CHAPTER V

URBAN PLANNING, DEVELOPMENT AND MANAGEMENT

5.1 INTRODUCTION

The City Administration and the Citizens are inseparable in any urban area. The Civic Body shall be responsible and responsive to the Citizen. The Citizen in turn needs to be suggestive and supportive to the Civic Body. This symbiotic bond between these two is very significant as it is connected from cradle to grave of a human being, i.e.–starting with the birth registration, provision of amenities and infrastructure for healthy living conditions for growing and ending with grave yard and consequent death registration. For the growing population proper planning of the city and its management is crucial in providing better living conditions to the people which is the primary responsibility of the administration.

After the 1972 United Nations Conference on Human Environment in Stockholm, the issue of environment has moved into the mainstream and the entire international community has demonstrated its concern for it by studying the impact and implications of various developments. The phenomenal growth of urban population has strained urban services and severely affected all types of urban environment viz. physical, social economic and aesthetic, in a majority of our settlements. The massive increase in the number of people, coupled with inadequate infrastructure, has had a direct impact on the environmental quality of town and cities. The disposal of garbage, solid
waste and liquid effluent generated and produced by the concentration of human beings and activities in urban areas are the major aspects of environmental degradation. Other implications of such a level of urbanisation relate to traffic and transportation problems, deterioration of central and old areas of the towns/cities, inadequacy of services and utilities excessive use of energy etc. Keeping in view the relationship between environment and development, sound environmental planning principles and practices are required to be followed so as to achieve sustainable development. Surveys to study and analyse the precise nature and quantum of the urban environmental problems are the prerequisites for any planning and development exercise.

For achieving this, the primitive systems in planning and administration being followed from times immemorial could not yield better results. In this situation, the revolution in Information Technology has helped in many ways in any Urban Local Body. Similarly various IT applications have been used in a quite commendable way in MCH as the database of various functions has already been built up. However like any other local body, in MCH also the analysis of the same for various decision-making purposes is hardly used. All the civic amenities such as garbage disposal and sanitation, street lighting and the developments such as roads, bridges, drains, parks & play grounds are directly linked with space and geography. Every decision is constrained, influenced or dictated by space. Due to this the Remote Sensing, GIS and GPS tools have considerable utility
value and enhance its efficiency in serving the citizens.

GIS is basically an information system that deals with spatial data. Spatial data and information are the basic requirements in almost every activity of a Civic body. As almost all municipal data has spatial relevance, GIS assumes a central role in such a system. Many widely used computer programs, such as spreadsheets (e.g., Lotus 1-2-3), statistics packages (e.g., SAS and Minitab) or drafting packages (e.g., Auto CAD) can handle simple geographic or spatial data. But they cannot the benefits of GIS, which alone permits spatial operations in the data. A GIS does not hold maps or pictures – it holds a database. The database concept is central to GIS and is the main difference between a GIS and a simple drafting or computer mapping system, which can only produce good graphic output. GIS thus incorporate a Data Base Management System.

5.2 URBAN PLANNING & DEVELOPMENT

Massive urbanization, technological advancements, particularly with the advent of ICT revolution, fast changing urban structure and urban life styles, increasing complexities of urban problems, inadequacy of shelter and basic civic services, unmanageable urban sprawl, slums and squatter settlements, growing insecurity and rising crime and deteriorating environmental conditions would further become acute and pose a greater challenge to effective planning, development and management of a civic body. Hence it is extremely important that the
urban areas develop in a planned manner particularly in increased burden on basic services and transport.

Urban Planning is envisaged through proper Master Plans or General Development Plans or Zonal Development Plans etc. Some of the major activities in the formulation of a Master Plan are: analysis of the urban sprawl, preparation of existing land use, determination of suitability of available land for various purposes, identification of new road links, zoning and reserving land parcels for conservation, public facilities and amenities and framing suitable development promotion and control regulations. For preparation or revision it requires a long term analysis and modeling such that the current development should bear the fruit in future. To prepare these plans geographic information of the area such as topography, land use, cadastral map, soil type, transport networks, vegetation water supply, flood hazard suitable for structures, residence, industry, commerce, agriculture, ecological conservation and many more are required. (NUIS, 2006; UDPFI, 1996).

This information consists of both spatial attributes and associated non-spatial attributes. It also constitutes a bulk of geographic information which should be properly stored, managed and analyzed for fruitful results.

Formulating Master Plans in a time bound manner will help to a large extent in addressing the problems of the Urban Areas in terms of unauthorized construction, congestion on roads, encroachment and their attendant results. With increasing use of ICT and the availability
of a host of data products it is possible to formulate Master plans within short period unlike the prevailing practice of the traditional methods. The use of State of Art Technology in formulating Master plans will help the Urban Local Bodies through cross linkages to:

- Collect, analyze and report indicators data - with a focus on data disaggregation at the sub-city level
- Use performance results for improving urban management and public accountability.
- Develop their own performance monitoring frameworks for municipal services, local development plans or programs.
- Establish regular, sustainable data collection processes through Local and National Urban initiatives and personnel training.

The most important information for preparing a Master Plan is an accurate and updated Base Map of the urban area, showing road networks, spatial extent of development and the information on the use of each parcel of land. It is the basis for making rational planning decisions. Use of Satellite Images and GIS can support this very effectively and also help in quick analysis of land form, soil, vegetation, settlement pattern etc on the basis of which strategies and proposals for future may be developed.

The focus is essentially on

1. Use Satellite Images for Preparation of Base Map
2. Use of Satellite Images for Land Use Mapping
3. Use of Satellite Images and GIS to support Planning Decisions
5.3 PREPARATION OF THEMATIC MAPS

5.3.1 BASE MAP GENERATION

Base map is been prepared using Survey of India (SOI) toposheets (56 K/1 to 56 K/16) on 1:50000 scale and updated with the help of satellite imagery. The information which content of this map is used as a baseline data to finalize all the other physical features of maps. The features included in the base map in general are district boundary, Taluk/Block/Mandal boundary, rivers/water bodies, major settlements, major roads, railways and other towns as shown in the figure below.

Since the toposheets are very old and prepared long back, the major roads, railways and the other settlements are updated using satellite image and existing maps. The major settlements included in the base map area are Municipal Corporation of Hyderabad and its environs i.e Rajendranagar, Hayathnagar, Patancheru, Medchal, Saroornagar, Bollaram, Maheswaram, Ibrahimpatnam, Narsapur, Chevella, Sangareddi etc. The map area includes Hyderabad district (which includes the Study area i.e Municipal Corporation of Hyderabad) along with parts of Ranga Reddy, Medak, Nalgonda, Mahabubnagar and Warangal districts, which fall within a buffer of 50kms from centre of Hyderabad city.

The major water bodies represented in the base map include Musi river, Miralam Tank, Saroornagar lake, Hussain Sagar lake, Himayath sagar and Osman sagar. There are a large number of small water bodies distributed in the entire study area. The South central
railway line passes through the city along with the NH-7 and NH-9 connecting different places.

**Figure 5.1 showing Base Map of Hyderabad City**

![Base Map of Hyderabad City]

**5.3.2 DRAINAGE NETWORK MAP**

The water bodies present in the study area Musi river and its tributary Chinna Musi, Nakkavagu, Miralam Tank, Saroornagar lake, Hussain Sagar lake, Himayath sagar and Osman sagar. There is a large number of small water bodies located in areas like Peddatupra, Narsappaguda, Upparguda, Annojiguda, Shamirpet, Shivampet, Khanapur, Avancha, Rudravaram etc. These maps show all water bodies, rivers, tributaries, perennial and seasonal streams, reservoirs, tanks, ponds and the entire drainage network.
5.3.3 WATERSHED MAP

The watershed map is prepared in accordance with the Watershed Atlas of India, 1990. The total area occupied by this region is 1130.48 lakh hectares and is sub-divided into 8 basins. Hyderabad area falls under basin-D i.e. the Krishna basin which has a total area of 272.03 lakh hectares. The Krishna basin includes 8 catchments, 41 sub-catchments and 271 watersheds. The present study area is located in catchment–1 in the lowermost part of the basin below the Nagarjuna Sagar dam. The total area of this catchment is 3,837 hectares and is further divided into A, B, C, D and E sub-catchments. The sub-catchment-E i.e. Musi sub-catchment of 1134 hectares consists of the present study area and occupies the 6, 7 and 8 watersheds. Part of
Hyderabad comes under watershed-6 i.e. Chinnaerai watershed (195 hectares). The study area is situated in the north-east and south-eastern parts of this watershed. The north-west part of watershed-7 i.e. upper Musi watershed (99 hectares) and south-west part of watershed-8 i.e. Musi watershed (131 hectares) is occupied by the present study area (Fig. 5.4). For a detailed study the 4D1E6, 4D1E7 and 4D1E8 watersheds are further divided into sub-watersheds (4D1E6a etc.), mini-watersheds (4D1E6a3 etc.) and micro-watersheds (4D1E6a3e etc.).

**Figure 5.3 Showing Watershed Map of Hyderabad City**

![Watershed Map of Hyderabad City](image)

### 5.3.4 LAND USE/LAND COVER MAP

Land use refers to man’s activities and various uses which are carried on land and land cover refers to natural vegetation, water bodies, rock/soil, artificial cover and others resulting due to land
transformation. Although land use is generally inferred based on the cover, yet both the terms land use and land cover are closely related and interchangeable. The growing biotic pressure coupled with increasing human demand exerts pressure on the available land resources all over the country. Therefore, in order to optimally use the land, it is not only necessary to have the information on the existing land use / land cover, but also to monitor the dynamic land use resulting from the increasing demands arising from the growing population. Land use data are needed in the analysis of environmental processes and problems that must be understood if living conditions and standards are to be improved or maintained at current levels.

**Figure 5.4 Showing Land Use Land Cover Map of Hyderabad City**
5.4 DATA COLLECTION AND FIELD SURVEYS

The maps and secondary data from various authorities concerned with the city functions need to be collected. A set of such maps that can help add layers to the digitized maps is illustrated below:

i. Prevailing Master Plan / General Town Planning Scheme (if any) showing proposed land use zoning, transport network and sites designated for various public purposes.

ii. Maps showing administrative boundaries of ULB jurisdiction, administrative and electoral wards, area units used by census.

iii. Maps showing Cadastral Boundaries

iv. Maps of utilities like sewerage water supply, drainage, storm water, roads and street lights along with the data available

v. Data regarding services like Fire Protection, Cremation and Burial Grounds, Slaughter Houses, Cattle Ponds, Primary Schools, Primary Health Centers, Parks, Gardens and Swimming Pools etc. In case such data is missing, the said attribute data is collected through field survey.

vi. Locations of facilities provided by State and Central Governments like Railways and highways, post and telegraph offices, police stations, universities, hospitals etc. also need to be located on the maps and available data collected through field survey.

vii. Existing land use categories like residential including slums, industrial, commercial and healthcare, educational, sports and sports and recreation facilities.
viii. Marking of property boundaries on image through field survey

ix. Property tax data identifying properties with their area, use and assessed values

5.4.1 Preparation of Final Base Map

Based on the above a Comprehensive Base Map to a scale of 1:1,000 (soft copy) in GIS file format (.gdb, .mxd, .shp,) and DXF/DWG format for the total MCH area shall contain locality, ward, block, slum and municipal boundaries, foot prints of each building and its usage, roads, nalas, canals, railway lines, bridges, water bodies duly incorporating cadastral information, utility services, with contour information at 1 m/0.5 meter interval.

5.5 DEVELOPING STANDARD SET OF THEMATIC MAP LAYERS AND COLLECTION AND INTEGRATION OF ATTRIBUTE DATA

A standard set of layers and attribute data as decided has to be followed.

Some of the map elements and the attribute data that can be linked to them forming GIS that would be useful in planning and managing the city are illustrated below;

i. Property Tax or Assessment of Properties:

The property details shall include use of building, plot and built up areas, building type (single/ multiple) construction type, building height approximated to the nearest meter with no. of floors & units,
owner/ occupier details, property tax details (integration with property

tax registers).

The plot information shall also include service availability and details
such as water connections (metered/ un-metered), size of connection,
sewerage facility, telephones etc.

For non-domestic use buildings activity type and employment shall also
be recorded.

Plot and Building boundaries shall be measured up to 0.1m.

ii. **Creation of network infrastructure and Utility database using
GPS**

Railway tracks, pavements, Bridges, Flyovers, buildings, Recreation
and others, Markets, Playground / Stadiums, Parks, Trees, graveyards,
open lands

**Data layers pertaining to following attribute data:**

1. Road Network
2. Water Supply
3. Sewerage System
4. Strom Water Drains
5. Solid Waster Management
6. Street Lights
7. Property Details
8. Slums
9. Govt.,/ Municipal Assets
10. Environmental Features
11. Water bodies
12. Urban Planning & Estate includes schemes, layouts & related information, details of encroachment and legal information of plots.

iii. Other Infrastructure

Apart from the above infrastructure services, the other services like Fire Protection, Cremation and Burial Grounds, Slaughter Houses, Cattle Ponds, Primary Schools, Primary Health Centres, Parks, Gardens and Swimming Pools etc. need to be located on the base map and attribute data recorded and integrated.

iv. Area level data

In addition to above, Census provides data at area level (Ward, Enumeration Block etc) in terms of population, households, age-sex structure, SC/ST population, literates etc. This could also be recorded as area attributes over part 3 or 4 censuses to help track changes and growth patterns. Data generated from other surveys could similarly be linked to map base particularly those related to poverty.

Data from other government sources like Shops and Establishment Act, (Economic activities and employment), Electoral Rolls, Multipurpose household survey, Electricity Meters (including unauthorised structures as well), Ration Cards (and Public Distribution Shops) could also be advantageously linked to the map base if the concerned agencies agree to part with the data. Such data would be useful in analysing access to some of the services to poor communities.
5.6 PREPARATION OF MASTER PLAN (GENERAL TOWN PLAN)

The plan for guiding urban areas has been done in three basic phases

1. To determine the use of land parcel in development areas.
2. To develop road network plan in the development areas.
3. To develop build up form and control regulations in the development areas.

The detailed Methodology for formulation of Master plans for Urban Area has been spelt out in the guidelines implantation and formulation of urban development plans, 1996.

The brief steps of the Master Plan are as given below.

(i) **Review of existing situation**

The town profile with respect to the local setting will be studied. The Broad area for the proposed study may also be delineated keeping in view the influence of the towns on its surroundings. The existing data available with the local body including earlier sanctioned GTP will be collected.

(ii) **Existing Land Use Survey**

The existing Land Use Map is studied and verified the same on ground. The GIS base map shall be updated on different uses as per the format prescribed and put it in GIS format. The GIS Base map and High Resolution Satellite Image will be carried for field verification wherever required for correct information. While collecting the land use details the missing physical features such as roads, buildings, drains etc. will
be marked on the base map. A land use register as prescribed is prepared for all the survey numbers indicating the present land use.

The macro level secondary data on environmental features like water bodies, forests, hillocks, agricultural lands, pollution level, ambient air quality, tourism potentials and heritage preservation etc. are also compiled. The household survey and transport survey will be carried out.

5.6.1 Future scenarios for growth over a 15 to 20 year period comprising

a. City economy and employment
b. Population with socio-economic characteristics
c. Demand for physical infrastructure – water supply, sewerage, sanitation, solid waste management, storm water drainage, roads and street lights, traffic including parking
d. Demand for social infrastructure - education and health care facilities, recreational open spaces, post and telecom facilities, police stations, fire stations etc.
e. Demand for various land uses including demand for housing
f. Forecast of urban local finance

5.6.2 Components of Draft General Town Planning Scheme / Master Plan

a. Proposed land use plan taking into account proposals of development by various public and private agencies
b. Designation of sites for public purposes including the norms adopted for the purpose including land required for infrastructure improvement.

c. Proposals for overall improvement and housing sector.

d. Slums

e. Proposals for promoting tourism

f. Proposals for conservation of built-heritage

g. Proposals for a forestation and improvement of environmental ‘hot spots’

h. Identification of areas requiring micro level detailed planning,

i. A detailed Transportation Plan and

j. Zoning and development control regulations covering

k. Procedure for obtaining development / building permission

l. Permitted land uses in various zones

m. Density and FSI provisions

n. On-site parking requirements

o. Regulations for layouts and sub-divisions

p. Special provisions for redevelopment of built-up areas and slums

q. Provisions for rain water harvesting and use of non-conventional energy (e.g. solar energy for water heating)

r. Obligations for setting aside land for certain facilities and payment of impact fees in certain cases
s. (Other aspects of building construction could be incorporated on the basis of the latest National Building Code if desired by the client)

All spatial features in the proposed plan have to be incorporated in the GIS base map as proposed plans.

5.6.3 Final Notification and Implementation of the Master Plan

As envisaged in the statutory provisions the draft Master Plan will be notified for filing objections and suggestions by the public and after due regard to them, the Master Plan will be notified for final sanction and the same will be implemented after informing the public through news papers.

5.7 DEVELOPMENT/MASTER PLAN INITIATIVES FOR HYDERABAD

Hyderabad has gone through a complex evolutionary process of economic, social and political changes from its inception. As a first step towards the planned development of the city, the City Improvement Board (CIB) was constituted in 1912. The CIB (later converted as AP Housing Board) has developed many housing colonies in the city on a planned manner. Hyderabad became the capital after the formation of Andhra Pradesh state and the city experienced rapid growth. To rationalise the growth of the city, the Master Plan for the city was prepared in 1975 and the Hyderabad Urban Development Authority was constituted on 2nd October, 1975 to regulate the developments in the city and the surrounding villages in a planned manner. A Master
Plan for the peripheral area was prepared in 1980 by HUDA.

In view of the rapid urbanisation of Hyderabad and its vicinity, the Government have constituted Cyberabad Development Authority (CDA) (vide G O Ms No. 21 MA, dt. 20th January, 2001), Buddha Purnima Project Authority (BPPA) (vide G O Ms No. MA, dt. th, 20) and Hyderabad Airport Development Authority (HADA) (vide G O Ms No. 352 MA, dt. 30th July, 2001) under the provisions of the A P Urban Areas (Development) Act, 1975. The Master Plans for CDA and HADA areas are also prepared for guiding the developments coming up in those areas.

The details of the planning initiatives happened in Hyderabad and its environs are as follows.

5.7.1 The 1975 Master Plan:

The first Development Plan for the area of Municipal Corporation of Hyderabad was prepared for an area of 172.60 sq. km. and notified in G.O.Ms.No.414 MA, Dt: 27.9.1975 under the Hyderabad Municipal Corporation Act 1955. Earlier in 1930, Sir M. Visvesvarayya, eminent engineer of his time prepared a Report entitled “City Improvement Schemes, Hyderabad Deccan”. This had a road network and land use plan in addition to specific projects for the city area. Later around 1945, Mohd. Fayazuddin, the then Director of Town Planning prepared a Perspective Plan not only for the city but for the suburbs as well. These plans were not notified under law though they contained extremely valuable and at times futuristic suggestions for the city.
5.7.2 Revision of Master Plan - 2020

A revised Master Plan for the non Municipal Corporation of Hyderabad areas was prepared in detail. This plan was notified for public objections and suggestions over 2003 and submitted to Government for approval. The Government of Andhra Pradesh suggested several changes to the draft plan. In addition, approval of the plan is linked with the alignment of the Outer Ring Road Project launched by the
Government. The final Master Plan was approved in 2008.

Figure 5.6 Showing 2020 MASTER PLAN OF HUDA (excluding) MCH

Source: HMDA, Hyderabad
5.7.3 Master Plan for Hyderabad Airport Development Authority (HADA)

Hyderabad International Airport at Shamshabad has been developed in an extent of about 5000 acres as a Greenfield airport. The site is located about 21km southwest of Hyderabad city and getting access from Hyderabad, Bangalore National Highway (NH7), Govt have constituted Hyderabad Airport Development Authority for an area of about 458 Sq.Km covering 70 villages which has about 1.54 lakh population as per census 2001. The HMDA has prepared Master Plan keeping the objective of Green Environment Initiatives. Figure 5.9 shows the Master Plan of HADA.

5.7.4 Master Plan for the Core Area of Hyderabad

In addition to the above the HUDA has prepared the Core Area Master Plan for Hyderabad, i.e. the area falling in then Municipal Corporation of Hyderabad and the same was approved in 2010. This Master Plan replaces the 1975 Development Plan and also the various Zonal Development Plans prepared for various zones of Core area. Figure 5.10 shows the Master Plan of the core Area of Hyderabad.
Figure 5.7 Showing Master Plan for HADA

Source: HMDA, Hyderabad
Figure 5.8 Master Plan for the Core Area of Hyderabad

Source: HMDA, Hyderabad
5.7.5 WATER SUPPLY

The metro water supply and sewerage board is incharge for providing water and sewerage facilities in the Hyderabad city. The Board is responsible for supply of potable water including planning, design, construction, implementation, maintenance, operation & management of water supply and sewerage system.

Sources of Water:

The main surface sources of water for the city of Hyderabad is from five impoundments of the following four rivers: (Figure 5.9)

- Osmansagar on River Musi.
- Himayatsagar on Esi River
- Manjira River
- Krishna River

The total quantity of water that can be drawn from the above sources is 245mgd. But the present drawl is 206mgd. In addition to the above 25mgd of ground water is also drawn through bore wells.

Service Area:

The present water supply service area is 688.2Sq.Kms which includes MCH area, ten (10) adjoining Municipalities 377Sq.Kms,(which are merged with MCH and now named as Greater Hyderabad Municipal Corporation(GHMC)) Osmania University Campus and Secunderabad Cantonment 44.1Sq.Kms and ten (10) enroute villages 97.8Sq.Kms along National Highway No.9 up to Sangareddy.
Figure 5.9 Metropolitan Water Supply and Sewerage Board
Map of Hyderabad city

Source: HMWSSB, Hyderabad
5.7.6 SEWERAGE SYSTEM:

The Sewerage System for Hyderabad and Secunderabad cities was constructed in the year 1931. The system was meant to serve an area of about 54 Sq. Kms for a design population of about 4,68,000. The system is connected to main intercepting sewers one each on the North and South side of River Musi. In 1985 remodeling of the sewerage system was taken up by adding five major sewers to the system.

Network Coverage & Distribution:

The existing sewerage system covers only 70% of the MCH area (prior to 1994) and is overloaded due to the growth of population of twin cities. It is to be noted that the sewer connections covers 95% of the total water supply connections in the MCH area. However, in peripheral municipalities and urban areas, a large population is not covered by safe sanitation facilities due to lack of well-established sewerage system. Out of 10 municipalities (now included in GHMC), only one municipality is connected to underground sewerage system, which accounts to around 20% coverage in surrounding municipalities.
Figure 5.10 Sewerage Distribution Network of MCH area of Hyderabad city

Source: HMWSSB, Hyderabad
5.7.7 SOLID WASTE MANAGEMENT

Sources & Quantity of Solid Waste Generated:

Solid waste Management is an obligatory function of Urban Local Bodies (ULBs) in India. The HUA generates around 3379 tons of solid waste every day out of which MCH contributes to 2240 tons and surrounding municipalities contribute towards 1139 tons at a per capita generation rate of 600gms/cap/day. MCH shows a collection efficiency of over 91%, whereas, surrounding municipalities shows a collection efficiency of 95%. The major sources of solid waste generation are household domestic waste, commercial establishments, markets, hotels and restaurants, etc.

5.7.8 TRAFFIC AND TRANSPORTATION:

Transportation Scenario– Current Situation:

Hyderabad is experiencing rapid growth and transportation issues have assumed critical importance. Since the proportionate road length in the HMA area has been almost static, traffic congestion has increased leading to endless transportation gridlocks. Interestingly, there is a declining trend in the use of bicycles. The city’s transportation requirement is largely met by the following modes of transport.

- Bus transport as the major public transport with modal share of 42% and merely 4% fleet.
- Rail based Multi Modal Transport System (MMTS) catering to 1.7% of the share of public transport.
Three and seven seated autos acting as the Para transit contributing to nearly 10% of the transport demand.

Private vehicles (two and four wheelers) mode share is about 50% of the total vehicular traffic.

**Traffic Flows and Travel Demand:**

Major transportation issue of the city is the large number of commuters getting into the central core (MCH area) from the surrounding villages through a high capacity radial network with the low capacity carriageway in the core area leading to traffic constrictions. The major travel patterns and the areas of trip attraction are presented below in Fig 5.11. Explosive growth of the surrounding municipalities and the concentration of substantial economic activity within the MCH area has resulted in heavy radial flows being pumped into the central core which has limited road capacity leading to traffic bottle necks. This is clearly reflected in the following origin – destination (O – D) pattern in figure below in Fig 5.11.

Substantial external-to-external flows across the core area are also being sponsored due to location of certain activity centers. In absence of convenient by pass roads, these flows are being funneled through existing travel corridors of MCH area, thus accentuating the problem. This case can be visualized in the east - west flows as shown in the figure below in Fig 5.11.
5.7.9 Metro Rail Project

The Hyderabad Metro Rail Project is now underway as a DBFOT project. The contractor is Larsen & Toubro. It is proposed to be completed by 2015. It’s total length is around 71 kms and has 66 stations and consists of three corridors:

1. Miyapur to LB Nagar (29.1 Kms, 27 stations)
2. Jubilee Bus Station to Falaknuma (14.2 Kms, 16 stations)
3. Habsiguda to Shilparamam (21.6 Kms, 20 stations)
Figure 5.12 Map showing the alignments of the three corridors of Hyderabad City

Source: HMRL, Hyderabad
5.8 URBAN ADMINISTRATION:

Growth of cities means increase in population which in turn makes the scale and complexity of urban problems daunting. This requires efficient and effective governance framework. Urban Governance refers to the management of civic affairs by institutions to improve the quality of life in an inclusive, transparent and accountable manner. The ‘good urban governance’ is characterized by equity, efficiency, transparency, accountability, civic engagement and security of people and environment. Only good urban governance enhances city’s competitiveness and contributes to sustainability. A number of institutions are involved in governing a city. They include the State Government departments, Parastatals and Local Bodies. While the departments are part of Government, the Parastatals and Local Bodies are created through Acts of Legislature or Government Orders.

There are number of government institutions associated with the governance of the Hyderabad urban area. They include:

5.8.1 State Government Agencies:

- Municipal Administration and Urban Development Department
- Directorate of Municipal Administration (DMA)
- Directorate of Town and Country Planning (DTCP)
- Public Health Engineering Department (PHED)
- Medical and Health Department
- Revenue Department
- Mission for Elimination of Poverty in Municipal Areas (MEPMA)
- Social Welfare Department
5.8.2 Parastatals:

- Hyderabad Metropolitan Water Supply and sewerage Board (HMWSSB)
- Hyderabad Urban Development Authority (HUDA)
- Quli Qutb Shah Urban Development Authority (QQSUDA)
- Cyberabad Development Authority (CDA)
- Buddha Purnima Project Authority (BPPA)
- Hyderabad Airport Development Authority (HADA)
- AP State Highways Authority
- AP State Road Transport Corporation (APSRTC)
- AP Transmission Corporation (AP Transco)
- AP Housing Board (APHB)
- AP Pollution Control Board (APPCB)
- AP Industrial Infrastructure Development Corporation (APIIC)

5.8.3 Urban Local Bodies:

The details of the Urban Local Bodies in the State are as follows.

Table 5.1 Shows Urban Local Bodies

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<thead>
<tr>
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<th>Total No. of ULBs:</th>
<th>124</th>
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<td>Municipal Corporations:</td>
<td>16</td>
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<tr>
<td>3</td>
<td>Municipalities</td>
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<td>A</td>
<td>Selection Grade (&gt; Rs. 8 cr)</td>
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<tr>
<td>B</td>
<td>Special Grade (8-6 cr)</td>
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<tr>
<td>C</td>
<td>Grade-I (6-4 cr)</td>
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<tr>
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<td>D</td>
<td>Grade-II (4-2 cr)</td>
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<td>Grade- III (1-2 cr)</td>
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<td>Nagara Panchayaths (Above Rs. 40,000/- &amp; 25000-40000 population)</td>
<td>05</td>
</tr>
</tbody>
</table>

**Figure 5.13 Map showing the Andhra Pradesh – Urban Local Bodies**

Source: Director of Town and Country Planning 2011, Hyderabad

### 5.9 Functions of Urban Local Bodies:

Functions are broadly divided into two categories, **Obligatory & Discretionary**.

**Obligatory functions** relate to erection of boundary marks, defining the limits of the city; maintenance of public streets, roads, public
health and other matters relating to sanitation and improvement of the city, etc.

**Discretionary functions** relate to the general welfare of various classes of the population, transport facilities improvement of socio-economic status of the inhabitants of the city, etc.

The functional domain was expanded in 1994 as per the 12th Schedule of the 74th Constitution Amendment Act. In Andhra Pradesh, the Municipalities and Corporation Acts provide for a majority of the functions listed in the 12th Schedule of the constitution. They include:

- **Urban Planning including Town Planning**
- **Regulation of land use and construction of buildings**
- **Roads and bridges**
- **Water supply for domestic, industrial and commercial purposes**
- **Public health, sanitation, conservancy and solid waste management**
- **Slum improvement and upgradation**
- **Provision of urban amenities and facilities such as parks, gardens, play grounds**
- **Burials and burial ground; cremations, cremation grounds and electric crematoriums**
- **Cattle ponds; prevention of cruelty to animals**
- **Vital statistics including registration of births and death**
- **Public amenities including street lighting, parking lots, bus stops and public conveniences.**
Regulation of slaughter houses and tanneries

In 2004 the Government after a review of functions of urban local bodies, transferred five more functions to the urban local bodies through government orders.

They are:

- Planning for economic and social development
- Urban forestry, protection of the environment and promotion of ecological aspects
- Urban Poverty alleviation
- Safeguarding the interest of weaker sections including the handicapped and mentally retarded
- Promotion of cultural and aesthetic aspects.

5.9.1 Functions of an Urban Local Body (MCH):

The following are the basic functions in the Municipal Corporation.

1. Finance & Accounts:
   - Survey of properties, assessment & collection of property tax
   - Issue of advertisement permissions & collection of advt. Tax

2. Health & Sanitation:
   - Birth and Death Registration & issue of certificates
   - Conservancy Services and Solid Waste Management;
   - Issue of trade licenses & collection of fee
   - Malaria Control;
   - Slaughter Houses;
- Prevention of Food Adulteration;
- Preventive Health Care and Control of Epidemics;
- Maternal and Child Health Care Services;
- Crematoria and Burial Grounds;

3. **Works & Engineering:**
   - Roads, Bridges, Flyovers, Subways, Markets, etc.;
   - Widening and Improvements to Roads and Junctions;
   - Traffic and Transportation Amenities;
   - Street Lighting;
   - Storm-water Drainage and Flood Control;
   - Rainwater Harvesting and Conservation;

4. **Urban Forestry:**
   - Parks and Playgrounds;
   - Avenue and Block Plantations;

5. **Planning & Projects:**
   - Preparation of development schemes including road-widening schemes
   - Preparation of plan for city development strategy
   - Preparation & implementation of Zoning and Building Regulations,
   - Approvals of buildings and layouts;
   - Removal of encroachments
   - Rationalization of House Numbering System

6. **Urban Community Development:**
   - Slum Improvement and Urban Community Development;
Assisting self-help-groups and poverty alleviation programmes

7. Traffic & Transportation:
   - Co-coordinating Multi-modal Rail Transport System in the Hyderabad metropolitan area
   - Matters related to traffic & transportation activities within MCH

8. General:
   - Co-coordinating with other governmental departments connected with citizen services.

5.9.2 Major Processes
The following are the major processes being carried out by the Municipal Corporation of Hyderabad under the functions mentioned above, which are the basic statutory requirements.

1. Collection of revenues:
   - Property Tax,
   - Vacant Land Tax,
   - Advertisement Tax,
   - Trade Licenses Fee,
   - Collection of Bulk Garbage Disposal Charges,
   - Market Rents,
   - Lease Rent on leased properties of MCH.
2. **To maintain health & sanitation & provision of civic services:**
   - Garbage disposal and solid waste management,
   - Prevention of food adulteration,
   - Preventive health care and control of epidemics,
   - Maternal and child healthcare services

3. **To provide necessary physical infrastructure such as**
   - Roads, bridges, flyovers, sub ways,
   - Widening of roads, junction improvements,
   - Street lighting,
   - Storm water drainage and flood control,
   - Parks & play grounds, avenue plantation,
   - Markets & complexes etc.

4. **To issue licenses, permissions & certificates:**
   - Registration and issue of birth and death certificates,
   - Approval of building and layout permissions,
   - Issue and renewal of trade licenses,
   - Issue of advertisement permissions,
   - Assessment of property tax and mutations,

5. **To attend to the public grievances of the citizens through**
   - Parishkruthi,
   - Face to Face program
   - Coordination with governmental agencies for improvement of city.
5.10 URBAN MANAGEMENT

Urban Management and Governance will be key words in urban sector reforms in the new millennium. Urban Management plays a vital role to manage the dynamic transformation of town and cities. The aim of such urban management system should include improving the efficiency and effectiveness of urban development organization, promoting the development of a commercially viable infrastructure finance system increasing private-sector participation in the delivery of municipal services and improving the capacity of local government to plan, operate, maintain and recover the cost of basic urban services. The distribution of urban services will become more crucial than production because of growing concern among stakeholders pressing equity issues and access for urban services in India.

The main features of urban management principles and paradigm are-

- Revenue enhancement
- Improved service to clients
- Increased efficiency
- Decentralization functions
- Increased public accountability
- Selective privatization
- Sustainability of operations and maintenance
- Institutionalization of planning
- Linking of budgets with revenue resources
- Transparency of operations
The entire process of urban governance shall develop a cohesive organization which understand the aspirations and needs of the community and provide an optimum level of service striving towards effective management of the city. For effective governance and management of the city proper strategies have to be formulated to serve the citizens to their best satisfaction levels.

5.10.1 Measures of performance:

For any Local Body, the performance indicators are crucial to judge the levels of service being provided to the citizens. There is a need to use the tools of the Remote Sensing, GIS and GPS to provide and improve the services being provided by any Local Body in view of the fact all these are spatially distributed variables and associated with the data.

1. Collection of Revenues:
   a. Property Tax:
      i. % of Collection of existing property tax
         • Arrears
         • Current
      ii. No. of self-assessment returns obtained
      iii. % of Collection of tax from those who have not filed S.A. Returns
      iv. No. of Special Notices / Demand Notices issued.
      v. No. of cases of plinth Areas/Floor areas/usage of building inspected
   b. Vacant Land Tax
      i. % of Collection of existing Vacant Land tax
• Arrears
• Current
  ii. No. of Vacant Lands detected which were not brought to assessment
  iii. No. of Special Notices / Demand Notices issued.
c. Advertisement Fee:
  ✪ % of Collection of Advertisement Fee
  ✪ No. of Notices issued
d. Trade License Fee:
  i. %Collection of Trade License Fee
  ii. No. of new trades assessed
  iii. No. of unlicensed trades detected
  iv. No. of Notices issued
e. Bulk Garbage Collection Charges:
  i. No. of bulk garbage generators identified
  ii. Quantity of bulk garbage disposed
  iii. % of Charges collected
  iv. No. of notices issued
f. Market Rents & lease rent on Mpl. Properties
  i. % Collection of Revenues
  ii. No. of demand notices issued
  iii. No. of defaulters/change of use/change of structure cases booked

1. Maintenance of health & sanitation:
a. Garbage Disposal
  i. No. of garbage bins cleared per day
  ii. No. of Notices issued for debris/garbage kept on roads
  iii. % of Fines collected from defaulters
b. Sanitation:
  i. Length of main roads cleaned in night
  ii. Length of streets cleaned in the day shift
  iii. Length of streets cleaned in private sanitation contract
  iv. No. of Slums cleaned per day
v. No. of Urinals cleaned per day  
vi. No. of public toilets cleaned per day  

2. Provision of Physical Infrastructure:  
a. Capital Works such as Roads, Bridges, Flyovers, Sub Ways, Widening Of Roads, Junction Improvements, Storm Water Drainage And Flood Control, Markets & Complexes Etc:  
i. % of works grounded as per norms  
ii. % of works completed on time  
iii. % of roads in good condition  
iv. % of resurfacing of roads done  
v. % of repairs to pot holes and bad patches  
vi. % of de-silting of drains  
vii. measures taken to control floods & water logging  
b. Street lighting  
  ✋ No. of new street lights provided  
  ✋ No. of new high mast lights provided  
  ✋ Length of road illuminated with modern street lighting  
  ✋ % of complaints redressed  
c. Parks & Avenue Plantation & Play grounds  
i. Total no. of trees planted in a season  
ii. No. of traffic islands and central media developed  
iii. No. of new parks developed  
iv. No. of new play fields developed  
v. % of repairs carried to the play fields  

3. Provision of Services to the citizens:  
a. Registration and issue of birth and death certificates  
  ✋ % of certificates issued in time  
  ✋ No. of arrear year records computerized (since the computerized records are updated only from 1998)  
b. Approval of building and layout applications  
i. % of applications disposed of within stipulated time  
ii. No. of unauthorized cases detected / action taken  
iii. No. of Court cases attended
iv. No. of buildings demolished  
v. No. of encroachments removed  
vi. No. of road widening schemes taken up  
vii. No. of dangerous buildings detected and action taken  

4. Issue and renewal of trade licenses:  
i. % of applications disposed of within stipulated time  
ii. No. of unlicensed cases detected / action taken  
iii. No. of Court cases attended  

5. Issue of advertisement permissions  
i. % of applications disposed of within stipulated time  
ii. No. of unauthorized cases detected / action taken  
iii. No. of Court cases attended  

6. Assessment of property tax and mutations:  
i. No. of newly constructed properties for which self-assessment returns and tax collected  
ii. No. of self-assessment returns of under assessed properties collected  
iii. No. of re-assessments of exempted properties  
iv. % of Court cases attended  

5.11 CRITICAL SUCCESS FACTORS FOR BETTER & EFFICIENT PERFORMANCE:  

The study of Critical Success Factors in each of the services of the Municipal Corporation of Hyderabad is necessary to examine the process of re-engineering through the deployment of Remote Sensing technology, GIS and GPS to enable more efficient, reliable and timely services in a transparent manner. As almost all urban data has spatial relevance GIS and GPS assume a central role in such system. The details of each of the urban services and components and the use
of GIS and GPS and other IT applications are explained below. The Vision for Hyderabad City is to make it “an inclusive and futuristic city providing high quality services with universal access including the poor, knowledge city, a planned, clean and green city and a cultured and caring society with concern for equity”. It is envisaged that the City will emerge as the medical and health, education, research and information technology capital of the country. It will be a slum free, citizen friendly, well-governed and environmental friendly city.

In order to realize this, MCH’s primary role shall be to ensure a well-managed and responsive city with effective delivery of civic services to all residents including the poor. But to fulfill the vision and to achieve the efficient performance and effective delivery mechanism to the citizens, the MCH needs to be financially self-sufficient. The Act provides for collection of revenues from the citizens and also partly supported by the Government. But most of the times the collection and the related procedure involved are the bone of contention of criticism and corruption. The success of the organization depends on the financial strength of the organization and also the infrastructure facilities being provided to the citizens and to provide services to the satisfaction of the citizens.

After analyzing the budget provisions with reference to the revenue and expenditure of various heads of accounts, it is observed that the **collection of taxes** accounts for about 33 to 35% of revenues
to MCH. Under this Property tax and Vacant land taxes are important components.

**Assigned taxes, shared taxes and compensation in lieu of taxes** category is another major source of income to the MCH. This also accounts for 33 to 35% total revenues to MCH. In this, the tax on transfer of immovable properties, entertainment tax and compensation in lieu of profession tax are the major sources of income.

Under **fee and user charges**, the trade license fee is one of the important sources of income. In addition to these, bulk collection on garbage charges is providing substantial revenue. Under this category the road cutting charges gives a huge income to MCH. This is because that as extensive cabling works has been taken up by the private agencies such as TATA Telecom, Reliance etc, which may not be in every year. In town planning section the building permission fee and related charges provide about 10% to the total revenue of MCH. Another major share comes from the advertisement tax, which is about 2.69% to the total revenue generated in the MCH.

In addition to these the potential for generating more finances will be from the **Estate, Land and Buildings** where in the market rents, lease rents are included. This can be improved if the records are regularly updated and proper analysis is done with reference to the increase in the inflation and market rates.

Keeping in view the resources problem and the needs of the citizens, all efforts are being made to provide adequate amounts for various
activities with special emphasis on sanitation, creation of long-term infrastructure facilities such as construction of roads including link roads, parallel roads, slip roads, widening of roads, improvements to junction, etc, to decongest; development of parks & play grounds; construction of buildings and public conveniences; widening and development of Nalas and other storm water drains; bridges, culverts, flyovers, foot paths, etc; land acquisition; purchase of new vehicles for sanitation etc.
# TABLE 5.2 CRITICAL SUCCESS FACTORS

<table>
<thead>
<tr>
<th>Issues</th>
<th>Critical Success Factors</th>
<th>IT applications and benefits</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Collection of Revenues:</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>i) Property Tax:</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>1. Survey of Properties</td>
<td>System should be evolved for capturing the data pertaining to the spatial &amp; non-spatial attributes simple and accurate and regular intervals.</td>
<td>The property tax records from 2001 have been done and in Oracle database.</td>
</tr>
<tr>
<td>2. Revision of Property Tax</td>
<td></td>
<td>The payments through the e-seva, banks, CSCs, on-line are done.</td>
</tr>
<tr>
<td>3. Assessment of properties</td>
<td></td>
<td>While continuing the above practices it is necessary that the GIS application is done for achieving the following benefits in view of the CSFs mentioned.</td>
</tr>
<tr>
<td>4. Collection of Taxes.</td>
<td></td>
<td>Efficient verification of property tax records, streamlining of working procedures can be possible through GIS.</td>
</tr>
<tr>
<td>5. Mutation of Property</td>
<td></td>
<td>Maps to rezone the areas based on the property tax ranges. Property tax zone map is in the first place valuable service to the taxpayers and help for tax inspectors.</td>
</tr>
</tbody>
</table>

The above are the major issues as the property tax is major revenue for any local body.

The spatial and non-spatial data relating to the Properties are changing frequently.

All the property tax records from 2001 are computerized and is accessible to all the citizens to know about the tax particulars and to facilitate payment through e-seva, banks and online.

The present computerized data, though allows to interpret, analyze, manage, update and verify, in the absence of spatial data the same cannot be done more meaningfully and accurately.

Survey for assessment & reassessment of properties is time consuming and due to this the property tax is not realized with in a

Bill collectors beat maps to identify the properties and also to detect un-assessed properties.

Spatial data makes the survey simple and also a simple formula can be evolved for reassessment of the property tax.

Self-assessment of the property tax shall be

Rapid access to any
given time.

Self-Assessment of property for tax is not statutory and therefore many citizens are not submitting the property details and even if furnished the correctness of the data particularly about the plinth area and usage of the building is doubtful.

It is difficult to identify spatially whether a particular property has been assessed and it is also difficult to cross check from the database of property tax about an un-assessed property.

In the absence of spatial data it is difficult to identify the no.of floors and total plinth area and floor area and usage of the building. The result is particularly underestimation of taxable building area and loss of revenues.

It is difficult to detect the new constructions for assessment, by any other means other than personal inspection.

The interpretation, cross checking the performance of the payment of taxes, sharing the analyzed data by the internal departments in the MCH for various decision making purposes.

statutory and submission of wrong information shall attract punishment.

The response time in assessment and collection time shall be to the satisfaction of citizen. At present through e-seva, banks, CSCs encourages this to realize the property tax without waiting for the last day. De-linking the Tax & Fee collection from Bill Collector & other Mpl. Staff.

Then application verification of plinth area (through GIS application) actually provides for detection of errors in plinth areas and shall in future practically reduce plinth area errors to absolute minimum.

Data storage, retrieval, updating, interpretation, analysis and management shall be amenable for making decisions.

The rules and regulations of property tax assessment & collection must be transparent and without cumbersome processes.

| property tax record by on screen clicking of any land plot appearing on the screen. |
| Elimination of paper archive |
| Substantial reduction of archival space |
| Quick access to archived data |
| Effective processing and presentation of data |
### ii) Vacant Land Tax:

1. Survey of vacant lands.
2. Assessment.
3. Collection of Tax are the main issues.

Spatial data not available and assessing is difficult due to frequently changing of data.

Lack of information about vacant land without assessment number. This leads to loss of revenues because vacant land is taxed higher than occupied land.

**Simple system to track the data for interpretation of data and updating not only through computerized data but also through maps.**

The rules and regulations of vacant land tax assessment & collection must be transparent and without cumbersome processes.

Detection of vacant lands not brought to assessment.

**Collection of revenues, citizen accessibility to the information and payment procedures.**

Through GIS maps the identification of vacant plots will be easy and tracking of the same for property tax assessment will be done easily.

**Graphic overview of where the taxes have been paid or not been paid at any desirable moment for efficient planning of arrears collection.**

### iii) Trade Licenses:

1. Conducting survey
2. Issue of License & Renewal
3. Collection of fee
4. Detection of unlicensed trades are the main issues.

Identification of properties by category Availability of spatial data.

**System should be evolved for capturing the data pertaining to the spatial & non-spatial attributes simple and accurate.**

Data storage, retrieval, updating, interpretation and analysis through computer database and maps on GIS format.

**Efficient verification of Trade License records, streamlining of working procedures can be possible through GIS.**

Graphic overview of where the license fee has been paid or not been paid at any desirable moment for efficient planning of arrears collection.

**Rapid access to any record by on screen clicking of any land plot appearing on the screen.**

Elimination of paper archive and substantial reduction of archival space.

**Quick access to archived data and Effective processing and presentation of data**
<table>
<thead>
<tr>
<th><strong>iv) Advertisement Tax:</strong></th>
<th></th>
<th><strong>Planning and Permissions:</strong></th>
</tr>
</thead>
<tbody>
<tr>
<td>Registration of Advertisement agencies</td>
<td>Simplified procedure for issue of permissions for advertisement boards based on the location details, size of the board, and calculation of fee shall be available.</td>
<td>The spatial and non-spatial data pertaining to the ownership of the plots (particularly about the Govt. lands) and size of the plots shall be available to save time in processing of the building applications. Legal connotation of land plots and the land registration data and the revenue records can be linked to verify the correctness of the ownership etc. for easy approval of building permission.</td>
</tr>
<tr>
<td>Granting of advertisement permissions</td>
<td>Spatial data showing the potential locations and objectionable locations will allow clearing the applications fast.</td>
<td>The schedule of the rates shall be for unit rate so that the calculation can be easy and understood by any body.</td>
</tr>
<tr>
<td>Location details of the advertisement boards with respect to size, number etc.</td>
<td>Control on the location of advertisement boards in objectionable locations</td>
<td>The zoning regulations and building rules shall be made simple so that the staff's discretion can be avoided and it will facilitate the on-line-clearance of the Building</td>
</tr>
<tr>
<td>Collection of advertisement tax</td>
<td>Collection of advertisement tax</td>
<td>Through GSI data on-line clearance of applications can be possible. Payment particulars and detection of unauthorized boards will be easy. Due to this the revenue leakage can be plugged.</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th><strong>Planning and Permissions:</strong></th>
<th></th>
<th><strong>Planning and Permissions:</strong></th>
</tr>
</thead>
<tbody>
<tr>
<td>Building application processing time</td>
<td>The spatial and non-spatial data pertaining to the ownership of the plots (particularly about the Govt. lands) and size of the plots shall be available to save time in processing of the building applications. Legal connotation of land plots and the land registration data and the revenue records can be linked to verify the correctness of the ownership etc. for easy approval of building permission.</td>
<td>Detection of unauthorized construction is easy and in future the feasibility of acceptance by the courts may also be possible.</td>
</tr>
<tr>
<td>Verification of zoning regulations and building rules and land use controls</td>
<td>Schedule of rates</td>
<td>The Building plans on AUTOCAD will help to clear the applications on-line and also facilitate storing and retrieval of the maps faster and help to share by the other departments whenever required.</td>
</tr>
<tr>
<td>Final release of approved plans and copies to the respective departments.</td>
<td>Final release of approved plans and copies to the respective departments.</td>
<td>Detection of unauthorized construction is easy and in future the feasibility of acceptance by the courts may also be possible.</td>
</tr>
<tr>
<td>Up-to-date existing land-use map or base map. Election maps showing the location of polling station maps, details of polling stations and counting centers, route maps etc.</td>
<td>The schedule of the rates shall be for unit rate so that the calculation can be easy and understood by any body.</td>
<td>The road widening plans may be prepared faster.</td>
</tr>
<tr>
<td>House numbering is in the built up areas.</td>
<td>The zoning regulations and building rules shall be made simple so that the staff's discretion can be avoided and it will facilitate the on-line-clearance of the Building</td>
<td>Encroachments can be identified easily. Weaker section layout plan can be prepared more accurately.</td>
</tr>
<tr>
<td>Through GIS instant updating of the land-use</td>
<td>Through GIS instant updating of the land-use</td>
<td>Through GIS instant updating of the land-use</td>
</tr>
</tbody>
</table>
The approved plan shall be available to the other departments so that the revenue section can assess the property tax without loss of time after completion of the building, etc.

New developments building permits merge or subdivision of lands

Town street map for general orientations. The maps for specific purpose such as elections, census, polling booth routing, location of polling booths and the details of each polling booths with respect to the coverage of the population, internal details of the building, etc.

House numbering data and map have lot of utility value.

### Health and Sanitation:

#### Garbage Disposal & Sanitation:

Garbage disposal is major issue as it involves monitoring of garbage lifting in many shifts from many garbage points.

Optimal location of garbage bins and routing the garbage vehicles.

Location of dumping yards at far off places.

Amount of garbage generated per day is increasing. Non-Organic waste generated is applications.

System to be developed to make the operation simple and effective.

Identification of the locations and quantity of garbage generated.

Optimal routing of vehicles so as to economize the entire operation.

Privatization of garbage lifting and disposal by encouraging the residential welfare groups and also DWACUA

This is possible if the GIS format data is available.

No. of trips of each garbage lifting vehicle can be easily monitored through GIS maps and by instant forwarding of the data through handsets with the staff.

The GIS maps help to identify the areas based on the quantity of garbage generated and problem areas can be identified and monitoring can be done effectively.
increasing.  
Narrow roads making the lifting difficult.  
Cleaning of slums.

| groups.  
Stepwise lifting of garbage and transit dumping points is important due to the long distances of the dumping yards and also because many of the streets are narrow where the free movement of the garbage vehicles is difficult. |

| ii) **Solid Waste Management:**  
Huge garbage is generated and dumped at various dumping yards.  
The garbage comprises bio and non-bio wastes it also comprises toxic wastes.  
No proper system exists to track and manage disposal of solid wastes.  
Distance of the dumping yards from the City. |

| The map showing the location of dumping yards and the generating points to plan the routing of vehicles.  
Identification of transit dumping points in view of the long distance of the dumping yards.  
Privatization of garbage lifting and provide incentives for recycling techniques.  
Recycling methods can be adopted.  
Educating citizens about segregation of bio and non-bio wastes at the generating point itself. |

| The GIS maps helps in locating the dustbins, transit dumping points, dumping yards and the distances between them so as to plan for lifting of the garbage and transporting them and optimal routing of the vehicles.  
To prepare a buffer zone for the dumping yards and also to for privatization of the areas.  
To track the lifting of the garbage from generating points to the dumping places, thus managing the solid waste disposal efficiently. |

| **Infrastructure for City Development**  
Construction of Roads, bridges, Flyover, Markets, Resurfacing of Roads.  
Resurfacing of Roads.  
Repairs to potholes & bad patches.  
Widening of roads & Junction improvements,  
Construction of drains / |

Accurate and reliable road inventory enables recording of all maintenance operations and overall monitoring of maintenance.  
Spatial and non-spatial data information to be made available to various departments i.e. Engineering, Town  
Through GIS maps and database many of the issues can be solved effectively and efficiently.  
The decision-making and preparation of action plans are possible.  
The monitoring of the works becomes easy. |

Various wings work in isolation & Data sharing is difficult.

Non-availability of spatial and non-spatial data, particularly in case of underground pipelines, drainage, cabling etc.

Planning, Police & HMMWS Depts. For provision of services to the citizens and also to take decisions.

Improvement in procedures for tenders, short listing and awarding works.

Quality checks are important for provision of better services.

Time bound completion of the works help in savings and also for better performance.

Action plan long-term & short-term for phase wise & work wise and locality wise proposals shall be prepared / available.

Documentation of the works done so far is important for proper planning.

Transparency is possible.

By following e-procurement policies the tendering system can be improved.

Data storage, retrieval and sharing are easy and convenient.

**Coordination with Govt. departments**

Many of the facilities in the city for citizens are being looked after by different agencies. For achieving best results for a given function the working of the departments together is major issue.

Priorities of the works vary for each department and sharing of the information and data is a bottleneck.

There is no comprehensive and joint action plan.

Action plan / concept plan for city development strategy for comprehensive development of the city duly showing the strategies for development and also funding pattern.

Joint Meetings and inspections of the departments in the city shall be regular and action oriented.

Sharing of the expenditure for major projects

The departments shall solve grievances of the citizens.

The GIS data and maps come in handy for many departments to take decisions without wastage of time.
<table>
<thead>
<tr>
<th>Funding and resources is the bottleneck.</th>
<th>citizens jointly.</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Attending public grievances</strong></td>
<td>Parishkruti the web based redressal mechanism &amp; Face-to-Face Program. Analysis of the complaints by the departments provides solution to many of the problems. No proper data either spatial or non-spatial.</td>
<td>For each infrastructure inventory map, the public grievance redress file can be linked to monitor the redressal and to plan and take appropriate decisions.</td>
</tr>
</tbody>
</table>