

TOWN AND COUNTRY PLANNING

DISPUR:: GUWAHTI-6:: ASSAM

SOP FOR PREPARATION OF MASTERPLAN

The urban settlements of the country have experienced relatively rapid population growth and the percentage of India's population living in urban areas has more than doubled from 14% at the time of independence to 31.8 % in 2011 (Census of India). This is expected to increase even further to nearly 40% by 2026 and is expected to be more than 50% by 2051.

Most of the urban settlements, especially smaller urban settlements, are characterized by haphazard and unplanned growth, non-conforming land uses, mushrooming unauthorized colonies, and land conversion from agriculture to urban resulting in environmental degradation and poor quality of life.

Master Plan/Development Plan is the major tool for urban land management, providing detailed landuse allocation for the sustainable development of city/town. Most master/development plans are made for 20-year periods, in phases of five years for periodic review and revision.

Formulation of master plans start with base map preparation, existing land use surveys and collection of socio-economic data necessary for reviewing the existing situation and proposing the future land use plan. With the advances in remote sensing and geographic information system, the plan making process can be expedited with integration of both spatial and attribute data, which enables detailed assessment of spatial growth of towns/cities, landuse status, physical infrastructure facilities, etc. in anticipation of the projected population growth.

The following shall be the steps in preparation of Master Plan for Towns of Assam:

- 1. Identification of distinctive characteristic of the Town/City and selection of theme.*
- 2. Fixation of boundary of Master Plan*
- 3. Collection of cadastral maps*
- 4. Procurement of Very High-Resolution Satellite imagery (VHRS)*
- 5. Drainage survey, contour survey and fixation of gradient. Preparation of drainage plan and reservation of land.*
- 6. Physical Survey of road and preparation of road network plan and fixation of alignment and reservation of land including RL(level) of land.*
- 7. Physical Survey of existing water supply network and preparation of water supply plan and fixation of alignment and reservation of land.*
- 8. Physical Survey and preparation of road Sewerage network plan and fixation of alignment and reservation of land.*
- 9. Physical Survey and preparation of utility plan with reservation of land for solid waste management site, water supply plant, crematorium, parks and playground.*
- 10. Physical survey for preparation environmental plan with strategy to preserve and maintain waterbodies, river, lakes and forest.*
- 11. Preparation of Disaster management plan in conformity with District and State Disaster management plan.*

DETAIL CONTENT AND PROCEDURE FOR PREPARATION OF MASTER PLAN

1. BASE MAP

- i. Boundary of Master Plan area
- ii. Boundaries of Cadastral maps with daga numbers
- iii. Boundary of Municipal area
- iv. Boundary of Municipal Wards
- v. Boundary of Revenue villages within Master Plan area

2. EXISTING LAND USE MAP

- a. **Residential** (also including slum areas, space for affordable housing and Govt. provided housing scheme, if any)

- b. **Commercial** : major markets and commercial hubs; including existing and proposed vending zones and vendors markets, daily & weekly markets, etc
- c. **Industrial:** current manufacturing areas & industrial warehouses, etc; also including, current & proposed LPG Storage areas
- d. **Public/Semi-public:** Pay & Use Toilets; Cemetery, Burial and Cremation grounds; Religious buildings, Lifeline Buildings like Hospitals, PHCs, Police stations, Major Institutional Buildings like educational and offices; DC's office; Fire Stations; etc
- e. **Recreational spaces:** Parks, gardens, stadium and sports complex
- f. **Open Spaces:** Restricted developable multi-purpose open space like maidans for public assembly, functions, sports, etc
- g. **Green belt:** Restricted development, including plantations, fisheries, urban forestry, hills, grazing lands, barren land, non-agricultural char areas in and along rivers, etc.
- h. **Eco-zone** : Undevelopable areas, including Reserved forest, wetlands, wildlife corridors, sanctuaries, etc.
- i. **Agriculture**
- j. **Water bodies:** Rivers, beels, wetlands, swamps, big ponds; Natural channels as already demarcated in Cadastral maps
- k. **Transport:** Bus terminals, Truck Terminals, Airport, railway station, internal water ways, etc.,
- l. **Special areas:** Old-build up, Heritage, Pilgrimage, and Notified Archeological sites, if any

3. PROPOSED LAND USE MAP

- a. **Residential** (also including slum areas, space for affordable housing and Govt. provided housing scheme, if any)
- b. **Commercial** : major retail & wholesale markets and commercial hubs; including existing and proposed vending zones and vendors markets, daily & weekly markets, etc
- c. **Industrial:** current manufacturing areas & industrial warehouses, etc., also including, current & proposed LPG Storage areas
- d. **Public/Semi-public:** Pay & Use Toilets; Cemetery, Burial and Cremation grounds; Religious buildings, Stadiums, Lifeline Buildings like Hospitals, PHCs, Police stations, major Institutional Buildings like educational and offices; DC's office, Fire Stations, etc
- e. **Agriculture**
- f. **Open Space:** Restricted developable multi-purpose open space like maidans for public assembly, functions, sports, etc
- g. **Green belt:** Restricted development, including plantations, fisheries, urban forestry, hills, grazing lands, barren land, non-agricultural char areas in and along rivers, etc.
- h. **Eco-zone** : Undevelopable areas, including Reserved forest, wetlands, wildlife corridors, sanctuaries, etc.
- i. **Recreational spaces:** Parks, gardens, stadium and sports complex
- j. **Water bodies:** Rivers, beels, wetlands, swamps, big ponds; Natural channels as already demarcated in Cadastral maps
- k. **Transport:** Bus terminals, Truck Terminals, Airport, railway station, internal water ways, etc.,
- l. **Special areas:** Old-city Build-up, Heritage, Pilgrimage, and Notified Archeological sites, if any, in proposed area
- m. **Composite uses:** Mix of Commercial, Residential, Public-semi public, existing industrial, etc.

4. PROPOSED ZONING MAP

- i. Residential
- ii. Commercial,
- iii. Industrial,
- iv. Public and Semi-public
- v. Agriculture

- vi. Green belt
- vii. Recreational spaces
- viii. Open Spaces
- ix. Eco-zone
- ix. Transport zones
- x. Water Bodies
- xi. Composite Zone

5. PROPOSED CIRCULATION MAP

(Existing and proposed)

A

- i. Road hierarchy in the city including bye-pass road
- ii. Demarcation of incomplete loops of major roads
- iii. Bus terminals, and major bus stops (with or without infrastructure)
- iv. Freight zones and Logistics (including truck and inland water)
- v. On-street parking for trucks and heavy vehicles and other vehicles (only existing)
- vi. Proposed truck and heavy vehicle parking bays; designated parking for other vehicles
- vii. Major accident-prone zones
- viii. Multi-car parking; mechanized parking; proposed parking for major transit zones like bus stops, railway station and ferry ghats; proposed parking for major commercial and institutional areas
- ix. Designated Cycle tracks in suitable streets
- x. Footpaths of min.2metre width
- xi. Proposed major rotary and junction improvements (road curves, signals signage, etc.)
- xii. Proposed streets for Street lighting
- xiii. Railway track (existing track and proposals by Railways, if any)
- xiv. Inland water transport (Ferry ghats, and their freight zones)
- xv. Petrol/diesel Filling Stations
- xvi. Fly-overs, bridges, river bridges

B: **Alignment and Reservation of land.**

6. PROPOSED UTILITIES PLANS –

(existing and proposed)

a. **Water Supply & Drainage Plan**

- i. **Water Supply Plan:** Distribution zones, Intake points, raw water mains, Water treatment plant, Clean water overhead reservoirs, distribution network, important ponds for intake of water by Fire Dept during disaster/emergency, fire hydrants
- ii. **Drainage plan:** delineation of basin area, major drains, sluice gates, silt traps, if any, major water-logged areas
- iii. **Alignment and Reservation of land.**

b.

c. **Sewerage plan and Solid Waste management Plan**

- i. **Sewerage plan:** indicating trunk lines below and along roads), sewerage treatment plant (lower-most points of the city for analyzing gravity flow). Alignment and Reservation of land.
- ii. **Solid Waste Management:** Location of ULB-provided garbage bins; major garbage dumping areas near vegetable & fish markets; commercial areas, residential areas, Vending zones, Bus terminus, industrial areas, etc.; garbage collection points; garbage transfer stations; Industrial effluent treatment plants; ULB Disposal Sites for garbage treatment/recycle; current and proposed landfill site. **Reservation of land.**

SOP FOR CHAPTERISATION OF MASTER PLAN FOR TOWNS OF ASSAM		
	CHAPTERISATION	MAJOR DATA SOURCES
	Chapter 1: INTRODUCTION TO MASTER PLAN AREA	
1	<i>Location, regional setting, brief history of the town and surrounding</i>	
2	<i>Climate, topography and soil condition</i>	
3	<i>City influence and its characteristics including settlement pattern, rural-urban scenario, history of the physical growth and expansion of town, etc</i>	
4	<i>Need for the Master Plan</i>	
	Chapter 2: DEMOGRAPHY	
1	<i>Total population, M/F population, Population growth rate, population density, sex ratio, literacy (Total, Male, Female, rate), working population and non-working, population, SC-ST Population, etc</i>	<i>Primary Census Abstracts, Census 2011</i>
2	<i>Migration population</i>	<i>Migration Tables of Census) 2001 or 2011</i>
3	<i>Household density and size</i>	<i>Census House-Listing Tables 2011</i>
4	<i>Population projection up to 20 years</i>	<i>T&CP calculation</i>
	Chapter 3: ECONOMIC BASE AND EMPLOYMENT	
1	<i>Formal sector</i>	<i>Raw data to be collected from Economics & Statistics Deptt.</i>
2	<i>Informal sector</i>	<i>T&CP Survey for No. of Vendors, Vending areas, Daily & Weekly markets</i>
3	<i>Occupational pattern</i>	<i>Raw data to be collected from Eco & Statistics Deptt.</i>
	Chapter 4: HOUSING AND SHELTER	
1	<i>Housing scenario</i>	
2	<i>Housing supply mechanism (self/pvt. builders & developers/Govt. housing schemes)</i>	
3	<i>Housing condition, Type of Structure, HH Facilities available, Availability of Kitchen, Latrine, Bathroom, Drainage</i>	<i>Census House-Listing Tables 2011</i>
4	<i>Slums-squatters and informal housing share, including list of all slums and informal housing localities in MP Area and marking location on Map</i>	<i>T&CP Survey for No. of slums and location;</i>
5	<i>Housing stock, shortage and need assessment</i>	
6	<i>Identification of suitable Govt/ULB land for housing</i>	<i>T&CP Survey/Circle Office</i>
	Chapter 5: TRANSPORTATION	
1	<i>Network of roads (NH, SH, District Roads, etc) with average road width</i>	<i>T&CP Survey and information of Transport Dept. and PWD</i>
2	<i>Overview of Critical roads (e.g. Road connecting major roads) and their improvement</i>	<i>T&CP Survey and information from Transport Dept. and PWD</i>
3	<i>Bus Transport Terminals: Bus Terminus, Bus parking bays, major bus-stops, on-street parking areas and infrastructure issues</i>	<i>T&CP Survey and information from Transport Dept.</i>
4	<i>Freight zones and Logistics: Truck terminal, loading/unloading areas, Warehousing, Feeder transport services</i>	<i>T&CP Survey and information from Transport Dept.</i>
5	<i>Footpaths (min. 2 mtr wide) and Bicycle tracks</i>	<i>T&CP Survey and information from Transport Dept.</i>

6	<i>Parking: Existing On-street and proposed for major commercial, institutional areas and transit areas like train& bus stations and ferry stops</i>	<i>T&CP Survey and information from Transport Dept.</i>
7	<i>Areas with major traffic congestion and parking issues, accident prone area</i>	<i>T&CP Survey</i>
8	<i>Improvement of Rotary and Junctions</i>	<i>T&CP Survey</i>
9	<i>Street lighting and proposed improvement plan</i>	<i>T&CP Survey</i>
10	<i>Signage: availability and requirements</i>	<i>T&CP Survey</i>
11	<i>Major Proposals to be on map indicating width of road and reservation of land for the proposed road or widening of existing road.</i>	
	Chapter 6: INFRASTRUCTURE, PUBLIC UTILITIES & SERVICES	
1	<i>Physical infrastructure : Overview of each sub-sector, current status, issues and proposals in consultation with the Executive Engineer of D&S Division</i>	
	<i>i. Water supply</i>	<i>PHE, AUWSSB and Census House-Listing Tables 2011 for availability of house-wise water connection information. Alignment and reservation of land.</i>
	<i>ii. Drainage system</i>	<i>ULB & D&S Divn; plus Census House-Listing Tables 2011 for availability of house-wise drainage information. T&CP Survey for existing drains, existing bridges and culverts, including narrow bridges and culverts, probable outlet points, reconnaissance of natural slopes, major water-logged areas, contour studies. Alignment and reservation of land</i>
	<i>iii. Sanitation</i>	<i>ULB & PHE; plus Census House-Listing Tables 2011 for information on availability of house-wise toilet, non-availability, alternate options, etc reservation of land</i>
	<i>iv. Sewerage network</i>	<i>- PHE for general information - T&CP Survey for: > feasibility of laying sewer lines; > Identification of land for reservation for network, intermediate pumping stations, treatment plant, dry beds, ultimate disposal sites, control rooms & laboratory Alignment and reservation of land</i>
	<i>iv. Solid waste management: current site assessment; land ownership; proposed site</i>	<i>- ULB for general information - T&CP Survey for: > Identification of land for garbage bins, transfer station, treatment plant (vermi-compost, recycling, etc), Land-fill sites. > Demarcation of land near vegetable markets for organic composting project reservation of land</i>
	<i>v. Electric sub-station and major transformers</i>	<i>T&CP Survey for location and number of transformers and sub-stations</i>
2	<i><u>Social Infrastructure</u>: Schools, colleges, universities, Hierarchy of hospitals and health centers, etc.</i>	<i>Education and Health Depts.</i>
	Chapter 7: ENVIRONMENT AND CITY BEAUTIFICATION PLAN	
1	<i>Description of eco-friendly areas like water bodies; beels; forests; and also heritage areas</i>	
2	<i>Plan/Measures for Protection and Conservation of environmentally-friendly zones</i>	
3	<i>City Beautification Plan/Proposals</i>	<i>T&CP Survey</i>
	<i>i. Roadside plantation</i>	
	<i>ii. Urban agriculture and urban forestry</i>	
	<i>iii. Public Rain Water Harvesting Scheme</i>	

	iv. <i>Development of parks and recreational spaces</i>	
	v. <i>Identification and demarcation of multi-purpose open spaces for sports, cultural functions, fairs, circus, etc.</i>	
	vi. <i>Beautification of major transit zones (major junctions, Bus depot, Railway Station, market zones, etc)</i>	
	vii. <i>Road signage and street furniture</i>	
	Chapter 8: LAND USE PLAN	
1	<i>Developable and non-developable area of the Master Plan</i>	<i>T&CP Survey</i>
2	<i>Existing and Proposed land-use: Residential, Commercial, Manufacturing, Public & Semi-public, Green belt, Parks & Playgrounds (including public grounds for functions, sports, assembly, etc), Open Spaces, Transport, Agriculture, Special areas (Heritage, Pilgrimage, Notified Archeological sites, if any, etc), Eco-zones, water bodies</i>	<i>T&CP Survey</i>
3	<i>Composite zones or Mixed Zones</i>	<i>T&CP Survey</i>
	Chapter 9: PROPOSED PROJECTS' BRIEF AND TENTATIVE FUNDING SOURCE	
1	<i>Based on existing conditions and projected requirements of the planning area, identify priority sectors and projects</i>	
2	<i>Fund Requirement for each sector/project identified under the sectors</i>	
3	<i>Identify Land site for proposals: In case of Government Land, inventory of Municipal Land, State Govt./ Govt. agency owned land, etc. and plan for acquiring/leasing the same</i>	
4	<i>Indicative Sources of fund: Specific Central Scheme funds (10%, NLCPR, AMRUT, Infrastructure Dev Fund, Entry tax, etc) Assam Finance Commission funds, CM's Special Package, Public Private Participation, Loan from (Externally aided Project (JICA-World Bank-ADB), etc.</i>	
	Chapter 10: DISASTER PLAN	
1	<i>Flood</i>	
2	<i>Earth-quake</i>	
3	<i>Others</i>	
4	<i>Standard Operational Procedure (SOP) on Disaster: Pre-disaster, During and Post disaster</i>	

DISTRIBUTION OF LANDUSE (as per URDPFI Guidelines, 2014)

The proposed land use structure for urban centres as prescribed in the URDPFI Guidelines, 2014 is indicated in the following table. The size of the urban centres is based on population densities of settlement on the developed land of the settlement, for which the section 5.3.1 of the URDPFI Guidelines may be referred.

Proposed Land use Structure of Urban Centres

Sl No.	Land use category*	Percentage of Developed Area			
		Small	Medium	Large cities	Metropolitan Cities and Megapolis
1	Residential	45-50	43-48	36-39	36-38
2	Commercial	2-3	4-6	5-6	5-6
3	Industrial	8-10	7-9	7-8	7-8
4	Public & Semi Public	6-8	6-8	10-12	10-12
5	Recreational	12-14	12-14	14-16	14-16
6	Transport &	10-12	10-12	12-14	12-14

	Communication				
7	Agriculture, Water Bodies and Special Areas*	Balance	Balance	Balance	Balance
8	Total Developed Area	100	100	100	100

- Note:
1. It would be desirable to fix the recommended land use share for essential uses (Residential, Transportation and Recreational) while the proportion for other uses may be flexible. Actual Landuse percentage in a given city case should be calculated based on local conditions and needs.
 2. Zoning Regulations given in Table 9.1 of the URDPFI Guildelines, 2014 to be followed in consistency with the land use structure given in the table above.
 3. Land occupied under Special Areas (Ref Table 9.1 of the URDPFI Guildelines, 2014) to be included in the land use categories 1-6 given in the table above, unless large special areas to be considered as a separate entity for planning, such as cantonment areas.
 4. However, to propose the mixed landuse of a city – percentage share of residential, commercial and industrial landuse to be adjusted proportionally as planned by the local Authority. Mixed land use should be either non- industrial oriented or industrial mix oriented Ref Table 9.1 of the URDPFI Guildelines, 2014).
 5. The adjustments in the residential, commercial and industrial land use (dominant use) to be based on the land area proposed for mixed land use zone and reduction of respective proposed mixed land use(s). Appropriate reduction in residential, commercial or industrial uses and adjustments in other uses to be made so that the total land use becomes 100 %. The mixed use of land is to be envisaged at vision development stage of the plan formulation.
 6. Detailed study is to be undertaken on the co- relation of and effects of FAR/ Densities in towns (both small towns and Metropolitan cities) and guidelines to be adopted for the optimal use of land.

INFRASTRUCTURE PLANNING

For a detailed study of infrastructure planning of the Master plan area the following sections of the URDPFI Guidelines, 2014 may be referred:

- Transportation Planning (classification of Urban Roads, bicycle tracks, footpath, Parking, Bus & Truck Terminals, Integrated Freight Complex etc) the Section 8.2 of the URDPFI Guidelines, 2014 may be referred.
- Physical Infrastructure (Water Supply, Sewerage & Sanitation, Drainage, Rainwater Harvesting, Solid Waste Management etc) the Section 8.3 of the URDPFI Guidelines, 2014 may be referred.
- Social Infrastructure (Educational facilities, Health, Socio Cultural facilities, Open Spaces, Sports, Distribution Services etc) the Section 8.4 of the URDPFI Guidelines, 2014 may be referred.
- Commercial Activities (Hierarchy of Commercial Centres, Urban Street Vending areas etc) the Section 8.5 of the URDPFI Guidelines, 2014 may be referred.
- Miscellaneous Facilities (Cremation, Burial Grounds, whole sale markets etc) the Section 8.6 of the URDPFI Guidelines, 2014 may be referred.

PLANNING APPROACH

For details regarding the study of the location, site, situation of Settlement, Peri-urban areas, urban sprawl, Green Cities, Transit Oriented Developments, Mixed Land use, Strategies for development of hilly areas etc the Chapter 5 of the URDPFI Guidelines, 2014 may be referred.

Planning techniques such as defining of the Carrying Capacity, Threshold Analysis and Land Suitability Analysis etc are useful tools for preparation of the Master Plan of an area. The Chapter 7 of the URDPFI Guidelines, 2014 may be referred for details regarding these techniques.

Work Plan & Schedule for preparation of Master Plan

[illegible]

[illegible]