



Local Government Spatial Development Department

Government of Sindh

Model Local Area

Master Plan

for

TMAs

in

Sindh

2006 - 2026

Programme Support Unit,
Sindh Devolved Social Services Programme

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Master Plans for Local Areas (City, Town or Village) within the jurisdiction of TMAs in Sindh

A. Preface

The present report is part of a series of documents for Technical Assistance to the TMAs in Sindh in enhancing their capacity for the “Preparation and Updating of Master Plans for *“local areas”* (City, Town or Village) within their jurisdiction. It covers, very briefly a format for the Master Plan for Local Areas (City, Town or Village) of any Taluka / Town in Sindh for the period 2006-2026.

The Local Government, Katchi Abadis & Spatial Development Department, Government of Sindh Karachi directed the Director, Town Planning Department (DTP), Government of Sindh @ Hyderabad to prepare an easiest format keeping in view the local capacity at TMA level for the preparation and updating of Master Plans for *“local areas”* in Talukas & Towns in Sindh. Accordingly the DTP submitted various documents including desired format illustrating “Scope of Work” and “Guide-lines & Training Manual” to provide Technical Assistance to the TMAs in Sindh in enhancing their capacities for the preparation and up-dating of Master Plans for *“local areas”* situated within the jurisdiction of TMAs in Sindh. In essence it is based on a step-by-step illustration of the ways and methods used by the Town Planning Department, Government of Sindh in order to prepare the Master Plan (Spatial Plan) for *“local areas”* in Sindh. Now, this format aims to serve as an easiest way for the preparation and updating of Master Plans by the TMAs who will be assigned the task of preparation of Master Plans for *“local areas”* within their jurisdiction.

The said format was perused, discussed and examined at the Local Government, Katchi Abadis & Spatial Development Department, Government of Sindh Karachi involving various experts including Programme Director, DSSP, Director, MEC, Director, Town Planning under the supervision and chairmanship of Special Secretary, Local Government Department. Unanimously it was agreed upon to immediately disseminate this format to TMAs of District Head Quarter Towns and major Taluka Head Quarter Towns for preparation of Master Plans of *“Local Areas”* within their jurisdiction. It was decided that the Director, Town Planning Department, (DTP) Government of Sindh @ Hyderabad will be the “Focal Person” for the preparation of Master Plans of *“Local Areas”* in TMAs in Sindh. It was further decided that the Local Government, Katchi Abadis & Spatial Development Department, Government of Sindh Karachi and Programme Support Unit, Sindh Devolved Social Services Programme, Finance Department, Government of Sindh, Karachi will provide required financial support and logistics to Director, Town Planning Department, Government of Sindh. The Technical Assistance to TMAs in the preparation and updating the Master Plans for *local areas* within their jurisdiction will be provided by DTP through various techniques; involving but not limited to direct counter part trainings.

This “Format” follows closely the outline set forth in the Master Plan reports earlier prepared by TPD. Section B *“Existing Situation and Development Trends”* deals with the basic information required defining the locational and geographical characteristics of the local area within a TMA, as well as its role in the wider region. The report on the regional linkages and flows of goods relevant to the local area is also presented and explained. This section refers to the techniques employed for the assessment of the existing conditions and the projection of development trends. Particular emphasis is given on the population projections. It further illustrates the analysis of the financial situation of the respective TMA within which a local area is situated. It also presents the underlying assumptions used for the estimation of obtainable funds

directed for development works. The above section illustrates and defines the tasks to be accomplished, data requirements, sources and methodology.

Finally, Section C & D deals with the actual Master Plan & Action Plan preparation. The basic definitions and the underlining assumptions, the aims and the scope as well as the ways to implement such plans are presented and analysed.

B. Existing Situation and Development Trends

i). Location of the -----

The -----was of ----- population in the year 1998 is located in the Taluka ----- and District ----- in Sindh at a distance of about ----- km west of ----- . Important towns in the vicinity of Taluka ----- included ----- and ----- . ----- . Districts and ----- Talukas share their boundaries.

ii). Population Characteristics

The average population growth rate of ----- experienced an increase / decrease / stagnation during the 1951 – 1998 period. It is expected that over the next 20 years the population growth in ----- will tend to approach the expected average growth rate of about -----% to -----% per year. According to this assumption, the population of ----- has increased from ----- in 1998 to ----- in 2006 and will increase to ----- in 2011, ----- in 2016 and -----in 2026.

iii). Household Characteristics

According to the 1998 District Census Report of ----- the average household size in ----- -- was ----- persons. In order to provide forecasts for the 20-year plan period, a decreasing household size is assumed, reflecting the expected structural changes in the society advocated by the official human resource development policies. On this basis it is assumed that the average household size in ----- will gradually fall to ----- persons during the 20-year plan period.

iv). Labour Force and Employment

Based on the trends experienced in the country as a whole and especially in developing districts & talukas, the table in the next page, shows the expected employment figures and composition by sector of economic activity in 2006, 2016 and 2026. According to these estimates, the relative importance of primary sector (Agriculture & Forestry) will be significantly reduced. On the contrary, an increasing participation of the secondary (Manufacturing) and tertiary (Service & Business) sector in the future employment composition is expected, reflecting the strengthening of -----’s role as a service centre in the wider area. Finally, and on the basis of the available information on the general economic trends, it is estimated that the labour force to total population ratio will tend to approach in the future the average of the urban sector of the country (i.e. 32% to 34%).

-----: EMPLOYMENT BY SECTOR OF ECONOMIC ACTIVITY
2006-2026

Sector	2006		2016		2026	
	%	Persons	%	Persons	%	Persons
Primary (Agriculture & Forestry)						
Secondary (Manufacturing)						
Tertiary (Service & Business)						
Total	100		100		100	

Source: District Census Report 1998, survey & estimates.

vii). Housing

According to information locally collected, there were -----dwellings in ----- on May 2006. Considering the estimated total number of households ----- a dwelling unit occupancy ratio of ----- households, or ----- persons per dwelling, is produced. Housing needs concerning new buildings and additional residential land have been calculated for the years 2016 and 2026 and are presented in the following table.

-----: HOUSING NEED 2006-2026

	2006	2016	2026
No. of Households			
Households per Dwelling			
Total Housing Needs			
Available Houses		(1)	(2)
Need for Replacement of deteriorating dwellings			
New Housing needs			
New Plot needs (3)			
Average Plot size in New Areas (sq.yds)			
Needs in New Resid. Land ha/acres(4)			

(1) 50% of the (2006) housing stock

(2) 20% of the (2006) housing stock

(3) Based on a 1.3 dwelling-to-plot ratio

(4) The number of new plots, multiplied by the average plot size, assuming that the plot area equals 50% of the gross area.

Source: Survey & Estimates

viii). Future Demand for Urban Residential Land

The following table presents the estimated total demand for major types of urban land for the years 2016 and 2026. The calculation of this demand is based on analysis regarding residential land.

**-----: TOTAL DEMAND FOR URBAN RESIDENTIAL LAND
2016 – 2026**

2016		2026	
Hectares	Acres	Hectares	Acres

Source: Survey & Estimates

ix). Traffic and Transportation

----- is well served by a number of regional roads from all directions including: -----, ----, ----- and ----- villages. There is also a ring road encircling major parts of the ----- and connecting various regional arteries with each other (cf. Fig.--- page.---). However, only a small portion of this ring road is metalled, while the remaining portion is a ‘katcha’ (unpaved) track. A by-pass road between ----- and ---- Road has been constructed by the Highway Department. A fly over has also been constructed to cross --.

Most urban roads in -----, with the exception of those found in the commercial area, follow gridiron patterns. -----/ ----- Road, ----- Road, ----- Road, ----- Road, and ---- - / ----- Road are some of the most important urban arterials. Pavement conditions in these roads are in general satisfactory and the instituted ROWs are adequate. However, projections, encroachments and parked vehicles, particularly around the CBD, reduce the effective road widths and create congestion in many central localities.

----- is divided into two parts by the ----- branch line of Pakistan Railway. A branch line to ----- also starts from ----- . Movement across the railway lines is effected through ---- grade-separated and ----- level crossings are of limited usefulness since their low clearance height does not allow trucks and buses to use them.

x). Water Supply (Option 1)

----- is located in between river -----, perennial ----- canal and non-perennial ----- canal. Due to this fact the aquifer in the area is annually replenished and it is there for there is plentiful potable ground water even at shallow depths and the residents of the city can tap the water without creating salinity problems to the aquifer. Residents used to extract ground water from shallow depths, but in recent years, because of fear of upper water strata being contaminated, depths of wells have been increased.

Although the ground water at ----- is potable and sufficient to meet the day-to-day requirements of the city population, however, during last three decades, the water supply infrastructure was also been developed in various phases.

x). Water Supply (Option 2)

At present, the water sources in ----- are: (a) the ----- Main Canal; (b) the -----Minor Canal; and (c) a number of tube wells. Raw water for the city is obtained during ---- months per year from ----- Canal, which is a major canal situated at a distance of ----- km from ----- . In order to reach the city, the water is transmitted by gravity through an open channel for ----- km

and is pumped through concrete pipes for another --- km. The channel is partly lined. When the water supply from ----- Canal is closed, raw water is obtained from ----- Minor Canal, which flows by the side of the ----- waterworks. During the period that both canals are closed (three to four weeks per year) the city relies on water pumped from ----- shallow tube wells situated around the existing raw water storage tanks.

Based on the observed consumption indices the following table presents the water demand expected in ----- for the year 20-years development plan period.

----- - **WATER DEMAND 2006-2026**

Year	Population	Per Captia Water Demand (1)		Total (2)
		Excl. Losses	Include. Losses	
2006		136	163	
2016		164	197	
2026		200	240	

(1) Lit/cap/day

(2) Cu.m/day

Source: PHED, TMA, Survey & Estimates.

xi). Sewerage

The sewer network in ----- consists mainly of open drains ('nals') and reinforced concrete underground sewers. Open drains, with some exceptions, constitute the collection drains in lanes and streets, receiving effluent from dwellings. Wastewater is collected into main sewers and flows by gravity into the disposal works. According to information provided by PHED / TMA, about -----% of the city area is covered by this network. The remaining -----% dispose of their wastewater to septic tanks or to cesspools. Wastewater is collected from cesspools and septic tanks by donkey carts or tractor trolleys with tanks.

The following table presents the estimated effluent production in ----- for the 20-year Master Plan period. Estimates are based on the projected water consumption presented in the previous table of water demand for the period 2006– 2026.

-----: **EFFLUENT PRODUCTION 2006-2026**

Year	Population	Effluent Production	
		Per Capita (1)	Total (2)
2006		109(+/-)	
2016		131	
2026		160	

(1) Lit/cap/day

(2) Cu.m/day

Source: PHED, TMA, Survey & Estimates

xii). Storm Water Drainage

There is no separate storm water drainage system in -----, except for temporary mobile pumping units, which are used in emergencies. Open sewers or drains have been designed to carry rainwater too, but as they are often clogged or under-designed; their proper operation is severely hindered during rain. Moreover, as the topography of the ----- is flat and the roads have no proper cambering and longitudinal slopes, rainwater over-floods the sewers during the rainy periods and inundates the streets. This water stagnates in low-lying areas and creates great public health hazards.

xiii). Refuse Collection and Disposal

----- lacks organised refuse collection: houses usually dump their garbage on the streets from where it is occasionally collected. Available vehicles fall short of the required number to meet the needs of the ----- . This shortage creates severe problems with refuse being scattered all over ----- . Congested residential areas, commercial streets and markets are presumably more adversely affected by the presence of refuse and leakages from it, on the streets. Less than -----% of the refuse-generated daily in ----- is actually collected and disposed of in ----- dumpsites without any sanitary measures.

C. Proposed Master Plan

The problems of ----- outlined in the foregoing paragraphs, are dealt with within the context of the proposed Master Plan for ----- and its associated sectoral plans.

The Master Plan is essentially a statement of proposals that will guide the future development of ----- . Seed funding for the realisation of the proposals is expected to meet through Federal, Provincial, District and Taluka's resources. On this basis, the goals and strategies of the Master Plan must be laid down within the constraints of the national & local economic environment. Within the framework provided by the evaluation of the existing conditions and the national policy documents, especially the medium and long-term targets of the National Development Plan, the following overall goals have been framed for the Master Plan of -----:

- Utilization of the interesting environment surrounding of -----;
- Compact development of the city/town;
- Establishment of a linear growth pattern;
- Provision of affordable municipal services;
- Affordability of housing and community standards; and
- Safeguarding of valuable agricultural land from urban development.

In order to materialise the foregoing goals, a number of strategies have been developed addressing all major issues of spatial development for the period 2006 – 2026. These strategies, illustrated in the so-called 'Master Plan', are as follows (cf. Fig.-----, page -----):

- Development of ----- will take place in the areas between the existing radial roads, followed by expansion along a northeast-southwest axis;
- The existing city centre will be re-organised and it will expand on a southeast direction;
- Two secondary (community) centres will be established to complement the existing commercial area;
- A public / institutional zone will be established across the ----- to complement the existing institutional area;

- An industrial area will be established to the north of the city; and
- Planned open spaces will be created.

a). Housing Plan

The housing plan for ----- is envisaged as a medium-term plan covering the period 2006 – 2016. This approach is expected to minimise dangers inherent to plans based on long-term projections, which may, or may not, retain their validity after a period of time.

The housing plan is structured around the following rules:

- Residential areas, existing and new, are structured on the basis of related, but at the same time, relatively self-sufficient and independent residential units;
- New housing schemes are developed strictly on the basis of adopted standards according to the income bracket they belong; and
- Community facilities are arranged along ‘corridors’ connecting the various public assembly places and forming citywide networks, reproducing the successful land use pattern observed in -----.

Considering the foregoing rules, it is estimated that the housing plan can accommodate about ----- people up to the year 2016.

b). Traffic and Transportation Plan

This plan has again been formulated for a medium-term planning period and incorporates the following goals and strategies;

- A proper road network hierarchy should be established, reflecting the structuring of the --- ----- in residential units and enhancing its positive aspects regarding the smooth functioning of the -----;
- Improvement in traffic circulation and traffic management.

c). Public Utilities Plan

This plan deals with water supply, sewerage, and storm water drainage and refuses collection and disposal for the period up to 2026. Problems related to the development of infrastructure are tackled taking into account the limited resources of the local economy.

Water supply (Option 1)

The tendency of common people in ----- is to use hand pumps or individual single-phase electric motors to fetch ground water, which is potable, less, contaminated than the water supplied by water supply system. More over it is available all the time with compare to water supply system, which used to be operated only one hour each in the morning and in evening. There are no charges to fetch ground water, where as for having connection through water supply system one had to pay usual regular charges. The position of recovery of water charges remained highly unsatisfactory.

Presently the pumping machinery and tube well bores have lost their life. Distribution system has been damaged at various places due to construction of nalas, under ground cable system, Sui gas distribution lines etc. The existing system has lost its life.

Hence the existing system is in un-running position and public do not demand this facility and they prefer to use ground water for the reason explained above; now the supply of water is stopped to town. Only, the high service reservoir (HSR), of ----- gallons capacity is been used to supply water to serve fire brigade system, gardening purpose and to serve public health colony area.

Major elements of the **Water Supply Plan (Option 2)** include the –

- Provision of quality water sufficient to meet the future requirements of the ----- upto 2026;
- Improvement of the operational characteristics of the system; and
- Extension of the networks to service the existing areas, which are presently not covered as well as new development areas proposed by the Master Plan upto 2026.

Major elements of the **Sewerage Plan** include the –

- Installation of a proper sewage treatment plant;
- Proper maintenance of the existing underground sewers and upgrading of the open drains; and
- Extension of the sewerage network to cover existing areas not yet covered and new areas proposed by the Master Plan upto 2026.

Major elements of the **Storm Water Drainage Plan** include the –

- Creation of proper road cambering and longitudinal slopes with catchment pits and interception drains;
- Stream lining of low-lying areas to stop the spreading of flood water;
- Installation of an adequate number of mobile pumps to pump out excess water during flooding from affected areas; and
- Protection of the existing disposal works pond from flooding (provision of mobile pumps to drain, if necessary, the area).

Finally, the Refuse Collection and Disposal Plan includes the –

- Upgrading of the existing refuse collection practice by establishing an efficient door-to-door collection system;
- Construction / organisation of a proper sanitary landfill upto the need of 2026; and
- Setting-up of a system for daily transportation of the collected refuses to the landfill site.

D. Immediate Action Proposals

Based on the Master Plan proposals, a number of action plans are put forward for ----- . These plans cover the areas of economic development, housing and community facilities, traffic and transportation and utility services; each action plan comprises a number of projects, as follows.

i). Action Plan for Economic Development

Construction of a Shopping Complex

It is acknowledged that the commercial area of ----- is facing serious congestion problems today. In order to alleviate these problems, the structure plan proposes the extension of the commercial area to the southwest of the city. The commercial area expansion should be initiated with the construction of a municipal shopping complex that will create the necessary impetus for the involvement of the private sector in the long-term operation. This solution will ease pressures on the existing commercial area and will allow for the eventual removal of encroachments, since some of the affected shop owners may move to the new commercial expansion area.

The actual size of the proposed commercial development should be determined following a detailed feasibility study. At this stage it is estimated that construction of ----- shops is sufficient to cover the extra demand during the next 5-year period without creating major upheavals to the existing commercial area.

iii). Action Plan for Housing and Community Facilities

a). Upgrading of the Katchi Abadis

Improvement of housing conditions unquestionably starts from upgrading of the Katchi Abadi areas, where the housing stock is in a particularly bad shape. Given the marked failure of formal land development schemes for low-income households, it is expected that Katchi Abadis will remain integral parts of the urban areas in Sindh for many years to come. This reality, together with the significant percentage of present Katchi Abadis in -----, demand that an action plan be launched to improve urban conditions in these areas.

It is therefore proposed to upgrade about ----- ha of Katchi Abadis area, housing an estimated population of about ----- people. Upgrading works include: (a) construction of local roads; (b) construction of local sewers and open drains; (c) construction of poles for street lighting; (d) improvement of open spaces and play grounds; (e) provision of communal water taps; and (f) replacement of dangerous structures and technical assistance for the repairing of houses.

b). Development of ----- Housing Plots and Construction of Residential Buildings for Low-income Households

A considerable percentage of households in ----- resort to informal schemes in order to solve their housing problem. These informal schemes refer to: (a) sharing a house with other low-income households; and (b) squatting. Living conditions in such informal arrangements are appalling; houses are overcrowded while utility services are rudimentary or non-existing.

In order to alleviate problems created by these situations, the public sector in ----- should launch as part of the Master Plan implementation and affordable development programme for low income housing plots. This programme should be initiated with the development of ----- low cost plots - a typical mohalla - in one of the new development areas of type I proposed by the plan. The project should also include construction of ----- two-storey residential buildings along the major roads of the proposed scheme.

c). Construction of a Community Park

In spite of the existence of numerous small green areas within the city ----- is short of organised big recreational spaces. At the same tie, cultural attitudes towards open-air recreation

are very favourable in Pakistan, with families making extensive use of such facilities, whenever available. Furthermore, specialised studies show that households are willing to pay entrance fees in order to enjoy outdoor recreational facilities.

Taking these realities into consideration, it is proposed to construct two community parks in ----- . Location and sizes of these parks are ----- .

iv). Action Plan for Traffic and Transportation

a). Traffic Management for the Commercial area.

The purpose of this project is the provision of short term / low cost measures to improve the performance of the existing road network in an around the commercial area of ----- . Such improvements refer to smoother traffic flows, safer environment, reduction of congestion and travel time and result in increased efficiency of the commercial area operations and strengthening of -----'s role as an important service centre of the wider area.

b). Construction of a Truck Terminal

In spite of the fact that trucks are extensively used for the transport of goods from and to the commercial area of -----, there is no properly organised truck terminal in the city at present. As a result, trucks are parked haphazardly on the roadside inside the commercial area creating all sorts of traffic problems.

In order to alleviate this problem and provide a proper place for the parking and servicing of trucks in -----, a truck terminal is proposed at ----- Road, near the new grain market.

c). Construction of a Ring Road

----- is well served by a number of regional roads from all directions. A ring road is proposed, in order to provide a useful connection between these radial roads and greatly improve the performance of road systems in the city (reduced congestion in the commercial area, reduction of travel times between the radial roads, segregation of regional traffic etc.). At present, part of such a road is being constructed between ----- and the road to -----.

d). Up-gradation / improvement of roads, footpaths, traffic and street lighting

The conditions of roads, footpath, street lighting and traffic signals is in deteriorated situation and need to be improved immediately for smooth and efficient circulation of vehicular and pedestrian traffic.

Approximately ----- numbers of roads alongwith footpath, streetlight, traffic islands and traffic signals have been included in the improvement project.

v). Action Plan for Sewerage

a). Construction of Sewage Treatment Plant and Disposal Works

Existing oxidation ponds have no provision for the disposal of the oxidised sludge setting at the bottom of the ponds; moreover, they are filled up to -----% with sludge due to lack of maintenance. The ponds are therefore unable to treat effluent and, as a result, untreated

wastewater is discharged to 'nalas' and from there to the irrigation canal system (and ultimately on agricultural lands). This practice creates great health hazards. Purpose of this project is to establish in the city a safe effluent treatment and disposal system, which will safeguard public health and will protect agricultural lands from pollution.

b). Up-grading of Existing Sewers

The sewerage network in -----consists mainly of open drains and reinforced concrete underground sewers. This network is problematic; a number of underground sewers, poorly maintained, have deteriorated, several manhole covers are missing and the manholes themselves are obstructed by debris. Many open drains have become undersized due to densification of development in the respective areas that they are serving; in addition they are liable to clogging, as it is common practice to throw garbage into them, especially plastic bags that cannot be dissolved via natural processes.

The proposed project suggests that all existing sewers will be inspected and problematic parts of the networks will be cleaned and repaired so that they are brought back to acceptable working conditions.

c). Extension of the Sewerage Network to cover Developed Areas

This project will provide with sewerage facilities the parts of the city that are not served by the existing network. In order to improve hygienic conditions in the city and protect ground water from pollution, it is of paramount importance that all these areas of the city will be ultimately served with sewers or drains.

vi). Action Plan for Solid Waste

The refuse collection system applied today in -----consists of employing ----- workers with ----- animal-drawn carts and ----- hand-barrows to collect refuse from homes and streets and to transport them to several tipping points scattered throughout the city; the refuse is then disposed of at -----dump-sites inside the city, creating serious environmental problems and health hazards. It is, therefore, necessary to upgrade the refuse collection and disposal practices, by establishing an efficient refuse collection system and by transporting the collected refuse to a properly constructed sanitary landfill outside ----- . These needs are catered for by the action plan at hand, which comprises two projects, namely: (a) Improvement of Refuse Collection System; and (b) Construction of a Sanitary Landfill.

E. Summary of Projects

The following table presents a summary of the capital cost requirements for the action plans and associated projects presented in the previous sections. Figure ----- on page number -- ----- illustrates the location of specific Development Proposals.

Action Plans / Projects	Capital cost requirement (in millions of Rs)	
Action Plan for Economic Development		00.0
Construction of a Shopping Complex	00.0	
Action Plan for Housing and Community Facilities		000.0

- Upgrading of the Katchi Abadis	00.0	
- Development of ----- Housing Plots and Construction of Residential Buildings for Low-income Households	000.0	
- Construction of a Community Park	00.0	
Action Plan for Traffic and Transportation		00.0
- Traffic Management for the ----- CBD	0.0	
- Construction of a Truck Terminal	00.0	
- Construction of a Ring Road	00.0	
- Road, footpaths, streetlight Improvement	00.0	
Action Plan for Water Supply		00.0
Construction of Water Treatment and Supply Installations	00.0	
Action Plan for Sewerage		00.0
- Construction of Sewage Treatment Plant and Disposal Works	00.0	
- Upgrading of Existing Sewers	00.0	
Extensions of the Sewerage Network to cover Developed Areas	00.0	
Action Plan for Solid Waste		00.0
- Improvement of the Refuse Collection System	00.0	
- Construction of a Sanitary Landfill	00.0	
Total for all projects		000.0