Medical Waste
- Waste is not properly segregated at source
- No special precautionary measures are taken during collection and transportation
- Treatment and Disposal
- No health center treat their waste before disposal
- At few center needle shredder is used
- Common disposal technique:
- Open burning of dressing materials without any treatment
- Deep burial of anatomical wastes
- Dumping/placing the waste into the municipal bins
- Subharti Hospital has incinerator but it is rarely operational.

Roads and Road Transport

- Lack of public transport, encourages use of personalize vehicle resulting in congestion, socio-economic and environmental problems.
- Lack of proper designated parking facilities encourages haphazard on-street parking hampering smooth flow of vehicle on major road.
- Lack of footpath and pedestrian facilities increases the vulnerability of pedestrian in terms of their road safety

- Presence of informal activities/ hawking along the road margins and encroachment along the roads decreased the road capacity considerably
- Poor junction design decreases the smooth flow of traffic
- Poor traffic management leads to delay and low travel speed along important corridors
- Poor planning for religious processions like the annual 'Kanwar Yatra' results in chocking of Major Arterials like NH-58, Meerut – Bahgpat Road and Roorkee Road for a period extending more than a week.

Summary of the Infrastructure

Item	Details	Current State
Water Availability	Installed Capacity Released/Daily	185 MLD 165 MLD
Source of Water Supply	*Within City Limits* 10-50 Sq. Km. 50-100 Sq. Km.	Tube Wells Tube Wells *Hardly 2.5 MLD is from Surface water*
Water Coverage	Population Covered By Public Water Supply % Per Capita Supply (lpcd) Supply Duration (Hrs.)	70% 158 lpcd 8 Hrs
Wastewater Disposal	Wastewater Generated Daily (Mld) Disposal (Underground Sewerage) Capacity (Mld) Present Operating Capacity (Mld) Households Connected To Underground Sewerage	112 MLD 45 MLD 34 MLD 25%
Solid Waste	Waste Generation Daily (Tonnes/Day) Collection Daily (Tonnes/ Day)	520 T per Day 320* T per Day
Storm-water Drainage	Average Annual Rainfall (Cm.) Length Of Storm-water Drains (Km.) – 12 Nalas	71.4 cm 43 km
Roads and Road Transport	Roads: Municipal Roads (Km.) State-Level Roads (Km.) Cantonment Roads (Km) Public Transport: Buses (Number of buses on city routes) Other Buses (including UPSRTC) No of School Buses + Private Buses Bus Capacity (no of Passengers) Private Registered Vehicles: Two Wheelers Cars/ Jeep LCV Truck Tempo/ Taxi/ Auto Rickshaws Bus Tractor Para Transit Service Modes: Tempo/ Taxi (Number of permits) Auto Rickshaws (Number of city route permits)	 970.0 km (50% *Kutcha*) 355.5 km 65.2 km 177 1091 125 + 25 (150) • 25 - 35 seat Mini buses • 54 seat Std buses 173375 25139 1160 7514 2557 939 53812 583 523
Street Lighting	Number of Street Light Poles % of Area Coverage	29001 80%

** Not on daily/ regular basis*

7.0 Environment Services

Ground water is available at 35-38m depth in the city of Meerut. There is depletion in the water level in the district by 0.15-2.5m during last decade. As per the information from the NCR report, the Total Dissolved Solids (TDS) level of ground water is 329, whereas the pH level was recorded as 8.4 during the year 1998.

7.1.1. Air Quality

The ambient air quality surveys carried out for Thana Road Junction reveals that Suspended Particulate Matter (SPM) level were far in excess of the standard level of 200 ug/m3. The SPM levels were found to be highest in the month of February.

7.1.2. Noise Pollution

Our analysis of data collected from department of Environment shows that the average level of noise exceeds permissible norms, in the different points of city.

7.1.3. Polluting Industries

The city of Meerut has a large industrial setup that is also in some way or the other responsible for contributing to the pollution levels in the city. In terms of polluting industries, the city of Meerut has 40 polluting industries in the form of slaughter house, dyeing industry, meat processing industry etc.

- **Bio-Medical Waste**

There are 137 health facilities located in the city. However, In spite of such large number of health facilities operating in the city there is no incinerator present for treating the bio medical wastes. The result is that wastes discharged from health units mixes with the solid waste of the city posing a serious problem for health and safety of the inhabitants.

7.1.4. Heritage and Tourism

- City is the gateway to Hastinapur.
- Also believed to have been an important centre of Buddhism during the time of Ashoka.
- City is associated with igniting the spark of first Freedom struggle in 1857 against East India Company.
- The entire region within 40 kms of radius is dotted with places of religious, tourist and historical importance, Buddhist and Jain shrines.
- No specific heritage site is present in Meerut city

8.0 Financial Profile

The total revenue income of the MNN for has grown consistently from Rs 4510 lakhs in 2001/02 to Rs 5114 lakhs in 2004/05 registering a compounded annual growth rate (CAGR) of 4.3 per cent during 2001/02 to 2004/05. Tax Revenues have shown negative trend of -1.7% from 2001/02 to 2004/05 while Non Tax revenue accounts have shown a growth of nearly 8% during the same period. The revenue account has shown a positive closing balance during the F.Y 2004/05 of about Rs. 419 lakhs, which has been a reverse trend from fiscal deficits registered in previous three years from 2001/02 and 2003/04. This appears to be a welcome sign that enhances the availability of finances for various

developmental works, but there is always a doubt on sustaining this trend looking at the past three years records.

As seen above the revenue income of the MNN has grown consistently at a compounded annual growth rate (CAGR) of 4.3 per cent during 2001/02 to 2004/05, while the quantum in revenue expenditure in 2004/05 has come down from 2002/03 and 2003/04 levels registering a negative growth rate of 9 to 10 per cent. The current trend of CAGR would definitely help MNN to minimize the huge deficit in due course of time.

9.0 Institutions

The CDP covers a broad assessment of the existing institutional framework for urban development in Meerut. This not only refers to the functions but also to the objectives for effective operations by various agencies including Local government and Municipal Nagar Nigam. The various agencies involved in urban management in Meerut are primarily:

- Meerut Municipal Corporation;
- U P Jal Nigam;
- MDA
- DUDA
- Public Works Department;
- Uttar Pradesh Housing Development Board;
- Town and Planning Organisation; and
- Uttar Pradesh Pollution Control Board;

Urban Reforms

Summary of current status and tentative plan for different reforms to be carried out by MNN and the state Government are discussed as under. Meerut Nagar Nigam is in the process of implementing all the mandatory and optional reforms. Adoption of modern accrual based double entry accounting system accounting is expected to be completed by **April 2007.** Interactive website for information on property tax dues, tenders of all departments and information birth and death registration to be implemented by **Dec 2007.** Assessment of identification of un-assess properties tax shall be transferred on GIS platform by **2009.** Collection target of 85% collection shall be achieved by **2010.** Cost recovery for Water supply and UGD is in the form of reasonable user charges by **2009. Similarly a time table for all the reforms is furnished by MNN.**

The status on various optional reforms that need to be undertaken by the MNN to avail JNNURM funding and the current status of the State with respect to their implementation are also provided by MNN. Revision of bye-laws to streamline the approval process for construction of buildings, development of site etc. Earmarking at least 20-25 per cent of developed land in all housing projects (both public and private agencies) for EWS and LIG category with a system of cross subsidisaion are currently under the jurisdiction of MDA.

There are many reforms to be undertaken by Govt. of Uttar Pradesh such as

Repeal of ULCRA, Reform of rent control laws, balancing the interests of landlords and tenants, Rationalization of stamp duty to bring it down to no more than 5 per cent within the next seven years, Enactment of the public disclosure law to ensure the preparation of a medium-term fiscal plan of ULBs and parastatal agencies and release of quarterly performance information to all stakeholders etc along with a series of optional reforms are to be committed by GoUP.

10.0 Vision for Sub Mission – I

No matter what the future brings, housing, creation of employment generation, educational facilities, transportation, telecommunication and provision of basic services will continue to be fundamental activities for various urban centers. While preparing City Development Plan, our paramount concern is to have a Vision for the city based on its current weaknesses, strengths, opportunities, potential and threats in order to provide the ideal balance between different current activities and future role of Meerut.

In order to monitor and evaluate the accomplishment of the stated VISION, goals gave been identified for sector. These goals are 'outcome based' and indicate the performance of the sector from the consumer/ resident point of view.

10.1. Present Scenario and Options of Development

The city faces urban infrastructural chaos due to limited availability and skewed distribution of water. High dependency on UG sources of water with increasing ground pollution increases the city's risk profile.

The limited coverage of UG sewer network, inefficient utilization and poor maintenance has led to extremely unhygienic conditions in majority of the city areas. Disposal of the non/partially treated sewage further compounds the issue.

Storm water disposal is in a state similar to other infrastructural sectors. In spite of having a number of nallas, that form a natural drainage system for the city, the city faces acute drainage problems due to the poor maintenance and incomplete works of the drainage system.

The urban transport system needs to gear to the needs and expectations of the city. Preponderance of private vehicles of varied categories and lack of a unified / efficient public transport system has led to poor safety and environmental degradation as also limiting the economic strength of the city.

In absence of a sewage treatment plant, improper drainage systems, poor vehicular transport systems and unsatisfactory solid waste and bio-waste disposal systems, the urban environment risks putting a negative edge to the city's growth.

10.2. Action Plan and strategy formulation

The following sectoral action plans have been devised to improve the urban living conditions in the city and help it achieve the vision envisaged for it.

Water Supply

- Augmenting the present UG sources of water and identifying sources of surface water.
- Strengthening of existing piping and distribution system
- Laying of new systems of distribution to fulfill the stated objectives
- Increasing the share of surface water sources by 50% till 2034

Sewerage

- Zoning of the city based on natural features so as to increase efficiency in networking and disposal

- Renovation and strengthening of existing network
- Provision of Sewage treatment Plants on zonal basis
- Complete segregation of sewerage and drainage networks.

Strom water Drainage

- Strengthening of the nalas in the city to cater to and act as a drainage system
- Segregation of Industrial effluent and storm water
- Water recharging through SW Drainage system
- Restoration of city's natural drainage systems

Solid waste management

- To consolidate and improve the collection system from weekly to daily basis
- Segregation of municipal and bio-waste
- To achieve segregation and maximize reuse, recovery and recycling of solid waste

Urban Transport

- Improving and strengthening existing road system
- Ensuring increase of passenger traffic in share of public transport system
- Strengthening the Public road transport system in the medium term (2006-24), while developing a fully operational Mass Transit system by 2034 to ensure 50% share of Public transport in the city traffic.

11.0 City Investment Plan

The City Investment Plan (CIP) gives an estimate of the level and quantum of investment required to implement the strategies in specific sectors in the CDP over a specified time-frame to attain the sustainable growth and to achieve the agenda goals.

The CIP is worked out duly considering the advice of Technical Experts, our recommendations based on a thorough assessment of existing situation and the constant interaction with different Stakeholders. The projects for system and infrastructure augmentation are derived based on a broad demand - supply gap assessment for each of the service sector. Cost of all these projects have been estimated in CIP and a suitable phasing for different years in the project period have been worked out. Unit costs adapted are based on estimates of similar projects planned/executed by MNN and other respective departments.

The sector-wise introduction and description of the sub projects included in the CIP are as follows:

11.1. Urban Renewal

For the renewal of the inner city area and make it free from various problems of congestion certain projects are identified as part of CIP (target year 2012). From our analysis, the total investment required for this sector is estimated about Rs. 35840 lacs.

11.2. Water Supply

In order to wipe of the deficit and to meet the demand of both domestic and bulk consumers, there are different projects identified as part of CIP (target year 2012) and vision (target year 2030).

From our analysis the total investment required up to 2030 for all the projects of water supply is estimated at about Rs. 62667 lacs and only in the first phase it is estimated as Rs. 19478 lacs.

11.3. Sewerage

To improve the condition of the sewerage system in Meerut and to connect the whole city with a centralized system, different projects are identified as part of CIP (target year 2012) and vision (target year 2030). From our analysis, the total investment required in this sector is estimated about Rs. 95183.8 lacs and in first phase it is estimated at about Rs. 23457.8 lacs

11.4. Solid Waste Management

To make the system of disposal technical and favorable to environment and also for hazardous waste disposal certain projects are identified as part of CIP (target year 2012). From our analysis, the total investment required for this sector is estimated about Rs. 2579.38 lacs and the whole situation can be improved in these seven years only i.e. in first phase, after that only proper maintenance is required.

11.5. Drainage

The nala's in the city are in dismal condition and also abused and encroached by different people which does not let proper cleaning and maintenance of the nallas causing floods and overflowing in the heavy flow conditions. To recover from this condition certain projects have been identified as part of CIP (target year 2012) and vision (target year 2030). From our analysis, the total investment required in this sector is estimated about Rs. 38640.30 lacs and in first phase it is estimated at about Rs. 18862.80 lacs

11.6. Road and Road Transport

Details of investment of projects regarding up gradation of existing infrastructure and construction of proposed new infrastructure is given in CIP (target year 2012). From our analysis, the total investment required for this sector is estimated about Rs. 22362.50 lacs.

The National Capital Planning Board (NCRPB) along with the Japan International Cooperation Agency (JICA) in their study titled 'Feasibility Study on the Construction of Expressway in the National Capital Region' had recommended the construction of Meerut – Ghaziabad Expressway along with other Links in the NCR. The total project cost was expected to be 538 Crores. It was recommended that the project would be taken up in the second phase i.e. 2011 - 2021.

The NCR in its Regional Plan – 2021 has recommended the construction of following projects that pertain to Meerut:

- Four laning of Meerut – Ghaziabad – Delhi segment of NH-58 (Phase I)
- Rapid Rial Transit System for Ghazaibad – Merut segment (Phase II)
- Upgradation of Meerut Hapur Grid Road (Phase II)

11.7. Urban Environmental Management

This includes the projects related to water bodies, ground water, heritage, open area as part of CIP (target year 2012). From our analysis, the total investment required for this sector is estimated about Rs. 2469.43 lakhs.

11.8. Municipal Reforms and Capacity Building

Municipal Reforms and capacity building form the major component of CDP, without which implementing various tasks of CDP would be difficult. Several requirements identified under Municipal Reforms and Capacity Building of the Municipal Corporation as part of CDP account for nearly a sum of 365.5 lakhs.

12.0 Financing Options

The broad sector wise break up of the project cost is presented below.

Sector wise Project Cost

S No	Sector/ Sub-Sector	Investment (Rs Lakhs)
SUB MISSION 1		
1	Urban Renewal	35840.00
2	Water Supply	19478.08
3	Sewerage	23457.80
4	Storm Water Drains	26730.30
5	Solid Waste Management	2579.38
6	Roads and Transportation	30042.50
7	Urban Environment	2469.43
8	Municipal Reforms and Capacity Building	365.50
Sub Total		140962.98
SUB MISSION 2		
9	Basic Services to Urban Poor	5109.35
Sub Total		5109.35
Grand Total		146072.33

Current state and local deficits have created a challenging environment in Meerut City to supply infrastructure at a Level of Service (LOS) that is acceptable to its populace.

City Investment Plan estimates a total requirement of Rs 140962.98 Lacs for different sectors with in a period of 6 years from 2005 to 2012. Looking at the existing climate for infrastructure financing, including the challenges and opportunities for state and local governments JNNURM suggests shifting of priorities and methods of financing infrastructure. CDP prepared under the framework of JNNURM thus looks beyond traditional financing instruments and inviting all stakeholders to the table to efficiently deliver the infrastructure via broad-based solutions.

13.0 Financial Shares of different Local Bodies

As 74th Constitutional Amendment is not in place in UP, different local bodies other than Municipal Corporation are involved in providing various services and facilities in Meerut cities. Under JNNURM, the component of local body in the overall city investment plan will be shared as per their current role of different such agencies. Different agencies to execute the identified projects are:

Meerut Nagar Nigam
Meerut Development Authority
UP Jal Nigam
UP Bridge Corporation
Department of Forest
DUDA (for submission II)

Respective shares of each agency mentioned above are worked out as per their current role.

The total financial resources to be mobilized by MNN during the project period from 2006 to 2012 are estimated to be Rs 18010 Lakhs. Funds ranging between Rs 20 to Rs 40 crores are required to be mobilised by MNN during different years of the project period. Revenues to the tune of Rs 15 crores per year can be mobilised by way of sale of assets, collaboration with real estate developers and leasing out of prime assets. Balance requirement can be mobilised by enhanced revenue collection by means of more effective governance, efficient tax structure and transparent accounting system.

Sub Mission II – Basic Services to Urban Poor

14.0 Existing Slum Situational Analysis (Submission II)

Slums in the city cover an area of approximately 240 ha and have an average population density of around 575 people per hectare. Significant number of these slum dwellers belongs to backward castes. Population of Scheduled Castes accounts for nearly 27% of the total slum population in the city.

There are 102 slums, which are identified by DUDA in the year 2000. This list is still in the process of revision. There are several poverty clusters in the city which are not registered in the official list owing to which they are not getting the benefits of various Governments policies and facilities.

Slums in Meerut have grown from 10 Slum pockets in 1950 to 108 Slum pockets in 2003. Owing to the flaws in current planning process and various ongoing government policies, practiced so far. Suffering from bias against slums these pockets have mainly been the recipients of residues and left-over of the main city, which has created object conditions of poor hygiene and wretchedness in one to all 108 slums as notified by DUDA. Such treatment of slums also failed to achieve a holistic urban growth. The slums in the city are predominantly scattered and located on private lands.

Brahmpuri and Tarapuri are the areas which are generally the only areas with clustered pattern of slums. There are many other additional poverty clusters which exist in these areas and because they are not listed separately they are counted under the same head.

14.1. Basic Services and Housing (Submission II)

The existing scenario in Meerut has got two distinct dimensions. Besides fulfilling the demand of basic amenities and infrastructure, for the mainstream population, the city needs to address the widespread disparity in access to basic urban services and treatment of city's slum dwellers and urban poor that constitute over 40% population of the city.

By and large the condition of huge slum population in the city expressed in terms of access to basic services present a very grim situation. Only 49.42% of slum dwellers have a piped water supply, only 48.27% have individual/ private toilets, while mere 24% of these have sewer lines. 43 % of these slums have drainage network.

Overall state of physical and social infrastructure in the slum areas highlights the acute disparity in service distribution and provision amongst different areas of the city.

The health services to these slums are provided by 8 health posts and 4 rural PHCs (which also cover few urban areas). There are 2 charitable hospitals which are also functional in the city and serving the urban poor. Many NGOs are also working in these slums in order to provide the basic education and primary health services.

Poor housing stock in different slums further adds to the degradation of these areas. As per DUDA records a total of 11203 houses need improvement (until year 2003). Of these 8669 are partially built, while 2534 are Jhuggis/ Kutcha houses that need to be dismantled and new housing provision need to be made on the lines of VAMBAY/ IHSDP schemes.

14.1.1. Key Findings

The above vulnerability criteria are used for identification and classification of slums has enriched programming. The most important finding of this exercise is that it helped in locating and listing of registered and additional slums and rationally classifying these on the basis of their vulnerability.

The major findings of the analysis are described below:

1. A significant proportion of slums remain unidentified

There are a significant number of slums which remain unlisted. In Meerut city, 108 slums are listed in the official DUDA list (until year 2003) and another 43 slums have been identified.

2. All slums are not equal in terms of need

Not all the slums in the city are homogenous and there exist a wide disparity. On the basis of certain criteria, the slums are categorized into most, moderate and less vulnerable.

This shows that all slums are not equal and thus need to be addressed differently. The needs and characteristics of different slums might also be different from programmatic intervention approach.

Additional Poverty pockets are more deprived on various counts than registered slums.

15.0 Vision for basic services for urban poor (Submission II)

No matter what the future brings, housing, creation of employment generation, educational facilities, transportation, telecommunication and provision of basic services will continue to be fundamental activities for various urban centers. While preparing City Development Plan, our paramount concern is to have a Vision for the city based on its current weaknesses, strengths, opportunities, potential and threats in order to provide the

ideal balance between different current activities and future role of Meerut. It include phase wise vision and goals for providing basic services for urban poor

15.1 Vision and Goal (Submission II)

In order to monitor and evaluate the accomplishment of the stated Vision, goals have been identified for sector. The formulated goals are 'outcome based' and indicate the performance of the sector from the consumer/ resident point of view.

15.2 Present Scenario and Options for Development (Submission II)

Urban poor constitute almost a third of the total population, but the disparity in provision of services is alarming. Poor infrastructural and housing conditions in the slums have led to a dichotomy, where residents of the same city seem to be discriminated against.

15.3 Action Plan (Submission II)

The following action plans have been devised to improve the urban living conditions of the urban poor in the city and help it achieve the vision envisaged for it.

- Ensuring habitability of housing areas of the poor, who may not presently be able to afford all the urban services under user charges system
- Provide housing units to those below poverty line and those without shelter
- Infrastructural improvements in slums.

16.0 City Investment Plan (Submission II)

The City Investment Plan (CIP) gives an estimate of the level and quantum of investment required to implement the strategies in specific sectors in the CDP over a specified time-frame to attain the sustainable growth and to achieve the agenda goals.

The CIP is worked out duly considering the advice of Technical Experts, our recommendations based on a thorough assessment of existing situation and the constant interaction with different Stakeholders. The projects for system and infrastructure augmentation are derived based on a broad demand - supply gap assessment for each of the service sector. Cost of all these projects have been estimated in CIP and a suitable phasing for different years in the project period have been worked out. Unit costs adapted are based on estimates of similar projects planned/executed by MNN and other respective departments.

16.1. Basic Services for Urban Poor (Submission II)

Two basic components i.e. housing and infrastructure are dealt separately for estimating cost and separate projects for the same are also identified as part of CIP (target year 2012). From our analysis, the total investment required for this sector is estimated about Rs. 5,109.35 lacs.

17.0 Financing Options (Submission II)

Current state and local deficits have created a challenging environment in Meerut City to supply infrastructure at a Level of Service (LOS) that is acceptable to its populace.

City Investment Plan estimates a total requirement of Rs 117134 Lacs for different sectors with in a period of 6 years from 2006 to 2012. Out of which Rs 5109.35 lacs is for urban poor looking at the existing climate for infrastructure financing, including the challenges and opportunities for state and local governments JNNURM suggests shifting of priorities and methods of financing infrastructure. CDP prepared under the framework of JNNURM thus looks beyond traditional financing instruments and inviting all stakeholders to the table to efficiently deliver the infrastructure via broad-based solutions.

18.0 Financial Shares of different Local Bodies (Submission II)

As 74th Constitutional Amendment is not in place in UP, different local bodies other than Municipal Corporation are involved in providing various services and facilities in Meerut cities. Under JNNURM, the component of local body in the overall city investment plan will be shared as per their current role of different such agencies. Different agencies to execute the projects related to basic services of urban poor (Sub-mission II) are SUDA and DUDA.

Section – I

Introduction

Chapter 1.0
Introduction

Section I - Introduction

Chapter 1.0 Introduction

1.1. Background

Meerut is a city having abundant history, limited present and potentially prosperous future. Depending on person's view point, Meerut is a city in history, a city of nallahs or a city with future. The historical background of the city has always been its USP. However, a clear understanding of urban growth, clarifies that it is not the city that made history but history that made the city gain importance.

Due to its location & setting, nearness to the National capital and rich agricultural activity in the surrounding region, Meerut city presently acts as a major distribution center for the diverse agriculture produce such as sugarcane, food-grains etc. It is the largest manufacturer of Musical Instruments in the country and is also one of the largest suppliers of sports goods. There are several large scale industries located in Meerut viz, sugar mill, spinning mill, auto- tyre factory, fibre board industry etc. It is well known for its sweet shops, scissor and razor manufacturing, handloom printing and dying and is an emerging center for jewellery desigining. The city being the largest urban center in the NCR, in terms of population after Delhi, holds a unique place and importance as the potential recepient of spill over activities from Delhi.

In spite of the above facts highlighting the importance of the city in the region it faces challenges of unplanned and organic growth. Infrastructural deficits in almost all the sectors coupled with an un-proportionately large poor class population limit the growth potential of the city.

However the city holds potentials that are inherent in its character; such as a vibrant trade and commerce sector and cottage industry, the rich agricultural land and favorable geographical conditions around the city areas, numerous higher education institutes, availability of adequate skilled and semi skilled work force, proximity to Delhi etc. In addition to the stated strengths of the city, the proposed decentralization of NCT via the NCR formation and resultant spill over of activities should be a major factor in giving a boost to the city's future.

To take advantages of these factors that hold promise for the city, it is of prime importance that the city improves its infrastructural provision and addresses these infrastructural deficit fulfillments through a socially fair manner.

Realizing the importance of urban centers and infrastructure in the country as the prime engines of economic activities and generators of national wealth, a nation wide urban renewal program has been formulated called Jawaharlal Nehru National Urban Renewal

Mission (JNNURM). Meerut is one of the city selected under JNNURM being a city with more than a million population.

M/s BCEOM India has been appointed to prepare the city development plan (CDP) for Meerut. The proposed City Development Plan (CDP) attempts to address these deficiencies and deficits, potentials and promises. The CDP takes a holistic view of the city's past and present, in context of social, physical, infrastructural and economic environment. This Report presents the City Development Plan (CDP) for the Meerut city.

1.2. Need of the Study

In order to sustain the high economic growth and ensuring an overall balanced development in different regions of the country keeping in view the interrelatedness of the economic activities in urban areas and quality of urban infrastructure Jawaharlal Nehru National Urban Renewal Mission (JNNURM), has been conceived and has reached an advanced stage of execution. Jawaharlal Nehru National Urban Renewal Mission (JNNURM) has thus been a national level initiative that enables both the State Governments and ULBs towards providing investment support in the sectors of urban infrastructure as well as urban reforms. Meerut city has been one of the 63 cities identified under this mission for the preparation of CDP.

The first Master Plan (1971-91) for the Meerut city which got expired in 1996, failed to achieve a balanced growth and solve the current and satisfy the future needs of the city. It is evident that availability of quality urban infrastructure services - both physical and social is posing a serious bottleneck in achieving and exploiting the true potential of Meerut city. Owing to its significance, contribution and potential role in the time to come, Meerut therefore has been selected as one of the cities under JNNURM in the phase one.

Chapter 2.0

Preparing City Development Plan

Chapter 2.0 Preparing City Development Plan

2.1. Background

A CDP is both a perspective and a vision for the future development of a city. It presents the current stage of the city's development. The CDP aims to set out the direction of change for the future development of Meerut based on a thorough assessment of current stage of the city development and interaction with different stake holders namely government agencies, parastatal agencies, NGOs, Residential Welfare Associations and participation of different weaker sections of the communities. This further provides a logical and consistent frame work to identify thrust areas, selecting best strategies, interventions, action plans and investment decisions to attain the envisaged vision for the city.

2.2. Focus

The main focus areas as considered by the Consultant for the preparation of CDP are furnished as under:

- Creation of economically productive, efficient, equitable and responsive cities
- Development of Economic & Social Infrastructure
- Selection of suitable alternative routes, strategies for bringing about desired change
- Issues affecting Urban poor
- Strengthening of Municipal Governments
  - Accounting systems & Procedures
  - Budgeting Systems & Procedures
  - Accountability
  - Transparency
- Elimination of legal and other bottlenecks
- Urban Sector Reforms to encourage direct investment into city based infrastructure

2.3. Methodology

The Multistage exercise of preparation of CDP for Meerut has been carried out following the guidelines as per the toolkit prescribed under JNNURM. Various stages involved in the preparation of JNNURM are presented in the figure 1:

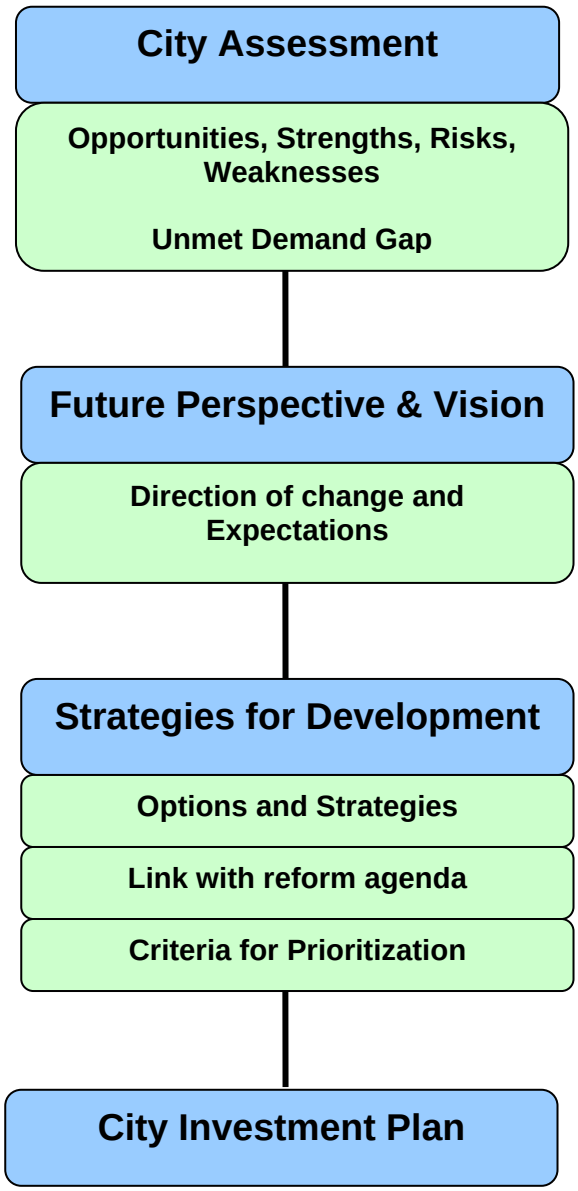


Figure 1 - Stages of CDP

Preparation of a CDP involves in-depth analysis of the existing situation, covering various demographic, economic, financial, infrastructure, physical, environmental and institutional aspects of the study area. This report presents a detailed assessment of existing levels of availability of different infrastructure and urban services based on a thorough situational analysis as per the requirements set out under JNNURM tool kits. **Annexure III** presents all the requirements of the toolkit in tabular form.

Chapter 3.0
City Profile

Chapter 3.0 City Profile

Meerut city, the head quarter of Meerut District, situated 70 km from Delhi, has been a place of historical, cultural and adminstrative importance since the time imemeorial. The city plays a significant role in different areas of economy in the modern times that includes trade & commerce, tourism & pilgrimage, transportation & distribution. The city is the gateway to Hastinapur, one of the earliest Indian cities like Ayodhya, Kashi which was the capital of the Kauravas and Pandavas during Mahabharata times. Meerut is famously associated with igniting the spark of first Freedom struggle in 1857 against East India Company, which transformed into a great revolution later. Meerut cantonment is the place where the movement started. The entire region around Meerut is dotted with places of religious, tourist and historical importance, Buddhist and Jain shrines.

The city lies south of the cantonment, and owes its modern importance to its selection by the British government as the site of a great military station. The cantonment, established in 1806, was the headquarters of the 7th division of the northern army. The administration of the cantonment area and running of its urban and other functions is still outside the jurisdiction of Meerut Nagar Nigam.

3.1. Location

Meerut district is the part of upper Gagna-Yamuna doaba, which lies between 28^0 47' and 29^0 18' north latitudes and between 77^0 7' and 78^0 7' east longitudes. On the north it is bounded by Muzaffarnagar district; in the south by Bulandshahar district while Ghaziabad and Baghpat districts form the southern and western limits. Ganga River makes its boundary in the east direction a separates it from the districts of Moradabad and Bijnor. Hindon River makes its western Boundary in the west and separates it from the Baghpat district.

3.2. Spatial Planning

Unplanned development of the cities marked with the falling far below the norms in terms of service levels in delivering citizen services whether good roads or clean environment. Municipalities/ULBs vested with authority to plan and implement infrastructure schemes

also lack in co-ordination among them. These factors are resulting in the falling levels of service delivery.

The first Master Plan (1971-91) for the city targeted to achieve a balanced growth of the city, which got expired in 1996. After the expiry of the 1st Plan, a new master plan based on detailed survey and analysis of the city's present problem and keeping in view the targeted population of 2.3 million for the year 2021, has been prepared.

3.3. Significance of Meerut in NCR

Meerut is a major part of NCR on the basis of its industrial and location base. NCR board is playing a major role in strengthening the financial aspect of the city by proving funds and loans for the development of the city. The main emphasis by NCR board for Meerut is on the proposal of **Ghaziabad - Meerut Express way** for improving the road connectivity of the city on the basis of importance of NCR. Further consideration of proposing IRBTS and RRTS for Meerut is under process for improving the connectivity and accessibility of Meerut city. Location of Meerut in NCR is shown in **Figure 2**.

Figure 2: Location of Meerut in NCR

As per U.P Sub Regional Plan Meerut has been identified as a **regional town** as per U.P. sub regional board and will be developed as alternative centre for job opportunities, infrastructure facilities and services. Meerut being a **priority town** identified in NCR for removing regional disparities and to provide employment opportunities for the prospective migrants to Delhi.

Table 3.1: Details of Ongoing Programmes and Proposals in Meerut

Completed/Ongoing Projects	Projects Proposed
1. Wholesale Mandi 2. Transport Nagar 3. Hathkargha Nagar Scheme 4. Sports Goods Complex 5. Medical College and Hospital 6. Tehri Hydro Electric Power Station 7. Industrial Township in Modipuram 8. Scissors Manufacturing and Marketing Centre Complex 9. Commercial Complex	1. Engineering College 2. Astrotuf Stadium 3. Bus Terminus 4. Expansion and Development Industrial Area

Source: U.P. Sub Regional Plan 2001

3.4. Demography

3.4.1. Population Profile

As per 2001 Census the city of Meerut has attained the status of a metropolitan city i.e. million plus population city. In exact terms the population was recorded to be 11.61 lakhs which was less than 5.5 lakhs in 1981 and nearly 8.5 lakhs until 1991. A brief account of population growth taken place in the city since 1901 is presented in **Table 3.2**

Table 3.2: Population Profile

Sr. No.	Year	Population	
		Numbers	Lakh
1	1901	1,21,180	1.21
2	1911	1,19,435	1.19
3	1921	1,25,506	1.26
4	1931	1,41,025	1.41
5	1941	1,79,155	1.79
6	1951	2,39,440	2.39
7	1961	2,94,853	2.95
8	1971	3,71,760	3.72
9	1981	5,36,615	5.37
10	1991	8,49,799	8.50
11	2001	11,61,716	11.61

Source: Meerut Master Plan, Vision-2021

During the decades 1951-61 and 1961-71, the population in the city grew by 23.14% and 26.08% respectively against the national growth rates of 26.14% and 38.23% during the same periods. Between 1971 and 2001, there has been a rapid increase in population in the city which exceeded over 58% in the 70s, when the population growth in Meerut surpassed the national average. The growth of population in the city is presented in **Table 3.3**

Table 3.3: Population Growth

Year	Population (Lakh)	Average Annual Growth Rate (%)
1981	5.37	3.74 (1971-81)
1991	8.50	4.70 (1981-91)
2001	11.61	3.26 (1991-01)
2005 (Estimated)	13.20	3.03 (2001-05)
2011 (Projected)*	15.27	2.70 (2001-11)

** Semi-log graph method* **Source**: Census 2001

The increase in population rate during the decade of 1991-2001 was 37.8%, which was less than that of the previous two decades and a little more than the national average of 36.17%. It is evident from the above analysis that the population rate decreased steadily in the recent years. The drop in population growth in Meerut can be attributed to the development of new housing areas in several competing towns in the neighboring areas which are indeed equipped with better and modern infrastructure facilities such as NOIDA, Ghaziabad, Greater NOIDA and Gurgaon. Meerut on the other hand could not continue the phase of infrastructure development started in late 60's and 70's.

The main reason for this phenomenon was the creation of numerous housing and industrial development plans by various development authorities, development of infrastructure facilities and the arrival of the green revolution in the agricultural sector in several parts of the west Uttar Pradesh, which resulted in immigration of population from the villages. Due to various administrative policies encouraging industrial development, many industrial units were set-up which in turn created new employment opportunities and increased the population.

In the Master Plan of National Capital Region 2001, it was foreseen that Meerut would be developed as a regional centre where many administrative offices and economic activities of Delhi would be shifted, thus encouraging the development of this city. In this context, the development authorities established many infrastructure facilities and a large increase in the population was foreseen but the failure to shift either the administrative offices or the economic activities resulted in the disproportionate increase in population growth.

Composition of Growth

The main components of the composition of growth are Natural growth, In-migration and Increase in population due to Jurisdictional changes. In-migration as highest contributor to the population increase in Meerut city accounts for nearly 73% of total increase and 20% of total population during the last decade.

Table 3.4: Composition of Growth

Composition	Population Increase During			
	1981-91	% of Total	1991-2001	% of Total
Natural Increase*	-	-	-	-
In-Migration*	-	-	-	-
Jurisdictional Change	Nil	Nil	Nil	Nil
Total Increase	3,13,184	58.36	321186	37.80

* Details not available

3.4.2. Male-Female Ratio

Male female ratio is an important demographic indicator. During each decade of the period from 1971 to 2001, there has been a steady increase in the number of female per 1,000 males. At the national level however the situation is reversed where constantly the share of women has declined. The main reason for this phenomenon has been the initial arrival of only men from the nearby villages due to increasing activities in industrial and economic activities and then after their establishment at work bringing their families to the city.

Table 3.5: Sex ratio of Meerut

Sr. No.	Year	Population			Sex Ratio
		Total	Male	Female	
1	1971	3,71,760	2,20,082	1,51,678	689
2	1981	5,36,615	2,90,370	2,46,245	848
3	1991	8,49,799	4,54,204	3,95,595	871
4	2001	1,16,716	6,21,481	5,40,235	869

Source: Meerut Master Plan, Vision-2021

3.4.3. Population Density

The development authority and other agencies in Meerut are trying to reduce the population density within the inner city area by planned development during the last three decades of 1971-2001, to the best of their abilities. Several housing areas have been developed as part of such attempts but in spite of that the population density in the central areas has not reached the desired levels. Certain areas of the centre city have a population density of more than 2,000 people per hectare. By studying the distribution pattern of population density ward wise as per the 2001 census, it is clear that in the old areas of the city close to Garh road, Hapur road and Delhi road, the population density is more than 500 per hectare. Overall, in the old developed area of course, the average density is more than 1,000 per hectare, and it is lesser only in the outer areas of the city.

High population density and increased economic activities in the inner city areas have resulted in excessive stress on existing infrastructure and urban services causing

unhealthy and unhygienic living conditions. The population density of Meerut is shown in **Map 19**.

Table 3.6: Gross Density of Meerut

Area Name	1991			2001		
	Area (ha)	Population	Density (per/ha)	Area (ha)	Population	Density (per/ha)
Meerut MC	14,189	7,53,778	53	14,639	10,68,772	74
Meerut Cantt.	3,569	96,021	27	3,569	92,944	26
Total Meerut City	17,758	8,49,799	48	17,938	11,61,716	65

Source: Census report 1991 and 2001

The net density of the developed area in Meerut has been increasing with increasing population, which is primarily due to the fact that the areas has been constant while the population has been increasing with every year with the CAGR of 3.78%.

3.4.4. Social Composition of Population

There is large poor population in the city. Population residing in such areas is dealt separately under section III – Urban poor as Sub Mission – II of JNNURM. At overall city level nearly 539 households has been identified as households below poverty line.

Table 3.7: Social Composition of Population

Year	Number of the Households BPL
2004/05 (Estimated)	**539**

Source: District Supply Office, Meerut

3.4.5. Access of the Slum Dwellers to Basic Services

The slum dwellers and urban poor are similar terms and are used interchangeably in the context of equitable urban development. The existing scenario in Meerut has got two distinct dimensions. City's slum dwellers & urban poor constitute over 40% population of the city.

Such a high residential density coupled with acute shortage and dilapidation of housing stock marred with extremely poor infrastructural conditions necessitates redevelopment and renewal works so as to improve the habitability of these areas for the urban poor.

Some key indicators for the slums in Meerut are presented in **Table 3.8.**

Details of Slum and their access to basic services are shown in **Map 21**.

Table 3.8: Access of the Slum Dwellers to Basic Services (2003)

Number of Slum Dwellers	Percentage of Slum Dwellers Having Access to			
	Water Supply	Drainage System	Waste Service Collection	Sewerage
4,71,581	49.4%	43.3%	Exact details not available	24.0%

Source: DUDA, Meerut

3.5. Economic Base

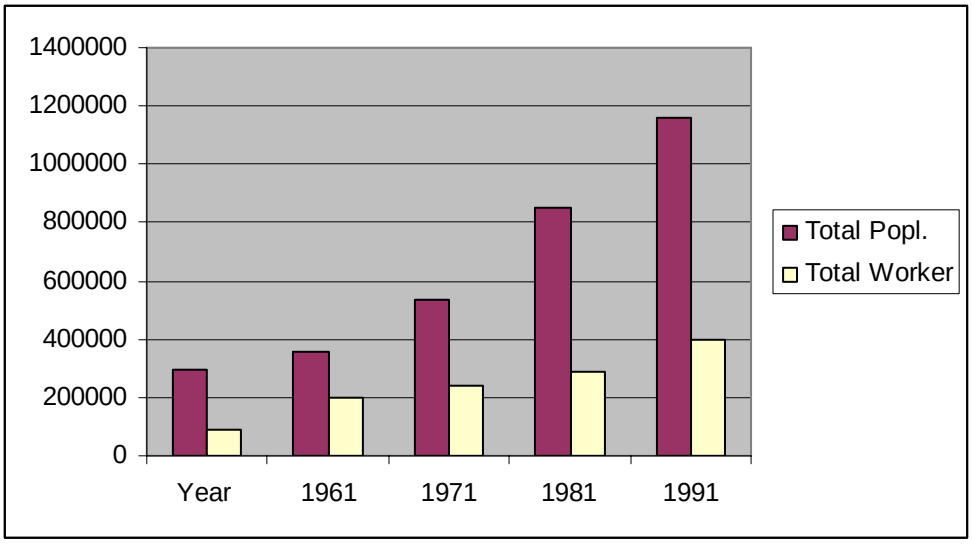
The economic activities of a city play the most decisive role in shaping up its state of social and physical development. The significance of sectoral composition of economic base, and structural changes taking place with in different periods in influencing the city growth can not be denied.

Meerut's advantageous geographical location and availability of abundant productive rich fertile land form the basis of a strong economical growth for the city. Traditionally the core economic activities in Meerut had primarily been trade and commerce, manufacturing of musical instruments, sports equipment, scissors, publication and printing, textiles & garments, engineering equipments and machine tools, gold jewellery, etc.

Business and commerce activities are the primary employment generator in the city which accounts for over 21.06% of the total employment in the city, while other services account for nearly 30% of the total workforce in the city. Of the total workforce employed in industries nearly 94% is employed in the small and cottage industry. The overall contribution by different Industries operating in the city is estimated to be around 250 crs annually which also earn a foreign exchange worth Rs 80 cr.

The work force participation rate (WPR) or the share of working population in the Meerut city as per 2001 is 33.75% as against district average of 26.54% and state average of 27.11%. Details of Work force participation in Meerut since 1961 are presented in the **Figure 3.9**.

Figure 3.9: Workforce Participation



The above figure shows that WPR has registered a sharp decline in the 70s which continued consistently 1990's and is reflected in the 2001 census. This could be attributed to the out migration of workers population from Meerut owing to various pull factors in various upcoming opportunity/ activity centers in the region.

Analysis of occupational distribution of the city's workforce, indicates that the Service sector accounts for the highest share of workers at 61% followed by secondary (manufacturing) at 30%. The comparative analysis of employment distribution in 1991 and 2001 indicates that there is no evident change in the shares of various employment generating activities in the city. There is a marginal decrease in share number of workers for primary sector between 1991 and 2001 and marginal increase in transport, storage and communication sector. City's Occupation distribution of is presented in **Table 3.10**.

Table 3.10: Economic Base, Occupational Distribution

Occupation Category	1991		2001	
	Number of Workers (Lakh)	% of Total	Number of Workers (Lakh)	% of Total
Primary Sector	23,912	10.4	26,230	8.0
Household Industry	12,178	5.3	17,213	5.2
Manufacturing	51,109	22.3	72,133	22.0
Electricity, Gas and Water Supply	(OS)	-	(OS)	-
Construction	8,112	3.5	12,295	3.7
Transport, Storage and Communication	15,197	6.6	24,591	7.5

Occupation Category	1991		2001	
	Number of Workers (Lakh)	% of Total	Number of Workers (Lakh)	% of Total
Banking and Insurance	(OS)	-	(OS)	-
Trade and Business	49,174	21.4	68,854	21.0
Other Services (OS)	69,748	30.4	1,06,559	32.5
Total	2,29,430	100.0	3,27,875	100.0

(OS) – included in other services

A city is such a habitation where the production and consumption of various economic activities take place in order to generate economic gains to both producers and consumers. The social and physical development of a city depends on the development of its economic activities. Increase in its nature and activities accommodating timely changes bring further changes in the economics of the city. Composition of economic base and role of various sectors of economy and inter sectoral changes play a vital role in influencing the city development to a great extent. That is why it is important to study the economy aspects of a city while preparing its City Development Plan.

Weekly Market on Middle of the Road near Ghanta Ghar
(Acting as a divider for two way road)

Historical studies have proven that the city, which cannot develop its economic base, will not be able to establish its importance and becomes an ancient fossil. Meerut's geographical location and its productive agricultural land all round is the base of its strong

economical growth. Traditionally the core economic activities in Meerut involve gold jewellery, sports equipment, scissors, publication and printing, textiles & garments, engineering equipments and machine tools. Sector wise descriptions of various economic activities are broadly covered in subsequent sections.

3.5.1. Industries

There are about 23,471 industrial units in the Meerut city area that include 15,510 small scale units and 7,922 cottage industries. During the current decade several industrial units in medium and small scale range have been shut down due to various reasons. Remaining 39 units are old units and can be categorized as medium sized units.

The study of labors employed in various economical activities in the different decades shows that the percentage of labor in the industrial activities in the period of 1961-1991 has increased from 26.24% to 30.61%. This share has shown a decline in the primary activities and other activities. The employment in the industrial activities in the period of 1961-1991 has increased from 15,098 to 71,339. Along with the industrial activities, the workforce has also increased considerably in the business, commerce, transportation and related sectors and services. This is a good indicator of growing contribution of tertiary sector in the economy.

The manufacturing sector has shown a sharp growth during the period of 1971-1991 as a result of which the number of labors has gone up from 28,026 to 71,399 registering an increase of 154.76%. The number of labors in tertiary sector has registered a growth of 85.44% during the same period which clearly states *that the industrial activities are increasing at a rapid pace and have more potential for employment generation.* Based on the 2001 census, the study of workforce in various sectors indicates that Meerut is an industrial and a commercial centre.

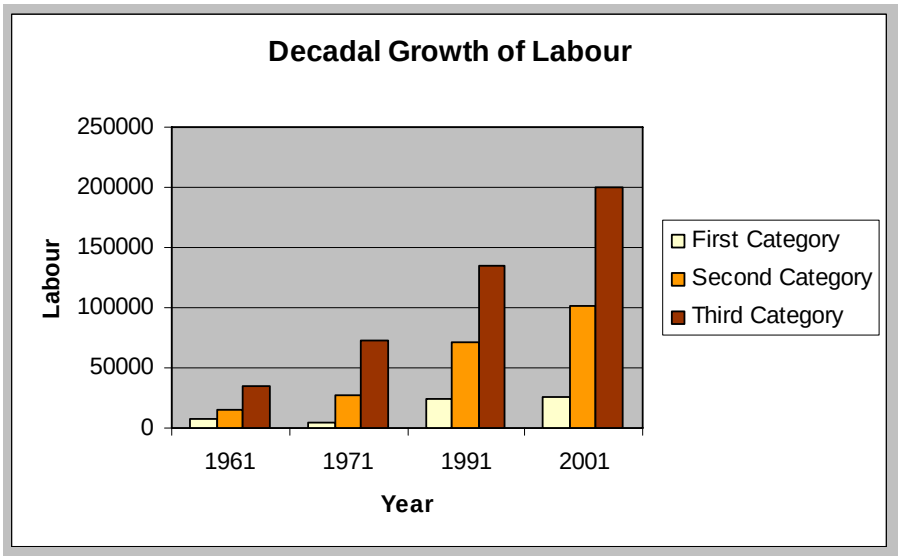


Figure 3 – Decadal Growth of Labour

Table 3.11: Details of Industrial Units of Meerut

Sr. No.	Category of Industrial Unit	No. of Units	Total Workers	%	Number and Percentage of workers					
					Skilled Workers	%	Semi Skilled Workers	%	Unskilled Workers	%
1	Heavy & Middle Scale Industries	39	4,683	6.31	235	10.61	796	4.65	3,652	6.65
2	Small Scale Industries	15,510	61,254	82.52	1,838	83.02	15,313	89.53	44,103	80.31
3	Cottage Industries	7,922	8,295	11.17	141	6.37	9,95	5.82	7,159	13.04
	Total	23,471	74,232	100	2,214	100	17,104	100	54,914	100

Source: Meerut Master Plan, Vision-2021

Role of primary sector in Meerut city is reduced as the city as secondary and tertiary sector in the city is gaining prominence. The share of each sector in the total labour force in the city is presented in **Table 3.12**.

Table 3.12: Division of Economic Categories in Meerut City

Sr. No.	Occupation category by sector group	1st master plan (1961)		2nd master plan (1971)		3rd master plan (1991)		2001	
		Total labour	%	Total labour	%	Total labour	%	Total labour	%
1	Primary Sector	7,553	13.12	4,797	4.56	23,912	10.25	26,230	8
2	Secondary Sector	15,098	26.23	28,026	26.65	71,399	30.61	1,01,641	31.00
3	Tertiary Sector	34,899	60.64	72,324	68.78	1,34,119	57.50	2,00,004	61.00
4	Marginal Category	-	-	-	-	3,810	1.64	-	-
5	Total Labour	57,550	100	1,05,147	100	2,33,240	100	3,27,875	100
6	Total Population	2,00,470	-	3,67,754	-	8,49,799	-	11,61,716	
7	Labour Contribution (%)	28.71	-	28.59	-	27.45	-	28.22	

Source: Meerut Master Plan, Vision-2021

The above table clearly shows the growing influence of industrial and trade activities in the city.

3.5.2. Occupational Characteristics

The economic strength and weakness, dynamism and stagnation of a city are reflected in the occupational character and workforce. Therefore, an analysis of these characteristics can be helpful in assessing the economic base of the city. After 1997, the WPR has declined, which could be attributed to the out migration of workers population from Meerut and other pull factors in various upcoming opportunity/activity centers in the region. Details of workforce participation rate are presented in **Table 3.13**

Table 3.13 Workforce Participation

Year	Total Popl.	Total Worker	WPR %
1961	2,93,853	89,210	30.63
1971	3,57,754	2,02,342	56.56
1981	5,36,615	2,38,532	44.45
1991	8,49,799	2,91,552	34.41
2001	11,61,716	3,95,263	34.02

The workers participation rate (WPR) or the share of working population in the Meerut city as per 2001 is 34.02% as against 26.54% and 27.11% of the district and state respectively.

3.5.3. Business/Trade and Commerce

Employment in Business and commerce accounts for as 21.06% of the total employment in the City and other services account for 29.94% of the total workforce in the City. This way it is clear that 93.69% is employed in the small and cottage industry. There are therefore strong possibilities of strengthening the economic base by encouraging the traditional industrial units of Meerut.

Meerut is an important commercial centre of west of Uttar Pradesh state which meets the needs of not only of its own population but their business needs too. Many business centre and market centers for food grains, textile and garment, fruits and vegetables are thriving in Meerut. As of now approximately 19,037 business establishments are there in Meerut. The UP market authority on the Delhi road has established a wholesale market for the fruit and vegetable and agricultural products. Similarly, a wholesale market has been established on Hapur Marg and Lohia Nagar. Even though many wholesale market have been shifted to the outskirts of the city the central city remains the hub of wholesale activity of textiles & garments, gold and food grains.

The commercial areas have been developed in the new parts of the city along the main streets of the city. In the old part of the city as at Ghanta Ghar Area, Veli Bazaar, Sarafa, Budhana Gate, Lala Bazaar, Subhash Bazaar, Khadak etc. are main market areas which are mainly operating from lower floors of Residential premises on the ground floor or the first floor without any official or legal approval. This has created several problems for the master plan related program, indicating the need to develop Commercial Complexes.

3.5.4. Government Offices/Institutional Framework

Being the regional and administrative centre Meerut has many regional and administrative offices. There are 41 different state departments comprising 123 central government undertakings and economic institutions, 180 offices of state government and 93 other undertakings of the state government established in the city. A total of 387 offices, undertakings and offices of various departments, employs about 44,384 officials

apart from the government undertakings and departments, other industrial, business and private service providers are in existence in the city. Most of the administrative offices are located in the eastern part of the city. PAC and RAF on Roorkee Road, Hapur Road and Vedvyaspuri have established police departments. Most government offices are within the government buildings.

Table 3.14: Description of Offices in Meerut City

Sr. No	Type of office	No of offices	Employment		
			Men	Women	Total
1	Central govt.	41	9,530	631	10,161
2	Central govt. aided	123	3,394	492	3,886
3	State govt.	180	18,983	1,946	20,929
4	State govt. aided / municipal	93	9,154	254	9,408

Source: Meerut Master Plan, Vision-2021

3.6. Housing and Social Infrastructure

3.6.1. Housing

The no. of residential buildings has increased considerably in the three decades from 1971 to 2001 in Meerut in 1971, for a population of 3,71,760 there were 54,914 residential buildings, where 62,158 families were living. In 1981 as a result of the new housing colonies developing by the Housing and Development Board and Meerut development Authority, the no. of residential colonies went up to 101,222 to house for families. There has been a rapid increase in the house building activity; by 2001 almost the no. of colonies rose to 1,74,595.

Table 3.15: Family size and Housing details for Meerut

Sr. No.	Year	Population	No. of Houses	No. of H/H	Family Size	Deficit no. of houses
1	1971	3,71,760	54,914	62,158	5.98	7,244
2	1981	5,36,615	1,01,222	1,01,584	5.28	362
3	1991	8,49,799	1,22,957	1,31,476	6.46	8,519
4	2001	10,74,869*	1,74,595	1,84,581	5.82	9,986

** Based on population for Meerut City only*

Source: Meerut Master Plan, Vision-2021

This scenario housing sector however does not reflect the situation of the status of housing for the poor which is to be addressed in the Sub-mission on “Basic services to the urban poor” as one of the obligatory function requirements to be fulfilled in developing the City Development Plan.

MDA has undertaken several housing and commercial schemes in the city. Apart from regularization of unauthorized colonies, their development and up gradation, MDA housing schemes laid a special emphasis on provision of housing for the low income

groups. Over a period of 16 years, the MDA has initiated 15 housing projects/colonies. The details are given below.

Table 3.16: Summary of MIG, HIG, LIG and EWS housing

Type of Scheme	Income Category	Targeted Units	Completion out of the targeted units	
			nos	%
PLOT	HIG	7,737	7,589	98.1
	MIG	5,247	4,668	89
	LIG	3,046	3,110	102.1
	EWS	2,061	1,581	76.7
	S.G.1	124	124	100
	S.G.2	157	157	100
	S.G.3	177	177	100
	S.G.4	70	70	100
	S.G.5	52	52	100
	S.G.6	29	25	86.2
	S.G.7	126	126	100
	S&S	205	205	100
	TOTAL	19,031	17,884	94
HOUSES	HIG	1,643	1,569	95.5
	MIG	2,639	2,639	100
	LIG	3,956	3,956	100
	EWS	10,538	10,531	99.9
	TOTAL	18,776	18,695	99.6
TOTAL HOUSES AND PLOTS		37,807	36,579	96.8

Source: MDA - as per march 2003

3.6.2. Educational Services

Meerut is an important education centre for Western UP. Meerut serves higher education requirement for only the city but also the entire region and the rural population surrounding it. In Meerut city, there are 645 primary schools, 104 junior high schools, 74 higher secondary schools and 12 secondary schools. For higher education there are 2 universities, 1 medical college, 4 ITI and 8 other such higher education institutions. By State government, higher education policy, private institutions are encouraged and many private companies are setting up institutions there. This city is evolving and re-evolving as an important educational centre for the entire northern India. Details of various education facilities are presented in **Table 3.18**

Table 3.17: Educational institutions in Meerut city (2002)

Sr. No	Categorization of educational institutions	No of education centers	
		Govt. / semi-govt.	Recognized by state
1	Nursery/primary	106	539
2	Junior high school	10	94
3	Secondary high school	1	26
4	Secondary school	2	45
5	Graduate college	-	1
6	Postgraduate college	-	11
7	University	2	-
8	Technical Institutes	8	-
9	Technical Institutes ITI	4	-

3.6.3. Health Services

The health and hospital services in the city include there are 1 medical college, 2 state level hospitals, 8 health care centers, 104 nursing homes and several private clinics. Besides these, there are hospitals for each armed force in the cantonment area, for police personnel in police lines and for railway staff in railway lines. There are adequate number of modern health centers and hospitals available in Meerut city imparting quality medical facilities that make Meerut an important centre for health and medical care in northern India. Majority of these services are provided by private establishments.

Details of various types of medical services in Meerut are furnished in **Table 3.19**

Table 3.18: Various health services available in Meerut 2002

Sr. No	Nature of institute	No of institutes	No of nurses / ANM's	No of doctors	Average no of patients
1	Primary health centre	4	13	6	-
2	Health Post	7	-	12	325
3	District Male Hospitals	1	250	42	575
4	District Women Hospitals	1	116	21	205
5	Medical colleges	2	1,090	59	-
6	Nursing homes	104	-	-	-
7	Railway Hospital(ESI)	1	-	-	-
8	Police Hospital	1	-	-	-
Cantonment area					
9	CBH	1	70	1	
10	Military Hospital	1	-	-	-
11	Health Post	1	-	-	-

- Details not available

Source: Department of health and family welfare

3.6.4. Fire Fighting Services

For Meerut city and adjoining rural areas there are 2 firefighting stations with a fleet of 6 fire trucks. One is located in the old area near Municipal Corporation of Meerut and the other in the new area near central police lines. Besides these two stations there is 1 firefighting station in Meerut cantonment area. *There has been a major fire disaster in the city recently during the trade fare in **Victoria Park** on 11th April 2006, claiming 50 casualties and leaving over 100 persons injured, which exposed the city's disaster handling capabilities.*

*The fire fighting services in the city are not fully equipped in order to control fire on **high rise buildings** cropping up in the city.*

3.6.5. Communication Services

Meerut City has an extensive communication/telecommunication networks involving both private and public sector as key service providers. The communication facilities are readily available in the private and public sector in Meerut city. In the private sector along with courier services there are:

- 3 main Post Offices,
- 8 LSG Post Offices,
- 10 first category Post Offices,
- 29 second category Post Offices,
- 34 third category Post Offices,
- 305 special branches category Post Offices.

All these are well distributed in different areas of the Meerut city. By year 2001 the telecommunication department had a total of 7 telephone exchanges with an operating capacity of 92000 lines. Currently 4 new telephone exchanges having a capacity of 31000 lines are being established. These new facilities would augment the total capacity up to 123000 lines. Besides the Telecommunication Department the private sector is involved in providing telecommunication services connecting Meerut city areas surrounding the city and far off rural areas through STD, ISD and mobile networks.

3.6.6. Electricity

Uttar Pradesh Power Corporation (UPPC) has established two power stations of 22KV and 132KV which supply electricity to the entire Meerut city. For this there are about 15 sub-stations having a capacity of 238 MVA. Currently there are 123,405 residential, 34245 commercial and 5379 industrial connections.

As per UPPC, commercial and residential activities are the biggest consumers of electricity.

Table 3.19: Change in Electricity Consumption (million units) for different land uses

Land Use	1996-98	Presently
Commercial and Residential	373.133 to 431.06	-
Commercial	56.69 to 86.36	79.85 to 84
Public services	-	55.32 to 43.26

Electric Poles in the middle of the road (near Ghanta Ghar)

Chapter 4.0

Stake Holders' Participation

Chapter 4.0 Stake Holders' Participation

The interests, experience, understanding of local know how and skills of each stakeholder and representatives of members of community in large, are the most important resources. The list of stakeholders is presented in **Annexure I.** Meetings and seminars are typical ways to mobilize stakeholders' opinion, views and get their feedback on the development issues. Different stages of preparation of CDP hence required mobilising stakeholders. The purpose of stakeholders' participation is to create desired database for Meerut, preparation of vision and strategy & action plan. Mobilising of stakeholders involved bringing together all the key actors/ players who are involved in the development of Meerut City.

Participation of different stake holders have helped in identifying priorities in different sectors of development and their problem and prospect with respect to development of Meerut, which will evolve issues such as infrastructure bottlenecks, service deficiencies, and management needs. Also, by doing this it will be possible to understand the over-lapping needs and interests of each group, areas of conflicts, root of the problems and their likely solutions. Moreover by mobilizing these groups, Meerut City as whole is more likely to count on its local resources during implementation of various identified strategies in the subsequent phases. The details of various stakeholders meetings held in the process of preparing City Development plan are summarised in **Annexure II**.

Chapter 5.0
SWOT Analysis of the City

Chapter 5.0 SWOT Analysis

Based on the above situation analysis and stakeholders participations a SWOT analysis for the Meerut city has been carried out which aims to identify the potential and problem sector that calls for an immediate attention to achieve the envisaged vision for achieving a balanced development of the city of Meerut. SWOT analysis for the Meerut City keeping all the issues identified through Consultants' own situation analysis and stake holders' participation is presented as under:

5.1 Strength

- The city has a strong and diverse economic base which has been flourishing for long time which is indeed the core strength of the city. Proximity to Delhi and Meerut being an important part of NCR, it has developed strong linkages with Delhi and attracts a lot of activities from Delhi. The City is also a major regional center located as hub of urban activities in the middle of agriculturally prosperous belt of western Uttar Pradesh.
- The city is served by an efficient regional road and rail network which provides connectivity to other major cities and surrounding rural areas. The surrounding region around the city has a rich Tourism & cultural heritage linkages. The city has a adequate work force with active and involved citizen.
- The city is a district head-quarter, which is served by various local bodies for providing basic urban services and there are various Central/ state government projects and schemes, which are being implemented in the city/ surrounding region. The city is also being served by a large number of active NGOs and CBOs.

5.2 Weakness

- The Large Slum population in the range of over 40% can be viewed as a major weakness for the city.
- There is a huge gap in the demand and supply of various urban services in all the sectors including water supply, sewerage, solid waste management, Housing and traffic & transportation etc.
- Deteriorating pollution levels in water bodies, Rivers, ground water and Air are causing serious health hazards and making the quality of life really worse for the local population.
- The core of the city is surrounded by a large cantonment area at three sides, which acts as a barrier in the continuous and smooth expansion of the business and other urban activities in the city.
- Lack of Awareness among the people and also official functionaries coupled with Lack of Awareness regarding reforms makes the situation in the city even worse. Poor Basic Services for the poor in the slums makes life in these areas really pathetic. The city is considered to be communally very sensitive and has a long history of communal turbulence.

5.3 Opportunity

- The up coming sectors such as IT, ITES, and new opportunities in various manufacturing sectors can be housed in Meerut city if the city's is developed as a potential recipient of various spill over activities from Delhi as exploitation of infrastructure in Delhi is reaching its capacity and various upcoming projects such as Expressway connectivity, high speed rail connectivity will open great opportunities for adjoining cities in the vicinity of Delhi.
- There are numerous Education & Research institutes in the city which supports various high end industries and economic activities to be located in Meerut.
- The Heritage and culture though may not take a prominence in the city's affairs at the moment but the city acts as a gateway to a whole region dotted with numerous places of historical religious and cultural importance within a radius of 40 km. as the city expands some of these shrines and places may come in the close vicinity of city. These places can be exploited suitably to make Meerut a prominent place in tourism map of Uttar Pradesh.
- There is ample unexplored land and opportunity for expansion and the city is located in one of the richest region of western Uttar Pradesh in terms of natural resources and fertile land are concerned.

5.4 Threat

- Dominance of various upcoming cities in the NCR in the proximity to Delhi namely Gurgaon, Noida, Greater Noida, Jhajjar, Sonipath etc. where large number of mega developmental projects and SEZs, townships are already in place.
- The political will and political instability in the state may delay the developmental works in the city and may delay the reform process as well.
- The city may loose other prominent urban centers in the state such as Lucknow, Kanpur, or other places in the eastern UP due to more influential and charismatic political leaders.

Section - II

Sub Mission I – Urban Infrastructure and Urban Governance

Chapter 6.0
Urban Infrastructure

Section II – Sub Mission I – Urban Infrastructure and Urban Governance

Chapter 6.0 Urban Infrastructure

6.1. Urban Renewal

Urban renewal is one major emphasis for the entire JNNURM and it has stressed the need to give special attention to policies promoting urban development and renewal. Urban renewal is a compelling need. Most of our cities have large blighted areas, with severe stress on the existing, aged infrastructure and services. Many of them have lost businesses, and are functioning at sub-optimal productivity. Notwithstanding the valuable land on which such areas stand, they contribute little to city finances. Maintaining them in their present state without any returns has become a liability, not to mention the other fallouts that have resulted from the lack of inner city redevelopment.

Keeping the emphasis laid on urban renewal we have studied the inner city areas of Meerut in detail. The inner city has faced widespread decay and physical deterioration over the years and is marked with narrow streets, extensive encroachments with Non Conforming Land uses like commercial and high rise Shopping Complexes just coming up here and there without any attention to the carrying capacity of the adjoining network or any traffic impacts of such complexes being taken into account. Housing, business and industry, and utility and transportation systems have become obsolete and are under tremendous stress.

Polluting and Nuisance Creating Commercial activities such as dairy, slaughtering and tyre re-treading further deteriorate the quality of life in such areas. Severe contamination of ground water is caused in places like Peth area, Nand puri, Ashok puri etc. due to the presence of distillery.

There is no left for footpaths and other pedestrian facilities due to prevailing encroachments and two way movements on all streets make passage of vehicles really impossible and unsafe. Problems are further aggravated by mix traffic conditions involving all types of motorised & non motorised and fast & slow traffic competing for using the left out spaces on the narrow streets after the encroachments and on-street parking.

6.1.1 Critical Parking locations in inner city area

The consultants carried out a detailed reconnaissance survey in order to Identify variuos critical parking locations and critical junctions in the inner city areas. Critical parking locations identified in the inner city areas are Begum Pul - Abu Lane Sadar, P L Sharama Road, Shastri Marg, Burhana Gate Road, Khair Nagar Gate, Ghantaghar, Bali Bazaar, Sarrafa, Western Court Road.

6.1.2 Critical Junctions in inner city area

Junctions are the necessary evils in any road network of the city. These nodes facilitates choose the right road and take appropriate turns as per route choice guided by the orogin and destination requirements of the user. These intersections also offer safety hazard and in inner areas where not enough space is available to accommodate proper widening the situation becomes all the more critical. Seven critical junctions Identifed in the inner city area namely Begumpul Chaupala, Bachchapark Chaupala, Eves Chaupala, Kchahari Chaupala, Nauchandi Chaupala, Thapar Nagar Chaupala, Ghantaghar Chupala.

6.2. Water Supply

Meerut city has a well developed water supply system. The city of Meerut meets its domestic and commercial water requirements mainly from sub-surface water sources, while a nominal contribution by surface water. The surface source is from Ganga nahar. The sub-surface sources are constituted by about 102 tube wells. The authorities responsible for water supply in Meerut are U P Jal Nigam, Meerut Nagar Nigam and MDA. Jal Nigam is responsible for transmission of water from the source till the corporation's jurisdiction and also for operation and maintenance of drinking water supply in rural areas within MDA limits. The MNN is thereafter responsible for supplying of water within its jurisdiction and also for maintaining the system. The City claims to have an installed water capacity of 185 MLD against the current demand of 206 MLD (excluding cantt). Different elements of water supply system are presented in **Map 1**.

6.2.1 Water Source

The main source of water supply for Meerut city is Ground Water. Ganga canal, which is few kilometres away from the city, supplies just 2.5 MLD of water through 300 mm dia Pipeline.

6.2.2 Water Supply System

At present a total of 165 MLD of water is supplied through tube wells including nearly 2.5 MLD from Bhola Jhall covering a population of 9 lakhs. Around 3 lakhs population of Housing Board colonies and MDA colonies are dependent on Marc 2 hand pumps. There are around 13 tube wells of MDA and U.P. Housing Board, which are not functional. The existing water supply system serves just the 71% population of the city.

The increasing demand for agricultural and domestic purpose and over use of underground water is resulting in the constant fall of the underground water table. The development agencies are constructing tube wells, overhead tanks and are laying water lines to ensure water supply in their own jurisdiction areas. In several areas people have their own private hand pumps, jet pumps and other equipment for water supply. There are 68 tube wells, 20 overhead tanks, and 3 underground water tanks in Meerut city. Capacity of 20 overhead tanks is 20,500 KL and capacity of 3 underground water tanks is 16000 KL. Municipal Corporation of Meerut supplies about 158.5 MLD of which only 4.8 MLD is supplied through canal. To supply 4.4 MLD water, 26 new tube wells and overhead tanks are being built by Municipal Corporation of Meerut. This way the total capacity of the water supply system shall be 202.5 MLD. Besides this in the near future the Municipal Corporation of Meerut proposes to build new tube wells and overhead tanks to increase the capacity to 240 MLD. Several areas of Meerut city are still not covered by the Municipal Corporation of Meerut water supply.

Pipe water supply was first introduced in 1895.

Now, 102 tube wells are meeting the water demand, 2 tube wells are under construction and 1 is disputed.

For storage, 41 OHT and 3 CWR of different capacity have been constructed.
Water Supply is provided in 70 wards of Meerut city being sub-divide in 471 mohallas and 29 villages according to previous delineation of the municipal area of the city:

- 230 mohallas have sufficient drinking water
- 146 mohallas have partial water crises
- 95 mohallas have no pipe for water supply and depend on hand pump
- 29 villages included in Nagar Nigam limit have no pipe for water supply

Table 6.1: Salient features of Water Supply in Meerut

Details	Unit	Description
Gross Supply	lpcd	175
T&D Losses/Total Supply	%	25
Storage Capacity	M	60.61
Population Served	%	71.20
Area served to total area	Ha	60.36
Storage Capacity/Total Supply	%	30
Supply Frequency	Hours	13

6.2.3 Ground Water

The quality of ground water is becoming worse as pollutants from untreated effluents from the factories are getting mixed. Good quality ground water is available at a depth of 35-38 mts. There is depletion in the water level in the district by 0.15-2.5 mts during last few decades. The existing water supply network is shown in **MAP 1.**

6.3. Sewerage System

The city generates 112 MLD of sewage while the disposal capacity is just 45 MLD. The major part is directly discharged in to the 3 nalas going through the city which further joins Kali River, finally meeting Ganga River.

The total length of the sewer line in the city is about 132 km, out of which 23 km is trunk line. There are 7 sewerage pumping stations. The intermediate pumping stations pump the sewerage to main pumping station and from there it is pumped to sludge farm at Hapur road (ward 19). Other stations pump sewerage to nalas finally meeting Kali river.

Sewerage system in Meerut was established in 1975. The sewerage network constituting about 90km of main sewer while 370km of branch sewer covers only 25 to 30% of the city currently.

The sewerage is used for irrigation without any treatment. A very limited area sewer has been laid by old sewer system. The entire existing sewer system needs cleaning because different sections of main and branch lines in the city are partially or fully chocked.

Table 6.2 Sewerage Situation in Meerut

Infrastructure Availability	Details
Population Covered to Total Population	25-30%
Sewerage Network to Total Road Network Length	12%

The existing sewage system is shown in **MAP 2.**
There is a urgent need to segregate the storm water drainage system from the sewage system.

6.4. Solid Waste Management

Solid waste management is probably the most critical area in Meerut. The MNN is responsible for collection, transportation and disposal of all solid waste generated in the city. Hardly 78 per cent of the area under Municipal Corporation is covered under daily collection and the rest under biweekly or fortnightly collection system. Discloses one important fact that the total waste generated in the city is around 600 tons/day whereas the total capacity of existing bins is only less than 450 tons. The rest of the solid waste lies directly on the street or thrown in the nalas. The garbage collection from the bins is extremely irregular. Other aspects of a normal solid waste management process namely waste storage and segregation, primary and secondary collection, waste processing and disposal, and reuse & recycling, are by and large missing in Meerut, with rampant complaints from different stake holders about plastic and bio medical waste management.

Controlling the generation of solid waste, segregation, transport action and disposal of municipal solid wastes arising from households and commercial establishments are some interlinked vital elements of solid waste management to be taken up in Meerut City.

With increase in city's population over the years generation of municipal waste has increased manifolds. **Table 6.3** presents the salient features of existing situation of SWM in the city.

Table 6.3: Solid waste collection and generation 2003

Item	Unit	Description
Generation: Total tons/day (excluding big industrial units)	Tons	600
Generation: per capita/day	Grams	512
Moisture content of waste	%	45
Density of waste	kg/cu.mt.	0.4
Distance of disposal point(from the city centre)	Km	5-8
Collection: tons/day	Tons	470
Nos. of RCC bins - capacity 16 tons(avg)	Nos.	12
Trolleys - capacity 1.5-2 tons	Nos.	20
Containers - capacity 0.25 tons	Nos.	200
Dumper Place - capacity 1 ton	Nos.	40
Total capacity of Dustbins	Tons	322
Bins per Kilometer	Nos.	2.2
Conservancy staff per km	Nos.	16

Source: MNN

The City has a waste collection capacity of about 75% and does not have adequate transportation facilities. Lots of littering usually takes place while waste is stored in collection centers and also during its transport. At present most of the municipal solid waste in the city is disposed off unscientifically. Unscientific disposal practices leave waste unattended at disposal sites, which attract birds, rodents; fleas etc. to the waste and create unhygienic conditions (odour, release of win borne pathogens etc.) Plastic content of municipal waste is picked up by rag pickers. Since the functioning of various group of rag pickers are not formalized, not all the recyclables, particularly plastic bags get picked up and are found littered everywhere, reaching the drains and water bodies ultimately choking them.

The wastes generated by hospitals, Nursing Homes, health centers, laboratories, animal houses, veterinary institutions constitute an important component of waste management. Municipal Corporation in Meerut is not maintaining a separate system for collection, segregation, transportation, storage and disposal of biomedical wastes. These waste both hazardous as well as non hazardous generated by hospitals and nursing homes are

being managed by a common collection system which may cause a serious environmental and health hazards. All the wastes are dumped in the landfills and burnt in open releasing smoke and foul smell various industries in Meerut. Small and tiny scale categories are dumping their effluent into drains. Permeation of effluent and toxic substances from drains and land fills into water table is leading to contamination of ground water which is also being used by a large local population as water supply without proper treatment.

As of now, Meerut city produces 600 metric tones of solid waste as against the Municipal Corporation's handling capacity of 470 metric tones.

Municipal waste management could be carried out by adopting the following processes:

1. Waste reduction
2. Effective management of waste disposal system

Sustainable development can only be achieved if society in general and industries in particular, produce more with less, produce more goods and services by less use of world's resources.

The existing system for solid waste management is shown in **MAP 3**.

6.5. Storm Water Drainage

Meerut is probably one of the very few cities among different Metropolis of India, known for having an identity associated with the existing filthy Nalas. These Nalas cris cross the whole length and breadth of the city and build a poor image of the city besides creating severely unhealthy and unhygienic conditions. Various low lying areas in Meerut suffer from acute crises of water logging during the rainy season and makes life miserable for residents of Meerut in those months.

The present condition of the Nala gives poor impression of city's drainage system. In Meerut there are 5 main trunk drains by which the rainwater flows into the river:

- Abu Nala-1
- Abu Nala-2
- N.A.S Nala
- Odian Nala
- Khadoli Nala

There are another 10 branch drains in the city. Almost all the nala are currently used for solid waste disposal covered with weed growth. The effluent of industries, waste water of sewer, effluent of different slaughter houses are also falling in these drains without any treatment.

At many low lying parts of the City, the water from these nalas spill during rainy season and cause severe problem of water logging in the city leading to unhygienic and filthy living conditions.

The storm water drainage system showing network of all drains and branch drains is presented in **Map 4**.

6.6. Road and Road Transport

The total road length in Meerut is approximately 1,391 km, of which over 65 kms lie in the cantonment area. The length of National Highways and the State Highways measure up to 356 km. The development and maintenance of National Highways and the state highways are the responsibilities of the Public Works department. The total road maintained by Municipal Corporation is about 970 kms, out of which share of kutcha (unsurfaced) roads account for nearly 50 per cent.

Almost all the major roads in Meerut Corporation jurisdiction are constructed and maintained by the Meerut Nagar Nigam, except for the roads belonging to the Public Works Department (highways and other district-level roads). The internal road constructed in the colonies is the responsibility of the MDA and respective private developers. The Municipal Corporation checks the adequacy of these roads at the time of according sanction to the schemes.

6.6.1. Road Network Characteristics

In the city of Meerut, roads and highways account for 7.76% of the total city area. The city has a per capita road length of 1.08 m, while the road density is 7.01 km/sq.km. In terms of traffic and travel characteristics and also in terms of construction, operation and maintenance the city of Meerut primarily has following five type of road network:

- National Highway
- State Highway
- District Roads
- Municipal Roads
- Cantonment Roads

The details of the road network along with its operation and maintenance are summarised in **Table 6.4**. It can be seen from the said table that 67.2% of the total road network in the city falls under the jurisdiction of Meerut Municipal Corporation, out of which about 50% of the roads are not all weather roads i.e. thay are ‘Kutcha Roads’.

Table 6.4: Category wise distribution of Road Network

Sl. No.	Particulars	Road Length (Km)	%age of Road Length	Jurisdictions
1	National Highway	12.5	0.98	NHAI
2	State Highway	243	19.05	PWD
3	District Roads	100	7.85	PWD
Sub total		**355.5**	**27.88**	
4	Municipal Roads (Pucca)	425.61	33.36	M. Corp.
5	Municipal Roads (Kutcha)	429.37	33.66	M. Corp.
6	Cantonment Roads	65.18	5.10	Cantonment Board
Grand Total		**1,275.66**	**100.00**	

Source: Meerut Municipal Corporation

The city of Meerut abuts the National Highways 58 that lies on the western side of the city. Other intercity / inter district roads include Meerut -Bidaun (State Highway 22), Garhmukteshwar-Meerut-Karnal (State Highway), Meerut—Bagpath—Sonipat (State Highway), Meerut—Bijnor—Pandi road and Meerut –Parikshitgarh road. All these roads primarily cater to the 'through traffic' though 'destined traffic' also accounts for certain percentage. Important city arterial road include Abu lane, PL Sharma Road, Lal Kurti Road, Burhana Road, Ghanta Ghar Road. These roads primarily cater to the large volume of intra city traffic. Road network of Meerut city is shown in Map 6

6.6.2. Registered Motor Vehicles

The vehicular registration data for the city of Meerut shows that there has been an annual average increase of about 7.6% for a period between 2001- 2005. In terms of composition of traffic it is seen that two wheelers account for largest share in the total registered vehicles category the share of two wheelers has increased from 64.6% in 2001 to 70.17% in 2005. **Table 6.5** shows the details of the registered vehicles in the Meerut city.

Table 6.5: Vehicle Registration Details

Year	Tractor	Two Wheelers	Car Tax Free (Govt.)	Bus Private		UPS RTC	Trucks (less than 60 Quintal)	Trucks (more than 60 Quintal)	Tempo/ Taxi	Car/Jeep Private	Others	Total
				Reserved Bus	Contract Bus							
2001	50761	1,31,098	313	859	299	406	1,352	2753	701	14,135	210	2,02,887
2002	50864	1,44,199	330	860	314	419	1,396	2972	742	15,679	210	2,17,985
2003	51224	1,71,155	338	683	275	454	1,398	2964	994	17,216	221	2,46,922
2004	51647	1,73,240	232	683	214	448	1,224	2826	1,242	19,099	246	2,51,101
2005	52273	1,90,310	243	656	283	349	1,160	1765	2,515	21,502	151	2,71,207

Source: RTO , Meerut

6.6.3. Traffic Characteristics

Various traffic studies for the city of Meerut reveal that peripheral/ outskirt areas of city witness about 80% of the trips being performed by fasts vehicles, this phenomenon decreases to 50% in the inner parts of the city. It is also indicated in these studies that two wheelers account for about 1/3rd of the total vehicular traffic while heavy vehicles constitute 25%. IPT (primarily cycle rickshaw) on the whole constitute 15% of the total vehicular trips. The role of public transport in serving the city's travel demand is marginal which is substantiated by various para transit modes like tempos, shared jeeps, cycle rickshaws.Traffic volume count data for the inter city roads (regional roads) in the city of Meerut reveals that majority of roads carry traffic in excess of 10,000 vehicles with Dilli road witness the highest amount of traffic (21,835 PCU) while Baraut road account for the least amount of traffic (7,566 PCU). In terms of composition it is seen that private vehicles constitute the highest category in all the road sections with Car/Jeep/Van having largest share. **Table 6.6** shows traffic volume details for various road sections in the city.

Table 6.6: Daily Traffic Volume on various Regional Roads (2002)

Sl. No.	Road Name	Bus/ Truck	Car / Jeep / Tempo / Tractor Auto / L.C.V	Scooter / Motorcycle	Horsecart / Bullockcart / Cart	Cycle/ Rickshaw	Net Total
1	Delhi Road (Near Partapur)	26%	46%	23%	1%	4%	21,835
		(-4.9)	(+98.72)	(+175.48)	(+46.02)	(+15.90)	(+59.07)
2	Bagpat Road (Multaan Nagar)	37%	25%	22%	3%	14%	10,900
		(+37.69)	(+136.22)	(+141.33)	(-56.92)	(-30.56)	(+37.16)
3	Baraut Road (Railway Crossing)	22%	28%	29%	4%	16%	7,566
		(+4.74)	(+56.09)	(+70.18)	(-48.02)	(-66.77)	(-11.39)
4	Sardhana Road (Railway Crossing)	14%	19%	42%	2%	24%	14,767
		(+22.96)	(+180.64)	(+201.52)	(-32.53)	(+45.43)	(+97.42)
5	Roorkee Road (Appu Ghar)	30%	41%	24%	2%	3%	16,227
		(+40.24)	(+135.72)	(+320.15)	(+35.74)	(-14.44)	(+100.38)
6	Mawana Road (Ganga Nagar)	23%	27%	33%	4%	13%	12,600
		(+45.49)	(+225.45)	(+351.31)	0	(-13.79)	(+96.57)
7	Parikshatgarh Road	18%	17%	26%	9%	29%	5967
		(+63.83)	(+273.06)	(+195.08)	(+92.41)	(+129.64)	(+137.55)
8	Garh Mukteshwar Road(Medical)	18%	26%	25%	14%	18%	12,414
		(+53.93)	(+73.72)	(+141.00)	(+477.77)	(+14.96)	(+82.80)
9	Hapur Road (Shastri Nagar)	20%	33%	30%	3%	14%	10,026
		(-16.86)	(+161.81)	(+198.99)	(-64.46)	(-31.54)	(+32.03)

Source: Meerut Master Plan 2021

Transport System Plan for Meerut – 2011, a study carried out by School of Planning and Architecture (1994) reveals that outer cordon traffic in the year 1992 was heaviest on Dilli Road (24109 PCU) followed by Roorkee Road (15802 PCU). Least Traffic was observed on Bhola Road (1856 PCU). **Table 6.7** shows details of Outer Cordon Surveys conducted for the study.

Table 6.7: Daily traffic volume on Outer Cordon locations

Count Station	Road Name	Location	Traffic Volume (PCU)		
			Incoming	Outgoing	Total
OC-1	Roorkee Road	Daurala Check Post	7931	7871	15802
OC-2	Mawana Road	Police Chowk near Kali Nadi	2303	2531	4834
OC-3	Parikshit Garh Road	After Kali Nadi	1227	1422	2649
OC-4	Grah Mukhteshwar Road	Thana Bhawanpur	4404	7268	11672
OC-5	Hapur Road	Phafunda Village	3833	4282	8115
OC-6	Dilli Road	Boorbaral Police Check Post	14512	9597	24109
OC-7	Baghpat Road	Jamalpur	5128	4334	9462
OC-8	Bhola Road	Peepla School	865	991	1856
OC-9	Baraut Road	Lakhwaya (Rasoolpur)	1991	2379	4370
OC-10	Sardhana Road	Dayand Road	2282	2177	4459

Source: Transport System Plan for Meerut – 2011, School of Planning and Architecture

Traffic survey carried out by SPA on the Middle Cordon revels that traffic volume on Dilli Road increases to 24940 PCU while it increases to 11413 PCU on Roorkee Road, Baraut Road too witness the increase in traffic (11292 PCU), This increase in traffic on Middle Cordon as compared to traffic on Outer Cordon is attributed to the mixing through and local traffic. **Table 6.8** shows the details of middle cordon traffic volume survey.

Table 6.8: Daily traffic at Middle Cordon survey locations

Count Station	Road Name	Location	Traffic Volume (PCU)		
			Incoming	Outgoing	Total
MC-1	Roorkee Road	Krishan Nagar (before Dorli)	6274	5139	11413
MC-2	Mawana Road	Electra Vidyapeeth	3875	3649	7524
MC-3	Parikshit Garh Road	Abdullapur Village	1485	1556	3041
MC-4	Grah Mukhteshwar Road	Medical College	4084	5255	9339
MC-5	Hapur Road	Police Check Post	3121	6634	9755
MC-6	Dilli Road	Hapur Railway Colony	12009	12931	24940
MC-7	Baghpat Road	Multan Nagar	5751	4119	9870
MC-8	Baraut Road	Railway Crossing	5100	6184	11284
MC-9	Sardhana Road	Railway Crossing	5271	3809	9080

Source: Transport System Plan for Meerut – 2011, School of Planning and Architecture

The screen line TVC survey at level crossing on Grah Mukhteshwar Road accounted for 20323 PCU (ADT) while that on Hapur Road accounted for 16947 PCU.

Table 6.9: Daily traffic at Middle Cordon Survey locations

Count Station	Road Name	Location	Traffic Volume (PCU)		
			Incoming	Outgoing	Total
SL-1	Garh Mukhteshwar Road	Puri Petrol Pump	10,063	10,260	20,323
SL-2	Hapur Road	Karim Nagar Nallah	7,165	9,782	16,947

Source: Transport System Plan for Meerut – 2011, School of Planning and Architecture

In order to understand traffic plying in the city, it is necessary to analyse the inner cordon traffic volume data. Inner cordon traffic volume survey by SPA study reveals that Begum Bridge caters to an ADT of 62,342 PCU (4,860 PCU during peak hour), ADT on Abu Lane was found to be 32,753 PCU (2,751 PCU during peak hour). Dilli Gate and Baghpat crossing cater to traffic to a tune of 19,702 PCU (2,980 PCU during peak hour) and 18,458 PCU (2,923 PCU during peak hours) respectively. **Table 6.10** summarises inner cordon traffic volume data.

Table 6.10: Daily traffic volume at Inner Cordon Survey locations

Count Station	Road Name	ADT (PCU)			Peak Hour Traffic Volume (PCU)		
		Incoming	Outgoing	Total	Incoming	Outgoing	Total
IC-1	Begum Bridge	29,409	32,933	62,342	2,450	2,411	4,860
IC-2	Commissioner Crossing	4,847	4,164	9,011	640	354	994
IC-3	Jail Chungi Crossing towards Quila	7,919	7,372	15,291	658	734	1,392
IC-4	Jail Chungi Crossing towards University	6,719	8,307	15,026	541	728	1,269
IC-5	Garh Bus Stand	17,755	17,242	34,997	1,120	1,479	2,600
IC-6	Hapur Bus Stand	16,124	15,667	31,791	927	1,531	2,458
IC-7	Boomiya Pul	10,050	10,091	20,141	679	1,008	1,687
IC-8	Dilli Gate	18,257	19,702	37,959	1,406	1,574	2,980
IC-9	Baghpat Crossing	17,389	18,458	35,847	1541	1,383	2,923
IC-10	City Railway Station	8,510	9,272	17,782	781	714	1,495
IC-11	Railway Crossing	1,729	2,101	3,830	186	114	300
IC-12	RT Office	5,959	3,918	9,877	517	411	929
IC-13	Sadar Thana	7,214	7,388	14,602	686	491	1,177
IC-14	Abu Lane	17,126	15,627	32,753	1,293	1,458	2,751

Source: Transport System Plan for Meerut – 2011, School of Planning and Architecture

Vehicle occupancy relates to the number of passenger trips to the number of vehicles in traffic. It also indicates the efficiency with which a vehicle is used. In Meerut, it was found that in general the occupancy of vehicles was reasonably high. The occupancy details are presented in **Table 6.11**.

Table 6.11: Vehicle Occupancy

Sl. No.	Vehicle Type	Occupancy
1	Car	2.95
2	Two Wheeler	1.85
3	Auto Rickshaw	3.29
4	Tempo / Mini Bus	20.64
5	Bus	42.59
6	Cycle	1.25
7	Cycle Rickshaw	1.86

Source: Transport System Plan for Meerut – 2011, School of Planning and Architecture

6.6.4. Traffic Growth

Traffic surveys carried out at different time slabs reveal that there has been steady growth traffic on various important road corridors. Apart from Dilli Road and Roorkee Road, traffic has grown on all major road corridors. The decrease in traffic along Dilli and Roorkee road could be attributed to the construction of Meerut Bypass (National Highway 58) that has resulted in shifting of 'through traffic' from these roads to the new alignment. It is clear from **Table 6.12** that on an average traffic has grown at the rate of 6.98% and 4.48% in terms of simple and compound growth rates respectively. The largest growth rate was observed on Sardhana Road followed by Mawana and Parikshit Garh Road respectively.

Table 6.12: Growth of Traffic along Regional Road Corridors

Road Name	Outer Cordon Count - 1992	Outer Cordon Count – 2002	Annual Growth Rate (Simple)	Annual Growth Rate (Compound)
Roorkee Road	15,802	16,227	0.27%	0.27%
Mawana Road	4,834	12,600	16.07%	10.05%
Parikshit Garh Road	2,649	5,967	12.53%	8.46%
Grah Mukhteshwar Road	11,672	12,414	0.64%	0.62%
Hapur Road	8,115	10,026	2.35%	2.14%
Dilli Road	24,109	21,835	-0.94%	-0.99%
Baghpat Road	9,462	10,900	1.52%	1.42%
Baraut Road	4,370	7,566	7.31%	5.64%
Sardhana Road	4,459	14,767	23.12%	12.72%
Average			**6.98%**	**4.48%**

It is clear from the table above that on an average traffic at the outer cordon has grown at the rate of 4.48% (compound) per annum. However in order to assess traffic on the inner cordon a growth rate of 3.5% (compound) has been adopted on the basis the fact that landuse within the city area would not have undergone a significant change. The projected traffic on the city arterials have been summarized in **Table 6.13**.

Table6.13: Peak Hour Traffic estimation (PCU)

Sl. No.	Road Name	Estimated Traffic (PCU)
1	Begum Bridge	7,867
2	Commisioner Crossing	1,609
3	Jail Chungi Crossing towards Quila	2,253
4	Jail Chungi Crossing towards Uni.	2,054
5	Garh Bus Stand	4,209
6	Hapur Bus Stand	3,979
7	Boomiya Pul	2,731
8	Dilli Gate	4,824
9	Baghpat Crossing	4,731
10	City Railway Station	2,420
11	Railway Crossing (Barnaut Road)	486
12	RT Office	1,504
13	Sadar Thana	1,905
14	Abu Lane	4,453

6.6.5. Transportation systems in the City

The city of Meerut is primarily driven by private modes; public transport is primarily governed by Auto Rickshaws though local city buses ply on certain designated routes. In order to cater to a large demand of inter city passenger movement, nine bus routes are operational and licenses have been issued according to the private operators the details of which are shown in **Table 6.14**.

Table 6.14: Inter city Bus Services Details for Meerut City

Sl. No.	Routes	No. of Permits / Licenses Issues
1	Meerut – Baghpat – Baraut – Chhaprauli	72
2	Meerut – Rohta – Baraut	74
3	Meerut – Baraut – Kotana	03
4	Meerut – Mawana – Meerapur – Bijnaur	108
5	Meerut – Parikshitgarh – Asifabad – Laliyana	42
6	Meerut – Hapur – Bulandshahar	102
7	Meerut – Ambala	09
8	Meerut – Jaani – Siwal – Khanpur – Lohara	03
9	Meerut – Sardhana – Binauli	38
Total		**451**

Source: Meerut Municipal Corporation

In order to cater to the movement of various inter city passengers for the above routes flowing bus terminals have been provided, the details of which are shown in **Table 6.15**.

Table 6.15: Details of Bus terminals for Inter City Bus Routs

Sl. No.	Routes	Bus Terminals
1	Meerut – Baghpat – Baraut – Chhaprauli	TP Nagar, Meerut
2	Meerut – Rohta – Baraut	
3	Meerut – Baraut – Kotana	
4	Meerut – Jaani – Siwal – Khanpur – Lohara	
5	Meerut – Mawana – Meerapur – Bijnaur	Sports Stadium, Meerut
6	Meerut – Parikshitgarh – Asifabad – Laliyana	
7	Meerut – Sardhana – Binauli	
8	Meerut – Hapur – Bulandshahar	Tiranga Gate Hapur Road, Meerut
9	Meerut – Ambala	Near Begumpul, Meerut

Source: Meerut Municipal Corporation

There are 18 bus terminals present in the city, the existing city bus routes along with the details of licenses / permits are shown in **Table 6.16**.

Table 6.16: Details of City Bus Service Routes

Sl. No.	Bus Routes	No. of Permits / Licenses
1	Medical College – City Railway Station	30
2	Medical College – Cant Railway Station	08
3	Medical College – Kanshi	12
4	Medical College – Daraula	15
5	Rajpura – Modinagar	20
6	Gandhi Ashram – Kithaur	12
7	SSD College – Dabthua	08
8	Medical College–Tajbari Intersection– L Bolck Junction–PAC Bypass – Partapur Bypass – Modinagar	15
9	Medical College–Tajbari Intersection–L Block Junction – PAC Bypass – Partapur Bypass – Katai Mill – Gangol – Chandsara	12
10	SSD College – Shradhapuri – Khirwajalalpur – Bypass – Shubhartipuram	14
11	SSD College – Company Bagh – PAC Bypass – Shubhartipuram	10
12	Begumpul – Railway Morh Crossing – Metro Plaza – Partapur – Modipuram Bypass – Shubhartipuram	14
13	Telephone – Exchange – SSD College – City Railway Station – Rohta Level Crossing – Shobhpur Bypass – Shubhartipuram	14
14	City Railway Station – Bhansauli Bus Stop – Begumpul – SSD College Intersection – Kashmir Junction – Defense Colony – Ganga Nagar Road – Jailchungi – Medical College	20

Sl. No.	Bus Routes	No. of Permits / Licenses
15	City Railway Station – Railway Road Intersection – Begumpul – SSD College – Jailchungi – Medical College – Sarai Kazi Morh	15
16	Begumpaul – Bhainsali Bus Stand – Metro Plaza – TP Nagar – Maliana Over Bridge – Baghpat Bypass – Subhartipuram	15
17	SSD College – Lalkurti – Telephone Exchange – Commissioners Residence – Tejgarhi Junction – Shohrabgate Bus Stand	12
18	City Station – Railway Road Junction – Begumpul – HSD College Crossing – Telephone Exchange – Commissioners Residence – Tejgadhi – Medical College – Jagrati Vihar Sector 6 – A Block Shastri Nager – PAC Electricity Bamba – Patapur Bypass – Subhartipuram	18
Total		**264**

Tempo – Taxi, a seven seater vehicle is also visible in the city of Meerut. These vehicles are licensed for a route length of 16 km. It was assessed that the city would require 600 vehicles in order to fulfill the demand, out of which 583 licenses / permits have been issued to various private operators.

Auto Rickshaws also ply in city of Meerut but are confined within the municipal limits of the city. The exact requirements (demand) of these vehicles have not been worked out for the city but 543 permits / licenses have been issued so far.

It is estimated that about 13- 15% of the total trips in the city are performed by the available public transportation modes which is far below the desired share of public transport as recommended by the Traffic and Transportation Policies in Urban Area in India by Ministry of Urban Development (**Table 6.17**).

Table 6.17: Share of Public Transport in Indian Cities

Sl. No.	City with Population in Millions	Share of Public Transport (%)
1	0.5 – 1.0	25
2	1.0 – 2.0	30-40
3	2.0 – 3.0	50-60
4	3.0 – 5.0	60-70
5	5.0 plus	70-85

Source: Traffic and Transportation Policies in Urban Area in India, Ministry of Urban Development – GOI

It can be seen from the table above the share of urban transport in the city of Meerut is far less than optimal when compared against the recommended shares by the Ministry of Urban Development, highlighting the importance of urban transportation.

6.6.6. Critical Road Stretches

It has been observed that majority of road corridors in the city of Meerut suffer from several inadequacies in the transportation system, such as capacity constraints in the road network, poor definition of road hierarchy, encroachments, on street parking, mixed traffic, poor traffic management, slow journey speeds, poor safety situation, inadequate enforcement of traffic rules, lack of pedestrian facilities and other street furniture. To worsen the situation further many new activity centers and shopping malls have been constructed on already congested roads without any traffic and parking impact study or taking other planning considerations into account. These new sites, in order to fulfill their access and parking needs are putting additional pressure on these congested roads. The problem of encroachment, Hawking and unauthorized on street parking is severe that majority of the road corridors are operating at 50% of their capacities. **Table 6.18** makes a comparative evaluation of constructed carriageway and available carriageway at various critical road corridors in the city.

Mixing of Motorised and Non – Motorised Traffic on Bijanur Road

View of Advertisements on Garh Road

Table 6.18: Carriageway Details of Major Road Corridors in Meerut City

Sl. No.	Road Name	Constructed Carriageway (m)	Available Carriageway (m)
1	Dilli Road	14	9
2	Hapur Road	10	6
3	Abu Lane	9	5
4	PL Sharma Road	9	5
5	Roorkee Road	10	5
6	Baghpat Road	14	7
7	Burhana Gate Road	14	7
8	Lal Kursi Road	12	6
9	Shashtri Marg	9	6
10	Gola Pua Road	9	6
11	Garh Road	14	9
12	Sharda Road	10	5
13	Brmhapuri Road	10	5
14	Ghanta Ghar Road	14	9

It is thus clear from the table above that majority of the road corridors are operating at a capacity that is far below than their actual capacity. Heavy encroachments, hawking coupled with unauthorized on-street parking further makes the situation more critical. Different critical road stretches in Meerut are shown in Map 7

6.6.7. Parking

A large number of markets, commercial and other activity centers on various roads in Meerut are suffering from inadequate parking facilities. On most of these stretches the root cause of the congestion on the street is caused due to on street parking. List of such areas with severe parking problems is furnished **Table 6.19**

Table 6.19: List of Critical Parking Areas

Sl. No.	Parking Locations
1	Begum Pul - Abu Lane until Bachcha Park
2	Sadar Bazar
3	P L Sharama Road
4	Shastri Marg
5	Burhana Gate Road
6	Khair Nagar Gate
7	Ghantaghar
8	Valley Bazaar
9	Sarrafa
10	Hapur Road – Bhagat Singh Market
11	Western Court Road
12	Chipi Tank Road
13	Baghpat Road
14	Malihana Fatak
15	Kabadi Bazar (Shahar)
16	Sharda Road
17	Bombay bazaar
18	Metro Plaza
19	Transport Nagar
20	Gola Kuan
21	Central Market Shastri Nagar
22	Dilli Road

Critical Parking locations in Meerut are shown in Map 8

6.6.8. Critical Intersections

Based on the traffic data and detailed survey of the city the consultants have identified 14 intersections in the city along with the various problems experienced at each locations. The details are presented in **Table 6.20**.

Lack of Traffic Control Devices and Lane Marking on Maharana Pratap Junction

Table 6.20: Critical Intersections in Meerut City

Sl. No.	Intersection	Associated Issues
1	Begumpul Chupala	Poor Geometrics, Hawking and Encroachment, On-street Parking, Heavy Pedestrian Maovement
2	Bachcha Park Chupala	Poor Geometrics, Hawking and Encroachment, Inadequate Carriageway
3	Hapur Adda Chupala	Poor Geometrics, Hawking and Encroachment, On-street Parking
4	Eves Chupala	Poor Geometrics, Hawking and Encroachment, On-street Parking
5	Kchahari Chupala	Poor Geometrics, Hawking and Encroachment, On-street Parking
6	Nauchandi Chupala	Hawking and Encroachment, On-street Parking,
7	Ghantaghar Chupala	Poor Geometrics, Hawking and Encroachment, On-street Parking, Heavy Pedestrian Movement
8	Baghpath Chupala	Poor Geometrics, Hawking and Encroachment, On-street Parking, Heavy Pedestrian Movement
9	Bhumiapul Chupala	Poor Geometrics, Hawking and Encroachment, On-street Parking, Heavy Pedestrian Movement
10	Bus Stand Chupala	Inadequate Carriageway, Poor Geometrics, Hawking and Encroachment, On-street Parking, Heavy Pedestrian Movement
11	Thapar Nagar Chupala	Poor Geometrics, On-street Parking
12	Jail Road Chupala	Hawking and Encroachment, On-street Parking

Sl. No.	Intersection	Associated Issues
13	Commissionery Chupala	Poor Geometrics, Hawking and Encroachment, On-street Parking, Heavy Pedestrian Movement
14	Sardana Bus Adda Chupala	Poor Geometrics, Hawking and Encroachment, On-street Parking, Heavy Pedestrian Movement

Different critical junctions in Meerut are shown in Map 9

6.6.9. Road Safety / Accident Characteristics

Road planning in Meerut has so far been highly automobile oriented that makes other Road Users vulnerable who could not reap the benefits of such planning. High vehicular traffic compounded by heavy shares of commercial (heavy) traffic deteriorates make the congested road unsafe. Lack of respect for the NMT drivers and pedestrians in the minds of the motor vehicle driver's worsens the situal further. On an average the city of Meerut witnesses about 250 traffic fatalities every year, coupled with about 500 odd traffic injuries the road safety scenario in the city is very grim. It can be seen from **Table6.21** that road traffic injuries and fatalities have increased considerable over the years for last five years with the year 2005 being the most critical accounting for 901 road traffic injuries and fatalities.

'Tripling' on Bhumia Chaupala

Table 6.21: Road Traffic Injuries and Fatalities Details for Meerut City

Year	Injuries			Fatalities			Grand Total
	Male	Female	Total	Male	Female	Total	
2001	421	83	504	271	37	308	812
2002	387	64	451	197	29	226	677
2003	469	73	542	253	21	274	816
2004	395	56	451	222	26	248	366
2005	599	71	670	212	19	231	901

A quick overview of existing state of infrastructure available in the city is presented in **Table 6.22.**

Table 6.22: State of the Infrastructure

Item	Details	Current State
Water Availability	Installed Capacity Released/Daily	185 MLD 165 MLD
Source of Water Supply	*Within City Limits* 10-50 Sq. Km. 50-100 Sq. Km.	Tube Wells Tube Wells *Hardly 2.5 MLD is from Surface water*
Water Coverage	Population Covered By Public Water Supply % Per Capita Supply (lpcd) Supply Duration (Hrs.)	70% 158 lpcd 8 Hrs
Wastewater Disposal	Wastewater Generated Daily (Mld) Disposal (Underground Sewerage) Capacity (Mld) Present Operating Capacity (Mld) Households Connected To Underground Sewerage	112 MLD 45 MLD 34 MLD 25%
Solid Waste	Waste Generation Daily (Tonnes/Day) Collection Daily (Tonnes/ Day)	520 T per Day 320* T per Day
Storm-water Drainage	Average Annual Rainfall (Cm.) Length Of Storm-water Drains (Km.) – 12 Nalas	71.4 cm 43 km
Roads and Road Transport	Roads: Municipal Roads (Km.) State-Level Roads (Km.) Cantonment Roads (Km)	 970.0 km (50% *Kutcha*) 355.5 km 65.2 km

Item	Details	Current State
	Public Transport:	
	Buses (Number of buses on city routes)	177
	Other Buses (including UPSRTC)	1091
	No of School Buses + Private Buses	125 + 25 (150)
	Bus Capacity (no of Passengers)	• 25 - 35 seat Mini buses • 54 seat Std buses
	Private Registered Vehicles:	
	Two Wheelers	1,73,375
	Cars/ Jeep	25,139
	LCV	1,160
	Truck	7,514
	Tempo/ Taxi/ Auto Rickshaws	2,557
	Bus	939
	Tractor	53,812
	Para Transit Service Modes:	
	Tempo/ Taxi (Number of permits)	583
	Auto Rickshaws (Number of city route permits)	523
Street Lighting	Number of Street Light Poles	29,001
	% of Area Coverage	80%

** Not on daily/ regular basis*

6.7. Sector wise Key Issues

Urban Renewal (Inner City Area)

- Non Conforming Land uses (Commercial and Shopping Complexes)
- Polluting and Nuisance Creating Commercial activities such as dairy, slaughtering and tyre re-treading
- Contamination of ground water in places like Peth area, Nand puri, Ashok puri etc. due to the presence of distillery
- Encroachment/ Narrow Street – Identification of critical road stretches
- Lack of pedestrian facilities
- Problems due to mix traffic
- Large number of critical parking locations
- Large number of critical junctions

Water Supply

- Water Crisis is due to growing population in different area.
- Most of the tube wells are either situated in colonies or old city. Lack of proper planning regarding water treatment.
- Large part of City depends on ground water leading to over exploitation of Ground water.
- Inadequate storage capacity
- Lack of treatment facilities as ground water is used for supply for drinking purpose.
- The gross average per capita supply in the city is 175 lpcd. At the same time ward numbers 1, 2, 3, 4, 5, 6, 23, 30, 40, 44, 48, 66 and 70 are partially covered and ward no. 7, 8, 10, 12, 16, 18, 19, 28, 31 are yet to be covered therefore there is high inequality in distribution of water.
- Contamination of water due to cracks in old service connections.
- The transmission and distribution losses accounts for 20-25% of the total supply.

Sewerage

- The existing network needs to be extensive rehabilitation.
- At various places the existing sewer lines are damaged resulting in falling sludge into existing nalas.
- Replacement of a part of the network is required due to hydraulic inadequacy at the forecast flow regime, provision has been made accordingly.
- Untreated sewerage disposal is a critical area.
- Mixing of sewerage with storm water drain.
- The current sewerage system does not serve a substantially large proportion of the population

Drainage

- Poor maintenance, weed growth and blockages on the Nalas lead to flooding, hygienic and filthy living conditions during rainy season in low lying areas.
- Mixing up of the sewerage into Nalas increases the vulnerability to various health hazards.
- Disposal of solid waste into Nalas is a poor practice.
- Many nalas in the City are under severe dilapidated condition.

Solid Waste

- Method of disposal is not scientific disposal of bio-medical waste
- Inadequate capacity collection system of solid waste
- Present sites for waste disposal totally exhausted.
- Segregation of solid waste and recycling not managed adequately.
- Bio Medical Waste
- Waste is not properly segregated at source
- No special precautionary measures are taken during collection and transportation
- Treatment and Disposal
- No health center treat their waste before disposal
- At few center needle shredder is used
- Common disposal technique:

- Open burning of dressing materials without any treatment
- Deep burial of anatomical wastes
- Dumping/placing the waste into the municipal bins
- Subharti Hospital has incinerator but it is rarely operational.

Roads and Road Transport

- Lack of public transport, encourages use of personalize vehicle resulting in congestion, socio-economic and environmental problems.
- Lack of proper designated parking facilities encourages haphazard on-street parking hampering smooth flow of vehicle on major road.
- Lack of footpath and pedestrian facilities increases the vulnerability of pedestrian in terms of their road safety
- Presence of informal activities/ hawking along the road margins and encroachment along the roads decreased the road capacity considerably
- Poor junction design decreases the smooth flow of traffic
- Poor traffic management leads to delay and low travel speed along important corridors
- Poor planning for religious processions like the annual 'Kanwar Yatra' results in chocking of Major Arterials like NH-58, Meerut – Bahgpat Road and Roorkee Road for a period extending more than a week.

6.8. Cost Recovery in Urban Infrastructure

The trend of past 3 years in cost incurred in service provision shows an increase of Rs. 50 lakhs between 2002/03 and 2004/05 in water supply whereas there is consistent decline of Rs 1 lakh in sewerage and sanitation for the same time period. On the other hand cost recoveries are declining in general in both the sector from 2002/03 to 2004/05. A comparative analysis of cost incurred vs direct recoveries in service provision is shown in **Table 6.23**.

Table 6.23: Cost Recovery in Urban Infrastructure

Infrastructure	Cost Incurred in Service Provision (Rs. Lakh)			Direct Recoveries (Rs. Lakh)		
	2002/03	2003/04	2004/05	2002/03	2003/04	2004/05
Water Supply	350.00	350.00	400.00	316.25	309.04	256.51
Sewerage and Sanitation	2.00	1.50	1.00	0.68	1.03	0.50

The investment from private sector in providing different urban services or urban infrastructure facilities is nil and the sole investment in supply of these services comes from public funding. The level of aggregate investment on different components of urban infrastructure is presented in **Table 6.24**.

Table 6.24: Level of Aggregate Investment in Urban Infrastructure: 2001/02 to 2004/05

	Public Investment	Private Investment
Water Supply	1,745.83	Nil
Sewerage And Drainage	1,309.37	Nil
Solid Waste	1,309.37	Nil
Roads (Municipal)	2,618.74	Nil
Street Lighting	436.46	Nil
Storm Water Drainage	1,309.37	Nil
Total:	8,279.13	Nil

Chapter 7.0
Physical and Environment Aspects

Chapter 7.0 Physical and Environment Aspects

The City Development Plan covers a broad assessment of current issues and prospects, priorities and proposals for managing the physical city-scape and land-use providing adequate infrastructure; housing; taking into account the matters related to environment, conservation and ecology. It is therefore, important to take stock of the current state of different environmental elements.

7.1. Environment Services

7.1.1. Quality of Water

Ground water is available at 35-38m depth in the city of Meerut. There is depletion in the water level in the district by 0.15-2.5m during last decade. As per the information from the NCR report, the Total Dissolved Solids (TDS) level of ground water is 329, whereas the pH level was recorded as 8.4 during the year 1998. The change in the characteristic of TDS and pH are given in **Table7.1**.

Table 7.1: Ground quality of water

Parameters	Standard	1996	1997	1998
Total Dissolved Solids		184	26	329
pH	7	7.6	7.8	8.4

The pH level has been increasing over the years and is above the standard as ground water is getting depleted. There is an urgent need to replenish the depleting ground water level as there is too much dependency on the ground water.

7.1.2. Air Quality

The ambient air quality surveys carried out for Thana Road Junction reveals that Suspended Particulate Matter (SPM) level were far in excess of the standard level of 200 ug/m3 (**Table 7.2**). The SPM levels were found to be highest in the month of February.

Table 7.2: Ambient Air Quality Status (2005) at Thana Road Junction

MONTH	Suspended Particulate Matter (SPM) ug/m3	Sulpher Dioxide (SO2) ug/m3	Oxides Of Nitrogen (Nox) ug/m3
	Mean Value	Mean Value	Mean Value
January	769.0	11.2	44.4
February	832.5	11.2	46.4
March	810.0	11.0	45.0
April	691.0	10.9	47.5
May	678.3	11.7	39.1
June	655.3	10.8	42.6
July	555.0	7.8	36.7
August	648.9	11.7	43.8
September	596.3	10.9	39.9

MONTH	Suspended Particulate Matter (SPM) ug/m3	Sulpher Dioxide (SO2) ug/m3	Oxides Of Nitrogen (Nox) ug/m3
	Mean Value	Mean Value	Mean Value
October	706.1	11.3	44.9
November	705.2	11.6	44.7
December	695.8	10.9	43.5
Standard Limit	**200**	**80.0**	**80.0**

Source: U. P. Pollution Control Board Meerut

Table 7.3 shows the ambient air quality status at Begumpul Junction for the year 2005. It can be seen from the table that levels of Suspended Particulate Matter (SPM) were far in excess of the standard level of 200 ug/m3. The highest SPM level was recorded in the month of February corresponding to 855 ug/m3.

Table 7.3: Ambient Air Quality Status (2005) at Begumpul Junction

MONTH	Suspended Particulate Matter (SPM)ug/m3	Sulpher Dioxide (SO2) ug/m3	Oxides Of Nitrogen (Nox) ug/m3
	Mean Value	Mean Value	Mean Value
January	761	11.3	44.9
February	855	11.1	47.2
March	810	11.2	48.0
April	759	13.1	46.7
May	699	12.3	53.1
June	744	11.5	45.0
July	655	9.0	40.5
August	674	11.7	45.3
September	600	11.4	42.0
October	718	11.6	51.0
November	725	10.9	51.0
December	706	11.4	45.8
Standard Limit	**200**	**80.0**	**80.0**

Source: U. P. Pollution Control Board Meerut

Ambient air quality survey carried out at Railway Road Police Station in the year 2001 showed excess levels of SPM, the average figures for all the counts were far above the permissible norm of 200 µ/m3 and show highest order of pollution. In terms of monthly variation, highest level of SPM was recorded in the month of January and February.

Table 7.4: Ambient Air Quality Status at Railway road Police station

Time Period	S.P.M µ/m3	SO2 µ/m3	Nox µ/m3
Jan-01	746.64	28.03	23.49
Feb-01	741.97	26.33	22.24
Mar-01	688.41	29.13	25.71
Apr-01	645.49	29.81	27.32
May-01	589.6	29.13	27.03
Jun-01	495.02	26.37	17.04
Jul-01	464.56	21.93	21.4
Yearly Average	**730.46**	**30.43**	**25.84**

Source: U. P. Pollution Control Board Meerut

7.1.3. Noise Pollution

It can be seen from **Table 7.5** that the average level of noise exceeds permissible norms, in the different points of city.

Table 7.5: Yearly Average Values (db)

Yearly Average Value	Average	Excess (%)
Begum Bridge crossing	76.62	18%
Railway Road crossing 3	77.83	20%
Baccha Park	73.42	13%
P.L Sharma District Hospital	63.00	26%
D.M. Office Collectorate	57.57	15%

- **Industrial Setup**

The city of Meerut has a large industrial setup that is also in some way or the other responsible for contributing to the pollution levels in the city. It can be seen from **Table 7.6** that in the year 2005-06 more than 13000 people were employed in 1382 industrial units in the year 2005.

Table 7.6: Industrial Setup in Meerut City

Year	Type of Industry	Industries (Nos.)	Workers	Investment (in Lacs)
2001-02	Tiny / Small	1,386	5,525	990.41
2002-03	Tiny / Small	1,394	6,801	248.19
2003-04	Tiny / Small	1,360	6,675	574.35
2004-05	Tiny / Small	1,356	6,662	454.52
2005-06	Tiny / Small	1,355	6,629	674.37
2005-06	Medium	27	6,773	6,220.60

Source: Meerut Municipal Corporation

In terms of polluting industries, the city of Meerut has 40 polluting industries in the form of slaughter house, dyeing industry, meat processing industry etc. The details of these have been presented in **Table 7.7**.

Table 7.7: Details of Polluting Industries in Meerut (2006)

Sl. No.	Type of Industry	Number of Industry
1	Slaughter House	1
2	Distilleries	2
3	Dairy & Milk Products	2
4	Paper Industries	2
5	Pesticide Industries	4
6	Dyeing Industries	25
7	Meat Processing Unit	1
8	Electroplating Units	3
	Total	**40**

Source: Uttar Pradesh Pollution Control Board

- **Bio-Medical Waste**

Table 7.8 shows that there are 137 health facilities located in the city. However, even with the presence of these many health facilities in the city there is no incinerator present for treating the bio medical wastes. The result is that wastes discharged from health units mixes with the solid waste of the city posing a serious problem for health and safety of the inhabitants.

Table 7.8: Details of Health Facilities in the City of Meerut

Sl. No.	Health Facility Type	Numbers
1	Medical College	1
2	Govt. Hospital	3
3	Govt. Dispensaries	16
4	Pvt. Nursing Homes	117
5	**Grand Total**	**137**

View of Tyre Retarding Shops near Bus Stand

7.2. Land Supply and Land Use Break Up

Land is the major resource available for accommodating current and new land use changes due to increasing population and economic growth. The measurement and monitoring of these land use changes are therefore crucial to understand land use cover dynamics over different spatial and temporal time scales for effective land management. Today, with rapid urbanization and industrialization, there is increasing pressure on land, water and environment. As per NCR Sub regional Plan 2001, prepared in 1989, the total area under Meerut was 8082 hectare, and keeping a population density of 125 persons per hectare the total future land requirement for the city was estimated as 12400 hectares.

The salient characteristics of land supply as available Meerut in 2002 are presented in **Table 7.9.**

Table 7.9: Land Supply (2001)

Developed Land (Ha.)	Undeveloped and Under Developed Land Under Use (Ha.)
5,712	8,511.4

Discussions with different stake holders suggest that there is a clear increase in residential, commercial, industrial and transportation in Meerut urban area. In the surrounding non-urban area, there is a clear reduction in agriculture area and also in vacant land suggesting the increased intensity with urbanization activities. In 2001 nearly 50% area is under residential use while industrial while nearly 12% is under industrial and commercial use. Detailed break up of Meerut City is presented in **Table 7.10.** The land use distribution of the city is presented in Map 15.

Table 7.10: Land Use Break-Up

Category	% Area (2001)
Residential	**47.68**
Commercial	**2.59**
Industrial	**9.09**
Public Semi-Public	**14.39**
Recreational (Park & Open Area)	**16.58**
Transportation	**9.67**
Total Area:	**100**

Nearly 6800 ha of land in the city is under housing and 1375 ha is under roads and Streets. Details of covered area under different city stock elements are presented in **Table 7.11**.

Table 7.11: Area under Different Uses

City Stock	Area (Ha)
Housing	6,781.8
Infrastructure ▪ Roads and Streets ▪ Water Distribution Network ▪ Sewerage and Drainage	 1,374.9 - -
Industry	1,292.8
Business Districts	368.3

7.3. Heritage and Tourism

The city is the gateway to Hastinapur, one of the earliest Indian cities like Ayodhya, Kashi which was the capital of the Kauravas and Pandavas during Mahabharata times. Meerut is also believed to have been an important centre of Buddhism during the time of Ashoka.

Meerut is famously associated with igniting the spark of first Freedom struggle in 1857 agqinst East India Company, which transformed into a great revolution later. Meerut cantonment is the place where the movement started. The entire region around Meerut is dotted with places of religious, tourist and historical importance, Buddhist and Jain shrines.

Looking at its present condition the city as such does not have any specific heritage site, However the entire region within 40 kms of radius from the city is dotted with places of religious, tourist and historical importance, Buddhist and Jain shrines, which can transform the area into a major tourist destination in the years to come if proper infrastructure is developed for this purpose coupled with sound upkeep of the sites and adequate marketing strategies.

Chapter 8.0
Financial Profile

Chapter 8.0 Financial Profile

As part of CDP it is equally essential to assess the financial health of different agencies operating in the city to provide various essential urban services. In particular, the study of financial profile would gather data on expenditures and sources of revenue in all major sectors and analyze this data and identify major issues to serve as input into the strategic view of urban development. It would include overview for the last five years (account surplus / deficit, capital amount, income, expenditure and closing balance).

Meerut Nagar Nigam maintains fund as per provisions of the Uttar Pradesh Municipal Corporation Act 1959, section 147. The accounts of the fund are maintained on a cash-based/single entry system. The actual accounts of MNN for previous years from 2001/02 to 2004-05, have been analyzed based on the figures provided by MNN. Detailed accounts compiled from the receipts and payments budget books of MNN are discussed in the following subsections.

8.1. Municipal Revenue Income

The total revenue income of the MNN for has grown consistently from Rs 4510 lakhs in 2001/02 to Rs 5114 lakhs in 2004/05 registering a compounded annual growth rate (CAGR) of 4.3 per cent during 2001/02 to 2004/05. Tax Revenues have shown negative trend of -1.7% from 2001/02 to 2004/05 while Non Tax revenue accounts have shown a growth of nearly 8% during the same period. Details of Municipal revenue income are presented in **Table 8.1**.

Table 8.1: Municipal Revenue Income

Year	Revenue Account Receipts (Rs. Lakh)			
	Tax	Non Tax	Transfers Including Grants	Total
2001/02	730.02	510.97	3269.08	4510.07
2002/03	686.61	496.69	3594.61	4777.91
2003/04	998.99	446.78	3477.16	4922.93
2004/05	693.02	644.75	3776.23	5114.00

8.2. Municipal Revenue Expenditure

As seen above the revenue income of the MNN has grown consistently at a compounded annual growth rate (CAGR) of 4.3 per cent during 2001/02 to 2004/05, while the quantum in revenue expenditure in 2004/05 has come down from 2002/03 and 2003/04 levels registering a negative growth rate of 9 to 10 per cent. The current trend of CAGR would definitely help MNN to minimize the huge deficit in due course of time. Municipal Revenue expenditure details are presented in **Table 8.2.**

Table 8.2: Municipal Revenue Expenditure

Year	Revenue Account Expenditure (Rs. Lakh)				
	Establishment (Wages and Salaries)	Operation and Maintenance	Interest Payment	Others	Total
2001/02	2,514.17	1,700.17	Nil	Nil	4,214.34
2002/03	2,593.99	2,335.89	125.82	Nil	5,055.70
2003/04	2,706.39	2,506.74	Nil	Nil	5,213.13
2004/05	2,508.55	2,186.33	Nil	Nil	4,694.88

8.3. Municipal Capital Receipts

The trends in total capital income have also shown an increasing pattern, which is solely contributed by loans and grants from the state government. The CAGR in total capital income has been just over 3.1 per cent per annum. Capital receipts through loans follow no consistent pattern. **Table 8.3** presents Municipal Capital Receipts.

Table 8.3: Municipal Capital Receipts

Year	Capital Receipts (Rs. Lakh)				
	State Government		Financing Institutions	Market	Total
	Loans	Grants			
2001/02	4,167.50	2,801.58	Nil	Nil	3,269.08
2002/03	247.03	3,347.58	Nil	Nil	3,594.61
2003/04	80.28	3,396.88	Nil	Nil	3,477.16
2004/05	141.65	3,634.58	Nil	Nil	3,776.23

8.4. Finances of Meerut Nagar Nigam

The revenue account has shown a positive closing balance during the F.Y 2004/05 of about Rs. 419 lakhs, which has been a reverse trend from fiscal deficits registered in previous three years from 2001/02 and 2003/04. This appears to be a welcome sign that enhances the availability of finances for various developmental works, but there is always a doubt on sustaining this trend looking at the past three years records.

Table 8.4: Finances of Meerut Nagar Nigam

Year	Expenditure (Rs. Lakh)	Income (Rs. Lakh)
2001/02	4,214.34	4,510.07
2002/03	4,929.88	4,777.90
2003/04	5,213.13	4,922.93
2004/05	4,694.87	5,114.00

Source: Pre Feasibility Report of sewerage Scheme under JNNURM for Meerut Nagar

Chapter 9.0
Institution

Chapter 9.0 Institutions

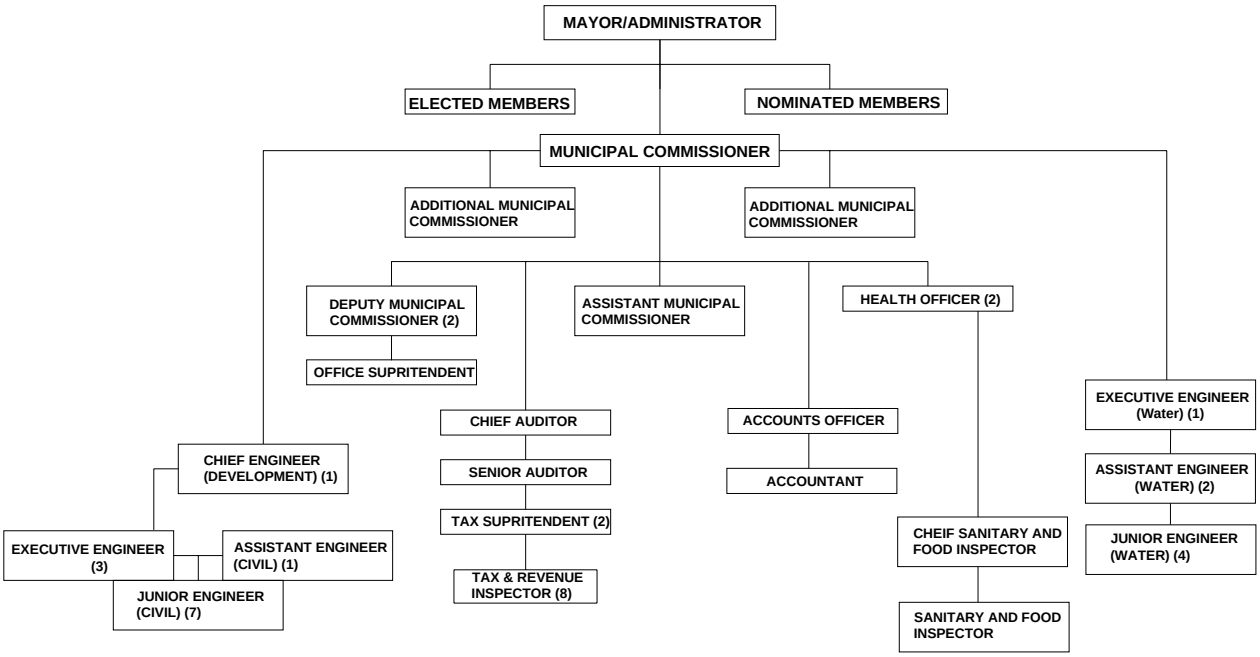
The CDP covers a broad assessment of the existing institutional framework for urban development in Meerut. This not only refers to the functions but also to the objectives for effective operations by various agencies including Local government and Municipal Nagar Nigam. The various agencies involved in urban management in Meerut are primarily:

- Meerut Municipal Corporation;
- U P Jal Nigam;
- MDA
- DUDA
- Public Works Department;
- Uttar Pradesh Housing Development Board;
- Town and Planning Organisation; and
- Uttar Pradesh Pollution Control Board;

9.1. Institution's Responsibilities

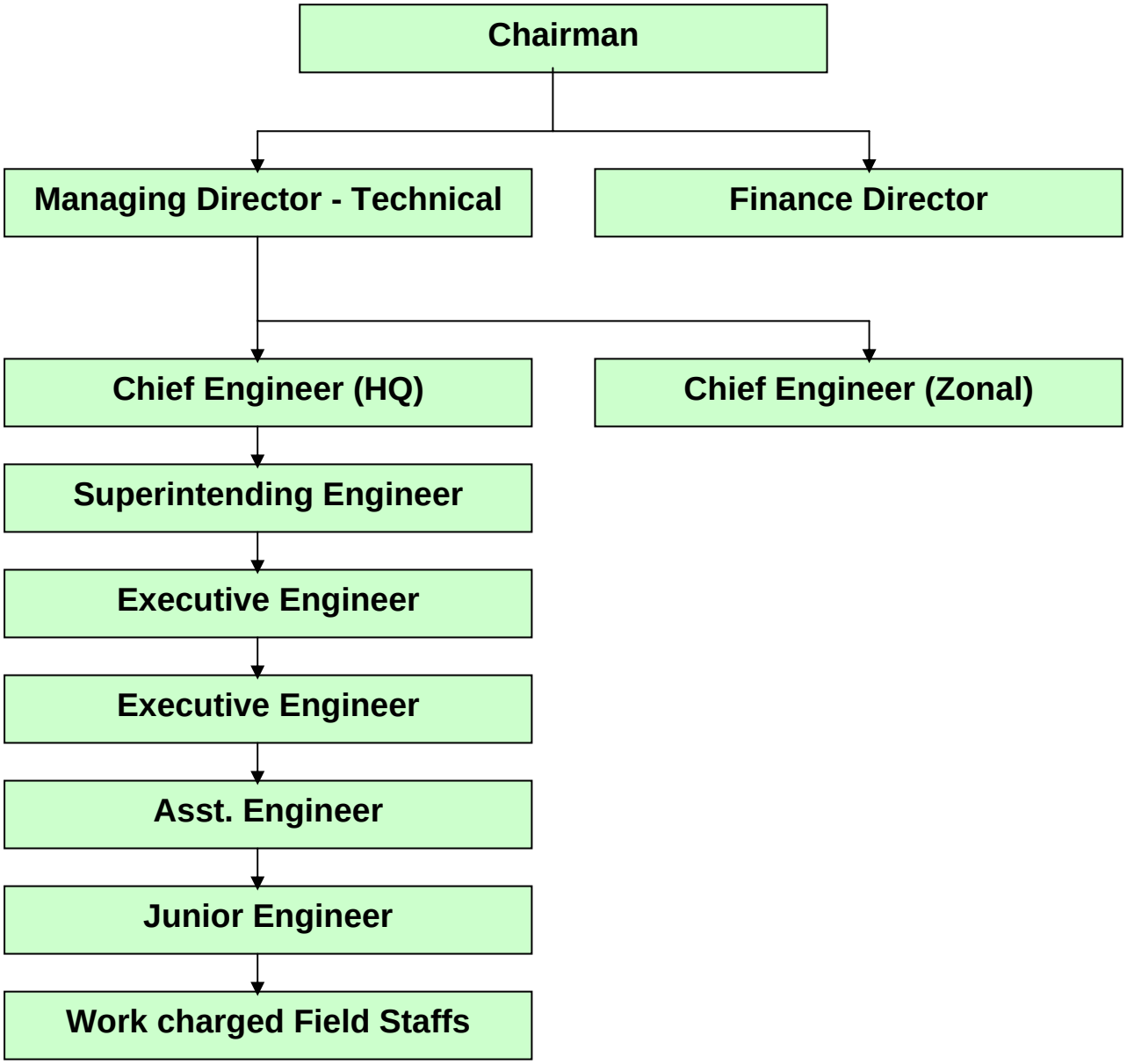
9.1.2 Meerut Nagar Nigam (MNN)

Meerut Nagar Nigam carries out a wide range of functions related to provision and maintenance of core civic services and ensures a planned and orderly development of the city. The corporation also collects fees and revenue from various users carries out obligatory and discretionary functions as per the provision of the Municipal Corporation Act – 1959, section 114 & 115.



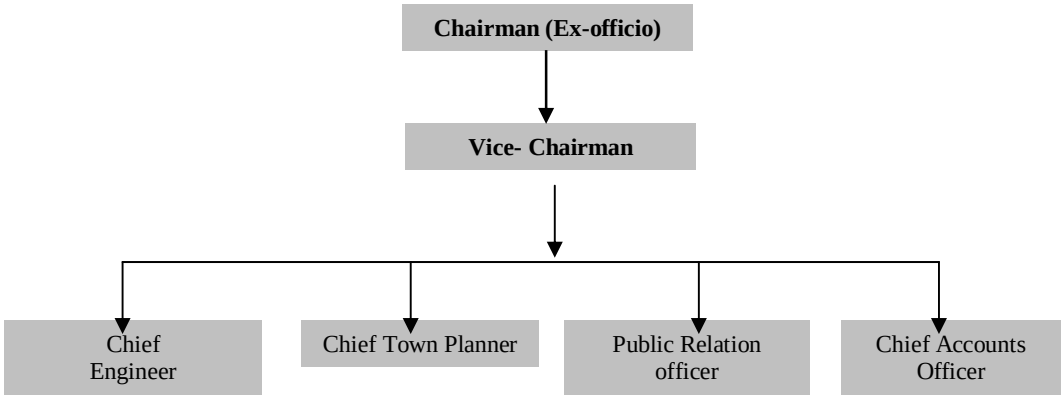
9.1.3 Uttar Pradesh Nigam

U.P. Jal Nigam is mainly responsible for the implementation of water supply projects in city. The major functions of the department are to design, plan, and implement water supply project. All the projects in Meerut once designed and implemented by the UP Jal Nigam are then transferred to the Corporation for operation and maintenance. UP Jal Nigam was created under the Water Supply and Sewerage Act 1975. Organisation Chart as per the Act is as under.



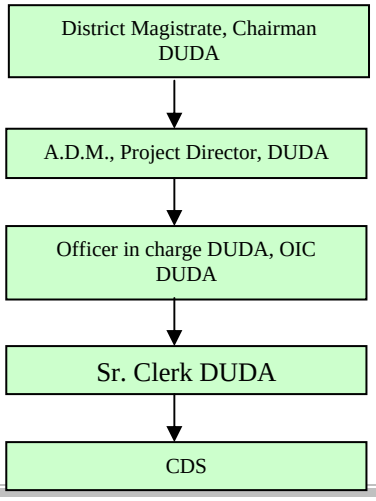
9.1.4 Meerut Development Authority

MDA (MDA) was formed under the vide notification dated 3 November, 1976 published under vide G.O. 6218/37-2-4 D. A/72 and is governed under the Uttar Pradesh Urban Planning & Development Act, 1973. The primary objective of MDA is preparation and implementation of development plan for the development area, which includes the jurisdiction of the Meerut Municipal Corporation and surrounding villages. They also execute projects of regional significance such as connecting road, wholesale markets, new townships, etc. To execute these projects, the Act empowers MDA to levy development charges and allows them to raise resources through borrowings from banks and other financial institutions. The total area of the MDA area is 10,783.4 hectares.



District Urban Development Authority (DUDA)

DUDA has a structured network of Resident Community Volunteers (RCVs) Neighborhood Groups (NHGs), Neighborhood Committees (NHCs) and Community Development Societies (CDS) in the urban slum areas of Meerut. DUDA had 35 CDS in various urban areas of Meerut. These CDS have been dissolved at present and fresh elections are awaited. The functionaries of DUDA work in close association with public and private medical practitioners. Their activity-mix includes family planning services, enrolment of pregnant women for ANC and children for immunization, counseling, distributing contraceptives, etc. They also organize health camps in close association with public and private medical practitioners. The organisation chart as per Annual report, 2001: DUDA is presented below.



9.1.5 Public Works Department (PWD)

Public Works Department in Meerut is responsible for the construction, maintenance and repair work of government buildings, roads, bridges and construction of pulias (bridges) etc outside the Municipal Limits, whereas for areas within Municipal Corporation limits, the MNN takes care of maintenance and repair works. The superintendent engineer heads the PWD department and is responsible for all the six executive engineer offices, which include offices at Meerut; construction Division, temporary departmental construction unit (Building), and National Highway Division.

9.1.6 Uttar Pradesh Housing Development Board

Uttar Pradesh Housing Development Board (UPHDB) had been implementing various housing and development projects, prior to the establishment of MDA. It was also functioning as the prime executing/ planning agency in Meerut. In order to ensure quick implementation of projects, MDA started undertaking development works (including building constructing activities). Much of the tasks of UPHDB have been taken over by MDA though UPHB still continues to undertake certain housing projects for various income groups in Meerut.

9.1.7 Town and Planning Organization

There is a fully operational Town & Planning Organisation in Meerut City, which looks after the planning of city development projects not only for Meerut but also covers the adjacent towns of the region. The divisional office of the Town and Country Planning Organisation in Meerut carries out the activities related to survey of the entire region so as to prepare a regional development plan.

9.1.8 Uttar Pradesh Pollution Control Board

Uttar Pradesh Pollution Control Board (UPPCB) has been constituted under the rules of the CPCB for implementation, supervision and monitoring activities pertaining to Central Pollution Control Acts. The Regional office at Meerut carries out operations of Uttar Pradesh Pollution Control Board which primarily is responsible for monitoring quality of the different elements and environmental parameters and various enforcement measures through:

- implementation of provisions of various Acts governing pollution control and prevention
- implementation of Municipal Solid Waste (Management and Handling) Rules, 2000 of CPCB,
- ground water, ambient air, and compost quality in urban areas

Sector wise responsibility of different institutions involved in service provision in Meerut city by activity is presented in **Table 9.1**.

Table 9.1: Institutional Responsibility

Urban Infrastructure	Planning And Design	Construction	Operation And Maintenance
Water Supply	UP Jal Nigam	UP Jal Nigam	MNN
Sewerage	UP Jal Nigam	UP Jal Nigam	MNN
Drainage	UP Jal Nigam	UP Jal Nigam	MNN
Storm Water Drainage	UP Jal Nigam	UP Jal Nigam	MNN
Solid Waste Disposal	Meerut Nagar Nigam	Meerut Nagar Nigam	MNN
Municipal Roads (Including Flyovers)	PWD, MNN, MDA, CB, UP Bridge Cooperation	PWD, MNN, MDA, CB, UP Bridge Cooperation	PWD, MNN, CB

9.2. Role of Private Sector in Urban Infrastructure Provision

Private Sector Participation can play a key role bridging the gap between the available resources and requirement in providing different urban services. Hence CDP aims at exploring the current levels of involvement of private sector. Though private sector can play crucial role, the present involvement is marginal in Meerut city.

Table 9.2: Role of the Private Sector in Urban Infrastructure Provision

Urban Infrastructure	Role Of The Private Sector (Specify)
Water Supply	Informal unorganized supply by various private parties through water tankers.
Sewerage	Nil
Drainage	Nil
Storm Water Drainage	Nil
Solid Waste Disposal	Informal unorganized involvement of rag pickers facilitating segregation of solid waste.
Municipal Roads (Including Flyovers)	Nil
Street Lighting	Nil

9.3. Institutional and Governance Reforms

The current status of the implementation of some reforms in MNN is included as anticipated by MNN. Some of the reforms as agenda though have been started by the MNN, mandatory reform on several items are yet to begin and carry on.

As a part of property tax reforms, MNN is in the process of identifying un-assessed properties by way of transferring all the properties on the GIS platform. With respect to the levy of reasonable user charges, in fact taking water tax not particularly as user charges. For the purpose of cost recovery for water supply but not in the form of user charges that need to be attempted. Any charge for conservancy or all other services like street lighting, fire, etc. would be attempted to cover under the additional Cess on property tax and to slowly move towards cost recovery. MNN proposes to introduce additional conservancy Cess to recover the full cost of the operations.

With regards to the introduction of e-governance, MNN will introduce interactive website for dissemination of information as required under Right to Information Act 2005, on property tax dues and tenders of all departments. Information on birth and death registration to begin with and fully automated building permission software will be implemented.

MNN, currently spends some amount of its fund obtained from different sources to meet the expenditure on the urban poor particularly to those who are residing in the authorized and identified slums with almost to all with pucca structures Basic services like water supply, sewerage, street lighting and roads are also attempted to be provided in all slums such slums, barring near about 50 unauthorised settlements in Meerut.

As far as the optional reforms are concerned, the responsibility of revision of bye-laws currently lies with MDA to streamline the approval process for the construction of buildings and sites and the earmarking of at least 20-25% in all housing projects for EWS and LIG are yet to be done during the period of JNNURM, starting immediately, say 2006-07.

The optional reforms with respect to the revision of byelaws however -- to make rainwater harvesting in all buildings for water conservation measures and byelaws will be brought in place.

In the case of administrative reforms, MNN shall explore the possibility of implementing the VRS option in departments where it is possible. Also, MNN proposes to upgrade the technical skills of its staff by organizing training programmes from 2006-07. As part of the structural reforms, the immediate decision has to be taken to improve their performance in view of their mission and public requirement.

The other reforms being considered by MNN as part of JNNURM and the 74th Constitutional Amendment Act, 1992, are the constitution once were half heartedly attempted and superseded afterward for quite a sufficient period of time. This is a matter of re-activating it by the State Government including formation of Metropolitan Planning Committee (target date 2006-07) and preparation of Draft Development Plan for the Metropolitan Area of Meerut, consolidating the plans to be prepared for the adjoining rural areas and that of the urban areas (municipal corporation).

With regard to private sector participation in the provision of services for door to door garbage collection could be started; such practices in the entire city, including Hospital waste management could be for the better management could be based on the PPP format. In addition to these services, MNN proposes to explore various contracting options like deferred payments for major infrastructure projects. (Target date 2007-08 onwards in phases).

9.3.1 Current status

The current status of the implementation of some reforms in MNN is included as anticipated by MNN. Some of the reforms as agenda though have been started by the MNN, mandatory reform on several items are yet to begin and carry taken up.

Regarding property tax reforms, MNN is in the process of identifying un-assessed properties by way of transferring all the properties on the GIS platform. Current mechanism of charging water tax may not be considered at reasonable method of collecting user charges based on actual consumption of water. There is need for cost recovery of water supply in the form of user charge for conservancy or all other services like street lighting, fire, etc. would be attempted to cover under the additional Cess on property tax and to slowly move towards cost recovery. MMC proposes to introduce additional conservancy Cess to recover the full cost of the operations.

With regards to the introduction of e-governance, MNN needs to introduce interactive website for dissemination of information as required under Right to Information Act 2005, on property tax dues and tenders of all departments. Information on birth and death registration to begin with, and a fully automated building permission software will be implemented.

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As far as the optional reforms are concerned, the revision of bye-laws to currently under the jurisdiction of MDA. The process of revision of bye laws to streamline the approval process for the construction of buildings and sites and the earmarking of at least 20-25% in all housing projects for EWS and LIG are yet to be done during the period of JNNURM, starting immediately, say by 2006-07.

The optional reforms with respect to the revision of byelaws however to make rainwater harvesting in all buildings mandatory for water conservation such byelaws shall have to be brought in place.

In the case of administrative reforms, MNN shall explore the possibility of implementing the VRS option in departments where it is possible. Also, MNN proposes to upgrade the technical skills of its staff by organizing training programmes from 2006-07. As part of the structural reforms, the immediate decision has to be taken to improve their performance in view of their mission and public requirement.

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With regard to private sector participation in the provision of services for door to door garbage collection could be started; such practices in the entire city, including Hospital waste management could be for the better management and can be based on the PPP format. In addition to these services, MNN proposes to explore various contracting options like deferred payments for major infrastructure projects. (Target date 2007-08 onwards in phases).

9.3.2 Urban Governance/ System Modernisation

Same amount of funds need to be allocated for monitoring modernisation of the prevailing system (System Modernisation), e-governance and GIS projects over the next five years towards. These projects would involve administrative reforms implementation, computerisation efforts, improvement and additions to the on-going e-governance project, GIS based systems development etc., those have to be started in organized manner. These capital investments are expected to bring in more accountability and transparency in the administration of MNN and thereby its reach to the citizens. Such items would involve the following:

- Urban governance, GIS systems, Systems modernisation
- Implementation of Double entry accrual system of accounting
- Implementing GIS based property tax system and support engineering services
- Rationalisation of tax administration process.

This would involve Restructuring of administration, monitoring and coordination including other actions and measures as may be necessary.

9.3.3 Urban Governance & Finance

- Identifying the training needs of the staff (HR, Administration, Financial Management, Urban Governance, Service Delivery, Citizens Communication, IT)
- Involve city based institutions and NGOs towards imparting training
- Publish the property tax records at the ward level and bring in transparency in the system.
- Carry out audit works of all the expenditure incurred service-wise, and identify and assess sector wise expenditure to categorize specific expenditure control measures.
- Communicating with the public and within the organisation to build popular support for the reform initiatives.

- Outsourcing high energy consuming maintenance works of municipal services, to target energy efficiency with revenue sharing procedures.
- Outsourcing non-administrative and non-technical operations of most of the municipal functions like:
- Property Tax database management, demand notices generation, arrears collection, etc.
- Non-core functions in the Vehicle/ workshop department establishing a pension fund for the retired employees and other employees who are on the payroll prior to 2005.
- Creation of such funds like the depreciation fund, infrastructure fund disaster management fund, etc. to meet unplanned and emergency expenses to have prudent financial management.
- Further decentralization must be incorporated in the system. For example, Licensing and taxing rights need to be given to ward officers. The function of the Central body must be limited to monitoring, planning and executing.
- Take up benchmarking of services

9.3.4 Minor Capital works and System studies

Some money could also be proposed for funding various systems' improvement studies to be taken up by MNN in line with the various reforms proposed in the CDP. Apart from this, MNN proposes to incur a considerable the expenditure per year through budget allocations for minor development works that shall be identified on an year to year basis.

9.3.5 Other actions/ Coordination measures

- Identify on an year-to-year basis, the detailed list of minor capital works to be taken up at the ward level.
- Identify various studies to be conducted for effective implementation of the various proposed reforms.
  - Administrative restructuring
  - Water audit
  - Mapping and socio-economic survey of Slums
  - Master plan documents for water supply, sewerage, drainage etc

The aim of JNNURM is to create economically productive, efficient, equitable and responsive cities by focusing on:

- Improving and augmenting the civic, social and economic infrastructure,
- Ensuring basic service for poor including security of tenure at affordable rice,
- Initiating wide ranging urban sector reforms, primarily aimed at eliminating legal, institutional and financial constraints that are impending investments in urban infrastructure and services, and

- Re-formation Strengthening of the elected form of the ULB and elected municipal government in the UP state and their functioning in accordance with the provisions of the 74th Constitutional Amendment Act, 1992.

One of the main aims of JNNURM is to finance the infrastructure investments through forms in ULBs.

The mission has identified certain other mandatory and optional reforms to be undertaken during the mission period for the ULB to be eligible for funding; those are the reforms at the level of State government and the ULB. This section deals with the ULB level reforms.

Specific items have been identified under each reform. The timelines for implementation are indicated and the detailed action plan and the status of these reforms, if already underway.

9.3.6 Mandatory Reforms By Meerut Municipal Corporation

JNNURM has identified mandatory reforms that ULBs need to implement to be eligible for funding under JNNURM. The specific actions plans which MNN intends to implement as part of these reforms are:

- Adoption of modern accrual-based double-entry system of accounting
- Introduction of a system of e-governance using IT applications such as GIS and MIS for various services provided by the ULB
- Reform of property tax with GIS and achievement of collection efficiency of 85 per cent of the demand by the end of mission
- Levy of reasonable user charges with the objective that the full cost of O&M or recurring cost is collected within the next seven years
- Internal earmarking in budgets for basic services to the urban poor, and
- Provision of basic services to the urban poor including security of tenure at affordable prices.

adoption of a modern accrual-based double-entry system of accounting

Currently, it initiated a computerized cash based double entry accounting system for both receipts and payments. MNN Need to invite tenders for the accounting reforms and to complete the process of finalizing the agency. MNN had set a target to generate its balance sheet by 2006-07. The time for implementation of MMC called for to carry out the following sub activities;

- Complete audit formalities for all previous years
- Prepare accounting manual based on National Municipal Accounting Manual (NMAM)
- Implement function and accounting codes
- Develop computer programme for the double entry accounting system

- Record and value all fixed and flexible assets and liabilities of the corporation
- Carry out bank reconciliation work of all the bank accounts of the corporation
- Train corporation staff for accurate account coding as per NMAM for the preparation of the balance sheet and the budget
- Prepare the opening balance sheet for the year 2006-07 and the consequent two years by March 2007 (FY 2006-07).

Introduction of a system of e-governance using IT applications such as GIS and MIS for various services provided by MNN

- E-governance is an opportunity to transform the corporation's commitment to be citizen-centric, provide cost-effective services and enhance governance through improved access to accurate information and transparent and responsive democratic institutions.
- Thus e-governance is no longer an experiment in administrative reform but a permanent part of the governing process.
- For both government organizations and citizens, its advantages are far reaching in comparison to investment in establishing e-governance.
- The objectives of the e-governance reforms as set by MNN are:

Promote people centric administration -- Common citizens should get the benefits of the system of accurate billing. Corruption should be avoided.

Move from process accountability to productivity accountability and from transactional to transformative governance -- The process is computerized to increase productivity. Each department of the corporation has reports giving exact statistics of how accountability is achieved through the system.

Reduce delays and ensure promptness in delivery of services -- Computerization would ensure timely delivery of accurate service.

E-Administration -- Improve administrative processes by cutting cost, managing performance, making strategic connections within the local bodies and creating empowerment.
E-Citizen and E–Services: Connect citizens to the local government by talking to citizens and supporting accountability, by listening to citizens and supporting democracy and by improving public services.

Citizen Centric Organisation: MNN has taken a lead in e-governance projects. Presently it has become necessary to display, and is a true citizen centric project through Citizen Facilitation centres.

Initial Services to be offered:

MNN intends to complete the process of e-governance by FY 2007-08. As part of e-governance reform, MNN intends to cover all services in addition to the following services, which are provided through its interactive web sites and the CFC.

- ★ Registration of births and deaths (initiated)
- ★ Public grievance reprisal as part of an interactive web site and also at CFCs
- ★ Property tax payments through CFC and through ICICI Infinity Internet
- ★ gateway'(initial stage of understanding)
- ★ Fully computerized cash based double entry accounting system
- ★ Works Management System (yet to be initiated)
- ★ E-Procurement (yet to be initiated)
- ★ Fully computerized pay roll and pension system need to be attempted
- ★ Payment of property tax, utility bills and management of utilities is at the rudimentary stage
- ★ Fully automated building plan permission, thoughts are raising

Services to be covered with priority :

Interactive web site to come in place :

- ★ E-Procurement
- ★ GIS based property tax and overall GIS for engineering, water supply (survey
- ★ of properties already in progress)
- ★ Interactive Voice Response System (IVRS)
- ★ Municipal Area Networking (MAN)
- ★ Document Management System

Property tax on GIS platform and proposed achievement of collection efficiency of at least 85%

JNNURM requires certain reforms in Property Taxes, with the broad objective of establishing a simple, transparent, non-discretionary and equitable property tax to encourage voluntary compliance and the same is to be brought under the GIS platform. With regard to reforms in property tax system, MNN should shift to an area-based unit rate system for all new properties.

Now for MNN it proposes to map all properties on the GIS platform. A survey should be initiated a survey of all properties for this purpose. MNN intends to complete the property tax reform process in all respects by 2008-09. It needs to be mentioned that MNN needs to achieved a collection performance of 85% in FY 2008-09 and proposes to achieve the target of 90% collection. Other reforms with regard to property tax which are already in place or in process of implementation.

Decentralization of the property tax, department education, health and social security should be ensured. In this regard, as a part of reforms, the ULB should earmark certain funds for the urban poor in order to improve the housing stock and provision of basic urban service.

With regard to this reform, 25% of its total expenditure of MNN, should be assigned for providing the services of water supply, sanitation, education and primary health, and Urban Child Development (UCD) activities. The service levels of basic services are fairly good. The only area of concern is the quality of housing stock.

Summary of current status and tentative plan for different reforms to be carried out by MNN and the state Government are discussed as under.

Table 9.3 Reforms by Mandatory MNN

S No	Reforms	Current Status /Plan
1.	Adoption of modern accrual based double entry accounting system accounting	▪ Expected to be completed by **April 2007**
2.	Introduction of a system of e-governance using IT applications, such as GIS and MIS for various services provided by MNN	▪ Interactive website for information on property tax dues, tenders of all departments and information birth and death registration to be implemented by **Dec 2007** ▪ Plan to have a fully automated building permission ▪ Property tax collection through Infinity Internet ▪ Citizen facilitation centre for Tax Collection and issue of certificates
3.	Reforms of property tax with GIS. It becomes a major source of revenue for ULBs and arrangements for its effective implementation so that collection efficiency reaches at least 85 per cent within next seven years	▪ Assessment of identification of un-assess properties tax shall be transferred on GIS platform by **2009** ▪ Collection target of 85% collection shall be achieved by **2010**
4.	Levy of reasonable user charges by MNN with the objective that the full cost of O&M or recurring cost is collected within the next seven years.	▪ Cost recovery for Water supply and UGD is in the form of reasonable user charges by **2009** ▪ Cost recovery for services like street lighting, fire, conservancy etc. are covered through additional cess on property tax and most of items cost except conservancy to have 100% cost recovery by **2009** ▪ Proposal to increase the conservancy cess to achieve 100% recovery targeted for **2010**
5.	Internal earmarking within local bodies, budgets for basic services to the urban poor	▪ As of now the responsibility for providing elementary education and primary health facilities rests with the State Govt. ▪ In case these responsibilities are transferred to the ULBs with in respective municipal limits the same would be executed

S No	Reforms	Current Status /Plan
6	Provision of basic services to the urban poor including security of tenure at affordable prices, improved housing, water supply and sanitation. Delivery of other existing universal services of the government for education, health and social security is ensured.	▪ As of now the State Govt has entrusted these responsibilities to State Urban Development Agency (SUDA). There are fulfilling their mandate within the municipal limits in association with concerned ULBs through SUDA's district level outfits known as DUDA.

9.3.7 Optional Reforms by MNN

The mission has identified seven optional reforms that the ULB needs to implement to be eligible under JNNURM. Ideally, the ULB may be implementing at least two to three reforms each year.

Revision of bye-laws to streamline the approval process for construction of buildings, development of site etc.:

The Development Plan for MNN needs to be renewed time to time. As part of the DP, MMC should propose to revise the current Development Control Regulations (DCR), taking into account the recent development and requirements of the city. It is also to explore the option to have area specific DC Rules with regard to FSI etc. (Target date 2007-09)

Earmarking of at least 20-25% of developed land in all housing projects (both public and private agencies) for EWS and LIG category with a system of cross subsidization:

MNN proposes to implement this in phases from FY 2006-07 onward, it is exploring various options in this regard. One of them could be to consider consultation process with the builders association, for the provision of High Density Housing Complexes (HDHC) in the newly added areas.

Under this provision, an extra FSI could be given to the builders. Once the construction is complete, the builder will hand over 20% of the tenements to MNN as per the specifications. The builders can sell the remaining 80 % in the market. (Target date 2008-09 onwards in phases)

Revision of byelaws to make rain-water harvesting mandatory in all buildings and adoption of water conservation measures, and will be in place including Byelaws for reuse of recycled water.

Administrative reforms i.e. reduction in establishment costs by adopting the voluntary Retirement Scheme (VRS), not filling posts falling vacant due to retirement etc., and achieving specified milestones in this regard.

Currently, establishment expenditure as percentage of revenue income much, however, the VRS option shall be explored in departments where it is possible; MNN also proposes to upgrade the technical skills of the staff by organising training programmes from 2007-08 onwards.

Structural reforms: Currently, a part of structural reforms, the immediate decision being taken is the merger of both transport undertakings to improve their performance as both serve a common area.

Encouraging PPP: With regard to private sector participation in the provision of services by MNN, currently door-to-door solid work collection could be attempted to undertake through the rag pickers in a few wards. MNN proposes to extend this activity to the entire city. Hospital waste management and Citizen forum etc are already based on the PPP format. In addition to these services, MNN proposes to explore various innovative contracting options like deferred payments for major infrastructure projects (Multilevel and at Grade Parking, High Capacity Mass Transit system, and certain non technical activities) (Target date 2008-09 onwards in phases).

Table 9.4: Optional Reforms by MNN

S. No.	Reforms	Current Status/Plan
1.	▪ Revision of bye-laws to streamline the approval process for construction of buildings, development of site etc.	▪ Currently under MDA
2	▪ Earmarking at least 20-25 per cent of developed land in all housing projects (both public and private agencies) for EWS and LIG category with a system of cross subsidisaion	▪ Currently under MDA
3	▪ Revision of byelaws to make rain water harvesting mandatory in all buildings and adoption of water conservation measures	▪ To be decided by MDA / UP Jal Nigam
4	▪ Byelaws for reuse of recycled water	▪ To be decided by MDA / UP Jal Nigam
5.	▪ Administrative reforms i.e. reduction in establishment costs by adopting the Voluntary Retirement Scheme (VRS), not filling posts falling vacant due to retirement etc., and achieving specified milestones in this regard.	To be undertaken in future keeping in view the requirement at that point of time.
6	▪ Structural reforms	To be done in planed manner with in a period of 5 years
7	▪ Encouraging PPP	A suitable model will be developed and implemented gradually

*To be committed and furnished by MNN

9.3.8 Reforms to be Undertaken by Govt. of Uttar Pradesh

In addition to mandatory and optional reforms by ULBs, JNNURM has prescribed some more reforms for implementation by the State governments.

Mandatory Reforms: Implementation of decentralization measures as envisaged in the 74th Constitutional Amendment Act -- The State should ensure meaningful association and engagement of ULBs in the planning function of parastatal agencies as well as the delivery of services to the citizens through the elected representatives in the three tyre system of government in the country, thus it should;

- Repeal of ULCRA
- Reform of rent control laws, balancing the interests of landlords and tenants
- Rationalization of stamp duty to bring it down to no more than 5 per cent within the next seven years (already in place)
- Enactment of the public disclosure law to ensure the preparation of a medium-term fiscal plan of ULBs and parastatal agencies and release of quarterly performance information to all stakeholders
- Enactment of the Community Participation Law to institutionalize citizens' participation and introduce the concept of the Area Sabha in urban areas,
- Assigning or associating elected ULBs with "city planning function". Over a period of seven years, transferring all special agencies that deliver civic services in urban areas to ULBs and creating accountability platforms for all urban civic service providers in transition.

Table 9.5: Mandatory Reforms of Govt. of UP

Sr. No.	Reforms	Current Status/Plan *
1	▪ Implementation of decentralisation measures in 74th constitutional Amendment Act. The state should ensure meaningful association and engagement of ULBs in planning the function of parastatal agencies as well as the delivery of services to the citizens	▪
2	▪ Repeal of ULCRA	▪
3	▪ Reforms of Rent Control Laws balancing the interests of landlords and tenants	▪
4	▪ Rationalisation of Stamp Duty to bring down to no more than 5 percent within next seven years	▪
5	▪ Enactment of the Public Disclosure Law to ensure preparation of medium term fiscal plan of ULBs and parastatal agencies and release of quarterly performance information to all stakeholders	▪
6	▪ Enactment of the Community Participation Law to institutionalise citizen's participation and introduce the concept of the Area Sabha in urban areas.	▪
7	▪ Assigning or associating elected ULBs with "city planning function". Over a period of seven years, transferring all special agencies that deliver civic services in urban areas to ULBs and creating accountability platforms for all urban civic service providers in transition.	▪

*To be committed and furnished by GoUP

Table 9.6: Optional Reforms by GoUP

Sr.No.	Reforms	Current Status/Plan*
1	▪ Simplification of legal and procedural frameworks for conversion of land from agricultural to non-agricultural purposes	▪
2	▪ Introduction of Property Title Certification System	▪
3	▪ Introduction of computerised process of registration of land and property.	▪

*To be committed and furnished by GoUP

Chapter 10.0

Vision for Sub Mission I

Chapter 10.0 Vision for Sub Mission – I

No matter what the future brings, housing, creation of employment generation, educational facilities, transportation, telecommunication and provision of basic services will continue to be fundamental activities for various urban centers. While preparing City Development Plan, our paramount concern is to have a Vision for the city based on its current weaknesses, strengths, opportunities, potential and threats in order to provide the ideal balance between different current activities and future role of Meerut.

10.1. Vision Statement for Meerut City

To Develop an Economically Strong, Socially Fair and Environmentally Sustainable City through Participatory Planning and Transparent, Accountable and Flexible Institutional Framework

SECTOR	YEAR		
	2012	2024	2030
Meerut City	A City that • Provides infrastructural facilities in a socially fair and environmentally sustainable manner • Is poised for further economic prosperity • Encourages participatory governance	A City that • Acts as a node of development in N.C.R. Region • Has flexible institutional framework	A City that • Is a major urban magnet in India • Has autonomous self sustaining agencies of urban management

10.2. Sector wise Vision and Goal

In order to monitor and evaluate the accomplishment of the stated VISION, goals gave been identified for sector. These goals are 'outcome based' and indicate the performance of the sector from the consumer/ resident point of view.

Table 10.1 : Vision and Goals

SECTOR	YEAR		
	2012	2024	2030
URBAN RENEWAL	• An Inner City area that Provides infrastructural facilities in a socially fair and environmentally sustainable manner • Redevelopment of blighted areas through land assembly, clearance and redevelopment	Decentralisation in Meerut and development of various nodes of development in Meerut Metropolitan Region	Meerut Metropolitan Region to be an urban magnet in India to have autonomous self sustaining multi nuclear business districts

SECTOR	YEAR		
	2012	2024	2030
URBAN DEVELOPMENT SECTORS			
Water Supply	• Demand – Supply gap to be bridged by 2009 • 12 Hrs. water supply by 2013 • Increase in share of surface water sources in city's water budget.	• Equitable distribution at city level at 135 lpcd • Water Auditing	• 24X7 water supply at 150 lpcd • Surface water sources to share 50% of city's water demand
Sewerage & Sanitation	• Operational STP's and upgraded Piping system • Performance Monitoring systems in place	• Fully operational U.G. Sewerage system for the entire city	• Sewage and drainage segregation • Reuse of effluent for farm land etc.
Urban Drainage	• Operational SW Drainage system • Segregation of Industrial effluent and storm water	• Water recharging through SW Drainage system	• Restoration of city's natural drainage systems
Solid Waste Management	• Daily collection and disposal of solid waste • Segregation of Municipal and Bio waste	• Sorting, segregation and disposal of solid waste	• Resource recovery, recycling and reuse of wastes • Environmentally sustainable disposal systems
Urban Transport	• Public transport to share 25% of passenger traffic • All weather road system in the city	• Public transport to share 35% of passenger traffic • Improved riding quality	• Public transport to share 50% of passenger traffic • Optimum mass rapid transit system
URBAN REFORMS SECTOR			
Decentralisation	**Partial**	**Major**	**Complete**
Land & Housing markets			
Transparency & Accountability			
Community Participation			
Financing Management Services	O&M costs of urban services to be recovered form user charges		
Municipal Finances			

10.3. Present Scenario and Options of Development

The city faces urban infrastructural chaos due to limited availability and skewed distribution of water. High dependency on UG sources of water with increasing ground pollution increases the city's risk profile.

The limited coverage of UG sewer network, inefficient utilization and poor maintenance has led to extremely unhygienic conditions in majority of the city areas. Disposal of the non/partially treated sewage further compounds the issue.

Storm water disposal is in a state similar to other infrastructural sectors. In spite of having a number of nallas, that form a natural drainage system for the city, the city faces acute drainage problems due to the poor maintenance and incomplete works of the drainage system.
The urban transport system needs to gear to the needs and expectations of the city. Preponderance of private vehicles of varied categories and lack of a unified / efficient public transport system has led to poor safety and environmental degradation as also limiting the economic strength of the city.

In absence of a sewage treatment plant, improper drainage systems, poor vehicular transport systems and unsatisfactory solid waste and bio-waste disposal systems, the urban environment risks putting a negative edge to the city's growth.

10.4. Action Plan

The following sectoral action plans have been devised to improve the urban living conditions in the city and help it achieve the vision envisaged for it.

Urban Renewal

- Up gradation of Kutcha Road to Bituminous Road
- Widening & Strengthening of other Roads
- Construction of New Abattoir out side municipal limits
- Improvement of critical traffic intersections
- Up gradation of public facilities on existing bus terminals
- Construction of Multilevel Parking Lots (spaces for 3 locations identified)
- Construction of New Flyover

Water Supply

- Augmenting the present UG sources of water and identifying sources of surface water.
- Strengthening of existing piping and distribution system
- Laying of new systems of distribution to fulfill the stated objectives
- Increasing the share of surface water sources by 50% till 2034

Sewerage

- Zoning of the city based on natural features so as to increase efficiency in networking and disposal
- Renovation and strengthening of existing network
- Provision of Sewage treatment Plants on zonal basis
- Complete segregation of sewerage and drainage networks.

Strom water Drainage

- Strengthening of the nalas in the city to cater to and act as a drainage system
- Segregation of Industrial effluent and storm water
- Water recharging through SW Drainage system
- Restoration of city's natural drainage systems

Solid waste management

- To consolidate and improve the collection system from weekly to daily basis
- Segregation of municipal and bio-waste
- To achieve segregation and maximize reuse, recovery and recycling of solid waste

Urban Transport

- Improving and strengthening existing road system
- Ensuring increase of passenger traffic in share of public transport system
- Strengthening the Public road transport system in the medium term (2006-24), while developing a fully operational Mass Transit system by 2034 to ensure 50% share of Public transport in the city traffic.

10.5. Strategy Formulation

Based on our assessment of the existing situation of the city, thorough continuous interaction and vision sharing with different stakeholders during the study period, various issues and priorities for different sectors emerged. This exercise has helped different members of the consultants' multi disciplinary team to frame suitable criteria to formulate appropriate strategies. Sector-wise identified criteria along with the selected strategy and alternate strategy with in the framework of JNNURM and practical constraints of mobilsation of resources, existing capabilities are presented in **Table 10.2**.

Table 10.2 : Strategy Formulation

Sector	Criteria	Selected Strategy	Alternative Strategy
Urban Renewal	Provision of infrastructural facilities in a socially fair and environmentally sustainable manner	Traffic management, parking location, pedestrian facilities, Redevelopment of blighted areas, junction improvement, shifting of polluting industries and activities such as dairy and slaughtering etc.	
Water Supply (2 criteria)	***Criteria 1*** Non- Availability of surface water source	Improvement of UG Sources and strengthening of existing networks, laying of new networks & gradual improvement in dependence on surface water sources	
	Criteria 2 Availability and access to surface water source		Shifting dependence on surface water for environmental sustainability of water supply.
Sewerage	Feasibility and operationabilty of the system	Decentralised collection, treatment and disposal	Centralised collection, treatment and disposal
Strom water Disposal	Efficiency and economy of disposal system	Strengthening, upgradation and Use of natural drains as disposal systems	Developing independent road drainage systems and reducing dependence on natural drains
Urban Transport (2 criteria)	***Criteria 1*** Urban growth (spatial and demographic) is as estimated	Strengthening of existing system Increasing share of public transport system	
	Criteria 2 Urban growth much more than estimated		Development of Mass Transit system and corresponding development o transport infrastructure

10.6. Identified Projects

Based on the above strategies different projects are identified in Meerut in order to meet respective goals for each sector. Sectorwise identified are discussed in subsequent sections.

10.6.1. Urban Renewal

Besides upgrading of kutcha roads in the inner city area, relocation of slaughter house is one of the key projects identified under urban renewal.

The consultants carried out a detailed reconnaissance survey in order to Identify variuos critical parking locations and critical junctions in the inner city areas. Critical parking locations identified in the inner city areas are Begum Pul – Abu Lane, Sadar, P L Shrama Road, Shastri Marg, Burhana Gate Road, Khair Nagar Gate, Ghantaghar, Bali Bazaar, Sarrafa, Western Court Road.

Junctions are the necessary evils in any road network of the city. These nodes facilitates choose the right road and take appropriate turns as per route choice guided by the orogin and destination requirements of the user. These intersections also offer safety hazard and in inner areas where not enough space is available to accommodate proper widening the situation becomes all the more critical. Seven critical junctions Identifed in the inner city area namely Begumpul Chaupala, Bachchapark Chaupala, Eves Chaupala, Kahahari Chaupala, Nauchandi Chaupala, Thapar Nagar Chaupala, Ghantaghar Chupala.

In order to attend to the parking problems in the city, three multi level parking lots are proposed to be developed on Public – Private Partnership (**Map 11**). The location details of multi level parking lots are presented below:

- Near Begumpul
- Near Railway Station
- Near Ghanta Ghar

Projectwise cost for inner city projects is presented in the Table below:

Works	Phase I 2005-12 (Rs Lakhs)
Up gradation of Kutcha Road to Bituminous Road	10,680
Widening & Strengthening of other Roads	9,000
Construction of New Abattoir	10,000
Improvement of critical traffic intersections	560
Up gradation of public facilities on existing bus terminals	100
Construction of Multilevel Parking Lots	1,500
Construction of New Flyovers	4,000
Total	**35,840**

Detailed year wise break up is presented in city Investment plan (chapter 11)

10.6.2. Water Supply

Projects identified under Water Supply Sector are presented as under:

Project Period (2005-2012)			
Work	**QTY.**	**Rates in Rs Lacs.**	**Cost**
Renovation Works			(Rs lakhs)
REPAIR OF PUMP HOUSES	85 NOS.	0.75	63.75
REPAIR OF OHTs & CWRs	38 NOS.	1.5	57.00
REPLACEMENT OF PIPING	143 KM.	3	429.00
REPAIRS OF SURFACE WW-BHOLA-KI-JHAL	I NO.	15	15.00
Electrical and Mechanical Works			
REPLACEMENT OF PUMPING PLANTS	46 NOS.	3	153.00
REBORING OF TUBE WELLS	13 NOS.	13	164.00
CONST. OF NEW TUBE WELLS (2500 lpm)	94 NOS.	20	1880.00
Construction of Overhead Tanks			
250 KL	10 NOS.	15	150.00
500 KL	18 NOS.	27	486.00
750 KL	21 NOS.	35	735.00
1000 KL	17 NOS.	45	765.00
1500 KL	11 NOS.	58	638.00
2000 KL	5 NOS.	70	350.00
2500 KL	8 NOS.	85	680.00
Distribution System			
New Lines			
AC LINES FOR CLASS-10	73 KM	1	73
PVC LINES OF 4KG/CM2	604 KM	1	604
Duplicating Pipe Lines			
WITH AC PRESSURE PIPE OF CLASS-10	38 KM	1	38
WITH PVC PIPE OF 4 KG/CM2	105 KM	1	105
Rising Main			
FROM REBORED T.W.s	7 KM	1	7
FROM NEW T.W.s	45 KM	1	45

Details of proposed projects are shown in Map 1. Year wise break up of cost is furnished in City Investment Plan (Chapter 11)

10.6.3. Sewerage

Projects identified under Sewerage are presented as under:

Project Period (2005-2012)			
Renovation & Strengthening Works			Rs Lacs
Works	**QTY.**	**Rate in Rs Lacs.**	**Cost**
RENOVATION OF EXISTING MAIN PUMPING STATION (1 NOS.)	1 NOS.	L.S.	9
RENOVATION OF INTERMIDIATE PUMPING STATIONS (7 NOS.)	7 NOS.	3	21
REPLACEMENT OF PUMPING STATIONS (12 NOS.)	12 NOS.	30	360
DUPLICATE TRUNK SEWER LINE (6 KM)	6 KM	120	720
DUPLICATE DISTRIBUTION SEWER LINE (10 KM)	10 KM	60	600
DESLUDGING OF EXISTING SEWERS (55.56 KM)	55.56 KM	5	277.8
New Constructions			
CONST. OF SEWAGE TREATMENT PLANT (2X100MLD)	27 MLD	45	900
LAYING MAIN SEWER TRUNK LINE (100KM)	10 KM	120	1200
LAYING BRANCH SEWER LINES (300KM)	300KM	60	18000
CONST. OF MAIN PUMPING STATION (3 NOS.)	1 NOS.	230	230
GENERATOR FOR IPS & MPS (12 NOS.)	5 NOS.	12	60
CONST. OF EFFLUENT CHANNEL (4 KM)	1 KM	40	40
PROVISION FOR RAIL CROSSING	---	L.S.	100

Details of proposed projects are shown in Map 2. Year wise break up of cost is furnished in City Investment Plan (Chapter 11)

10.6.4. Solid Waste Management

Projects identified under Solid Waste Management are presented as under:

Project Period (2005-2012)			
Works	**QTY.**	**Rate in Lacs.**	**Cost** (Rs lakhs)
Municipal Solid Waste			
CONTAINERIZED WHEEL BARROWS (11340 NOS.)	2491	0.045	112.12
CONTAINERIZED TRICYCLES (756 NOS.)	166	0.090	14.95
COMMUNITY BINS FOR SLUMS (15120 NOS.)	3322	0.003	9.97
SEAMLESS HANDCARTS FOR SILT REMOVAL (1200 NOS.)	332	0.030	9.97
CLOSED DUMPERS (4.5CUM x 1124 NOS.)	249	0.375	93.43
CLOSED DUMPERS (7CUM 1259 NOS.)	276	0.525	145.10
CONTAINERS FOR DOMESTIC HAZARDOUS WASTE (190 NOS.)	42	0.375	15.70
SMALL VEHICLES (COLLECTION) (60 NOS.)	13	2.000	26.58
DUMPER PLACER MACHINE (164 NOS.)	37	11.250	418.57
BULL/WHEEL DOSERS (9 NOS.)	2	100.000	199.32
ASPHALT FLOORING-STORAGE DEPOTS (2393 NOS.)	526	0.150	78.83
COMPOSTING OF WASTES	1	150.000	99.66
INCINERATOR PLANTS (3 NOS.)	2	100.000	199.32

Project Period (2005-2012)			
Works	**QTY.**	**Rate in Lacs.**	**Cost** (Rs lakhs)
LANDFILL SITE DEVELOPMENT (459 Tonnes)	102 tonnes	0.005	0.51
DEPOTS (2NOS.) FOR VEHICLES&MAINTENANCE (@ 2500 SQ.M.)	3322 SQ.M.	0.1per SQ.M.	332.20
Bio- medical Wastes			
VAN FOR HOSPITAL WASTE COLLECTION (39 NOS.)	9	3.000	25.91
INCINERATORS (5 NOS.)	3	100.000	332.20
BUILDING FOR INCINERATORS (5000 SQ.M.)	3322 SQ.M.	0.1per SQ.M.	332.20

Details of proposed projects are shown in Map 3. Year wise break up of cost is furnished in City Investment Plan (Chapter 11)

10.6.5. Drainage

Projects identified under Storm Water Drainage are presented as under:

Project Period (2005-2012)			
Renovation and strengthening works			
Works	**QTY.**	**Rate in Lacs.**	**Cost** (Rs lakhs)
RECONSTRUCTION OF DAMAGED WALLS ON MAIN NALLAH (9KM)	9 KM	15	135
CONST. OF WALLS AND BED OF SUB-NALLAHS (20KM)	20 KM	10	200
REHABILITATION OF SERVICE DRAINS (200KM)	200 KM	1	200
DESLUDGING OF DRAINS	---	---	147
DISPOSAL OF SLUDGE (OUTSIDE CITY LIMITS)	---	---	73.5
PROVISION OF DESLUDGING PUMPS (50NOS.)	50 NOS.	0.2	10
RENOVATION OF EXISTING NALLAHS-2MX1M (13.8KM)	13.8 KM	16	220.8
RENOVATION OF EXISTING NALLAHS TO-4MX2M (9.5KM)	9.5 KM	85	807.5
EXTENSION OF NALLAH-4MX2.5M (24.5KM)	24.5 KM	91	2229.5
EXTENSION OF NALLAH TO-3MX2M (13.80KM)	13.8 Km	135	1862
New Constructions			
CONST. OF NEW NALLAH -6MX3M (95KM)	12.5 KM	139	1737.5
CONST. OF NEW NALLAH -5MX2.5M (20KM)	2.5 KM	110	275
CONST. OF NEW NALLAH -3MX2M (20KM)	2.5 KM	76	190
CONST. OF NEW NALLAH -2MX1.5M (10KM)	1.25 KM	56	70
CONST. OF LATERAL DRAINS (260KM)	35 KM	17	595
CONST. OF NEW CULVERTS & BRIDGES (50NOS.)	7 NOS.	5	35
RAIN WATER RECHARGING UNITS (500NOS.)	62.5 NOS.	1	62.5
PROVISION FOR RAIL CROSSING	---	---	12.5

Details of proposed projects are shown in Map 4. Year wise break up of cost is furnished in City Investment Plan (Chapter 11)

10.6.6. Road and Urban Transport

- **Bus Terminals**

A lot of inter city movement at present uses the core area of the city, it is therefore proposed to construct the following terminals on the fringe areas:

- Construction ISBT on Garh Road near Gogulpur – Hasanpur
- Construction ISBT on Garh kankheda
- Up gradation of public facilities on existing bus terminals (7 nos.)

- **Bus based Transportation**

In order to improve the exiting public transport in the study following projects have been identified:

- A comprehensive study is required for rationalisation of Bus Routes in the city
- Creation of public facilities like Bus Stops, Public Convenience etc are required for the users of public transport
- Licensing of Mini Buses should be taken up seriously for increasing the efficiency and coverage of bus services in the city
- The routes Tempo – Taxi should rationalized and they should instead be allowed on routes connecting the sub-urban areas of the city
- Auto rickshaws may be allowed to ply on bigger residential premises

- **Parking**

There is an urgent need for developing proper parking facilities in the city, however the highest priority is to be given to the following locations.

- Hapur Road – Bhagat Singh Market
- Chipi Tank Road
- Baghpat Road
- Malihana Fatak
- Kabadi Bazar (Shahar)
- Sharda Road
- Bombay bazaar
- Metro Plaza
- Transport Nagar
- Gola Kuan
- Central Market Shastri Nagar

- **Intersection Improvement**

The following intersections are proposed to be improved ie. the intersections are proposed to be redesigned (**Map 11**). These include:

- By pass-to Roorkee (NH-58)
- Kachahri Chupala
- Commissionery Chupala
- Jail Road Chupala

- Hapur Adda Chupala
- Bhumia Pul Chupala
- Univercityto Garhmukteshwar Road Intersection
- Hapur road -Ashyana Colony Road Intersection
- Hapur road - Shastri Nagar Intersection
- Hapur road - Lohia Nagar Road Intersection
- Delhi Road- Ambedkar Nagar Road Intersection
- Bhaghpat Chupala
- Bypass - Baghpat Road Intersection
- Bypass - Baraut Road Intersection
- Bypass - Shobha Pur Road Intersection
- Bypass - Sardana Road Intersection
- Sardana Bus Adda Chupala
- Bus Stand Cupala

- **Public Transportation Systems**

The study carried out by School of Planning and Architecture (1994) titled 'Transport System Plan for Meerut – 2011' had recommended the provision of **Light Rail Transit System (LRT)** for the city of Meerut. However, under the present situation a detailed techo-economic feasibility study is required for selecting and developing a comprehensive public transportation system for the city.

- **Regional Projects**

The National Capital Planning Board (NCRPB) along with the Japan International Cooperation Agency (JICA) in their study titled 'Feasibility Study on the Construction of Expressway in the National Capital Region' had recommended the construction of **Meerut – Ghaziabad Expressway** along with other Links in the NCR. The total project cost was expected to be 538 Crores. It was recommended that the project would be taken up in the second phase i.e. 2011 - 2021.

Projectwise cost for Urban Transportation projects is presented in the Table below:

	WORKS	PHASE I (2005-12) (Rs lakhs)
A	**IMPROVING EXISTING CONDITION**	
A1	CONSTRUCTION OF GRADE SEPARATED RAILWAY CROSSING	11200.00
A2	UPGRADATION OF KUTCHA ROAD TO BITUMINIUS ROAD	7680.00
A1-A2	**TOTAL**	**18880.00**
B	**CONSTRUCTION OF NEW INFRASTRUCTURE**	
B1	CONSTRUCTION OF NEW ROADS	10000.00
B2	CONSTRUCTION OF BUS STOPS IN THE CITY	12.50
B3	CONSTRUCTION OF NEW BUS TERMINALS	200.00
B4	CONSTRUCTION OF FREIGHT TERMINAL	150.00
B5	CONSTRUCTION OF NEW LINK FOR KANVAR YATRA	800.00
B1-B5	**TOTAL**	**11162.50**
A-B	**GRAND TOTAL**	**22362.50**

Year wise break up of cost is furnished in City Investment Plan (Chapter 11)

10.6.7. Urban Environment Management

Different projects identified under urban environment management are presented as under:

- Up gradation of Sanjay Van Parisar
  - Sanjay Var Parisar Improvement
  - Plantation
  - Maintenance of Forest Land within the City
- Arboriculture on roads
  - Development of Green Areas in/around Cross Section of Roads

Project wise cost for Urban Environment management projects is presented in the Table below:

Works	**Phase I (2005-12)** (Rs lakhs)
Up gradation of Sanjay Van Parisar	17.69
Arboriculture on roads	7.00
Total	**24.69**

10.6.8. Municipal Reforms and Capacity Building

Requirement identified under Municipal Reforms and Capacity Building of the Municipal Corporation as part of CDP is listed below:

Works	**Phase I (2005-12)** (Rs lakhs)
Software requirements viz GIS, Oracle, Networking etc	59.5
Hardware viz Networking/ Cabling, Computer terminals etc	65.0
Data Generation, Training and Capacity Building	241.0
Total	**365.5**

Chapter 11.0
City Investment Plan

Chapter 11.0 City Investment Plan

The City Investment Plan (CIP) gives an estimate of the level and quantum of investment required to implement the strategies in specific sectors in the CDP over a specified time-frame to attain the sustainable growth and to achieve the agenda goals.

The CIP is worked out duly considering the advice of Technical Experts, our recommendations based on a thorough assessment of existing situation and the constant interaction with different Stakeholders. The projects for system and infrastructure augmentation are derived based on a broad demand - supply gap assessment for each of the service sector. Cost of all these projects have been estimated in CIP and a suitable phasing for different years in the project period have been worked out. Unit costs adapted are based on estimates of similar projects planned/executed by MNN and other respective departments. The broad sector wise break up of the project cost is presented in **Table 11.1** and shown in (**Figure 11.1**).

Table 11.1 (A) Sector wise Project Cost

S No	Sector/ Sub-Sector	Investment (Rs Lakhs)
SUB MISSION 1		
1	Urban Renewal	35840.00
2	Water Supply	19478.08
3	Sewerage	23457.80
4	Storm Water Drains	26730.30
5	Solid Waste Management	2579.38
6	Roads and Transportation	30042.50
7	Urban Environment	2469.43
8	Municipal Reforms and Capacity Building	365.50
Sub Total		140962.98
SUB MISSION 2		
9	Basic Services to Urban Poor	5109.35
Sub Total		5109.35
Grand Total		146072.33

Figure 11.1 Sectorwise Project Cost

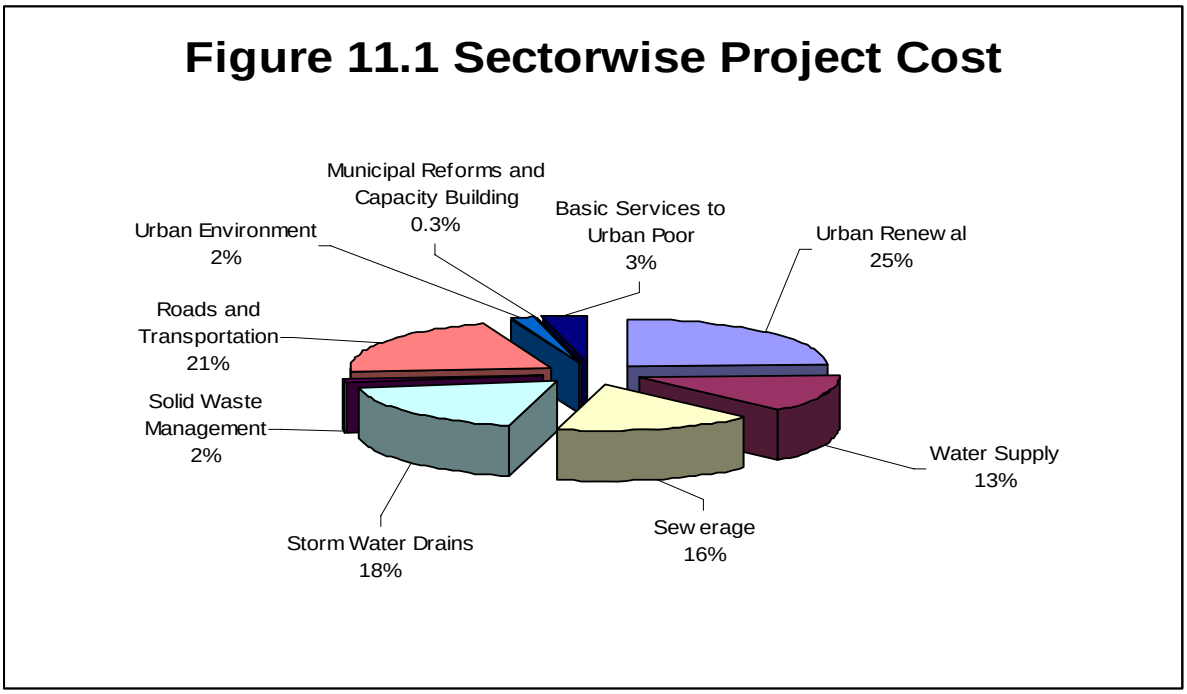
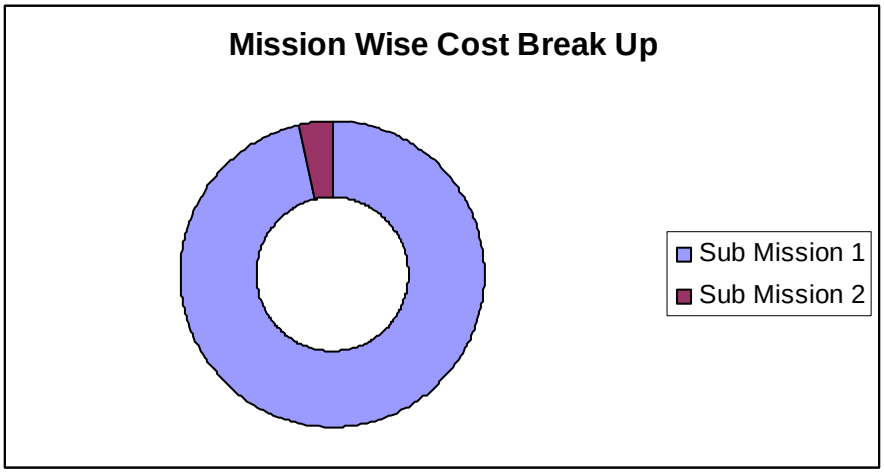


Table 11.1 (B) Mission wise Cost Break Up

Mission	Cost (in Rs Lakhs)
Sub Mission 1	140962.983
Sub Mission 2	5109.35
Total	146072.333



The sector-wise description of the sub projects included in the CIP is dealt in subsequent sections.

11.1. Urban Renewal

For the renewal of the inner city area and make it free from various problems of congestion certain projects are identified as part of CIP (target year 2012). These projects are presented in **Table 11.2**. From our analysis, the total investment required for this sector is estimated about Rs. 35840 lacs.

11.2. Water Supply

In order to wipe of the deficit and to meet the demand of both domestic and bulk consumers, the different project identified as part of CIP (target year 2012) and vision (target year 2030) are presented in **Table 11.3**

From our analysis the total investment required up to 2030 for all the projects of water supply is estimated at about Rs. 62667 lacs and only in the first phase it is estimated as Rs. 19478 lacs.

11.3. Sewerage

To improve the condition of the sewerage system in Meerut and to connect the whole city with a centralized system, the different identified projects as part of CIP (target year 2012)

and vision (target year 2030) are presented in **Table 11.4**. From our analysis, the total investment required in this sector is estimated about Rs. 95183.8 lacs and in first phase it is estimated at about Rs. 23457.8 lacs

11.4. Solid Waste Management

To make the system of disposal technical and favorable to environment and also for hazardous waste disposal certain projects are identified as part of CIP (target year 2012) are presented in **Table 11.5**. From our analysis, the total investment required for this sector is estimated about Rs. 2579.38 lacs and the whole situation can be improved in these seven years only i.e. in first phase, after that only proper maintenance is required.

11.5. Drainage

The nala's in the city are in dismal condition and also abused and encroached by different people which does not let proper cleaning and maintenance of the nallas causing floods and overflowing in the heavy flow conditions. To recover from this condition certain projects have been identified as part of CIP (target year 2012) and vision (target year 2030). These projects are presented in **Table 11.6**. From our analysis, the total investment required in this sector is estimated about Rs. 38640.30 lacs and in first phase it is estimated at about Rs. 18862.80 lacs

11.6. Roads and Transportation

Details of investment of projects regarding up gradation of existing infrastructure and construction of proposed new infrastructure is given in CIP (target year 2012) are presented in **Table 11.7**. From our analysis, the total investment required for this sector is estimated about Rs.30042.50 lacs.

The National Capital Planning Board (NCRPB) along with the Japan International Cooperation Agency (JICA) in their study titled 'Feasibility Study on the Construction of Expressway in the National Capital Region' had recommended the construction of Meerut – Ghaziabad Expressway along with other Links in the NCR. The total project cost was expected to be 538 Crores. It was recommended that the project would be taken up in the second phase i.e. 2011 - 2021.

The NCR in its Regional Plan – 2021 has recommended the construction of following projects that pertain to Meerut:

- Four laning of Meerut – Ghaziabad – Delhi segment of NH-58 (Phase I)
- Rapid Rial Transit System for Ghazaibad – Merut segment (Phase II)
- Upgradation of Meerut Hapur Grid Road (Phase II)

11.7. Urban Environmental Management

This includes the projects related to water bodies, ground water, heritage, open area as part of CIP (target year 2012) are presented in **Table 11.8**. From our analysis, the total investment required for this sector is estimated about Rs. 2469.43 lacs.

11.8. Municipal Reforms and Capacity Building

This includes Computerisation, Database creation and Interfacing with GIS & MIS; Periodical comprehensive survey on the Property tax, On-the-Job-Training (OJT); Assets and liability evaluation; Creation and Strengthening the Ward offices. These projects would finally aim at optimum utilization of the resources requires efficient database on the sources of own revenue and the infrastructure. Adequate interfacing of the ground based physical surveys has been taken into account in the preparation of CIP. This effort also includes mapping of the infrastructure and its delivery mechanism. The break up of different activities/ works and costing of each of these is presented in **Table 11.9**. From our analysis, the total investment required for this sector is estimated about Rs. 365.5 Lakhs.

Table 11.2 URBAN RENEWAL

PHASING OF WORKS & EXPENDITURE FOR URBAN RENEWAL (in Rs Lakhs)

	WORKS	PHASE I	I YR.	II YR.	III YR.	IV YR.	V YR.	VI YR.	VII YR.
		(2005-12)	2005-06	2006-07	2007-08	2008-09	2009-2010	2010-11	2011-12
		COSTS	COSTS	COSTS	COSTS	COSTS	COSTS	COSTS	COSTS
A	**UPGRADATION OF EXISTING INFRASTRUCTURE**								
A1	UPGRADATION OF KUTCHA ROAD TO BITUMINIUS ROAD	10680.00		1480.00	3250.00	3150.00	2800.00	0.00	0.00
A2	WIDENING & STRENGTHENING OF OTHER ROADS	9000.00		900.00	2700.00	2700.00	1350.00	1350.00	0.00
A3	CONSTRUCTION OF NEW ABATTOIR	10000.00		100.00	250.00	500.00	1400.00	3000.00	4750.00
A4	IMPROVEMENT OF CRITICAL TRAFFIC INTERSECTIONS	560.00		200.00	200.00	160.00	0.00	0.00	0.00
A5	UPGRADATION OF PUBLIC FACILITIES ON EXISTING BUS TERMINALS	100.00		53.00	25.00	22.00	0.00	0.00	0.00
A1-A5	**TOTAL**	**30340.00**	**0.00**	**2733.00**	**6425.00**	**6232.00**	**4200.00**	**4350.00**	**3000.00**
B	**CONSTRUCTION OF NEW INFRASTRUCTURE**								
B1	CONSTRUCTION OF MULTILEVEL PARKING LOT	1500.00		0.00	500.00	500.00	500.00	0.00	0.00
B2	CONSTRUCTION OF NEW FLYOVER	4000.00		0.00	0.00	1000.00	1000.00	1000.00	1000.00
B1-B2	**TOTAL**	**5500.00**	**0.00**	**0.00**	**500.00**	**1500.00**	**1500.00**	**1000.00**	**1000.00**
A-B	**GRAND TOTAL**	**35840.00**	**0.00**	**2733.00**	**6925.00**	**7732.00**	**5700.00**	**5350.00**	**4000.00**

Table 11.3 WATER SUPPLY

PHASING OF WORKS & EXPENDITURE FOR WATER SUPPLY (in Rs Lakhs)

	WORKS	PHASE I (2005-12)		I YR. 2005-06	II YR. 2006-07	III YR. 2007-08	IV YR. 2008-09	V YR. 2009-2010	VI YR. 2010-11	VII YR. 2011-12	PHASE II (2012-24)	PHASE III (2024-31)
		QTY.	COSTS	COSTS	COSTS	COSTS	COSTS	COSTS	COSTS	COSTS	COSTS	COSTS
A	**RENOVATION OF EXISTING INFRASTRUCTURE**											
A1	REPAIR OF PUMP HOUSES	85 NOS.	63.75	0.00	31.88	31.87	0.00	0.00	0.00	0.00		52.50
A2	REPAIR OF OHTs & CWRs	38 NOS.	57.00	0.00	28.50	28.50	0.00	0.00	0.00	0.00		
A3	REPLACEMENT OF PIPING	143 KM.	429.00	0.00	214.50	214.50	0.00	0.00	0.00	0.00		
A4	REPAIRS OF SURFACE WW-BHOLA-KI-JHAL	I NO.	15.00	0.00	7.50	7.50	0.00	0.00	0.00	0.00		
A1-A4	**SUB-TOTAL**		**564.75**	**0.00**	**282.38**	**282.37**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**52.50**
B	**ELECTRICAL & MECHANICAL WORKS**											
B1	REPLACEMENT OF PUMPING PLANTS	46 NOS.	153.00	0.00	76.50	76.50	0.00	0.00	0.00	0.00	312.00	483.00
B2	REBORING OF TUBE WELLS	13 NOS.	164.00	0.00	82.00	82.00	0.00	0.00	0.00	0.00	300.00	980.00
B3	CONST. OF NEW TUBE WELLS (2500 lpm)	94 NOS.	1880.00	0.00	0.00	188.00	376.00	376.00	376.00	564.00	1512.00	1350.00
B1-B3	**SUB-TOTAL**		**2197.00**	**0.00**	**158.50**	**346.50**	**376.00**	**376.00**	**376.00**	**564.00**	**2124.00**	**2813.00**
C	**CONSTRUCTION OF OVER HEAD TANKS**											
C1	250 KL	10 NOS.	150.00	0.00	0.00	15.00	30.00	30.00	30.00	45.00	54.68	571.35
C2	500 KL	18 NOS.	486.00	0.00	0.00	48.60	97.20	97.20	97.20	145.80	639.70	2768.40
C3	750 KL	21 NOS.	735.00	0.00	0.00	73.50	147.00	147.00	147.00	220.50	1211.96	4668.93
C4	1000 KL	17 NOS.	765.00	0.00	0.00	76.50	153.00	153.00	153.00	229.50	820.13	3962.25
C5	1500 KL	11 NOS.	638.00	0.00	0.00	63.80	127.60	127.60	127.60	191.40	739.94	3411.87
C6	2000 KL	5 NOS.	350.00	0.00	0.00	35.00	70.00	70.00	70.00	105.00	255.15	1567.30
C7	2500 KL	8 NOS.	680.00	0.00	0.00	68.00	136.00	136.00	136.00	204.00	1084.39	4223.78
C1-C7	**SUB-TOTAL**		**3804.00**	**0.00**	**0.00**	**380.40**	**760.80**	**760.80**	**760.80**	**1141.20**	**4805.95**	**21173.88**

Table 11.3 WATER SUPPLY

PHASING OF WORKS & EXPENDITURE FOR WATER SUPPLY (in Rs Lakhs)

	WORKS	PHASE I (2005-12) QTY.	PHASE I (2005-12) COSTS	I YR. 2005-06 COSTS	II YR. 2006-07 COSTS	III YR. 2007-08 COSTS	IV YR. 2008-09 COSTS	V YR. 2009-2010 COSTS	VI YR. 2010-11 COSTS	VII YR. 2011-12 COSTS	PHASE II (2012-24) COSTS	PHASE III (2024-31) COSTS
D	**NEW CONSTRUCTION: Main Supply line and Distribution System**											
D1	**NEW LINES**		0.00	0.00								
D1.1	NEW MAIN SUPPLY LINE FROM GANGA CANAL	22 KMS	5000.00	0.00	500.00	2000.00	2500.00	0.00	0.00	0.00	2500.00	2500.00
D1.2	AC LINES FOR CLASS-10	73	1033.00	0.00	0.00	103.30	206.60	206.60	206.60	309.90	1325.00	0.00
D1.3	PVC LINES OF 4KG/CM2	604	3130.00	0.00	0.00	313.00	626.00	626.00	626.00	939.00	1765.00	0.00
D2	**DUPLICATING OF PIPE LINES**		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		
D2.1	WITH AC PRESSURE PIPE OF CLASS-10	38	572.00	0.00	0.00	57.20	114.40	114.40	114.40	171.60	220.00	0.00
D2.1	WITH PVC PIPE OF 4 KG/CM2	105	633.80	0.00	0.00	63.38	126.75	126.75	126.75	190.13	743.00	0.00
D1-D2	**SUB-TOTAL**		**10368.80**	**0.00**	**500.00**	**2536.88**	**3573.75**	**1073.75**	**1073.75**	**1610.63**	**6553.00**	**2500.00**
E	**RISING MAIN**											
E1	FROM REBORED T.W.s	7	215.00	0.00	0.00	21.50	43.00	43.00	43.00	64.50	390.00	0.00
E2	FROM NEW T.W.s	45	1401.00	0.00	0.00	140.10	280.20	280.20	280.20	420.30	720.00	0.00
E1-E2	**SUB-TOTAL**		**1616.00**	**0.00**	**0.00**	**161.60**	**323.20**	**323.20**	**323.20**	**484.80**	**1110.00**	**0.00**
A-E	**TOTAL (BASIC W.S. WORKS)**		**18550.55**	**0.00**	**940.88**	**3707.75**	**5033.75**	**2533.75**	**2533.75**	**3800.63**	**14592.95**	**26539.38**
F	**SUPPORTING CIVIL WORKS**											
F1	STAFF QUARTERS, BOUNDARY WALLS, GATES & SITE DEVELOPMENT @ 2% COST OF WS WORKS		371.01	0.00	18.82	74.16	100.68	50.68	50.68	76.01	291.86	530.79
G	**MISCELLANEOUS WORKS**											
G1	SHIFTING OF TELECOM/ELECTRICAL CABLES, EQUIPMENTS & BULK WATER METERS @ 3% OF COST OF WS WORKS		556.52	0.00	28.23	111.23	151.01	76.01	76.01	114.02	437.79	796.18
A-G	**TOTAL**		**19478.08**	**0.00**	**987.92**	**3893.14**	**5285.44**	**2660.44**	**2660.44**	**3990.66**	**15322.60**	**27866.35**

Table 11.4 SEWERAGE

PHASING OF WORKS & EXPENDITURE FOR SEWERAGE (in Rs Lakhs)

	WORKS	PHASE I (2005-12) COSTS	I YR. 2005-06	II YR. 2006-07 COSTS	III YR. 2007-08 COSTS	IV YR. 2008-09 COSTS	V YR. 2009-10 COSTS	VI YR. 2010-11 COSTS	VII YR. 2011-12 COSTS	PHASE II 2012-24 COSTS	PHASE III 2024-31) COSTS
A	**RENOVATION & STRENGTHENING OF EXISTING INFRASTRUCTURE**										
A1	RENOVATION OF EXISTING PUMPING STATION	50.00	0.00	50.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
A2	RENOVATION OF INTERMIDIATE PUMPING STATIONS	60.00	0.00	20.00	40.00	0.00	0.00	0.00	0.00	0.00	0.00
A3	REPLACEMENT OF PUMPING STATIONS	620.00	0.00	0.00	100.00	150.00	150.00	100.00	120.00	0.00	0.00
A4	DUPLICATE TRUNK SEWER LINE	720.00	0.00	0.00	72.00	144.00	144.00	144.00	216.00	0.00	0.00
A5	DUPLICATE DISTRIBUTION SEWER LINE	600.00	0.00	0.00	60.00	120.00	120.00	120.00	180.00	0.00	0.00
A6	DESLUDGING OF EXISTING SEWERS	277.80	0.00	0.00	27.78	55.56	55.56	55.56	83.34	0.00	0.00
A1-A6	**SUB-TOTAL**	**2327.80**	0.00	**70.00**	299.78	**469.56**	469.56	**419.56**	599.34	**0.00**	0.00
B	**NEW SEWERAGE WORKS**										
B1	CONST. OF SEWAGE TREATMENT PLANT (3X100MLD)	1500.00	0.00	0.00	700.00	0.00	450.00	0.00	350.00	2700.00	3150.00
B2	LAYING MAIN SEWER TRUNK LINE (100KM)	1200.00	0.00	120.00	120.00	240.00	240.00	240.00	240.00	19200.00	12000.00
B3	LAYING BRANCH SEWER LINES (300KM)	18000.00	0.00	1800.00	1800.00	3600.00	3600.00	3600.00	3600.00	21000.00	11400.00
B4	CONST. OF MAIN PUMPING STATION	230.00	0.00	23.00	46.00	46.00	46.00	46.00	23.00	230.00	230.00
B6	CONST. OF PUBLIC FACILITY CENTRE IN SLUM AREAS	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	612.00	
B7	GENERATOR FOR IPS & MPS	60.00	0.00	6.00	12.00	12.00	12.00	12.00	6.00	48.00	36.00
B8	CONST. OF EFFLUENT CHANNEL	40.00	0.00	4.00	8.00	8.00	8.00	8.00	4.00	40.00	80.00
B9	PROVISION FOR RAIL CROSSING	100.00	0.00	0.00	10.00	20.00	20.00	20.00	30.00	0.00	
B1-B9	**SUB-TOTAL**	**21130.00**	**0.00**	**1953.00**	**2696.00**	**3926.00**	**4376.00**	**3926.00**	**4253.00**	**44230.00**	**27496.00**
A-B	**TOTAL**	**23457.80**	**0.00**	**2023.00**	**2995.78**	**4395.56**	**4845.56**	**4345.56**	**4852.34**	**44230.00**	**27496.00**

Table 11.5 SOLID WASTE DISPOSAL

PHASING OF WORKS & EXPENDITURE FOR SOLID WASTE DISPOSAL (in Rs Lakhs)

	WORKS	PHASE I (2005-12) COSTS	I YR. 2005-06 COSTS	II YR. 2006-07 COSTS	III YR. 2007-08 COSTS	IV YR. 2008-09 COSTS	V YR. 2009-2010 COSTS	VI YR. 2010-11 COSTS	VII YR. 2011-12 COSTS
A	**MUNICIPAL SOLID WASTE MANAGEMENT**								
A1	CONTAINERIZED WHEEL BARROWS	112.12	0.00	11.21	22.42	22.42	22.42	11.21	22.42
A2	CONTAINERIZED TRICYCLES	14.95	0.00	1.49	2.99	2.99	2.99	1.49	2.99
	COMMUNITY BINS FOR SLUMS	9.97	0.00	1.00	1.99	1.99	1.99	1.00	1.99
A3	SEAMLESS HANDCARTS FOR SILT REMOVAL	9.97	0.00	1.00	1.99	1.99	1.99	1.00	1.99
A4	CLOSED DUMPERS (4.5CUM)	93.43	0.00	9.34	18.69	18.69	18.69	9.34	18.69
A5	CLOSED DUMPERS (7CUM)	145.10	0.00	14.51	29.02	29.02	29.02	14.51	29.02
A6	CONTAINERS FOR DOMESTIC HAZARDOUS WASTE	15.70	0.00	1.57	3.14	3.14	3.14	1.57	3.14
A7	SMALL VEHICLES (COLLECTION)	26.58	0.00	2.66	5.32	5.32	5.32	2.66	5.32
A8	DUMPER PLACER MACHINE	418.57	0.00	41.86	83.71	83.71	83.71	41.86	83.71
A9	BULL/WHEEL DOSERS	199.32	0.00	19.93	39.86	39.86	39.86	19.93	39.86
A10	ASPHALT FLOORING-STORAGE DEPOTS	78.83	0.00	7.88	15.77	15.77	15.77	7.88	15.77
A11	COMPOSTING OF WASTES	99.66	0.00	9.97	19.93	19.93	19.93	9.97	19.93
A13	LANDFILL SITE DEVELOPMENT	0.51	0.00	0.00	0.51	0.00	0.00	0.00	0.00
A14	DEPOTS (2NOS.) FOR VEHICLES&MAINTENANCE	332.20	0.00	33.22	132.88	166.10	0.00	0.00	0.00
A15	INTERNAL EQUIPMENTS, FURNITURE, MACHINES & FIRE FIGHTING @ 20% OF BUILDG. COST	66.44	0.00	0.00	0.00	66.44	0.00	0.00	0.00
A1-A15	**TOTAL**	**1822.64**	**0.00**	**155.64**	**477.88**	**477.37**	**344.49**	**122.42**	**244.83**
B	**BIO-MEDICAL WASTE MANAGEMENT**								
B1	VAN FOR HOSITAL WASTE COLLECTION	25.91	0.00	2.59	5.18	5.18	5.18	2.59	5.18
B2	INCINERATORS	332.20	0.00	0.00	110.72	0.00	110.72	0.00	110.72
B3	BUILDING FOR INCINERATORS	332.20	0.00	0.00	110.72	0.00	110.72	0.00	110.72
B4	INFRASTRUCTURE FOR INCINERATOR BUILDG., TOOLS, EQUIPMENTS & MACHINES @20% OF BUILDG. COST	66.44	0.00	0.00	0.00	22.14	0.00	22.14	22.14
B1-B4	**TOTAL**	**756.74**	**0.00**	**2.59**	**226.62**	**27.33**	**226.62**	**24.74**	**248.77**
A-B	**GRAND TOTAL**	**2579.38**	**0.00**	**158.23**	**704.50**	**504.70**	**571.12**	**147.15**	**493.60**

Table 11.6 STROM WATER DRAINAGE

PHASING OF WORKS & EXPENDITURE FOR STROM WATER DRAINAGE (in Rs Lakhs)

	WORKS	Phase I	I YR.	II YR.	III YR.	IV YR.	V YR.	VI YR.	VII YR.	Phase II	Phase III
		(2005-12)	2005-06	2006-07	2007-08	2008-09	2009-2010	2010-11	2011-12	(2012-24)	(2024-31)
		COSTS	COSTS	COSTS	COSTS	COSTS	COSTS	COSTS	COSTS	COSTS	COSTS
A	RENOVATION & STRENGTHENING OF EXISTING INFRASTRUCTURE										
A1	RECONSTRUCTION OF DAMAGED WALLS ON MAIN NALLAH (9KM)	135.00	0.00	13.50	27.00	20.25	20.25	20.25	33.75	0.00	0.00
A2	CONST. OF WALLS AND BED OF SUB-NALLAHS (20KM)	200.00	0.00	20.00	40.00	30.00	30.00	30.00	50.00	0.00	0.00
A3	REHABILITATION OF SERVICE DRAINS (200KM)	200.00	0.00	20.00	40.00	30.00	30.00	30.00	50.00	0.00	0.00
A4	DESLUDGING OF DRAINS	147.00	0.00	14.70	29.40	22.05	22.05	22.05	36.75	0.00	0.00
A5	DISPOSAL OF SLUDGE (OUTSIDE CITY LIMITS)	73.50	0.00	7.35	14.70	11.03	11.03	11.03	18.38	0.00	0.00
A6	PROVISION OF DESLUDGING PUMPS (50NOS.)	10.00	0.00	1.00	2.00	1.50	1.50	1.50	2.50	0.00	0.00
A7	RENOVATION OF EXISTING NALLAHS-2MX1M (13.8KM)	220.80	0.00	22.08	44.16	33.12	33.12	33.12	55.20	0.00	0.00
A8	RENOVATION OF EXISTING NALLAHS TO-4MX2M (9.5KM)	807.50	0.00	80.75	161.50	121.13	121.13	121.13	201.88	0.00	0.00
A9	EXTENSION OF NALLAH-4MX2.5M (24.5KM)	2229.50	0.00	222.95	445.90	334.43	334.43	334.43	557.38	0.00	0.00
A10	EXTENSION OF NALLAH TO-3MX2M (13.80KM)	1862.00	0.00	186.20	372.40	279.30	279.30	279.30	465.50	0.00	0.00
A11	COVERING OF MAIN NALLAH'S (45 KM)	10000.00	0.00	1500.00	1500.00	2000.00	3000.00	2000.00	0.00	0.00	0.00
A1-A11	**SUB-TOTAL**	**15885.30**	**0.00**	**2088.53**	**2677.06**	**2882.80**	**3882.80**	**2882.80**	**1471.33**	**0.00**	**0.00**
B	NEW STROM WATER DRAIN WORKS										
B1	CONST. OF NEW NALLAH -6MX3M (95KM)	6255.00	0.00	0.00	0.00	1251.00	1251.00	1251.00	2502.00	5212.50	1737.50
B2	CONST. OF NEW NALLAH -5MX2.5M (20KM)	1100.00	0.00	0.00	0.00	220.00	220.00	220.00	440.00	825.00	275.00
B3	CONST. OF NEW NALLAH -3MX2M (20KM)	760.00	0.00	0.00	0.00	152.00	152.00	152.00	304.00	570.00	190.00
B4	CONST. OF NEW NALLAH -2MX1.5M (10KM)	280.00	0.00	0.00	0.00	56.00	56.00	56.00	112.00	210.00	70.00
B5	CONST. OF LATERAL DRAINS (260KM)	2040.00	0.00	0.00	0.00	408.00	408.00	408.00	816.00	1785.00	595.00
B6	CONST. OF NEW CULVERTS & BRIDGES (50NOS.)	110.00	0.00	0.00	0.00	22.00	22.00	22.00	44.00	105.00	35.00
B7	RAIN WATER RECHARGING UNITS (500NOS.)	250.00	0.00	0.00	0.00	50.00	50.00	50.00	100.00	187.50	62.50
B9	PROVISION FOR RAIL CROSSING	50.00	0.00	0.00	0.00	10.00	10.00	10.00	20.00	37.50	12.50
B1-B9	**SUB-TOTAL**	**10845.00**	**0.00**	**0.00**	**0.00**	**2169.00**	**2169.00**	**2169.00**	**4338.00**	**8932.50**	**2977.50**
A-B	**TOTAL**	**26730.30**	**0.00**	**2088.53**	**2677.06**	**5051.80**	**6051.80**	**5051.80**	**5809.33**	**8932.50**	**2977.50**

Table 11.7 URBAN ROADS and TRANSPORTION

PHASING OF WORKS & EXPENDITURE FOR URBAN TRANSPORT (in Rs Lakhs)

	WORKS	PHASE I	I YR.	II YR.	III YR.	IV YR.	V YR.	VI YR.	VII YR.
		(2005-12)	2005-06	2006-07	2007-08	2008-09	2009-2010	2010-11	2011-12
		COSTS	COSTS	COSTS	COSTS	COSTS	COSTS	COSTS	COSTS
A	**IMPROVING EXISTING CONDITION**								
A1	CONSTRUCTION OF GRADE SEPARATED RAILWAY CROSSING	11200.00	0.00	0.00	5600.00	5600.00	0.00	0.00	0.00
A2	UPGRADATION OF KUTCHA ROAD TO BITUMINIUS ROAD	7680.00	0.00	1600.00	3400.00	2680.00			
A1-A2	**TOTAL**	**18880.00**	**0.00**	**1600.00**	**9000.00**	**8280.00**	**0.00**	**0.00**	**0.00**
B	**CONSTRUCTION OF NEW INFRASTRUCTURE**								
B1	CONSTRUCTION OF NEW ROADS	10000.00	0.00	500.00	2000.00	2000.00	2000.00	1500.00	2000.00
B2	CONSTRUCTION OF BUS STOPS IN THE CITY	12.50	0.00	3.50	3.50	3.50	2.00	0.00	0.00
B3	CONSTRUCTION OF NEW BUS TERMINALS	200.00	0.00	0.00	100.00	100.00	-	0.00	0.00
B4	CONSTRUCTION OF FREIGHT TERMINAL	150.00	0.00	0.00	-	75.00	75.00	0.00	0.00
B5	CONSTRUCTION OF NEW LINK FOR KANVAR YATRA	800.00	0.00		300.00	300.00	200.00		
B1-B5	**TOTAL**	**11162.50**	**0.00**	**503.50**	**2403.50**	**2478.50**	**2277.00**	**1500.00**	**2000.00**
A-B	**GRAND TOTAL**	**30042.50**	**0.00**	**2103.50**	**11403.50**	**10758.50**	**2277.00**	**1500.00**	**2000.00**

Table 11.8 URBAN ENVIRONMENTAL MANAGEMENT

PHASING OF WORKS & EXPENDITURE FOR ENVIRONMENTAL MANAGEMENT (in Rs Lakhs)

	WORKS	PHASE I (2005-12) COSTS	I YR. 2005-06 COSTS	II YR. 2006-07 COSTS	III YR. 2007-08 COSTS	IV YR. 2008-09 COSTS	V YR. 2009-2010 COSTS	VI YR. 2010-11 COSTS	VII YR. 2011-12 COSTS
A	**UPGRADATION OF EXISTING CONDITION**								
A1	SANJAY VAN PARISAR IMPROVEMENT	988.08	0.00	100.00	200.00	200.00	200.00	0.00	288.08
A2	PLANTATION ACTIVITY	406.35	0.00	50.00	100.00	80.00	80.00	50.00	46.35
A3	MAINTENANCE OF FOREST LAND WITHIN CITY	375	0.00	50.00	100.00	75.00	50.00	50.00	50.00
A1-A2	**TOTAL**	**1769.43**	**0.00**	**200.00**	**400.00**	**355.00**	**330.00**	**100.00**	**384.43**
B	**CONSTRUCTION OF NEW INFRASTRUCTURE**								
B1	DEVELOPMENT OF GREEN AREAS IN/AROUND CROSS SECTION OF ROADS	700.00	0.00	150.00	150.00	100.00	100.00	100.00	100.00
B1-B3	**TOTAL**	**700.00**	**0.00**	**150.00**	**150.00**	**100.00**	**100.00**	**100.00**	**100.00**
A-B	**GRAND TOTAL**	**2469.43**	**0.00**	**350.00**	**550.00**	**455.00**	**430.00**	**200.00**	**484.43**

TABLE 11.9 PHASING OF WORKS & EXPENDITURE FOR MUNICIPAL REFORMS – CAPACITY BUILDING											
	WORKS	PHASE I	I YR.	II YR.	III YR.	IV YR.	V YR.	VI YR.	VII YR.	PHASE II	PHASE III
		(2005-12)	2005-06	2006-07	2007-08	2008-09	2009-2010	2010-11	2011-12	(2012-24)	(2024-31)
		COSTS	COSTS	COSTS	COSTS	COSTS	COSTS	COSTS	COSTS	COSTS	COSTS
A	**Software**										
A1	GIS Software	3.5				3.5					
A2	Customisation to exact needs	3.0				1.5	1.5				
A3	Database Management and Oracle License	1.5				1.5					
A4	Document Management Software/ Networking Software	50.0				25.0	25.0				
A5	Access of System to User	1.5					1.5				
A1-A5	**SUB-TOTAL**	**59.5**	**-**	**-**	**-**	**31.5**	**28.0**	**-**	**-**	**-**	**-**
B	**Hardware**										
B1	Networking/ Cabling	10.0				5.0	2.0	1.0	2.0		
B2	Computer Terminals (100 Nos Say)	30.0			5.0	5.0	10.0	10.0			
B3	Creation of ward offices*/ Networking and integration with Central/ State/ National network	25.0						10.0	15.0	50.0	25.0
B1-B3	**SUB-TOTAL**	**65.0**	**-**	**-**	**5.0**	**10.0**	**12.0**	**21.0**	**17.0**	**50.0**	**25.0**
	Contd. Next page										

	WORKS	PHASE I	I YR.	II YR.	III YR.	IV YR.	V YR.	VI YR.	VII YR.	PHASE II	PHASE III
		(2005-12)	2005-06	2006-07	2007-08	2008-09	2009-2010	2010-11	2011-12	(2012-24)	(2024-31)
C	**Data Generation/ Training and Capacity Building**										
C1	Data Generation - Physical Assets and Properties (Details of each bit of property/ Asset be mapped and interfaced based on thorough survey @ Rs 200 per property)	150.0				25.0	25.0	50.0	50.0	600.0	250.0
C2	Data Generation - Accounts and financial management	50.0				25.0	25.0				
C3	Conversion to double entry accounting system	10.0			5.0	5.0					
C4	Periodic on the Job Training for Engineers and Planners**	14.0			4.0	4.0	2.0	2.0	2.0	2.0	
C5	Training to Accounting personnel	17.0		12.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0
C1-C5	**SUB-TOTAL**	**241.0**	**-**	**12.0**	**10.0**	**60.0**	**53.0**	**53.0**	**53.0**	**603.0**	**251.0**
A+B+C	**Total**	**365.5**	**-**	**12.0**	**15.0**	**101.5**	**93.0**	**74.0**	**70.0**	**653.0**	**276.0**

Chapter 12.0
Financing Options

Chapter 12.0 Financing Options

Current state and local deficits have created a challenging environment in Meerut City to supply infrastructure at a Level of Service (LOS) that is acceptable to its populace.

City Investment Plan under Sub Mission 1 estimates a total requirement of Rs 140963 Lacs for different sectors with in a period of 6 years from 2005 to 2012. Looking at the existing climate for infrastructure financing, including the challenges and opportunities for state and local governments JNNURM suggests shifting of priorities and methods of financing infrastructure. CDP prepared under the framework of JNNURM thus looks beyond traditional financing instruments and inviting all stakeholders to the table to efficiently deliver the infrastructure via broad-based solutions.

Details of various Financing options for each sector and break up in the form of different funding sources are presented **in Table 12.1.**

Table 12.1 FINANCING OPTIONS

Sr. No.	SECTOR	Investment (in lacs)	Distribution of Funding (in Rs Lakhs)														
			GoI					GoUP					ULB/FI				
		2005-12	Total	2006-07	Balance Period	2007-08	Balance Period	Total	2006-07	Balance Period	2007-08	Balance Period	Total	2006-07	Balance Period	2007-08	Balance Period
A	**URBAN RENEWAL**																
A1	RENOVATION & STRENGTHENING OF EXISTING INFRASTRUCTURE	30340.00	**15170.00**	1366.50	13803.50	3212.50	10591.00	**6068.00**	546.60	5521.40	1285.00	4236.40	**9102.00**	819.90	8282.10	1927.50	6354.60
A2	NEW CONSTRUCTION WORKS	5500.00	**2750.00**	75.00	2675.00	250.00	2425.00	**1100.00**	30.00	1070.00	100.00	970.00	**1650.00**	45.00	1605.00	150.00	1455.00
A1-A2	**TOTAL (URBAN RENEWAL)**	**35840.00**	**17920.00**	**1441.50**	**16478.50**	**3462.50**	**13016.00**	**7168.00**	**576.60**	**6591.40**	**1385.00**	**5206.40**	**10752.0**	**864.90**	**9887.10**	**2077.50**	**7809.60**
B	**WATER SUPPLY WORKS**																
B1	RENOVATION OF EXISTING INFRASTRUCTURE	564.75	**282.38**	141.19	141.19	141.19	0.00	**112.95**	56.48	56.47	56.47	0.00	**169.43**	84.71	84.71	84.71	0.00
B2	ELECTRICAL & MECHANICAL WORKS	2197.00	**1098.50**	79.25	1019.25	173.25	846.00	**439.40**	31.70	407.70	69.30	338.40	**659.10**	47.55	611.55	103.95	507.60
B3	CONSTRUCTION OF OVER HEAD TANKS	3804.00	**1902.00**	0.00	1902.00	190.20	1711.80	**760.80**	0.00	760.80	76.08	684.72	**1141.20**	0.00	1141.20	114.12	1027.08
B4	NEW CONSTRUCTION - MAIN SUPPLY LINE AND DISTRIBUTION SYSTEM	10368.80	**5184.40**	250.00	4934.40	1268.44	3665.96	**2073.76**	100.00	1973.76	507.38	1466.38	**3110.64**	150.00	2960.64	761.06	2199.58
B5	RISING MAIN	1616.00	**808.00**	0.00	808.00	80.80	727.20	**323.20**	0.00	323.20	32.32	290.88	**484.80**	0.00	484.80	48.48	436.32
B6	SUPPORTING CIVIL WORKS	371.01	**185.51**	9.41	176.10	37.08	139.02	**74.20**	3.76	70.44	14.83	55.61	**111.30**	5.65	105.66	22.25	83.41
B7	MISCELLANEOUS WORKS	556.52	**278.26**	14.11	264.15	55.62	208.53	**111.30**	5.65	105.66	22.25	83.41	**166.95**	8.47	158.49	33.37	125.12
B1-B7	**TOTAL (WATER SUPPLY)**	**19478.08**	**9739.04**	**493.96**	**9245.08**	**1946.57**	**7298.51**	**3895.62**	**197.58**	**3698.03**	**778.63**	**2919.40**	**5843.42**	**296.38**	**5547.05**	**1167.94**	**4379.10**
C	**SEWEARGE WORKS**																
C1	RENOVATION & STRENGTHENING OF EXISTING INFRASTRUCTURE	2327.80	**1163.90**	35.00	1128.90	149.89	979.01	**465.56**	14.00	451.56	59.96	391.60	**698.34**	21.00	677.34	89.93	587.41
C2	NEW SEWERAGE WORKS	21130.00	**10565.00**	976.50	9588.50	1348.00	8240.50	**4226.00**	390.60	3835.40	539.20	3296.20	**6339.00**	585.90	5753.10	808.80	4944.30
C1-C2	**TOTAL (SEWERAGE WORKS)**	**23457.80**	**11728.90**	**1011.50**	**10717.40**	**1497.89**	**9219.51**	**4691.56**	**404.60**	**4286.96**	**599.16**	**3687.80**	**7037.34**	**606.90**	**6430.44**	**898.73**	**5531.71**
D	**STORM WATER DISPOSAL WORKS**																
D1	RENOVATION & STRENGTHENING OF EXISTING INFRASTRUCTURE	15885.30	**7942.65**	1044.27	6898.39	1338.53	5559.86	**3177.06**	417.71	2759.35	535.41	2223.94	**4765.59**	626.56	4139.03	803.12	3335.91
D2	NEW STROM WATER DRAIN WORKS	10845.00	**5422.50**	0.00	5422.50	1348.00	4074.50	**2169.00**	0.00	2169.00	539.20	1629.80	**3253.50**	0.00	3253.50	808.80	2444.70

Table 12.1 FINANCING OPTIONS

Sr. No.	SECTOR	Investment (in lacs)	Distribution of Funding (in Rs Lakhs)														
			GoI					GoUP					ULB/FI				
		2005-12	Total	2006-07	Balance Period	2007-08	Balance Period	Total	2006-07	Balance Period	2007-08	Balance Period	Total	2006-07	Balance Period	2007-08	Balance Period
D1-D2	**TOTAL (STORM WATER WORKS)**	**26730.30**	**13365.15**	**1044.27**	**12320.89**	**2686.53**	**9634.36**	**5346.06**	**417.71**	**4928.35**	**1074.61**	**3853.74**	**8019.09**	**626.56**	**7392.53**	**1611.92**	**5780.61**
E	**SOLID WASTE MANAGEMENT WORKS**																
E1	MUNICIPAL SOLID WASTE MANAGEMENT	1822.64	**911.32**	77.82	833.50	238.94	594.56	**364.53**	31.13	333.40	95.58	237.82	**546.79**	46.69	500.10	143.36	356.74
E2	BIO-MEDICAL WASTE MANAGEMENT	756.74	**378.37**	1.30	377.07	113.31	263.76	**151.35**	0.52	150.83	45.32	105.51	**227.02**	0.78	226.24	67.99	158.26
E1-E2	**TOTAL (SOLID WASTE WORKS)**	**2579.38**	**1289.69**	**79.11**	**1210.57**	**352.25**	**858.32**	**515.88**	**31.65**	**484.23**	**140.90**	**343.33**	**773.81**	**47.47**	**726.34**	**211.35**	**514.99**
F	**URBAN TRANSPORT WORKS**																
F1	IMPROVING EXISTING CONDITION	18880.00	**9440.00**	800.00	8640.00	4500.00	4140.00	**3776.00**	320.00	3456.00	1800.00	1656.00	**5664.00**	480.00	5184.00	2700.00	2484.00
F2	CONSTRUCTION OF NEW INFRASTRUCTURE	11162.50	**5581.25**	976.50	4604.75	1348.00	3256.75	**2232.50**	390.60	1841.90	539.20	1302.70	**3348.75**	585.90	2762.85	808.80	1954.05
F1-F2	**TOTAL (URBAN TRANSPORT WORKS)**	**30042.50**	**15021.25**	**1776.50**	**13244.75**	**5848.00**	**7396.75**	**6008.50**	**710.60**	**5297.90**	**2339.20**	**2958.70**	**9012.75**	**1065.90**	**7946.85**	**3508.80**	**4438.05**
G	**URBAN ENVIRONMENTAL MANAGEMENT WORKS**																
G1	UPGRADATION OF EXISTING CONDITION	1769.43	**884.72**	100.00	784.72	200.00	584.72	**353.89**	40.00	313.89	80.00	233.89	**530.83**	60.00	470.83	120.00	350.83
G2	CONSTRUCTION OF NEW INFRASTRUCTURE	700.00	**350.00**	75.00	275.00	75.00	200.00	**140.00**	30.00	110.00	30.00	80.00	**210.00**	45.00	165.00	45.00	120.00
G1-G2	**TOTAL (ENVIRONMENTAL MANAGEMENT)**	**2469.43**	**1234.72**	**175.00**	**1059.72**	**275.00**	**784.72**	**493.89**	**70.00**	**423.89**	**110.00**	**313.89**	**740.83**	**105.00**	**635.83**	**165.00**	**470.83**
H	**MUNICIPAL REFORMS AND**																
H1	Software	59.50	**29.75**	**0.00**	29.75	0.00	29.75	**11.90**	0.00	11.90	0.00	11.90	**17.85**	0.00	17.85	0.00	17.85
H2	Hardware	65.00	**32.50**	**0.00**	32.50	2.50	30.00	**13.00**	0.00	13.00	1.00	12.00	**19.50**	0.00	19.50	1.50	18.00
H3	Data Generation/ Training and Capacity Building	241.00	**120.50**	**6.00**	114.50	5.00	109.50	**48.20**	2.40	45.80	2.00	43.80	**72.30**	3.60	68.70	3.00	65.70
H1-H3	**Total (Municipal Reforms)**	**365.50**	**182.75**	**6.00**	**176.75**	**7.50**	**169.25**	**73.10**	**2.40**	**70.70**	**3.00**	**67.70**	**109.65**	**3.60**	**106.05**	**4.50**	**101.55**
A-G	**GRAND TOTAL**	**140963.0**	**70481.5**	**6027.8**	**64453.7**	**16076.2**	**48377.4**	**28192.6**	**2411.1**	**25781.5**	**6430.5**	**19351.0**	**42288.9**	**3616.7**	**38672.2**	**9645.7**	**29026.4**

Chapter 13.0

Financial Shares of different Local Bodies

Chapter 13.0 Financial Shares of different Local Bodies

As 74th Constitutional Amendment is not in place in UP, different local bodies other than municipal corporation are involved in providing various services and facilities in Meerut cities. Under JNNURM, the component of local body in the overall city investment plan will be shared as per their current role of different such agencies. Different agencies to execute the identified projects are:

Meerut Nagar Nigam
Meerut Development Authority
UP Jal Nigam
UP Bridge Corporation
Department of Forest

The total financial resources to be mobilized by MNN during the project period from 2006 to 2012 are estimated to be Rs 18010 Lakhs. The year wise break up this fund requirement from Meerut Nagar Nigam is presented in **Table 13.1**.

Table 13.1 Year wise Funding by MNN

(Rs Lakhs)

Total MNN	2006-07	2007-08	2008-09	2009-10	2010-2011	2011-2012
17970.22	2091.19	4149.06	3892.67	3199.94	2392.07	2245.28

Funds ranging between Rs 20 to Rs 40 crores are required to be mobilised by MNN during different years of the project period. Revenues to the tune of Rs 15 crores per year can be mobilised by way of sale of assets, collaboration with real estate developers and leasing out of prime assets. Balance requirement can be mobilised by enhanced revenue collection by means of more effective governance, efficient tax structure and transparent accounting system.

Total respective shares of each agency mentioned above are given in **Table 13.2.**

Table 13.2 Distribution of Financial Share of ULB's

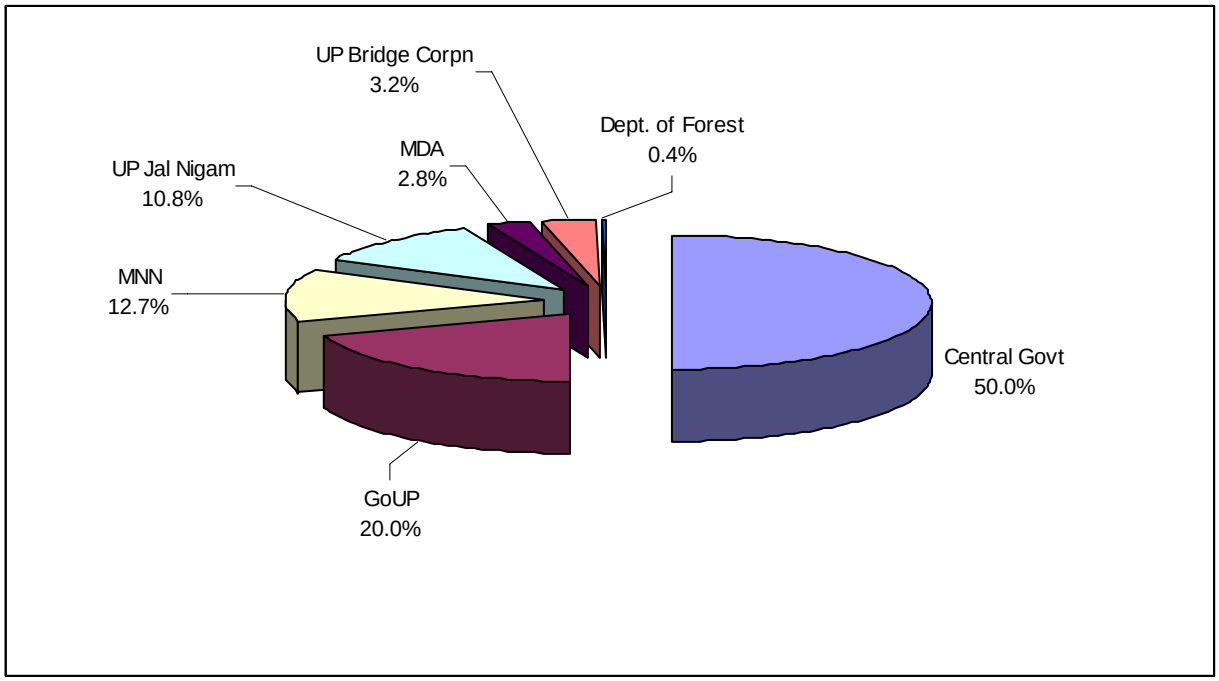
Sr. No.	SECTOR	Investment (in Rs lakhs)		MNN	UP Jal Nigam	MDA	UP Bridge Corporation	Dept. of Forest
		2005-12	ULB/FI Share					
A	**URBAN RENEWAL**							
A1	RENOVATION & STRENGTHENING OF EXISTING INFRASTRUCTURE	30340.00	**9102.00**	8934.00		168.00		
A2	NEW CONSTRUCTION WORKS	5500.00	**1650.00**			450.00	1200	
A1-A2	**TOTAL (URBAN RENEWAL)**	**35840.00**	**10752.00**					
B	**WATER SUPPLY WORKS**							
B1	RENOVATION OF EXISTING INFRASTRUCTURE	564.75	**169.43**	169.43				
B2	ELECTRICAL & MECHANICAL WORKS	2197.00	**659.10**	45.90	613.20			
B3	CONSTRUCTION OF OVER HEAD TANKS	3804.00	**1141.20**		1141.20			
B4	NEW CONSTRUCTION - MAIN SUPPLY LINE AND DISTRIBUTION SYSTEM	10368.80	**3110.64**		3110.64			
B5	RISING MAIN	1616.00	**484.80**		484.80			
B6	SUPPORTING CIVIL WORKS	371.01	**111.30**		111.30			
B7	MISCELLANEOUS WORKS	556.52	**166.95**		166.95			
B1-B7	**TOTAL (WATER SUPPLY)**	**19478.08**	**5843.42**					
C	**SEWEARGE WORKS**							
C1	RENOVATION & STRENGTHENING OF EXISTING INFRASTRUCTURE	2327.80	**698.34**	698.34				
C2	NEW SEWERAGE WORKS	21130.00	**6339.00**		6339.00			
C1-C2	**TOTAL (SEWERAGE WORKS)**	**23457.80**	**7037.34**					
D	**STORM WATER DISPOSAL WORKS**							
D1	RENOVATION & STRENGTHENING OF EXISTING INFRASTRUCTURE	15885.30	**4765.59**	4725.09	40.50			
D2	NEW STROM WATER DRAIN WORKS	10845.00	**3253.50**		3253.50			
D1-D2	**TOTAL (STORM WATER WORKS)**	**26730.30**	**8019.09**					
E	**SOLID WASTE MANAGEMENT WORKS**							
E1	MUNICIPAL SOLID WASTE MANAGEMENT	1822.64	**546.79**	546.79				
E2	BIO-MEDICAL WASTE MANAGEMENT	756.74	**227.02**	227.02				
E1-E2	**TOTAL (SOLID WASTE WORKS)**	**2579.38**	**773.81**					
F	**URBAN TRANSPORT WORKS**							
F1	IMPROVING EXISTING CONDITION	18880.00	**5664.00**	2304.00			3360.00	
F2	CONSTRUCTION OF NEW INFRASTRUCTURE	11162.50	**3348.75**			3348.75		

Table 13.2 Distribution of Financial Share of ULB's

Sr. No.	SECTOR	Investment (in Rs lakhs)		MNN	UP Jal Nigam	MDA	UP Bridge Corporation	Dept. of Forest
		2005-12	ULB/FI Share					
F1-F2	TOTAL (URBAN TRANSPORT WORKS)	30042.50	9012.75					
G	URBAN ENVIRONMENTAL MANAGEMENT WORKS							
G1	UPGRADATION OF EXISTING CONDITION	1769.43	530.83					530.83
G2	CONSTRUCTION OF NEW INFRASTRUCTURE	700.00	210.00	210.00				
G1-G2	TOTAL (ENVIRONMENTAL MANAGEMENT)	2469.43	740.83					
H	MUNICIPAL REFORMS AND CAPACITY BUILDING							
H1	Software	59.50	17.85	17.85				
H2	Hardware	65.00	19.50	19.50				
H3	Data Generation/ Training and Capacity Building	241.00	72.30	72.30				
H1-H3	TOTAL (MUNICIPAL REFORMS)	365.50	109.65					
A-H	GRAND TOTAL	140963.0	42288.9	17970.22	15261.1	3966.75	4560.00	530.83

Figure 13.1 shows the distribution of Total Project Cost amongst various Contributing bodies, ULBs and operating parastatal bodies in Meerut.

Figure 13.1: Cost Structuring for Sub Mission 1



Section - III

Sub Mission II – Basic Services for Urban Poor

Chapter 14.0

Existing Slum Situational Analysis

Section III – Sub Mission II – Basic Services for Urban Poor

Chapter 14.0 Existing Slum Situational Analysis

The slum dwellers and urban poor are similar terms and are used interchangeably in the context of equitable urban development. The existing scenario in Meerut has two distinct dimensions. In terms of basic amenities and infrastructure, it may be indicated that the mainstream population in the city on one hand suffers from tremendous lack of coordination in the delivery of services and stake holder's accountability. On the other hand, the city suffers from wide disparity in terms of distribution and access to basic services.

14.1. Growth Potentials

Slums in the city cover an area of approximately 240 ha and have an average population density of around 575 people per hectare. Significant number of these slum dwellers belongs to backward castes. Scheduled Castes account for nearly 27% of the total slum population in the city. The total population living in these slums is shown in the **Table 13.1**

Table 14.1 Existing Slum Population in Meerut City

Name of the City	Total population			Slum population		
	Persons	Males	Females	Persons	Males	Females
Meerut	11,61,716	6,21,481	5,40,235	4,71,581	251,796	219,520

Source: Census of India 2001

There are 102 slums, which are identified by DUDA in the year 2000. This list is still in the process of revision. There are several poverty clusters in the city which are not registered in the official list owing to which they are not getting the benefits of various Governments policies and facilities.

Slums in Meerut have grown from 10 Slum pockets in 1950 to 108 Slum pockets in 2003. Owing to the flaws in current planning process and various ongoing government policies, practiced so far. Suffering from bias against slums these pockets have mainly been the recipients of residues and left-over of the main city, which has created object conditions of poor hygiene and wretchedness in one to all 108 slums as notified by DUDA. Such treatment of slums also failed to achieve a holistic urban growth. The general growth trend of the slums in the Meerut city is shown in **Figure 4**

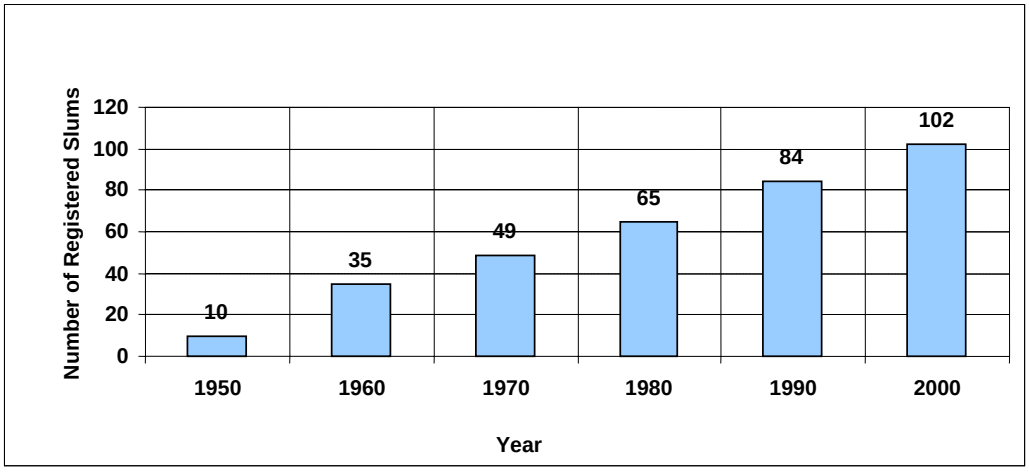


Fig 4 : Growth Trend of slums in the city

The slums in the city are predominantly scattered and located on private lands. The general distribution of all the slums on the basis of there pattern of settlement and tenancy is shown in the **Table 14.2** and **Table 14.3** respectively.

Table 14.2

Sl. No.	Types of slum	Number of slums	%age
1	Linear	1	1
2	Dense	1	1
3	Scattered	100	98
Total		**102**	**100**

Sources: DUDA, Meerut

Brahmpuri and Tarapuri are the areas which are generally the only areas with clustered pattern of slums. There are many other additional poverty clusters which exist in these areas and because they are not listed separately they are counted under the same head.

Table 14.3

Sl. No.	Types of slum	Number of slums	%age
1	Public	4	3.9
2	Private	98	96.7
3	Trust	No	0
Total		**102**	**100**

Sources: DUDA, Meerut

As we see in the above **Table 14.3** most of the slums are on the private land. These are mostly the squatted land.

14.2. Ongoing policies for urban poor in Meerut city

14.2.1. SJSRY- Swarna Jayanti Shehri Rojgar Yojana

The Swarna Jayanti Shehri Rojgar Yojana (SJSRY) provides gainful employment to the urban unemployed or underemployed poor through encouraging the setting up of self-employment ventures or provision of wage employment. This programme creates a suitable community structures and delivery of inputs.

The Swarna Jayanti Shehri Rojgar Yojana is funded on a 75:25 basis between the Centre and the State respectively. The Swarna Jayanti Shehri Rojgar Yojana consists of two schemes, namely:

- The Urban Self Employment Programme (USEP)
- The Urban Wage Employment Programme (UWEP)

The salient features of this policy are:

- The SJSRY rest on a foundation of community empowerment rather then relying on the traditional method of top down implementation. Towards this end community organizations like Neighborhood Groups (NHG's), Neighborhood Committees (NHC's), and Community Development Societies (CDS's) are set up in the target areas based on the UBSP pattern.
- These CDS's set themselves up as Thrift and Credit societies to encourage community savings, as also other group activities. However, Thrift and Credit Societies are set up separate from the CDS's as well. These bodies link local resource generation efforts with wider institutional finance. These bodies are registered under the Societies Registration Act or other appropriate Acts to provide them direct access to funds under various schemes as also a wider finance and credit base.
- The CDS's, being a federation of different community based organizations, is a nodal agency for this programming. They will lay emphasis on providing the entire gamut of social sector inputs to their areas including, but not limited to, health, welfare, education, etc. through establishing convergence between schemes being implemented by different line departments within their jurisdiction.

The eligibility criteria on the basis of which the beneficiaries for Urban Self Employment Programme (USEP) are selected are listed below:

- Assistance to individual urban poor beneficiaries for setting up gainful self-employment ventures.
- Assistance to groups of urban poor women for setting up gainful self-employment ventures.
- Training of beneficiaries, potential beneficiaries and other persons associated with the urban employment Programme for up gradation and acquisition of vocational and entrepreneurial skills.

- Special attention is given to women, persons belonging to Scheduled Castes/Tribes, disabled persons and other such categories as may be indicated by the Government from time to time.
- The percentage of women beneficiaries under this Programme should not be less than 30%. All other conditions being equal, women beneficiaries belonging to women-headed household, viz., widows, divorcees, single women, or even households where women are the sole earners are ranked higher in priority. SC's and ST's must be benefited at least to the extent of the proportion of their strength in local population. A provision of 3% should be reserved for the disabled.
- There is no minimum educational qualification for beneficiaries under this programme. However, this scheme is not applicable to the persons educated beyond the IXth standard.
- A house-to-house survey for identification of genuine beneficiaries is prescribed. Non-economic parameters are also applied to the urban poor in addition to the economic criteria for the purpose of prioritization within the BPL.

The eligibility criteria on the basis of which the beneficiaries for Urban Wage Employment Programme (UWEP) are selected are listed below:

- This component seeks to provide wage employment to prospective beneficiaries living below the poverty line within the jurisdiction of urban local bodies by utilizing their labor for construction of socially and economically useful public assets.
- Under this component, there are no restrictions on educational qualifications.
- This programme applies to the urban local bodies having population less than 5 lakh as per the 1991 Census.
- The material labor ratio for works under this component is to be maintained at 60:40.
- The prevailing minimum wage rate, as notified from time to time for each area, has to be paid to beneficiaries under this component.

Government gives loan of Rs. 50,000/- with 15% grant and 5% margin money.

14.2.2. National Slum Development Plan: (Rastriya Malin Basti Sudhar Yojana)

For the qualitative improvement of the slum dwellers and improvement of slum, honorable prime minister has announced NSDP. The NSDP have two major objectives

- To solve all fundamental problems of slum dwellers.
- To achieve poverty alleviation by planned and efficient system of different plans and unites all state govt. departments.

The plan covers the following components of physical infrastructure

- Construction of main drain
- Construction of cemented road
- Drain kharanja construction
- Construction of public toilets
- Construction of community centers

The construction works in slum has been proposed which comes within the Meerut city boundary, so that the slum dwellers get salary through participation in the construction works. The ratio of material and labor charges would be 60:40.the construction works are proposed by community Development Units.

A fund of Rs.157.32 lakh/- was allocated for the financial year 2003-04 in Meerut district under this plan. As per U.P. govt., fund of Rs.196.66lakh/-, this was increased by nearly 25% in order to achieve the increased physical targets for the same financial year.

In this plan the construction works are only within slum areas. These construction works are proposed through 43 Community Development Units.

The proposed construction works in Meerut city under this plan covers Construction of C.C. road and Construction work of drain kharanja.

14.2.3. Maharshi Valmiki Ambedker Malin Basti Avas Yojana
(Maharshi Valmiki Ambedker Slum Housing Plan)

A new centrally sponsored scheme called Valmiki Ambedker Avas Yojana (VAMBAY) has been launched since December 2, 2001 with a view to ameliorate the conditions of the urban slum dwellers living below poverty line without adequate shelter. This is the first scheme of its kind meant exclusively for slum dwellers with a Government of India and state government sharing the cost on 50:50 basis. The share of the Central Government comes as subsidy which is passed on to beneficiary as grant while the remaining fifty per cent is a loan to be repaid in 15 years. The average cost per dwelling unit constructed over a plinth area of 150 sq.ft., has been estimated to be around Rs 40,000 to Rs 60,000. Land for the scheme is provided by the state government which also draws up a list of beneficiaries under the scheme.

14.2.4. Nirmal Bharat Abhiyan – A Sub-component of VAMBAY

To integrate sanitation as part of the housing development and to achieve cent per cent sanitation coverage in all the state capitals and cities having more than one million populations, this sub-component of the above program is intended to be launched. New individual toilets or conversion of existing toilets into sanitary latrines and community based group toilet scheme in slum areas will be financed under this scheme. Effluents and wastes from such toilets constructed under this scheme will be used for production of manure through vermin culture, biogas etc. In the first year one lakh toilet seats in 10 cities on a demand driven basis with an outlay of Rs. 400 crores is being launched soon.

In this plan 1000 houses would be constructing on the bases of land availability. In this plan Rs.20, 000/- are given as grant Rs.20, 000/- as loan and Rs.5, 000/- as margin money by applicant. These houses are given for homeless weaker classes.

14.3. Basic Services and Housing

The existing scenario in Meerut has got two distinct dimensions. Besides fulfilling the demand of basic amenities and infrastructure, for the mainstream population, the city needs to address the widespread disparity in access to basic urban services and treatment of city's slum dwellers and urban poor that constitute over 40% population of the city.

By and large the condition of huge slum population in the city expressed in terms of access to basic services present a very grim situation. Only 49.42% of slum dwellers have a piped water supply, only 48.27% have individual/ private toilets, while mere 24% of these have sewer lines. 43 % of these slums have drainage network.

Overall state of physical and social infrastructure in the slum areas highlights the acute disparity in service distribution and provision amongst different areas of the city.

The health services to these slums are provided by 8 health posts and 4 rural PHCs (which also cover few urban areas). There are 2 charitable hospitals which are also functional in the city and serving the urban poor. Many NGOs are also working in these slums in order to provide the basic education and primary health services.

Poor housing stock in different slums further adds to the degradation of these areas. As per DUDA records a total of 11203 houses need improvement (until year 2003). Of these 8669 are partially built, while 2534 are Jhuggis/ Kutcha houses that need to be dismantled and new housing provision need to be made on the lines of VAMBAY/ IHSDP schemes.

Details of the urban basic services such as health, educational and community facilities are mentioned in **Table 14.4.**

Table 14.4

Sl. No.	Services	Existing Status
1	Total Number of slums and estimated population	102 nos. 471581 popu.
2	Total Number of slums provided with Basic Services	
	2.1 Water Supply	26 Slums
	2.2 Sewerage	26 Slums
	2.3 Drainage	90 Slums
	2.4 Community Toilets	14 Slums
	2.5 Community Baths]	
	2.6 Solid waste management	
	2.7 Number of Bins	42
	2.8 Community Halls	32 Slums
	2.9 Child Care Centers	
3	Social Sector Schemes like:	
	3.1 Primary schools and other types of schools	32 Slums
	3.2 Primary Health Facilities	
	3.3 Private	
	3.4 On going Social Security Schemes	
4	Overview of Housing conditions in the slums	
	4.1 Pucca	68695
	4.2 Kutcha/ Jhuggies	2534
5	On going housing schemes in the slums	Nil
6	Total number of slums where housing activities proposed to be	43

The condition of Slums in Meerut City

14.4. Vulnerability Assessment

Categorizing slums as areas of urban poverty is not a conclusive or effective method for reaching an understanding of the most vulnerable sections in a city. A Slum vulnerability assessment study was therefore undertaken in Meerut to do two things:

- Identify and mark the location of vulnerable Slums in the map.
- Distribution of slums as most, moderate and less vulnerable

Approach for identification and vulnerability assessment of slums

Additional Poverty Clusters were identified in addition to the official slum lists. All listed as well as additional poverty clusters were mapped on the city map. Slums were assessed on a vulnerability matrix developed keeping in view the local context taking into account their socio-economic, infrastructure, available service facilities, housing, environmental conditions and history of developmental activities. All the sums are classified as less vulnerable slums, moderately vulnerable slums and highly vulnerable slums.

For the purpose of developing vulnerability criteria for considering any poverty area as slum, two case study areas are taken up, covering over 30% of slums in the city located in Zakir Hussain Colony and Brahmpuri area are taken up. Details of the case studies and the findings are presented in the subsequent sub sections

14.4.1. Zakir Hussain Colony

Location

Dr.Zakir Hussain Colony (Zakir Colony) shares its boundary with other slums in three sides and a posh colony on its 4th side i.e. Shastri Nagar colony. The major slums that share its boundary with Zakir colony are Dhawai Nagar, Fateullapur and Ali Ahmed Nagar.Zakir Colony itself is a big slum comprising of small poverty pockets within it.Its area starts from Madina Masjid till Chamda Peth.It comprises of Kamela Colony, Iqubal Nagar,Zohra Bagh,Humayun Nagar, Rasool Nagar, Jamuna Nagar and Katchchi Zakir Colony.The colony is divided into different blocks starting from A to F.

The Zakir Colony in all covers 3 wards i.e. 76, 77, 66. The layout plan showing Zakir Hussain colony and its adjoining areas are shown in **figure 5.**

Population

Total no. of houses in the Zakir Colony is near about 8,600 with an average family size of 7.At an approx. the population will come to more than 60,200.

Occupation

Majority of the people in the slum are daily wage earner and few are engaged in business as they have set up cottage industries for the manufacture of sports good such as bats, wickets, etc. Basic occupation categories are:

- Khairati Machine
- Rickshaw puller
- Weavers

- Daily Wagers
- Well off

Religion
The total populations of slum are followers of Islam.

Social Structure
Joint family system is prevalent in the area. Male member is the head of the family. Old pardah system is still prevalent.

Education
Illiteracy is the major problem in the area as there are no Govt. schools in the close vicinity. As evident from pulse polio record that this slum comes under HRA (High Risk Area) because of highest no. of resistant cases for pulse polio drops due to lack of proper education about the services provided.

Housing Condition
In the periphery of the slum, the houses and roads are in better condition but as moving inwards from the main road the condition is vulnerable. The roads are narrow with complex vein nation of gallies is visible in the entire slum. Open drainage system and water logging in the roads is common scene of the slum. In terms of structure most of the houses are pucca and two storied.5-6 people accommodate in a single room and the rooms have no ventilation facility.

Sanitation
No sewerage system exists in the area. The drains that are seen are the open drains which are cemented. Groves have been carved out in the soil which acts as drains. The inner part of the colony especially the migrant colony of Bengali basti is at a lower level which faces the problem of stagnant water collection during monsoons. This stagnant water breeds mosquitoes and other insects which give rise to a number of diseases.

Table 14.5 Brief details of Zakir Colony

Items	Details (Nos.)
Total population	60,000 (approx)
Total number of blocks	6
Total number of houses	8600
Average family size	7
Total number of Private primary schools	20
Total number of religious institutions (Madarsa)	6
Total number of charitable clinics	2
Total number of private nursing homes	1 (5 in Shastri Nagar)

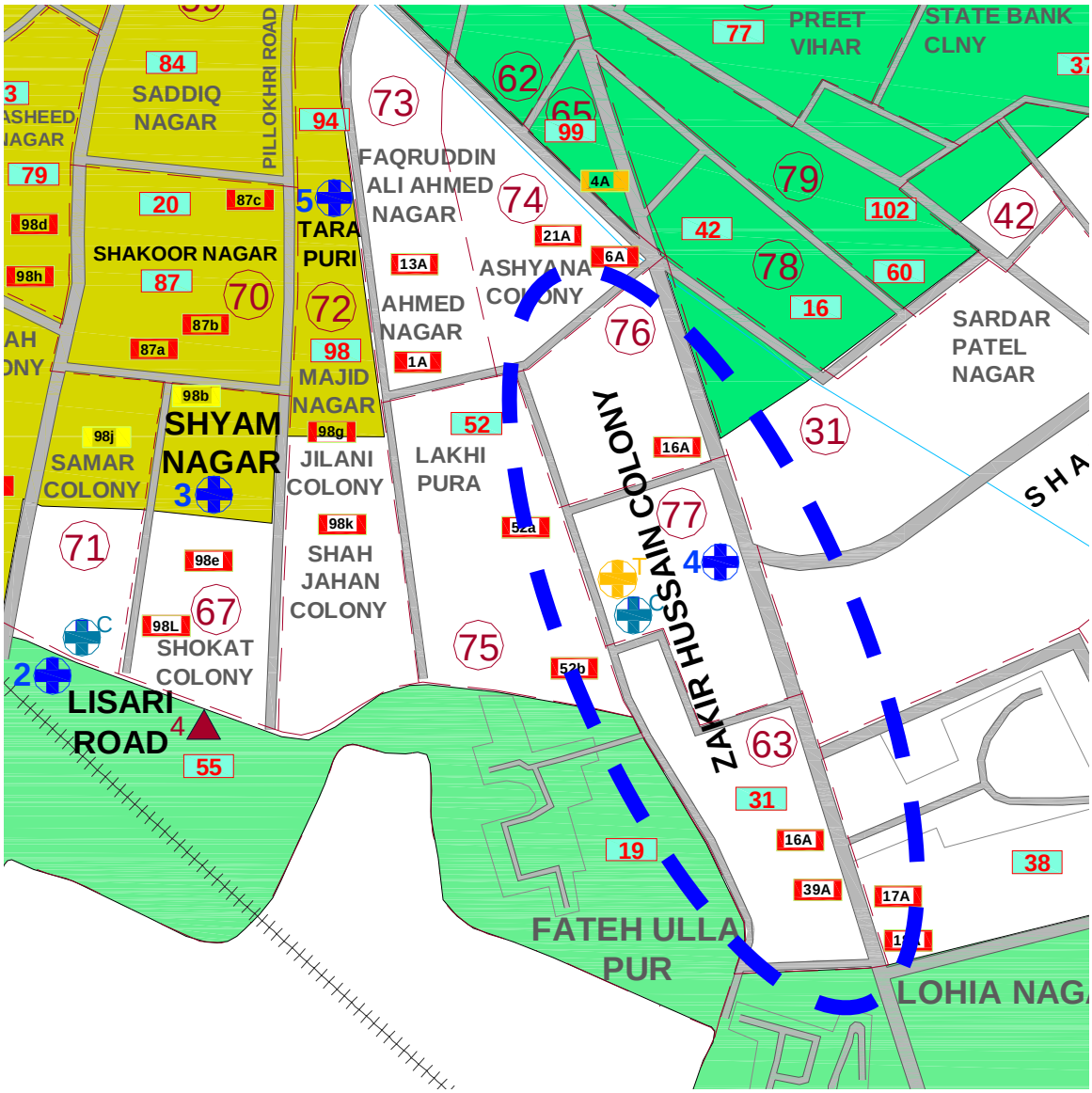


Figure 5: Zakir Hussain Colony and its adjoining areas

14.4.2. Brahmpuri

Location
Brahmpuri shares its boundary with Noor Nagar and Shaukat Colony in the south, Padampura in the north – east and Gupta colony in the North West. The area is spread over in **9** wards completely i.e. 44, 53, 2, 38, 30, 57, 69, 59, 70 and partially in **3** wards i.e. 71, 72 and 67. **Figure 6** shows the layout of Brahmpuri area.

Population
The Brahmpuri area has been divided into 3 sections for the purpose of effective administration of health facilities.

The 3 subdivided areas are:

Table 14.6 Population living in Brahmpuri area

Area	Population
Brahmpuri	98,616
Tarapuri	61,867
Shakoor Nagar	54, 590

The total population of this area is 2,15,073

Occupation
Majority of the people in the slum is daily wage earner and few are engaged in business and service. Basic occupation categories are:

- Rickshaw Puller
- Weaver
- Daily Wages
- Business
- Service

Religion
Three fourth of the population living here follows Hinduism (75%) while rest is Islam (25%).

Social Structure
Joint family system is prevalent in the area.

Education
Illiteracy is the major problem in those slums where the percentage of the Islamic followers is more then Hindu. As there were no Govt. schools in the close vicinity. As evident from pulse polio record these slum comes under HRA (High Risk Area) because of highest no. of resistant cases for pulse polio drops due to lack of proper education about the services provided.

Housing Condition
The houses located near the main roads are in very good condition as compared to the houses in the core areas of the slums. Most of the houses are double storied in which 3-4 households are living and the condition of these slums based on the occupancy is very bad.

Sanitation

No sewerage system exists in this area. The drains that are seen are the open drains which are cemented. Groves have been carved out in the soil which acts as drains.

Table 14.7 Brief Detail about Brahmpuri

Items	Details (nos.)
Total population	2, 15, 073
Average family size	7
Charitable Hospital	1
Proposed Health Posts	1
Total pop. of the poverty pockets	1, 51,233

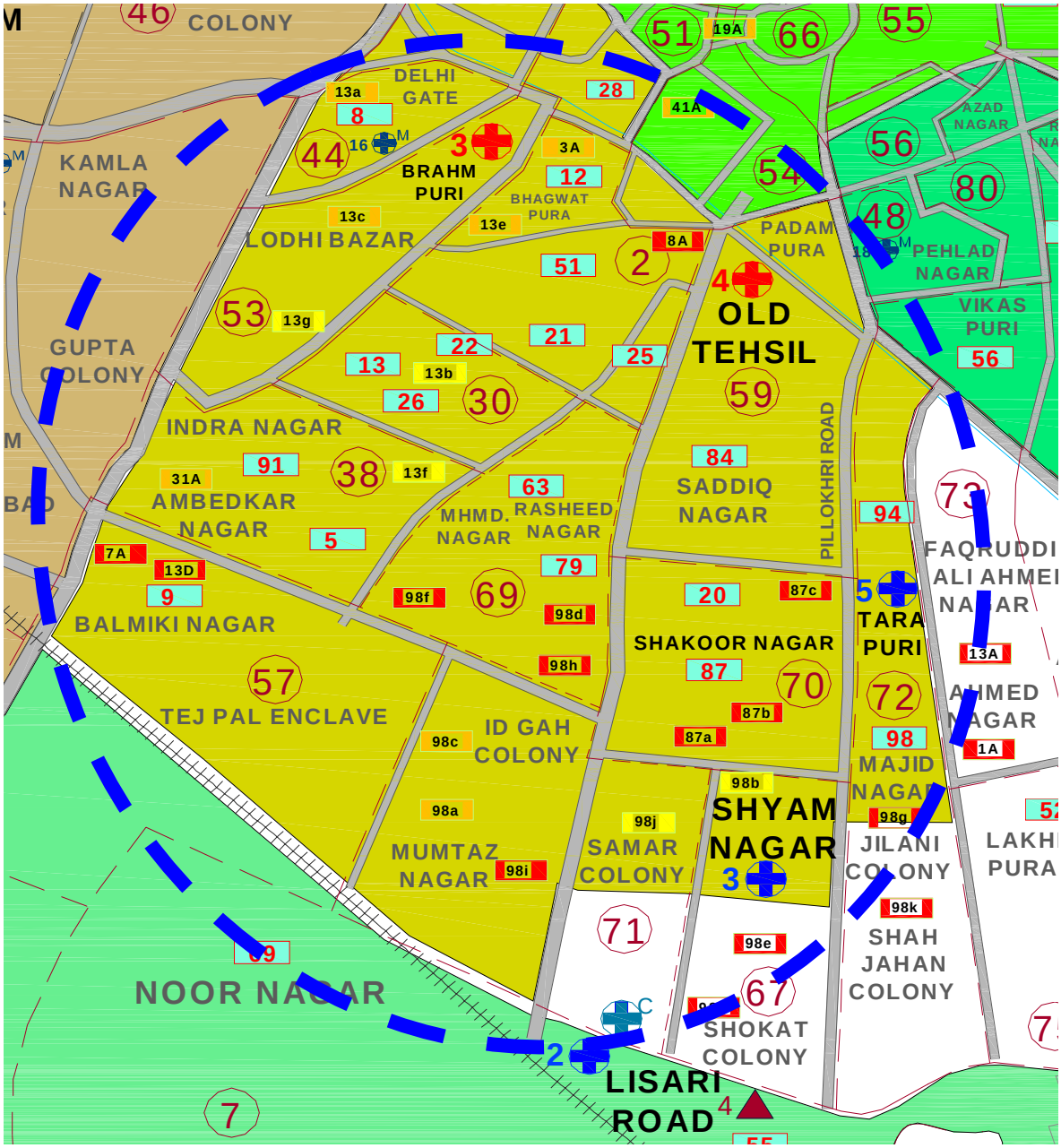


Figure 6. : Layout of Brahmpuri area

14.4.3. Criteria for Vulnerability Assessment

Based on the above two case studies following criteria for vulnerability criteria for vulnerability assessment has been developed as shown in **Table 14.8.**

Table 14.8 Vulnerability Criteria for slums in Meerut

CRITERIA		Most Vulnerable Condition	Moderately Vulnerable Condition	Less Vulnerable Condition
OWNERSHIP		Most of the houses are kutcha Most living in rented houses(Rent ranging from Rs.700-1000/-) Few people own houses	More than half of the people have own houses. Remaining live in rented house	Most have own houses Few live in rented houses
LOCATION OF SLUM		Close to Nala & far from main road	Little far from Nala but far from main road	Far from Nala and close to main road.
OCCUPANCY		5-6 Persons/ Room	3-5 Persons / Room	2-3 Persons/ Room
HOUSES		House having temporary walls of clothes, mud, bamboo mats, etc with plastic or thatch roof; minimal ventilation and flooring Kutcha.	Houses are Pucca with brick wall but the roof are thatched and most of the houses have flooring Kutcha.	Houses are congested with Pucca flooring and roof.
SERVICES	**Toilet**	Most of the houses have no toilets and defecation in open Few houses	More than half have toilets that open directly in the drains. The rest have pit type toilet. Children defecate in open.	More than half have pit type toilets. The rest have toilets that open into drains.
	Water	No govt. water supply and public hand pump. They have individual shared hand pumps or had to walk out distances to get water.	Govt. water supply present.Govt. Hand pumps are also present, 1 for 2-3 gullies. People have individual taps. Few people have private individual hand pumps.	Govt. water supply and individual taps.
	Drainage	No Drains /kutcha drains are clogged No regular cleaning	Open drains are there but lack cleaning, cleaning is done more often than 1 but garbages are heaped outside drains.	Open drains but without proper outlet system. They are cleaned regularly.
	Roads	Main roads in these areas are in good condition. Sub lanes are kutcha.	Pucca roads are there but lack maintence and cleaning.	Roads are good.
EMPLOYMENT	**Pattern**	Most of the people are daily wage earner No work is available for 10-15 days in a month and is worse off in rainy season.	Almost half of the population comes under daily wage earner and rest run business such as shopkeepers.	People have regular jobs in Govt. departments, factories and in

CRITERIA		Most Vulnerable Condition	Moderately Vulnerable Condition	Less Vulnerable Condition
	Types of Occupation	Types of work, people involve in rickshaw pulling, rag picking, vendors (vegetable, flower fruit sellers), maids and workers in small shops.		private jobs. Some are Businessman.
	Service Cover	These is no public health service facility within 1-2 km.	There exist primary facility within 1-2 km but their services are few and irregular.	Health facility in the vicinity within 1 km.
HEALTH	**Health Facility**			
	Health & hygiene Awareness	Dirt and garbage in and around the area.	Lack of cleanliness and garbage outside the drains.	Cleanliness situation is little improved as compared to other two.
	Gov / NGO / CBO	No AWC.Basti Sudhaar Samiti and NGO exists but not actively involved.	AWC's exists but insufficient to cater the population.	----
EDUCATION	**Children and Adults**	Children don't go to school.	Few Govt. School	Children go to Private schools and most parents literate.
	Gov / NGO / CBO	No AWC	AWC's present but functioning irregularly	Availing AWC's services of the nearby areas.
	Children and Adults			
VIOLENCE AGAINST WOMEN		Many cases women violence.	Women violence cases are lesser than previous.	Few women violence cases.
STATUS OF WOMEN & CHILD LABOUR		Most women and children are engaged in work	Almost 1/3rd women and few children work.	Few women work.
STATUS OF ALCOHOLISM		Alcoholism is rampant in most households.	More than half households are alcoholic.	Fewer cases of alcoholism.
STATUS OF BORROWING		Most people take loan and are in debt.	Some people take loan.	Few people take loan
		Generally the loans are taken from Money lenders.	The rate of interest is lower at 5%.	The rate of interest is 5%.
		The interest rate is high at 10-15 %.		
DISEASES		Incidence of diarhoea, malaria, skin diseases is high.	Incidences of diarhoea, malaria, skin diseases are less in compared to previous one.	Few incidences of diseases compared to the previous.

Table 14.9 Distribution of poverty pockets on the basis of their vulnerability

	Official	Additional poverty clusters	Total
Most	43	22	65
Moderate	45	21	66
Less	14	---	14
Total	**102**	**43**	**145**

As from the **Table 14.9** it is seen that the percentage of the most vulnerable slums are less then that of the identified in the additional poverty pockets. This shows that most of the vulnerable slums are not getting the benefits of the government policies and facilities and are hidden.

14.4.4. Key Findings

The above vulnerability criteria are used for identification and classification of slums has enriched programming. The most important finding of this exercise is that it helped in locating and listing of registered and additional slums and rationally classifying these on the basis of their vulnerability.

The major findings of the analysis are described below:

1. A significant proportion of slums remain unidentified

There are a significant number of slums which remain unlisted. In Meerut city, 108 slums are listed in the official DUDA list (until year 2003) and another 43 slums have been identified.

2. All slums are not equal in terms of need

Not all the slums in the city are homogenous and there exist a wide disparity. On the basis of certain criteria, the slums are categorized into most, moderate and less vulnerable.

This shows that all slums are not equal and thus need to be addressed differently. The needs and characteristics of different slums might also be different from programmatic intervention approach.

Additional Poverty pockets are more deprived on various counts than registered slums.

3. The proportion of vulnerable slums

In Meerut city 42% of the 108 officially listed slums (by DUDA) are highly vulnerable while corresponding number for Additional Poverty pockets was 51% out of 43 identified additional poverty pockets. The same is pictorially shown in **figure 7.**

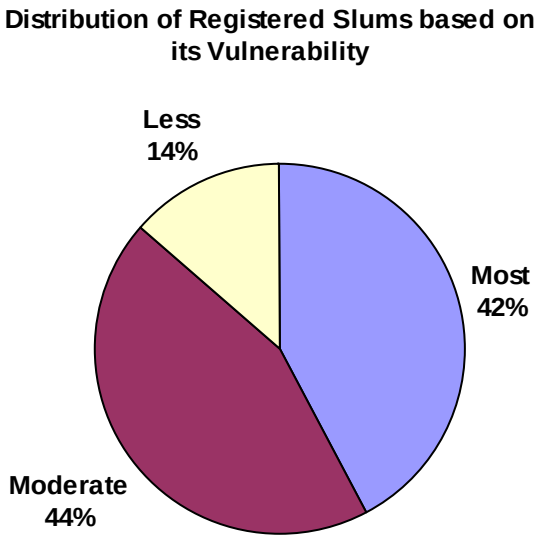


Figure 7. : Distribution of registered slums

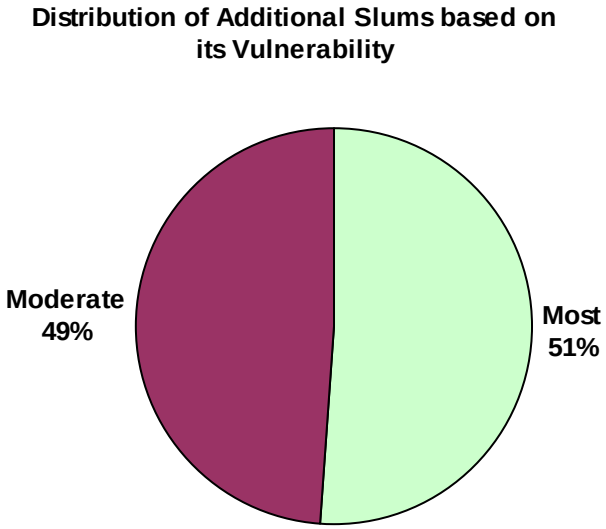


Figure 7. : Distribution of additional slums

Chapter 15.0

Vision for basic services for urban poor

Chapter 15.0 Vision for basic services for urban poor

No matter what the future brings, housing, creation of employment generation, educational facilities, transportation, telecommunication and provision of basic services will continue to be fundamental activities for various urban centers. While preparing City Development Plan, our paramount concern is to have a Vision for the city based on its current weaknesses, strengths, opportunities, potential and threats in order to provide the ideal balance between different current activities and future role of Meerut. It include phase wise vision and goals for providing basic services for urban poor

15.1 Vision Statement

To Develop an Economically Strong, Socially Fair and Environmentally Sustainable City through Participatory Planning and Transparent, Accountable and Flexible Institutional Framework

15.2 Vision and Goal

In order to monitor and evaluate the accomplishment of the stated Vision, goals gave been identified for sector. These goals are 'outcome based' and indicate the performance of the sector from the consumer/ resident point of view.

Table 15.1: Vision and Goals

SECTOR	YEAR		
	2012	2024	2030
CITY VISION	A City that • Provides infrastructural facilities in a socially fair and environmentally sustainable manner • Is poised for further economic prosperity • Encourages participatory governance	A City that • Acts as a node of development in NCR • Has flexible institutional framework	A City that • Is a major urban magnet in India • Has autonomous self sustaining agencies of urban management
Urban Poor	Housing for all, Access to basic services for the majority	Access to Basic services for all	Access to Basic services for all
URBAN REFORMS SECTOR			
Decentralisation	**Partial**	**Major**	**Complete**
Budgeting for the urban poor	Internal earmarking within local body budget	Budgets for basic services for urban poor	

15.3 Present Scenario and Options for Development

Urban poor constitute almost a third of the total population, but the disparity in provision of services is alarming. Poor infrastructural and housing conditions in the slums have led to a dichotomy, where residents of the same city seem to be discriminated against.

15.4 Action Plan

The following action plans have been devised to improve the urban living conditions of the urban poor in the city and help it achieve the vision envisaged for it.

- Ensuring habitability of housing areas of the poor, who may not presently be able to afford all the urban services under user charges system
- Provide housing units to those below poverty line and those without shelter
- Infrastructural improvements in slums.

A. Identification and mapping of all slums help to locate unlisted slums, which are seldom given any benefit of any program and are often more vulnerable.

The information generated on various aspects of slums (housing, sanitation, availability of health services etc.) also helps in identifying important issues which need attention. With the MDGs in perspective, central and state governments are working through various schemes for improving conditions of the urban poor. The needs of specific groups of slums, as gauged through these assessments, should be attempted to be met through these provisions. A significant number of slums in each cities were included in the proposed development interventions, which otherwise would have been missed out.

B. Acknowledgement and inclusion of different vulnerability factors such as social, economic, cultural and environmental factors in the assessment exercise to better understand the specific needs, develop context appropriate intervention strategies.

All slums plotted on the city map will help planners to better plan, implement and monitor the program defining catchments areas (and fixing accountability) and minimizing duplication of efforts. This also helps better understand program implementation options and to implement them more effectively. Decentralized participative processes provide space for giving a human face to urban poverty and mobilizing local stakeholders

C. Very vulnerable communities require deeper programming inputs:

The implementation approach of a program can mitigate more than the basic program objective, by involving the community in a genuine manner and addressing the issue of low self-esteem and confidence. Such an enabling approach is integral to a program with the poorest, so that they are able to access program inputs. This helps them to arrange for their own daily requirements proactively. In the most child health vulnerable slums, the community by virtue of having low social capital would take longer time to be adequately receptive to program efforts. Providers would also require greater persuasion to strengthen service delivery to such disadvantaged slums, since these are difficult to work in.

Chapter 16.0
City Investment Plan

Chapter 16.0 City Investment Plan

The City Investment Plan (CIP) gives an estimate of the level and quantum of investment required to implement the strategies in specific sectors in the CDP over a specified time-frame to attain the sustainable growth and to achieve the agenda goals.

The CIP is worked out duly considering the advice of Technical Experts, our recommendations based on a thorough assessment of existing situation and the constant interaction with different Stakeholders. The projects for system and infrastructure augmentation are derived based on a broad demand - supply gap assessment for each of the service sector. Cost of all these projects have been estimated in CIP and a suitable phasing for different years in the project period have been worked out. Unit costs adapted are based on estimates of similar projects planned/ executed by MNN and other respective departments.

The introduction and description of the sub projects included in the CIP are as follows:

16.1. Basic Services for Urban Poor

Two basic components i.e. housing and infrastructure are dealt separately for estimating cost and separate projects for the same are also identified as part of CIP (target year 2012) are presented in **Table 16.1**. From our analysis, the total investment required for this sector is estimated about Rs. 5109.35 lacs.

Table 16.1

BASIC SERVICES FOR URBAN POOR									
PHASING OF WORKS & EXPENDITURE FOR URBAN POOR (in Rs Lakhs)									
	WORKS	Phase I	I yr.	II yr.	III yr.	IV yr.	V yr.	VI yr.	VII yr.
		(2005-12)		2006-07	2007-08	2008-09	2009-10	2010-11	2011-12
		COSTS		COSTS	COSTS	COSTS	COSTS	COSTS	COSTS
A	**HOUSING PROVISION**								
A1	**PROVISION OF HOUSING UNIT (25SQM) FOR BPL FAMILIES WITH KACCHA HOUSES (2534 UNITS) @ RS. 80000/UNIT**	2027.20		284.00	653.60	526.40	324.00	221.60	17.60
A	**TOTAL**	**2027.20**	**0.00**	**284.00**	**653.60**	**526.40**	**324.00**	**221.60**	**17.60**
B	**INFRASTRUCTURE PROVISION**								
B1	**ROADS**	1483.47		36.57	268.50	242.10	233.10	254.47	448.73
B2	**DRAINS**	213.98		5.25	26.00	38.98	33.03	39.03	71.70
B3	**WATER**	427.47		5.88	42.24	95.91	87.02	67.23	129.21
B4	**STREET LIGHTS**	253.77		6.71	39.39	45.34	40.82	38.92	82.60
B5	**COMMUNITY TOILETS (150SQM X 10)**	418.00		20.00	100.00	100.00	80.00	80.00	38.00
B6	**OTHERS**	285.46		6.53	46.54	50.69	47.27	47.98	86.46
B1-B5	**TOTAL**	**3082.15**	**0.00**	**80.93**	**522.66**	**573.01**	**521.23**	**527.62**	**856.69**
A-B	**GRAND TOTAL**	**5109.35**	**0.00**	**364.93**	**1176.26**	**1099.41**	**845.23**	**749.22**	**874.29**

Chapter 17.0
Financing Options

Chapter 17.0 Financing Options

Current state and local deficits have created a challenging environment in Meerut City to supply infrastructure at a Level of Service (LOS) that is acceptable to its populace.

City Investment Plan estimates a total requirement of Rs 117134 Lacs for different sectors with in a period of 6 years from 2006 to 2012. Out of which Rs 5109.35 lacs is for urban poor looking at the existing climate for infrastructure financing, including the challenges and opportunities for state and local governments JNNURM suggests shifting of priorities and methods of financing infrastructure. CDP prepared under the framework of JNNURM thus looks beyond traditional financing instruments and inviting all stakeholders to the table to efficiently deliver the infrastructure via broad-based solutions.

Details of various Financing options and break up in the form of different funding sources are presented in **Table 17.1**

Table 17.1 – Financing Options

Sr. No.	SECTOR	Investment (in lacs)	Source of Funding (in Rs Lakhs)												
			GoI					GoUP/ ULB**					Beneficiary*		
		2005-12	Total	2006-07	Balance Period	2007-08	Balance Period	Total	2006-07	Balance Period	2007-08	Balance Period	Total	2006-07	Balance Period
H	**BASIC SERVICES FOR URBAN POOR**														
H1	INFRASTRUCTURE PROVISION	3082.15	**1541.07**	40.47	1500.61	326.80	1173.81	**1541.07**	40.47	1500.61	326.80	1173.81			
H2	HOUSING PROVISION	2027.20	**1013.60**	142.00	871.60	261.33	610.27	**1013.60**	142.00	871.60	261.33	610.27			
H1-H2	**TOTAL (SERVICES FOR URBAN POOR)**	**5109.35**	**4087.48**	182.47	2372.21	588.13	1784.08	**2554.67**	182.47	2372.21	588.13	1784.08			

* for housing 10 -12 %
** beneficiary share where applicable included

Chapter 18.0

Financial Shares of different Local Bodies

Chapter 18.0 Financial Shares of different Local Bodies

As 74th Constitutional Amendment is not in place in UP, different local bodies other than Municipal Corporation are involved in providing various services and facilities in Meerut cities. Under JNNURM, the component of local body in the overall city investment plan will be shared as per their current role of different such agencies. Different agencies to execute the projects related to basic services of urban poor (Sub-mission II) are SUDA and DUDA.

ANNEXURE

Annexure I

List of Stakeholders

Annexure I - List of Stakeholders

The following list of stakeholders and NGO's working for the Meerut city are consulted at different stages of preparation of CDP through meetings, general discussions and took and incorporated their vision and suggestions for the development of the Meerut City:

a) List of Government Officials and Departments:

- District Magistrate
- Divisional Commissioner
- Municipal Commissioner
- Chief Engineer, U.P. Jal Nigam, Meerut
- Chief Engineer, P.W.D., Meerut
- Chief Engineer (Water, Drainage, Sewerage, Solid waste, Roads), Nagar Nigam, Meerut.
- Social Welfare Department, Meerut.
- C.M.O, Meerut
- R.T.O, Traffic Depts., Meerut.
- Bus Unions and Railway Depts., Meerut
- Chairman, Cantonment Board, Meerut
- C.T.P, Meerut Development Authority, Meerut
- Housing Board, Meerut
- Project Officer, D.U.D.A, S.U.D.A, Meerut.
- Pollution Control Board, Meerut
- Depts. of Health, Meerut
- Depts. of Education, Meerut
- UPSIDC
- Police Department
- Power Corporation
- Fire Department
- Chamber of Commerce
- Tourism Department.
- Horticulture Department.
- Sports Department
- U.P Bridge Corporation
- Dept. of Forest and Environment.

b) List of NGO's:

- Bhartiya Sewa Samiti
- Grameen Vikas Sansthan
- Jan Kalyan Sansthan
- Manav Samaj Kalyan Sewa Samiti
- Pupils Red Rose
- Samaj Vikas Sansthan
- Institute of Brothers of St Gabriel St.Charles
- Janchetna Yuva Club
- Mahila Vikas Club
- N.V.Gadgil National Society
- Pupils Red Rose
- Subharti Sewa Sansthan
- The Catholic Diocese of Meerut
- Vishal Mahila Sewa Samit

Annexure II

Details of Meetings with Stakeholders

Annexure II - Details of Various Stakeholders' Meeting held for CDP, Meerut

DATE	PARTICIPANTS	ISSUES COVERED
17th May 2006	• Team members, BCEOM, New Delhi • Executive Engineer, Jal Nigam, Meerut • Chief Town Planner, MDA, Meerut • Chief Engineer, Nagar Nigam, Meerut	• Discussion on data requirements for the study • General Discussion about the present city condition. • Discussion on the main bottlenecks & problems of the city.
19th May 2006	• Team members, BCEOM, New Delhi • Executive Engineer, U.P. Jal Nigam, Meerut • Chief Town Planner, MDA, Meerut • Executive Engineer, Nagar Nigam, Meerut • Assistant Engineer, U.P. Jal Nigam, Ghaziabad • Additional Commissioner, Meerut	• Discussion on the data requirements and submission of required formats for the same. • General Discussion on the present city condition and role of various organizations involved
20th May 2006	• Team members, BCEOM, New Delhi • Executive Engineer, U.P. Jal Nigam, Meerut • Chief Town Planner, MDA, Meerut • Executive Engineer, Nagar Nigam, Meerut • Assistant Engineer, U.P. Jal Nigam, Ghaziabad • Project Officer, Housing board, Meerut • Secretary, M.D.A, Meerut • Executive Engineer, P.W.D, Meerut • Executive Engineer, Bridge Corporation, Meerut • Executive Engineer, National Highway, Meerut • C.M.O, Meerut • Regional Manager, UPSRTC, Meerut • Senior police Superintendent, Meerut • Senior Manager, Electricity Board, Meerut • Regional Transport Officer, Meerut • Chief Fire Officer, Meerut	• Discussion on finalizing the methodology for the preparation of inception report. • Data to be required with all other organizations involved and view sharing on various problems of the city. • Discussion on different aspects to be covered under CDP and formulation of strategies to be work upon. • Discussion on the general view and suggestions for defining future course of action ensuring a balanced city development.
26th May 2006	• Team member, BCEOM, New Delhi • Municipal Commissioner, Nagar Nigam, Meerut • Executive Engineer, Nagar Nigam, Meerut	• Discussion on the present stage of the institutional reforms and financial framework of Nagar Nigam, Meerut.

DATE	PARTICIPANTS	ISSUES COVERED
	• Accounts Officer, Nagar Nigam, Meerut	
16th June 2006	• Team member, BCEOM, New Delhi • Executive Engineer, Nagar Nigam, Meerut • Assistant R.T.O, Meerut	• Discussion on the current status of the Traffic Condition of the city • Time series data on "vehicles on roads" in Meerut City
19th June 2006	• Team members, BCEOM, New Delhi • V.C., M.D.A, Meerut • Municipal Commissioner, Nagar Nigam, Meerut • Executive Engineer, U.P. Jal Nigam, Meerut • Executive Engineer, Nagar Nigam, Meerut • Assistant Engineer, U.P. Jal Nigam, Ghaziabad • Senior Manager, Yamuna Pollution Control Board, U.P. Jal Nigam, Ghaziabad • Project Officer, U.P. Jal Nigam, Ghaziabad	• Discussion on the rapid assessment report and data required for the same. • Discussion about the infrastructure related problems and other aspects like city environment demand supply gaps, future demand assessment and key issues required for the city development.
27th June 2006	• Team members, BCEOM, New Delhi • Executive Engineer, Nagar Nigam, Meerut • Assistant Engineer, DUDA, Meerut	• Assessment of Present situation of urban poor in the city and various schemes for the urban poor. • Existing infrastructure and services status for the slums.
29th June 2006	• Team members, BCEOM, New Delhi • Executive Engineer, Nagar Nigam, Meerut • Executive Engineer, U.P. Jal Nigam, Meerut • Assistant Engineer, U.P. Jal Nigam, Meerut • Assistant Engineer, U.P. Jal Nigam, Ghaziabad • Project Manager, U.P. Jal Nigam, Ghaziabad	• Existing condition infrastructure and desired improvement measures required for the city development. • Status of water, sewerage, drainage supply network system • Procurement/ updating/ Preparation/ of Network maps for above services

DATE	PARTICIPANTS	ISSUES COVERED
4th July 2006	• Team members, BCEOM, New Delhi • Municipal Commissioner, Nagar Nigam, Meerut • ADM, Meerut. • Chief Engineer, Nagar Nigam, Meerut • Executive Engineer, Nagar Nigam, Meerut • Executive Engineer, U.P. Jal Nigam, Meerut • Assistant Engineer, U.P. Jal Nigam, Meerut • Assistant Engineer, U.P. Jal Nigam, Ghaziabad • Project Manager, U.P. Jal Nigam, Ghaziabad • Information Officer, Meerut	• Discussion on the work progress for the preparation of CDP and suggestions for the same. • Discussion on the role of NGO's and their involvement in the city activities and reaching grass root level • Outstanding data required from different departments and discussions on the same.
11th July 2006 Session 1	**Stakeholders Meeting:** • Team members, BCEOM, New Delhi • Team Members, Craphts, New Delhi • Municipal Commissioner, Nagar Nigam, Meerut • Chief Engineer, Nagar Nigam, Meerut • Executive Engineer, Nagar Nigam, Meerut • Sr. J.E., (Jal), Nagar Nigam, Meerut • Executive Engineer, U.P. Jal Nigam, Meerut • Assistant Engineer, U.P. Jal Nigam, Meerut • Assistant Engineer, U.P. Jal Nigam, Ghaziabad • Project Manager, U.P. Jal Nigam, Ghaziabad • Tax Officer, Nagar Nigam, Meerut. • Chamber of Commerce, Meerut • R.M., Pollution Control Board, Meerut. • E.E, Solid Waste Dept. , Nagar Nigam, Meerut • U.P. Fire Department, Meerut • Forest Department, Meerut • RTO, Meerut • Horticulture Department, Meerut • Asst. Engineer, DUDA, Meerut • Addl. CMO, Health Department, Meerut • Social Welfare Department, Meerut	• Discussion on various critical issues identified in the draft rapid assessment report • Prioritizing different problems of the city • Sharing of vision on different sectors • Selecting and assessing different alternative solutions • Finalizing various strategies for development • Taking note of suggestions and views of different stakeholders for the preparation of CIP. • Discussion on the status of the reforms and budgetary system • Assigning priority to various competing requirements of the city such as transport, water, sanitation, environment degradation, slums etc.

DATE	PARTICIPANTS	ISSUES COVERED
11th July 2006 Session 2	**NGO's:** • Sahyog Sewa Samiti • Gramin Samaj Vikas Kendra • Gramin Vikas Sansthan Jyoti • Jan Kalyan Sanshthan • Subharti Sewa Samiti • Vishva Shanti Vikas Sansthan • Sahyogi Sewa Samiti **Media:** • Naradvani Newspaper • Hira Times Newspaper	• Discussion on role of NGOs in delivering the desired goods and services to the target population at the grass root level • View sharing and identification of major issues hampering the progress of the city • Strategy formulation • Discussion on preparation of a workable action plan duly addressing the priorities of the city
25th July 2006	• Team member BCEOM & CRAPHTS • Municpal commissioner, Nagar Nigam • Ex Engineer, Nagar Nigam • Ex Engineer, UP Jal Nigam • Assistant Engineer U.P. Jal Nigam	• Discussion and presentation of draft CDP including the city investment plan • Obtaining feedback on various identified projects and ascertaining their adequacy
27th July 2006	• Team member BCEOM & CRAPHTS • Officials of RCUES • Executive Engineer Jal Nigam, Meerut • Executive Engineer Jal Nigam, Ghaziabad • Consultants preparing CEP for Agra & Mathura	• Discussion and presentation of Draft CDP & CIP • Discussion of adequacy of various projects identified.
2nd August 2006	• Joint Director, NCR PB • Transport Planner	• Discussion on average of CDP and future role of Meerut in NCR
3rd August 2006	• Team Member BCEOM & CRAPHTS • Municipal Commissioners, MNN • Executive Engineer Jal Nigam, Meerut • Executive Engineer Jal Nigam, Meerut • Assistant Engineer Jal Nigam, Meerut	• Complication of maps working existing infrastructure and proposed projects • Seeking final consent on various identified projects • Commitments from MNN regarding Urban reforms
3rd August 2006	• Team Member BCEOM • Divisional Commissioner • Municipal Commissioner • Executive Engineer MNN	• Presentation of draft CDP • Seeking opinion and final approval on proposed projects

DATE	PARTICIPANTS	ISSUES COVERED
3rd August 2006	• Team Member BCEOM • Member of Parliament • Executive Engineer, MNN	• Presentation of draft CDP • Seeking opinion and final approval on proposed projects
4th August 2006	• Team Member BCEOM • MLA Meerut Cantt • MLA • Former Mayor • Former MLA Meerut Cantt	• Presentation of draft CDP • Seeking opinion and final approval on proposed projects • Exchange of ideas for strengthening the proposed projects

Annexure III

Outcomes as per toolkit

Annexure III – Outcomes as per Toolkit given in JNNURM

Table 1: Population Growth

Year	Population (Lakh)	Average Annual Growth Rate (%)
1981	5.37	3.74 (1971-81)
1991	8.50	4.70 (1981-91)
2001	11.71	3.26 (1991-01)
2005 (Estimated)	13.20	3.03 (2001-05)
2011 (Projected)*	15.27	2.70 (2001-11)

** Semi-log graph method* **Source**: Census 2001

Table 2: Composition of Growth

Composition	Population Increase During			
	1981-91	% of Total	1991-2001	% of Total
Natural Increase*	-	-	-	-
In-Migration*	-	-	-	-
Jurisdictional Change	Nil	Nil	Nil	Nil
Total Increase	313184	58.36	321186	37.80

* Details not available

Table 3: Social Composition of Population

Year	Number of the People BPL
2004/05 (Estimated)	**539***

* Source: District Supply Office, Meerut

Table 4: Access of the Slum Dwellers to Basic Services (2005)

Number of Slum Dwellers	Percentage of Slum Dwellers Having Access to			
	Water Supply	Drainage System	Waste Service Collection	Sewerage
4,16,570	49.4%	83.3%	Exact details not available	24.0%

District Urban Development Agency (DUDA), Meerut

Table 5 Workforce Participation

Year	Total Popl.	Total Worker	WPR %
1961	293853	89210	30.63
1971	357754	202342	56.56
1981	536615	238532	44.45
1991	849799	291552	34.41
2001	1170985	395263	33.75

Table 6: Economic Base, Occupational Distribution

Occupation Category	1991		2001	
	Number of Workers (Lakh)	% of Total	Number of Workers (Lakh)	% of Total
Primary Sector	23912	10.4	26230	8.0
Household Industry	12178	5.3	17213	5.2
Manufacturing	51109	22.3	72133	22.0
Electricity, Gas and Water Supply	(OS)	-	(OS)	-
Construction	8112	3.5	12295	3.7
Transport, Storage and Communication	15197	6.6	24591	7.5
Banking and Insurance	(OS)	-	(OS)	-

Occupation Category	1991		2001	
	Number of Workers (Lakh)	% of Total	Number of Workers (Lakh)	% of Total
Trade and Business	49174	21.4	68854	21.0
Other Services (OS)	69748	30.4	106559	32.5
Total	229430	100.0	327875	100.0

(OS) – included in other services

Table 7: Municipal Revenue Income

Year	Revenue Account Receipts (Rs. Lakh)			
	Tax	Non Tax	Transfers Including Grants	Total
2001/02	730.02	510.97	3269.08	4510.07
2002/03	686.61	496.69	3594.61	4777.91
2003/04	998.99	446.78	3477.16	4922.93
2004/05	693.02	644.75	3776.23	5114.00

Table 8: Municipal Revenue Expenditure

Year	Revenue Account Expenditure (Rs. Lakh)				
	Establishment (Wages and Salaries)	Operation and Maintenance	Interest Payment	Others	Total
2001/02	2514.17	1700.17	Nil	Nil	4214.34
2002/03	2593.99	2335.89	125.82	Nil	5055.70
2003/04	2706.39	2506.74	Nil	Nil	5213.13
2004/05	2508.55	2186.33	Nil	Nil	4694.88

Table 9: Municipal Capital Receipts

Year	Capital Receipts (Rs. Lakh)				
	State Government		Financing Institutions	Market	Total
	Loans	Grants			
2001/02	4167.50	2801.58	Nil	Nil	3269.08
2002/03	247.03	3347.58	Nil	Nil	3594.61
2003/04	80.28	3396.88	Nil	Nil	3477.16
2004/05	141.65	3634.58	Nil	Nil	3776.23

Table 10: Finances of Meerut Nagar Nigam

Year	Expenditure (Rs. Lakh)	Income (Rs. Lakh)
2001/02	-	-
2002/03	4777.90	4929.88
2003/04	4922.93	5213.13
2004/05	5114.00	4694.87

Source: Pre Feasibility Report of sewerage Scheme under JNNURM for Meerut Nagar

Table 11: State of the Infrastructure

Item	Details	Current State
Water Availability	Installed Capacity Released/Daily	185 MLD 165 MLD
Source of Water Supply	*Within City Limits* 10-50 Sq. Km. 50-100 Sq. Km.	 Tube Wells Tube Wells *Hardly 2.5 MLD is from Surface water*
Water Coverage	Population Covered By Public Water Supply % Per Capita Supply (lpcd) Supply Duration (Hrs.)	70% 158 lpcd 8 Hrs
Wastewater	Wastewater Generated Daily (Mld)	112 MLD

Item	Details	Current State
Disposal	Disposal (Underground Sewerage) Capacity (Mld)	45 MLD
	Present Operating Capacity (Mld)	34 MLD
	Households Connected To Underground Sewerage	25%
Solid Waste	Waste Generation Daily (Tonnes/Day)	520 T per Day
	Collection Daily (Tonnes/ Day)	320* T per Day
Storm-water Drainage	Average Annual Rainfall (Cm.)	71.4 cm
	Length Of Storm-water Drains (Km.) – 12 Nalas	43 km
Roads and Road Transport	Roads:	
	Municipal Roads (Km.)	970.0 km (50% *Kutcha*)
	State-Level Roads (Km.)	355.5 km
	Cantonment Roads (Km)	65.2 km
	Public Transport:	
	Buses (Number of buses on city routes)	177
	Other Buses (including UPSRTC)	1091
	No of School Buses + Private Buses	125 + 25 (150)
	Bus Capacity (no of Passengers)	• 25 - 35 seat Mini buses • 54 seat Std buses
	Private Registered Vehicles:	
	Two Wheelers	173375
	Cars/ Jeep	25139
	LCV	1160
	Truck	7514
	Tempo/ Taxi/ Auto Rickshaws	2557
	Bus	939
	Tractor	53812
	Para Transit Service Modes:	
	Tempo/ Taxi (Number of permits)	583
	Auto Rickshaws (Number of city route permits)	523
Street Lighting	Number of Street Light Poles	29001
	% of Area Coverage	80%

** not on daily/ regular basis*

Table 12: Cost Recovery in Urban Infrastructure

Infrastructure	Cost Incurred in Service Provision (Rs. Lakh)			Direct Recoveries (Rs. Lakh)		
	2002/03	2003/04	2004/05	2002/03	2003/04	2004/05
Water Supply	350.00	350.00	400.00	316.25	309.04	256.51
Sewerage and Sanitation	2.00	1.50	1.00	0.68	1.03	0.50

Table 13: Level of Aggregate Investment in Urban Infrastructure: 2001/02 to 2004/05

	Public Investment*	Private Investment
Water Supply	**1745.83**	Nil
Sewerage And Drainage	**1309.37**	Nil
Solid Waste	**1309.37**	Nil
Roads (Municipal)	**2618.74**	Nil
Street Lighting	**436.46**	Nil
Storm Water Drainage	**1309.37**	Nil
Total:	**8279.13**	Nil

*** in Rs crs**

Table 14: Environment Services

	Quality
Air	SPM : 550 - 850 ug/m3, NOx : 17 – 53 ug/m3 SO2 : 7 – 12 ug/m3
Water	Ground water at 35-38m TDS level of ground water - 329 pH level - 8.4
Waste Water	No Sewerage treatment plant
Solid Waste	

Table 15: Land Supply (2001)

Developed Land (Ha.)	Undeveloped and Under Developed Land Under Use (Ha.)
5712	8511.4

Table 16: Land Use Break-Up

Category	% Area (2001)
Residential	**47.68**
Commercial	**2.59**
Industrial	**9.09**
Public Semi-Public	**14.39**
Recreational (Park & Open Area)	**16.58**
Transportation	**9.67**
Total Area:	**100**

Table 17: Area under Different Uses

City Stock	Area (Ha)
Housing	6781.8
Infrastructure ▪ Roads and Streets ▪ Water Distribution Network ▪ Sewerage and Drainage	 1374.9 - -
Industry	1292.8
Business Districts	368.3

Table 18: Institutional Responsibility

Urban Infrastructure	Planning And Design	Construction	Operation And Maintenance
Water Supply	UP Jal Nigam	UP Jal Nigam	MNN
Sewerage	UP Jal Nigam	UP Jal Nigam	MNN
Drainage	UP Jal Nigam	UP Jal Nigam	MNN
Storm Water Drainage	UP Jal Nigam	UP Jal Nigam	MNN
Solid Waste Disposal	MNN	MNN	MNN
Municipal Roads (Including Flyovers)	PWD, MNN, MDA, CB, UP Bridge Cooperation	PWD, MNN, MDA, CB, UP Bridge Cooperation	PWD, MNN, CB

Table 19: Role of the Private Sector in Urban Infrastructure Provision

Urban Infrastructure	Role Of The Private Sector (Specify)
Water Supply	Informal unorganized supply by various private parties through water tankers.
Sewerage	Nil
Drainage	Nil
Storm Water Drainage	Nil
Solid Waste Disposal	Informal unorganized involvement of rag pickers facilitating segregation of solid waste.
Municipal Roads (Including Flyovers)	Nil
Street Lighting	Nil

Table 20: Vision and Goals

SECTOR	YEAR		
	2013	2024	2031
CITY VISION	A City that • Provides infrastructural facilities in a socially fair and environmentally sustainable manner • Is poised for further economic prosperity • Encourages participatory governance	A City that • Acts as a node of development in N.C.R. Region • Has flexible institutional framework	A City that • Is a major urban magnet in India • Has autonomous self sustaining agencies of urban management

SECTOR	YEAR		
	2013	2024	2031
URBAN DEVELOPMENT SECTORS			
Water Supply	• Demand – Supply gap to be bridged by 2009 • 12 Hrs. water supply by 2013 • Increase in share of surface water sources in city's water budget.	• Equitable distribution at city level at 135 lpcd • Water Auditing	• 24X7 water supply at 150 lpcd • Surface water sources to share 50% of city's water demand
Sewerage & Sanitation	• Operational STP's and upgraded Piping system • Performance Monitoring systems in place	• Fully operational U.G. Sewerage system for the entire city	• Sewage and drainage segregation • Reuse of effluent for farm land etc.
Solid Waste Management	• Daily collection and disposal of solid waste • Segregation of Municipal and Bio waste	• Sorting, segregation and disposal of solid waste	• Resource recovery, recycling and reuse of wastes • Environmentally sustainable disposal systems
Urban Transport	• Public transport to share 25% of passenger traffic • All weather road system in the city	• Public transport to share 35% of passenger traffic • Improved riding quality	• Public transport to share 50% of passenger traffic • Optimum mass rapid transit system
Urban Drainage	• Operational SW Drainage system • Segregation of Industrial effluent and storm water	• Water recharging through SW Drainage system	• Restoration of city's natural drainage systems
Urban Poor	Housing for all, Access to basic services for the majority	Access to Basic services for all	Access to Basic services for all

SECTOR	YEAR		
	2013	2024	2031
URBAN REFORMS SECTOR			
Decentralisation	**Partial**	**Major**	**Complete**
Land & Housing markets			
Transparency & Accountability			
Community Participation			
Financing Management Services	O&M costs of urban services to be recovered form user charges		
Municipal Finances			
Budgeting for the urban poor	Internal earmarking within local body budget	Budgets for basic services for urban poor	

Table 21: Strategy Formulation

Sector	Criteria	Selected Strategy	Alternative Strategy
Water Supply (2 criteria)	***Criteria 1*** Non- Availability of surface water source	Improvement of UG Sources and strengthening of existing networks, laying of new networks & gradual improvement in dependence on surface water sources	
	Criteria 2 Availability and access to surface water source		Shifting dependence on surface water for environmental sustainability of water supply.
Sewerage	Feasibility and operationabilty of the system	Decentralised collection, treatment and disposal	Centralised collection, treatment and disposal
Strom water	Efficiency and	Strengthening,	Developing independent

Sector	Criteria	Selected Strategy	Alternative Strategy
Disposal	economy of disposal system	upgradation and Use of natural drains as disposal systems	road drainage systems and reducing dependence on natural drains
Urban Transport (2 criteria)	***Criteria 1*** Urban growth (spatial and demographic) is as estimated	Strengthening of existing system Increasing share of public transport system	
	Criteria 2 Urban growth much more than estimated		Development of Mass Transit system and corresponding development o transport infrastructure

Annexure IV

Slums listed by DUDA in Meerut

Annexure IV - DUDA Listed Slums in Meerut City

Slum Name	Population
Mulltanagar	3996
Shekhpura	3694
Kishanpura	4768
Kothi Atanus	2055
Macheran	7450
Lallapura	5877
Sabun Godam	5637
Shiva Hari Mandir	2359
Rithani	10160
Kanchanpura	2570
Raunakpura	3679
Maqbara Ghosiyan	3326
Maqbara Digge	4890
Bhagavatpura	10980
Maliyana	10376
Lakshmanpuri	4990
Purva Elahi Baksha	4400
Firoz Nagar	7275
Saddiq Nagar	4869
Tarapuri	9246
Shyam Nagar	14075
Rashid Nagar	7320
Shakoor Nagar	7865
Indra Nagar**	8909
Kanshi	8075
Acharoda	3925
Sofipura	3925
Pulheda	3868
Roshanpur Drorali	6256
Purva Ahiran	1737
Mohanpuri	2625
Rambagh	920
Shahpir Gate	11481
Abdullahpur	4143
Kasauru Baxser	1451
Kasauru Kera	2840

Slum Name	Population
Yadgarpur	1973
Ambedker Nagar(Mavana Bus Stand)	1491
Shobhapur	2922
Khadroli	4820
Lakhvaya	2017
Drabaka	840
Dugravali	1674
Dayampur	2680
Mangolpuri Kankarkhera	1580
Jassu(Kankarkhera)	
Ambedker Nagar(Kankerkhera)	2009
Janata Colony (Modipuram)	915
Mohammadpur Lala	3794
Shiva Shakti Nagar**	8312
Ambedker Nagar (Delhi Road)	687
Balmiki Nagar(Delhi Road)	625
Beripura	2025
Ganeshpuri	2531
Gautam Nagar	3640
Mia Mohammad Nagar	2090
Gulzar Abrahem	2180
Jawaher Nagar**	3068
Golabarh	5067
Phazalpur**	4714
Dhavai Nagar	10400
Brahmapuri	7960
Purva Tahir Hussain	2325
Jakir Hussin Colony**	13345
Kajipur	2906
Ghosipur	3732
Shergarhi	2712
Saraikaji	3945
Baghdiyan	3470
Ishwarpuri	3275
Podivada	2396
Ramgari	365
Kaliyagari	2355
Kuti	1810

Slum Name	Population
Aurangshahpur Digge	2360
Ambedker Nagar Garh Road	845
Rafiqpura	3396
Shivpuram**	4676
Mohkampur	4372
Kunda	2630
Jayabhim Nagar	9662
Luharpura	2175
Islamabad	7813
Jatauli	3640
Dantal	
Naglatashi	5280
Manjur Nagar	4217
Karim Nagar	6245
Umar Nagar	4549
Jahidpur	3641
Fatehullahpur	2700
Noor Nagar	2920
Lishari	5038
Lakhipura	5754
Jayadevi Nagar**	2250
Zaidi Farms	1608
Banbatan	
Sundra Urf Pootha	
Subhash Nagar	
Indrapuram**	
Katai Mill	
Uttam Nagar**	

Source: DUDA, Meerut

Annexure V

Ward wise List of Identified Slums and Additional Poverty Pockets Identified

Annexure V- Ward wise List of Listed Slums and Additional Poverty Pockets Identified

Ward No.	Slum No.	Name
1	90	Shiv Hari Mandir
	54	Lallapura
2	12	Bhagvatpura
	21	Ganeshpuri
	25	Guljar Abrahim
	51	Laxmanpuri
	3A	Alok Vihar (Horam Nagar)
	8A	Bhumia Ka Pul
3	58	Maliyana
4	72	Palheda
	95	Sofipur
5	4	Ambedkar Nagar (Garh Road)
	36	Jay Bheem Nagar
6	15	Dayampur
	17	Dabaka
	35	Jawahar nagar
	93	Sobhapur
7	19	Fatehullapur
	55	Lisari
	69	Noor Nagar
8	33	Jassu (Kankarkhera)
9	70	Phazalpur
10	24	Golabarh
	88	Shekhpura
	27A	Moksh Puri
11	3	Ambedkar Nagar (Delhi Road)
	18	Dungravali

	49	Kunda
	66	Mohkampur
	92	Shivpuram
	97	Sundra Urf Putha
12	7	Aurangshahpur Diggie
	89	Shergarhi
13	40	Rithani
	81	Kanchanpura
14	1	Abdullapur
15	101	Yadgarpur
16	14	Dantal
	34	Jatauli
17	No Slums	
18	23	Ghosipur
	30	Jahidpur
	38	Kajipur
	17A	Iqbal Nagar
	18A	Jamuna Nagar
19	11	Beripura
	27	Dabaka
	100	Uttam Nagar
	38A	Ramesh Vihar
20	67	Multan Nagar
	12A	Chandra Shekhar
	40A	Ratan Nagar
21	78	Ram Garhi
	5A	Asha nagar (Bhawani Puram)
	36A	Putli Ghar (Bhawanipuram)
	37A	Rajiv Gandhi Colony (BhawaniPuram)
22	96	Subhas Nagar

23	28A	New Govind Puri
24	64	Mohmmadpur Lalla
	22A	Kasam Pura
25	No Slums	
26	2	Acharoda
	41	Kanshi
	45	Katai Mill
	30A	PartaPur
27	59	Mangalpuri (Kankarkhera)
	68	Nagla Tashi
28	43	Kaseru Baxar
	10A	Baxar Khera
29	No Slums	
30	13	Brahmpuri
	22	Gautam Nagar
	26	Indra Nagar
31	No Slums	
32	47	Kishanpura
	83	Sabun godam
	11A	Chandra Lok
	35A	Pushp Vihar
33	46	Khadroli
	53	Lakhvaya
	14A	Gulab Murli Pur
34	6	Ambedkar Nagar (Mawana Bus Stand)
35	No Slums	
36	65	Purani Mohanpuri
37	73	Purva Ahiran
	74	Purva Elahi Baksh
	86	Shahpir Gate

	32A	Purva Abdulwari
	34A	Purva Sheikh Lal
38	5	Ambedkar Nagar (Kankarkhera)
	91	Shiva Shakti Nagar
	31A	Prem Vihar
39	32	Janta Colony (Modipuram)
	82	Roshanpur Daroli
40	37	Jaya Devi Nagar
41	No Slums	
42	No Slums	
43	50	Kuti
44	8	Baghdiyan (Mata ka Bagh)
45	15A	Hasam Pura
46	76	Rafiqpura
	33A	Purva Deen Dayal
47	No Slums	
48	No Slums	
49	42A	Sanjay Nagar
50	9A	Budhana Gate (Khatta Road)
	24A	Kumhar Mandi (Sotegunj)
51	28	Ishwarpuri (Brahmpuri)
52	29A	Phool bagh (Nale Wala Road)
53	No Slums	
54	19A	Jatav Gate
	41A	Ravindra Puri
55	No Slums	
56	No Slums	
57	9	Balmiki Nagar (Delhi Road)
	7A	Bangali Basti (Kusth Ashram)
58	26A	Maqbara Abbu

59	84	Sadiq Nagar
60	77	Rambagh
61	71	Podivada
62	29	Islamabad
	56	Luhar Pura
63	31	Jakir Hussain Colony
	16A	Alimpura (Behind Sadar Thana)
	39A	Rasul Nagar
64	10	Banbatan
	48	Kothi Atanus
65	99	Umar Nagar
	4A	Ansar Pura
66	No Slums	
67	No Slums	
68	No Slums	
69	63	Mia Mohammad Nagar
	79	Rashid Nagar
70	20	Firoz Nagar
	87	Shakoor Nagar
71	No Slums	
72	94	Shyam Nagar
	98	Tarapuri
73	1A	Ahmed Nagar
	13A	Fakruddin (Bani Sarai)
74	6A	Ashiyana Colony
	21A	Kabir Nagar
75	52	Lakhipura
76	31	Jakir Hussain Colony
	16A	Humayun Nagar
77	31	Jakir Hussain Colony

78	16	Dhavai Nagar
	42	Karim Nagar
79	60	Manjoor Nagar
	102	Zaidi Nagar
80	No Slums	
Cantt.	44	Kaseru Khera
	57	Macheran
	61	Maqbara Diggie
	62	Maqbar Ghoshiyan
	75	Purva Tahir Hussain
	80	Raunakpura
	20A	Jubligunj
	23A	Khanna Ki Kothi
	25A	Lal Kurti
	43A	Tondon Mohalla

** #A – Additional Poverty Clusters

MAPS

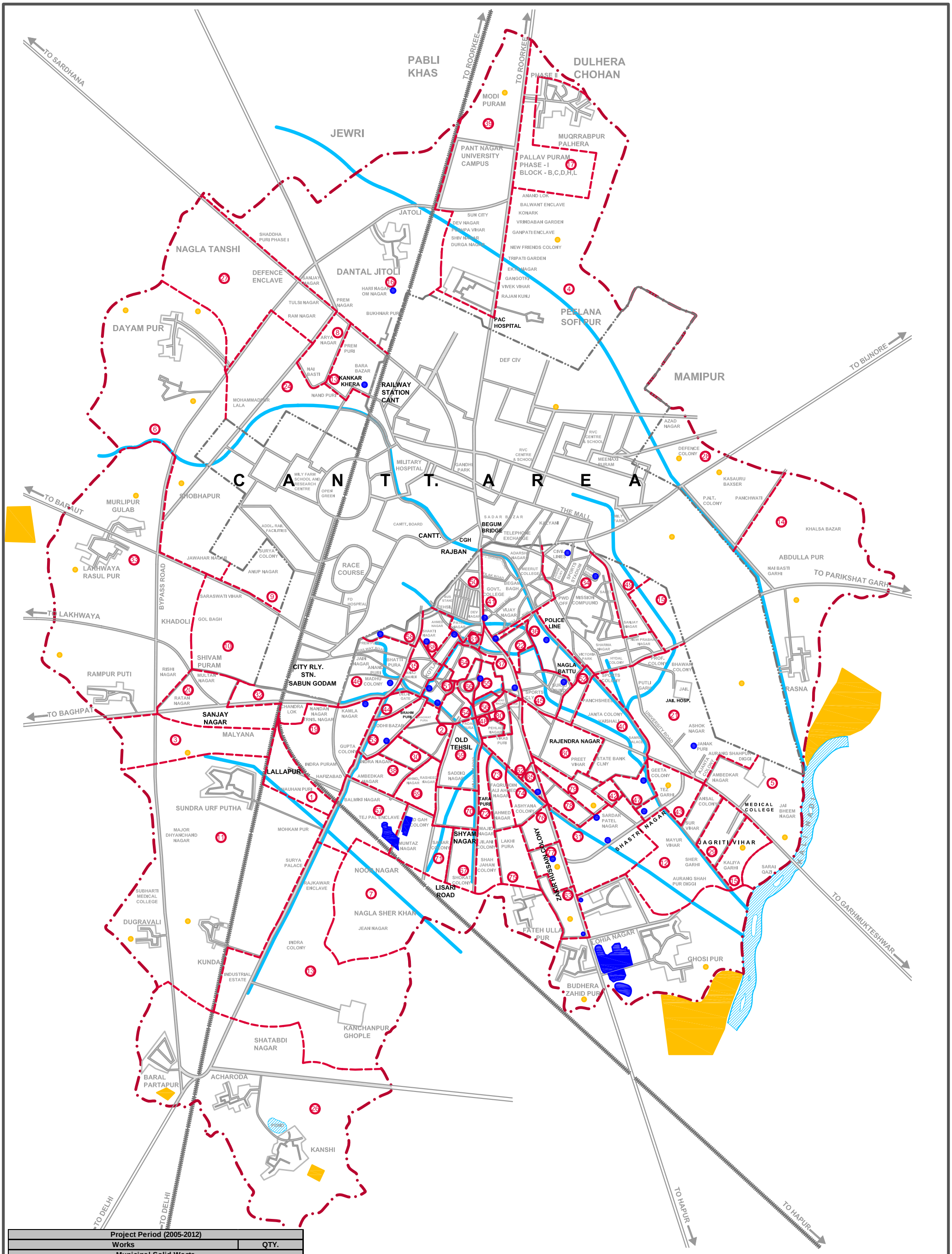
MEERUT CITY WATER SUPPLY

Project Period (2005-2012)	
Work	**QTY.**
Renovation Works	
REPAIR OF PUMP HOUSES	85 NOS.
REPAIR OF OHTs & CWRs	38 NOS.
REPLACEMENT OF PIPING	143 KM.
REPAIRS OF SURFACE WW-BHOLA-KI-JHAL	I NO.
Electrical and Mechanical Works	
REPLACEMENT OF PUMPING PLANTS	46 NOS.
REBORING OF TUBE WELLS	13 NOS.
CONST. OF NEW TUBE WELLS (2500 lpm)	94 NOS.
Construction of Overhead Tanks	
250 KL	10 NOS.
500 KL	18 NOS.
750 KL	21 NOS.
1000 KL	17 NOS.
1500 KL	11 NOS.
2000 KL	5 NOS.
2500 KL	8 NOS.
Distribution System	
New Lines	
Main Supply Line from Ganga Canal	14 KM
AC LINES FOR CLASS-10	73 KM
PVC LINES OF 4KG/CM2	604 KM
Duplicating Pipe Lines	
WITH AC PRESSURE PIPE OF CLASS-10	38 KM
WITH PVC PIPE OF 4 KG/CM2	105 KM
Rising Main	
FROM REBORED T.W.s	7 KM

SCALE : 1:25000

0.5 0.25 0 0.5 1

- Existing Tubewells
- Existing Overhead Tanks
- Existing Trunk Lines (750 mm)
- Existing Branch Lines (450- 300 mm)
- Existing Branch Lines (Below 300 mm)
- Proposed Tubewells
- Proposed Overhead Tanks



Project Period (2005-2012)	
Works	**QTY.**
Municipal Solid Waste	
CONTAINERIZED WHEEL BARROWS (11340 NOS.)	2491
CONTAINERIZED TRICYCLES (756 NOS.)	166
COMMUNITY BINS FOR SLUMS (15120 NOS.)	3322
SEAMLESS HANDCARTS FOR SILT REMOVAL (1200 NOS.)	332
CLOSED DUMPERS (4.5CUM x 1124 NOS.)	249
CLOSED DUMPERS (7CUM 1259 NOS.)	276
CONTAINERS FOR DOMESTIC HAZARDOUS WASTE (190 NOS.)	42
SMALL VEHICLES (COLLECTION) (60 NOS.)	13
DUMPER PLACER MACHINE (164 NOS.)	37
BULL/WHEEL DOSERS (9 NOS.)	2
ASPHALT FLOORING-STORAGE DEPOTS (2393 NOS.)	526
COMPOSTING OF WASTES	1
INCINERATOR PLANTS (3 NOS.)	2
LANDFILL SITE DEVELOPMENT (459 Tonnes)	102 tonnes
DEPOTS (2NOS.) FOR VEHICLES&MAINTENANCE (@ 2500 SQ.M.)	3322 SQ.M.
Bio- medical Wastes	
VAN FOR HOSPITAL WASTE COLLECTION (39 NOS.)	9
INCINERATORS (5 NOS.)	3
BUILDING FOR INCINERATORS (5000 SQ.M.)	3322 SQ.M.

SCALE : 1:25000

0.5 0.25 0 0.5 1

Existing Land Fill Site

Existing Collection Centre

Proposed Land Fill Site

Proposed Collection Centre

MEERUT CITY SOLID WASTE MANAGEMENT SCHEME

MEERUT CITY SEWERAGE SCHEME

Project Period (2005-2012)	
Renovation & Strengthening Works	
Works	**QTY.**
RENOVATION OF EXISTING MAIN PUMPING STATION (1 NOS.)	1 NOS.
RENOVATION OF INTERMIDIATE PUMPING STATIONS (7 NOS.)	7 NOS.
REPLACEMENT OF PUMPING STATIONS (12 NOS.)	12 NOS.
DUPLICATE TRUNK SEWER LINE (6 KM)	6 KM
DUPLICATE DISTRIBUTION SEWER LINE (10 KM)	10 KM
DESLUDGING OF EXISTING SEWERS (55.56 KM)	55.56 KM
New Constructions	
CONST. OF SEWAGE TREATMENT PLANT (2X100MLD)	27 MLD
LAYING MAIN SEWER TRUNK LINE (100KM)	10 KM
LAYING BRANCH SEWER LINES (300KM)	300KM
CONST. OF MAIN PUMPING STATION (3 NOS.)	1 NOS.
GENERATOR FOR IPS & MPS (12 NOS.)	5 NOS.
CONST. OF EFFLUENT CHANNEL (4 KM)	1 KM
PROVISION FOR RAIL CROSSING	---

SCALE : 1:25000

0.5 0.25 0 0.5 1

- IPS (Intermediate Pumping Station)
- MPS (Main Pumping Station)
- Proposed IPS
- Proposed MPS
- Proposed STP (Sewerage Treatment plant)
- Existing trunk Main Sewer Line (1800 mm)
- Existing branch Sewer Line (1200 mm - 350 mm)
- Existing Damaged Sewer Line (1200 mm)
- Existing Supply Line for Agriculture (1000 mm)

MEERUT CITY DRAINAGE SCHEME

Project Period (2005-2012)	
Renovation and strengthening works	
Works	**QTY.**
RECONSTRUCTION OF DAMAGED WALLS ON MAIN NALLAH (9KM)	9 KM
CONST. OF WALLS AND BED OF SUB-NALLAHS (20KM)	20 KM
REHABILITATION OF SERVICE DRAINS (200KM)	200 KM
DESLUDGING OF DRAINS	---
DISPOSAL OF SLUDGE (OUTSIDE CITY LIMITS)	---
PROVISION OF DESLUDGING PUMPS (50NOS.)	50 NOS.
RENOVATION OF EXISTING NALLAHS-2MX1M (13.8KM)	13.8 KM
RENOVATION OF EXISTING NALLAHS TO-4MX2M (9.5KM)	9.5 KM
EXTENSION OF NALLAH-4MX2.5M (24.5KM)	24.5 KM
EXTENSION OF NALLAH TO-3MX2M (13.80KM)	13.8 Km
New Constructions	
CONST. OF NEW NALLAH -6MX3M (95KM)	12.5 KM
CONST. OF NEW NALLAH -5MX2.5M (20KM)	2.5 KM
CONST. OF NEW NALLAH -3MX2M (20KM)	2.5 KM
CONST. OF NEW NALLAH -2MX1.5M (10KM)	1.25 KM
CONST. OF LATERAL DRAINS (260KM)	35 KM
CONST. OF NEW CULVERTS & BRIDGES (50NOS.)	7 NOS.
RAIN WATER RECHARGING UNITS (500NOS.)	62.5 NOS.
PROVISION FOR RAIL CROSSING	---

List of Nala's in Meerut City

1. **Kaseru Baxar Via Abdullapur to Kali Nadi- Abu Nala I**
2. **Abu Nala II**
3. **NAS Nala**
4. **Odian Nala**
5. Ahmed Road Via Delhi Gate to Odian Nala
6. Sabun Godam Via Baghpat Bus Stand to Odian Nala
7. Sharda Road Via Baghpat Stand to Nala No. 6
8. Tarapuri Via Bhumia Ka pul to Odean Nala
9. Khatta Road Nala
10. Macacheen Nala
11. Lisari Gate Via Bhumia Ka Pul to Odean Nala
12. Budhana Gate to Odean Nala
13. **Khadoli Nala**
14. Delhi Road Nala
15. Fatehullapur Road nala

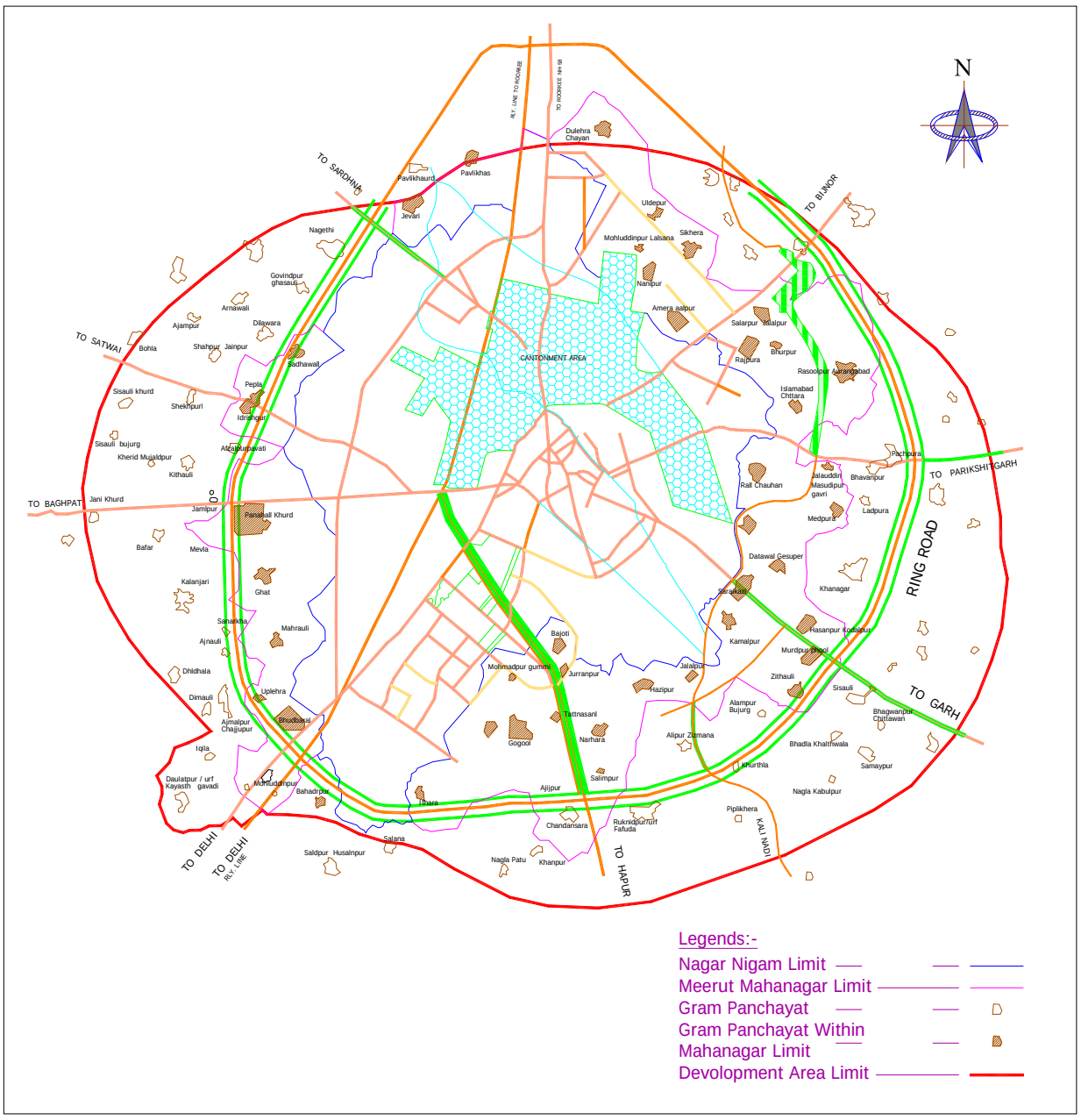
SCALE : 1:25000

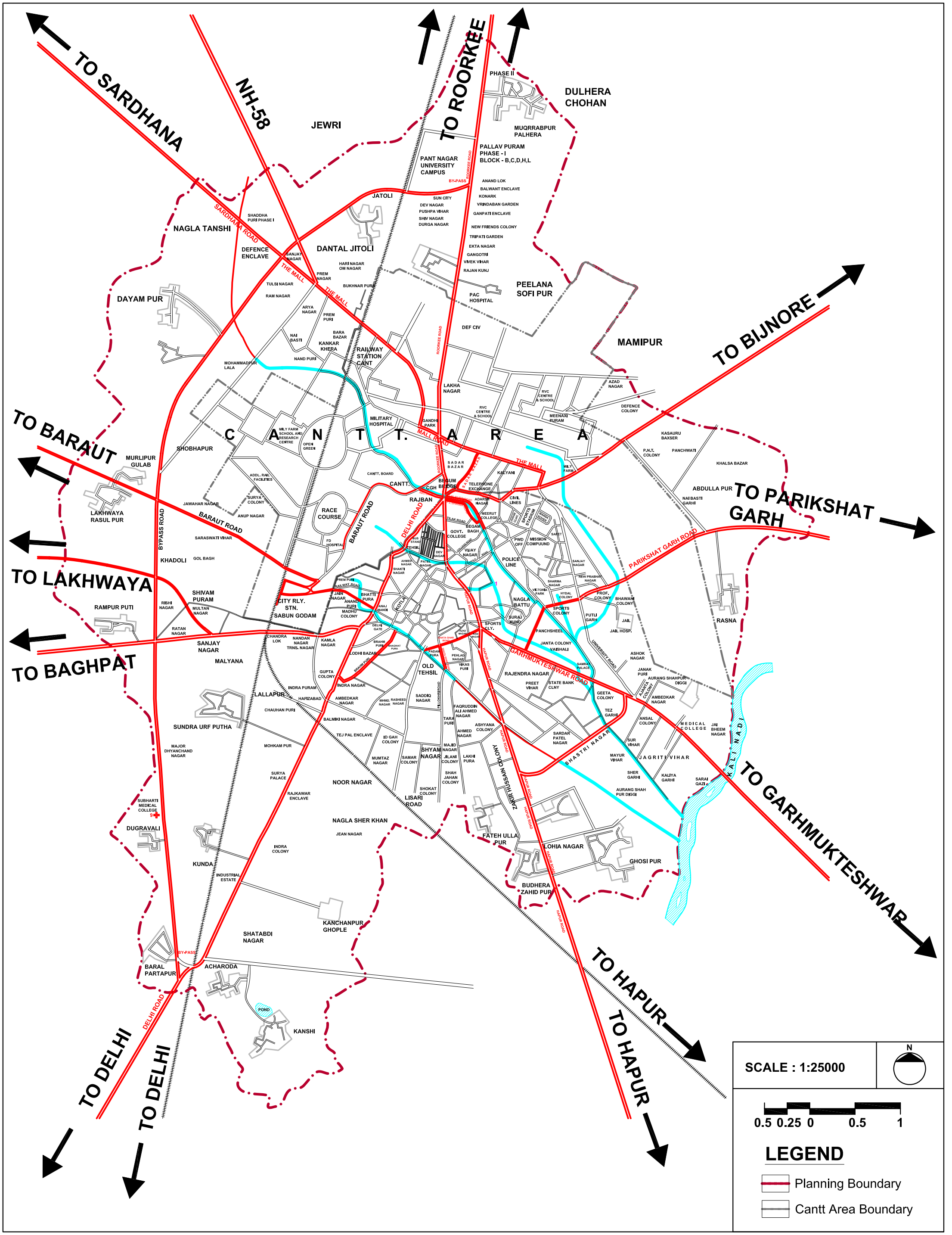
0.5 0.25 0 0.5 1

Existing Trunk Drains

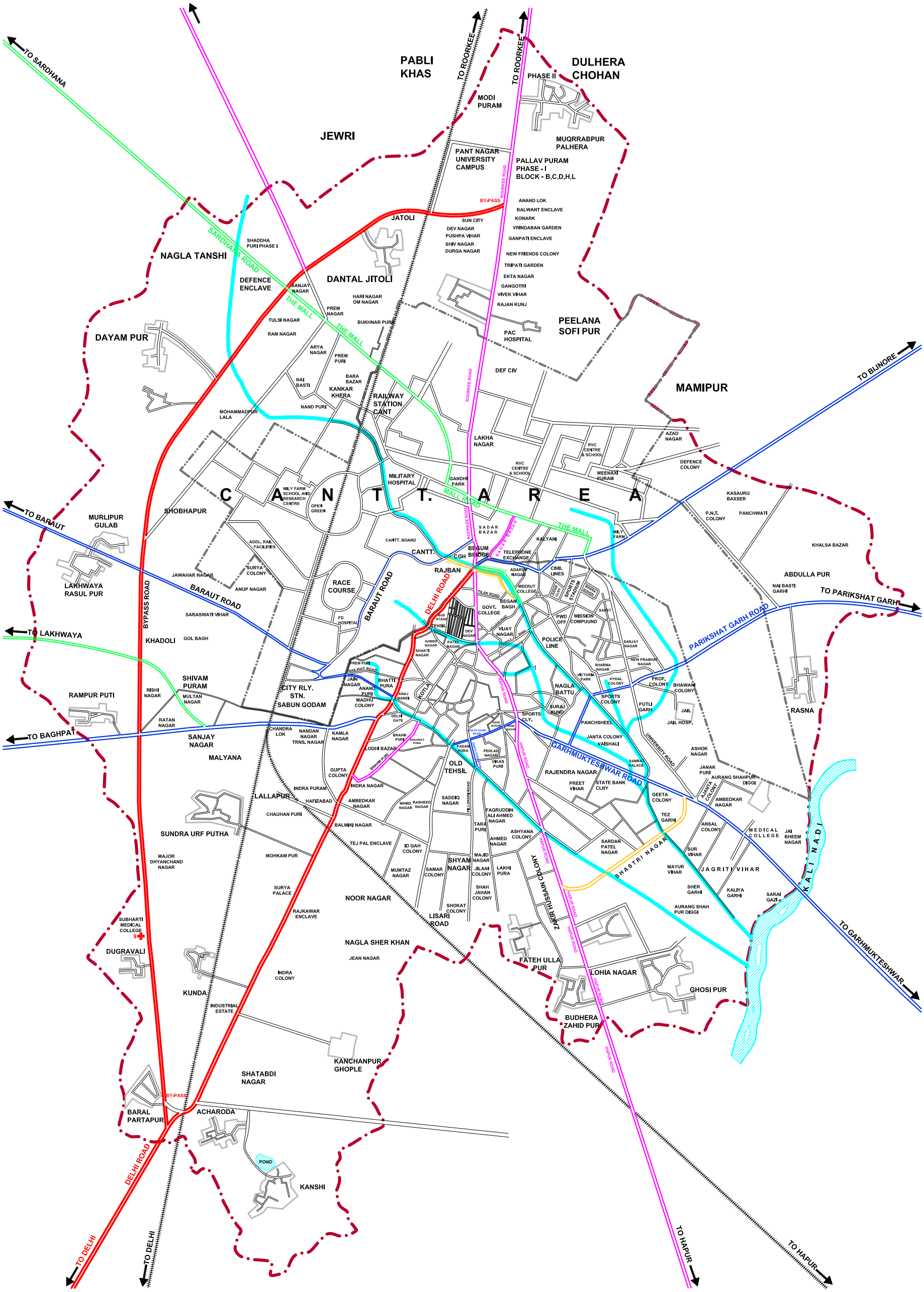
Existing Branch Drains

Map 5 - Showing Administrative Boundaries





ROAD NETWORK MAP OF MEERUT CITY



DETAILS OF CRITICAL ROAD STETCHES IN MEERUT CITY

16 M WIDE CARRIAGE WAY

1 DELHI ROAD
2 BY- PASS ROAD

14 M WIDE CARRIAGE WAY

1 BIJNORE ROAD
2 PARIKSHAT GARH ROAD
3 GARHMUKTESHWER ROAD
4 BAGHPAT ROAD
5 BARAUT ROAD
6 GHATA GHAR ROAD

12 M WIDE CARRIAGE WAY

1 LAL KURTI ROAD
2 LAKHWAYA ROAD
3 MALL ROAD
4 SARDHNA ROAD

10 M WIDE CARRIAGE WAY

1 ROORKI ROAD
2 HAPUR ROAD
3 BRAHMA PURI

9 M WIDE CARRIAGE WAY

1 ABU LANE
2 P. L. SHARMA ROAD
3 SHASTRI MARG

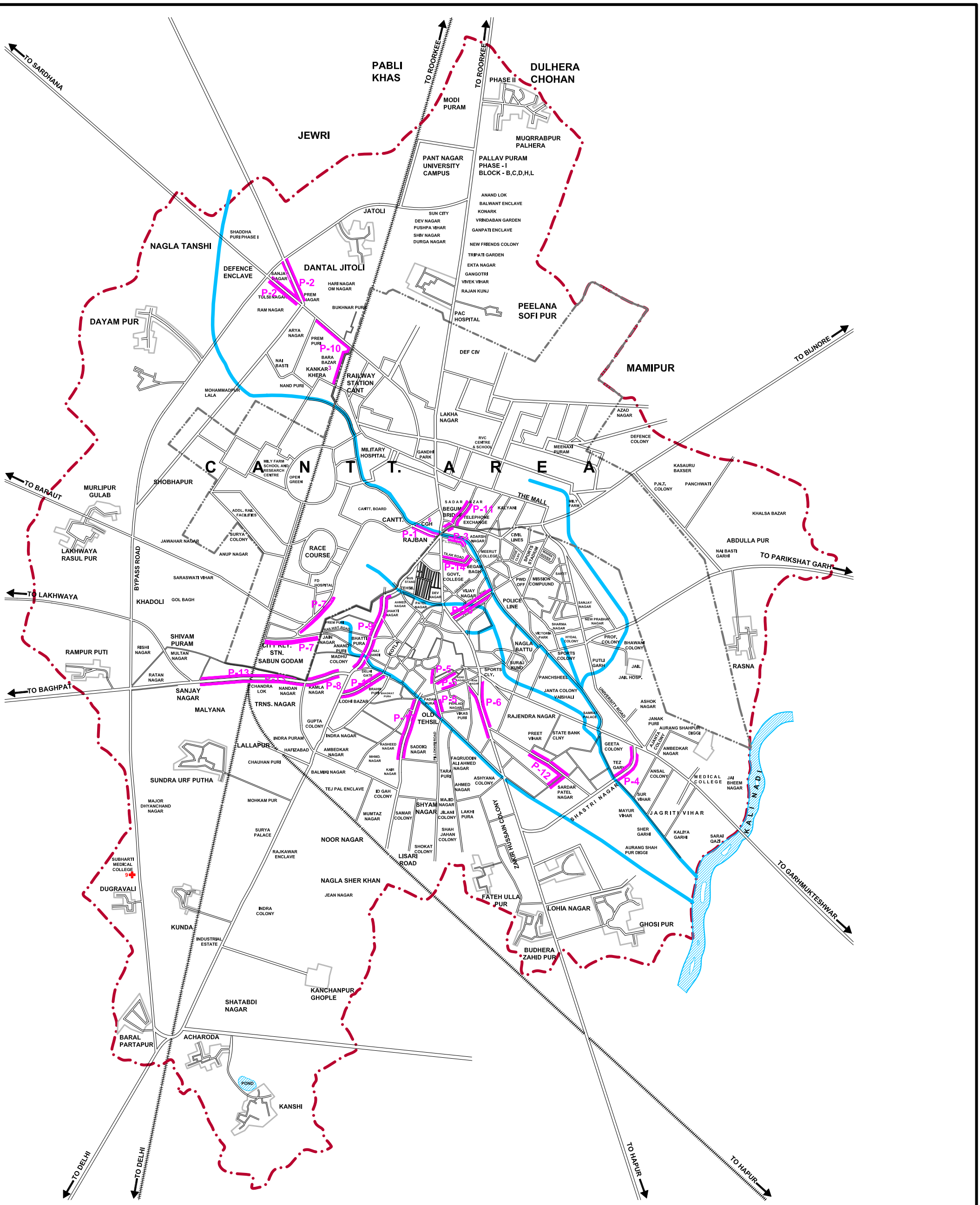
SCALE : 1:25000

0.5 0.25 0 0.5 1

LEGEND

Planning Boundary

Cantt Area Boundary



ON STREET PARKING

P-1 BEGUM PUL-ABU LANE
P-2 SARDANA ROAD
P-3 P L SHARMA ROAD
P-4 SHASTRI MARG
P-5 GHATA GHAR ROAD
P-6 HAPUR ROAD BHAGAT SINGH MARKET
P-7 WESTERN COURT ROAD
P-8 BAGH PAT ROAD
P-9 KABADI BAZAR ROAD
P-10 BOMBAY BAZAR (NAYA BAZAR)
P-11 SADAR BAZAR
P-12 CENTRAL MARKET SHASTRI NAGAR
P-13 TRASNPORT NAGAR
P-14 METRO PLAZA
P-15 SARRAFA BAZAR
P-16 BALI BAZAR
P-17 KAIR NAGAR

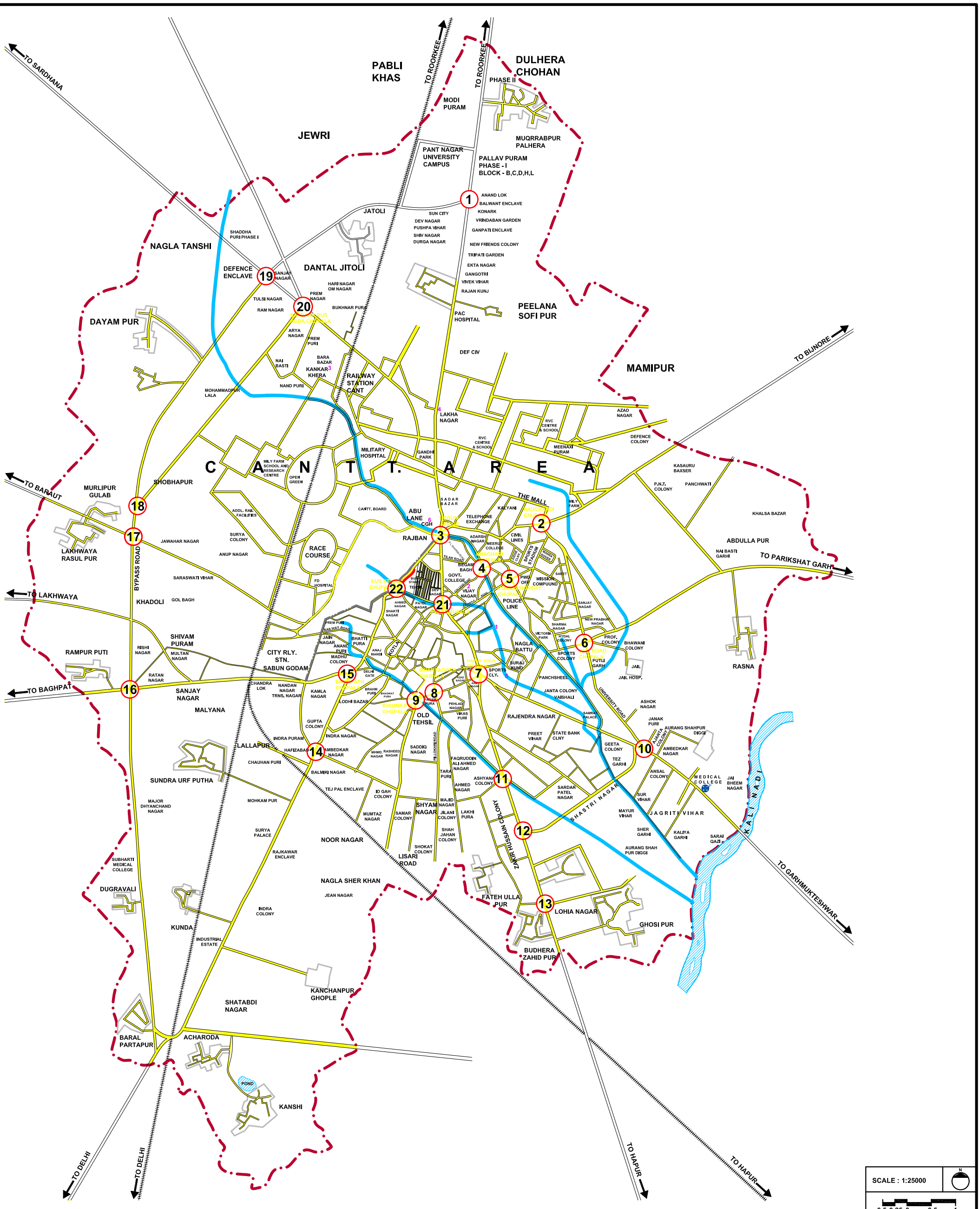
DETAILS OF CRITICAL PARKING LOCATIONS IN THE CITY

SCALE : 1:25000

0.5 0.25 0 0.5 1

LEGEND

Planning Boundary
CRITICAL PARKING AREA
Cantt Area Boundary



CRITICAL INTERSECTIONS IN MEERUT

1	BY PASS-TO ROORKEE (NH-58)
2	NAUCHANDI CHUPALA AT BIJNOURE ROAD
3	BEGUM PUL CHUPALA
4	KACHAHRI CHUPALA
5	COMMISSIONERY CHUPALA
6	JAIL ROAD CHUPALA
7	HAPUR ADDA CHUPALA
8	GHANTAGHAR CHUPALA
9	BHUMIA PUL CHUPALA
10	UNIVERCITYTO GARHMUKTESHWAR ROAD INTERSECTION.
11	HAPUR ROAD -ASHYANA COLONY ROAD INTERSECTION..
12	HAPUR ROAD - SHASTRI NAGAR INTERSECTION.
13	HAPUR ROAD - LOHIA NAGAR ROAD INTERSECTION.
14	DELHI ROAD- AMBEDKAR NAGAR ROAD INTERSECTION.
15	BHAGHPAT CHUPALA
16	BY PASS- BAGHPAT ROAD INTERSECTION.
17	BY PASS- BARAUT ROAD INTERSECTION.
18	BY PASS- SHOBHA PUR ROAD INTERSECTION.
19	BY PASS- SARDANA ROAD INTERSECTION.
20	SARDANA BUS ADDA CHUPALA
21	EVES CUPALA
22	BUS STAND CUPALA

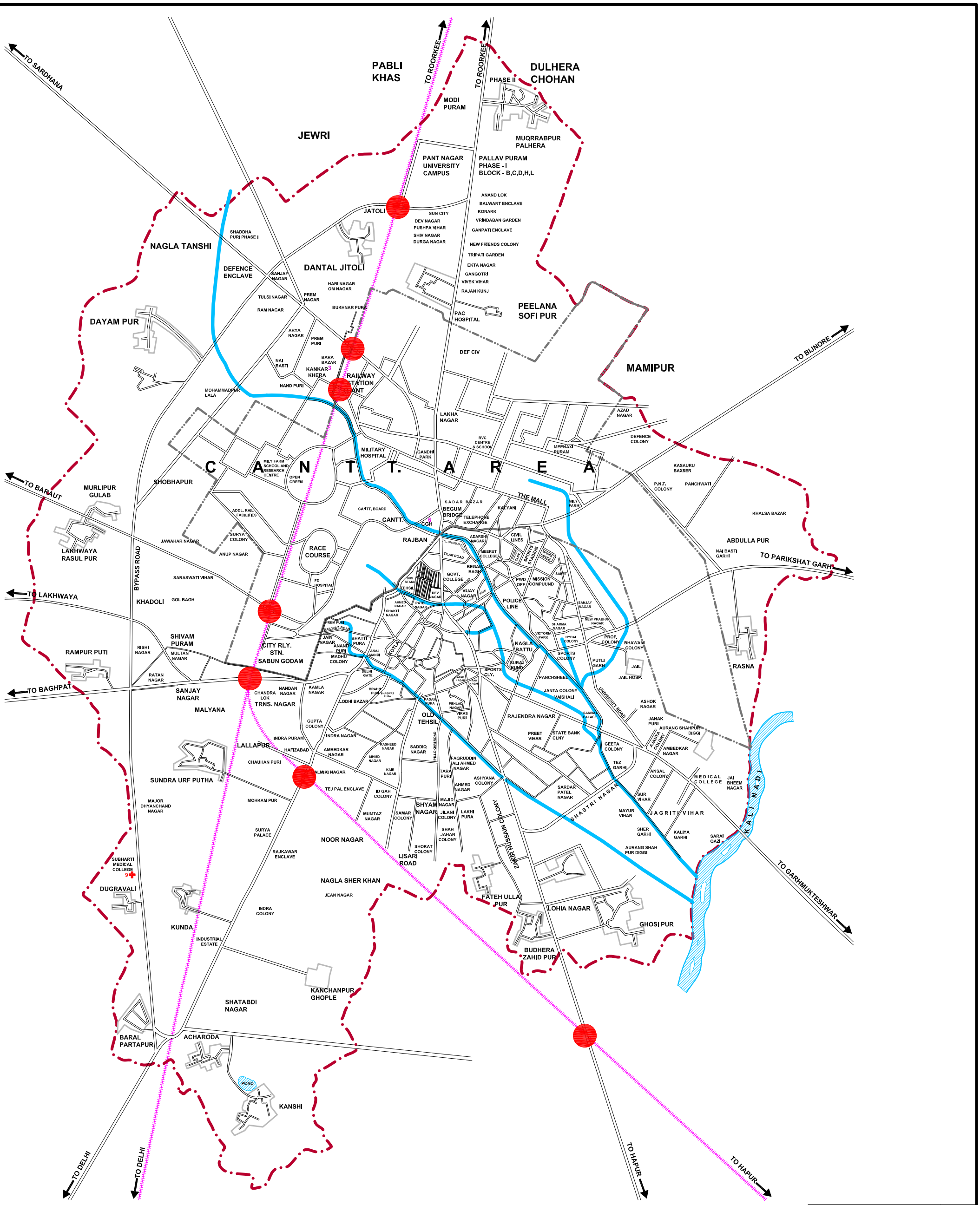
SCALE : 1:25000

0.5 0.25 0 0.5 1

LEGEND

- Planning Boundary
- Cantt Area Boundary
- PARKING
- 13 INTERSECTION

DETAILS OF CRITICAL INTERSECTIONS IN MEERUT CITY



Grade Seperated Railway Corssing

- Kankarkhoda Railway Crossing
- Hapur Crossing (Delhi Road Mevala Gate)
- Jatauli Crossing
- Begumpul
- Hapur Adda Crossing
- Old Baghpat Adda Crossing
- Ghantaghar Railway Road Crossing

SCALE : 1:25000

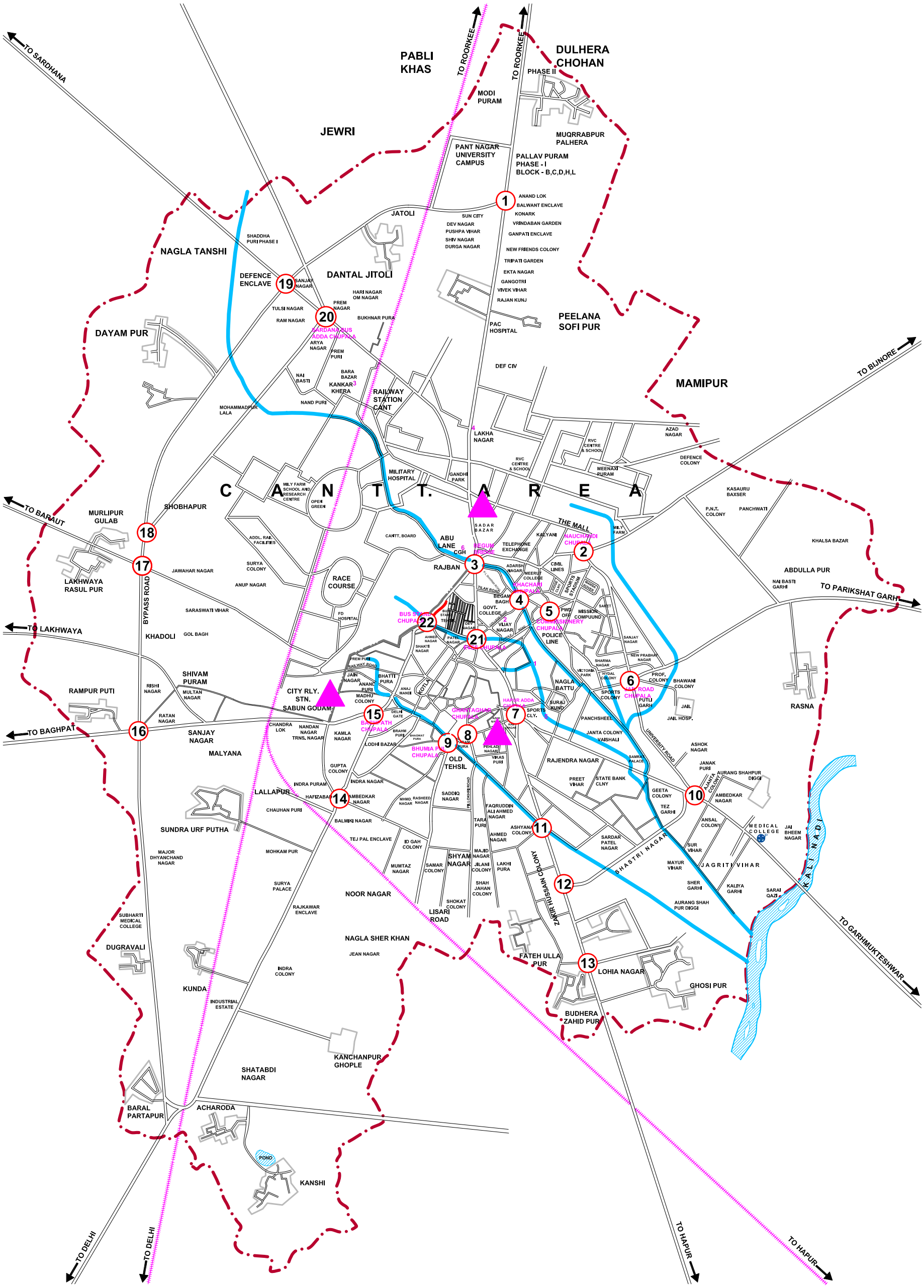
N

0.5 0.25 0 0.5 1

LEGEND

Grade Seperated Railway Crossings

DETAILS OF PROPOSED GRADE SEPERATED RAILWAY CROSSINGS



INTERSECTIONS TO BE IMPROVED

1 BY PASS-TO ROORKEE (NH-58)
2 NAUCHANDI CHUPALA AT BIJNOURE ROAD
3 BEGUM PUL CHUPALA
4 KACHAHRI CHUPALA
5 COMMISSIONERY CHUPALA
6 JAIL ROAD CHUPALA
7 HAPUR ADDA CHUPALA
8 GHANTAGHAR CHUPALA
9 BHUMIA PUL CHUPALA
10 UNIVERCITYTO GARHMUKTESHWAR ROAD INTERSECTION.
11 HAPUR ROAD -ASHYANA COLONY ROAD INTERSECTION..
12 HAPUR ROAD - SHASTRI NAGAR INTERSECTION.
13 HAPUR ROAD - LOHIA NAGAR ROAD INTERSECTION.
14 DELHI ROAD- AMBEDKAR NAGAR ROAD INTERSECTION.
15 BHAGHPAT CHUPALA
16 BY PASS- BAGHPAT ROAD INTERSECTION.
17 BY PASS- BARAUT ROAD INTERSECTION.
18 BY PASS- SHOBHA PUR ROAD INTERSECTION.
19 BY PASS- SARDANA ROAD INTERSECTION.
20 SARDANA BUS ADDA CHUPALA
21 EVES CUPALA
22 BUS STAND CUPALA

MULTI LEVEL PARKING LOTS TO BE PROVIDED

1 NEAR BEGUMPUL
2 NEAR RAILWAY STATION
3 NEAR GHANTA GHAR

SCALE : 1:25000

0.5 0.25 0 0.5 1

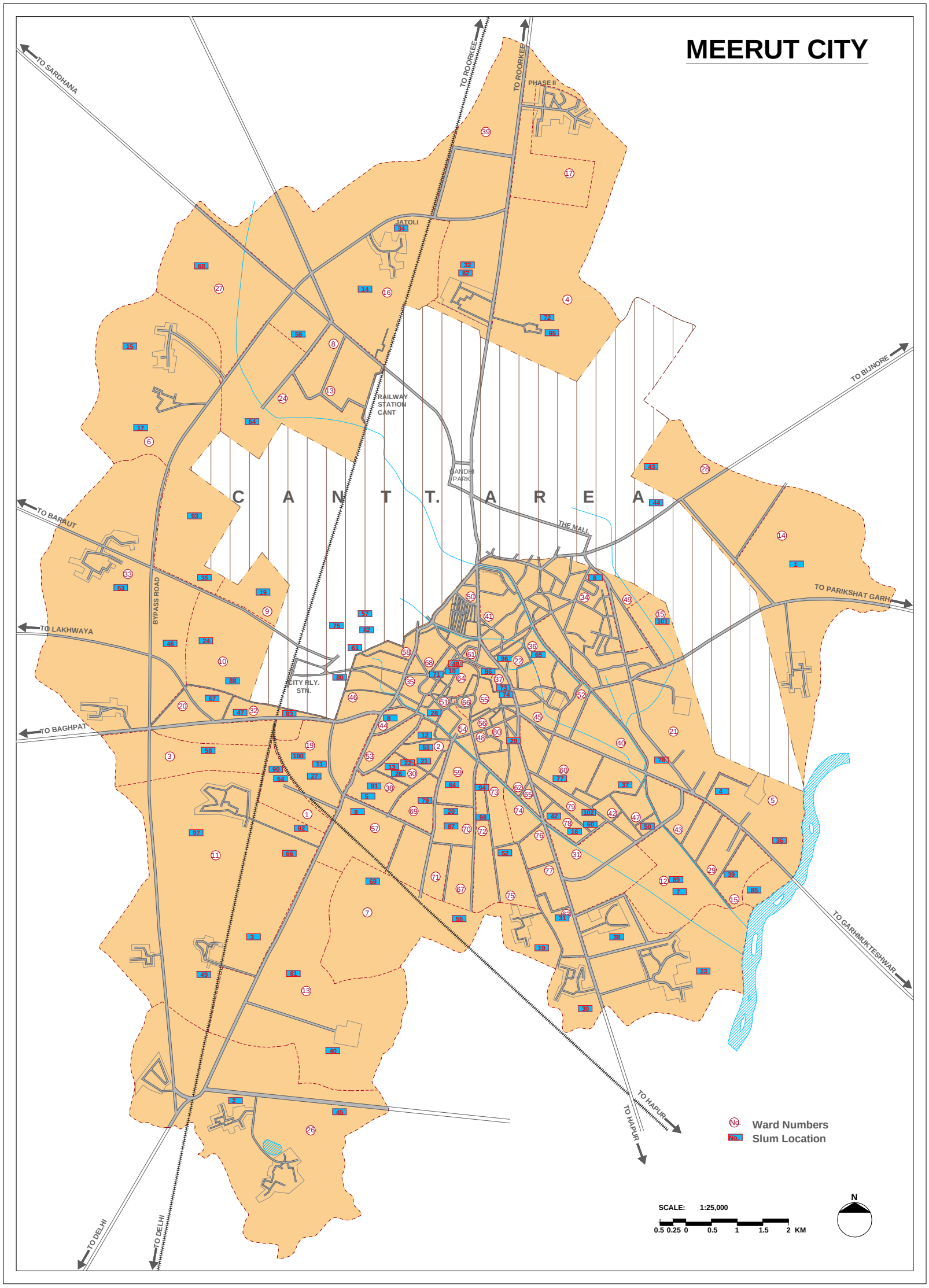
LEGEND

13 INTERSECTIONS TO BE IMPROVED

MULTI LEVEL PARKING LOCATIONS

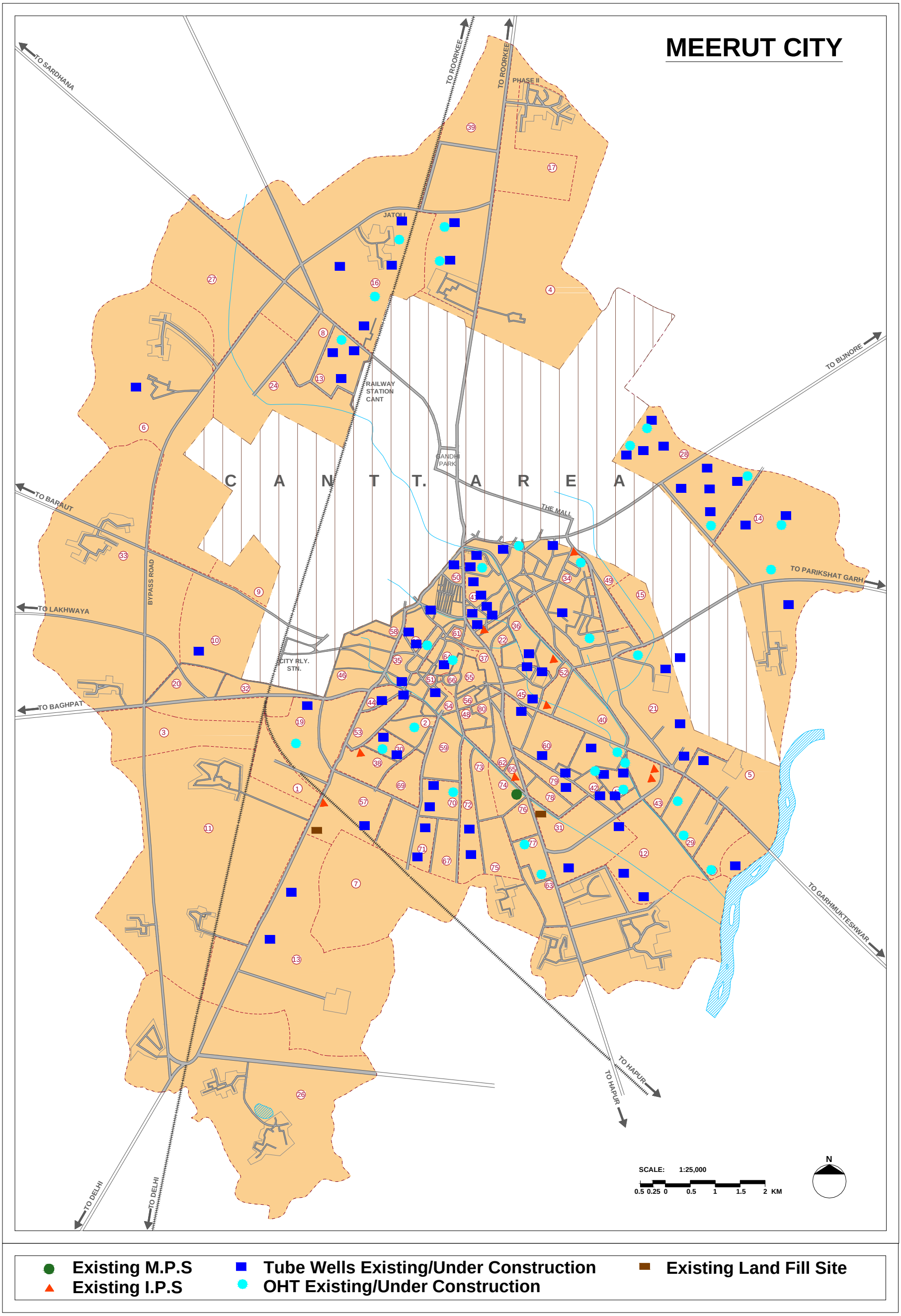
PROPOSED INTERSECTION IMPROVEMENT AND MULTI LEVEL PARKING DETAILS

Map 12 - Showing Road Network, Wards and Slums

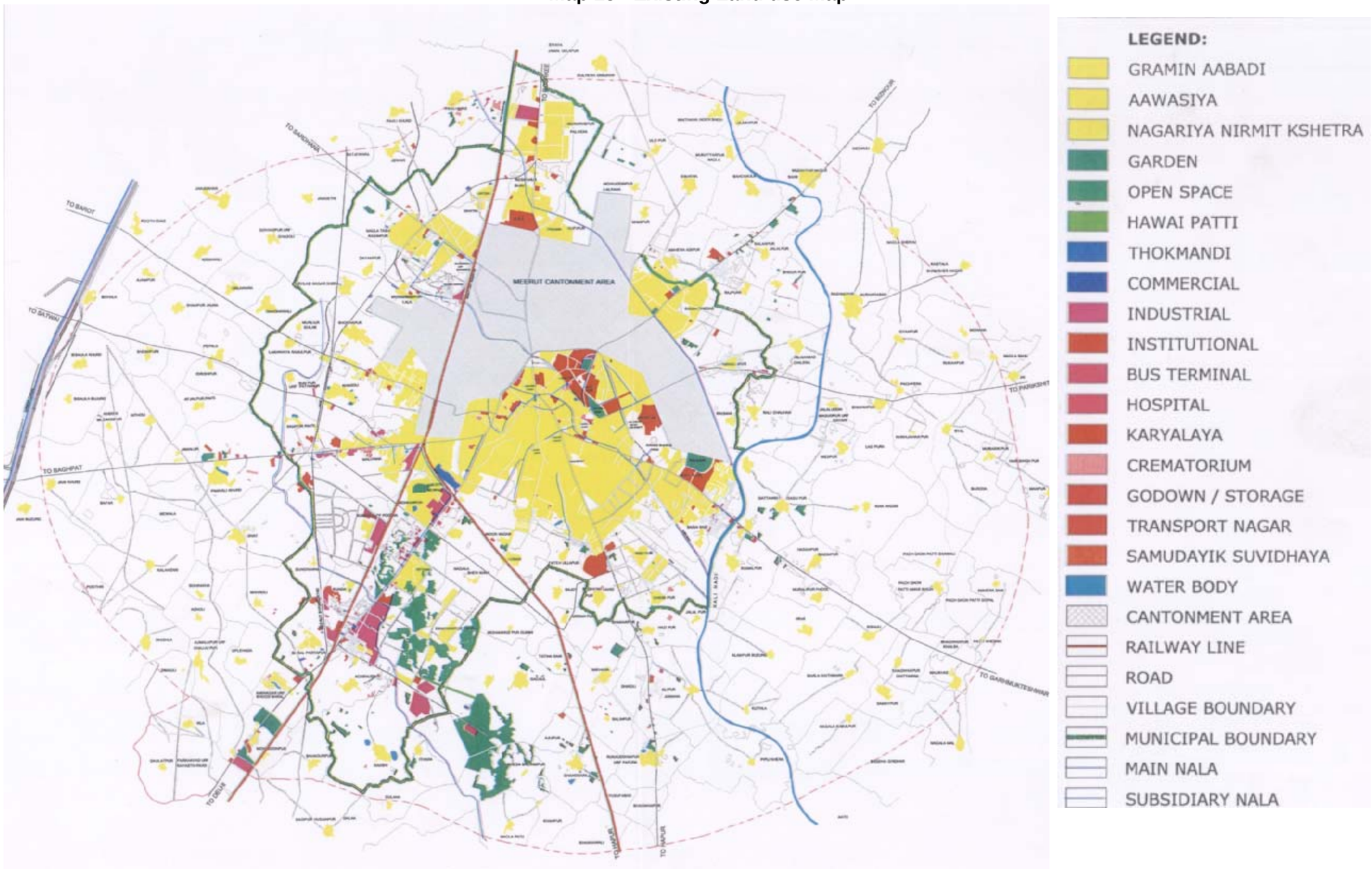


Map 13 - Showing Cantonment Area

Map 14 - Showing Existing Infrastructure Facilities

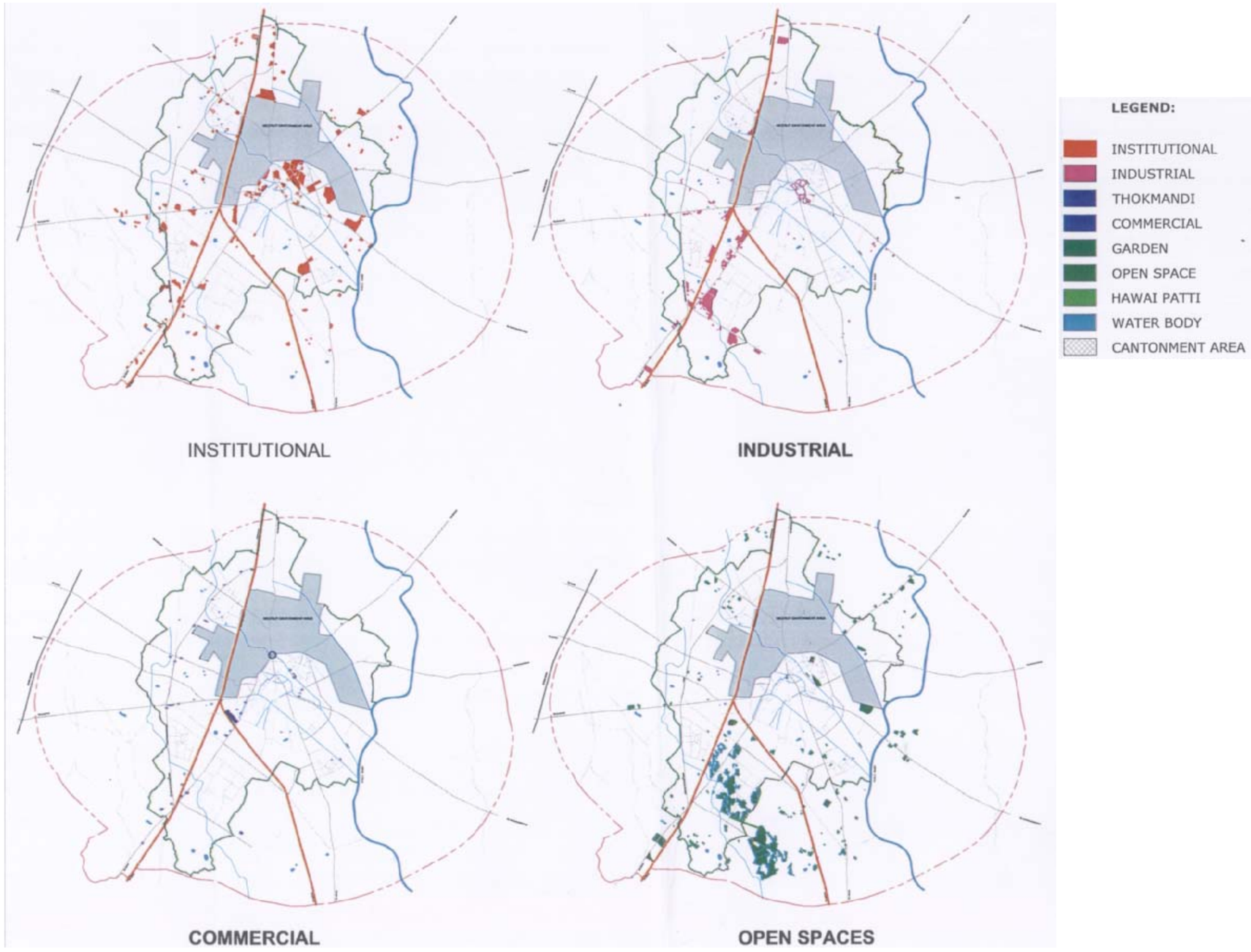


Map 15 - Existing Land use Map



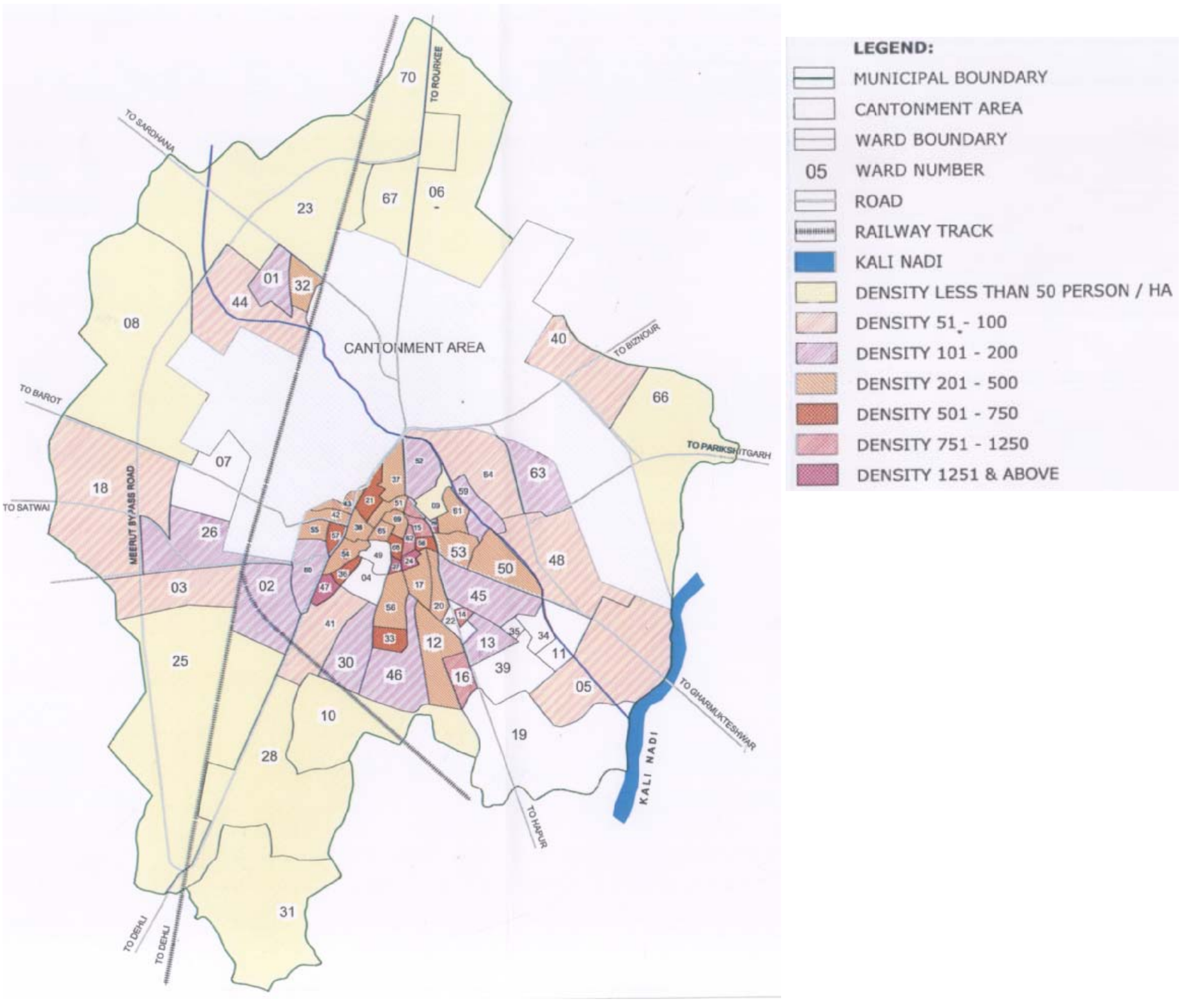
Map 16 – Existing Road Network Map

Map 17 – Existing Institutional, Commercial, and Industrial and Open Spaces

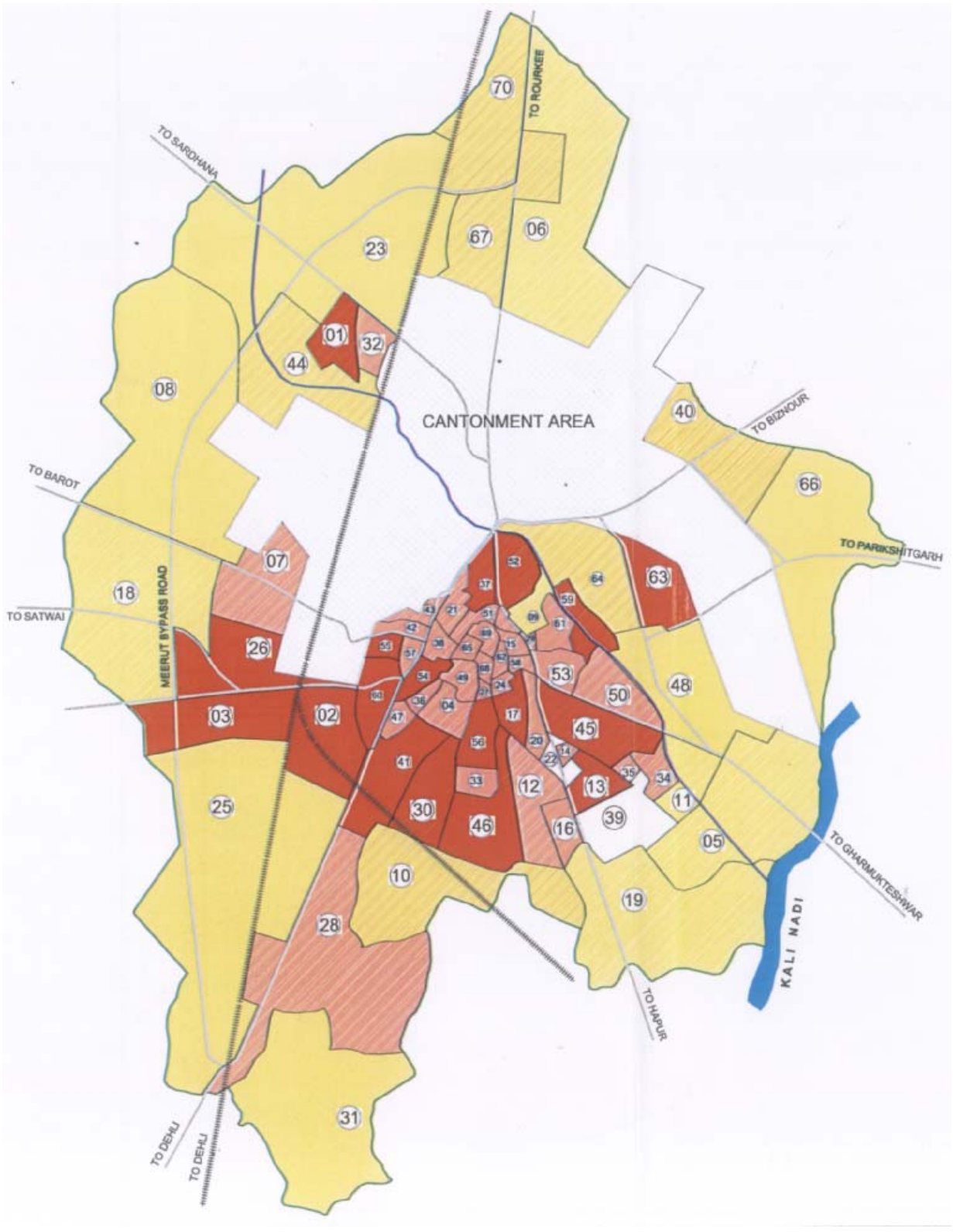


Map 18 – Existing Commercial Development in the Inner City

Map 19 - Population Density Map



Map 20 – Stress Map (Infrastructure)



Map 21 – Location of Slums and their related Facilities