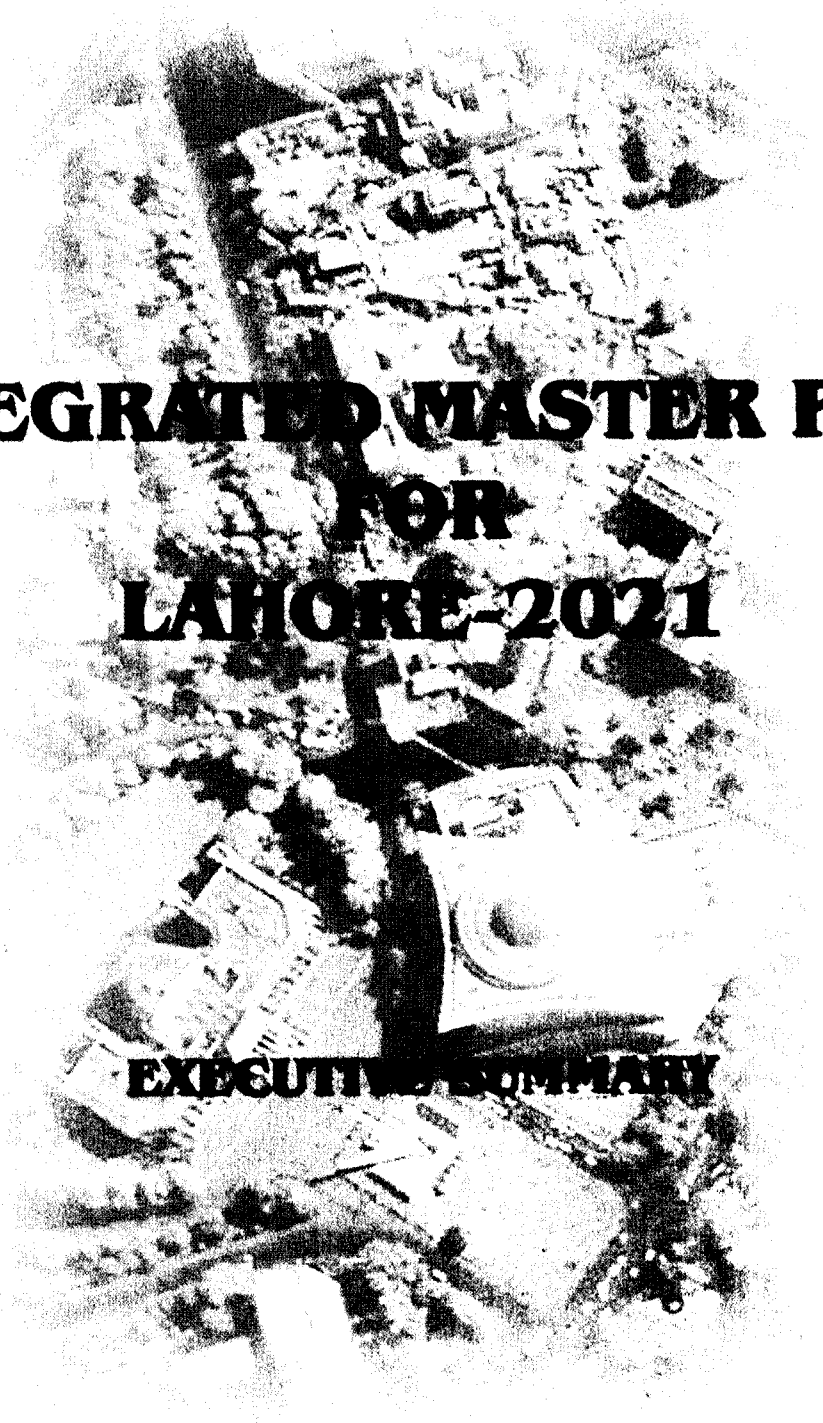
LAHORE DEVELOPMENT AUTHORITY



INTEGRATED MASTER PLAN FOR LAHORE-2021

EXECUTIVE SUMMARY

NATIONAL ENGINEERING SERVICES PAKISTAN (Pvt.) Ltd.
HEAD OFFICE: NESPAK House, 1-C, Block N, Model Town Extension, Lahore-54700, Pakistan.

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FINAL REPORT
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THE PROJECT AND TERMS OF REFERENCE

The terms of reference required that the consultants should review the existing state of urban development, urban services/utilities and infrastructure for the preparation of an Integrated Master Plan for Lahore. The integrated master plan was to include a long-term framework for identification of form and direction of physical growth of Lahore for the next 20 years. Also required was a short-term plan for identification of projects with preliminary cost estimates for the five years in the sectors of urban development, utility services, traffic and transportation, urban management and environmental improvement. The consultants were also required to prepare three action studies pertaining to urban renewal methodology, solid waste management, and monitoring programme for air and water quality. The Inception Report, the Report on Existing Situation, and the three final Action Studies have already been submitted to LDA.

Based on the Contract for Consultancy Services signed in July 1997, the first version of the Master Plan Report was submitted to LDA in July 1998. In the same year, Population and Housing Census was conducted by the Government of Pakistan in the month of March and hence to have more realistic data base it was decided to revise the Master Plan Report based on the results of 1998 Census. The census results in the form of a published report were made public in February 2001. Based on the new Census data, additional investigations/ surveys by NESPAK and the comments received from LDA and other agencies/departments, the preparation of revised draft was commenced in May 2001. The Report was thoroughly revised and the second updated Draft Master Plan Report was submitted to LDA in November 2002.

The Master Plan Report from time to time has been was presented to various agencies and the concerned professionals in the relevant disciplines including the Project Steering Committee, the City District Government, Town Planners, Architects, Engineers, Builders, Administrators etc. at various forums to invite their suggestions/ comments which were duly incorporated in this document. The Project Steering Committee cleared the report on June 23, 2004 and Lahore District Council approved this document on October 06, 2004.

This report is presented in the following three separate Volumes:

Volume - I Existing Scenario
Volume - II Analysis and Proposals
Volume - III Short Term Plan

This document entitled Executive Summary contains the salient features of the above listed three Volumes of the Master Plan Report.

In order to accomplish the assigned tasks under NESPAK's contract with the Lahore Development Authority, comprehensive studies have been carried out to prepare the Master Plan. The Plan covers the entire Lahore Metropolitan Area (LMA) and aims at assessing the nature and extent of problems faced by the metropolis and provide guidelines for its future growth in various sectors. Salient features of the Master Plan are summarised below:

A. EXISTING SCENARIO

In order to comprehend the existing situation, data on socio-economic characteristics, spatial development, urban transportation, infrastructure, utilities and community facilities like education, health and recreation have been compiled. Current status of physical infrastructure comprising water supply, sewerage, solid waste management, drainage and flood protection, electricity, gas supply and telephone have been assessed. Causes of environmental degradation have also been identified. In view of the Devolution Plan, the role of the existing agencies/organisations as well as the newly formed City District Government and Town Municipal Administrations responsible for managing the urban services in the metropolitan area has been analysed. Based on the above, framework for the implementation of Integrated Master Plan for Lahore has also been proposed.

The LMA is spread over 2,300 sq. km and comprises of most of District Lahore (except for 307 sq. km. in the south across Butchar Khana Distributory). Also included in LMA are 628 sq. km of Tehsil Ferozewala of Sheikhupura District across the river in the north and 263 sq. km of part of Tehsil Kasur in the south.

The total population of LMA, as estimated for year 2001, is around 7.7 million. More than 91% of this population lives in Lahore District. Though under the Devolution Plan, the dichotomy between urban and rural areas has now ended, but going by the pre-devolution terminology, 77% of LMA's population lives in urban areas. Lahore being a City District, has been divided into six towns. The average population per town is 1.06 million. Data Ganj Bukhsh Town with a population of about 1.4 million is largest of the six towns, while Aziz Bhatti Town is the smallest (0.55 million). Population growth rate has been consistently declining. The average annual urban growth rate of District Lahore was 4.3% during 1951-61, which declined to 3.32% during 1981-98. It is still however, one of the highest in the world. Contrary to most other districts, the growth rate of population in rural parts of District Lahore has been faster (4.16%) than in urban areas of the District (3.32%). The existing urban population of 5.77 million (2001) will soar to 9.89 million by the year 2021.

Most of the new housing schemes are being developed towards south-west of the city, in the corridor between Multan Road and the railway line. The plots in these schemes are mostly lying vacant, but for speculative purposes, the developments are continuing further south, even across Defence Road/Hudiara Drain, and are approaching Raiwind Town. This trend is resulting in piecemeal expansion, costlier services, missing links and trunk infrastructure, low densities and wastage of prime agricultural land. The trend

needs to be curbed and further developments south of Hudiara Drain/Defence Road must be discouraged.

There is a need to update and computerise land records. Present land record keeping is obsolete facilitating malpractices such as duplicate claims. Comprehensive zoning and sub-division regulations are also lacking.

The main city is confined to an inner core of about 7 km radius where 78% of the urban population lives. Household size of Lahore Urban has increased from 5.8 persons in 1961 to 7.1 in 1998 which shows consistent densification process within the built-up areas. Thus while new developments are taking place in outer areas such as in the south-west, people prefer to live within the present built-up areas.

Current housing stock is more than 731 thousand while the backlog is about 137 thousand. The demand for residential plots is around 30,000 per year while the (formal sector) response is only about 2,000 plots per year. Even this meagre supply is beyond the affordability of the common man. The result is the continuous growth of Katchi Abadis and illegal land sub-divisions on the urban periphery. Over a million people are living under sub-human conditions without adequate utilities and services.

Housing affordability of middle and low-income groups is low and taxation/legal policies and stringent financial terms depress house-building activities. Private sector is mostly interested in upper income housing.

The radial pattern of city road network lacks inter-radials. Riding quality and road capacity has improved through recent investment of Rs. 3.41 billion spent towards this end. Delays and safety problems still persist at junctions. Facilities for pedestrians and cyclists are either non-existent or inadequate. These are the most vulnerable groups and are the victims of 50% of road accidents. Encroachments are wide spread and absence of sustainable road maintenance mechanism is resulting in frequent pavement failures. Road maintenance is ignored till reconstruction becomes due.

Public transport operations are solely serviced through private sector. Public transport fleet mainly comprises of 4,500 mini-buses and 18,000 rickshaws. About 25% of operating mini-buses are without valid license. Average annual traffic growth rate is 3.75% and the maximum up to 9.63% is observed in mini-buses. Almost 350 quality buses are operating on 10 franchised routes. Inspite of relief provided through introduction of high capacity bus operations, nothing is materialising towards limiting the number of highly polluting, environmentally hazardous and low capacity para-transits. Inter-city public transport terminals are neither properly developed nor properly operated. Among the operating vehicles, 46% are cars and 44% are two-wheelers.

Commercial and trading activities are concentrated in Central Business District causing congestion and strain on road network. Inter-radial connections are missing, many of

the traffic signals are inoperative and signage system is inadequate. Traffic Police suffers from inadequate strength and needs further training.

Educational facilities are lacking in the northern and western parts of the city. About 86% of the enrolment in primary age groups and 45% in secondary age groups is taken care of by the private sector. Many institutions lack even the basic facilities like play areas and latrines. Quality education is expensive and drop out rate, particularly at primary level is high.

Regarding health services, there are a total of 125 hospitals, (40 in public sector and 85 in private sector) with a total of 14,307 beds (i.e. 2.48 beds/1000 persons). There are 4,033 doctors (1 doctor per 1430 persons). Mostly, areas lying north and west of the Walled City are deficient in such facilities.

There are 2250 hectares of developed open spaces in Lahore (i.e. 0.42 ha per 1000 population). Recreational facilities are deficient in the entire metropolitan area, particularly in the northern and western parts of the city. Low-income areas are most deprived of these facilities.

About 290 million gallons per day of drinking water from 316 tube wells is being made available by WASA to about 70% of the population through direct pumping for 16-18 hours daily. There are leakages in the distribution network and 70% water connections are un-metered resulting in 30-40% wastage. Due to excessive abstraction, the water table is depleting from 0.63 ft to 3.11 ft per year at various locations.

Sewerage system is provided to about 54% of the population in WASA area with 3,610 km of sewer lines. Northern and western parts of Lahore have inadequate sewerage system. There are 11 pumping stations having gross capacity of 2,623 cusec. Sewage is finally disposed of in River Ravi and Lahore Canal without treatment.

Existing drainage system comprises of 216 km of primary and secondary drains, which are cleaned both manually (48%) and mechanically (52%). Heavy encroachments along these drains have reduced the waterways causing difficulty in cleaning. Capacity of these drains is 6,474 cusec whereas the capacity of pumping stations is only 613 cusec. Sewage, industrial and solid wastes are released in these drains causing environmental pollution. Final disposal is in River Ravi.

Solid waste generation amounts to about 3,160 tonnes per day, of which only 70% is collected and disposed of at undesignated areas. Hospital and municipal wastes are not separated. Transportation is in open trucks/vehicles and proper land-fill sites are not available.

Improper solid and liquid waste management, air quality deterioration, noise pollution, encroachments and unregulated urban growth are causing serious environmental degradation.

Flood protection facilities are adequate for flood peaks of up to 7,100 m^3/sec (250,000 cfs). For higher floods Shahdara Distributary Bund is breached causing extensive damage to life and property on the Right Bank of the river. Waterway at Shahdara is severely constricted due to road and rail bridges. The encroachments in the flood plain have further reduced the discharge capacity.

Electricity is supplied through interconnected 132 kV system comprising of 38 Nos. 132/11 kV grid stations. There are about 1.2 million consumers including 75% residential, 22% commercial and 3% industrial. The existing network is relegating towards inefficient operational level and there is a dire need for reinforcement and rehabilitation programmes.

Gas supplies are 30 million cubic metres per day with the main distribution network of 6,213 km and service lines of 2,215 km. In Lahore, there are 0.56 million consumers out of which 0.17% are industrial, 2.11% commercial and 97.72% residential. 52% of the revenue generated is from industrial consumers. Gas sales are increasing @ 12.3% and consumers @ 7.83% per annum. There are 23 CNG stations established in Lahore.

Telephone system has 82 exchanges at 31 locations having a total capacity of 613,369. The number of subscribers is (81% of total capacity). 85% of the available capacity is installed in digital exchanges. The existing set up for receiving consumer complaints and responding to service calls needs improvement.

The management of the city has remained in the hands of a number of institutions, each of which has a specific role in the city affairs. The urban development is still fragmented and is under the control of a number of authorities/agencies, which have overlapping functions. Under the Devolution Plan 2000, Lahore District has been declared as "City District" and the City District Government has taken charge of city management. The City District has been divided into 6 Towns, namely Data Gunj Bakhsh, Ravi, Allama Iqbal, Nishtar, Shalimar and Aziz Bhatti Towns. The 6 towns, in aggregate have 150 Union Councils. It may however, take a couple of years before the new system gets firmly rooted.

B. ANALYSIS

The total incremental urban population during the plan period (2001-2021) will be 4.162 million, of which 1.802 million will be absorbed within the existing built up areas through the on-going densification process and the balance 2.36 million will spill-over. Most of the spill-over population will have to be accommodated in other areas, particularly in the south-west corridor, between Multan Road and Ferozepur Road, where about 8000 hectares of developed/semi-developed area is lying vacant.

A thorough review of the current situation reveals that the key issues facing the city pertain to infrastructure deficiencies, land management, housing, traffic and transportation, sustainability of living environment, urban governance and finances.

Resolution of the above issues therefore, must take precedence over other issues for solving the urban problems and planning future development strategy.

The employment pattern and urban characteristics indicate that the major economic activities in LMA will continue to be commercial and public services. To decrease dependence on existing CBD and reduce congestion in the central areas, one of the major requirements is the decentralisation of commercial activities. Other key elements are facilitation of growth towards south-west of the city and encouraging in-fill of vacant lots within the built-up areas to ensure best utilisation of the available infrastructure. Key factors and potentials on the basis of which Lahore can be further developed for local, national and international markets are enhanced educational facilities, specialised health care, historical and cultural heritage, and recreation.

Analysis of the collected information reveal that densification of the existing built up areas through sub-division of larger plots / vacant pockets of land, and through construction of additional rooms is continuing. Being flood-prone area, growth of the city across River Ravi is restrained. Unless a comprehensive study on flood management is undertaken, no large-scale development can be proposed along the Right Bank of the river. The city growth is also restricted towards the east due to Indian Border.

The only corridor open for development is the south-west, where a large number of housing schemes (mostly private) have been developed. The development however has been in a piecemeal and scattered fashion. The recommended planning strategy for the area emphasises development of infrastructure, provision of missing links between schemes for better accessibility and to ensure public transport to operate. The pockets of land lying vacant between schemes should also be developed for contiguous and cost-effective development. These measures will accelerate pace of development in the area and encourage people to start living here. Besides, development of a Town Centre in Johar Town, as planned by LDA, will make the upcoming southern city self-sustaining. On the other hand, it will also ensure lesser dependence on the existing central business district, thereby reducing pollution and congestion on city roads and strain on existing infrastructure.

C. PROPOSALS

Master Plan proposals for LMA have been formulated on basis of development priorities, demographic pressures, housing for the low income groups, infrastructure deficiencies and optimum utilisation of available infrastructure, provision of necessary facilities and services, resource constraints and environmental considerations. Salient proposals/recommendations in various sectors are as below:

There is a dire need to have strict development and land use control through enforcement of zoning, sub-division and environmental protection regulations, and adoption of uniform set of building regulations by all concerned agencies within LMA. Priority programmes proposed include consolidation of development activities in the

south, in-fill of vacant pockets of land, provision of trunk infrastructure, shifting of incompatible land uses (such as obnoxious and polluting industries), upgrading of Katchi Abadis and protection of those living at vulnerable locations such as river bed. In order to ensure planned growth of the city, there is a need to adopt 'Land Readjustment' technique which implies assembling and re-plotting of land for urban development (with the consent and in agreement with the land owners), and returning a part of the developed land to the owners. Compulsory land acquisition and payment of compensation will therefore not be necessary.

Housing for the poor is proposed to be subsidised through cross subsidies, provision of infrastructure on incremental basis, use of affordable standards, provision of high proportion of smaller plots in new housing schemes, exempting houses up to 5 marlas from taxes and provision of micro-credits.

As already elaborated, for expansion of the city, south-west direction is currently the natural growth corridor. Over 8000 hectares of land is available in this corridor, most of which is already developed/semi-developed. This needs to be provided with the trunk infrastructure, missing road links, urban transportation system, town level facilities and services, so that people get encouraged to construct houses and start living in this area. Bulk of the incremental population over the next twenty years (2.36 million) can be absorbed in this area. This will also be a continuation of the 1980 Structure Plan in the form of a network of radial and ring roads. The proposed Trade Centre in Johar Town measuring 1400 kanals will serve as a new Town Centre for the area catering to the commercial and service requirements of the people living in the south in the near future. Although various housing schemes have been approved by LDA south of Hudiara Drain, it is recommended that preference should be given to ensure infill development north of Hudiara Drain during the plan period. Two Business Districts along with public parks and institutional areas, one south of Hudiara Drain and the other east of railway line may also be acquired and developed to cater for the requirements of the growing population and to ensure lesser dependence on the existing city.

In Transportation Sector, short term as well as long term recommendations have been made in order to improve the road network and traffic flow in the city. These include construction of new roads including Ring Road and missing links, bridges/underpasses, provision of facilities for pedestrians/cyclists, removal of encroachments, parking arrangements, traffic surveillance, management and control. There is need to base major road projects on feasibility and project impact assessments. Consistent policies, design guidelines and proper maintenance and management programmes for the urban road network are required. Private sector financing needs to be encouraged in this sector. Transport Fund needs to be raised through channelling government transfers and accumulating local taxation, fees and charges.

Public transport operations should be improved by extending franchised bus operations on all major corridors and restricting mini-bus operations on feeder routes and switching towards gas operated buses. Light Rail Transit (LRT) between Bhaati Chowk

and Model Town (12.5 km) costing over Rs. 10 billion is also proposed. Badami Bagh and Railway Station Bus Terminals have to be upgraded. All transport related functions are proposed to be looked after by one body (may be TEPA). This authority is proposed to have two wings: one for transport planning, engineering and maintenance, and second for licensing, registration, regulation and operation of public transport routes. For smooth functioning of this authority, its management is proposed to be contracted out to private sector for first 5 years through international bidding.

In education sector, the policies should be such so as to keep pace with the increasing educational demands of growing population and to achieve 100% enrolment of primary age group by year 2010. To meet the demand during the plan period, over 4200 primary and secondary schools and 270 colleges have been proposed in collaboration with the private sector. In health sector, about 400 primary health centres, 82 clinics and 41 hospitals are proposed to cater for the health requirements over the next 20 years. Around 2700 hectares of open spaces for both active and passive recreation have been proposed to be developed in the form of stadiums, play grounds, parks and river side recreation areas.

Physical infrastructure is the backbone for any future urban development. The following measures are therefore proposed for its improvement:

- Projected water supply demand for Lahore in terms of number of tube wells is 709 by the year 2021, while for the first five years, 144 additional tube wells are required. These include 46 tube wells to be rehabilitated in the first five years and 289 over the entire plan period. Major improvements in water supply can be made by curtailing losses and wastage of water, metering connections, checking illegal connections, reducing pumping hours and using overhead tanks. As water table is depleting, water budgeting is necessary to minimise wastage.

- There is need to provide additional lateral and trunk sewers and pumping stations at requisite locations as identified in the Report. All private housing schemes should have trunk sewers linked to WASA system, which should also commence early construction of central sewage treatment plant together with the ancillary works. Pump stations at Johar Town and L.M.P. Blocks require shifting towards Hudiara Drain. Cantonment Board must stop discharge of raw sewage into Mian Mir Drain. Discharge of raw sewage into Lahore Canal be prohibited and elimination of 61 lift stations must be planned to avoid double pumping.

- Drainage system of the city should be revamped and new tributary drains constructed. Encroachments along the drains should be removed and dumping of solid waste in the drains be completely banned. Trunk sewers must be constructed to eliminate sewage from storm water drains. Major storm water drains must be remodelled. Maintenance of the drains should be carried out on regular basis.

- Hospital and municipal wastes must be separated and incinerators installed. Solid waste collection must be organised at town/local levels by involving private sector. Transportation of solid waste must be through covered trucks instead of open vehicles. In congested areas animal drawn vehicles must be replaced with special vehicles. Dumping of solid waste in River Ravi and undesignated open spaces must be stopped. Proper landfill sites must be developed to dispose of the solid waste through private sector on BOT basis. Apart from Mahmood Booti, sites for this purpose have also been identified in the vicinity of Kahna Kachha, Bedian Road, Narang Road, west of New Bund and Sunder Village etc. for acquisition and development.

- Projects have been identified for efficient power distribution and street lighting. These include adequacy of equipment on grid stations, provision of additional transformers, general improvement of distribution network and installation of sodium vapour lights on all roads.

- Measures proposed to restore, maintain and upgrade the existing flood protection facilities need to be implemented to save the city from flood havoc causing huge losses of life and property. Short term and long term measures including the undertaking of a comprehensive flood management study have been proposed for meeting this menace especially on the Right Bank of the River.

- Environmental protection measures have been proposed to safeguard all aspects of environment pollution such as air, water, land, and noise.

- In order to ensure proper implementation of the Master Plan, it is imperative to have an effective legal and institutional framework. Some of the major causes of the present malaise are lack of effective public participation, overlapping functions of parallel agencies, lack of proper planning and inadequate financial resources.

  City District Government / LDA should be allowed to play a major role in the governance of the city with a public / private mix for some of the services. Property tax and entertainment tax should also be levied and collected by the elected local government of the city.

  The estimated investment outlay for the first five years of IMPL is Rs. 58.03 billion with an average annual requirement of about Rs. 12 billion. The total package includes a public sector component of Rs. 20.543 billion (35.4% of the total) and the balance of Rs. 37.487 billion (64.6%) will be implemented through private sector participation. The annual average financial requirement from public sector will thus be around Rs. 4.11 billion. The four main organisations responsible for developing and maintaining infrastructure in Lahore i.e. City District Government, LDA, WASA and TEPA can only mobilize Rs. 1 billion annually. The balance of Rs. 2.91 billion could be raised

through other means such as enhancement of property tax, allocating share of traffic fines and bridge tolls to civic agencies, motor vehicle tax, transport cess levy at 2% of total fuel sales, transferring of entertainment tax to local agencies etc. Extensive metering of water connections, waste detection and reduction can also add to public revenue. The balance left over could be met through international grants, loans etc.

There is a need to implement the Master Plan through systematic phasing of the proposed development by setting sectoral priorities with infrastructure and public facilities falling in the first phase. Establishment of a data information centre with digitized information on all sectors using GIS is also essential to meet the plan objectives in this phase. Subsequent phases can be undertaken as per prioritised list for various development projects as the city grows.

D. SHORT TERM PLAN

The proposed Short Term Plan (first five years) deals with the problems of immediate concern such as the infill and consolidation of vacant planned areas, especially in the southern corridor, improvement of traffic circulation in CBD, solution of problems relating to water supply, sewerage, drainage, solid waste and environmental issues. The Plan envisages the establishment of a computerised database providing information on socio-economic, physical and infrastructural aspects for planning and monitoring the development in LMA. The Plan recommends a public sector development package of Rs. 20.543 billion for various sectors including establishment of data base, drainage sewerage and water supply systems, solid waste management, environmental issues, traffic and transportation, flood management, education, health and recreational facilities.

The implementation of these projects will require a dedicated commitment and effective co-ordination between the City District Government, LDA, and other concerned provincial and local agencies to prepare necessary action programmes and carry them out in time.

The inter-setoral priorities have been based on the severity of the problems in various sectors being faced by the residents of the metropolitan area. As each sector has varied and acute nature of problems, it is difficult to prepare a list based on priorities. Most of these sectors/issues are inter-related and should be implemented concurrently.