Part I
Development Premises, Planning Norms & Landuse Plan For Srinagar City (1985-2001)

CONTENTS

1. GOALS AND OBJECTIVES

Srinagar is both the largest and the fastest growing town in the State of Jammu and Kashmir. Located as it is in the vale of Kashmir the city not only performs the most important functions such as economic, administrative, communication, social and cultural, defence and strategic, in the state, but it also has a major ecological impact on the Valley and the surrounding hills.

The first Master Plan for Srinagar was prepared in 1970 but so far its recommendations have not been implemented very effectively. Part I of this report contains an assessment of the present status of Srinagar. This part attempts to make tentative estimates for the industrial and economic development of the city based on its major functions.

The Master Plan for Srinagar is the first exercise of its kind in comprehensive urban planning for Srinagar city. Although the basic aims are not stated explicitly in the Plan, the main objective is the provision of basic utilities for the projected population. However, some basic postulates enunciated in the Plan about a decade and a half ago remain as true today as they were in 1970.

Based on the experience of the last decade of developmental activity in and around Srinagar city and its strategic location in the Valley, the objective of the revised plan would be to strengthen the dominant functions of the city and then to disperse them spatially over a region in order to achieve predetermined economic goals.

In reviewing the earlier Master Plan and revising it the

objectives will be:

- to maintain habitation equilibrium in the Valley by discouraging excessive concentration in Srinagar Valley;

- to suggest impoved utilization of the old built up area suggesting a spatial spread of the city;

- to build a strong viable economic base in the city of Srinagar and to integrate physical and economic planning so that land becomes available in sample measure for the future expansion of the city;

- to tackle the problem of renewing those sections of the city which are showing signs of decay;

- to evolve a pattern of city Government which will bring about a co-ordinated development of the city and subsequently ensure the maintenance of created assets;

- to formulate an urban land policy for planned development and land use besides enabling the public sector to extend its control over vital land resources; and finally

- to improve the visual impact of the city.

The basic concepts of the Revised Master Plan are as follows:

- suitable modification in the local planning are limits required for the projected population by 2001 A.D.;

- The reorganisation possible or necessary keeping in view the existing infrastructre and its possible intensification;

- the incorporation of the role of the informal sector in the city functions;

- the decentralisation and dispersal of economic activities at city and regional levels;

- the introduction of compatiable, incompatible and mixed landuses, with a view to provide greater flexibility in enforcing the landuse patterns; and

- the provision of a satisfactory environment which can help integrate the new with a rich and valuable heritage.

2. DEVELOPMENT PREMISES, NORMES AND STANDARDS

2.1 Population

Between 1971-81, the populatiobn of Srinagar city increased by 42.8 per cent, while the population of the municipal area showed an increase of 45.18 per cent. The growth rate of the former is partly influenced by the increase in the municipal area during 1974-75.

Based on the population projections prepared by the Town and Country Planning Organisation (TCPO) for Class I, II and III towns and cities in India, by statistical methods and on the report of the Expert Committee on Population Projection, Census of India, 1971, the urban population of Srinagar will be 13.37 lakhs by the year 2001 A.D.

TABLE - 1

Projected population for the years 1991 and 2001

		Years	
		1991 (in lakhs)	2001 (in lakhs)
1.	Master Plan's estimated population	6.69	-
2.	TCPO's projection	5.69	6.74
3.	Census projection	8.50	-
4.	NIUA's projections (adopting statistical methods)	8.84	13.37

The projected population for the Srinagar Local Planning Area (Master Plan limits) will include the following:

- the population of the villages in the local area limits;
- the floating population of tourists; and
- the floating population of commuters.

Keeping in view the above factors, the population of the Srinagar Local Planning Area (Master Plan limits) has been estimated to be 15.18 lakhs by 2001 A.D. provided the Master Plan limits remain unchanged.

2.2 Occupational Changes

Anticipation of the participation ratio can be evolved keeping in mind the town's sociological and economic conditions and the future trends.

The participation ratio for the next 20 years has been worked out to help design the land use structure and economic policy for the

development of the city (Table 2).

TABLE - 2

Workers and Non-workers

SL.No.	Description	1971	1981	1991	2001
1.	Workers	112277 (26%)	175387 (29%)	300300 (30%)	425040 (28%)
2.	Non-workers	319557 (74%)	429398 (71%)	700700 (70%)	1092960 (72%)

2.2.1 Sectorwise Distribution

Srinagar city, as indicated by the plans and programmes of the State Government, will maintain its primacy among the urban centres of the State and will also be able to generate more government and semi-government employment in future in the wake of multifarious development activities in the States. All these together will draw workers from different parts of the State as well as from outside. A large scale influx of workers into the city will tend to keep the sex ratio comparatively low and the participation ratio high, at least during the next decade, after which a marginal decline may be expected. Table 3 gives the occupational distribution of workers in each category. The depdency rate of other workers is the highest. The decrease in the dependency rate of cultivators is observed due to the acquisition of agricultural land for human settlements. Trade and commerce activities have registered a positive change due to the increasing demand of intersectoral flows, land requirement, commercialisation of forestry and horticulture. By 2001 A.D. cultivators' activities and the activities of other workers will

deteriorate whereas the activities of workers engaged in household industry, other than construction, trade and commerce, transport and communication are likely to increase due to their respective importance in Srinagar city.

TABLE - 3

Projected Workforce for Srinagar - 2001 A.D.

Sl.No.	Sectors	Total
1.	Cultivators	8500 (2%)
2.	Agricultural Labour	6375 (1.5%)
3.	Industry	
	a) Household	8075 (19%)
	b) Other than Household	38250 (9%)
4.	Other workers	284753 (67%)
	Total Main Workers	425004 (100%)

2.3 Srinagar Urban Area - 2001 A.D.

The Srinagar planning area limits total 42,805 acres excluding the agriculture belt. Out of this only 18,836 acres are to be developed by 1991. The projected population of 15.18 lakhs however will require approximately 30,000 acres by 2001 A.D.

An alternative strategy has therefore been recommended along the following lines:

- to increase the population holding capacity of the area within

urbanisable limits; and

- to extend the present urbanisable limits to the extent necessary.

The holding capacity of the area within the existing urbanisable limits depands upon

- The residential development types and their potential for higher adsorption;
- the availability of physical and social infrastructure;
- employment areas/centres: capacity, potential; and
- the transport network capacity.

Reviewing the trend of development in Srinagar city and the absorption capacity of various planning zones, zones A,C, and D may be considered as the saturated zones; zone F is marginally potential; and zones B and E highly potential. Therefore, the direction of future growth has been suggested considering the physical limitations and the potential and absorption capacity of various zones. Further, in order to have an effective enforcement and development control by the authority over the controlled area boundary of the Master Plan, the outer limits including the agricultural green belt may be taken as the local planning area (as shown in the revised Master Plan) for the purpose of implementing the Master Plan proposals. A suitable amendement is suggested in the Development Act, 1970 to incorporate the above proposal.

2.3.1 Urban Designs

The slum-like peripheral growth that is often the accompanying

feature of urban expansion in developing countries can be avioded in Srinagar by expanding northwards on the higher contours. Instead of the water-logging that one finds in the low-lying areas there will be better drainage. About 30,000 kanals of land can be acquired now by Government for future sale which will eventually help recover costs of underground drainage construction and sewerage that must be provided.

Other measures proposed are the provision of tourist infrastructure including hotels, transport and so on; the cleaning of the Dal Lake and the designing of a new road pattern that will take care of future growth. The Revised Plan also provides for and identifies areas for slum clearance and rehabilitation as well as urban renewal while ensuring that historical and religious buildings will be preserved according to the principles of conservation.

2.4 Circulation

Srinagar is the point of convergence of all traffic to the State of Jammu and Kashmir. The forms of traffic are mainly two - road and air with a small portion of local river transportation in and around Srinagar city.

The size of the Srinagar Local Planning Area, dictated by the population projections of 2001 will generate problems and a number of CBD functions need to be decentralised.

2.4.1 Intra-city Movement

The Circular Road project has to some extent reduced congestion and opened up areas in many parts of the city including the heavily

congested core. In the light of all options and choices the basic aims of the transportation proposals are:

- establish an efficient system for public transportation;
- make possible a reasonably free movement of automobile traffic;
- help safe pedestrain movement; and
- encourage innovative management techniques to resolve problems of critical areas.

Six cordon points at peripheral locations were selected to assess the generation and flow of traffic in Srinagar. The distribution of proposed roads has been clearly shown in the Master Plan. These have been aligned in such a way as to avoid congestion in the city. Peripheral traffic can avoid the core area and use the bypass.

2.5 Utilities and Services

2.5.1 Water Supply

The supply positions from 1971 onwards and the projected future sypply for the projected population of 2001 A.D. are given below:

TABLE - 4

Water Supply

Sources	1971	1975-76	1984	Master Plan proposal 1991	Augmentation+ new schemes 2001
Nishat	6.8	7.0	11.0	-	12.0
Alusting	4.8	4.8	4.8	-	6.8
					20.0
Doodganga	2.2	2.25	3.75	-	3.75
	13.8	14.05	19.55	22.8	42.55

The Master Plan proposals for 1991 totalled 22.5 mgd* of water for population of 7.5 lakhs at 30 gall/cap/day. This was calculated assuming a shortfall of about 9 mgd over the 1971 figures. This was to be made up by pumping the waters of the Sindh and/or the river Jhelum.

The accepted National Standard for this type and size of city is between 125 and 200 lcpd.+ However, for the immediate future up to 2001 A.D., the supply rate could be restricted to 150 lcpd, that is, 30 gcpd as is supplied in most cities in India. The expected supply of 42.55 mgd by the year 2001 would then be sufficient for the projected population for that year. A supply of 200 lcpd is a pipe dream and should be forgotten for the present. The supply of civic services is always a continuous battle and no sooner is a new augmentation scheme completed than plans have to be drawn up for futher increase in infrastructural capacity. This point should always be kept in mind.

2.5.2 Sanitation

Investments in civic services, when services are not paid for directly, become increasingly difficult to be adequately financed from other revenues. In many states these services have started generating revenue. One striking example is the Madras Water-Supply and Drainage system. In the State of J & K it seems as if positive efforts in this direction are lacking. This is one of the basic reasons that the drainage and sewerage system has not so far made any breakthrough in the state much less in metropolitan Srinagar.

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* Million gallons per day
\+ Liters per capita per day

Under the prevailing climatic conditions with long rainy winters and very wet spring with high humidity all the year round, any waste water that is collected converts into slush and takes time to dry up, which is a great nuisance. Since the water supply is sufficient, it is recommended that, in future, input into this sector should be restricted to the bare essentials using money so released for the sanitation sector.

The financing of these sectors, namely drainage and sewerage and solid waste, will have to be stressed for the time being if sanitation and protection of the environment are of paramount importance. Huge financial inputs are needed in the sanitation sector. Bilateral aid has serious limitations; and even if it is available it will not cover more than 20 per cent of the investment. Internal generation of funds is essential.

The most important overall objective is to provide separate systems for storm water and waste water drainage. The drainage system must be designed as a set of separate small sub-systems.

2.5.3 Standards for Social Infrastructure

Enumerated below are the planning standards which have been adopted for Srinagar city's social infrastructure requirements for the year 2001.

TABLE - 5

Srinagar city - 2001 A.D. Standards for Social Infrastructure

	Category	Population	Area (in hec)
I.	HEALTH		
	Central Hospital	5,00,000	6.0
	Intermediate Hospital	2,00,000	2.5
	Poly Clinic	1,50,000	0.25
	Nursing Home	50,000	0.25
	Dispensary	15,000	0.1
II.	EDUCATION		
	College	1,30,000	4.0
	Techn. Education		
	Tech. Edu. Centres (A)	10,00,000	4.00
	Tech. Edu. Centres (B)	10,00,000	2.10
	Proff. Colleges		
	Tech. Engg. College	5,00,000	60.0
	Med. College	5,00,000	15.0
	Sr. Sec. School	5,000	0.40
	Nursery/Primary School	2,500	0.065
III.	TELECOMMUNICATION		
	Post & Telegrah office	50,000	0.17
	Head P.O. with delivery office	3,00,000	0.06
	Head Post Office (Admn.)	6,00,000	0.25
	Post Office	15,000	0.0733
	Telephone Exchange	4,00,000	0.8
	a) Stores for equipment	4,00,000	1.0
	b) Depot-cum-workshop	(one in a city)	1.0
IV.	SECURITY		
	Police Line	(one for each direction)	5.00
	Police Station	80,000	1.15
	Police Post	45,000	0.10
	Distt. Office	10,00,000	14.80
	Distt. Jail	10,00,000	10.0
	Fire Station/Sub-Fire Station	25,000	0.8
V.	DISTRIBUTIVE AND OTHER SERVICES		
	Milk Booth	5,000	0.002
	G.P.G. Godown	40,000	0.520
	Community Room	5,000	0.03
	Community Hall	15,000	0.10

2.5.4 Tourist Infrastructure

For the purpose of the Master Plan of the core region of the Valley (The Local Area of Srinagar), the tourist infrastructure has been tackled at the micro level.

The State Government must take steps to afforest the hill slopes around the Dal Lake and Hariparbat Fort. New construction between Boulevard Road and the hill slopes must be strictly disallowed.

Judging by past trends the yearly growth of tourists from 1974 onwards ranges between 7 per cent and 10 per cent up to 1981, except in the year 1975-76 which showed a growth of 80 per cent. With the hope that there will be a general improvement in the political situation and in respect of improved infrastructural facilities in the coming years, a growth of 150 per cent has been envisaged for the tourists upto the year 2001 A.D. Thus assuming the average stay of tourists to be between two and three days, the maximum number if tourists during the peak season in the valley will be about 25,000 persons a day.

3. LAND USE

In the proposed land use plan, the city is to expand to about 50,000 acres excluding the agricultural belt, out of which about 22,600 acres are proposed for development for the projected city population in 2001 and about 1112.00 acres are allocated for use by the defence services, the Border Security Force (BSF) and the J & K Militia. The remaining area has been alloted for Malyari development, plantations along water-fronts, orchards, cultivable lands, hilly

areas and water bodies.

Land under residential use has been raised slightly from 62 per cent to 65 per cent and land under non-residential uses lowered from 38 per cent to 35 per cent of the development area. The existing and proposed land use and the land requirement by 2001 are given below.

TABLE - 6

Land in Acres

Uses	Proposed		Existing	Total additional requirement 1985-1991	Total additional requirement 1985-2001
	2001	1991	1984-85		
Residential	4035	10,873	2,638	8235	12537
Commercial	392	390	70.5	319.5	711.5
Industrial	661	1,418	156.4	1261.5	1922.5
Governmental	380	493	290	203	583.0
Community Facilities	640	932	315	617	1257.0
Parks & Play Fields	920	1,192	128	1068	1988.0
	7295	15,302	3,597.9	11704	18999

The highly built up area and overcrowded area as shown in the density plan shall be thinned out by allowing tall structures with a higher floor space index, lesser ground coverage, wide enough roads and open speces including adequate social infrastructure.

3.1 Residential Land Density

The population density of the urban extensions as in the

extending MP limits (2001) has been proposed as 60 PPA for the additional population of 4.38 lakhs. Against this the proposed average gross density is 70 persons per acre in the existing Master Plan limits of 1991 for a population of 10.80 lakhs.

The land required for the projected population 15.18 lakhs by 2001 in the local planning area is proposed to be released in the land market under proper control by the Government by the creation of a land bank and by bulk acquisition of land and through reconstitution methods provided in the Act.

The land shall be built upon in a manner provided in the land use plan and zoning regulations prescribed hereafter. The Land Use Plan (Master Plan) indicates the density of population in various development zones.

3.2. Planning Divisions

In planning division 'A' a complete moratorium shall be placed on the development of scattered houses. The development of villages shall be in a compact manner.

The site for the Guptganga Housing Colony is earmarked in A-10 zone with a proposed gross density of 60 persons per acre. The residential development here as shown in the land use plan is proposed with a maximum gross density of 80 persons per acre. The density of villages in this planning division is fixed at a maximum of 50 persons per acre.

In planning division 'B' an area of 599 acres has been taken for the modification of densities to accommodate the population

projected by 2001. In zone B-15, the site for the housing colony shall be regularised according to the zoning regulations having a gross density of 60 persons per acre. In development zones B-9 and B-20, the cultivated area as proposed in the Master Plan 1971, is now earmarked for residential development with a maximum gross density of 60 and 120 persons per acre respectively. The university area in development zone B-4, is intended partly for residential development with a gross density of 60 persons per acre. In planning division 'C' the density of the various development zones remains the same considering the congestion and saturation in this zone. The site earmarked for hotels in development zone C-11, will be removed and an extension of water bodies planned in order to clear the water coming from Rainawari area and Dal Lake.

In planning divisions 'D' and 'E' areas of 1068.9 acres and 86.00 acres will be used for modification of densities respectively while in planning division 'F' the figure is about 2080.8 acres.

Residential development is proposed in development zone F-14, with a gross density of 120 persons per acre. Zone F-19 earmarked for Defence purposes in the Master Plan, 1971 is to be used for residential development with a gross density of 60 persons per acre.

In planning division 'G' an area of 345.5 acres is intended for modification of densities. In development zone G-1, an area of 250.00 acres has been allotted for Defence purposes. The existing villages will be allowed to grow in a compact manner under a gross density of fifty onlypersons per acre.

In the urban extension, the limits of the local area are

extended to 7,300 acres to accommodate the projected population of 4.38 lakhs by 2001. The urban extension is further divided into planning divisions H, I and J. They are further divided into development zones as shown in the Master Plan.

The planning division 'H' covers an area of 3568.0 acres. The development zone H-5, H-6 and part of H-9 are allocated for light industrial complexes while zone H-9 is considered for the development of a Bus terminal on the proposed north-south corridor. Some of the Government offices decentralised from the core area of the city are to be shifted to zone H-3. The location of parks and play-fields will be in the development zone H-3, H-8 and H-11. The gross residential densities are kept higher in this zone, in the northern part, that is, about 120 persons per acre, considering the limited expansion of the city in that direction.

The planning division 'I' covers an area of 2167.0 acres. The extension of Shalimar Bagh in Zone-I, Zone-I-2 and part of Zone A-2 is allocated for hotel sites and a district park. The site for a hospital is in Zone I-5.

The planning division 'J' covers an area of 1560.0 acres. The proposed location of public and semi-public uses is shown in the land use.

Besides this, a bus terminal is proposed in Zone D-10 in order to help vehicles bypass the city. A truck parking lot is also being planned in Zone C-40 as shown in the land use plan.

3.2.1. Residential

Studies have revealed that by the year 2001 Srinagar Urban Area, that is, the 1991 urbanisable limits would be able to accommodate about 10.80 lakhs population by judicious infill and selected modification of densities in the existing Master Plan area of Srinagar as given in Appendix-I (Table below).

TABLE - 7

Population Distribution of Srinagar City for the Years 1991 & 2001 (Zonewise)

Existing Planning Zones	Years	
	1991 Master Plans Estimates	2001
A.	26,612	55,198
B.	1,30,896	1,98,117
C.	2,09,692	2,09,231
D.	1,57,996	2,60,046
E.	14,310	52,091
F.	99,742	2,31,054
G.	30,411	74,049
	6,69,659	10,89,786

URBAN EXTENSION

(New Planning Zones)

H I J	4.38 lakhs

To accommodate a population of 4.38 lakhs the Srinagar urban area which can hold 10.80 lakhs needs to be extended by approximately

7,300 acres. Land required for various developments in the extended time frame by the year 2001 may be acquired from time to time, with due regard to the balanced development of the city. The land in the urban extension (UE) would approximately be distributed for the different land uses in the following manner:

TABLE - 8

Urban Extension : Land Use

Land use	% of land
Residential	45-55
Commerical	3-4
Industrial	6-7
Recreation	15-20
Public & Semi-public	8-10
Facilities circulation	10-12

3.2.2 Shelter

Besides supplying a need for shelter, housing could act as a vehicle for social change for aspects such as health, sanitation, welfare of women and children, universal elementary education, removal of adult illiteracy and expansion of the public distribution system. A housing policy can serve as a major tool for influencing the efficiency and equity of urban area. Under-utilised labour can be made productive at low cost.

Essential housing components are:

i. Space - Sufficient for household activities

ii.	Infrastructure	
	Physical	- Water, electricity, liquid and solid waste disposal
	Social	- Educational, health, recreational and other faciltities.
iii.	Location	- In the relation to transportation to the work place and educational and other facilities
iv.	Tenure	- Secure, rental/ownership compatible to needs
v.	Socio-economic compatibility	- Social compatible neighbourhood and economically compatible terms of procurement.

Srinagar city at present accommodates approximately 1,20,000 households in about 70,000 houses. The next two decades will add another approximately 1,50,000 households.

Suitable housing for all families is one of the major concerns of the Play. Emphasis should be both on the development of new housing areas and on conservation, improvement and revitalisation of the existing housing areas.

During 1971 and 1981 the housing shortage has been to the extent of 17188 and 22859 dwelling units respectively. This gap has been increasing over the period. If this trend in the growth rate of housing construction and household expansion persists the number of households and houses will be 2,42,980 and 1,42,729 respectively by 2001 A.D. The requirement of an additional 1,65,588 dwelling units over the existing stock of 1981 can be met if Srinagar City adds about 8250 new houses per year.

The dwelling areas should be designed to fit local conditions and tailored to suit the local climate, social habits and should utilize locally available building materials. Table 9 gives the (percentage) provision of housing by different agencies.

TABLE - 9

Provision of Housing by Different Agencies

Housing Type	Land Development Agency	Construction Agency	Percentage of Housing
Houses on individual plots	Department	Individual Family	17
Employer Housing	State Govt., Local Bodies	State Govt., Local Bodies	4
Regularised infill	Individual	Individual	8
General Housing (a) Sites & Services	Housing Agency	Individual Family	28
(b) Built Houses	Housing Agency & Cooperatives	Housing Agency & Cooperatives	43

Housing co-operatives which are an overlapping sector between public and private and which have had a moderate success in other cities should be encouraged. Small co-operatives with individual housing on plotted basis could also be introduced. The need for development of institutional finance for the construction of dwellings by individual families in sites and services, schemes should be recognised.

3.2.3 Conservation, Revitalisation and Environmental Improvement

Conservation and revitalisation are required in the case of traditional areas and environment upgradation and improvement in other

old build up areas.

The most important part of traditional housing is the core area of the city which basically comprises partially or fully the areas of wards 3,7,8,9 and 10. This also accomodates the central business district. The population of these wards reached saturation in 1971 but since then there has been an infill by commercial use replacing residential use.

TABLE - 10

Growth of Population in the Core Area of the Srinagar City (word-wise)

Ward Nos.	Popuation		% of growth
	1971	1981	
3	27551	35211	27.82
7	23816	24380	2.3
8	24595	30212	22.84
9	38032	42914	12.84
10	31780	43734	36.61

The following measures are recommended for the traditional area:

- Shifting of noxious and hazardous industries and trades and delimitation of non-residential activities; and
- Shifting of wholesale godowns to wholesale and warehousing areas and dairies to the areas in rural use zones.

During the period 1961-81, there has been a spurt of commercial

activity in the core area of the city. There is every danger that the whole of the core area may eventually get converted into a fully commercial area thus completely destorying an area of urban heritage. Therefore, it is exteremely important that new commerical ventures should not be encouraged in the core area of the city.

3.2.4 Upgrading of Physical Infrastructure

According to the survey conducted, it was found that decongestion was very important to reduce pressure on water supply and drainage services. 60 per cent of the households have no piped water supply; they obtain water from public taps and municipal tankers. Modern sewerage facilities are totally non-existent. Shallow surface drains carry all waste water and storewater. Thcese get clogged in the summer due to insufficient flow. Alternatively, overflow occurs during the rainy season. Many houses in the old city have service privies. The narrow lanes make laying of underground sewers an extremely difficult and costly propostion in congested areas such as on both sides of the Jhelum in Zones 'C' and 'D'. Alternative methods of improving sanitation are essential. Low cost sanitation with flush latrines according to UNDP and national standards are suggested where soil absorption properties are found favourable. Water distribution pipes are worn out and of insufficient diameter. Leakages should be stopped and worn out pipes replaced with those of a minimum diameter of 4".

3.2.5 Revitalisation of Residential Areas

Revitalisation of residential areas should be taken up keeping in view the traditional character and style of the buildings. Repairs may be permitted, within the existing architectural framwork, for most

houses.

The city's existing network and the characteristics of urban and streetscape should be taken care of in the conservation of the residential character of the core area.

The areas in Zones 'C' and 'D' as marked on the map are old congested built up areas with mixed land use and serious problems of traffic congestion, inadequate physical and social infrastructure and a lack of open spaces. The development of these areas should ensure the provision of a minimum municipal level of infrastructure. The urban renewal scheme for these area should have physical and socio-economic inputs with conservative surgery as a basic ingredient and planning tool. Areas such as Maisuma, Habba Kadal, Amira Kadal, Fateh Kadal, Zainakadal, Khankahi Mohalla, Idgah, Jama Masjid, Gori Khan Bota Kadal, Maharajgunj, Rambagh fall within this category.

3.2.6 Approach for Urban Renewal

From what has been stated before it is seen that urban renewal is not merely a problem of slum clearance or of redeveloping the physically deteriorated areas; rather it envisages a positive programme for better living conditions for the entire city. This requires that the future growth of the areas is properly regulated and organized, and their liveability protected through slum clearance and redevelopment; through rehabilitation of substandard areas and blighted neighbourhoods; and through conservation of good areas.

Urban renewal is part of a larger planning process, and it has been evolved within the general framework of the Master Plan. It is conceived here as a comprehensive activity to counteract functional

obsolescence of the urban structure as a whole, and of parts and elements of it, and to revitalize continually all elements and parts of the urban area. The process of renewing the city involves the whole pattern of population distribution and functional reorganisation.

The major recommendation of the plan for urban renewal limits itself to giving only a sense of direction. This programme is kept flexible so that necessary adjustments, necessitated by the human problems encountered can be made from time to time by the implementing agency.

RELOCATION AND NEW HOUSING

The pre-requisite for effectuation of the urban renewal programmes is new housing. In view of the huge housing deficit as stated earlier in the chapter, emphasis should be placed on the building of new houses, and on carrying out improvements in the existing strucutes to make them habitable. A positive development programme should be prepared to meet this emergency, and whatever resources are available should be harnessed for the purpose. Without additional houses coming up fast, it is unlikely if any urban renewal plan can be put into operation with any degree of success.

Viewing the problem in the perspective of the economic conditions of the people, especially those living in slums and bustis, it would become evident that the craving need of the day is low cost housing.

3.2.7 Urban Villages

At present there are about 45 villages within the municipal

area. More villages would be added to the urban area because of its extension. The settlements which have had a different life style for centuries are not getting merged into the urban enviornment and need a sensitive treatment in the planning and development process. The settlements should obtain modern services and amenities and yet be allowed to maintain their traditional life style.

3.2.8 Nazool Land Use

Nazool lands shall, as far as possible, be allocated for community facilities and/or income generating schemes. Small pieces of Nazool land (1/2 kanal or less), which have no direct access from a public street and lie under unauthorised occupation, shall be regularised on condition that such lands are improved and developed properly within the zoning regulations. Sordid spots, waterlogged areas and ditches under unauthorised occupation or built upon by semi-public agencies such as trusts, mosques, temples and other religious institutions shall, as far as possible, be regularised subject to proper redevelopment of such areas.

Where the leasehold period of any Government land expires, the Development Authority and/or the Government shall see if such land can be utilised in the interest of the community and pay due compensation to the leaseholder for the construction, if any, authorisedly made by him on Government land, during the lease period.

4. INDUSTRY

A large proportion of industries belongs to the household category. Some of the major industrial pockets of the district are Batamaloo, Zairokola, Lal Bazar, Bamk, Perimpora and Red Cross Road.

The areas dealing with particular industries and trades are given below:

	Type of Trade	Areas
1.	Marketing of willow wickets	Habbakadal and Basthana
2.	Wollan knitwear and handloom fabrics	Kangan, Buchwara, Hassanabad, Nowpora and Lal Bazar
3.	Manufacturing repair and service works	Parimpora, Batmaloo, Zainkot

The dispersal of industrial development in the city, can be made possible if the State Government provides entrepreneurs with incentives such as loans, raw material, land, transportation and other infrastructural facilities.

20 major industrial centres in the city are listed below:

1.	Nowpora	11.	Sanoz Kadal
2.	Parimpora	12.	Hassanabad
3.	Zainakoot	13.	Nal Band Pora
4.	Dudurhoma	14.	Red Cross Road
5.	Hazratbal	15.	Buchwara
6.	Barthana	16.	Acrinawari
7.	Habbakadal	17.	Ualkawpora
8.	Batamoloo	18.	Karan Nagar
9.	Maharaj Bazar	19.	Bamk
10.	Lal Bazar	20.	Syed Hamidpora

The distribution of recommended types of industries (area-wise) is given below (based on a field study):

	Types of industries	Areas
1.	Handicrafts, lace making, willow work, carpet weaving, and papier mache	Planning Zone 'A'
2.	Light industrial complex	B-11, B-22 F-18, F-10 E-3 C-40
3.	Silk factories	C-32, D-1
4.	Woollen mills	D-12
5.	Industries (extractive)	E-7
6.	Industries of obnoxious use and factories with fumes, noise and odour	E-5
7.	Service and Repair	-3 & G-5
8.	Brick and tile factory	G-3, G-4, G-11 G-12,C-41,C-42

Electronic industries have already come up in the south near Lachmanpora and further development may be encouraged by earmarking the land for industries in this area. Additional land must be allocated for such industries in Bonapore, Arampora and Rangrath.

Considering the growth potential and rational distribution of industries, the following development zones may be earmarked for specific types of industries in the planning area by 2001, besides those recommended (typewise) as shown below:

	Type of activity	Development zones
1.	Electronic industrial complex	F-11, E-4 & E-5
2.	Large, medium and small scale industries	G-1
3.	Food processing units	H-5, H-6 and H-9
4.	Small scale industries	C-40

It is further suggested that the chemical industries located in Zone G should treat their effluents before discharging them into the river Jhelum, considering the direction of flow through the city and the dangers of pollution.

5. TRADE AND COMMERCE

Exchange Road, Lal Chowk, Badshah Chowk, Hari Singh High Street Bazar, Habba Kadal, Zainakadal and Maharajgunj commercial areas shall continue to exist but shall undergo timely urban renewal in accordance with zoning regulations. Other shopping fronts on the roads and lanes in the city which will remain and grow under zoning regulations and road widths provided are shown in the proposed land use plan. Shops will not however be permitted where the competent authority feels that they will cause nuisance to the adjacent locality.

In the extensions of the city, construction of shops will not be permitted along the roads and lanes.

A more rational distribution of shops in different zones of the city catering to the residential population and the floating population of tourists is essential.

About 4000 more shops are however required for the additional population of 9.00 lakhs to be distributed in different zones and in the urban extensions. The total adds up to about 25,000 working out to one shop per sixty persons by 2001 A.D. The land area has been earmarked in the planning divisions 'A' and 'C' for the construction of hotels, tourist hostels, huts and so forth.

To accommodate required shopping, commercial offices, offices

for undertakings and other related activities such as cinema, hotel and other facilities, the following five-tier system of commercial areas is to be generally followed:

TABLE - 11

Commercial Areas

Level	Name	Population served
I.	Central Business District (including sub-central Business Dist.)	City (including sub-city)
II.	District Centres	4,00,000 to 7,00,000
III.	Community Centre	60,000 to 1,00,000
IV.	Local Shopping	15,000 to 20,000
V.	Convenience Shopping	5,000 to 6,000

5.1 Central Business District

The Lal Chowk area, Badshah Complex and Maharajganj commercial area are at the apex in the hierarcy of the commerical centres at city and regional level. They can be reinforced with timely urban renewal.

5.2 District Centres

Three district centres in Zones C,B & F have been proposed and one each in the urban extension.

5.3 Local Shopping Centres

Local shopping centres are not marked as part of the land use plan. In the last two decades, most of these shops for services and repair have come up in a haphazard and straggly manner. This should be discouraged.

5.4 Mandies

As present there is only one mandi located at Bemins towards the south-west part of the city for wholesale and retail fruit, that serves the city and functions as a wholesale market for the region and important urban centres in the neighbouring states. Further, the area for such storage and bulk handing of fruit in the mandi is inadequate. In order to minimize the traffic congestion, help smoothen the traffic links for intra-city and inter-city movements and to cope with the inadequate space, the proposed mandies should be located in other parts of the region namely, at Sopore, Baramula or Anantnag, where adequate facilities for godowns, parking, movement and linkage to the regional roads can be provided.

6. CIRCULATION PATTERN

The existing circular road network should be implemented without delay and should be taken as an integral part of the new Master Plan for the city. The roads to be widened/constructed under the Circular Road project are listed below:-

1. Widening of road from Nawakadal to Mar Road.
2. Construction of road from Gassiyar to Rajouri Kadal to Nawakadal Kawadera to Idgah.
3. Widening of road from Sazgaripora to Firdous Cinema.
4. Construction of road from Sazgaripora to Ali Masjid (Idgah).
5. Construction/widening of road from Safa Kadal to Idgah.
6. Construction/widening of road from Ali Kadal to Rajouri Kadal Road.
7. Construction of road from focal point Wazpora to M.R. Gunj old P.N. Bank.

8. Widening of road from M.R. Gunj old P.N. Bank to Badshah tomb.

9. Construction of road from Badshah tomb to Saraf Kadal (Mar road) (Zarab Khana Cut.)

10. Connection of Zaina Kadal with Mar road at Bhori Kadal through Farooq's Book Stall.

11. Widening of road from Jamia Masjid to Firdous Cinema.

12. Widening of road from Mirza Kamil Saheb junction to Baghi Ali Mardan via Madeen Saheb.

13. Widening of road from Firdous Cinema to National Medical Institute source.

14. Widening/construction of road from Khan to Barbar shah via Baba Dharam Dass.

15. Construction of road from Barbar Shah to Nai Sarak via Mini ditch.

16. Widening/construction of road from Nai Sarak to Kral Khud via Vasanta Girls school.

17. Extension of Mar Road from Und-Masjid via Munawarabad, through transport yard to M.A. Road (East Bari Numbal).

18. Extension of Mar road from Und Masjid (Mar road) along western Bank of Bari Numbal connecting east of Shamaswari, Malik Angan, Banamohall, Chinkral Mohhalla, Sheliteng and Babapora and cutting through Bagwanpora across Barbar Shah via Shatal Nath ditch.

19. Link road connecting Habba Kadal Bridge via Sheliteng Ghat with Bari Numbal.

20. Link road connecting new Fateh Kadal bridge with Bari Numbal via Malik Angan.

21. Link road from K.K. Mohalla with Bari Numbal via Kani Kocha.

22. Widening of road from Fateh Kadal to K.K. Mohalla.

23. Widening/construction of road from K.K. Mohalla to L/C Qaziyar.

24. Widening of blind corner opposite J.L.N. Hospital leading to Jogi Lanker.

25. Widening and improvements to link connecting Jogilankar with Kralyar.

26. Widening/construction of road from Safakakal to Gasiyar (Malik Saheb).

27. Link Road from Sokalipora Mar road towards the North through vacant land.

28. Widening of road from Bohri Kadal to Nawhatta.

29. Construction of link road connection PWD road at Shri Bhat with Idgah Soura road via Gili Kadal Zoonimar.

30. Widening of road from Kral Khud to Babbakadal.

31. Construction and widening of approaches to Biscoe bridge.

32. Widening of road from Barbar Shah to Munwarabad.

33. Construction of Link Road from new Barbar Shah bridge to Central telegraph office.

34. Links connecting Habba Kadal-Fateh Kadal road through Chinkral Mohalla with Bari Numbal road.

35. Construction of road from Naidkadal to Khoj Bazar.

36. Construction of road from Saidpora to Soura up to National Medical Institute.

37. Construction of road from

    i. Sazgaripora junction to M.K. Sahab junction via Kckarkocha.

    ii. Gasiyar junction to Alamgari Bazar junction via Baba Mazar road.

38. (North-South corridor) widening of road from Industrial estate to Nallah Amir Khan Bridge (left to right approach).

39. Badapora ditch.

40. Construction of road from Badoo Bagh to Eastern-Foreshore of Bari Numbal to Girls High School, Khanyar via Koolipora.

41. Destigeer Saheb approach road to eastern foreshore of Bari Numbai.

42. Khanyar Shiraz junction to Eastern Bari Numbai.

43. Naqeushpora link to eastern Sari Numbai.

44. Und-Masjid M.A. road via Newpora Munwarabad road (from Newpora to M.A. road).

45. Dal gets to Koolipora via Kheyam Chowk.

46. Jamia Masjid western gate to Mar road through Kawangerpora.

6.1 Bridges

In order to connect the above identified arteries through some existing bridges need to be reconstructed thereby improving both the traffic intensity and the realignment of arteries proposed. Some new bridges have also to be constructed. These have been identified in the project as under:-

- Reconstruction of Fatehkadal bridges (1x203 ft.)
- Tsunti Khul Nallah Bridge (1x130 ft.)
- Tsunti Khul Nallah bridge D.S. of existing Berbershah Bridge.
- Construction of new bridge over River Jhelum near convent.
- New bridge over Nallah Amirkhan (Baghi Alimardan Khan).
- Sayed Mansoor bridge.
- Reconstruction of New Zoins Kadal bridge on River.
- Reconstruction of Alikadal bridge.
- Reconstruction of Zampakadel bridge.

6.2 Circulation Pattern in the Core Area of the City

In order to improve the communication system in Srinagar city and to afford some relief to those living in the core city the following arrangements have been suggested:

- Generation of traffic at Badshah Chowk leading to Barbarshah should be restricted. This lane should either be closed to traffic or only open to one way traffic.
- A pedestrian crosswalk should be provided a little away on both sides of the rotary towards the approach of the Budshah bridge. A controlled type of crossing should preferably be made use of.
- Traffic from the small lane by the side of the Palladium Cinema should be disallowed.
- Properly designed automatic traffic signals should be installed at the junctions for the smooth regulation of traffic.

- As far as possible parking and bus stand facilities must be minimised in the neighbourhood of Budshah Chowk and Exhibition centre.

- No facility for parking should be provided at Lal Chowk and at Women's College (Lane between Maulana Azad road and Sherwani Road). This will help the smooth and orderly movement of traffic and proper drainage at Lalchowk.

- The present K.M.D.A. Bus stand should be shifted to the General Bus stand and to the area thus vacated should be used for operating of mini buses for Khanyar and other places. All interior roadside parking in and around the Budshah area should be avoided.

- The exits of Apna Bazar and SRTC Bus Stand should be shifted to the General Bus Stand. The SRTC Bus Stand space thus vacated should be used for car and scooter parking.

- Badshah Chowk, Lal Chowk and Exhibition spot should be made from from hawkers, vendors and other encroachments so that pedestrians can utilise the sidewalks fully.

- The minimum width of the sidewalk should be according to the table given below:

Sl.No.	Type	Type of Street	Min.width of sidewalk (m)
1.	Business Area	1. Main Street	4.0
		2. Minor Street	2.0
2.	Residential Area	1. Main Street	3.0
		2. Minor Street	1.50

- One way traffic should be introduced between J & K Bank and Biscoe school.

- For the sake of convenience the Army convoy bound for Leh should alter its route and go via Badami Bagh-Bypass road - Parim Pura - Safapora - Lal wail - Kangan.

- Operation of rural buses (East) for Pulouama, Anantnag Distt. should go via the Bypass.

- An additional city bus stand has been provided at Iqubal Memorial crossing to case out the traffic at the General Bus Stand. Vehicular traffic between Baramulla and Srinagar can bypass the city.

- The road between Qumerwari and Octroi post at Parimpora should be widened.

- The road from Chand mill, Athwajan to Panthchowk should be widened.

- Charari Sharif Bus Stand should be shifted to General Bus Stand and the place available there be alloted to the mini buses operating on Jawahar Nagar Channapora and Samat Nagar Areas.

- Buses bound for Kangan and Ganderbai area should go via cement bridge.

- A general Bus Stand has been proposed on the North-South corridor in the urban extension areas.

6.3 Problem Points, Zones and Intersections

Road intersections at Maulana Azad Bridge, Dalgate Bridge, Lal Chowk to Bori Kadal, Nowhatta, Zainakadal, General Bus Stand, Chotta Bazar, Magarmal Main road need to be widened and a signal system should be introduced at these intersections.

A network of by passes, ringroads and other arteries with a hierarchy of road widths based upon traffic intensity has been evolved in the proposed circulation plan of the city by 2001.

6.4 Right of Way and Building Line

The right of way and the building line proposed are given in the list below:

TABLE - 12

Right of Way and Building Line

Sl.No.	Name of the Proposed Road	Right of way proposed (ft.)	Minimum Building Line from Cent. of the road 4 proposed (ft.)
1.	2.	3.	4.
1.	North-South Corridor from Ranjit Treatment Plant to Srinagar city i.e. Oont Bhawan.	150	100
2.	Construction of road from Bermina to Karan Nagar	60	40
3.	Construction of road Chattabal to Wattaldub	60	40
4.	Construction of off-shore road on the North-West of the Nageen Lake	80	50
5.	Construction of road opposite Dr. Nassir's Clinic to Boulevard Road	60	40
6.	Construction of road from Muskeem Bagh to Nowpora Road	60	40
7.	Construction of Outer ring road starting from Nagbal crossing via Saidapor Hamchi, Gorsu, Inderhema, Burrama, Dara Bagh, Harwan, Ragawallapora Shalimar Bagh to Rang Nath Bagh. A construction of bridge at Tal Bal Nal is proposed.	100	75
8.	Construction/widening of road from Habal to Pandach crossing via Zakura	80	45
9.	Widening of road from Habak to Botpora	80	45
10.	Construction/widening of road from Bagh Rang Nath to Botpura	80	45

Contd.....

1.	2.	3.	4.
11.	Construction/widening of road from Botpora to Shalimar Bagh via Telbal	60	40
12.	Construction of road from Idgah Soura Road to Shangloo Pora, Palapora via Goripora to Wular lake road. A bridge is proposed tobe constructed on Jhelum river	100	75
13.	Construction of road from Idgah Soura road to Gori Pura	80	50
14.	Widening of road at Sonawar Bazar	100	75
15.	Widening of road from M.A. Bridge to Dal Gate	100	75
16.	Widening of road from Batmallo to Bermina	80	50
17.	Widening of road from Police Station Khanyor to Bhori Kadal	100	75
18.	Widening of road from Pantchowk to Batwara	120	75
19.	Widening of road from Khonikhan to Baba Dharamdas Mandir to Khalipora	80	50

6.5 Lanes

Existing lands in the city shall be improved on a priority basis. Those in the huddled parts of the city shall be taken up in the first phase; others in the less dense areas shall be developed in subsequent phases. Widening of lanes, wherever possible, shall be carried out on the basis of the length of the lane. The standard or lane widths shall be as follows and these shall be applied in the old city allowing for widening of the lane.

Length of the Lane	Minimum Lane Width
Less than 100'	6 to 8 ft.
100 ft. to 200 ft.	8 to 10 ft.
201 ft. to 400 ft.	10 to 12 ft.
401 ft. to 800 ft.	15 ft.

Above a length of 800 ft., standard road widths will be applied. Where, however, the traffic intensity on a shorter link lane of 100 ft. and less is more than 200 pedestrians per day, the lane width shall be increased up to 10 ft.

Standards for streets in the residential areas shall be as follows:

		Right of way	Maximum Length
1.	Cul-de-sac	15 ft.	300 ft.
2.	Loop street	15 ft.	300 ft.
3.	Service Lanes	15 ft.	800 ft.
4.	Residential streets	30 ft.	-
5.	Collection streets	40 ft.	-
6.	Feeders	60 ft.	

6.6 Mass Transportation System

6.6.1 Overview:

With the population of Srinagar projected at more than 1.5 million by the year 2001 and considering its growth potential both as the state capital and a tourist spot of national and international repute, there is urgent need to lay down a long term Traffic and Transportation Plan to cater to the city's future needs. The present

Review and Revision of the Master Plan already envisages three new Urban Extensions on the periphery where an estimated 4.38 lakh people will reside. Further expansion of the Srinagar Urban Area is inevitable in the future. The recommended decentralisation of a variety of activities will also add to urban sprawl. Against this backdrop, a conceptualisation of a Mass Transportation System for Srinagar has been attempted here.

6.6.2 Concept:

Transportation is one of the key factors in shaping our cities. As our urban communities increasingly undertake deliberate measures to guide there development and renewal, we must be sure that transportation planning and construction are integral parts of general development planning and programming. The major objectives of urban transportation policy are the achievement of sound landuse patterns, the assurance of transportation facilities for all segments of the population, the improvement in overall traffic flow, and the meeting of total urban transportation needs at minimum cost. Only a balanced transportation system can attain these goals -- and in many urban areas this means an extensive mass transportation network fully integrated with the highway and street system.

6.6.3 Approach:

Normally the modes compete for selection are the following

- Rail systems
- Bus systms - (a) Conventional buses (b) Trolley buses.

In the case of Srinagar, the complete absense of railways in and around the Srinagar valley coupled with the constraints on

electric supply make the rail and trolley bus systems unsuitable. For most cities throughout the would, mass transit can adequately be served by local fixed-route bus service operating on streets, mixed with traffic, and constrained, due to its required stops and delays from other traffic, to average, scheduled speeds of 16 tp 19 Km/h. While not competitive with the automobile, such speeds are adequate as long as trip lengths in corridors served tend to be 8 Km or less and maximum hourly passenger volumes in one direction are 5000 to 7000 or less.

6.6.4 Advantages and Disadvantage

The advantages of bus systems over rail systems include

1. Relative ease of adjustment to meet changing travel patterns.
2. Comparatively low capital costs.
3. Relatively short time required to inaugurate or expand sytems.
4. A proven, relatively trouble-free technology.
5. Ease of bypassing barriers (accidents,fires,etc.) in normal route.

The disadvantages (more important in larger urban areas) are

1. Lower capacity in high-volume travel corridors.
2. Limited ability to reduce labour cost in high volume corridors.
3. Susceptibility to delays from other vehicles except where exclusive bus lanes are provided.
4. Less "visibility" to the route network (compared to rail), frequently resulting in less public awareness and understanding of available service and coverage.

6.6.5 Requirements of a Transit System:

The various requirements of a transit system are enumerated below. These are divided into two categories - Passenger Requirements and Operator requirements.

Passenger Requirements

Availability: This requirement, without which the population cannot use a transit system, has two facets: locational, closeness to a system's terminals, and temporal, expressed as frequency of service. For good availabilty, users must have both reasonably close terminals and adequate frequenct service. Because of cost constraints, trade-offs between the two must often be made. At one extreme is a dense route net-work with low frequency of service. At the other extreme is frequent service on few routes; users far from terminals do not have the service unless they use feeders. Most urban transit lines utilize a compromise solution: they provide a certain network density and frequency of service. Naturally, with higher demand both can be increased.

Punctuality: Punctuality is defined as schedule adherence. The variance from scheduled travel times may result from traffic delays, vehicle breakdowns, or adverse weather conditions. Since traffic delays and interference dominate as causes, by far the most significant factor for securing punctuality is control over the system.

Speed/travel time: The total door-to-door travel time can be composed of five parts: access, waiting, transfer, travel and departure times. Relative weights of these time intervals vary, since passengers perceive them differently. Therefore, based on various

studies reported in literature, a factor of 2.0 to 2.5 can be used for waiting and transfer times to obtain perceived travel times. The relative weight of walking time depends heavily on the attractiveness of the area.

User cost : The price of transportation is another important factor for travelers. Transit fare is the most significant portion of it, but other out-of-pocket costs are also included, particularly by commuters. In a broader sense, cost of access by automobile and even its fixed costs (if an auto is owned only for that purpose) should also be considered.

Comfort : Comfort is a difficult concept to define because it encompasses many qualitative factors. Paramount are the availability of a seat and the quality of ride. The physical comfort of the seat itself naturally enters in, as does the geometry of the vehicle entrances/exist, width of aisles, presence of air conditioning, jerk and noise levels, image of passengers relative to one's self-image, and the degree of privacy offered, to name a few.

Convenience : While comfort is related to the vehicle, convenience refers to the overall system. Lack of the necessity to transfer is a convenience. Good off-peak service, clear system information, well-designed and protected waiting facilities, and sufficient, close parking (if required) are all user conveniences. By nature, evaluation of conveniences is predominantly qualitative.

Safety and security : Passengers safety in terms of accident prevention is very important, but this aspect is sometimes less

importance for passengers than protection from crime. Security is measured by statistical records of crime. Security is measured by statical records of crime incidents on the system.

6.6.6. Operator Requirements

Area coverage : Area "covered" or served by transit is defined as the area within 5 or 10 minutes' walking distance from transit stations. Area coverage by a transit system can be expressed as percent of the urban area which is the transit service area. In examining area coverage however network extensiveness, provision of and for access modes, and central business district (CBD) coverage should be considered.

Frequency : Frequency is expressed by the number of vehicle departures per unit time (hour). It is often incorrectly believed that frequency is not important for commuters. While its significance is greater for off-peak hours, it also seriously affects regular riders. For example, there are no residential areas in which only two or three departures during the whole peak period would be convenient for all potential users. Short, regular headways are an essential element of attracting all categories of passenger trips.

Speed : While passengers are more sensitive to transfer and waiting than travel times, they also prefer high running speed on the line; the operator is particularly concerned with high commercial speeds on the lines, since they affect his fleet size, labour costs, fuel, maintenance, and above all, attraction of passengers. Several speeds are used in transit system analysis.

- Travel speed - one-way average speed of vehicle, including stops.
- Commercial speed - average speed, including terminal times.
- Platform speed - overall average speed, including travel to/from garages.
- Paytime speed - average speed based on driver's paid time.

Cost : Although cost is often given an unjustifiably high relative weight (even used as a single evaluation criterion for different systems), it does represent the most important single factor to the operator. In most cases, three aspects of costs are analysed : investment cost, operating cost, and revenue. All three vary grately with local conditions and system characteristics, as well as with time (because of inflation). In evaluation, unit costs rather than total costs of individual modes should be compared.

Capacity : Two different capacities can be defined for a system - way capacity and station capacity. The latter, capacity of stations along with line, governs line capacity since it is smaller in all cases except with vehicles from a line-haul section branch out into several terminals; such cases have few applications at present.

Safety : The operator must pay great attention not only to passenger security, but also to operational safety of the system.

Side effects : System effects on the non-users and the environment for which the operator is responsible include such physical impacts as aesthetics, noise, and air pollution.

Passenger attraction : The number of passengers a transit line

carries is usually the most important indicator of its success and its role in urban transportation. The attraction is obviously a function of the type and level of service, but there is also an additional factor probably best described as system image, which can be very important. This image is difficult to define, but it is composed of such aspects as the simplicity of the system, reliability of service, frequency, and regularity, as well as physical characteristics of facilities.

6.6.7. Route Planning

Walking distance and route spacing : A commonly used rule of thumb is that transit patrons should not be required to walk more than 0.4 Km (0.25 mi) to reach the nearest bus stop. This would result in parallel routes being spaced about 0.8 Km apart. In suburbs which are at present low-density, this goal may have to be compromised if there is an insufficient density of housing to suport this close a network of lines.

Pedestrian Access : Pedestrian access is becoming an increasingly important factor, particularly in newer subdividions designed with curvilinear streets to discourage through traffic. Increasingly, transit route planners are faced with situations where routes might be within the standard 0.4 Km of each residence 'as the crowflies'. The shortest path from some houses to the nearest bus stop, however, might actually be much longer through the waze of street that must be followed. Transit representatives should maintain contact with local planning agencies to call attention to the need or convenient and direct pedestrian access to street carrying transit

lines. This may be provided by pathways.

Convenient Transfer Connections : The various lines of a route network cannot be analysed independently. Each must be thought of in terms of how it relates to others in the network. Provision of convenient locations for transfers is an especially important factor.

6.6.8. Conceptualisation of Srinagar System :

The basic system consists of an Arterial/sub Arterial Loop with Feeder Roads. As visulised in Map No. 11A the system has been adopted to the basically radial pattern of roads and the by-pass existing in Srinagar. A strong, fixed-route bus system is proposed on the arterial/sub-arterial loop. This will connect, at twenty terminal points, with the secondary transportation system, mini buses, which will ply on the sub-arterial roads connecting/crossing with the loop at the terminals (T). This feeder system will be able to support a high level of service on the main loop bus system. Particularly during non-peak hours a system of scheduling will be required to reduce waiting time at the passenger interchange terminals.

A second sub-arterial inner loop is proposed to provide quick easy movement around the CBD. Mini buses will ply on this inner loop. A system of second order terminals for the mini-buses can be worked out later in consultation with the SDA, with these terminals located at convenient end-of-the-line locations. However a minimum number of such terminals should be situated within the loop, and particularly in the CBD. This will have the advantage of minimum turning and parking movements in the central areas resulting in reduction of congestion and space saving in the CBD. All layover time will be scheduled at

both ends of the feeder lines. On the main loop this will be at the starting and end terminals. Additional points associated with the system are as follows:

- Further detailing will be required to fully integrate the above system with the other roads and streets of the city.

- Park and Ride (P+R) concepts can be applied at all terminal points in the future. This consists of provision of free, protected parking facilities for private vehicles at the terminals, thus reducing private vehicular traffic in central areas and fuller utilisation of the transportation system.

The major details of the system are given below:

Arterials: ROW 200 feet with central median. Two lanes on either side of central median.

Part of NHIA from 1 km east of Panthchowk to Shankaracharya Hill crossing. Complete by-pass and extending west 1 km beyond Zainakoot. From Parimpura crossing of by-pass via Baramulla-Srinagar road to Batmallo.

Sub-Arterial loop: ROW 100 feet with central median. One lane on either side of median to start with and two on either side ultimately.

By-pass crossing at Humhama to Airport starting at Shankaracharya Hill crossing - Dal Gate - Western Off - shore Road - Ashish Bagh Bridge - Engineering College - Naseem Bagh - Northern Off - shore Road - Shalimar Bagh - North east through sub-zone A10 -

proposed East-West corridor (north of subzones I5, I6, I7, H5, H11) - Bus terminal in sub-zone H9 - Soura (Sher-i-Kashmir Institute of Med. Sciences) - Khushal sar - Gagerzoo - across Jhelum to Parimpura crossing at by-pass.

For the inner loop, the route will be Batmallo - New Secretariat - Badshah Bridge - Maulana Azad Road - Road Transport Corporation Jn. - New Bridge on Chunti Khul - Manora Bagh - Nalla Mar Road - Noor Jehan Bridge. Feeder Roads: ROW 80 to 100 feet. Two lanes to start with and four lanes ultimately.

Feeder roads will connect with these sub-arterials for further access to the interior residential/commercial/industrial/institutional areas.

Terminal: The terminals will serve as the interface between the modes of transit service. Parking accomodation will be available to encourage part and ride travel. Secure bicycle storage will be available for those who use this mode to reach the terminal and all-weather pedestrial shelters will exist for those who live or work close enough to walk. Terminal operation costs could be offset by leasing commercial space within and/or around the terminals. 20 bus terminal points have been proposed as shown, where sub-arterials will connect with various sections of the city within and outside the loop.

Second order terminals : These 'miniterminals' will be simple all weather structures incorporating most of the facilities of the Terminals, but on a smaller scale. They will not, of course, be an interface of the different modes since they will only cater to mini buses.

Buses : High capacity buses with seating capacity of 55 and above are proposed on the main loop. Articulated buses could be considered for increased capacity and economy.

Mini Buses : Mini buses of the type already successfully in use in Srinagar would be appropriate. They could also ply on some feeder roads because of their small axle-width.

6.6.9. Management:

Management is a critical but often overlooked element in a succesful urban mass transportation service. The use of modern business management concepts and techniques make sense in the process of improving transit service. The important thing will be to focus on the consumers in Srinagar and how best to serve them. Only then will this transportation system meet the city's requirements of the future and improve the quality of life in the Srinagar Urban Area.

6.7. Road Lighting

The quality of road lighting needs to be in keeping with the status of Srinagar as a tourist centre. The number of poles and wires should be kept to a minimum and the poles should of prestressed R.C.C. instead of wooden poles in the interest of preservation of natural forest resources.

Mercury vapour lamps are suggested for general use because they are anti-glare while providing economic illuminetion. Sodium vapour lamps should be used for road intersections only, to avoid night time accidents.

6.8. Water Transport

The Jhelum is navigable between Khanabal and Khadanyar. Over the decades silting has reduced the draft in many places and dredging is therefore recommended. It will then be possible to have inter-city movement of fruit and vegetables by water. The extensive timber and saw mills in and around the city would also be able to use this cheap mode of transportation. It was proposed in the previous Master Plan to rehabilitate dongas in the Jhelum upstream of Padshahibag and downstream of Chattabal weir. This should be accomplished speedily.

The development of ghats on the Jhelum and other nallahas and their connection with the city road system will go a long way to make the improvement of water transport successful.

Deepening of the flood spill channel and redesigning its gradient to connect with river Jhelum will also help greatly. The flood channel is heavily silted and has become flat and the design capacity of 800 cusecs has gone down. It can be increase to the order of 15000 cusecs by dredging and raising the bunds.

6.9. Air Transport

The facilities at Srinagar Airport can be further augmented to meet the requirement of an International Airport. At present all weather handling of passengers and cargo is a problem. The quality of the tarmac apron should also be upgraded.

7. UTILITIES AND SERVICES

7.1. Water Supply

The proposed supply or 42.55 mgd. will be made available from the following sources :

a. Nishat (including Dal Lake + Dachigam stream) - 12.0 mgd.

b. Sindh Extension Canal

i.	Alusteng	6.8 mgd.
ii.	Gangil	20.0 mgd.

c. Doodganga 3.75 mgd.

Total 42.55 mgd.

This works out to 30 gal./cap./day for the projected population by 2001 A.D.

In the Master Plan Phase-I, only major works for improving distribution and extensions have been provided with pipelines up to 150 mm. in diameter.

All the worn out pipes and pipelines in the city below 4" diameter must be replaced by 4" diameter pipes. These pipes will be connected with the loops in all the four zones on all the streets irrespective of size and width. Parallel 4" diameter pipes shall be added wherever lower diameter pipes have recently been laid and the 2" will be interconnected at suitable intervals. It will be economical to provide High Density Polyethelene (HDP) or asbestos pressure pipes. Water installations will then be equitable and at much better terminal pressure at an eastimated cost that is not likely to exceed Rs. 4 crores.

The Seventh Plan period works already in hand will have to be completed. In addition replacement work on small pipes should also be completed.

The possible sources for the future must be carefully looked into such as drawing additional water from the Sindh river.

Despite large viparian commitments on the Sukhna, a snowfed perennial nullah, it should be possible to draw a considerable quantity of water from it in an economical manner for use when the city limits are extended in the northwest. One of the probable sites tapping the Jhelum could be near Pantchok-Zawan. At Pantchok, water can be lifted to the nearest hill on the eastern side where cost effective treatment works can be made available. Since the supply is based on multiple sources in all directions, each of these is used in the part of the town nearest to it. The Jhelum will thus be a substantial addition for the south-east and south-west areas.

Being a snowfed and perennial, the Ferozpur nullah near Tangmarg can be dammed. There are various available sites for a storage reservoir. The Tarsar and Marsar lakes upstream of Dachigam beyond the hills are other potential sources to be explored. Water can be brought across by tunnels as economically convenient foundations for an impounding reservoir may not be available. This could be investigated into as part of a long term project.

Tapping of ground water has not been encouraged so far because methane gas and iron are encountered in some of the shallow tubewells. The Kashmir Valley several ages ago was a very big lake. The Valley is surrounded by hills and deep tubewells can give large yields. Treatment of tubewell water is not impossible with the advanced technology available. The advantage in picking up underground water is that the long load of bringing water from the hills to the sprawling city is eliminated. The Ground Water Survey Department of the Government of India or some reputed consulting firms can make

intensive investigations. Beyond a depth of 400' good aquifers can be located and deep tubewells can go down to about 600'.

The existing tubewells which have a good yield can be grouped together to serve each localised area. Groups identified in this manner are Balgarden. Karannagar and Narishingharh, another at Bemina and Chattabal and a third can be at Rawalpura. Barzula and Haiderpur while the fourth group can be at Shoopur. Each group can work as a unit. Water from these tubewells can be collected at the ground level and treated together. The treated water can be raised to elevated reservoirs which will then feed each individual area.

There are still three plan periods, the Seventh, Eighth and the Ninth during which time intensive surveys can provide a shelf of projects for additions to the source so that just about the year 1995 it will be possible to take up one or many schemes ready for operation for further additions to the supply.

Prompt action must be initiated for detection and repair of leakages in the treatment plants and systems so as to avoid wastage and infructious expenditure. The benefits deserved from this kind of preventive action will be enormous.

The quality of water at the treatment plants and in the supply system must be monitored effectively through a Central Public Health Engineering (PHE) Laboratory with a chain of smaller units manned by qualified and trained personnel. Disinfection of the supply is necessary at the various points in the town for the lead lines are long. Addition of chlorine gas under pressure at these vulnerable points is also necessary.

A tariff system has to be developed and the cost of production converted into recoverable tarrif so that the decision making authorities know that the services cost them. Even free supply through the public stand posts must be metered to know how much water they are supplying free to whome and at what cost the political authority must also know what it costs to make the suply free so that they can take a more practical view of things even if they wish to the water supply.

Transport of chlorine over the hills is cumbersome. Government is advised to have a chlorine gas factory whithin the valley. At the treatment plant chlorine gas can be generated from common salt to the extent of the requirement. This was done 59 years ago in Gwalior, and was found to be working very satisfactorily. At least four such treatment plants already in operation or under execution are advised. This will ensure emergency needs so that at no time is unprotected water supplied to the people.

In addition to the 46.55 mgd. of water supply generated there is an arrangement to lift water from the Dal Lake when the discharge in the hill streams gets reduced in winter. From the Dal Lake 2.5 mgd. of water is lifted and fed into the Nishat treatment plant. There is a scheme under consideration to withdraw 12 mgd. from the Dal Lake should the Datchigam sources fail completely in winter. Further, additional withdrawal from the lake would be economical from the Nagin Lake side.

The Government owned power canal takes off at Prang. There are frequent breakdowns in the section before the canal reaches Gandarbal.

From the forebay of the Gandarbal Power House, the Sindh extension canal takes off which feeds Rangil. Allusteng and Nishat through the Datchigam Canal. As the main power canal has frequent breakdowns,it seriously affects the water supply. Downstream of Prang at a lower level, there is another canal called Padshahi Khul (Zamindari Khul) which is a better maintained canal. To meet the contingency of the power canal failure the proposed scheme for the lift of 25 causecs from the canal must be executed. From this canal upto 40 causecs of water can be lifted.

It will be cheaper to provide service reservoirs at the treatment plants for half day capacity and zonal reservoirs for different zones into which water from ground level can be pumped. This will reduce the size of the supply mains considerably.

7.2 Sanitation

A detailed scheme for providing adequate storm water drainage and sanitary sewerage facility for Srinagar has been prepared by M/s Consultant Engineering Co. Pvt. Ltd. at an estimated cost of Rs. 118 crores. This scheme has been approved by the state government. Although, there was an approval in the 6th Plan for Rs. 8 crores only Rs. 3.75 crores were actually provided in the first four years of the Plan. Assuming a 2 1/2 times growth for every Plan period this schemem will take many Plan pariods to be completed. When there is delay, inflation is inevitable. Such an immense scheme requires huge inputs so to be completed in a reasonable length of time. It is perhaps prudent to take up the most valunerable parts in pieces and ignore the major scheme for some time longer.

Alternative methods for improving sanitation are urgently needed. Low cost sanitation with a poor flush latrine requiring about 3 to 4 litres of water per flushing for every individual household is the only solution in dense parts of the towns where soil absorption properties are favourable.

On an experimental basis such a programme with the help of UNICEF has been started in the area between Kathidarwaza near the fort to Lal Bazar in the north, Nallah Amrikhan in the West and Nagin Lake in the east. In this area soil absorption is good and latrines developed so far are sanitary and functioning well. In the first phase 1500 latrines have been planned. This activity must be extended to every house wherever possible.

Within the old city which is densely populated where the lanes are very narrow it is not possible to lay the sewers without damaging the property. Therefore, it is suggested that the area from Gaukadal down to Lal Bazar Botakadal can have such latrines. Underground sewerage system can be postponed in this area for the present, due to physical and financial limitations. In the peripheral area where there are wider lanes, funds permitting, it may be possible to lay underground sewers and this is advised because in the long run there will be underground sewers everywhere.

A scheme to prevent flow of sewage and sullage into the Dal Lake is under execution at Brarinambal and should be completed on a priority basis to save the Dal Lake from pollution. This will also reduce the insanitary conditions in the surrounding area.

It is worthwile to consider reclaiming the whole Brasi Numbal in the long run in order to use that site for future sewage/sullage treatment. The treated effluent can then go into the river Jhelum by cutting a drain at Chinkaral Mohalla. This is also under consideration and it will serve the whole of the Rainawari area beyond Razweerkadal and 20% to 30% of the old town.

One way of providing finance for developing underground sewage systems in the colonies already built is to lay a cess on each property which will meet at least 75% of the cost. Government can consider subsiding to the extent of 25%. Individuals would otherwise require to spend on septic tanks.

In many of the post houses where are septic tanks with soakage pits such as in Karannagar, Rajbagh, Jawahar Nagar, Balgarden, Narsinghagarh and other such areas. There are generally high water table areas where soakage pits have limited use. Underground drainage in these areas will have to be on a priority basis. A cess on the properties up to 75% of the cost can easily help make a unit underground drainage systems here, even if on a trial basis.

The work in the three drainage zones has been done to the extent of constructing main drains in the main city in Zone No.3. This work should be done because a major sewerage scheme will take a very long time to come. All that can be and should be done at the first chance is to connect all the outlets from the pumping stations by a common sewer and drain it down as stated in an earlier paragraph.

Land has been acquired for sewerage treatment plants at two

places. Three alternative treatment plants are contemplated. But all the alternative seems to be expensive. However, it is possible to zone the areas according to water sheds and provide a number of small treatment plants of the cheapest type with primary treatment and then carry the effluent from the primary plant for secondary treatment outside the town.

For the purpose of primary treatment, land must be provided in the zones.

Surface drainage and sewerage cannot be mixed up because such a scheme would be beyond the financial capacity of the state Govenment and difficult to implement and therefore impracticable. Surface drainage works are less costly, and probably that is the first than can be done in stages. Sewerage can be taken up in part allowing only primary treatment to begin with in the watersheds.

The Green's sewer already in existence should be made operational by cleaning it up and connecting it outside the town towards the north west where there is a site for a treatment plant, in Razweerkadal. Once this is done, areas on either side of the Green's sewer can be connected like the branches of a tree to the extent that it is capable of carrying the discharge. This will not involve deep cutting. Primary treatment in the shape of an asrated oxidation ditch would be enough.

The river Jhelum has to be protected from indiscrimination and heavy doses of pollution. Human beings live in boats and are thus vulnerable. Annual flood flushing provides a slight relief though there is a large inflow of silt in that period. Every year 3" of silt is added to the bed. Therefore, dredging the bed is important.

Lifting of sullage and dumping it into the river Jhelum is in itself an insanitary act and must be prohibited.

The possibility of transferring the lifted sullage northwards and dropping it into the Jhelum just before the weir so that the overflow gives the much needed aeration, needs investigation. The consultant seems to have accepted dropping of sullage at different points as a foregone conclusion. The Jhelum is of tourist interest and adds to the beauty of the town for it passes through the length almost like a backbone. Its sanitation, no matter what it costs, cannot be washed away. The entire reach of the Jhelum from Sangam in the south to Shalteng in the north will have to be declared as a restricted area from the environmental point of view. The health of the people living in house boats and doongas is equally important consideration.

7.3 Collection and Disposal of Garbage

The spread of garbage and filth all over the city is common and their collection and disposal is a huge task. The overall responsibility for this rests with the Municipal Corporation. This is an important aspect of Urban Development. The quantity of garbage is huge and if it is properly disposed of, not only will it clean up the city but it can also generate soil conditioning products which will bring in money.

Incineration of garbage is not recommended becuase it will cause serious air pollution problems. Composting can be considered as well as direct land fill.

At present there is an inadequate collection system which does not operate systematically. The garbage is simply dumped in the north on open lands. Down south beyond the weir and beyond Shaltong and on the left bank one can take up composting. The most important factor in this process is collection and transport of the garbage to the composting/filling site.

The introduction of machanical compost plant where land requirement is considerably reduced is recommended. Gujarat Agro Industries Corporation has one such plant at Ahmedabad. Where the collected material is unloaded in a Reception Hopper directly from the trucks. The refuse in the Reception Hopper is passed on a conveyer belt. There is an arrangement in the conveyer system which removes metallic parts from the refuse and further separation of compostable material.

There are many advantages in having a mechanical compost plant. It can be located at a distant place on very little land and this will be minimal. Since the valley is bounded by hills, land will become scarce every day with passage of time, mechanical composting is therefore, strongly recommended.

7.4 COST IMPLICATIONS

7.4.1 Water Supply

The present water supply situation in Srinagar is 19.55 mgd for a population of 6.05 lakh persons i.e. 23.15 gpcd. The projected population (NIUA figures) for 2001 is 15.34 lakhs. Therefore, future provisions in the field of water supply will have to be organised for 15.34-6.05=9.29 lakh persons for the year 2001.

The public Health Engineering Department has identified only surface sources for all major water supply augmentation schemes for Srinagar city and its environs. Estimates of per capita cost norms indicate a high of Rs.350 and a low of Rs.245(1980 rupees)[1] for water supply from surface sources. The cost variation is governed by the follwing factors:-

Quality of raw water
Type and extent of treatment
Distance of source
Distributing system etc.

Considering an average figure of Rs.297.50 per capita, the cost of provision for an additional population of 9.29 lakh persons comes to Rs.27.87 cr. This figure compares well with the revised figure of Rs.27.64 cr. envisaged in the Improvement and Augmentation of Water Supply Srinagar Master Plan, Phase I.

7.4.2. Sewerage/Excreta Disposal

The Master Plan contemplates a number of sewage treatment plants for Srinagar. However, with the present and proposed accent on low cost sanitation, there will be an increase in the provision of on-site sanitation units in the years to come. The UNICEF project of provision of 2-pit pour flush latrines has proved successful in areas where soil absorption properties have been found favourable. With Govt. of India and international aid, low cost sanitation technoligies are bound to find increased coverage in the city in the future. For these reasons the following sanitation coverage has been assumed for the year 2001.

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1 Task forces on Housing and Urban Development, II, Planning Commission, Govt. of India P.20.

a) Sewerage system with treatment plant - 75%

b) Septic tanks - 10%

c) Pit-latrines - 15%

As per planning commision norms the average per capita cost of provision of these three systems is as follows:

a) Rs.425

b) Rs.213

c) Rs.135

For the projected population of 15.34 lakhs for Srinagar in 2001 these figures aggregate to a total amount of Rs.55.26 crores as per the following cost breakup.

Sewerage with treatment plant	Rs.48.90 crores
Septic tanks	Rs. 3.26 crores
Pit latrines	Rs. 3.10 crores

7.4.3 Drainage

Topography, to a great extent, determines a storm water drainage system. In Srinagar many areas slope away from the River Jhelum and much of the developed areas are actually at a lower level than the high flood level of the river. The city has been divided into 15 drainage basins and in several of these there will be a need for extensive pumping. Also, priority should be given to solving the water-logging problems of densely populated areas in the old city. On the city scale first attention needs to be paid to the storm drainage collection and disposal facilities for the following basins (Map 8A):

- Jhelum Left Bank Basin 1
- Jhelum Right Bank Basin 1
- Jhelum Right Bank Basin 2

It is clear that the cast of stormwater drainage provision in Srinagar will be higher than systems where gravity flows can be dependend on. Hence, for the purposes of assessment, the high level figures have been adopted from the Planning Commission figures i.e. a per capita investment cost of Rs.100.

For the projected population of Srinagar in the year 2001 of 15.34 lakhs this works out to a total cost of Rs. 15.34 crores.

7.4.4. Solid Waste Disposal

The overall cost of any infrastructure provision is made up of two main components - initial capital expenditure and recurring operation and maintenance costs. In the case of solid waste disposal the second component assumes particular significance and the operation takes up significant portions of municipal revenue and manpower. Also cost recovery and levy of user charges are difficult propositions. Hence, in the following cost estimates though the total figures may seem deceptively low, the high costs in men and material must be kept in mind.

As per the Planning Commission norms the average cost of investment for solid waste is Rs.33/- per capita. For the projected population of Srinagar of 15.34 lakhs (2001), this totals to Rs.5.06 crores.

Table - 13

ESTIMATES OF PER CAPITA INVESTMENT COST NORMS (1980 RUPEES)

		Low	High
1.	Water Supply		
	(a) Surface System	245	350
	(b) Ground Water	200	300
2.	Sewage/Sanitation		
	(a) Water-borne system with treatment plant	350	500
	(b) Septic tank	200	225
	(c) Pit latrines	120	150
3.	Solid Waste Disposal	25	40
4.	Storm Water Drainage	75	100

Source : Task Forces on Housing & Urban Development, II, Planning Commission, Government of India, New Delhi, December, 1983.

7.4.5. Financing of Infrastructure

The main sources of funding are plan and institutional funds. Water supply, since reasonable cost recovery can be envisaged, could be financed from institutional sources but sewerage/excreta disposal, drainage and solid waste operations are not commercially viable and will have to depend on plan finance. However the scope for introducing user charges can and should be expanded for urban services which are generally regarded to be free. Depending on the success of introducing suitable user charges, the scope for corresponding capital financing for aumenting the facilities could be considered in terms of institutional financing. In Srinagar, revenue income does not cover adequate operation and maintenance of existing services.

It is clear that even if there is greater provision of funds for infrastructure developent in the city, it will be necessary for Srinagar to generate a greater volume of funds itself to achieve more self-financing capability. The levy of user charges for public services is one way towards increased resources.

Water charges may be levied at different rates, for different uses or classes of consumers, namely,industrual consumers, commercial consumers, institutional consumers and domestic consumers. In the domestic sector some relief is to be given to the poorer sections, who abound in most urban area; this can be done by fixing flat charge related to ferrule size of the supply of water. For industrial, commercial and institutional consumers, rates can be fixed per thousand gallons and on the whole the water supply service can be made to pay for itself. Needless to add, the user charge approach for water supply will require metering and this can be done through a gradual process of starting with the bulk consumers, industrial, commercial and institutional consumers, newly developing or developed areas of the city. The phasing is needed because some capital expenditure will be necesary for introducing metering and billing systems. Provision of safe water spply is expensive and the people of Srinagar must pay for it in the long run. This will not only help in preventing wastage but will also help in specific areas where subsidising becomes necessary.

The levy of user charges for sewerage/excreta disposal and drainage may prove difficult. Much of the capital cost involvement is the subject of the state govt. of J & K. But as far as sewerage is concerend, though the possibilities of sewerage being extended on any

large scale are very limited in view of constraint of resources, at least for certain ranges of properties in cities, a sewerage surcharge may be levied on the water rate and this will help to effect a partial cost recovery in the matter of liquid waste management. Where low-cost sanitation methods are adopted, efforts should be made to make the beneficiaries pay a part, perhaps one-third or 40%, of the cost low-cost sanitation facility and the rest may be subsidised. It may be relevant to note here that liquid waste disposal, which is an expensive component, should be achieved through low cost technologies, such as lagoons and stabilisation ponds rather than trickling filters or bio-filters. In this area some amount of cost recovery may also be possible if liquid waste is used for bio-gas generation, agricultural irrigation in urban fringe areas, sewage-fed pisciculture etc.

In Srinagar, as in most other cities, a significant part of revenue expenditure is one solid waste removal, collection and disposal. Here some cost recovery may be affected by sanitary landfill reclamation of low-lying areas and/or composting. However, the need for solid waste cost recovery may be reduced if the present inefficent, labour intensive method of solid waste management in the city is improved. It may be possible to levy a solid waste charge for industries, commercial enterprises and markets etc. A study needs to be conducted on how to establish an efficient solid waste system for Srinagar.

7.5. Power

Power has been a terrible problem because so far only large power houses have been considered by the State Government. In the valley of Kashmir surrounding the treatment plants the micro hydel

power stations can be considered, for such power stations can come up in the Nishat Complex. Waste water from the 20 mgd. plant at Rangil can be used to generate power because it drops from a good height.

Table - 14(a)

COMPARABLE TABLE OF SRINAGAR MASTER PLAN PROPOSALS 1991 AND PROPOSED REQUIREMENT FOR 2001

1. HEALTH

1991	Required for 1991 (6.90 Lakhs)	Sub-Totals for Planning Division							Existing
		A	B	C	D	E	F	G	
Hospitals	12	-	1	-	-	-	1	-	10
Health Units cum Dispensaries	42	-	5	-	6	1	5	1	17

Table - 14(b)

2001	Required for 2001 (10.80 Lakhs)	A	B	C	D	E	F	G	Required for UE (4.38 lakhs)	Total Land		
										Total	Required (in hec.)	
											C	UE
1	2	3	4	5	6	7	8	9	10	11	12	13
General Hospitals	3	-	-	-	-	-	-	-	1	4	18.0	14
Intermediate Hospital	6	-	-	2	2	-	2	-	3	9	16.02	8.01
Poly Clinic	8	-	2	2	2	-	2	-	3	11	2.0	0.75
Nursing	22	1	4	4	5	1	5	2	9	31	5.5	2.25
Dispensary	72	4	13	14	17	4	15	5	29	101	7.2	2.9
								Total :			48.72	19.91

C - Central Area UE - Urban Extensions

II. EDUCATION

Table - 15(a)

1991	Required for 1991 (6.90 Lakhs)	Sub-Totals for Planning Division A	B	C	D	E	F	G	Existing
Professional College	4	-	-	-	-	-	-	-	4
Academic College	15	-	1	-	2	-	2	1	6
Hr. Sec. School	67	-	5	-	6	1	6	1	44
Middle School	80	-	10	-	12	2	12	4	17
Primary School	257	-	25	-	30	5	30	10	205
	423								

Table - 15(b)

2001	Required for 2001 (10.80 Lakhs)	A	B	C	D	E	F	G	Required for UE (4.38 lakh)	Total Land: Total	Total Land: Required (in hec.) C	Total Land: Required (in hec.) UE
1	2	3	4	5	6	7	8	9	10	11	12	13
College	8	-	2	2	2	-	2	-	3	11	32.0	12.0
a) Tech.Education												
i) Tech.Edu. Centre(A)	1	-	-	-	-	-	-	-	-	1	4.0	-
ii) Tech.Edu. Centre(B)	1	-	-	-	-	-	-	-	-	1	2.10	-
b) Proff.College												
i) Tech.Engg. College	2	-	-	-	-	-	-	-	-	2	120.0	-
ii) Medical College	2	-	-	-	-	-	-	-	-	2	30.0	-
Nursery/ Primary School	432	22	79	84	104	21	92	30	175	607	43.2	17.5
Sr.Sec. School	216	11	40	42	52	10	46	15	88	304	86.4	35.2
	662											

C - Central UE - Urban Extensions

Table - 16(a)

III. TELECOMMUNICATION

1991	Required for 1991 (6.90 Lakhs)	Sub-Totals for Planning Division A	B	C	D	E	F	G	Existing
Post and Telegraph office	14	-	1	-	1	-	1	1	10
Telephone Exchange	3	-	-	-	1	-	1	-	1
Post Office	55/72	-	5	-	6	1	5	-	38

Table - 16(b)

2001	Required for 2001 (10.80 Lakhs)	A	B	C	D	E	F	G	Required for UE (4.38 lakh)	Total Land Total	Total Land Required (in hec.) C	Total Land Required (in hec.) UE
1	2	3	4	5	6	7	8	9	10	11	12	13
Telegrah office	22	1	-	4	5	1	5	2	9	31	3.74	1.53
Telephone Exchange	3	-	-	-	-	-	-	-	1	4	2.4	0.8
a) Stores for equipment	3	-	-	-	-	-	-	-	1	4	3.0	1.0
b) Depot cum workshop	1	-	-	-	-	-	-	-	-	1	1.0	-
Head P.O. with Delivery office	4	-	-	-	-	-	-	-	-	5	0.24	0.06
Head Post Office(Admn.)	2	-	-	-	-	-	-	-	-	2	0.5	-
Post Office	72/107	4	13	14	17	4	15	5	29	101	5.27	2.12

C - Central Area UE - Urban Extension

Table - 17(a)

IV. SECURITY

1991	Required for 1991 (6.90 Lakhs)	Sub-Totals for Planning Division							Existing
		A	B	C	D	E	F	G	
Police Stations	9	-	1	-	1	-	1	-	6
Police Post/ Divisions	29	-	5	-	6	1	5	1	11
Fire Stations	27	-	1	-	1	1	1	1	22

Table - 17(b)

2001	Required for 2001 (10.80 Lakhs)	A	B	C	D	E	F	G	Required for UE (4.38 lakh)	Total Land		
										Total	Required (in hec.)	
											C	UE
1	2	3	4	5	6	7	8	9	10	11	12	13
Police Lines (1 for each direction)	4	-	-	-	-	-	-	-	-	4	20.0	-
Police Station	13	1	2	2	3	1	3	1	5	18	14.95	5.75
Police Post	24	1	4	5	6	1	5	2	10	34	2.4	1.0
Distt. Office	1	-	-	-	-	-	-	-	-	1	4.8	-
Distt. Jail	1	-	-	-	-	-	-	-	-	1	10.0	-
Fire Station/ Sub-fire Station	43	-	1	1	1	-	1	-	17	60	34.4	17.6

C - Central Area UE - Urban Extionsions.

Table - 18(a)

V. DISTRIBUTIVE AND OTHER SERVICES

1991	Required for 1991 (6.90 Lakhs)	Sub-Totals for Planning Division							Existing
		A	B	C	D	E	F	G	
Libraries	8	-	1	-	1	1	1	1	3
Reading Rooms	44	-	5	-	6	1	5	1	9
Community centres	37	-	8	-	10	1	6	2	-

Table - 18(b)

2001	Required for 2001 (10.80 Lakhs)	A	B	C	D	E	F	G	Required for UE (4.38 lakh)	Total Land		
										Total	Required (in hec.)	
											C	UE
1	2	3	4	5	6	7	8	9	10	11	12	13
Milk Booth	216	11	40	42	52	10	46	15	88	304	0.432	0.176
Godown	27	1	5	5	7	1	6	2	11	38	14.04	5.72
Community Room	216	11	40	42	52	10	46	15	88	304	6.48	2.64
Community Hall	72	4	13	14	18	3	15	5	29	101	7.2	2.9

C - Central Area UE - Urban Extensions.

7.6 Medical Facilities

The existing master plan projects the health requirements up to the year 1991 as 54 units out of which 12 are hospitals and 42 are health units cum dispensaries [Table-14(a)]. The planning division-wise distribution of these facilities is also shown.

The total requirement of health units for the year 2001 is 156 [Table-14(b)]. Four general hospitals will be required to serve the city and the surrounding region. Nine intermediate hospitals will be required of which Zones C, D and F will have two each and the remaining three will be for the urban extensions. Eleven poly clinics with two each in planning zones B, C, D and F and three in the urban extensions are required along with thrity zone nursing homes, the spatial distribution zonewise being A-1, B-4, C-4, D-5, E-1, E-5 and G-2. Nine more are proposed for the three urban extensions. A total of 101 dispensaries will be required with 4 in Zone A, 13 in Zone B, 14 in Zone C, 17 in Zone D, 4 in Zone E, 15 in Zone F and 5 in Zone G. Twentynine such dispensaries have been allocated for the urban extensions.

7.7 Educational Facilities

The total number of educational institutions required by the year 1991 (existing Master Plan) was projected as 423 [Table -15(a)] to be divided into five categories; thus professional colleges - 4 academic colleges - 15, higher secondary schools - 67, middle schools - 80 and primary schools-257. The sub-totals division-wise were also indicated.

Comparatively speaking, the total requirement of educational institutions will rise to 662 (for a total population of 15-18 lakhs) by the year 2001 [Table-15(b)]. Eleven colleges will be needed with two each in Zones B,C,D and E and three in the urban extensions. For technical education centres, the total requirement as per the norms is two. However, since the total expected population is 15.18 lakhs, a

third institution of this type can be provided. The requirement of professional colleges will be as follows; technical engineering colleges -2 and medical colleges - 2. A total of 304 senior secondary schools will be required out of which 216 are for planning zones A to G as indicated and 88 for the three urban exstensions. In all, 607 primary school/nurseries will be needed in the central urban area and 175 in the urban extensions.

The total area of land required for educational facilties in the central urban areas will be 31.77 hectares while in the urban extensions it will be 64.7 hectares.

7.8 Telecommunication

The existing Master Plan envisaged the requirement of 14 post and telegraph offices, 55 post offices and 3 telephone exchanges in Srinagar by 1991 [Table-16(a)].

By the year 2001 this need will increase in relation to the population and 31 post and telegrah offices will be needed [Table-16(a)] out of which 22 will be situated in the central area and 9 in the urban extensions in the south, west and north. The required number of post offices will rise to 101 with 72 in the Central urban area and 29 in the urban extensions. Five head post offices (with delivery offices) will be needed; 4 in the central area and 1 in the urban extension. In addition two administrative head post offices will be required.

These post and telegraph facilities will demand a total land area of 9.75 hectares in the central area and 3.71 hectares in the urban extensions.

A total of four large telephone exchanges will be required as indicated in Table 3(b). In addition, four stores for equipment will cover the entire city area with 3 in the centre and one the southern urban extension. One depot-cum-workshop will be needed in the centre.

Telephone facilities will require in all 6.4 hectares in the central urban area and 1.8 hectares in the urban extensions.

7.9 Security

According to the existing Master Plan 9 police stations and 29 police posts/division will be required by 1991 in Srinagar [Table-17(a)]. Similarly, for fire stations the number proposed was 27 including existing ones.

The requirements of security for the year 2001 may be summarised as follows. Four police lines will be needed for the four directions. 18 police stations will be spread over the city with fire stations in the urban extensions. Further, a total of 34 police posts will be required out of which 10 will be in the urban extensions. In additions to the above one district office and one district jail will serve the entire city. Sixty fire stations will be spread over the city with 43 in the central urban area and 17 in the urban extensions.

The total land area required for the provision of these security faciltities will be 86.55 hectares in the central area and 24.35 hectares in the three urban extensions.

7.10 Distribution and other Services

The existing Master Plan envisaged a need for 1991 of 8 libraries, 44 reading rooms and 37 community centres [Table 18(a)].

The distributive services for 2001 A.D. for which demands have been proposed are milk booths and L.P.G. godowns. 216 milk booths will serve the seven planning zones. A-G and 88 will be required in the three urban extensions, 27 L.P.G. godowns will be required in the central area with 11 in the urban extensions.

The land area required for milk booths and L.P.G. godowns in the central area will be 14.47 hectares and 5.9 hectares in the urban extensions.

216 community rooms in the central area with 88 in the urban extensions are needed and 72 community halls are proposed in the seven zones with 29 in the urban extensions.

The combined land area requirement for community rooms and halls will be 13.68 hectares in the central area and 5.54 hectares in the urban extensions respectively.

7.11 Tourist Infrastructure

Srinagar is undoubtedly the city in India which is most dependent on tourism. Tourist arrivals had progressively increased to over 0.6 million by the early eighties. The valley of Kashmir has remained one of the main toursit attractions for both domestic and foreign toursts and the estimated figure for the number of tourists per day, by the year 2001, is 25000.*

Again, since Srinagar is well connected with the rest of the country by road and air and has the overall infrastructure/amenities of a large city, it behaves as a base for all tourists to the State of

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* NIUA Projections.

Jammu and Kashmir. It is a convenient jumping-off point for the other places of tourist interest like Gulmarg, Pahalgam, Tangmarg, Anant Nag etc.

Further, the climate, terrain and scenic beauty in all tourist spots in Jammu & Kashmir in general and in Srinagar in particular make the following tourist related activities a speciality unsurpassed anywhere else in India:

- Skiing
- Angling
- Trekking/Riding
- Sight-seeing
- Boating
- Purchase of local handicrafts
- Viewing of local performing arts.

The city of Srinagar also has the following tourist spots of national and international importance.

- Dal lake and its surrounds
- The Moghal Gardens viz. Shalimar Bagh, Nishat Bagh and Chashme shahi.
- Mosque of international repute
- Temples of international repute
- Other monuments.

However, the very existence of favourable conditions is not sufficient for the propagation by tourism. Tourism development is a function of tourism and other related infrastructure. Infrastructure includes adequate accomodation/camping sites, transportation

facilities, protected water supply, electricity, communication facilities etc. Availability of food catering to different national and international tastes is an asset in addition to the presentation of local food stuff in clean, palatable and affordable form. Many tourists have complained of poor heating and water arrangements while others have complained of poor communication facilities and dead telephones.

The facilities at Srinagar Airport can be further augmented to meet the requirements of an International Airport. All weather handling of passengers and cargo is presently a problem and should be looked into. Air booking and terminal facilities in Srinagar needs to be brought up to an internationally acceptable level while the introduction of commercial helicopter services with Srinagar as base could be investigated. Lastly, foreign tourists complain that information on Srinagar and associated places are poor in their respective countries - this needs urgent attention.

Tourists must be able to avail of recreational facilities like boating, other water related sports, riding, viewing of local performing arts, etc. in a conducive atmosphere and also at controlled prices. Travellers often complain of cheating by taximen, paniwalas and boatmen. Tourists, particularly foreign ones, are invariably interested in new customs, culture and art forms and the rich heritage of Jammu and Kashmir should find no better outlet than the stage provided by Srinagar.

Overall, the basic objectives of tourism propagation should be the following:-

- maximise financial return
- maximise foreign exchange earning
- increase the income of the region as a whole
- increase the incomes of weaker sections of society.*

The achievement of these objectives is directly related to the economic benefits which will accure both in terms of income and employment generated to Srinagar and the surrounding region. The greater the level of linkages between the tourist industry and the rest of the economic sectors the higher will be the economic benefits to the people of the whole region as well as the government. At 1982-83 prices, the financial earnings from tourism in the year 2001 is expected to be Rs. 41,56,000 per day,** of this the foreign exchange component will be Rs. 3,32,520. It is expected that these earnings will have a marked effect on the economic base of the State in all sectors.

7.11.1 Accomodation for Tourists

The overall bed strength in Srinagar, public and private sectors combined and including house boat accomodation, presently comes to a total of 14357.[1] The peak daily number of tourists by the year 2001 is projected at 25,000 persons. Hence about 10643 extra beds will be needed by the end of the century. For this purpose the following proposals have been made in the Revision of the Master Plan. The proposals for accomodation are the construction of hotels at

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* Cost-benefit analysis and socio economic impact-Gulmarg winter sports project (NEAER 1980)

** NIUA figures.

1 Directorate of Tourism (Registration), J & K Govt.

selected points on the proposed road from Shalimar to New Colony as shown in the Revised Master Plan.

Construction of hotels has been proposed at selected points on the proposed road from Shalimar to New Colony as shown in the Revised Master Plan. Other proposals are District park (picnic park) between North road and the road from Shalimar Gardens. A picnic hut and two or three cafetarias at selected points are proposed in the District Park. The Shalimar Gardens can be extended up to Northern Offshore Road. The areas earmarked for intensive development as shown in the Land Use Plan can be acquired by the State Government.

A part of sub-zones A2 and A3 have been earmarked for the construction of tourist/picnic huts. The private sector should be encouraged to utilise the incentives provided by the Government for the construction of hotels, tourist huts, houseboats, etc. To this end the subsidy on land price/rent, reduced interest on loans, refund of sales tax, road toll and octroi on construction materials should continue.

7.11.2 Regional/District Parks

Regional parks have been proposed in sub-zones I1 and I2 north and north-east of the Northern Foreshore Road. As shown in the Revised Plan, District parks have been proposed in the three Urban Extensions H, I and J as follows:

Zone H - District Parks in sub-zones H3,H8,H9 & H11

Zone I - District Parks in sub-zones I3,I5,I6,

Zone J - District Parks in sub-zones J1,J3, Part of J4.

7.11.3 Environmental Improvement

Improvement of the environment is specified in the Master Plan Revision under the following heads:

- Dal Lake, Nagin Lake and other water bodies
- Jhelum River
- Hills on the eastern, south-eastern and northern sides
- Other proposals.

Special mention has been made of the Dal and other lakes/water bodies. Proposals to decrease the pollution of these water bodies and the control of aquatic plant growth have been made.

It is proposed to make the Jhelum sullage and sewage free by declaring its complete length passing through the city as 'protected'. Desilting of the river to increase its carrying capacity is also proposed.

Afforestation of the Shankaracharya Hill has been proposed as also the hill slopes surrounding the Dal, the area west of Zainakoot (near the bird sanctuary) and north of Panthchowk on the hills behind BSF and JKAP.

Water bodies in the Urban Extensions are proposed as lung spaces to improve the micro-climate. Revival of the 1971 Master Plan concept of artificial lakes in sub-zones D7, D8 and D9 are proposed.

Stone quarrying in the hills near Panthchowk should be stopped.

7.11.4 Handicrafts

The handicraft products of the State of Jammu and Kashmir are

famous the world over and the city of Srinagar is its main outlet. The great variety of products purchased by tourists comprise the following:

Carpets

Jewellery

Leather products

Silk fabric

Shawls

Handloom fabric

Papier mache

Woollen garments

Dry fruits

Saffron

Other products

The major crafts in the State comprise carpets, namdhas, shawls and embroideries, crewel, wood carving, papier mache and leather embroidery which together accounted for Rs. 2322.00 lakhs worth of production and employed approximately 57,600 persons in 1978-79.* Production of other crafts accounted for Rs.1200.00 lakhs and employed approximately 60,000 persons in 1978-79.* Handicrafts industry in the State is primarily an export one in which direct export accounts for approximately 80.0% of total gross turnover and sales to tourists about 20.0%.*

The development of the handicrafts sector will therefore not only generate further employment, but the multiplier effects of tourist expenditure on handicrafts will be felt in all other sectors

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* J & K State Handicrafts Industry.

as well. For this purpose more government and government-licensed handicrafts' outlets are proposed particularly in areas of intense tourist activity.

Finally it must be remembered that those amenities should be provided which tourists feel to be a need and not what is thought that they might need.

8. URBAN ENVIRONMENT AND THE DAL LAKE

The creation of a physical and social environment for an improved quality of life is the major goal of the plan. Major attributes of environment in a city are:

- Ecology, nature conservation and parks
- Urban design
- Conservation of urban heritage
- Community life
- Conditions for health, safety and convenience.

8.1 Natural Features

Conservation of major natural features in a settlement is of utmost importance to sustain the natural ecosystem. The major natural features are:

- the Dal Lake, Nagin Lake and other water bodies
- the Jhelum river and
- the Hills on the eastern and north-eastern sides.

The dumping of sullage and silting causes pollution. This is a major hazard for the inhabitants of houseboats on the Dal Lake. The Jhelum river must also be protected from sullage pollution and silting

which takes place during the flood period.

It sill be important to investigate in detail the possibility of transfering lifted sullage northwards and dropping it into the Jhelum immediately before the weir so that the overflow gives the much needed aeration.

The entire reach of the Jhelum from Gangam in the south to Shalteng in the north will have to be declared as a conservation area.

8.2 Lung Spaces

Parks and open spaces, the vital lungs of the city, are being put to uses that are determinental to the health of the city environment. The New Secretariat was the only ladies' park in the past. Similarly the New High Court setting is sadly misplaced from the environmental point of view. There are many others in this category.

The areas reserved for parks available in the local planning area (1971) should be developed on a priority basis. Part of the area will be developed for sports activities.

One District Park has been proposed as shown in the Land-use plan. In new developments, it is necessary to have at least one neighbourhood park of approximately 1 hec. for 15,000 population.

The water bodies in the urban extensions, must be developed to act as a major lung space in order to improve the micro-climate.

The Distric Park in the urban extension should include separate children's parks (4 each) and picnic huts (2 each).

8.3 Artificial Lakes

The Master Plan 1971 has proposed developing artificial lakes in their development zones D-7, D-8, D-9. Nothing has so far been done in this respect. This could be done by the Srinagar Development Authority because it will bring the prescribed advantage. These artificial lakes will become recreational spots provided they are owned and maintained by the Municipal Corporation. The Bemina Colony and others will benefit from this. Water from these artificial lakes can be handled as suggested in the Master Plan (1970).

Revenues to meet the additional cost involved can be raised indirectly if not directly. Funds can also be diverted to this sector from other sectors. Owing to the appalling insanitary conditions in the Dal Lake and the city it is necessary to give this sector the maximum attention to improve the sanitation conditions and therefore the environment.

8.4 Construction of Water Lock Gates

In order to stop water from entering into the Brari Numbal and to maintain cleanliness new water lock gates may be constructed at the following sites shown in Land Use Plan:

i. Between Brari Numbal and Nowpora Bridge

ii. Between Brari Numbal and Jhelum

Secondly, two more water lock gates may be constructed at Nalabal as shown in the plan so as to channelise the water coming from the northern side.

9. DAL LAKE

The lake offers endless views of scenic beauty from the hills, particularly from famous view points such as Shankaracharya, Chashmeshahi, Nishat, Shalimar, Boulevard, Hazaratbal, Hariparbat, Pari-Mahal and other landmarks. The landscape plays a very dominant role in these views. Conservation of the landscape quality has therefore to be an important activity. The key elements of the landscape are:

- a large expanse of water;
- rich foliage cover around the water bodies;
- absence of high rise structures around the lake (except one University Building) and
- a back-drop of mountains.

The Dal Lake is deepest at Hazarat Bal (11.5 ft.) while Bod Dal and Gagribal have a maximum depth of 8.5 ft.

Broadly speaking, what is urgently required is to reduce the nutrient load from sewage and sullage inflow, and silt entering the lake, remove weeds periodicaly, arrange circulation of lake water and define its boundary to prevent further encroachment by floating gardens.

The most important activity in the process of saving the Dal Lake on a long term is the improvement of the main catchment area of the lake. The cleaning of the lake boundary and saving the area from pollution are of immediate interest. The long term activity includes protecting the entire catchment area with a reforestation programme which has already been started but is going on at a very slow speed.

The Dal Lake has now reached a critical stage where unless intensive anti-pollution activity is undertaken right now it will become very expensive and highly time consuming. Secondly, any half-hearted approach now, may in the long run mean a total loss of the lake and all that the Kashmir Valley stands for. A very strong political will is called for at this juncture.

The following physical improvements are needed urgently:

- Reduction of nutrients entering the lake by improvement of the catchment;
- construction of a settling basin for the bulk of the sediment load including insoluble nutrients in the Tel Bal Nullah, prior to its entering the lake;
- extension of the present Foreshore Road on the eastern side of the lake (the present Boulevard) around to meet the main road on the western side of the lake to define the shoreline of the lake and prevent extension of the floating gardens.
- the dredging of the northern end of the lake up to the proposed Foreshore Road so that minimum water depth of 1.5 metres is maintained;
- the construction of an earth bund from Dal Lake to Nehru Park, east to Kotar Khan (Maharaja's Summer Palace) north to the pipe bund then north-west towards the engineering college to completely isolate the water in the floating gardens from the open water area of the lake, this bund would define open water areas;
- the provision of increased weed harvesting capacity;
- the rearrangement of the mooring areas of the house boats;

- the harvesting of weeds in houseboat areas and the promotion of water circulation; and
- the provision of a sewage pipe to service the houseboats.

These measures are expected to provide a net loss of nutrients which is one of the significant goals. This will also reduce the growth of needs.

Works in three phases have been planned. Phase -I units at a cost of Rs. 20.50 crores are to be undertaken. These works are:

		Cost (Rs. in lakhs)
1)	Improvements to hilly catchment area of the lake	63.21
2)	Construction of settling basin on the main challen to screen off the incoming water	182.25
3)	Marginal dredging of Hazratbal lake	30.13
4)	Construction Foreshore roads	937.15
5)	Improvements in water circulation by regulator and cuts	43.00
6)	Improvements in House Board area - their replanning and provision of services	175.00
7)	Selective de-weeding	40.00
8)	Acquisition of land and structures coming in the way of works	340.00
		1811.05
	Add preliminary surveys, investigation research, misc. T&P works-charge Establishment as well as Direction and Administration and and contingencies	237.96
		Rs. 2049.01
		Rs. 2049.00

The Government believes these would hopefully help in defining the lake boundaries to stop further encroachments plus a few urgent improvement works, some even of a short term nature, in order to control pollution of the lakes as far as possible.

The Government of Kashmir have divided the work in three phases at a total cost of Rs. 64.50 crores. Phase I & II together are for Rs.40.5 crores, Phase II is mainly for rehabilitation. The Phase III is for peripheral development. This can wait until Phases I & II are completed. The Seventh Plan would not be able to provide more than Rs. 21 crores while the balance money required at the end of the Sixth Plan would not be less than Rs. 35 crores approximately (which includes a minor escalation of Rs. 4 crores). The State Government must provide all the money to complete all works of Phases I & II by the end of the Seventh Plan. Phase III works should not be started unless Phase I & II are completed. If all the three phases are started together none will get completed so that the expected results of even Phase I will not appear. Already some work has started as part of Phase I. Restructuring of Phases I, II & III is absolutely necessary right now to avoid loading the Dal Project with works which can conveniently and logically form part of the Public Works Department and the Forest Department and can be passed on to these departments for funding.

9.1 Defining Lake Boundary - Foreshore roads

The northern Foreshore road is being widened to 64 ft. to help diversion of traffic via Hazarat Bal. This has generated plenty of land nearly 3000/4000 ft. wide immediately behind the road. Intensive

urbanisation in the shape of hotels and high rise buildings for commercial purposes are a natural consequence of this road alignment. This will surely add tremendous indirect pollution to the lake. Infact urbanisation could have been kept away from the lake if the Foreshore road was aligned just at the root hills and not where it is now being built. Had it been untouched, it will still have been enough for light traffic.

The only remedy now left is to provide a green belt all along and immediately behind the Foreshore road. A collecting sewer all along and a pumping station at the end to pump the stuff away to an oxidation pond will prevent most pollutants from seeping into the lake. A green belt 500 metre wide will discourage movement of heavy traffic on this road and will incidently add to the beauty of the lake.

Strong legislative action is needed to prohibit building activity close to the foreshore roads.

The existing road from Shalimar corner along the foothills required widening to carry all commercial trucks, buses and so on; and the PWD can undertake this work. This is a multi purpose road right now. The northern Foreshore road can then be restricted for light and tourist traffic. This is the only alternative left, now that the work has progressed so far.

Encouraging the movement of heavy traffic on the Foreshore roads, beats the main purpose for which they were conceived. Diversion of heavy truck/commercial traffic away from these roads must

be enforced even though money has already been spent.

The work on the western Foreshore road has not gone ahead much. It may be possible to provide only foot bridges to prevent movement of heavy traffic. Width can be reduced in the portion yet to be done. This will considerably help in keeping pollution away.

The slopes on both sides of the foreshore road embankments must be pitched with stone/bricks laid in cement mortar upto the high flood level with a wave rise of 1.9 ft. Above the pitching line green turf must be laid and grown on either side.

The Mirbari population can be shifted and the people rehabilitated elsewhere to save the Dal Lake. The Mirbari area is behind Nehru Park where there are about 1500 houses. A new city must be developed around Dalban near Malapur. The extension of floating gardens is being restricted by providing foreshore roads. The populaton living in these areas have to be rehabilitated elsewhere.

Improvements as suggested above on the foreshore roads will, while achieving the much needed objective of fixation of the Lake boundary, also keeps pollution away from the water body. Being primarily earthern bunds these cannot be considered absolutely water tight. The above measures will not only reduce seepage but will also prevent nutrients entering the lake.

9.2 Settling Basin

Unloading of silt from the main inflow nallah - the Tel Bal- before it enters the lake is a vital need. A settling basin near the village Habak at the Nallah mouth is under construction.

Desilting must be done every year from the time of construction. So far manpower is available in plenty and regular desilting every winter would be ideal, preferably mechanical desilting. There is no other place where another settling basin on this nallah can be added later. Silt could be taken for landfill in marshes behind foreshore roads in the green belt. All the banks can be pitched to avoid earthwork from slipping in.

The bed of the basin must be levelled and graded. A proper clay blanket will make it fairly impervious. The irrigation department can advise regarding the details.

There is a lot of silt flowing through Tel Bal Nallah and other hill streams into the Dal Lake because of denudation of hill slopes owing to indiscriminate cutting of vegetation for agriculture. It is necessary to provide stop dams on all these streams at different elevations to hold back the bulk of the silt to help save the Dal Lake. This will restrict erosion.

These slopes all over should be reforested to help stop the flow of silt into the Dal Lake.

Wherever development activity in the catchment of the Dal Lake is envisaged complete underground drainage system and provision for carrying wastes to outside the Dal catchment for treatment must become an integral part.

9.3 Weed Harvesting

Harvesting to restrict growth of weeds and to keep these away from the surface is an important activity. Two modern harvesters,

have been imported. These are being used. These harvesters together would be able to make a single cut over the whole Dal Lake in a year. The depth of cut is approximately 4 ft. Prolific weed growth owing to shallowness of the lake is a problem. There must be enough harvesters to provide at least 4 cuts every year over the whole area. Therefore, six additional harvesters of the present size can be acquired. Harvested weeds must not be allowed to drop back in the lake.

9.4 Recirculation of Dal Lake Water

By cutting the Kotar Khan bund, Bod Dal and Lokut Dal will get fully connected. This will assist in water circulation though not fully. Circulation of water helps aeration which is an effective anti-pollution measure.

To increase ciculation it is necessary, therefore, to keep the full tank level guage at 11 ft. instead of 8.50 ft. as at present. Then the water spread will increase and as in old times touch the road bund near Shalimar Garden on the side. Then the level can again be dropped by 1.5 ft. every year. This rise and fall of the level will cause the much needed strong flushing and therefore recirculation. Recirculation and flushing will aerate the Dal water. Raising the level could cause only a temporary flooding which is worthwhile. Ultimately the level must be raised again and retained at 9.50 ft. It is possible to retain this level which gives the much needed depth of water. Deep waters retard the growth of weeds. If the depth is shallow - 8.50 ft. as at present the sun's rays reach the bed, causing the prolific growth.

Again when there is a very heavy flood in the Jhelum which may

happen once in ten years or so, the Jhelum water can be allowed to enter and flood the lake-this is possible-and flush it out via the Chunthi Khul.

Recirculation and flushing activities are important and must be done. This, however needs a strong Government will and a political directive.

9.5 House Boat Sanitation

The ENEX report has suggested realignment of house boat sites, and providing a new bund (see the plan) inside the lake itself. This brings the pollution point nearer the open waters, which can be avoided. The sewer to collect the sewage from the boats can be laid at the bed of the lake. Leakage however, cannot be entirely avoided. Therefore, it is advisable to align these boats along the Western Foreshore Road, lay the collecting sewer on the slopes of the foreshore bund, provide a pumping station in the lake (drywell type), connect the sewer and pump the sewage to the oxidation pond at the site suggested in the ENEX report.

All these changes over a period of time will reduce the nutrient balance, reduce growth of weeds, allow aeration of water by recirculation, define the lake boundary and thus prevent encroachment by floating gardens, while simultaneously removing weeds very quickly. Then the lake will again become the pride of the Valley.

In Phase I of the project, the State Government have suggested fencing of the 15 km. perimeter of the catchment area. It is better to provide a moat or a well which will be more durable than the

fencing. Fencing for nearly half the length has been put in. Wherever this has not been done it is recommended that a masonry wall/moat be provided. Reforestation must also be intensively followed up.

House boats should be accessible only by small shikaras from the water-front to prevent vehicular traffic going near the house boats.

10. LAND POLICY FOR SRINAGAR MASTER PLAN

As a consequence of the rapid growth of urban population very large areas of land need to be made available for housing, industry, commerce, social facilities and infrastructure services, both to make good past deficiences and to meet future requirements.

The simplest and most directly effective means of ensuring that land is available as required for the state to acquire all such land and to distribute it as necessary. State land ownerships, however, has its constraints: the availability of financial resources, the basis of acquisition and disposal and the management of publicly owned land.

It is, therefore, necessary to devise a complementary system which will ensure that privately owned land is developed as required. Generally the town and country planning powers operating in each state provide an opportunity to prevent unsuitable development of land, but these powers are seldom used effectively and in any event they are of little value in persuading private land owners to carry out desired development. To be effective, the system directed at the private sector must be one which is able to persuade or induce private land

owners and investors to do what is necessary to achieve a satisfactory form of development.

Since a mixed public/private system of development must be accepted as the fait accompli for urban growth, the following factors may be considered important for land acquisition and management:

- Development promotion and planned expansion require large areas of urban land to be acquired in advance and made available for different uses at appropriate locations.

- Substantial acquisition of additional land may become necessary over and above what is already available.

- A new Land Acquisition Act which will provide for accelerated processing and fair basis for paying compensation is necessary. Acquisition can also be expedited by the use of PERT charts and other programming techniques.

- It is necessary to point out here that large scale land acquisition require a large capital outlay at one time which is not always available and, therefore, land acquisition proceeds piecemeal, extending over a number of years. During this period development of the notified but unacquired area is hindered, causing great dissatisfaction among the land owners. It also creates problems of leap-frogging of development, dislocating the planning of services and Master Plan concepts. Further, political pressure gets built up, leading to the exemption of a lot of notified land from acquisition. Therefore, land acquisition programmes should be strictly

geared to resource availability schedules. Any consequential rise in land compensation can be offset by savings achieved through more speedy development and avoidance of abortive work.

- Land not acquired can also be promoted by the private sector through reconstitution of plots/schemes, encouragement of private layouts in accordance with the plan and standards laid down in the plan. Development and betterment levies should, however, be made.

- Acquired land should be developed as quickly as possible so that it can be put to use before unauthorised constructions and squatters take it over.

- The development authority's aim should be to increase the availability of developable land and make it available to public sector agencies and to the private sector for development.

- Bulk, advance acquisition of land with a view to counteract speculation which had been advocated so far did not seem a possibility because of shortage of funds and the difficulty in facing encroachment.

On the question of using publicly owned land as a means of bringing about co-ordinated development, it is suggested that all publicly owned land be brought under the management of the planning authority for allocation to various bodies for different purposes.

Disposal of land by auction will undoubtedly help to mobilise

greater resources for future development, but the desire to get the maximum price is likely to lead the development authority towards speculative operations, which will inflate land prices and adversely effect the overall interests of planning. Therefore, as far as possible land price should be determined taking into account affordability, the balance between the urban poor and the urban affluent, differential rates for different uses, and similar factors.

11. INSTITUTIONAL FRAMEWORK

The Srinagar Development Authority (SDA) would have to be equipped with adequate powers to ensure that every development agency working within the area is bound to dovetail its own sectoral plan within the framework of the overall plan suggested by the Development Authority.

The role of such a planning and development authority like the Srinagar Development Authority is to rapidly prepare the physical plan and then to make available the requisitioned land, provide the development inputs and build the basic infrastructure.

Once, the basic infrastructure is complete, its municipalisation would be called for. The authority would then convert itself into an apex body on the metropolitan scale, where it would be a planning, programming, monitoring, and co-ordinating agency leaving the development to be carried out by specialised and state level agencies. The resource allocation plan (capital budgeting) will also be prepared by the development authority.

Presently, the Srinagar Development Authority has a specific, relatively short term role to play to build the basic infrastructural

services in the city. It must be tightly structured. It is suggested that it be charged by a senior administrator or planner, with representation of some of the technical services of Government at the regional level, as also of the local bodies and special interests with a stake in city development. The disciplines to be strongly represented at the operational levels will be physical planning, the discipline relating to civil and environmental engineering, transportation planning, housing, industrial development and land management.

Table - 19

PROPOSED (AMENDMENT) IN THE JAMMU & KASHMIR DEVELOPMENT ACT, 1970

PRESENT		PROPOSED		REMARKS
Section No.	Provisions	Section No.	Provisions	
1	2	3	4	5
Chapter-I Definition (d)	'development' with its grammatical variations means the carrying out of building, engineering quarrying or extraction or manufacture of building materials or other operations in, on, over or under land, or 'erecting or re-erecting' of any building or land & includes redevelopment	2(d)	'development' with its grammatical variations means the carrying out of a building, engineering, mining or other operation in, on, over or under land, or the making of any material change in any building or land or in the use of of either, and includes sub-division of any land & redevelopment	*It is necessary to include change in use of building or land * Manufacture of building material is not development hence deleted
		(e)Development permission	Permission/approval granted under this act in respect of: i. use of land or building ii. street line including front set back iii. space for parking of vehicles within the premises (plot area) of the applicant in respect of non-residential building/land iv. F.A.R. in respect of multy-story building	It is necessary to distinguish between 'building permission' granted by the M.C. under the Municipal Act and 'development permission' granted under Development Act

Contd.....

Table - 19 (Contd.)

1	2	3	4	5
		(f)'Development Committee'	Development Committee set up under the Act	
(e)'Local Area		(g)	No change except re-numbering of definitions	
(f)Engineering operation		(h)		
(g)Means of access		(i)		
(h)Regulation		(j)		
(i)Rule		(k)		
(j)To erect or		(l)		
(k)Zone		(m)		
(l)Land		(n)		
Chapter V Section 13	After a notice approving the date of operation of the plan is published under section 11, no person including the department of Govt. shall undertake or carry out development of any land or building in the Zone unless permission for such development has been obtained in writing from the Authority in accordance with the provisions of this Act	Chapter V Section 13	After a notice is published that preparation of Master Plan under section 7 or modification in plan under section 12 has been undertaken no person including the deptt. of Government shall undertake or carry out development of any land or building unless permission for such development has been obtained in writing from the Authority in accordance with the provisions in this Act	

Contd.....

Table - (Contd.)

1	2	3	4	5
		13.1 Development Committee	The Government shall set up a 'Development Committee' for examination and disposal of applications received under 13. Members of the committee shall be representative of: i. Development Authority not below the rankof senior Town Planner/ Architect-Convenor ii. Town Planning organisation not below the rank of Town Planner iii. Public Health Engineering Deptt. not below the rank of Ex-Engg. iv. P.W.D. not below the rank of Ex-Engg. v. Municipal Committee not below the rank of Town Planner The committee may invite other persons to attend meetings of committee from any specialised descipline to deal with a specific problem.	
		13.2 Meetings	The committee shall meet twice a month on fixed days preferably 2nd and 4th Mondays; or next working day (if Monday happens to be a public holiday).	

Contd.....

Table - __ (Contd.)

1	2	3	4	5
		13.3 Time Limit	The committee shall communicate refusal/ approval with or without modifications under sub-section (i)within 30 days after receipt of application failing which permission will deem to have been granted	This will ensure quick disposal of applications.
		14.8 Application for building permission	No person shall submit an application for building permission to Municipal Committee unless a Development permission has first been obtained	
		14.9 Development undertaken by Govt. Deptts.	When the Union Govt.or the State Govt. intends to carry out development of any land for the purpose of its deptts. or offices or authorities, the officer-in-charge thereof shall inform in writing to the Council the intention of the Govt.to do so, giving full particulars thereof, accompanied by such documents and plans as may be prescribed at least thirty days before undertaking such development.	It is necessary to lay down procedure for development undertaken by Union and State Govt. Deptts.

Contd....

Table - 19 (Contd.)

1	2	3	4	5
			Where the committee raises any objection to the proposd development is not in conformity with the provisions of the development plan, the officer shall: i. make necessary modifications in the proposals for development to meet the objections raised by the committee; or ii. submit the proposal for development together with the objections raised by the committee to the State Govt. for decision. Provided that where no modifications is proposed by the committee within thirty days of the receipt of the plan of the proposed development, the plan will be presumed to have been approved. The State Govt. on receipt of the proposals for development together with the objections of the committee shall, approve the proposals with or without modifications in the proposals as it considers necessary in the circum-stances. The decision of the State Govt. under sub-section (3) shall be final & binding.	

11.2 One of the main drawbacks in the environmental engineering sector is that the departments of Public Health Engineering and Urban Environmental Engineering are separate and the staff is drawn at will from other engineering organisations. This prevents the growth of expertise in the sector.

It is therefore recommended that :

- the two departments should become one and be called Environmental Engineering Department;
- a common cadre must be developed;
- staff must not be drawn at will from other engineering departments, though permanent transfer of willing officers/officials to the new department is recommended;
- the channel of promotion should be within the department itself;
- post-graduate Degree/or Diploma Courses in Environmental Engineering are available in the country and personnel can be trained from within the department; and
- if necessary for the convenience of working, drainage/sewerage and water supply can become two elements of a whole. Since the jobs are allied and interdependent requiring similar training in the field of public health.

12. ZONING REGULATIONS

12.1 Introduction

The provisions regarding zoning regulations have by and large

been adopted as prescribed in the Master Plan for Delhi, with necessary adjustments accoriding to local conditions and standards.

The purpose of this regulation is to promote quality of life of people of Srinagar by organising the most appropriate development of land in accordance with the Development Policies and Land Use proposals contained in the Plan.

It is a systematic regulation to decide the use activity, (use) in two levels (i) conversion of use zone into premises (layout); and (ii) permission of use activities in use premises. The regulation provides differentiation between the use zones and use premises. It also gives regulations for subdivision of use zones into use premises and control of buildings within use premises.

12.2 Definition

In these regulations, unless the context otherwise requires it,

Use Zones means

- An area for any one of the specific dominant uses of the urban functions.

Use Premises means

- one of the many sub-divisions of a Use Zone, designated at the time of preparation of the layout plan, for a specific main use or activity.

Table - 20

Suggested Unit Requirements for Residential Planning Area
Residential Planning Area of Population 15,000 with one Higher Secondary School

Gross density (persons per acre) Residential	UNIT LAND AREA REQUIREMENTS									
	COMMUNITY FACILITIES AND SERVICES									
	Total area required		Higher secondary schools (one)		Basic primary schools (4 Nos.)		Nursery (10 Nos)		Sub-total	
	Acres	%	Acres	%	Acres	%	Acres	%	Acres	%
1	2	3	4	5	6	7	8	9	10	11
25 . . .	600.0	100.0	12.0	2.0	16.0	2.7	10.0	1.6	38.0	6.3
50 . . .	300.0	100.0	10.0	3.3	0.0	3.3	7.5	2.5	27.5	9.2
60 . . .	250.0	100.0	10.0	4.0	10.0	4.0	7.5	3.0	27.5	11.0
75 . . .	200.0	100.0	8.0	4.0	10.0	5.0	5.0	2.5	23.0	11.5
100 . . .	150.0	100.0	7.0	4.7	8.0	5.3	5.0	3.3	20.0	13.3
125 . . .	120.0	100.0	6.0	5.0	8.0	6.7	2.5	2.1	16.5	13.8
150 . . .	100.0	100.0	6.0	6.0	8.0	8.0	2.5	2.5	16.5	16.5
200 . . .	75.0	100.0	5.0	6.7	6.0	8.0	2.0	2.7	13.0	17.3

Contd.....

Table - 20 (Contd.)

Suggested Unit Requirements for Residential Planning Area
Residential Planning Area of Population 15,000 with one Higher Secondary School

UNIT LAND AREA REQUIREMENTS													
	COMMUNITY FACILITIES AND SERVICES												
Gross density	Parks and playground		Shops & other commerical establishments		Other community services		Total community facilities and services		Streets and roads		Area under residential plots		Average plot area per family (sq.yds.)
	Acres	%	Acres	%	Acres	%	Acres	%	Acres	%	Acres	%	
	12	13	14	15	16	17	18	19	20	21	22	23	24
25	30.0	5.0	2.9	0.5	3.7	0.6	74.5	12.4	90.0	15.0	435.5	72.6	632
50	27.0	9.0	2.5	0.8	3.5	1.2	60.5	20.2	30.0	10.0	209.5	69.8	304
									60.0	20.0	179.5	59.8	261
60	25.0	10.0	2.5	1.0	3.25	1.3	58.25	23.3	28.0	11.2	163.75	65.5	238
									55.0	22.0	139.50	54.7	206
75	23.0	11.5	2.0	1.0	3.0	1.5	51.0	25.5	24.0	12.0	12[illegible].0	62.5	182
									45.0	22.5	104.0	52.0	151
100	21.5	14.0	1.5	1.0	2.5	1.7	45.5	30.3	18.0	12.0	86.5	57.7	126
									33.7	22.5	70.8	47.2	103
125	15.0	12.5	1.5	1.2	2.0	1.6	35.0	29.2	16.0	13.3	69.0	57.5	100
									30.0	25.0	55.0	45.8	80
150	15.0	15.0	1.5	1.5	2.0	2.0	35.0	35.0	15.0	15.0	50.0	50.0	73
									25.0	25.0	40.0	40.0	58
200	12.2	16.4	1.3	1.6	1.5	2.0	28.0	37.3	11.3	15.0	35.7	47.6	52
									18.8	25.0	28.2	37.6	41

Layout Plan means

- A Sub-division Plan indicating configuration and sizes of all use premises.

12.2.1 The Layout Plans

The Layout Plans already approved by the Authority or any other local authority concerned in accordance with land shall be deemed to have been approved under this code.

- An area in respect of which there is no approved layout plan shall be governed by the provision of the Zonal Development Plan.

- All layout plans and building plans shall be approved by the Authority except the service plan and plans of individual residential and industrial plots which shall be sanctioned by the local authority concerned.

12.3 Use Zones Designated

The use zones shall be classified into 9 categories, namely, Residential, Commercial, Manufacturing, Recreational, Transportation, Utility, Government, Public and Semi-public and Agriculture and Water Body.

Residential

- Residential area with density (including villages falling under rural zone)

Commercial

- Retail Shopping, General Business and Commerce
- Wholesale, Warehousing, Cold Storage and Oil Depot.

- Hotel.

Manufacturing

- Light and Service Industry
- Extensive Industry

Recreational

- District Park
- Play Ground, Stadium and Sports Complex
- Historical Monument

Transportation

- Airport
- Bus Terminal and Depot
- Truck Terminal
- Road Circulation

Utility

- Water
  (Treatment Plant, etc.)
- Sewerage
  (Treatment Plant, etc.)
- Electricity
  (Power House, sub-station, etc.)
- 4.22 U5 Drain

Government

- Government Office

- Government Land
  (Use undetermined)

Public & Semi-Public

- Hospital
- Education and Research (including University and specialised educational institutes)
- Social and Cultural
- Police Headquarters and Police Lines
- Fire Station and Headquarters
- Communication
- Cremation and Burial
- Religious

Table - 21

PERMISSION OF USE PREMISES IN USE ZONES

Permission of selected use premises in five important use zones

S.No.	Use premises	Use zones				
		Residential area with density	Retail shopping general business & commerce	Wholesale ware-housing cold storage, oil depots	Light and service industry	Extensive industry
1	2	3	4	5	6	7
1.	Residential plot-plotted housing	P	NP	NP	NP	NP
2.	Residential plot-group housing	P	NP	NP	NP	NP
3.	Residence-cum-work plot	P	NP	NP	NP	NP

Contd.....

Table - 21 (Contd.)

1	2	3	4	5	6	7
4.	Hostel					
	(i) Hostels attached to institutions	NP	P	NP	NP	NP
	(ii) Hostels not attached to institutions	P	P	NP	NP	NP
5.	Guest house, boarding house and lodging house					
	(i) Government, public and private Ltd. company guest house	P	P	NP	NP	NP
	(ii) All other	P	P	P	P	NP
6.	Convenience shopping	P	NA	NA	NA	NA
7.	Local shopping centre	P	NA	NA	NA	NA
8.	Wholesale Trade	P	NA	NA	NA	NA
9.	Storage, godown and warehousing					
	(i) Non-inflammable	NP	NP	P	P	P
	(ii) Inflammable (as per regulation regarding explosive NP materials)	NP	NP	P	P	P
10.	Cold storage and ice factory	NP	NP	P	P	P
11.	Gas godown	NP	NP	P	P	P
12.	Major oil depot and L.P.G. refilling plant	NP	NP	P	NP	NP
13.	Commerical office	NP	NP	P	NP	NP
14.	Cinema	NP	P	P	P	P
15.	Service centre	NP	P	P	NA	NA

Contd....

Table - 21 (Contd.)

1	2	3	4	5	6	7
16.	Industrial plot-light and service industry	NP	NP	NP	P	P
17.	Industrial plot-extensive industry	NP	NP	NP	NP	P
18.	Bus terminal	P	P	P	P	P
19.	Bus depot and workshop	NP	NP	NP	P	P
20.	Hospital (upto 200 beds)	NP	NP	NP	P	P
21.	Health centre (upto 30 beds)	P	P	NP	NP	NP
22.	Nursing home	P	P	NP	NP	NP
23.	Primary school	P	NP	NP	NP	NP
24.	Secondary school	P	NP	NP	NP	NP
25.	Senior secondary school	P	NP	NP	NP	NP
26.	College	P	NP	NP	NP	NP
27.	Religious premises	P	NP	NP	NP	NP
28.	Hotel	NP	P	NP	NP	NP

P - Permitted NP - Not permitted NA - Not applicable

Agriculture and Water Body

- Green Belt
- Rural Zone (Villages as residential areas)
- River and Water Body

12.4 Location and Boundaries of Use Zones

- Any one of the Use Zones may be located at one or more than one place as shown on the Land Use Plan.

- The boundaries of various pockets of Use Zones are defined in Land Use Plan by features such as roads, railway tracks and drains. The area of each pocket of different Use Zones is as indicated in the Land Use Plan.

12.5 Provision regarding Uses in "Use Zones"

12.5.1 Location and Boundaries of Use Premises

- The location and boundaries of each use premises shall be taken to be as given in the layout plan with reference to important bench features such as mark road, drains or other physical features.

- Any change in the location boundaries and predominant use of use premises due to any reason whatsoever and duly approved shall be incorporated in the layout plan.

12.5.2 Sub-division of Use Zones into Use Premises

The objective of these regulations is to guide the preparation of layout plans for residential and industrial use zones. These regulations include norms for provision of facilities, circulation system and land scaping standards. The service plans corresponding to

these layout plans for provision of physical infrastructure such as water supply, sewerage and drainage shall conform to municipal by-laws.

The provision of requisite infrastructure shall be governed by the following norms for a residential neighbourhood of 15,000 population.

12.5.3 Use Premises which are permitted in all the five important Use Zones mentioned above:

Retail, Repair and Personnel Service Shop (in Commercial Centres only), Vending Booth, Bank, Petrol pump, Restaurant (in Commercial Centres only), Hotel (in Commercial Centres only) and in other residential areas where building plans have been approved for a hotel building as per the sanctioned coverage and Floor Area Ratio (F.A.R.) Park, Play Ground, Indoor Games Hall, Recreational Club. Cargo Booking Office (in Commercial Centres only), Parking, Taxi and Three Wheeler Stand, Public Utility Premises.

Central Government Office (in Commercial Centres only), Local Government Office (in Commercial Centres only) Public Undertaking Office (in Commercial Centres only) Police Post, Police Station, Fire Post, Fire Station, Post Office, Posts & Telegraphs Office and Telephone Exchange.

12.5.4 Use Premises which are not permitted in all the five important Use Zones:

Hotel, Industrial Premises (Extractive Industry), Outdoor Games Stadium, Indoor Games Stadium, Shooting Range, Zoological Gardens,

Bird Sanctuary, Botanical Gardens, Specialised Park/Ground, Planetarium, Picnic Hut/Camping Site.

International Conference Centre, Courts, Government Land (Use undetermined)

Sports Training Centre, Fair Grounds, Reformatory, District Battalion Office, Civil Defence and Home Guards, Forensic Science Laboratory, Jail, General Head Post Office, Radio and Television Station, Transmission Tower, Satellite and Tele-communication Centre, Observatory and Weather Office, Burial Ground, Cremation Ground Cemetery, Electric Crematorium, Orchard, Forest, Dairy Farm, Poultry Farm and Piggery Farm House.

12.5.5 Use Premises in the Remaining Use Zones may be given permission for the following:

- District Park

  District Park, Residential Flat (for Watch & Ward and maintenance staff), Playground, Recreational Club, Childrens Traffic Park, Specialised Park (Ground, National Memorial, Bird Sanctuary, National Gardens and Zoological Gardens).

- Playground, Stadium and Sports Complex

  Playground, Outdoor Stadium, Indoor Games Stadium, Indoor Games Hall, Recreational Club, Residential Flat (for watch and ward and maintenance staff), Boarding and Lodging House, Restaurant, Bank, Local Government Office (Maintenance), Library, Sports Training Centre, Auditorium, Police Post, Fire Post, Posts & Telegraphs Office.

- Truck Terminal

  Truck Terminal, Motor Garage, and Workshop, Retail and Repair Shop, Night Shelter, Boarding House, Bank, Restaurant, Road Transport Booking office.

- Government Office

  Central Government Office, Local Government Office, Public Undertaking Office, Public International Conference Hall, Courts Government Land (use undetermined), Commercial Office (in commercial centres only), Retail and Repair shop, Bank, Restaurant, Watch and Ward, Vending Booth, Indoor Games Hall, Dispensary, Library, Museum, Cultural and Information Centre, Social and Cultural Institute Auditorium, Police Post, Fire Post and Posts & Telegraphs Office.

- Hospital

  Hospital Health Centre (including Welfare Centre), Nursing Home Dispensary, Clinic, Clinical Laboratory, Voluntary Health Service, Residential Flat and Residential Plot-Group Housing (for staff and employees), Hostel (for students of medical college and staff), Dharamshala, Night shelter, Retail and Repair Shop (in commercial centres only), Bank, Restaurant, Indoor Games Hall, Recreational Club, Library, College, (Medical Profession and like), Forensic Science Laboratory, Police Post, Fire Post and Posts & Telegraph Office.

- Education & Research

  University and specialised Educational Institute, College, Nursery and Kindergarten School, Research and Development

Centre, Library, Social Welfare Centre, Auditorium, Playground, Outdoor Stadium, Indoor Games Stadium, Indoor Games Hall, Swimming Pool, Recreational Club, Botanical Gardens, Planetarium, Zoological Gardens, and Aquarium, Residential Plot-Group Housing (for staff and employees), Hostel (for students), Guest House, Convenient Shopping, Bank, Museum, Fire Post, Police Post and Post & Telegraph Office.

- Social and Cultural

Social and Cultural Institute, International Conference Hall, Museum, Exhibition Centre, Art Gallery, Auditorium, Open Air Theatre, Community Hall, Cultural and Information Centre, Residential Flat (Watch and Ward Staff only), Hostel, Indoor Games Hall, Recreational Club, Planetarium Library, Police Station, Fire Station and Post & Telegraph Office.

- Police Headquarters and Police Lines

Police Headquarters, Police Post, Police Station, District Battalion Office, Civil Defence and Home Guards Forensic Science Laboratory, Jail, Fire Post, Residential Plot-Plotted and Group Housing, Hostel (Staff and employees) Guest House, Bank, Convenience Shopping, Motor Garage and Workshop, Restaurant, Playground, Indoor Games Stadium, Indoor Games, Hall, Shooting Range, Swimming Pool, Recreational Club, Hospital, Health Centre, Dispensary, Voluntary Health Service (such as Red Cross), Nursery and Kindergarden School, Library Fire Post and Post & Telegraph Office.

- Fire Station and Headquarters

  Fire Station, Fire Post, Residential Flat (for staff employees), Hostel (for staff), Guest House, Convenient Shopping, Bank, Motor Garage and Workshop, Restaurant, Playground, Indoor Games Hall, Swimming Pool, Recreational Club, Health Centre, Primary School Library and Post & Telegraph office.

- Communication

  Satellite and Tele-communication Centre, Transmission Tower, Wireless Station, Telephone Exchange, Radio and Television Station, Observatory and Weather Office, Fire Post, Residential Flat (for Watch and Ward).

- Agriculture, Malyari use and Green Belt

  Agriculture, Horticulture, Dairy and Poultry farming, Milk Chilling centres, Farm houses & their accessory buildings, Orchard, Plant Nursery and Forest.

12.5.6 The permission of use premises in following use zones shall be governed by the specific function of the use zone.

- Hotel
- Historical Monument
- Airport
- Bus Terminal & Depot
- Road Circulation
- Water
- Sewerage
- Electricity

- Solid Waste
- Drain
- Government Land 'Use undetermined'
- Cremation and Burial Ground
- Religious
- Green Belt and
- River & Water Body

12.5.7 Park, Parking, Taxi and Three Wheeler Stand and Public Utility Premises are permitted in all zones.

A-IV Provision Regarding Requirements in Use Zone

A-IV-I Density Ground Coverage, Floor Area Ratio setbacks and other requirements of use zones.

The density shown in the land use plan for a particular area shall be followed in layout plans for the area provided that the competent authority may, till such time as the zonal development plans are finalised, approve individual layouts, so as to achieve the overall density prescribed for the areas.

I/Residential Use Zone General

Community facilities should be planned on the basis of actual gross density achieved or that prescribed for the Residential Planning Area, whichever is higher, applying the interpolation method for calculating the various areas. In calculating gross residential density shown in the Land Use Plan, all land meant for community facilities (local shopping, neighbourhood parks, local open spaces, playgrounds and tot-lots; high school, primary and nursery schools and

other community facilities) and residential streets upto 40 feet right-of-way should be included. The actual determination of the community facilities will depend upon the size of the given layout in acres, and the overall population it is to contain.

In calculating gross residential density, the area of land for the following items should be excluded:-

- Major roads of 80 feet and more, which are shown in the Land Use Plan;
- Open spaces including land under agriculture, semi-public recreation, regional and district parks, large playgrounds, green linkages, and water bodies as shown in the Land Use Plan;
- All the non-residential acres that is, commercial areas, for example, business district, district and sub-district centres, warehouses, wholesale markets, offices, industrial areas and public and semi-public facilities (for example, colleges, research and cultural institutions, hospitals, public utilities and installations) as shown in the land use plan;
- Transport terminals, local and inter-stage bus and truck terminals and their depots, the Airport and the extensive parking areas as shown in the Land Use Plan;
- All historical buildings and monuments; burial and cremation grounds and existing places of worship. Irrespective of the actual number of servant quarters for purpose of the density calculations in considering layout plans, the number of

servant quarters in various sizes of plots will be reckoned as under :-

a)	Plots upto 300 sq. yards	Nil
b)	Plots above 300 sq. yards and not exceeding 600 sq. yards	One servant's quarter per dwelling unit
c)	Plots 600 sq. yards and not exceeding 1200 sq. yards	Two servants quarters per dwelling unit
d)	Plots above 1200 sq. yards	Three servants' quarters per dwelling unit

Note: i) Each servant quarter shall comprise one habitable room of area not more than 120 sq. feet floor area, exclusive of cooking verandah, bathroom and lavetory.

ii) The number of persons per servants' quarter will be reckoned as 4.7.

iii) The number of persons per servants' quarter will be reckoned the same as the number of floors permissible plus the number of servants' quarters as mentioned above. These conditions will not apply to 'Group Housing'. Good planning practice for designs of residential areas should include :-

- Light and air in the buildings;
- Protection against noise, dust and local hazards
- Open space for various family needs;
- easy circulation and access, safety from accidents; and
- a logical arrangements of residential plots by sizes and shapes.

The translation of these requirements into actual planning practice would vary with design relations and density patterns. Individual plots

(row houses, detached and semi-detached houses)

a) Minimum floor space

The minimum size of an individual residential plot for a two storeyed two family dwelling, should be 111 sq. yards.

b) Plot coverage

The coverage shall be as follows:

Plots	Coverage on each floor (per cent)
i) upto 300 sq. yards	60%
ii) Above 300 sq. yards and not exceeding 600 sq. yards	45%
iii) Above 600 sq. yards and not 1200 sq. yards	35%
iv) Above 1200 sq. yards	30%

In areas of slums excluding their clearance areas, the ground coverage and F.S.I. shall be permittd upto 80% and 70% with F.S.I. of 2.1 and 2.4 respectively.

c) Floors

In individual residential plots, normally only two-storyed buildings with attic may be allowed. In individual plots exceeding 200 sq. yards, a two storyed building raised on stilts may be permitted, provided the enclosed area on the ground floor does not exceed 30 per cent of the permissible

covered area on the first floor. In individual plots of 300 sq. yards and above, which face roads with a right-of-way of 50 and above, full three-storyed construction with an attic floor may be allowed.

d) Frontage of plots

Each individual plot should provide a minimum frontage of 20 feet on the access road. The ratio of depth of frontage should normally range between 3.0, 2.0, 1.5 is to 1.0 (for row housing, frontage of plots may be reduced upto 11 feet per plot)

e) Set-back lines

The following setback lines are prescribed depending upon the depth of plot for individual plots.

i. Front set back depth of plot	Minimum set back required from plot line
a. Upto 60 feet	10 feet
b. Above 60 feet and not exceeding 90 feet	15 feet
c. Above 90 feet and not exceeding 120	20 feet
d. Above 120 feet and not exceeding 150 feet	25 feet
e. Above 150 feet and not exceeding 200 feet	30 feet
f. Above 200 feet	40 feet

Note: Where a plot abuts any road shown in the land use plan, the front set back line shall not encroach upon either of the building lines prescribed under this Master Plan or under the Prevention of Ribbon Development Act.

ii. Rear Set-back

Besides the front set-back, a set-back should also be provided at the rear of the plots subject to height restrictions to allow sufficient light and air circulation.

iii. Side set-back

Side set-back of at least 5 feet from plot line on each side should be left on detached plots. In semi-detached plots set-back on one side should be at least 5 feet from the plot line to the building line. For row housing, corner plots should be suitable set-back from the road right-of-way, according to traffic requirements.

f) Ground coverage and floor space index and height of residential buildings

Gross residential density (persons per acre)	Maximum ground coverage in %	Maximum F.S.I.
25	25	0.75
50	25	0.75
60	25	0.75
75	30	1.25
100	35	1.25
125	35	1.25
150	40	1.50
200	50	1.50

F.S.I. or Floor Space Index = Floor Area/Plot Area
Floor area is defined as plinth Area on all floors unless specifically excluded.

g) Orientation of houses

In consideration of the direction and velocity of wind and humidity of the place in the summer and winter months, the plots in the housing layout plans should be so designed as to allow a large number of houses to face towards the south-east between 160° and 170° from the north.

In the individual house plots the said orientation of houses should, as far as possible, be adopted in order to obviate the difficulties caused by high humidity, changing wind directions and wind velocities in different months of the year.

II. Agricultural Use Zones and Agricultural Belt.

In order to preserve agricultural zones from the onslaught of urbanisation the following restrictions are imposed.

i. No dwelling unit, or shop of factory or any kind of structure other than fencing or walling (5'-6' maximum heights) shall be permitted for a depth of 150 ft. from the centre of any major road, district road or highway. This will not apply to roads, whose building lines are specified in this Master Plan.

ii. The existing village will not be allowed to expand to more than 500 ft. along the road or highway, save the villages on the hill side of the Nishat Cheshmashahi Road from Nishat to Cheshmashahi as shown on the Land Use Plan, where the size of the road side plots shall not be less than 4 kanals and the width of the plot abutting the proposed right of way not less than 100 feet. For such plots the ground coverage is fixed as 10 per cent, the height of buildings up to a maximum of 37 ft.

iii. Villages on Boulevard from Chashmashahi Road intersection to Nishat shall be allowed to further expansion between Bouleward and Old Nishat Road, save in such cases where the competent authority is convinced that the area shown under agriculture/plantation/parks in the Land Use Plan will not be affected.

iv. No structure other than a fencing or a walling (5'-6' max. height) shall be allowed in or around a plot which is more than 50 ft. away from any existing building of the village.

v. In villages other than on the Lake front, no plot for a dwelling unit shall be less than 1/2 kanal in area.

vi. In any residential plot of such villages the ground area covered under main building and necessary buildings, if any, shall not exceed 30 per cent for the plot size of 1/2 kanal and 25 per cent for a plot having an area between 1/2 kanal and one kanal and 20 per cent for the plot of one kanal area and above.

The height of structure shall not exceed 37 ft. measured from the ground level to the topmost ridge of the roof. The minimum yard and set-back limits for individual plots in such village shall be as follows:

Size of Plot	Front (ft.)	Rear (ft.)	Side (ft.)
1/2 Kanal	15	10	10
Between 1/2 kanal and one kanal	20	10	10
1 kanal and above	25	10	10

For group housing around an open space and for terrace housing in such villages the side set-back shall not be applicable provided that easement rights of the adjacent plot holder are not encroached upon.

III. Government offices in Planning Areas 'C' and 'D'

F.S.I.	0.5 to 1.5
Maximum ground coverage including 5% for covered parking	30%

All other District centres

F.S.I.	0.5 to 1
Maximum ground coverage including 5% for covered parking	25%

IV. Commercial and retail buildings

i. Existing built up areas of the city shall have the following F.S.I.

Ground Coverage	Floor Space Index
60% (maximum)	1.5
50%	1.8
45%	2.0
35%	2.5

The height of the buildings will be subject to air and light planes as conditioned by municipal by-laws. In district centres and residential planning area centres of planning division 'B' 'D' 'E' 'F' 'G' 'H' 'I' 'J' the commercial and retail building shall lie within 40 per cent ground coverage and 1.00 and 1.5 F.S.I.

Table - 22

MINIMUM SET-BACK FOR COMMERCIAL BUILDING

	For plots fronting 100 ft. to 120 ft.roads	For plots fronting 80 feet wide roads or less
Front	50 feet	40 feet
Rear	20 feet	20 feet
Sides	15 feet	10 feet

V. Industries and Manufacturing

a) Industrial-cum-work Centre
(District Centre and in outlying areas)

Minimum plot area	2 kanals
Maximum coverage	33 1/3 %
Floor Space Index	1.2
The minimum number of floor allowed in two	
Minimum set-backs	
Front	25 feet
Rear	25 feet
Side	15 feet

b) Special Industry

Minimum plot area	1 acre
Maximum coverage	15 %
Maximum height	40 feet
Floor Space Index	0.25
Minimum set-back	
Fronts	50 feet

Rear	25	feet
Sides	15	feet

c) Light Industries

Minimum plot areas	400	sq.yards
Minimum frontage	30	feet
Maximum plot area	2	acres (may be relaxed in special cases upto 7 acres)

The following sliding scale of coverage and floor area ratio is prescribed :

	Plot area in acres	Maximum plot coverage	F.S.I.
1.	400 sq.yds. to 1.00 acres	50 %	0.6
2.	Above 1.00 acre to 3.00 acres	40 %	0.6
3.	Above 3.00 acres to 7.00 acres	40 %	0.5

Minimum set-backs

	For plots below 0.25 acre	For plots from 0.25 acre and above upto 1 acre	For plots above one acre
Front	15 feet	20 feet	50 feet
Rear	15 feet	15 feet	30 feet
Sides	Optional	15 feet on one side and 10 feet on the other	20 feet

d) Service industries

Same regulations as for light industries

e) Extensive industries

The following sliding scale of coverage and floor space index is prescribed :

	Plot area in acres	Max. plot coverage	F.S.I.
1.	0.25 to 1.00	50 %	0.50
2.	Above 1.00 to 2.00	45 %	0.45
3.	Above 2.00 to 7.00	40 %	0.40
4.	Above 7.00	30 %	0.30

Minimum set-backs

	For plot size upto 1 acre	For plot size above 1 acre
Front	20 feet	50 feet
Rear	15 feet	30 feet
Sides	15 feet on one side and 10 feet on the other	30 feet

VIII. Industrial uses*

	For plot size up to 2 acres	For plot size above 2 acres
Maximum coverage including covered parks	33.1/3%	25 %

13. PLAN MONITORING AND INDICATORS OF CHANGE

Plan monitoring has two main objectives:

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* F.S.I. will be determined on the merits of each industrial case depending upon the location and the nature of use.

The socio-economic and functional efficiency of the performance of urban settlements has to be monitored and evaluated so that changes required to improve the quality of life can be identified and put into action through appropriate measures.

The plan should be continuously made responsive to the emerging socio-economic forces. Unintended developments must be arrested here essential. Plan monitoring will help in this. This is based on the following proposition.

No long range urban development plan can be implemented as it is.

The Plan should be responsive to the happenings and emerging socio-economic and other forces during the plan implementation period.

Time lags between the happenings and the emerging socio-economic forces and the plan responses create accontuating conditions of unintended growth. The achievement of physical targets prescribed in the plan must be evaluated and physical and socio-economic change in the city must be identified.

14. PLAN REVIEW

The Plan monitoring will provide sufficient material for any modifications required. A comprehensive review encompassing all aspects should be taken up during 1992.

Policies indicate directions; it is the detailed development projects that ultimately create the environment good or bad. All aspects of development such as, housing, transport, work centres, recreation and infrastructure need study and research to make the plan

effective in providing a high quality living environment. The Srinagar Development Authority (SDA) should be constantly doing these studies, research and monitoring work to make planning a firm instrument for development.

Annexure - I

MODIFICATION OF DENSITIES IN EXISTING MASTER PLAN AREA, SRINAGAR

Sub-Zone	Existing Density	Proposed Density
Zone B		
B-5	40	60
B-6	40	60/120
B-7	40	60/120
B-9	40	60
Zone D		
D-2	40	120
D-3	40	120
D-7	40	120
D-8	60	120
D-9	60	120
D-24	60	120
D-25	40	120/200
D-26	40	120/200
Zone E		
E-6	40	60
E-8	40	60
Zone F		
F-2	40	60
F-3	60	60
F-4	60	60
F-5	40	60
F-6	40	60

Sub-Zone	Existing Density	Proposed Density
F-7	40	60
F-9	40	60
F-10	60	120
F-12	60	60
F-14	60	120
F-16	60	120
F-17	40	60/120
F-18	40	60
Zone G		
G-7	60	120
G-8	60	60/120
G-9	60	120
G-10	60	60

Annexure - II

LOCAL AREA SRINAGAR

Area covered by Municipality and the following villages including 1/2 mile agricultural green belt

S.No.	Name of Villages	S.No.	Name of the Villages
1.	Pazwalpora	2.	Chandapora
3.	Harwan	4.	Danigam
5.	Nishat	6.	Theed
7.	Dharbagh	8.	Zewan
9.	Paristabal	10.	Kadalbal (both sides of the river)
11.	Sompora	12.	Soiteng
13.	Naugam	14.	Mengam Waji
15.	Zangibagh	16.	Kralapora
17.	Manchua	18.	Shankerpora
19.	Natipora	20.	Rawalpora
21.	Rangar	22.	Gandwa
23.	Naider Gund	24.	Brathna
25.	Parimpora	26.	Zainakoot
27.	Goripora	28.	Hassanabad Shunglipora
29.	Baghwanpora	30.	Noorbagh
31.	Dadamari Bagh	32.	Bagi Chandpora
33.	Dachhigam	34.	Shalimar
35.	Guptaganga	36.	Pantachokh
37.	Zowra	38.	Nambalbal
39.	Drangabal	40.	Lhha Nambal
41.	Gundi Chandal	42.	Suthu Kotheer Bagh
43.	Godibagh	44.	Dangerpora

S.No.	Name of Villages	S.No.	Name of the Villages
45.	Kanipora	46.	Bagati Kanipora
47.	Bagi Mehtab	48.	Kursu Padshahi Bagh
49.	Bagi-Barzulla	50.	Haiderpora
51.	Wawatch	52.	Humahama
53.	Wanaduri Galwanpora	54.	Chawani Badam Singh
55.	Khushipora	56.	Shalateng
57.	Palapora	58.	Bagi Lal Pandit
59.	Gaggar Zoo	60.	Chandhihar
61.	Lasjan	62.	Nowgam
63.	Murinder Bagh	64.	Dara
65.	Fakir Gujri	66.	Sadipora Bala
67.	Dani Hoom	68.	Ahal
69.	Burzshama	70.	Chatri Hama
71.	Tel Bal	72.	Indra Hama
73.	Gasoo	74.	Khimber
75.	Hodoora	76.	Wani Hamal Bala
77.	Takia Sanghreshi	78.	Batapora
79.	Zakoora	80.	Kandizal
81.	Shalina	82.	Wanipora
83.	Seerbagh	84.	Samar Bugh
85.	Rakh Shalina	86.	Tarazi Khud
87.	Kani Hama	88.	Rakh Soothu
89.	Chukpora Kalan	90.	Chak Fatech Din.
91.	Chak Dewan No. 1	92.	Chak Dewan No. 2
93.	Wangipora	94.	Kuthipora
95.	Chak Dewan Badri Nath	96.	Dharm Bugh

S.No.	Name of Villages
97.	Handool Bagh
99.	Ompora
101.	Nambal Narakara
103.	Bemina Watni Gund
105.	Rakhi Arat
107.	Rakhi Mujgund
109.	Krishibal
111.	Omar Hair
113.	Ghulab Bagh
115.	Saidpora Hamchi
117.	Wari Pahoo
119.	Bakra
121.	Meej
123.	Chetalam
125.	Chandharo

S.No.	Name of the Villages
98.	Karewa Damodar
100.	Shaikpora
102.	Narakara
104.	Hanjuk
106.	Sharifa Bad
108.	Nalru
110.	Sangam
112.	Devipora
114.	Rakh Zokra
116.	Dadi Nawbugh
118.	Shihama
120.	Balahama
122.	Konabal
124.	Kronchoo

Proposed Names of the Villages in Srinagar Extension Area including 1/2 mile agricultural green belt

Sl.NO.	Name of Villages	Sl.No.	Name of Villages
	Urban Extension I		Urban Extension I
126.	Rakh Sulan	127.	Khurd Moah
128.	Nahama	129.	Pharo
130.	Madak Ghand	131.	Dudni Dari
132.	Rani Pura	133.	Dal Pura
134.	Khanda	135.	Santri Pura
136.	Wagara	137.	Suntto Kalan
138.	Marabai	139.	Chalam Gam
140.	Gundu Pura	141.	Zatoh
	Urban Extension II		Urban Extension II
	NIL		NIL
	Urban Extension III		Urban Extension III
142.	Gund	143.	Gund Hasirat
144.	Kawi Pura	145.	Sorhat Gorpura
146.	Atmal Pratapgarh		

Annexure - III

Statement showing names of villages included within Municipal Limits vide SRO No.342 Dated 19 June 1978

Sl.No.	Name of the Villages	Present Municipal Ward
1.	Shalteng	Ward No. 5
2.	Ganga Bug	Ward No. 4
3.	Barazella	Ward No. 5
4.	Zainakeot	Ward No. 5
5.	Khushi Pora	Ward No. 5
6.	Habak Khushki	Ward No. 17
7.	Bata Pora	- do -
8.	Gussee	- do -
9.	Inderhama	- do -
10.	Wanihama	- do -
11.	Burzahama	- do -
12.	Banigam	Ward No. 1
13.	Pazwalpora	- do -
14.	Danihama	Ward No. 17
15.	Gund Telbal	- do -
16.	Haripora Narwan	Ward No. 1
17.	Harwan Merinder Bagh	- do -
18.	Shalimar	- do -
19.	Chanda Pora	- do -
20.	Baghi Chanda Pora	- do -
21.	Gupt Ganga	- do -
22.	Nishat	- do -
23.	Dadi Nowbug	Ward No. 17
24.	Shihama	Ward NO. 16

25.	Bakura	- do -
26.	Pandach	Ward No. 16
27.	Khal Mulla	- do -
28.	Duser-Bug	- do -
29.	Umerheir	- do -
30.	Dadi pora	- do -
31.	Buchora	- do -
32.	Nagabal	- do -
33.	Zakura	- do -
34.	Rekh-Zakura	- do -
35.	Saida-pora Humchi	Ward No. 17
36.	Soitenge	Ward No. 4
37.	Lasgan	Ward No. 4
38.	Natipora	- do -
39.	Nowgam	- do -
40.	Rekhsothoo Sutirkurir Bagh	- do -
41.	Lala Shsehgari Bagh	- do -
42.	Qooru Wata Galwanpora	- do -
43.	Baghti Barzallah	- do -

Annexure - IV

Statement showing the Estate-wise details of lands in Srinagar City (As per 1981 survey)

Sl.No.	Name of Estate	Kanals	Marla	Sft.
1.	Kothi Bagh	1250	10	88
2.	Zaira Kadal	65	17	212
3.	Barari-Numbal	587	2	81
4.	Maisuma	1794	16	237
5.	Khanyar	280	1	117
6.	Nowpora	236	13	136
7.	Buchawara	342	18	205
8.	Camar Wari	153	8	140
9.	Naba Kadal	292	2	000
10.	Sangeen Darwaza	3146	181	000
11.	S.R. Gunj	214	11	000
12.	Nawa Kadal	982	11	000
13.	Lachaman poza	[illegible]0	11	000
14.	Idd-Gah	178	13	000
15.	Rainawari	282	15	160
16.	Nowhatta	1044	14	000
17.	Baghi-Nand Singh	147	13	000
18.	Bonamsar	292	13	000
19.	Tashwan	1251	3	000
20.	Chattabal	645	13	000
21.	Rampoza	381	14	000
22.	Narsingh Ghar	6508	6	000

23.	Zoonimar	NA	NA	NA
24.	Souawar	NA	NA	NA
25.	Batamalina	NA	NA	NA
26.	Barzalla	NA	NA	NA