

Master Plan-2035 Srinagar Metropolitan Region

(Planning for Sustainable Growth and Change)



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Preface

The State of Jammu & Kashmir during the last decade (2001-2011) recorded a growth rate of about 23% exceeding the national growth rate of about 17%. As per the Census of India 2011, the State has about 27% (3.4 million) of its people living in urban areas. The State's urban population increased by 36.42% during last decade higher than the national average of 31.1% and much higher than decadal growth rate (19.42%) in case of rural areas at the State level. The macro-level spatio-demographic variations across three regions reflect that the Kashmir Region has 32% urban population followed by Ladakh Region with 23% while Jammu Region has 22% of its population living in urban areas. With regard to total urban population of the State, the Kashmir Region accounts for 63%, the Jammu Region 35% and the Ladakh Region just 2%. Out of the total urban population of 3.4 million in the State, Kashmir Valley holds 2.2 million with Srinagar city alone accounting for 55% whereas Srinagar Metropolitan Region i.e.; the Local Area has more than 75% of the urban population of the Valley presenting a case of highly skewed urbanization or *macrocephaly*.

Post 1947, Srinagar has been growing very fast, mostly in haphazard manner with insignificant contribution of the planned development. Historically, the city has been on the path of planning trajectory much before 1947 when Mr. W.G. Harris, a British Engineer was hired by the State during the reign of *Maharaja Gulab Singh* in the aftermath of devastating floods of 1902 for comprehensive flood management plan for ensuring sustainable development of Srinagar city. The Srinagar Master Plan 1971-91 was the first comprehensive planning effort made by the State Government post-Independence. The Master Plan 1971-91 triggered growth in west and southwest directions of Srinagar mostly in low lying areas, wetlands and flood absorption basins adjacent to Flood Spill Channel. Turbulence from 1989 forced a kind of plan holiday for a decade and ineffective regulatory mechanism of the urban local bodies and local authorities led to massive conversion of hitherto colonies and residential areas into commercial development.

The Master Plan-2035 is the third statutory planning exercise carried out for Srinagar city so far. However; the question remains as to how much has been achieved on ground *vis-à-vis* the master plan targets during the plan period of more than four decades. Certainly the progress is very dismal as evident on ground which is not surely not because of poor quality plans but due to absence of administrative zeal and lack of a strong political will. If we are to make our city economically more vibrant and environmentally sustainable, then there is no alternative to a sustained and long term planning vision as enshrined through master plans.

The Master Plan-2035 is a comprehensive public policy document calibrated to ground realities. The plan is at a departure from archaic planning efforts in terms of its public policy approach, development regulations, implementation mechanism, resource mobilisation, mixed landuse regulations etc. The Master Plan has been prepared for a threshold population of around three million by 2035 spread over an area of 766 Sq. Km. The Srinagar Metropolitan Planning limits have been increased from 416 Sq. Km to approximately 766 Sq. Km., i.e.; 84% increase. The Local Area of SDA stands already notified vide SRO-429 dated 21.10.2014 (*including the municipal areas of Srinagar Municipal Corporation and that of Budgam, Ganderbal, Pampore and Khrew ULBs and additional 160 villages as outgrowths in twelve tehsils of Six districts viz; Srinagar, Budgam, Ganderbal, Pulwama, Bandipora and Baramula*).

The assignment of preparing the master plan was entrusted to Town Planning Organisation Kashmir after disengaging a private consulting firm i.e.; *the M/s SAI Consulting Pvt Ltd, Ahmedabad*—initially hired by SDA for the revision of Srinagar Master Plan-2021. The Master Plan-2035 has been completed by Town Planning Organisation Kashmir in-house by a team of dedicated officers who left no stone unturned to accomplish the assignment in time. In the preparation of this master plan, extensive field surveys and interactions with all stakeholders were conducted from time to time to ensure large-scale public consultations. Seminars and workshops were also conducted in Srinagar and Delhi for one-to-one interaction with experts and people at large to improve the contents and quality of the master plan. Technical experts having extensive field experience in urban planning, environment, heritage conservation, transportation, housing and economy were also taken on board for guidance and support to add further value to this important public policy document.

The Master Plan-2035 articulates a shared vision for the future of Srinagar city and recommends specific actions for reaching that future. For a long term sustainable development—**smart, sustainable and economically empowered growth— the city has to be treated as a sustainable ecosystem offering vibrant and equitable setting where People can Live, Work and Prosper with dignity.**” The Master Plan-2035 has many firsts which make it a unique exercise. Some of the significant firsts are:

- Comprehensive land suitability analysis based on scientific parameters.
- Comprehensive identification and mapping of heritage buildings/precincts for revitalization and social inclusion of core city – Srinagar.
- Policies for promotion of local craft and tourism on sustainable norms.
- Focus on policies connecting rural economy with urban economy.
- Restructuring of Srinagar city for its sustenance and improving index of urban living.
- Use of GIS technology for accuracy and data base creation.
- A unique Development Code based on individual zone system as per development intensity and natural setting aiming at promoting the development rather than constricting it.
- TDRs and Green FAR for heritage conservation and land value capturing or monetization of land.

The Master Plan-2035 has been prepared after in-depth efforts put by a team of dedicated officers and technical experts. It is held that the master plan will provide a new direction to metropolitan area provided the proposals and policies envisaged are implemented sincerely and effectively. In this context, Government has the primary responsibility to ensure that the master plan proposals are implemented in letter and spirit.

The Draft Master Plan Srinagar-2035 was put in the public domain by Srinagar Development Authority under the provisions of the J&K Development Act, 1970 in May 2017 and subsequently extended up to 8th October 2017 from time to time for seeking suggestions and objections from all stakeholders including general public. The master plan proposals were also discussed with people of all shades including traders, *KHARA, KHAROF, KEF, KEA*, public representatives, advocates, common citizens etc for their feedback. Before its submission, the proposals of the master plan were placed for reviews before a panel of experts having relevant subject specialization and vast field experience

both within and outside India. About 320 suggestions and objections were received which were examined by the Committee constituted by the Government vide Order No: 226 –HUD of 2017 dated 09.11.2017.

The Draft Master Plan Srinagar-2035 along with the recommendations of the said Committee was placed before the State Administrative Council (SAC) for its approval under Section (9) of the J&K Development Act 1970. The Master Plan-2035 was approved by the State Administrative Council (SAC) along with the recommendations of the Committee vide Decision No: 40/5/2019 in its meeting held on 13th February 2019 at Raj Bhavan Jammu except for the recommendation of the Committee w.r.t. any development along the NH Bypass from Pantha Chowk to Nowgam. Accordingly, the SAC approved the departmental proposal with a modification that “no development/construction activity be permitted along the NH Bypass from Pantha Chowk to Nowgam which forms a part of flood absorption basin”.

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1. SRINAGAR - A PROFILE OF PERSPECTIVE & DEVELOPMENT

1 SRINAGAR – A PROFILE AND PERSPECTIVE OF DEVELOPMENT

1.1 The Srinagar City – A Brief Historical Perspective

The first account of the spatial history of Srinagar – starting from the city of *Srinagari* founded by *Ashoka* in 250 BC at the present village of *Pandrethan* in the east of *Takht-i-Sulaiman* Hill or *Shanker Acharya* Hill – is available in *Kalhan's Rajatarangini*. *Srinagari* remained the capital of Kashmir till the middle of sixth century AD when a new city – *Pravarapura* – was founded by *Parvarasen II* near the *Hari Parbat* Hill also known as *Kohi Maran*. The city extended along the right bank of the river *Jhelum*. With the passage of time, *Paravarapura* assumed the old name *Srinagari*. The two capitals of Kashmir have been mentioned by *Hieun Tsiang* – the first Chinese traveller to visit Kashmir. *Kalhan* described the city as having markets and mansions mostly built of wood reaching the clouds (Khan, 2013). He describes Srinagar in the following words:

“The streams meeting, pure and lovely, at pleasure-residences and near market streets obviously referring to Dal Lake and the River Jhelum, and the numerous canals which intersect the city.”

The later Hindu rulers transferred capital from one place to another. *Lalitaditya* founded *Parihaspora*, *Jayapida* laid out the city of *Jayapura* and *Awantivarman* founded the city of *Awantipura* followed by other capitals – *Kaniskapura*, *Juskapura* and *Hushkapura*. All these later capitals lost their importance and Srinagar alone survived. The *Parvarasen's* choice has been admitted as impeccable for its beauty, strategic importance and its intrinsic value (Khan, 2013). The River *Jhelum* serves as the main artery of communication with *Aurel Stein* describing it the city enjoying the facilities which no other side could offer with Srinagar acting as the distributing centre for incoming merchandize from different parts of the Valley (*Stein*). Srinagar acted as distribution centre for incoming merchandize, commanded trade route to India and Central Asia with strategically located rivers and lakes making it invulnerable and the Dal and Anchar Lakes fulfilling the needs of city population (Khan, 2013). Srinagar city is equidistant from two main commercial towns of the Valley – *Anantnag* and *Baramulla* – and is also equidistant from *Jammu*, *Rawalpindi*, *Leh* and *Gilgit* (Khan, 2013).

The city of Srinagar during the Muslim rule (1320-1819) became Kashmir or *Shahr-i-Kashmir* with the name also used by western travellers *Bernier* and *Desideri*. Srinagar during this period underwent significant changes but the geographic position of *Parvarasen's* city remained unaltered. *Rinchan* – the first Muslim ruler – founded *Rinchapura* building the first mosque followed by *Allauddin* who founded *Allauddinpora* – between *Jamia Masjid* and *Ali Kadal*. *Shahabuddin* again selected *Hariparbat* for his capital followed by *Qutbuddin* who persisted with Srinagar, founded *Qutbuddinpora* also making *Khanqahimualla* as the centre for Islamic teaching. *Sultan Sikander* built a mosque at the place making it the centre for political and religious activities. *Sultan Zain-ul-Abdin* built *Zaina Kadal* and founded a new

city—*Nau Shahahr*. The Mar Canal built by him remained till recently the main artery of communication between Srinagar city and the villages near Dal Lake—the production centres. He was responsible for introducing new industries –*shawl, carpet, silk, paper machie, paper, wood carving Namda and Gabha*—making Srinagar famous in the Central Asia (Khan, 2013).

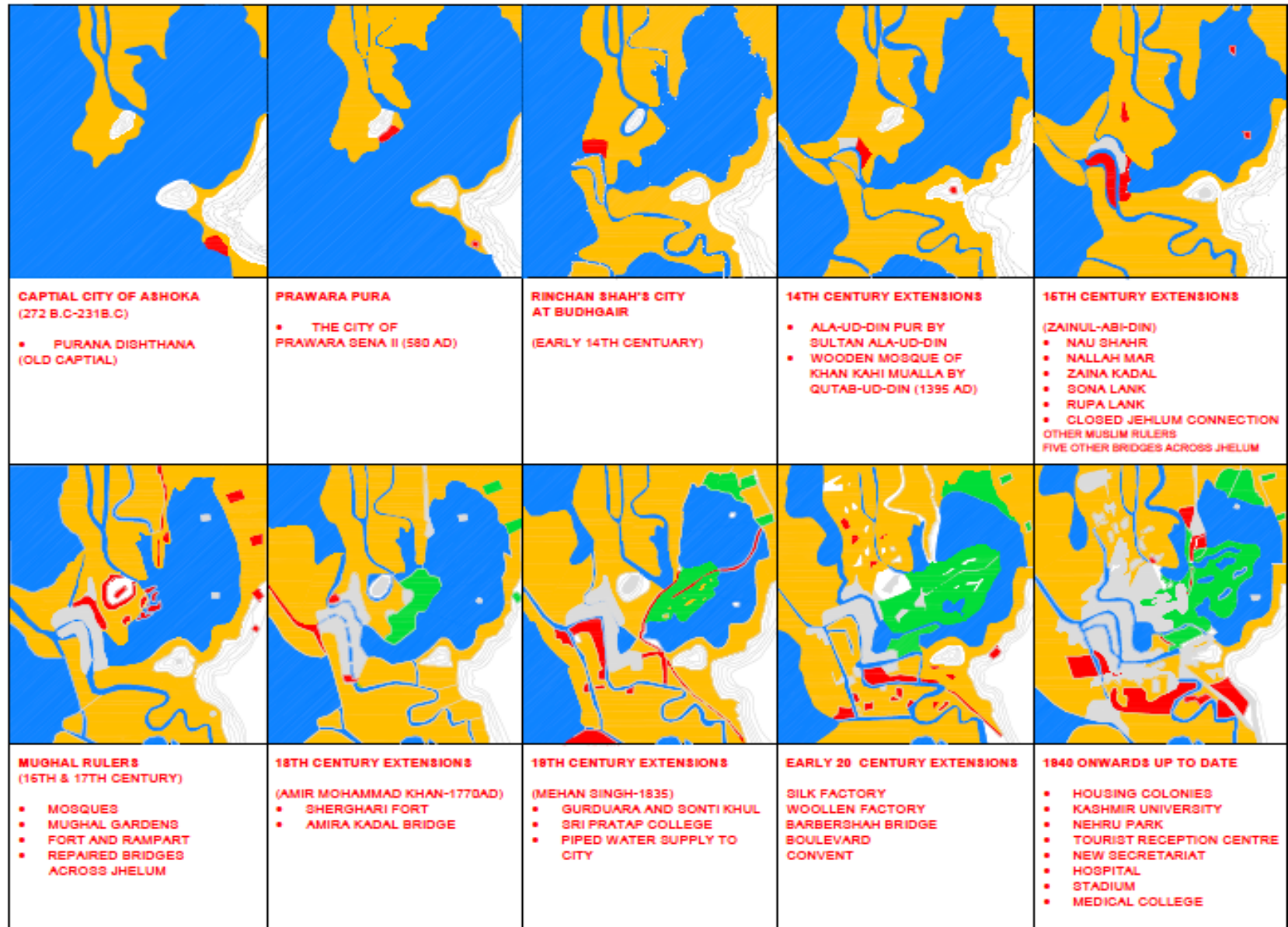
This was followed by *Sutan Haider Shah's* reign shifting the capital from *Nau Shahr* to *Nowhatta*, however in *Sultan Hassan Shah's* reign the capital was shifted back to *Nau Shahr*. The period of Sultan's was followed by Chak dynasty and the period did not see significant spatial development and was marred by internal feuds. This led to Mughal occupation in 1586 AD who operated through their Governors with Hari Parbat fort becoming the centre of political activity. Akbar's reign led to the construction of walled city—*Nagar Nagar*— around the slopes of Hari Parbat. Under the Mughals Srinagar became the city of gardens. Francois Bernier— who visited Srinagar during Aurangzeb's reign—describes the city as the Paradise of Indies. He describes the city not less than three quarters of league in length and half a league in breadth with two bridges over the Jhelum (Khan, 2013). Kashmir Valley became the summer resort for Mughals who fell in love with the landscape and ecology of the place. They built a number of gardens perfecting the gardens landscape. The perfection of landscape of Taj Mahal would not have been possible without the perfections achieved by Mughals in the garden landscape and architecture in Kashmir. No city in the north of Delhi has the amount and quality of heritage which Srinagar has. The city still has a number of Mughal Gardens—*Nishat, Shalimar and Chashma Shahi* in addition to *Mullah Akhun Shah Mosque, Pari Mahal*—while a number of them including *Baghi Dilawar Khan, Baghi Ali Mardan, Dewan Bagh* etc. have already been lost to urbanization and industrialization in the city.

Father Ippoliti Desideri— who visited Srinagar in 1714 AD—describes Srinagar as:

“the populous character of Srinagar, its lakes surrounded by pleasant gardens and crowded with boats for pleasure and commerce and the lilies growing on the roofs of the houses(Khan, 2013).”

Under the Afghan rule, the fort of Sherghari, the construction of massive fort on the top of Hari Parbat hillock and the construction of Amira Kadal Bridge were major spatial developments in the city. George Foster who visited Srinagar in 1783 AD mentions the city having developed about three miles on either side of the Jhelum with four of five bridges (Khan, 2013).

Figure 1-1:
Evolution
of Srinagar
(Source:
TPOK)



After several centuries with the advent of Sikhs in 1819 Kashmir again assumed the name Srinagar. Moorcroft who visited the city in the Sikh period describes the city as confused mass of ill-favoured buildings, forming a complicated labyrinth of narrow and dirty lanes, scarcely broad enough for a single cart to pass, badly paved with houses generally two or three stories high—in a state of total neglect (Khan, 2013).

After 1947 Srinagar has been growing very fast mostly in haphazard manner with insignificant contribution of the planned housing colonies. The Master Plan 1971-91 triggered growth in west and southwest direction of Srinagar mostly in the low lying areas, wetlands and flood absorption basins adjacent to Flood Spill Channel. Turbulence from 1989 forced a kind of plan holiday for a decade and ineffective regulatory mechanism of the urban local bodies and local authorities led to massive conversion of hitherto colonies and residential areas into commercial development.

The process of the acceleration of landuse conversions further picked up after the approval of Srinagar Master Plan-2021. Public Interest Litigations were filed in the Hon'ble High Court against the Master Plan violations and a number of properties were sealed by Srinagar Municipal Corporation (SMC). The Government promulgated the J&K Civic (Provisions) Act and a number of committees were constituted by the Government to look into the violations of Srinagar, Jammu and Katra cities for framing policies for the regularization or otherwise of these violations which came into being in 2017.

1.2 Srinagar – the Urbanization Pattern and the Prospectus of Growth

The population of Srinagar urban area in 1981-2011 had shown an annual average growth of 2.45% against 2.38% AEGR for the period 2001-11 which is not only amongst the lowest in the towns but less than the regional average of 3%. The AEGR of the city region –SMR—is about

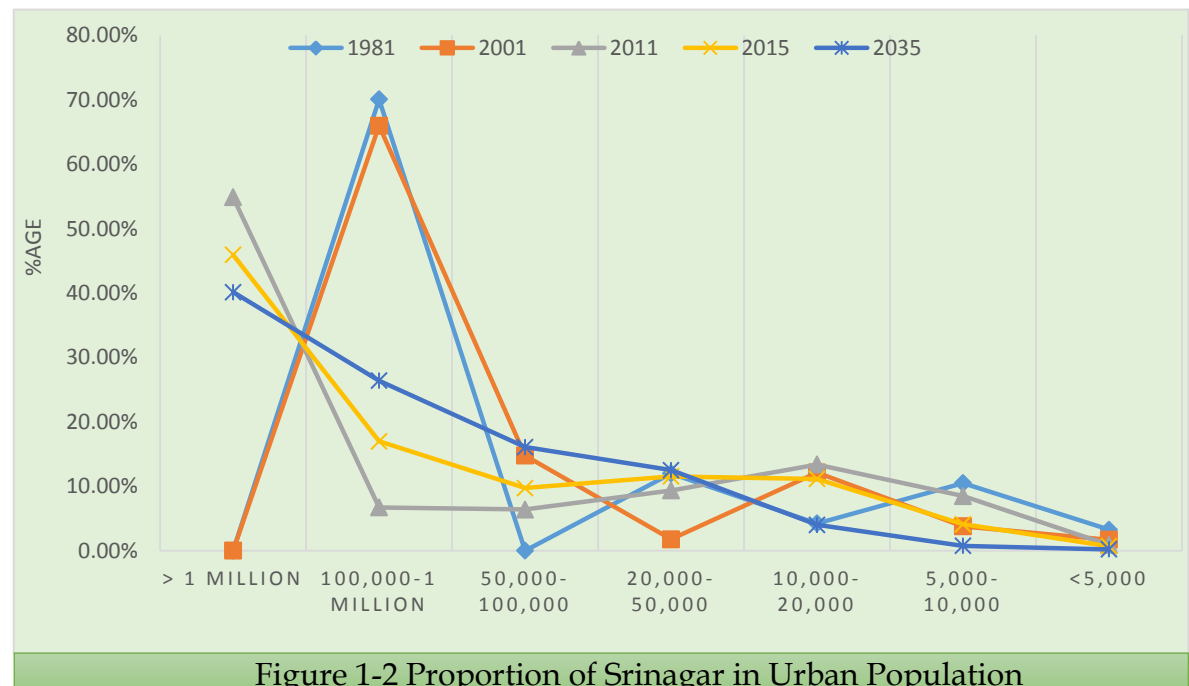


Figure 1-2 Proportion of Srinagar in Urban Population

1.75% which is even lesser than Srinagar city. Even the far-flung *Kupwara* town has the growth rate [AEGR] of 4% – far higher than Srinagar Metropolitan Region [766 sq.km.]. The detailed analysis of the available data indicates that Srinagar Metropolitan Region has been experiencing modest growth rates even in comparison to mid-sized towns as well as the overall [urban] population growth of the state.

The sluggish growth rate of Srinagar city is an obvious indicator of its declining economic growth and its creeping into ‘metropolitan stagnation and regional suburbanisation’.

As per Census of India, population of Class I towns from 1981 to 2001 varied between 65-70% of the total urban population of Kashmir region. While the proportion of Srinagar metropolitan city to total urban population is expected to perversely decrease from 58% to 43% from 2011 to 2035, the proportion of Class I towns is viewed to contrarily increase from 7% to 28%. The number of cities is projected to increase from one in 2011 to three in 2015, and seven in 2035. In the same period, the number of mid-sized towns [50,000 to 100,000 population range] is expected to increase from two to thirteen with their population share from 6% in 2011 to 16% in 2035. This trend is a healthy indicator of the fact that urbanization is correcting its skew and turning out to be regionally more balanced.

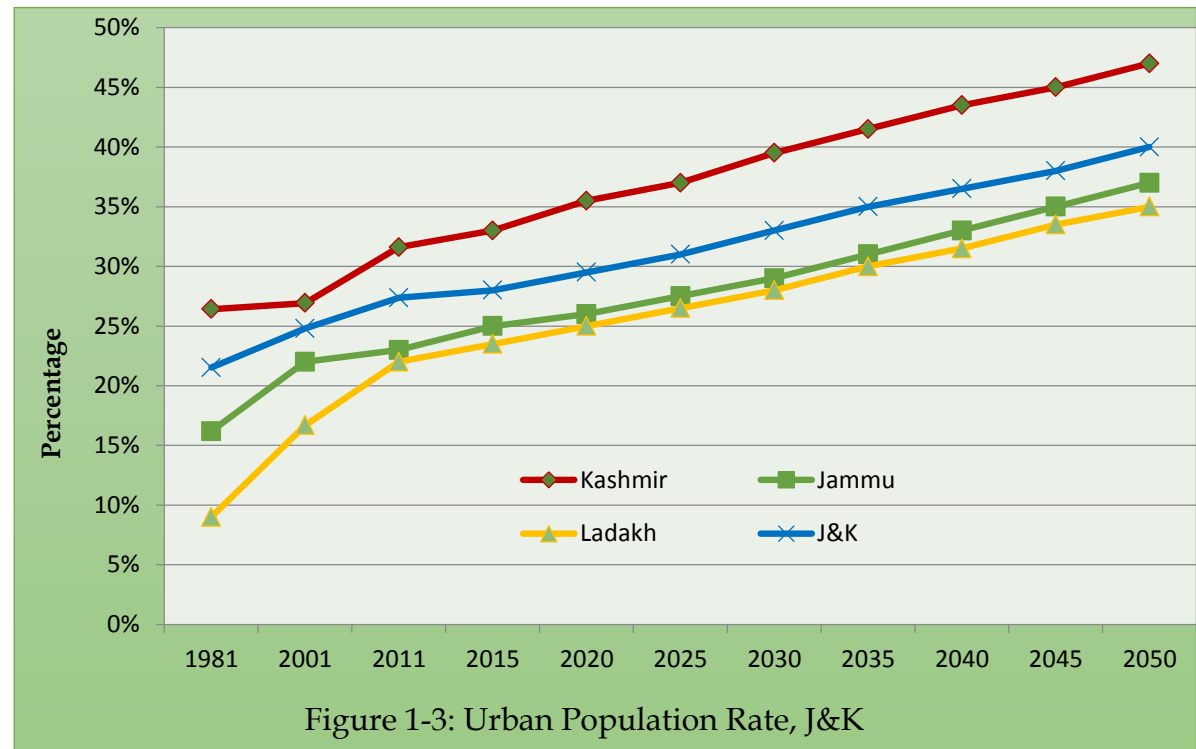


Figure 1-3: Urban Population Rate, J&K

1.3 Skewed Urbanization or Macrocephaly

As per Census 2011, out of total population of the State, about 27% (3.4 million) people live in urban areas with its urbanisation having increased at 36.42% higher than the national average of 31.1% and much above the rural areas which grew at 19.42% decadal growth rate in the State. **At present annual growth rate of 3.6%, urban population of the State is projected around 7.0 million by 2035.**

The Kashmir Region has 32% of its people living in urban areas followed by the Ladakh Region with 22% while Jammu Region has 23% of its population in urban areas. With regard to total urban population of the State in 2011, the Kashmir Region accounts for 63%, the Jammu Region 35% and the Ladakh Region just 2%. Out of the total urban population of 3.4 million, Kashmir Valley holds 2.2 million, and out of 2.2 million urban population in the Valley, Srinagar city accounts for 55% whereas Srinagar Metropolitan Region i.e.; the Master Plan Area of 766 sq. km shares more than 75% of the urban population of the Valley. *This is a case of skewed urbanization or macrocephaly* which needs a more balanced approach connecting regional dimensions to it. Planning Srinagar in isolation without having an insight into the regional factors which play a key role in shaping city's urban profile is a

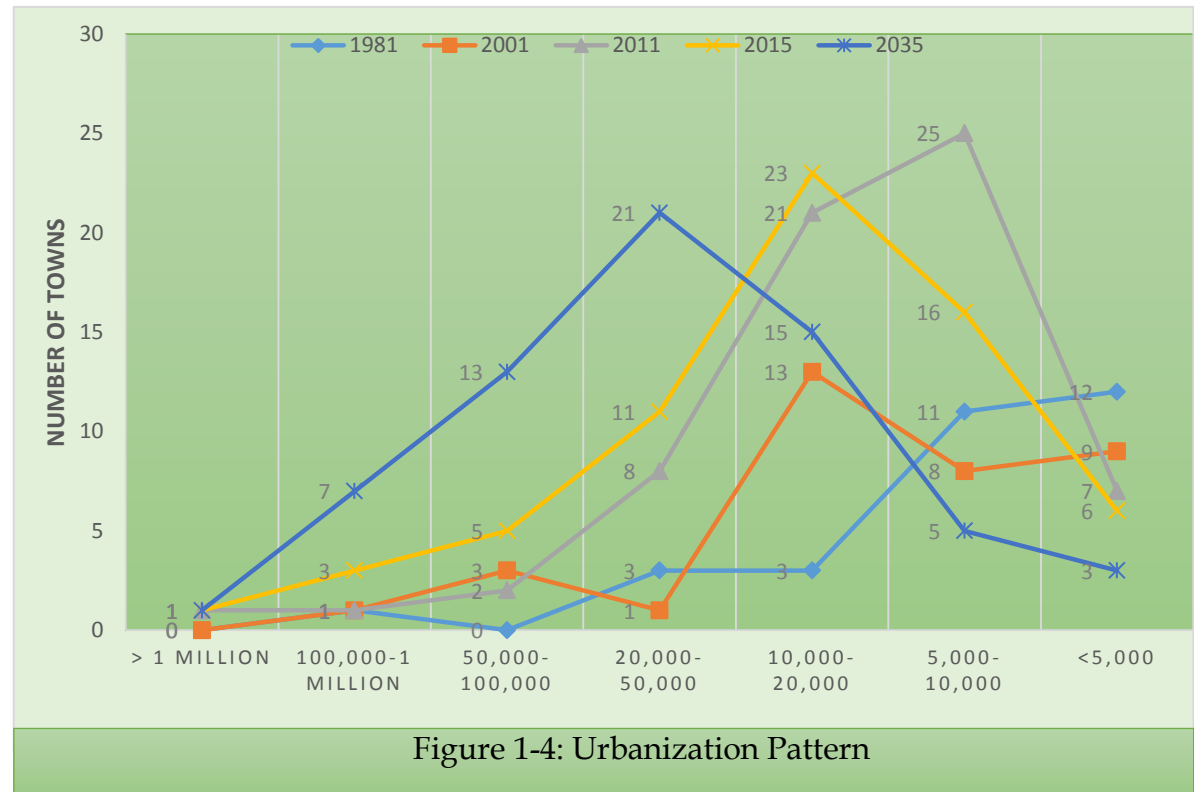


Figure 1-4: Urbanization Pattern

planning fallacy. In this connection, an attempt has been made to look at the regional pattern of settlement hierarchy in Kashmir Valley to sensitise the authorities about impending challenges and possible interventions in the urbanisation of the Valley.

1.4 Settlement Hierarchy - Projected Population

The Kashmir Valley as per the population estimates of 2015 has 65 towns which include 48 statutory towns as well; out of which 20 towns have population more than 20,000 (Census 2011). Srinagar is the only city with more than one million population with its defined 'city region' has a population of 1.9 million whereas the three urban areas of *Annantnag*, *Baramulla* and *Sopore* being class I towns have more than

one lakh population each. There are five towns in the range 50,000-99,999 in the Valley whereas 11 towns having population in the range 20,000-49,999 as per census 2011 figures.

The 2035 population estimates for the towns made in the master plan (where available) and for remaining towns worked out on the basis of existing AEGR indicate that the Valley will have an urban population of 5.5 million in comparison to the existing urban population of 2.95 million – an increase of 2.55 million in two decades. From these figures, the Srinagar Metropolitan Region [SMR] will have a population of about three million excluding the floating and tourist populations. Greater Anantnag will grow into a major city with around 500,000 population

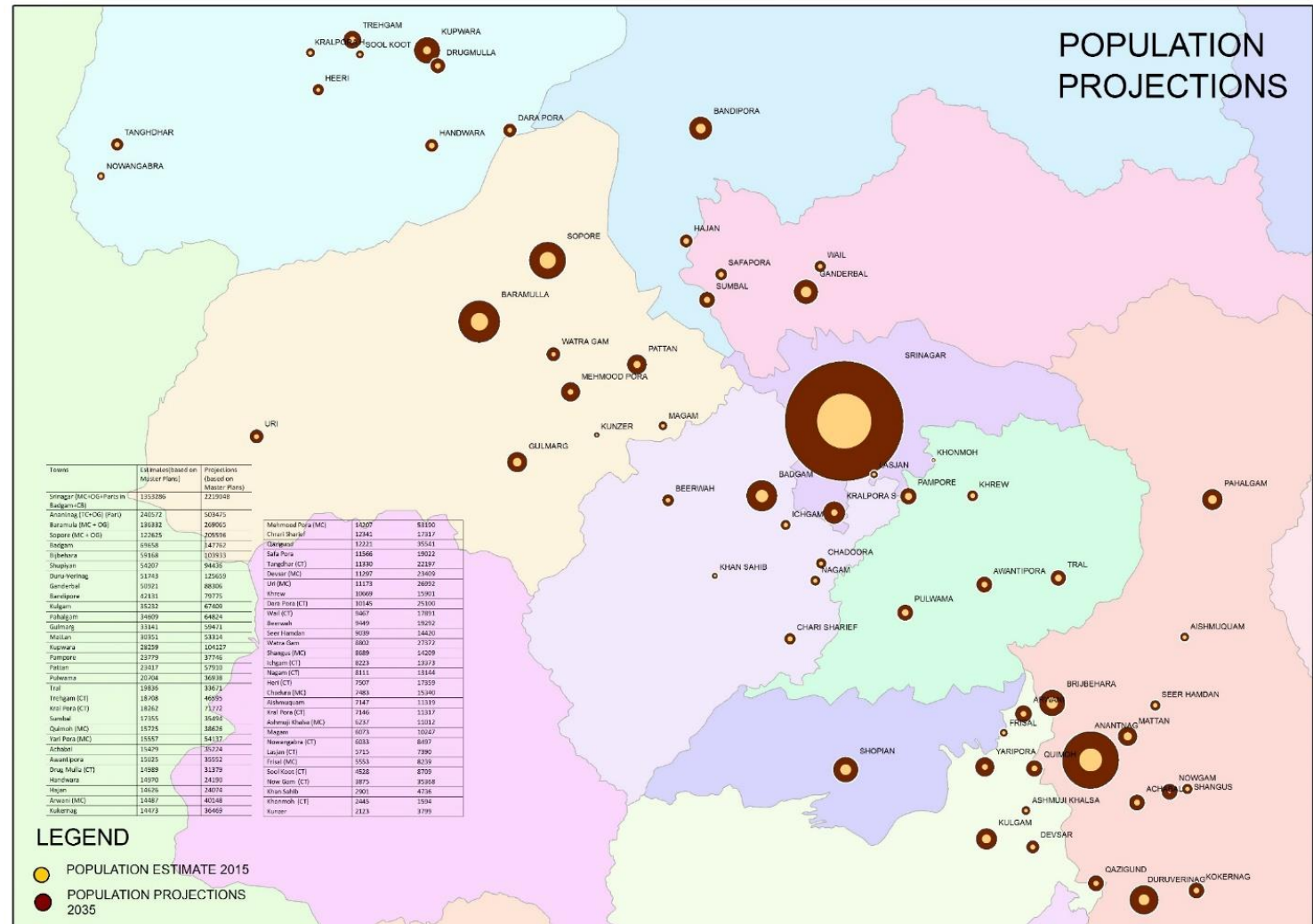


Figure 1-5: Settlement Hierarchy 2015-35

whereas Sopore and Baramulla each with more than 200,000 population will add to the City's list. About 32 towns will be mid- sized towns and 15 as small towns in 10,000-20,000 population range.

1.5 Framework for Regional Development

In order to arrive at a reasonable population projection of Srinagar city region for 2035, it is prerequisite to understand the BAU scenario of projections *vis-à-vis* the settlement hierarchy of the Valley floor. Well managed urbanization is a necessary condition for economic transformation and change. The juxtaposition of the 2015 urban population figures and the settlement hierarchy with 2035 is indicative of large scale urbanization in the Kashmir Valley with Srinagar retaining its primacy in the region. However, the scenario will drastically change in next two decades which will see unprecedented urbanization in the whole region including the Srinagar Metropolitan Region. The trend is towards a balanced urbanization with small and medium towns contributing significantly towards the growth of urban population.

The projections being based on the statutory and census towns as per Census 2011 are exclusive of class VI potential towns which will come up as a result of transformation of existing large village settlements.

As stated earlier, the projected urban population of different classes of towns is pointing towards the fact that Srinagar will continue to hold its primacy in the region, however the Class I and Class II towns are expected to contribute significantly during the next two decades. Srinagar has two major urban agglomerations to its north and south which include the *Anantnag, Bijbehara and Mattan and Baramulla -Sopore* Urban Agglomerations both having the potential to grow as countermagnets to Srinagar city. *Anantnag-Bijbehara-Mattan* (ABM) agglomeration is estimated to have 650,000 population where *Baramulla-Sopore* Urban Agglomeration is estimated to have 475,000 population 2035. This trend is healthy for the reasons as the existing skewed urbanisation is being balanced out by the growth of midsized towns. **This healthy trend needs to be supported and reinforced by a public policy which *inter-alia* shall include policy impetus to the development of dormitory and satellite townships in the suburbs of Srinagar city besides the development of regional counter-magnets in north and south directions as part of a Macro-Regional Plan of Jhelum Valley Floor.** This will not only help to counter regional migrations to Srinagar city which is riddled with many thresholds but will also go a long way in the balanced and sustained development of the region.

[The rationale for the planning and development of a smart and sustainable Srinagar has to be based on a trade-off taking into account the complexities of the Kashmir region as a whole, its fragile ecology, vulnerability to floods, the existing settlement pattern and affordable and sustainable transportation so that the economic development and future growth of the city is ensured within sustainable limits with a focus on natural and cultural heritage].



2. TRACKING THE PAST PLANNING EFFORTS

1 TRACKING PAST PLANNING EFFORTS

Cities cover just two percent of the earth's surface yet consume about 75% of the world's resources. Given that more of the world's population now live in cities than in rural areas. It is clear that cities are key to tackling climate change and reducing resource use. Urban administrators face huge challenges to make cities more sustainable. From traffic jams and inefficient buildings to social inequality and houselessness, the problems are complex and hard to tackle—but not insurmountable. Some cities are forging ahead with the use of innovative urban planning, technological and governance models, showing that with the right focus and resources, cities can become "smart" or more sustainable (*The Guardian, 2012*). And while positive perceptions of a city are linked tightly to its prosperity, negative perceptions can also point to economic declines, impacting the city's attractiveness to prospective residents, businesses and tourists. A well-conceived master plan can be stepping stone for economic development and improvements in the quality of living. This has to be supported by strong public institutions and enabling laws so that the document is actually translated into doable projects.

For Srinagar, the first ever comprehensive plan for ensuring its sustainable development was undertaken during the reign of *Maharaja Gulab Singh* in the aftermath of devastating floods of 1902. Mr. *W.G. Harris*, a British Engineer was hired by the State for comprehensive flood management and drawing plan. However, the city has been on the path of formal planning trajectory since late 1960s. The Srinagar Master Plan 1971-91 was the first comprehensive planning effort of the State Government, followed by the Master Plan 2000-2021 which is presently in vogue. The Master Plan-2035 will be third statutory planning exercise for Srinagar city in forty five years. However; the fundamental question remains as to how much has been achieved on ground *vis-à-vis* the master plan targets during the plan period of more than four decades. Certainly the progress has been very dismal on ground not because of poor quality plans but due to administrative inertia and lack of a strong political will. If we are to make our city economically vibrant and environmentally sustainable, then there is no alternative but to implement the master plan.

1.1 The Revision of the Master Plan – Issues and Questions

As midterm appraisal, the revision of Srinagar Master Plan-2021 is undertaken under the provisions of the Jammu and Kashmir Development Act, 1970 with the objective to understand how the actual growth of the city has taken place *vis-à-vis* the proposals of the previous master plan(s). Using GIS tools, analysis has been layered deliberating upon the comparative incremental growth of certain areas *vis-à-vis* other areas and the proposals of the master plan. The revision of the Master Plan should answer the following fundamental questions:

1. Has the actual growth of Srinagar followed the master plan proposals?

2. Why the city continues to be vulnerable despite two major planning efforts?
3. Why is the city facing serious drainage and wastewater treatment problems?
4. Why is the city facing severe congestion wasting millions of man-hours in traffic jams every year?
5. Why have rampant violations of master plan taken place despite the institutional existence of SMC and SDA?
6. Are rampant violations the result of the faulty planning or ineffective regulatory mechanism?
7. Is the archaic legal framework an impediment in the implementation of master plan?
8. Are there planning reasons for the economic underdevelopment of the city?
9. How can planning be used to give impetus to the underdeveloped parts of Srinagar?

The answer to these questions shall lead to the strategic planning and urban development vision for Srinagar and its region arresting the sluggish growth and making the city and its region inclusive and sustainable. The strategic vision shall ensure sustained economic development of the city, improve the quality of the life of its citizens, and address the disaster vulnerability of the city. **The floods of September, 2014 are a watershed in the economic and social development of the city as major business and residential areas were under deluge for a long time, hence the future of the city is connected to its resilience to face the disasters.**

The Master Plan Srinagar 1971-91 (*first Master Plan*) acknowledged the existence of flood absorption basins and water bodies in its east, west and south and the constraints of seismography in the southwest direction. The master plan covered an area of 236 sq. km. including 62 rural settlements with projected population of 8.66 lac. In view of the limitations of vertical development due to low bearing capacity of soil, the Master Plan earmarked the highlands of *Soura-Buchpora in north* and *Zainakot Karewa in west* for the expansion of city however restricting the growth of *Pampore-Wuyan Karewas* adjacent to Airport due to their economic value and aeronautical distance and seismicity. The Master Plan added 5.36 sq. miles in north up to *Buchpora Road*, 2.15 sq. miles on North West up to *Gagarzo Saidpora Spill Channel*. The expansion of the mother city was expected to accommodate 500,000 people. It also proposed the development of three satellite townships in *Buchpora-Pandach* area, *Pampore Karewa* on the southern side of *Pampore Town* and one industrial township at *Zainakote Karewa*—for a population of about 165,000. *The Master Plan termed the expansion further south across flood spill channel though faulty but indispensable.* It recommended the protection of the population between *Natipora-Nowgam Road* in the east and *Baghat-Budgam Road* in the west from floods because of the already settled population in the housing colonies of *Natipora, Rawalpora, Barzulla* Industrial area. The area was proposed to take 100,000 population. It also envisaged the area around *Brari Numabal, Arampora-Kursu Loop* area to be a massive and high rise development after the construction of grand trunk road cum sewer through *Nallamar*, development of Central Lake in the city and stabilization of soil.

In order to mitigate the problems arising out of development on the west in *Bemina-Barthana* area due to higher water tables, these areas till recently continued to be marshy and part of flood absorption basins. Therefore, the Master Plan-1991 recommended the creation of three number artificial lakes of 11, 22 and 12 acres each. Water of these lakes was proposed to be connected with the covered or open drains proposed to run parallel to right bank of Flood Supplementary channel up to *Parimpora* and it was provided either to be connected with the treatment plant or pumped into the *Parimpora Nallah* as may be economical. The areas got developed with huge population between the River Jhelum and the Flood Spill Channel but the measures suggested were not implemented, jeopardizing the safety of the citizens with persistent problems of drainage.

There was a plan holiday kind of scenario from 1991 - 2001 and the Master Plan-1991 was illogically extended up to 2001, although an effort for the preparation of second Master Plan was also made through National Institute of Urban Affairs in mid-1980s. The Master Plan 1971-91 was more succinct and elaborate in understanding the city of Srinagar in comparison to the Master Plan 2000-21, however both the Master Plans failed to give Srinagar a safe direction. The failure may also be attributed to archaic institutional structure of urban local bodies including SMC and the local authority (SDA), concerned departments etc entrusted with the implementation of the Master Plans.

The Master Plan explained that the city was growing along National Highways, district roads, major peripheral roads of Srinagar and hesitantly towards silted up flood absorption basins. The Master Plan identified the trend of development in lateral directions, constraints of expansion towards flood absorption basins, water bodies and mountains existing around, constrains of seismography in the southwest, limitation of vertical development due to poor bearing capacity of soil, deteriorating conditions of arboriculture all around, rising costs of land, growth of population, immigration and outmigration, imbalanced industrial growth, dwindling economic activity, inadequate roads, least possible involvement of agriculture and horticulture lands, cost of development, efficient transportation network, utilization of *malyari* land in the old city for social/community infrastructure. The general understanding of the issues and the diagnosis of the problem by the Master plan was not followed by a scientific treatment of these problems and issues like—

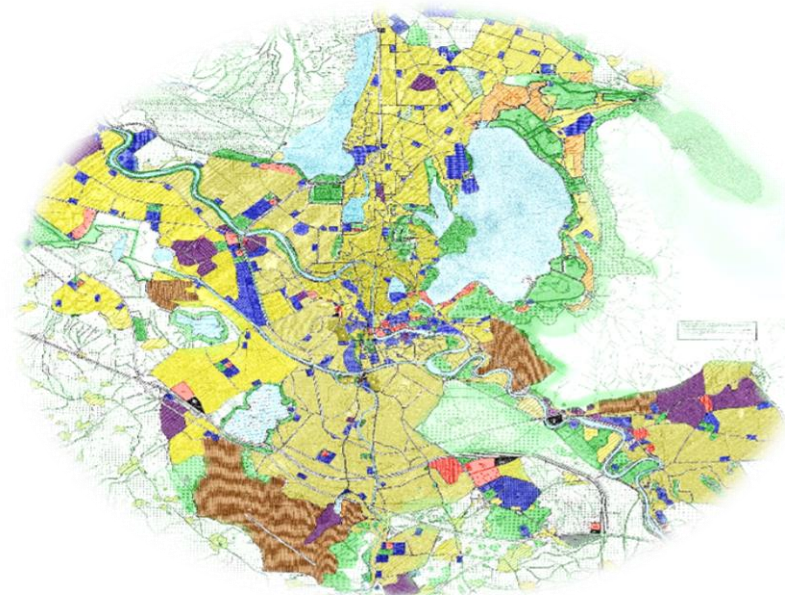


Figure 2.1 - Growth Direction Master Plan 1971-91

- Prescription of Building line for the roads in the core city where historically building line merges with the right of way, thereby most of the buildings having come up adjacent to the road becoming a violation;
- The Circular Road Project which preceded the first master plan was subsumed in the master plan with the proposals for widening of roads in the core city involving the acquisition of structures, adversely affecting the urban design and the built heritage of city. The Circular Road Project is not even 50% complete after the elapse of almost five decades;
- Zoning regulations provide for setbacks and ground coverage whereas the average plot size and dwelling unit make it impossible to construct the habitable dwelling unit also becoming an impediment in the preservation of the existing structures; and
- The byelaws which should never have been applied to the heritage core city as they provided for limited ground coverage, FAR and fixed building line were applied to the core city leading to its dilapidation. This was compounded by persistent neglect, two decades of turbulence, absence of heritage policy incentivising the conservation of heritage in the core city.

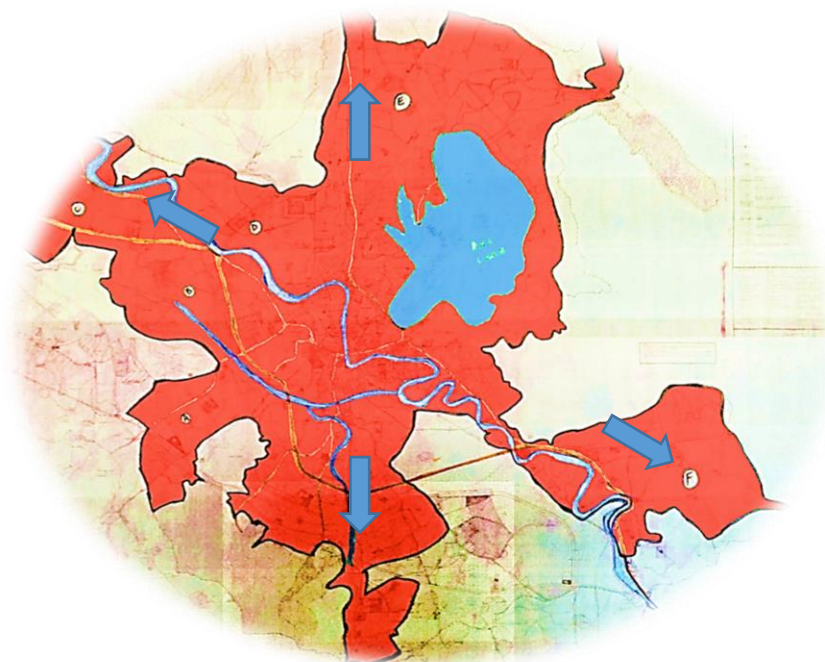


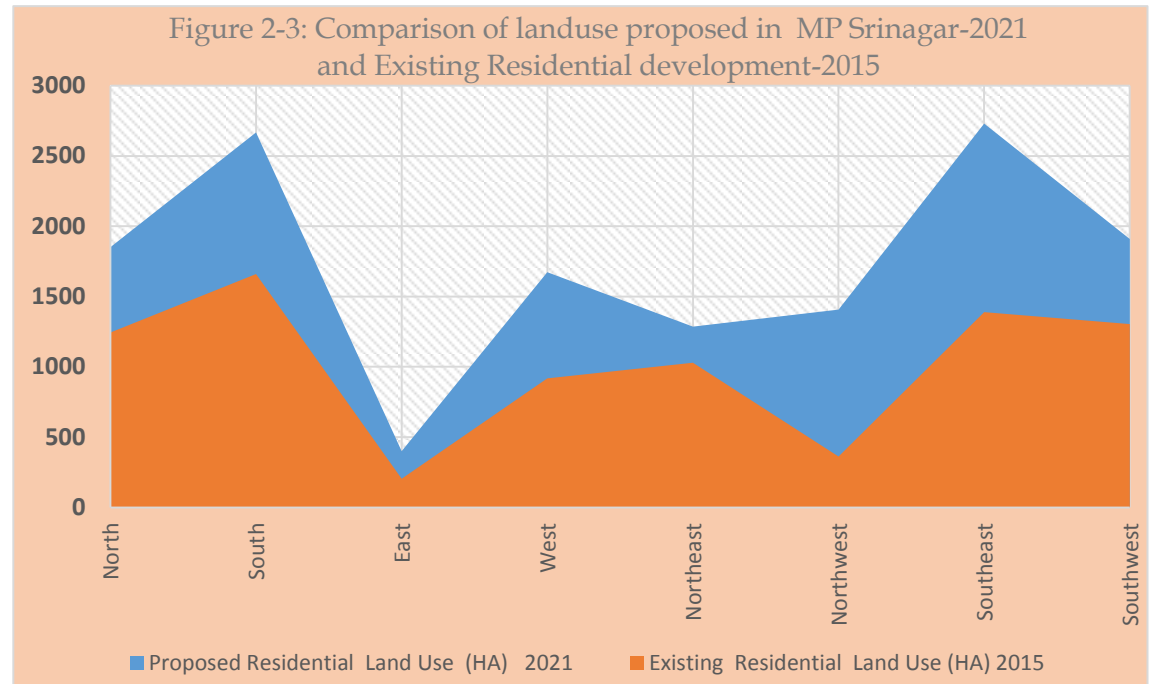
Figure 2.2 Proposed Growth (Master Plan 2000-21)

The Master Plan did not provide any solution to the sanitation problem of the city especially the historic Conservative Surgery including repairs on both banks of the River Jhelum. The Master Plan 1971-91 and the development norms prescribed by the master plan discouraged the conservation of the built heritage and the repair and reconstruction of dilapidated structures, might have been the reasons for slowly converting the city into a slum. The Master Plan directly borrowing from the western planning concepts prescribed the building line, setbacks, ground coverage for the core area which might have been appropriate for new areas with large plot size but created impediment in the conservation of the valuable heritage and discouraged the redevelopment of the blighted areas. This policy continued in the Master Plan 2000-21 adversely affecting redevelopment, conservation and rejuvenation of the different areas in the core city. The planning and the urban design of the core is fast disappearing and if timely interventions are not made the historic core may disappear altogether after a few decades. The historic urban pattern, nuances of planning, the colonial and vernacular style of construction are being replaced by glass and

aluminium façade affecting the ambience of the old city. Even the historic nuances of planning in the city have been drastically affected mainly by government interventions starting from the Circular Road Project and followed by the two Master Plans.

The Master Plan Srinagar 2000-21 was prepared by Srinagar Development Authority through its Consultant—Mr. Mohammad Sultan Pampori, Retired Chief Town Planner and the Architect of Master Plan 1971-91. The master plan covered an area of 416 Sq. Km adding 126 new villages in the local area and horizon population of 23.5 lacs. The major spatial development proposals of Master Plan-2021 covered the areas from —

- *Buchpora* to foothills of north and the area in the North from *Zakura* upto *Nagbal*.
- *Saidpora* to right bank of river *Jhelum* upto *Shallabugh Numbal* on the northeast
- *Mujgund* to *Narbal* on the west side
- *Soibugh* and *Ompora* on the southwest; *Wathura* and *Wagura* on the south
- *Gallandar* in the southeast and *Khrew* on the east side



One of the key advantages of the use of GIS Technologies has been the precise analysis of the landuse. The master plan revision involved both the analysis of the actual landuse as in December 2015 and also its comparison *vis-à-vis* the projections of the Master Plan-2021 interpolated for 2015. For example, in the Southeast, the areas in the *Khrew-Khunmoh* have not developed as envisaged in the Master Plan. Similarly there are areas in the South and southeast which were identified for development have not picked up to the extent these were proposed in the Master Plan.

The second step after the completion of the existing landuse plan in December 2015 was to delve deep into the proposals of the Master Plan and check them *vis-à-vis* the actual spatial development of Srinagar as it stood in 2015. Even the cursory look at the Master plan will indicate huge gaps between the proposed landuse plan and the actual spatial development in 2015. The major gap is between the residential, public and recreation uses. In order to make the figures comparable the proposed landuse-2021 has been proportionately reduced for the year 2015. Detailed analysis of the data indicates that a gap of about 27 Sq. Km. exists in the overall developed landuse and major part of the gap (20 Sq. Km.) is attributed by residential landuse only.

Further insight into the details indicates that some areas which were earmarked for huge residential development could not take off at all. The comparison of the landuse proposals of the Master Plan-2021 with the Existing Landuse Plan-2015 in different directions indicates that the areas in the Northwest of the city could not see much growth as was foreseen. Only 25% of the area proposed in the Master Plan has actually developed. The south-eastern areas of Srinagar and the areas in its east have also remained grossly under-developed. Most of the development has occurred in a cone shape on the North-South axis. Southern areas falling in the cone between *Natipora* Road and the New Airport Road have grown adequately to the extent of around 65%.

Going further deep into the history of Master Plans starting from the pioneering Master Plan 1971-91, the areas in the north-west, south-east and east have been persistently proposed to be developed since first master plan but have remained underdeveloped. The area has either not developed at all or are sparsely developed with negative implications of ribbon development. Although 45 years have passed from the inception of first master plan but the development has not taken off in these areas **either warranting course correction or rethinking of urban development strategy**. Apart from technically flawed landuse strategy adopted as discussed above, the previous master plan suffered on following grounds:

- Contradictory and highly generic building norms and development regulations;

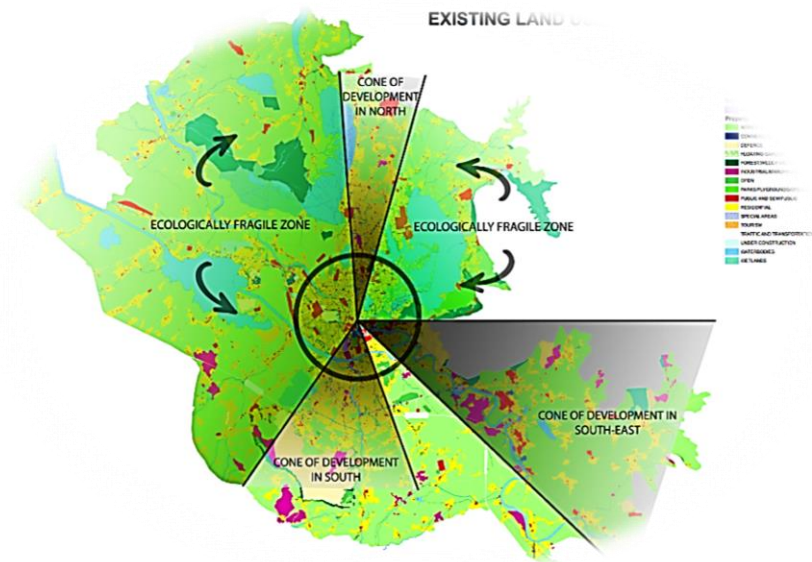


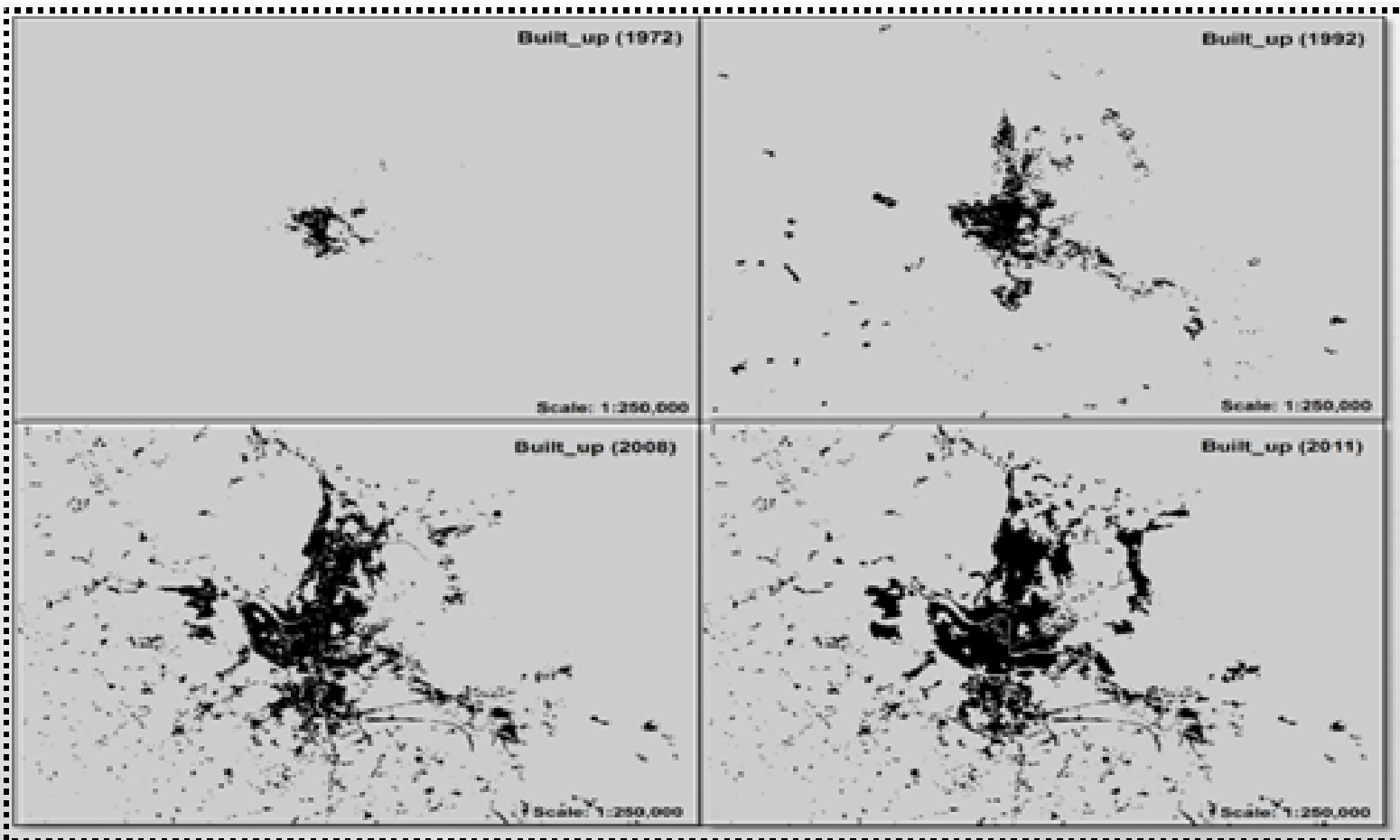
Figure 2.4: Existing Growth Patterns

- Irrational building lines proposed for core city roads and the existing *Pantha Chowk-Parimpora* bypass;
- Slack landuse policy that promoted unwanted development, etc;

1.2 Way Forward

Though master plan revision is a statutory obligation mandated by the J&K Development Act 1970 and its rules after every five years, the present master plan has undergone its revision after fifteen long years. The Master Plan-2021 having lived more than half of its life by 2015 had become almost irrelevant and non-responsive to ground realities of the city. Given these facts, its revision though delayed will provide an opportunity to address the city's developmental issues and provide a framework for its future growth strategy. The Master Plan-2035 will have focus on transforming Srinagar into a vibrant and liveable city. **The major highlights of the Master Plan are as follows:**

- Srinagar Metropolitan Planning limits have been increased from the existing **416 Sq. Km. to 766 Sq. Km.**, i.e.; **84%** increase from the existing Master Plan limits. The Local Area expansion stands approved by the State Cabinet vide SRO 429 dated 21.10.2014 (include the municipal areas of Srinagar Municipal Corporation and that of Budgam, Ganderbal, Pampore, Khrew ULBs and additional 160 villages as outgrowths in twelve tehsils of Six districts viz; *Srinagar, Budgam, Ganderbal, Pulwama, Bandipora nd Baramula*).
- Srinagar Metropolitan Region is expected to have a total population of 32.50 lac (including overhead population of 3.90 lac) by 2035 up from basic population of 21.90 in 2015 (including overhead population of 3.00 lac).
- Incentivised landuse policy through Green FAR, TDRS and Town Planning Schemes.
- Comprehensive land suitability analysis based on scientific and Mathematical models w.r.t. topographical features.
- Comprehensive identification and mapping of heritage buildings/precincts for revitalization and social inclusion of core city - Srinagar.
- Policies for promotion of local craft and tourism on sustainable norms.
- Focus on variable FSI/FAR, vertical development.
- Smart and Sustainable road network development supported by robust Public Transport and Non-Motorized Transport system.
- A unique zone based Development Code aiming at promoting development rather than constricting it based on development intensity and natural setting.
- Use of GIS technology.



3. DEFINING THE PLANNING PROCESS

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3 DEFINING THE PLANNING PROCESS OF MASTER PLAN

The JK Development Act [Chapter III(a) & (b)] defines Master plan as to—

- a) define the various zones into which the Local Area may be divided for the purposes of development and indicate the manner in which the land in each zone is proposed to be used (whether by the carrying out thereon of development or otherwise) and the stages by which any such development shall be carried out; and
- b) serve as a basic pattern of framework within which the zonal development plans of the various zones of the Local Area may be prepared

The Act also provides (Chapter II) that—

- 1) as soon as may be after the commencement of this act, the Govt. may, by notification in the Government Gazette, declare any area to be local area for purposes of this Act and constitute therefore an authority to be called the Development Authority; and
- 2) the Authority shall be a body corporate by the name of the Local Area having perpetual succession and a common seal with power to acquire, hold and dispose of property, both movable and immovable, and to contract and shall in the said name sue and be used.

3.1 Notification of Local Area—Srinagar Metropolitan Region [SMR]

With rapid pace of urbanisation, the city's size has been increasing in range and impact. Growth of Srinagar Urban Agglomeration (UA) has been very fast (13.26 lac in 2011) which can be adjudged from the trend of decadal growth change (2.66%) in urban population during the last decade. Many villages in adjoining tehsils of *Budgam*, *Ganderbal*, *Baramulla*, *Bandipore* and *Pulwama* have already been engulfed by the urban sprawl of Srinagar city. Keeping this in view, the Local Area limits of Greater Srinagar have been extended from 416 sq. km to 766 sq. km i.e.; 84% increase from the existing Master Plan limits. The area includes Srinagar Municipal Corporation, Cantonment Board and four municipalities of *Budgam*, *Ganderbal*, *Pampore*, *Khrew* towns- notified as the Local Area Limits of SDA¹— to be designated as “**Srinagar Metropolitan Region [SMR]**”. The Local Area of SDA notified vide SRO-43 dated 2nd February 1971, SRO 28 of 2003 and SRO 429 dated 21-10-2014 is shown as [Annexure-A] of this report. As per SRO 429 dated 21-10-2014, some 162 village settlements were added to the Local Area of SDA of fifteen tehsils and five Sub-Divisions in six districts². Spreading over an area of 766 sq. km., the SMR is inhabited by a

¹ Notification No: SRO 429 dated 21.10.2014.

² Srinagar, Budgam, Pulwama, Ganderbal, Bandipora and Baramulla

population of 17.27 lac persons as of 2011 (*Census of India 2011*) excluding the estimated overhead population of around 3.0 lac which includes the Defense forces, Service population and *Darbar Move* population.

Srinagar due to its limitations for growth with hills and strategic uses in South and Southeast, fragile wetlands in east, west and northwest has limited holding capacity, hence major thresholds to its growth. The city is surrounded by a number of towns including *Budgam, Ganderbal, Khrew, Pampore, Cantonment Board* and Census towns of *Khunmoh, Nowgam, Lasjan, Ichgam* and *Kralpora* which are part of its city region. The city region has six towns above 10,000 population with one town having population more than 30,000 as of 2015. During next two decades, it is estimated that eight towns will have population more than 10,000 population and five towns above 30,000 while one town will have population above 50,000 by 2035.

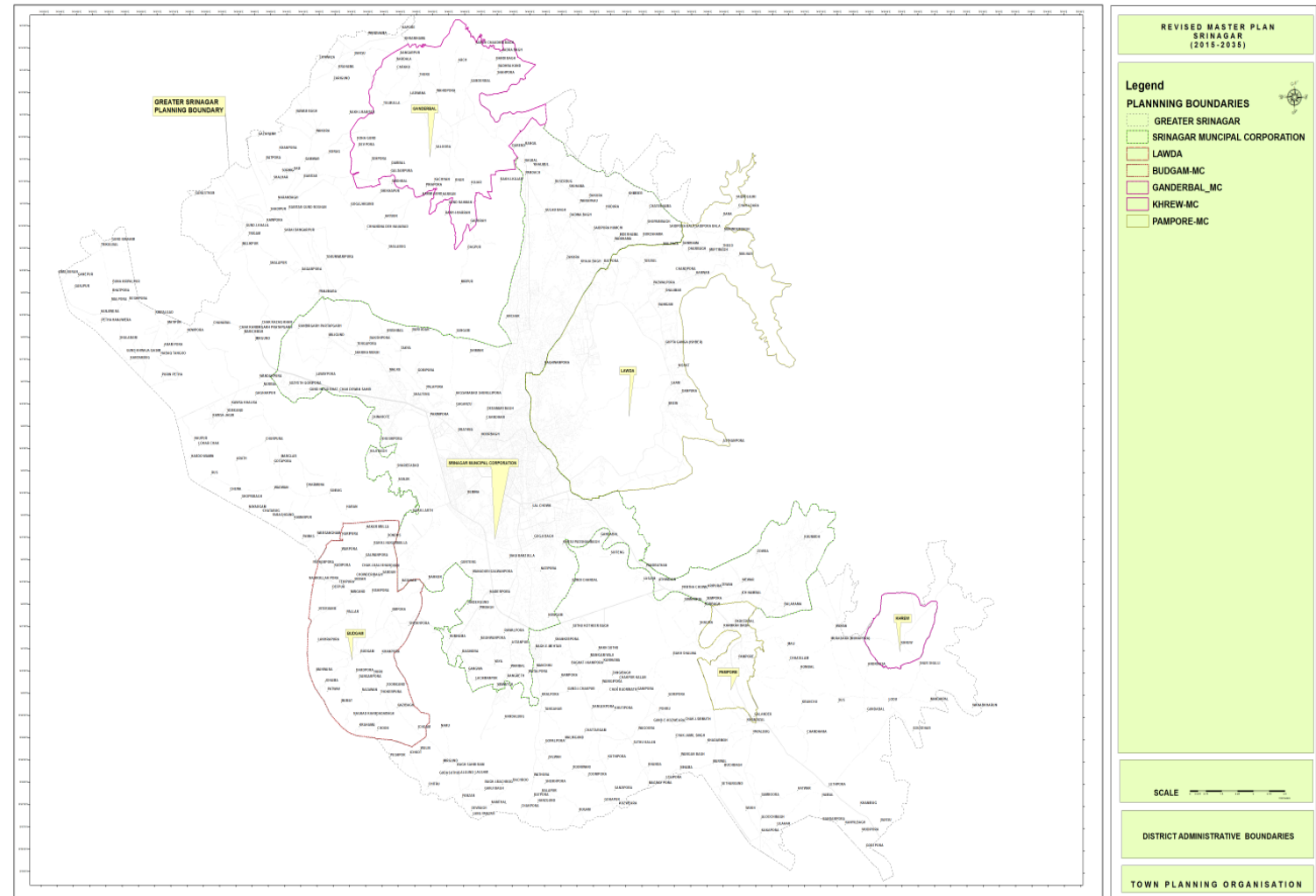
As per the Act, Srinagar Development Authority being the custodian of Master Plan is supposed to fulfil the following objectives as elucidated below –

--“to promote and secure the development of the local area for which it is constituted according to plan and for that purpose the Authority shall have the power to acquire, hold, manage and dispose of land and other property, to carry out building, engineering and other operations, to execute works in connection with supply of water and electricity, disposal of sewerage and other services and amenities and generally to do anything necessary or expedient for purposes of such development and for purposes incidental thereto”.

The **Chapter IV, Sub-section (1) of the J&K Development Act, 1970** authorises the Authority to make any modifications to the master plan or the zonal plan as it thinks fit being modifications which, in its opinion, do not effect important alterations in the character, of the plan and which do not relate to the extent of land uses or the standards of populations density. However, sub-section (2) of the Chapter IV provides that the Government may make any modifications to the master plan or the zonal plan whether such modifications are of the nature specified in sub section (I) or otherwise.

3.2 Data Collection and Analysis

The revision of the Master Plan-2021 went through various milestones ranging from data collection to stakeholder consultations, analysis and synthesis of data, drafting of proposals and their calibration on ground. The Department in collaboration with SDA constituted a number of survey teams who were entrusted with the responsibility of carrying out landuse and household surveys. An in-house GIS cell was established to



transform all data into GIS format. The Survey and Investigation Division, Town Planning Organisation Kashmir made a complete road inventory of about 550 km. Also Opinion Survey was held by this office to ascertain the will of people to shift from private mode to public mode. In addition, point persons were used to liaison with all departments for the collection of departmental inputs. A series of one-to-one

meetings with HoDs all line departments were held in the offices of Divisional commissioner Kashmir and Deputy Commissioner Srinagar. Relevant reports were also collected for their review and use in the master plan proposals. The department at its best kept a track of all important projects and ensured that these projects are incorporated within this master plan. The database collected from primary and secondary sources was tabulated and consolidated for standardisation and projections. Two important ingredients for the revision of master plan are city's Demography and its Workforce Participation rate which are discussed below.

3.3 Demography

The State of Jammu and Kashmir State had a population of about 12.54 million in 2011³ making it the 19th most populated state in India. Being the 10th largest state in the country in terms of area, the State has a density about 56 persons per sq. km. which is fairly below the national average of 382 per sq. km. The State recorded a decadal growth rate of about 23% from 2001-2011 exceeding the national growth rate of about 17%. Out of total population of Jammu and Kashmir, 27% (3,433,242) people live in urban areas. During last decade, urban population has increased by 36.42% higher than the national average. The macro-level spatio-demographic variations observed at the regional level as per Census 2011 reflect that the Kashmir Region with 16% of the State's total geographical area accounts for 43% of its total population load. Against the State's average urbanisation of 27%, the Kashmir Region has 32% of its people living in urban areas. As per the census 2011, the Kashmir Region accounts for 63% of the total urban population of the State. Among [22] districts, Srinagar is the highest urban district with 99% of its people living in urban areas. With rapid pace of urbanisation, the city's influence has been increasing in range and impact. Growth of Srinagar Urban Agglomeration (13.26 lac) has been very fast which can be adjudged from the trend of decadal change (2.66%) in urban population during last decade. Many villages adjoining tehsils of *Budgam*, *Ganderbal* and *Pulwama* have already been engulfed by the urban sprawl of Srinagar city. Keeping this in view, the Metropolitan limits of Greater Srinagar notified as the Local Area Limits of SDA have been extended from 416 sq. km. to 766 sq. km to include the municipal areas of Srinagar Municipal Corporation and that of *Budgam*, *Ganderbal*, *Pampore*, *Khrew* ULBs and additional 160 villages as outgrowths in twelve tehsils of six districts. Spreading over an area of 766 sq. km., the proposed Srinagar Metropolitan Region is inhabited by a population of 17.27 lac persons (*Census of India 2011*) excluding the overhead population of around 3.0 lac which includes the Defense forces, Service population and Darbar Move population as per following:

- | | | | |
|-----|------------------------|---|---|
| i. | Darbar Move Population | = | 40,000 |
| ii. | Defense Population | = | 2,00,000 (worked out @ 100 PPH density for 2200 ha presently under defense use) |

³ Census of India 2011

iii. Service Population (@3%) = 50,000

As such, the sum total of population worked out for the planning area of 766 sq. km. for the base year [2015] is 20.0 lac (approx.). The density of population for the area is calculated at 2600 per Sq. Km. (including overhead population) and 2300 per Sq. Km. net of overhead population. During last decade (2001-2011), population in the Local Area has increased from 14.51 [2001] lac to 17.27 in 2011 which was projected to 18.50 Lac in 2015 at the average annual growth rate of 1.8%. More than 77% [2,05,224] households are presently urban with average household size as 6.46. As per Census 2011, the planning region consists of 2,65, 023 households with 59,799 in rural areas. It has been found that the household formation rate [2.5%] for the region is higher than its population growth which will have direct implications on the housing demand in the area. Sex Ratio is an important demographic indicator of social and economic development of female population in any region or country. As per the Census 2011 figures, the urban Sex Ratio for the Srinagar Metropolitan Region is 892 against the rural sex ration of 934. Literacy Rate is another equally important demographic attribute. The literacy level for the area as per Census 2011 is 70% for urban areas and 56% for rural areas. The average literacy rate [60%] for the local Area needs to be improved by promoting universalisation of primary and secondary education as a potential ingredient for improving the local economic development.

3.4 Population Projection

After the synthesis of existing database available on the socio-economic parameters for local area, future projections of these parameters are among essential inputs for the allocation of land for different activities. Projections are an extrapolation of historical data (*population v/s time*) into the future. The accuracy of population projections is generally considered directly proportional to the size of the existing population and the historical rate of growth, and inversely proportional to the length of the time projection. It helps to develop the policy and strategies for the future development.

This section will cover the population and employment estimations of the Local Area for the future. The projections of all relevant inputs including population have therefore, been made for the horizon years 2015, 2020, 2025, 2030 and 2035. In view of rapid transportation, flux in economic activity and extraneous inputs, the population projections have been based on following major assumptions:

- a) *population growth of the Srinagar Metropolitan Region will remain more or less constant as per the existing growth rate [1.8%] up to 2020;*
- b) *from 2020-2030, population is assumed to grow @ 2.0% for both urban and suburban areas;*
- c) *finally from 2030 onwards for the remaining plan period up to 2035, the growth rate for the local area is assumed to register a minimal decrease to 1.80.*

As per data, the population of the Srinagar Metropolitan Region [SMR] in 2011 was 17.28 lac as against 14.51 lac in 2001 registering increase of 2.76 lac population at the annual growth rate of 1.76%. Excluding overhead population like *Defense, Darbar Move* and *Service Population* etc of 3.0 lac, the total *base year population* for the region is estimated at **18.90 lac in 2015**. **Based on adopted growth rates, the [Basic Population] of Srinagar Metropolitan Region is projected from 18.90 lac in 2015 to around 28.50 lac by 2035**. Based on these parameters, the overhead population is projected as follows:

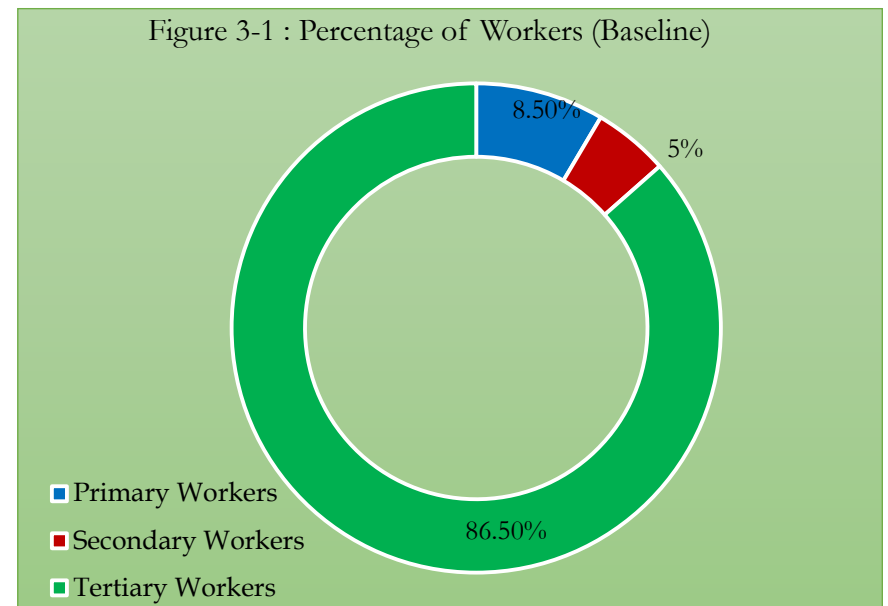
- i. *Darbar Move Population* [@2%] = 55,000
- ii. *Defence Population* = 2,00,000 (*constant at increased density*)
- iii. *Service population*[@5] = 1,40,000

The differential growth rates for the Srinagar Metropolitan Region have been assumed keeping urbanisation and economic development of the region in view. The growth rates assumed are based on conservative estimates and consistent with other cities of similar category. These figures are also based on the premise that the proposals in the Master Plan will give some impetus to the growth of the region. **To sum up, the Srinagar Metropolitan Region is expected to have a total population of 32.50 lac in 2035 up from 20.25 lac in 2011 including projected overhead population of about 4.0 lac.**

3.5 Workforce Participation Rates for Srinagar Metropolitan Region

A study of Srinagar city's economy indicates major trends in its development which have relevance in the process of urban planning. Analysis of the city's scope of development in primary, secondary and tertiary sectors is imperative to provide a guideline for its overall development and creation of potential centres of development. In the absence of a detailed study of the economic base of the region, an analysis of Workforce Participation Rate and Occupational characteristics will give some idea about the relative working importance of different sectors of economy and its functional orientation; thereby throwing some light on the directions of future growth of the city at large. Workforce participation rate of the [main] workers shows 3% decrease during last three decades from 1981 to 2011. The WFPR has reduced from 29.30% in 1981 to 26.70% 2011. During the same period the WFPR of all workers including marginal workers increased from 30.7% to 32.8%. This is reflection of the main workers getting converted into marginal workers--*an indicator of under-development and seasonal unemployment*. In the same period, the WFPR in case of towns on the periphery of the city and part of city region showed significant growth from 25.50% in 1981 to 32% in 2011 whereas WFPR including marginal workers showed significant increase from 33% to 43%. The comprehensive data over a period of three decades reveals that the towns on the periphery of the city have higher WFPR and WFPR main workers than the mother city warranting drastic measures for putting the city on economic development trajectory.

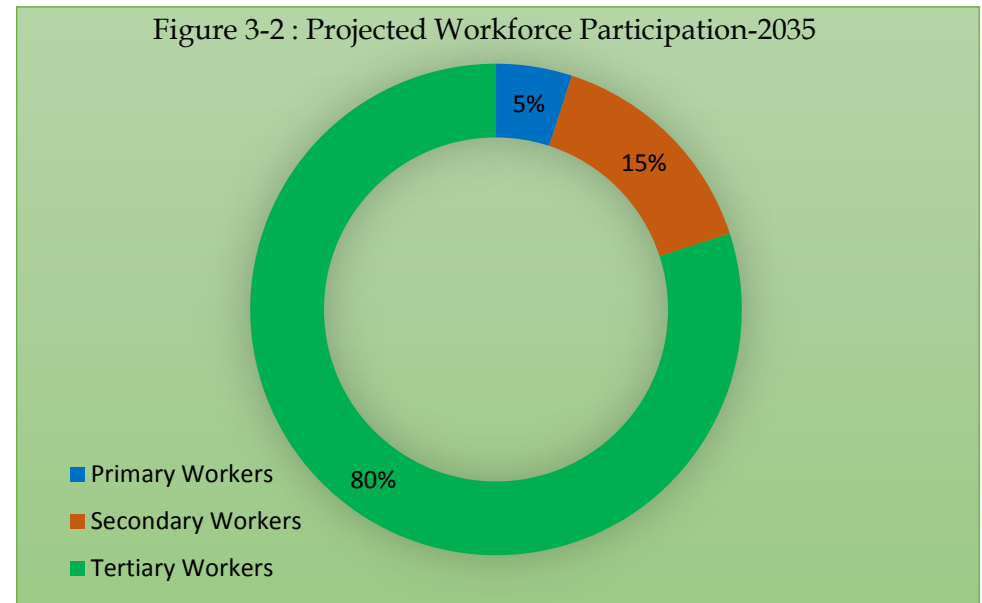
The capacity of a city to provide variety of jobs and to absorb its working population in various sectors of economy is an indicator of economic viability. For Srinagar city, the share of gainfully occupied persons—Work Force Participation Rate (WFPR)— against the dependent and non-working population as per the census 2011 is 26%. During last decade, the workforce in Srinagar city has remained almost constant showing a very minimal decadal increase of 0.77% against the 18% population growth for the corresponding period. WFPR observed for towns incorporated within the Local Area is 31% much higher than the mother city. Cantonment Board [47%] and *Khrew* [30%] are having the highest workforce participation rate among four towns and Cantonment Board (CB). Among Census towns incorporated in the Local Area, *Ichgam* has the highest WFPR (40%) followed by *Kralpora* with 37%. The average WFPR for the entire Local Area is 25% with urban areas having 27% and 18% for rural areas. The overall workforce rate for rural areas including the marginal workers is 32% which may be attributed to their seasonal occupation in agriculture practices. Such workforce participation is fairly low when compared with other productive cities in India. It is alarming to note that about 68% of the population in the Local Area is constituted by non-workers (*Census of India 2011*) which depicts very high rate of unemployment in the region. By conservative estimates, the WFPR for a metro city like Srinagar should not have been less 40 - 45% of the total population. The WFPR of the Metropolitan Region as shown above is not healthy and indicates significant decline for rural areas.



Workforce of an area is composed of all persons who are gainfully employed or engaged in productive activity across three economic sectors. Primary Sector consisting of Agricultural Labourers and Cultivators only accounts for 8.5% of the total main workers (Census 2011). During last decade, the primary workers have decreased in percentage indicating increasing influence of urban forces in the area. The corresponding share of workforce resulting because of decrease has been either left jobless or engaged in tertiary sector which predominantly constituted by the services sector. There is no denying the fact that services sector is growing as a dominant contributor to GDP in developing countries, but diversification of economy and multiplier effects are found more in secondary sector. Secondary sector also indicates insignificant share of workers with around 5% workers engaged in the sector in 2011. Unfortunately there has been no significant increase in the secondary sector workers during last two decades reflecting poor economic base of the city. Tertiary sector on the

other hand constitutes a major share of about 86.5% of the total workers at the Local Area level. This trend of exorbitant increase in the tertiary sector is indicative of the fact that the workers are engaged mainly in the services sector like government/private jobs, businesses and informal sector jobs etc.

The study of economic base is important for understanding and evaluating the effect of economic development on physical environment. For the study of the economy of SMR, a general description of economic structure of the region at present and how it has developed in the past will give inputs for the possible future economic structure. This is being used in the absence of a long term policy document for the economic development. Major trends have to be analysed to appreciate their relevance to physical planning. Understanding of the trend in the development of different sectors of economy during the last two decades or so is prerequisite for the forecast of reliable occupational structure. From the figures, it is evident that the change in economic structure observed during last decade is not a healthy characteristic for the city. If the growing share of tertiary sector is not arrested and the secondary sector with insignificant share is not given impetus, the city will cease to be vibrant economically. Consistent with this policy of growth, the tertiary sector will have to register percentage reduction in the share of workforce participation. Physical planning and urban growth directly affect the area under non-urban activities like cultivation which in turn results in reduced potential to hold employment in agriculture sector. Therefore, to ensure high productivity and employability of the region at large and create a balance between secondary and tertiary sectors, macro-level distribution of work force has to be reinforced as discussed in subsequent sections.



3.6 Workforce Projections

As discussed in the preceding section, the probable occupational structure for the horizon years is used as a policy measure to alleviate the economic problems of the region. The estimate of prospective workforce structure has been based on certain assumptions and the

explanation of underlying assumptions is necessary to ensure the realization of the objectives of the Master Plan in totality. Emphasis has been laid on the strategy to give impetus to the secondary sector so that there is shift from other sectors to secondary sector.

- a) *The overall Workforce (main workers only) for the horizon year is projected as 35% of the total population⁴.*
- b) *The basic assumption for projecting WFPR in the SMR is that the agricultural labourers and cultivators will decrease from 8.5% to 3% during plan period. However, by promoting poultry, dairy farming, sheep husbandry, fisheries and sericulture sectors, a significant number of primary jobs will be generated. Also by organising these sectors of rural economy around innovation and technology as well as by connecting rural economy with urban economy, rural employment will go up though specifics cannot be ascertained. For sketching the job profile, it is expected that these sectors should contribute additional 2% as direct jobs towards the Primary sector.*
- c) *In order to restructure the Sectoral Workforce, the tertiary sector is expected to decline from 86.5% to 82% in next twenty years.*
- d) *The secondary sector is proportionately increased from 5% to 15%.*

3.7 Job Profiling for Srinagar Metropolitan Region

1. Primary Sector

Activities associated with the primary sector include agriculture, mining, forestry, farming, grazing, hunting, fishing and quarrying. In 1981 there were 22% of the working population engaged in primary economic activities which reduced to 15% by 2001 and almost 8% in 2011. Primary sector constituting mainly Cultivators and Agriculture Labourers is assumed to further decrease in SMR from 8.5% to 5%⁵ during plan period. It is projected to engage around 50,000 workers with 30,000 main agricultural workers against existing 36,500 workers as of 2011 and 20,000 skilled allied agricultural workers by horizon year 2035. Estimated to be about 3% of the total main workers (9, 97,500) by 2035, the decline in agricultural labourers is attributed to land use conversions to non-farm activities, mechanization of farming and migration of people from rural to urban areas etc.

2. Secondary Sector

Secondary economic sector involves the activities of manufacturing or processing of raw materials into finished products. Secondary sector has shown many ups and downs since 1981. In 1981 there were 12% of the working population involved in secondary economic activities, which reduced drastically to 4.44% in 2011. However, by 2015 a slight increase has been witnessed in the growth of secondary sector

⁴ [Note: Population projections have been worked out for the 'Basic Population' and the 'Overhead Population' separately, so that the impact of overhead population is made minimal as extraneous entity].

⁵ (3% as Agricultural labourers and cultivators and 2% as skilled primary workers engaged in allied sectors)

workers. The Master Plan proposes to give a boost to Industrial economy so that the job creation is enhanced from present 5% as of 2011 to 15% by 2035, adding thereby 1.20 lac new industrial jobs in the local area. The industrial sector needs comprehensive transformation in coming years if employability of the region is to be increased. The Master Plan proposes a menu of suggestions for the development of industrial economy in the region. Industrialisation will provide a platform for the economic development of the region shifting from 'Gig Economy' to a robust and sustained economy. The city is already in the focus of industrial development and the Government has come up with a draft Industrial Policy, 2016 to facilitate "ease of doing business" in the state. As per estimates a sum total of about 1000 hectares of land will be required to create 100, 000 direct industrial jobs which will warrant development of Industrial estates SEZs/SIZs over next 20 years at an average industrial density of 125 PPH.⁶

3. Tertiary Sector

Tertiary economic sector involves activities associated with the distribution of the finished product to the market. Activities associated with this sector include services –Government and private, transport and communication, retail and wholesale sales, entertainment, restaurants, media, tourism, insurance, banking, healthcare, and law. The workers population in this category has increased from 66% to 87.78% of total worker population from 1981 to 2011. In 2015, 89% working population was engaged in this sector of economy. With the improvement in secondary sector and some agro based activities like sheep farming, fisheries, horticulture, poultry and dairy, working population of tertiary sector is expected to reduce insignificantly from 89% [2015] to 80% by 2035 as this sector will continue to play an important role in the local and regional economy. Employment in the tertiary sector is estimated to add as many as 2.90 lac new jobs during next two decades. These jobs will be created in sectors like Retail and Wholesale, Trade, Commerce, Warehousing Storage, Transport and Communications, Services and allied activities including the informal sector. Tertiary sector which is the predominant feature of all district headquarter towns will continue to play an important role in the economy of region but at the same time is expected to decrease proportionately in its share to secondary sector from 86.5% in 2011 to 80% by 2035 although in absolute terms the share of tertiary jobs will increase from 3.75 lac to 8.0 lac. The targets which have been set as policy measures are pre-requisite to arrest the deteriorating economic base of the city. Correction to the basic economic structure has become inevitable which has to be supplemented by robust infrastructure to rejig the city's economy during the plan period of twenty years.

⁶ Land requirement has been worked out which is exclusive of household and cottage workers



4. DEFINING FUTURE PLANNING STRATEGY

4 DEFINING FUTURE PLANNING STRATEGY

The earlier sections had a spotlight on city's historical perspective, past planning efforts, existing growth trajectory and the basic inputs to its future planning. It has been established that the review of the Master Plan-2021 is not only reasonably overdue but shall define new contours of city's future development on sustainable parameters. The future planning of Srinagar shall have focus on its historical values, natural environment, vulnerability and the quality of life in neighbourhoods. Giving these guiding principles, it is necessary to envision Srinagar city by 2035 and align its future development accordingly.

4.1 Vision-2035

As discussed in previous section, the Srinagar Metropolitan region [SMR] is expected to have a population of around 3.0 million by 2035 which will require 8000 hectares of additional land. Around two lac dwelling units will be added in the local area and more than one million jobs will be required. The Master Plan-2035 is viewed as an opportunity towards planning for change and sustained economic growth of the city. The master plan defines the future strategy in light of its vision for Srinagar as a city of opportunities. *Articulating a shared vision for the future of Srinagar city, the master plan envisages specific actions for reaching that future. For a long term sustainable vision of Srinagar – **smart & sustainable development, economically empowered growth, and better quality of life** – the city has to be treated as a sustainable ecosystem with the following guiding principles of its vision:*

Principle 1

Long term vision of Srinagar based on sustainability; intergenerational, social and economic equity and its individuality
(*Land Suitability*)

Principle 2

Long term economic and social security of Srinagar (*Economic and Social Development*)

Principle 3

Recognizing the intrinsic value of biodiversity and ecosystems ensuring provisions to protect and restore them (*Biodiversity Conservation*)

Principle 4

Recognize and build on distinctive characteristics of Srinagar including their human and cultural values, history and natural systems (*Heritage and Conservation*)

Principle 5

Empower people fostering participation (*Public Participation*)

Principle 6

Enable cooperative networks towards a common *sustainable future*

Principle 7

Enable continual improvement based on accountability, transparency and good governance (*Implementation*)

4.2 Major Considerations for Futuristic Planning- *The Determinants*

The spatial expansion of Srinagar as is evident from time series data of last century is a testimony to the fact that wetlands and flood absorption basins have become soft targets for urbanization. *The September, 2014 flood has become a watershed for the future 'planning and development' of the Valley.* Out of the total area of 766 sq. km, almost 34% of the planning area (262 sq. km.) was under floods in 2014. As per the details of the areas/villages falling under different categories of flood zonation provided by I&FCD, 125 sq. km fall under undevelopable areas whereas about 136.50 sq. km are vulnerable to floods. Besides, 11% area (88 sq. km) is located beyond 1670 threshold contour (>1670 elevation). This limits the availability of area essentially suitable for development. Integrating landuse planning with environmental factors has become inevitable for the sustainable development of Srinagar. Though Srinagar has central location in the settlement pattern of the Valley, the city has many odds to its expansion which warrant course correction at some point of time. Last four decades of "urbanization" has compromised these fragile environmental resources. Wetlands, lakes, flood absorption basins, hillocks, forest, wildlife and low-lying areas etc are integral components of its ecosystem which have to be central to city's planning. Due to rapid growth of population and unplanned urbanization, the quality of environment is fast degrading. Unfortunately, the water bodies and their connecting ecosystems have not been researched in detail. *Khushalsar* and *Anchar* wetlands are facing serious threats from unplanned urbanization along their shoreline. The Dal Lake is connected to Jhelum, its outfall channels go to *Brari Numbal*, *Gilsar* and *Khushalsar*. Water from *Khushalsar* goes through to *Anchar* which is also fed by the *Sindh Nallah*. The *Sindh Nallah* also feeds the *Rakhi Shalbug*, *Harran* forest and then joins the Jhelum River at *Sangam*.

The complex aquatic ecosystems and their relationships need to be studied in detail on '*part-to-whole intrinsic basis*'. Apart from huge environmental and ecological value, these water bodies/wetlands are potential sites for tourism and local economic development. Historically, lakes and wetlands were not only the reserves of biodiversity but also acted as flood sponges. *Wetlands especially in the south, southwest, west and northwest have been acting as flood retention basins protecting the city in times of floods. These flood plains including the wetlands have been urbanized in the aftermath of the Master Plan 1971-91, making city more vulnerable to natural disasters.* The floods of September 2014 exposed the vulnerabilities of the city and the inevitability of a cautious and structured planning process for its economic and physical sustenance. The structure of the planning process has to be comprehensive and hierarchical using the scientific data in the form of layers based on flood zonation, eco-fragility and seismic vulnerability. It is also clear that addressing environmental issues at city level will not be possible without appropriate urban planning systems. **Resilience to potential environmental disasters can be increased through proper urban landuse planning (UN-HABITAT, 2010).** The government will have to come up with unequivocal policy for the preservation of the ecosystems

of the city to increase its resilience to the disasters including the floods. The Master Plan-2035 used time series data to quantify the urbanization of the wetlands and emphasises their preservation by creating buffers as shock absorbers and physical boundaries for their delineation. *There is no sustainable solution to the unabated expansion of city into low lying areas and flood absorption basin except for doing a course correction at some point of time. The master plan provides that opportunity for the city and draws the broad contours of its future development.*

4.2.1 Land Suitability and Environmental Sustainability

Land Suitability and Environmental Sustainability are two key parameters of city's future planning strategy. The city of Srinagar is located in an area with many geographical disadvantages ranging from terrain to ecology. On the basis of scientific land suitability analysis, the areas have been classified into highly suitable, moderately suitable, suitable and unsuitable categories from urban development standpoint. Proposals are mainly based on the most suitable and moderately suitable lands and the lands which are not suitable have been reserved environmental sustainability. Land Suitability is a unique feature of the Master Plan involving creation of layered GIS data based on important parameters. Ideally the Master Plan should have been based on multiple GIS layers including flood and earthquake vulnerability, agricultural productivity, lithology, soil and public infrastructure, however in the absence of some of the layers viz; fault lines, lithology, soil etc, the following layers were used to evolve the Land Suitability map of LPA:

- *Flood vulnerability*
- *Water bodies, wetlands etc*
- *Elevation/Slope*
- *Forest/hills/wildlife*
- *Saffron fields*
- *Defense and Special Areas (graveyards and cremation grounds)*
- *Parks and Gardens*

The study reveals that very limited land is actually suitable for any development. Out of the total area of 766 sq. km., 160 sq. km. is already developed. About 28% area (157 sq. km) is ecologically fragile while 14% area (107 sq. km¹) has medium to high vulnerability to floods. In addition, 4% (31 sq. km) is a restricted area is under defense, parks and graveyards. In crude terms, about 57% of the total area cannot be used for any development. In a situation where [annually] around 15,000 housing units would need to be constructed for 75,000 additional

¹ Part of it is included in ecologically fragile area

population, an alternative development strategy based on sustainable parameters has to be worked out for accommodating an additional one million population in a period of 20 years. The underlying principle accordingly is to preserve the ecological footprint of the city and guide its future growth in areas which are relatively safer and disaster responsive. The city's planning has to be responsive to the vulnerabilities caused by natural disasters like flood, earthquake, landslide and land subsidence. In this connection, a separate section on "Disaster Mitigation and Management" has been incorporated in this master plan.

4.2.2 Regional Dimension - Planning the Jhelum Valley Floor

Plethora of constraints in the growth of Srinagar city minimises the availability of suitable land for its urban expansion. It further gets compounded by the extension of SDA limits in areas which are either vulnerable to floods or ecologically fragile. This limits the supply of land for spatial growth though with the possibility of infill in the North and South and some areas in the west and southwest after securing these areas by taking flood protection measures. For the absorption of additional 1.2 million people over next two decades ensuring balanced regional growth, the authorities should be duty bound to develop satellite and dormitory townships as well as promoting growth of countermagnets in north and south Kashmir under Regional or Sub-Regional Planning framework. **The entire Valley Floor needs to be treated as a single macro planning region with north, south and central Kashmir as major sub-regions for dovetailing its broad landuse policies in an integrated manner.** In the regional settlement hierarchy pattern as discussed earlier, the Kashmir Valley is witnessing growth of following three major urban nodes:

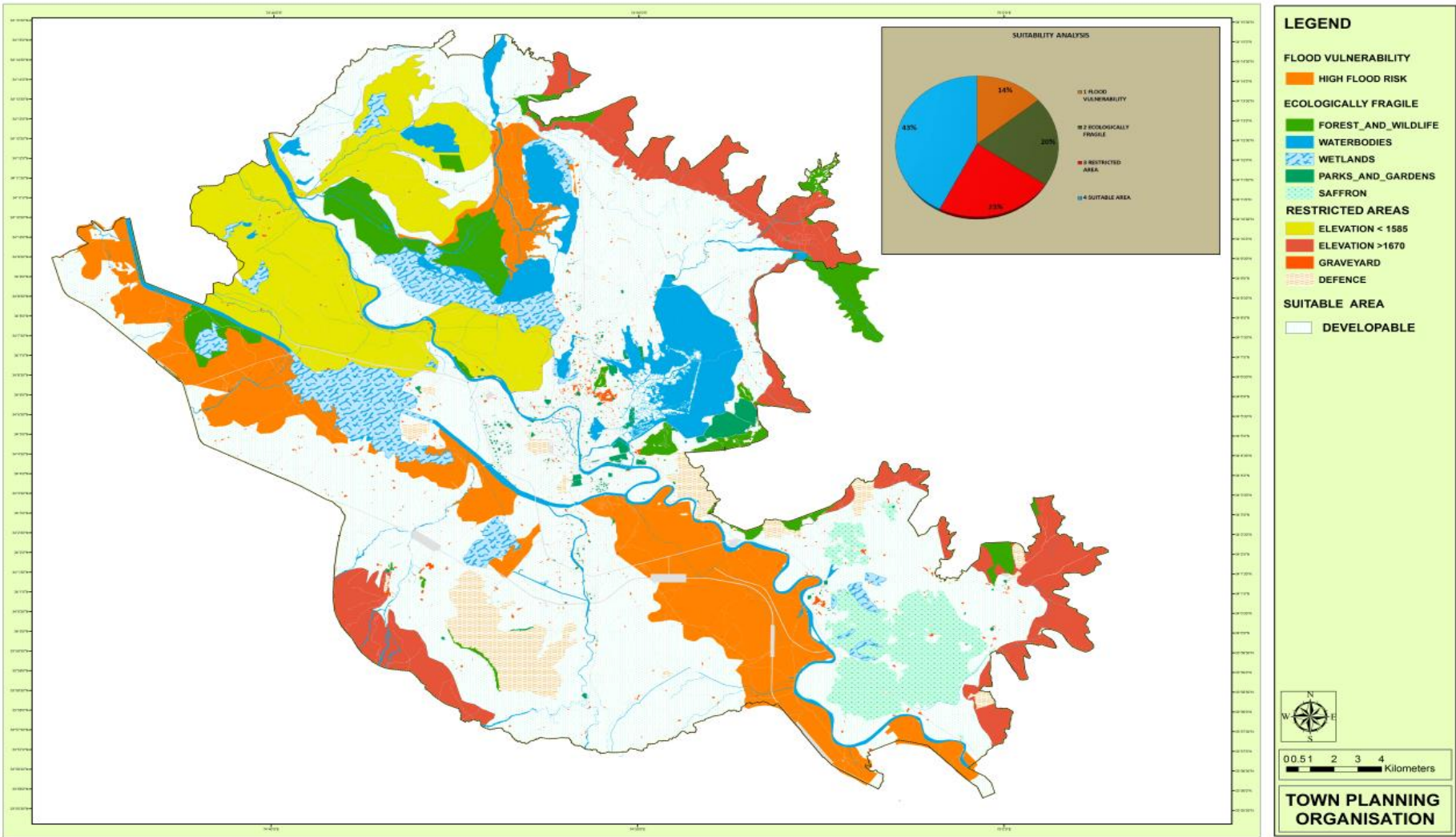
- i. *Srinagar Urban Agglomeration i.e.; Srinagar Metropolitan Region (12.75. lac in 2011)*
- ii. *Southern Urban Agglomeration i.e.; Anantnag-Bijbehara-Mattan (ABM) Urban Agglomeration (1.70 lac in 2011)*
- iii. *Northern Urban Agglomeration i.e.; Baramulla and Sopore (1.60 lac in 2011)*

As a regional planning strategy, the south and north countermagnets need to be developed at par with Srinagar Metropolitan Region besides focussing on the infrastructure development of small and mid-sized towns. In this connection, **it is strongly recommended to establish a Regional Metropolitan Development Authority for the North-South Growth Axis with its focus on key infrastructure projects to infuse developmental impetus in small and mid-sized towns.**

4.2.3 Accommodating Projections

The socio-economic forecasts are among the basic ingredients of city planning. The population assignment based on densities, area requirements for various uses and policies for local economic development have been decided after precise population and economic projections. In this master plan, zone-wise densities and other regulations have been proposed depending on the potentials of a zone. It is

believed that density is an important instrument of the master plan which has not been effectively used in the earlier master plans. The Master Plan envisages increase in the gross residential densities from the existing maximum level of 200 PPH to over 300 PPH with commensurate increase in the FAR/FSI for ensuring the preservation of prime agriculture lands and ecologically fragile areas. The average residential density has been proposed at 150 PPH increased from existing 130 PPH. For new areas, residential density has been proposed at 176 PPH to promote vertical development. The core city or the oldest part of the city has historically been planned as high density development which unfortunately was equated to slum like situation in the planned documents. The city like any other city with such a long history was not planned for car but was a pedestrian city with high density of development and mixed landuse. Plans were prepared to decongest the city and widen the pedestrian streets into motorable streets. The effort called the Circular Road Project predated the first master plan and was subsumed in the subsequent master plans. Hence, the historic city with extraordinary streetscape started converting into eclectic architecture destroying the invaluable heritage.



4.2.4 Market Forces and Past Planning Efforts

The causes for the failure of a master plan are generally embedded in understanding and appreciating the role of market forces. The market forces determine the nature and type of competitive landuses in space and time. The profound impact of such forces is generally correlated to economies of scale, agglomeration of economies and greater accessibility. As such, it was deemed necessary to adopt flexible and mixed landuse policies so that competitive uses are not defied by this master plan. Since Srinagar city has been on a planning trajectory of last more than four decades, it wouldn't advisable to take major departures from previous planning efforts. **Continuing the past planning efforts has become inevitable though some course correction is equally imperative.** In this connection, parameters like land suitability, food security, environmental conservation and safety of people have been used as key determinants of landuse polices envisaged in this master plan. It is believed that integrating urban planning with environment would be the first step in this direction which shall be followed by a long-term regional planning strategy as mentioned above.

4.3 Defining the Future Growth Trajectory

Based on these defining planning considerations, the growth trajectory adopted in the Master Plan for the City is based on **“a compact growth model with development scaled to suitability and leveraged as per the hierarchy of road network”**. **The underlying principle of landuse policy is ‘the preservation of ecological resources, protection of agriculturally productive areas and leveraging targeted productive urban lands’**. The three fold landuse strategy has been arrived at after a structured scientific approach using land suitability and land potential analysis which *inter alia* included the multiple layered analysis in Geographic Information System. The landuse policy is also based on the availability of developable land ensuring long term sustenance of the city and also deciding on densities based on zonal potentials ensuring a sustainable smart growth of the Srinagar city. The city having faced the worst disaster of century and still grappling with huge economic losses and the flux in the tourism activity, has to be revitalized and restructured – *the Master Plan providing that opportunity*.

Physical thresholds play a dominant role in shaping the structure of a city. The structured land suitability analysis was carried out by a method of successive elimination of critical areas like undevelopable slopes (>30%), ecologically fragile areas, wetlands, water bodies, forests, floating gardens, etc. Out of the total local area of 766 sq. km., about 57% area by and large is unsuitable for any kind of development which includes the areas under wetlands and water bodies, forests and wildlife, *rakhs* and farms etc. Apart from these areas, 23% of the area is restricted for any development which includes the areas earmarked for defense use, graveyards and cremation grounds etc. In the local area, 107 sq. km. are highly vulnerable or potentially undevelopable. This leaves only about 327 sq. km (43%) in the whole local area which is developable. On the basis of population projections discussed in the earlier chapters, total developed land requirement is

pegged at around 145 sq. km (*i.e.; about 90% increase on existing area*). The Master Plan therefore, envisages two-pronged development strategy of the infilling development and the development of satellite/dormitory townships in the city region of Srinagar.

Table 4-1: Outline of Proposed Landuse-2035 (Break up)

Sl. No.	LANDUSE	SUB-CLASSIFICATION	AREA (Ha)	%age
1	RESIDENTIAL	HIGH DENSITY	2514	3.3
		MEDIUM HIGH DENSITY	5154	6.7
		MEDIUM DENSITY	8192	10.7
		LOW DENSITY	4365	5.7
		SUB-TOTAL	20225	26.4
2	COMMERCIAL	COMMERCIAL	250	0.3
		DRYPORT / IFC	78	0.1
		CITY CENTRE	45	0.1
		DISRICT / SUB CENTRES	78	0.1
		SUB-TOTAL	450	0.6
3	INDUSTRIAL & MANUFACTURING	INDUSTRIAL ESTATES	532	0.7
		SERVICE AND LIGHT INDUSTRY	48	0.1
		SUB-TOTAL	596	0.8
4	PUBLIC & SEMI-PUBLIC	GOVT / SEMI-GOVT /	827	1.1
		EDUCATION AND RESEARCH	613	0.8
		MEDICAL AND HEALTH	303	0.4
		SOCIO-CULTURAL	13	0.0
		UTILITY AND SERVICES	231	0.3
		RELIGIOUS	203	0.3
		BURIAL AND CREAMTION GROUNDS	286	0.4

	SUB-TOTAL	2475	3.2
5	ROAD NETWORK	1724	2.3
	ROAD NETWORK	1335	1.7
	RAILWAY	314	0.4
	PARKING	42	0.1
	AIRPORT	1331	1.7
	TERMINALS	127	0.2
	SUB-TOTAL	4873	6.4
6	HOTELS/HUTS/GUEST HOUSES	241	0.3
	TOURIST VILLAGE-CUM-URBAN HUT	20	0.0
	SUB-TOTAL	260	0.3
7	PARKS AND GARDENS	1461	1.9
	PLAY-FIELDS / SPORTS STADIUM/PLAYGROUNDS	171	0.2
	GOLF COURSE	188	0.2
	SUB-TOTAL	1820	2.4
8	CONSERVATION RESERVE	4550	5.9
	BIODIVERSITY PARK	239	0.3
	RIVERFRONT AND BUFFERS	278	0.4
	CITY FOREST	2790	3.5
	SUB-TOTAL	7841	10.2
9	HERITAGE RESOURCES	40	0.1
	FLOATING GARDENS	108	0.1
	SAFFRON FIELDS	3855	5.0
	SUB-TOTAL	4004	5.2

10	ECOLOGY & ENVIRONMENT	LAKES, WATER BODIES AND NATURAL DRAINAGE	5934	7.8
		FOREST AND WILDLIFE	2793	3.6
		WETLANDS	3891	5.1
		SUB-TOTAL	12617	16.5
11	AGRICULTURE & ALLIED	PADDY LAND	15166	19.8
		ORCHARDS	873	1.1
		URBAN AGRICULTURE	3350	4.4
		PLANTATION	1626	2.1
		SUB-TOTAL	21015	27.4
12	DEFENCE	DEFENCE	472	0.6
		SUB-TOTAL	472	0.6
		TOTAL	766	100

Note:

- The outline presents an overall structure of landuse distribution. An area of 2500 ha residential area is likely to be covered under mixed landuse policy spelt out in the Development code which will further reduce the area under residential use to around 55% of the total developed area.
- Also area under Developed use will further increase with the development of Special Investment Corridor for which an area of 2850 ha has been earmarked in the landuse plan. The SIC may change overall landuse distribution by around 4%.

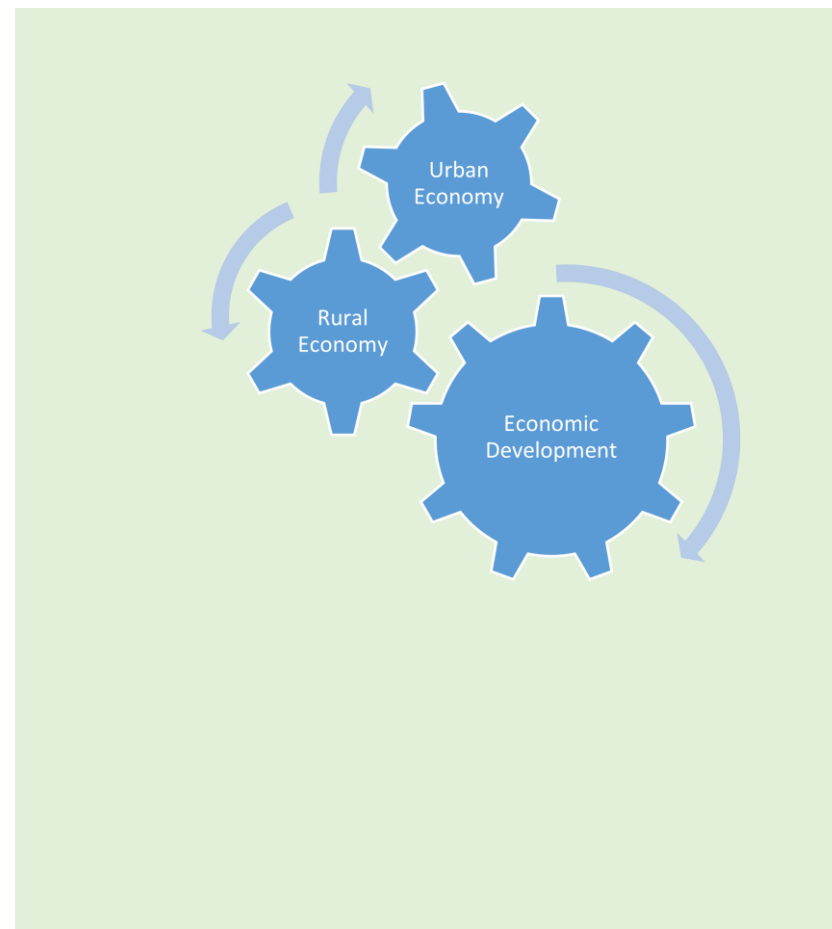


5. ECONOMICS OF URBAN DEVELOPMENT

5 ECONOMICS OF URBAN DEVELOPMENT

Healthy and dynamic cities are an integral part of sustained economic growth. As countries move through the development process, cities account for an ever-increasing share of national income. Urban areas generate 55% of Gross National Product (GNP) in low-income countries, 73% in middle-income countries, and 85% in high income countries. The manufacturing and services are usually concentrated in cities, where they benefit from agglomeration economies and ample markets for inputs, outputs and labour, and where ideas and knowledge are rapidly diffused. Governments can foster economic development, or they can slow it down. The agglomerative forces and locational inducements that shape cities – is a useful way of identifying what role governments should play.

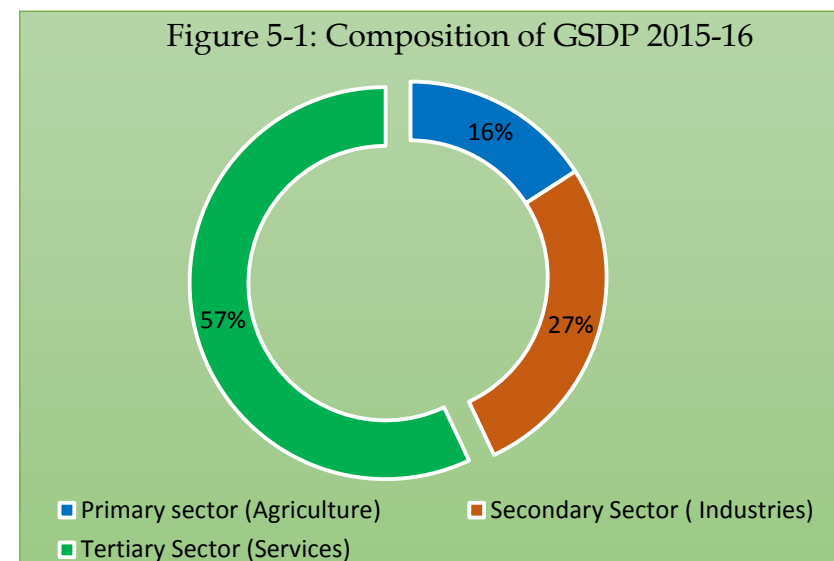
This section reviews the economic forces underlying urbanization and discusses what State Government can do – and should not do – if it intends to foster economic growth.



The pillars of any state rest on the building blocks of Economy, Environment, Education, Employment and Healthcare. Although each block is important for the stability and growth of a civilization but “Economy” is the corner stone on which the prosperity of a state rests. One primary indicator of measuring state income is the “Gross Domestic Product” (GDP). J&K contributes approximately 0.84% to national GDP and ranks 21st in the list of contributing states. Another important point to understand is the “base” on which the growth multiplication factor is applied which in case of National GDP is huge compared to small sized GSDP of J&K. Therefore, even a small percentage growth on a bigger base means proportionally bigger incremental growth to National aggregates in absolute terms compared to a small GSDP base of J&K. In addition to GSDP, one of the concerning indicators of our state economy is the fiscal deficit. J&K is among the states with highest fiscal deficit in the country which measures to 5% for FY 2015 ranking 3rd in the worst list of deficits after Manipur and Pondicherry and irony is that we rank 2nd in the list of highest grant receiving states from central government which amounts to 7.55 billion USD. This makes J&K the most indebted state with a debt-GSDP ratio of around 55% in 2015-16. Debt-to-GSDP ratio is an indicator of health of an economy. A lower debt-to-GSDP ratio means an economy is producing enough to pay back its debts. A higher debt-to-GSDP ratio is a highly unfavourable situation. Another socio-economic indicator of Jammu Kashmir is the per capita income which in case of J&K is Rs. 6057, 858 which is quite low as compared to the national average of 93,231 and we rank 16th in terms of per capita income among all the Indian states.

5.1 Sectoral composition of J&K’s GSDP

GSDP of J&K State is less than Himachal Pradesh by Rs. 4123 crore despite the fact that area and population of Himachal Pradesh is less than J&K almost by 45% (Economic Survey Report, 2016). J&K is a hilly state. Its net area (in Indian part) is 1,01,387 sq. km. Its population (2011 census) is 1.25 crore souls. The forest cover of J&K State is 20% of its total geographical area (comparable). The density is 124 people per sq. km. Its GSDP (at constant prices 2011-12) for 2015-16 is Rs. 91,806 Crore and the per capita income (NSDP 2015-16) is Rs. 57858 with a growth rate of 7.79% recorded over 2014-15. The composition of GSDP (2015-16) is as under:



The three components of J&K's GSDP are Agriculture & Allied sector, Industry & Manufacturing and Services. During the last few years of planning between 2004-05 and 2011-12, the share of agriculture in GDP has fallen by approximately one third from 28.00% to 16%, whereas the share of industry has remained almost constant and the share of services has improved from 43.71% to 57%. It is observed that services sector is emerging as an important growth driver and the manufacturing sector is relatively stagnant while agricultural productivity has decreased significantly. It is a point of concern that the combined contribution from primary and secondary sectors is becoming less than the lone contribution from service sector which is a very unhealthy condition for sustaining growth in the long run.

J&K needs to focus on its weakest contributor "Agriculture" which ironically supports more than 60% of employment and the effects can be easily seen in the disparity ratio between average incomes of agriculturists and non-agriculturists which has been increasing since long. This means that a major population (60% people) of J&K is becoming poorer. Also, keeping in consideration the scope of expansion in manufacturing sector and Service sector (primarily with tourism industry under its kitty) the major bottleneck that can hold us back is the Agriculture sector.

The agricultural sector has shown a lower performance due to a number of factors such as illiteracy, insufficient finance, insufficient irrigation facilities, power availability, inadequate marketing facilities and under-pricing of agricultural products. The average size of the farms is very small and approximately 90% of land holdings are of the size of 2-4 *Kanal*, which in turn results in low productivity. The sector has not adopted modern technology and agricultural practices to a larger extent. Also decline in plan allocations investment and investment credit are contributing factors.

What needs to be done?

There is an urgent need to keep a vigil on agrarian land which is getting misused by land mafia across the state. The urbanization pressures have directly impacted the size of land holdings and area under cultivation. In addition, focus has to be made towards agricultural awareness, efficient irrigation methods, power facilities, marketing, logistics and adequate MSP. Since most parts in J&K have a single crop in a year, there is a need to promote green housing and other all-weather methods of farming. There is also a need for opening Compressed Atmosphere Stores and Cold Chain Facilities for increasing the fresh fruit life keeping the contribution of horticulture into consideration. Other allied activity of agriculture which has a potential to add volumes to our economy is production of Sheep, Poultry, Fish and Dairy products which we mainly purchase from outside states like Delhi, Rajasthan, Punjab and Haryana. Apart from contributing to GSDP and providing employment to youth, this allied agriculture industry has a potential to make J&K self-sufficient in terms of food consumables and milk & dairy products.

Broad areas of focus for future should be Agricultural Research, Agricultural Extension, Training and Information Services, Marketing and Processing, Agricultural Credit, Diseases and Pests Control and above all setting of performance targets to concerned departments. Also, focus should be on sub-sectors like livestock, fisheries, and the Cooperatives. **The sooner we realize the backwardness of our primary sector the faster we increase our chances of emerging as an economically stable state.**

There are certain objectives for J&K Government that are echoed through Economic Survey, 2016 as stated below –

- First, J&K state has to revive growth, and that growth has to provide more decent jobs for the large number of labour force, even while reducing poverty.
- Second, J&K needs to shift from consumption state to production state. There is an urgent need for optimum utilization of savings especially government savings and household savings, while increasing corporate and infrastructure investment.
- Third, J&K needs macroeconomic stabilization – to bring own inflation, the fiscal deficit and the current account deficit.

5.2 City's Economy

A study of Srinagar city's economy indicates major trends in its development which have relevance in the process of urban planning. Analysis of the city's scope of development in primary, secondary and tertiary sectors carried out in preceding section is imperative for its holistic development and creation of potential centres of development. In the absence of a detailed study of the economic base of the region, an analysis of Workforce Participation Rate and Occupational characteristics provides some idea about the relative working importance of different sectors of economy and its possible functional orientation; thereby throwing some light on the directions of future economic growth of the city at large.

The capacity of a city to provide variety of jobs to absorb its working population in various sectors of economy is an indicator of its economic vitality. The Census figures [2011] reveal that the share of gainfully occupied persons—Work Force Participation Rate (WFPR) – for Srinagar city is 26%. During last decade, the workforce in Srinagar city has remained almost constant showing a very minimal decadal increase of 0.77% against the 18% population growth for the corresponding period. WFPR observed for towns incorporated within the Local Area is 31% much higher than the mother city. Cantonment Board [47%] and *Khrew* [30%] are having the highest workforce participation rate among four towns and Cantonment Board (CB). Among Census towns incorporated in the Local Area, *Ichgam* has the highest WFPR (40%) followed by *Kralpora* with 37%. The average WFPR for the entire Local Area is 25% with urban areas having 27% and 18% for rural areas. Such workforce participation is fairly low when compared with other productive cities in India. It is alarming to note that about 68% of the population in the Local Area is constituted by non-workers (*Census of India 2011*) which depicts very high rate of unemployment in

the region. By conservative estimates, the WFPR for a metro city like Srinagar should not have been less 40 - 45% of the total population. The WFPR of the Metropolitan Region as shown above is not healthy and indicates significant decline for rural areas. The overall workforce rate for rural areas including the marginal workers is 32% which may be attributed to their seasonal occupation in agriculture practices.

Workforce of an area is composed of all persons who are gainfully employed or engaged in productive activity across three economic sectors. Primary Sector consisting of Cultivators and Agricultural Labourers accounts for 8.5% of the total main workers (Census 2011). During last decade, the primary workers have decreased in percentage indicating increasing influence of urban forces in the area. The corresponding share of workforce resulting because of decrease has been either left jobless or engaged in tertiary sector which is predominantly constituted by the services sector. There is no denying the fact that services sector is growing as a dominant contributor to GDP in developing countries, but diversification of economy and multiplier effects are found more in secondary sector. Secondary sector also indicates insignificant share of workers with around 5% workers (Source: Census 2011). Unfortunately there has been no significant increase in the secondary sector workers during last two decades reflecting poor economic base of the city. Tertiary sector on the other hand constitutes a major share of about 86.5% of the total workers at the Local Area level. This trend of exorbitant increase in the tertiary sector is indicative of the fact that the workers are engaged mainly in the services sector like government/private jobs, businesses and informal sector jobs etc.

The careful interpretation of the occupational structure of Srinagar Metropolitan Region (SMR) is viewed as highly skewed with urban and rural economies in the region yet to take-off. *By careful estimates, the SMR will need around 5.50 lac additional direct jobs¹ over next twenty years maintaining the average family-job ratio at 2.0.* Under BAU scenario, the region will add another 2.75 lac jobs with about 50% jobs in retail business and informal sector. Under this scenario, the city will be riddled with poor tax base to finance its infrastructure and public services. In order to increase the employability of the area and per capita income above the national average, a structured policy based on a long-term vision is a prerequisite supported by strong institutions and enabling systems. This is not only to cope up with present joblessness but providing jobs to future population. Though difficult but this is quite doable for the government provided systems are sufficiently strengthened and institutions mobilised for this challenge in right direction. There is no question of not doing this otherwise city will not only lose its prominence but end up with fractured institutions, increased crime rates and social anarchy. In this regard, the Master Plan envisages a multi-pronged strategy and recommends following inevitable actions by the government in a time bound manner –

¹ Presently [2015] the SMR has 4.34 lacs direct jobs at just 26% workforce participation rate which shows unemployment by around 1.70 lac jobs for this area only.

- diversification of agriculture and allied sectors for increased production and productivity which will lead to retention and increase in green collar jobs;
- skill development and promotion of local crafts,
- connecting heritage and local crafts with tourism;
- revival of sick and dysfunctional industrial units
- development of integrated industrial estates
- development of agro-based industries

It is believed that the economic growth of city cannot take off unless adequate and uninterrupted power supply is ensured and robust and efficient physical connectivity is developed. As such, the Government should focus on power generation and construction of efficient road connectivity.

5.3 Rural Economy

Rural economy by and large consists of agro-economy and small scale village industries which are taken care of by the Khadi and Village Industries Board. In the absence of adequate data, the rural economy has been limited to agro-economy only, however the workforce engaged in small-scale village industries has been incorporated in the overall WFPR of the rural areas. It is in place to mention here that small-scale industrial units in villages which are run on highly disorganised and unregulated manner have a huge employment potential provided these activities are organised into Village Service Centres with all necessary facilities. The Government should facilitate them through micro-credits, skill development and training for diversification.

5.3.1 Agro-Economy

Agriculture is an important economic activity of Srinagar Metropolitan Region as significant part of the area is still under agriculture. The main agricultural produce comprises rice, vegetables, saffron, cereals and pulses. In view of the fact that landuse conversions continue unabated which can significantly reduce the reserve agriculture lands in future. Large-scale unplanned urbanisation and haphazard growth of peripheral rural villages are engulfing prime agricultural lands and threatening future agri-reserves essential for food security. The data received from Director Agriculture Kashmir reveals that 20,000 hectares of prime agricultural land has been lost non-agricultural uses in Kashmir valley. The expansion of city and rural settlements in an unplanned manner has to be stopped without further delay. **In this context, it is recommended in the master plan that the State Government ought to come up with a Land Utilization Policy supported by a Landuse Management Plan for Jammu, Kashmir and Ladakh Regions and implement the master plans [of all towns] with more seriousness.** In this master plan, effort has been made to discourage horizontal growth of city and outlying villages by increasing residential densities, FAR/FSI and focussing on infill housing. It is also envisaged that agriculture practices need to be carried out in a scientific manner supported by inevitable Land Reforms like digitization of land records, consolidation of land holdings, improved irrigation and

introduction of mechanical farming and high yielding crops. The State as a whole lacks basic infrastructure required post-harvest which includes the hullers, mini-rice mills like paddy Cleaners, Shellers, Separators and Polishers. The mechanisation of farming will have multiple benefits like increased productivity, less labour and more per capita income and a check on land use conversions. There is need to shift from subsistence farming to commercial farming for increasing the per capita rural income. Increase in per capita income in rural areas will directly increase demand for urban goods and services. A chain of inflows and outflows will be established which shall be based on local resources and local consumption. This will certainly reduce our dependence on imports from neighbouring states in India. **For local consumption within city, a Food Grain Mandi be also developed at Budgam Railway Station to create a structured supply chain of rural goods to urban markets.**

Vegetable farming/Urban Farming is another important agriculture activity with enormous economic potentials in suburban areas. As per the data provided by Director Agriculture, Kashmir, Srinagar district has around 1.56 thousand hectares of land under vegetable farming producing more than 37.23 thousand metric tonnes. Around 12,500 acres of land around Dal Lake is used for growing vegetables generating more than 35 million revenue annually. Srinagar by-far-the-most a consuming city, is heavily dependent on rural and outside supplies coming from Jammu and Punjab. Besides preservation of vegetable lands in the countryside of Srinagar, it is also recommended to promote and incentivise the *kitchen farming* in urban areas as majority of households in city are having plot sizes of one *kanal* and above. The people need to change their mind-set and effectively capitalise this limited land resource. The shared responsibility will create a sense of belongingness where Government and people both have to work together for the future of city.

Horticulture is another important sector of our State economy contributing 7-8 percent towards SGDP. The Kashmir Valley offers good scope for the cultivation horticulture crops covering a variety of temperate fruits like apple, pear, peach, plum, apricot, almond, cherry etc. There are seven lakh families comprising about 3.30 million people which are directly or indirectly associated with horticulture². Horticulture development is one of the thrust areas in Agriculture and a number of programmes have been implemented in the past resulting in the generation of higher incomes thereby improving the quality of life of orchardists. In Srinagar District, an area of 7442 hectares is under fruit cultivation out of which 5665 hectares are under fresh fruit and 1777 hectares under dry fruits with the respective production of 49887 MT and 2380 MT. The State has a well-established Fruit Plant Nursery at *Zakura* having an area of 8.55 hectare. The nursery is being developed as a High-Tech Nursery where a variety of different kinds of fruit trees have been planted. Another Government Fruit Plant Nursery is located at *Harwan* near Dachigam National Park spreading over 9.10 hectares. Besides, Zawoora Orchard (30 Ha) at *Zewan* along the Khunmoh Road is developed a Centre of Excellence in collaboration with GoI and Govt. of Netherlands. The Ragunathpura Orchard at *Habbak* along the Foreshore Road is developed over 1.55 hectare area for exotic varieties of stone fruits.

As per the information collected from Horticulture Department, *Khunmoh, Balhama, Penzinara, Mirgund, Kaerpora, Dangarpora, Takenwari, Checki Mujgund, Khimber, Zakura, Gulab Bagh, Gassoo, New Theed, Danihama, Chatterhama, Faqir Gujri, Tailbal and Brein* are potential horticulture areas in Srinagar District. About 30% orchards in Srinagar have become old and senile which need to be rejuvenated. About 100 hectare area needs to be taken up for rejuvenation each year in aforesaid potential areas of Srinagar District. Besides, new plantation under Area Expansion Scheme needs to be outlined for these potential areas which shall serve as permanent

² Source: J&K Horticulture Department

source of income for the people and will provide employment opportunities to others. The Department is required to bring about 30 hectares under Area Expansion Scheme for fruit cultivation like apple, stone fruits and cherry. The Master Plan also highlights the need for a Kitchen Garden Scheme which shall include planting of fruit trees of different varieties in kitchen gardens. Under this Scheme, a kit of 10 plants with Vermi-compost (10 kg) is proposed to be distributed to 1500 beneficiaries each year residing in urban areas.

Sericulture is an agro-based industry with a high capacity of employment generation. It has broadly two components viz; mulberry plantation and silk-worm rearing. Though it is rural based, as such it has been placed under rural economy. The sector comprises a plethora of activities ranging from planting of mulberry trees, culturing of silkworms, production of cocoons and raw silk. Kashmir had silk trade with Europe since early 19th Century as the Valley was known for its quality silk which for our negligence has dwindled abysmally. Now-a-days, production of mulberry juice and jam are gaining popularity. As per the data received from Sericulture Department, 10.23 MT raw silk was produced in 2015-16 which is two times the production in 2011-12. The sector provided employment of 1.125 lakh man days around the year.

Sericulture has a huge potential in Kashmir and as such there is dire need to revive the sector on well organised and scientific parameters. There is need to strengthen the pre-and-post Cocoon sectors. Additional areas need to be brought under mulberry plantation for quality leaf production for which areas like *Mulnar, Khrew, Pampore, Mirgund, Narbal, Sozeith, Rambirgarh, Pratbgarh, Kawoosa, Saidapora, Khimber, Ladoo, Lar, Shariiefabad, Khushipora* etc are proposed in the master plan. These areas have been proposed as per the requirement made by the concerned department. The master plan also proposes that the sector has to be organised by way of Cluster Approach focussing on silkworm rearers, silk brand promotion, up-gradation of infrastructure at silkworm clusters, increase in silkworm rearers' coverage, capital and financial incentives to the families involved in this sector, cocoon quality etc.

Fisheries form an important component of the State's economy which along with agriculture contributes a significant 23% to its GSDP. Besides being an important allied activity to agriculture, it contributes significantly to the agricultural economy and also generates self-employment. The need of the hour is to overhaul fisheries completely by developing hatcheries to increase production, develop ranching programs which includes herding or aggregating fish of one species at one place and harvesting them. It is recommended to make concerted efforts to reduce the dominance of carp and encourage institutionalisation of lake fisheries of Kashmir through establishment of suitable end-to-end supply chain arrangements. The Kashmir Valley has significant presence of fresh water lakes and springs which create a healthy breeding environment for fish production in the State. Presence of various species of fish especially *Trout* has increased the demand for consumption. In this backdrop various Government schemes are introduced at state level to boost fish production and engage more entrepreneurs by way of providing technical and financial assistance.

To ensure promotion of fisheries within the Srinagar Metropolitan Region, fish ponds, hatcheries and sale points along with other support infrastructure have been made permissible even in non-developable areas. As desired by the Fisheries Department, a site measuring seven *kanal* allotted by the Government is reserved at *Tengpora Batmaloo* for the development of a retail/wholesale **Fish market on scientific lines which will be funded by National Fisheries Development Board (NFDB)**. Also to create awareness of the species grown in Kashmir as well as Himalayan region, a state-of-the-art Aquarium is proposed at *Lal Mandi* near SPS Museum.

Sheep and Animal Husbandry sector has an important contribution in rural economy of the state. As per the data received from Sheep Husbandry Department, the Kashmir Division alone has a sheep and goat population of 20.50 lacs. About 67,000 families are associated with sheep and goat farming generating an income of about

472 crore in Kashmir Division alone. The Srinagar Metropolitan Region [SMR] has a total sheep/goat population of 1.79 Lac and about 6000 families are directly associated with sheep and goat farming generating an income of 41 crore.³ The meat consumption has increased from 75 lac kgs (2010) to 104 lac kgs (2014) whereas the wool production has increased from 2.80 lac kgs to 3.40 lac kgs.

In order to promote sheep farming as an important economic activity in region, 29 sheep extension/facilitation centres, three veterinary hospitals/dispensaries, one sheep breeding farm, one Embryo transfer technology laboratory and five slaughter houses at *Khunmoh, Bemina, Nagbal, Ompura, Parimpora* are planned over next two decades and the sites will be finalised in consultation with the concerned department while preparing the Zonal Plans. Besides, *Sheep Mandis* adjacent to proposed slaughter houses are also required to be developed in a phased manner till 2035. The Master Plan also provides for the establishment of *Sheep Breeding Farms* undertaken through entrepreneurship programs.

5.4 Industrial Economy

As one of the key sectors of economy, industries play a vital role in the economic development of a state or a city. The J&K State does not have a robust industrial base though many small and medium-scale industries have come up in the traditional sectors and in areas like food processing, agro-based units and metallic and non-metallic products. The issue of industries has been a subject of extensive debate and concern over the past three decades. This has centred mainly on the aspects of industrial sickness and closure of many industrial units. Being the most urbanised part of the State, the Valley has remained as an industrially backward region. Unfortunately, the Valley could not attract investments in industrial sector for multiple reasons which include prevailing uncertainty, insufficient capital, lack of technology and infrastructure, poor connectivity and frequent power cuts. However, the city has some service and small scale industrial units besides centuries old local craft like wood-carving, shawl and carpet making, stone polishing, paper machie, etc. As per the data collected from Department of Industries and Commerce, the city has about 4300 *kanal* of land under eight industrial units besides the industrial estate at HMT, *Zainakote* (400 *Kanal*). The Department is also in the process of finalising 1000 *kanal* land at *Budgam* for the development of another major Industrial Estate. Around ten Industrial Estates (IEs) are located in Srinagar city region providing jobs to more than 8,000 people. Besides these industrial estates, there are as many as twenty cement factories located in *Khrew* and *Khonmoh* due to availability of high quality limestone in the area. The JK Cements Ltd. – a PSU is the largest cement factory with installed capacity of 600 tonnes/day. The factory provides direct and indirect employment to over 1000 skilled, semi-skilled and specialised workers.

As per the estimates, the State has invested about 400 crore on industrial development in Srinagar Metropolitan Region though no sizeable impact is seen on ground which can be attributed the fact that about 40% of industrial units are dysfunctional and sick. The Industrial Estate

³ Source: Sheep and Animal Husbandry Department, 2015

at *Zakura* is the worst affected where most of the units are either closed or dysfunctional. The State Pollution Control Board (PCB) has identified 177 industrial units under “RED” category (polluting industries) and 79 industries under “Orange” category. A cluster of RED category industries like the stone crushers at *Rakh-e-Shalina* and *Lasjan*, and Cement factories at *Khonmoh*, *Wuyan* and *Khrew* need to be phased out periodically after proper EIA and the areas are proposed to be preserved for replenishing the degraded ecology of the area. It is also proposed that the bulk storage depots of petroleum products at *Sanat Nagar* and *Hyderpora* are proposed to be phased out from these areas to Petroleum Bulk Storage Depot either at *Khunmoh* or *Balhama*.

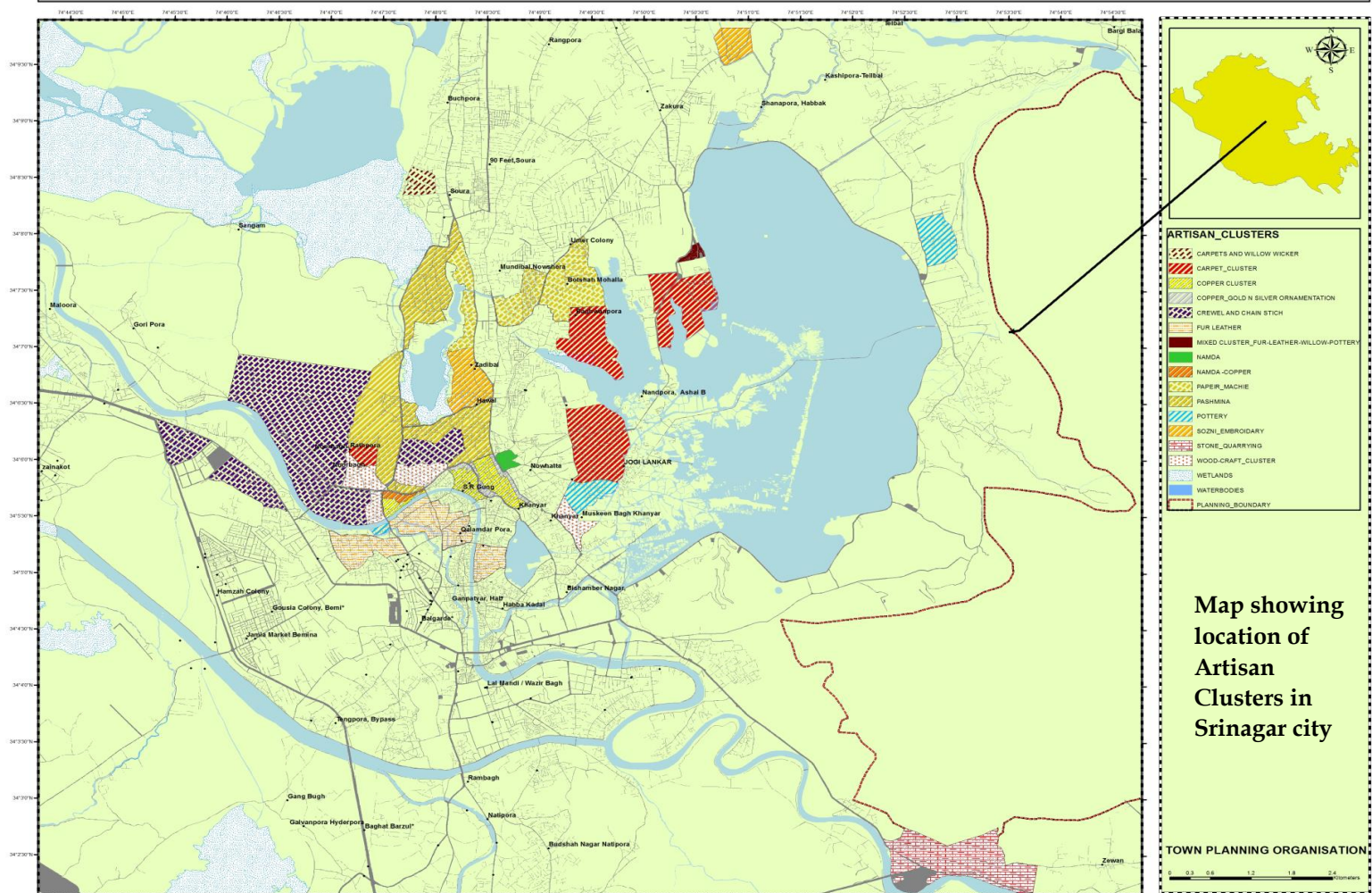
As discussed above, the industrial sector is in a highly poor condition in the State in general and Valley in particular despite various government efforts. Given the present rate of unemployment (25%)⁴ prevalent in the state which by rough estimates has gone over 4.0 lakh, the Government has been taking steps to curb this problem for long now. It needs to be strategized by creating more jobs in the industrial sector which will require extension of industrial base and revival of sick industrial units in Kashmir region. In this connection, new industrial estates are recommended to be developed in *Budgam*, *Pulwama* and *Ganderbal* suburban districts. It is recommended that the age old Silk and Wollen factories at *Rajbagh* and *Bemina* be revived for which sufficient budgetary allocations need to be made in state annual budgets. It is in place to mention here that the Silk Factory *Rambagh* be shifted to village *Mirgund*, tehsil *Pattan* in the vicinity of Mulberry Farms for production of quality silk. The Industrial Estate at HMT *Zainakote* be developed into an Electronic and Software Park for manufacturing electronic goods and development of software applications besides providing IT-based solutions to customers within and outside the state. The Kashmir Region has huge potential for the development of agro-based industries due to large-scale fruit production like apples, pear, apricot, walnut, cherry etc. Diversifying of agriculture and connecting it with the industries will give a boost to local economy. In this regard, it is recommended to develop Food Parks and Export Promotion Industrial Parks in *Khunmoh* and *Budgam*. It is also strongly provided in the master plan to shift defense establishments from areas or buildings previously used for industrial activities.

5.4.1 Cottage Industry (Handloom and Handicrafts)

Kashmir is world over known for its indigenous handicrafts which is a labour intensive and less capital intensive activity. The crafts like *embroidery*, *woodcarving*, *willow works*, *carpet making* and *paper-machie* are found in and around Srinagar and have unparalleled quality and design at the national and international level.

⁴ State figure (Source: Economic Survey, 2016)

The export of these world famous crafts earns a significant share of foreign exchange to the state. In the master plan, the local craft is viewed as an important driver of city's economy, and needs to be preserved and promoted at all levels. In this direction, the State Government has already initiated the Artisan Cluster Development Initiative (CDI) to promote and incentivise the local craft which will be a key to



economic empowerment of local community. This has to be achieved through a structured approach by dividing the historic Srinagar District into various artisan clusters based on concentration of artisan community in the area. The Craft Development Institute is already working towards the holistic development of local craft and has identified following artisan clusters in Srinagar as shown in the Map below:

The Craft Development Institute has proposed following interventions like *Building of Common Facility Centres, Establishment of Craft Bazaars within these clusters, and provision of work sheds for artisans within each cluster*. These clusters need to be facilitated with basic infrastructure in terms of covered drains, paved lanes, sign boards, better streetscape, street lights, sanitation etc. They shall be made accessible to visitors so that artisans are able to showcase their artistic skills, and a direct interface between the artisan and a customer is established. This will certainly instil confidence among them and make a win-win proposition for both. The Government should hold craft *Malas* at regular intervals for better marketing of these crafts at local and national level. Besides, the local authorities in consultation with these artisans who are important stakeholders shall conduct regular workshops, training programmes and exhibitions.

The State Government has already taken many positive steps in this direction. The Craft Development Institute (*Zadibal*), the Common Facility Centre (*Nowshetra*) and even setting up of a separate Directorate for Handicrafts under the State Industries and Commerce Department are some of the important steps so far taken by the State Government. As part of the development of aforesaid clusters, the Institute has been actively involved in carrying out various interventions like design and product development, skill upgradation and capacity building of the artisans. The master plan taking cognizance of this initiative proposes two more city level Art and Craft Centres one each at *Shaheedgunj after shifting of FCI/CAPD Godowns to alternative site at proposed Dry Port near Budgam Railway Station* for which an area of 36.51 ha has been earmarked in the proposed Landuse Plan-2035. In addition, one more such facility centre is proposed at *Badamwari* replacing existing poultry farm. The Government shall allocate micro units to the local artisans and craftsmen on subsidised rates for manufacturing and sale in these cluster centres.

5.5 Retail and General Business

The commercial use occupies around 5.0 sq. km. accounting for 1.6%⁵ of the total developed area. Primarily the commercial areas are concentrated along the major arterials like MA Road, Residency Road, Nallamar Road, IG Road upto Baghat Chowk, KZP Road, SMS Road, NH Bypass and other district roads. Lal Chowk is the main commercial hub designated as the main Commercial Business District (CBD) of Srinagar city. The commercial development is extended from *Dalgate* in the east to *Batamaloo* in the west as shown in the Zonal Plan. There are 23 identified commercial stretches within the Local Area of SDA including both organised and informal markets. The other major markets in the city are *Karan Nagar, Jawahar Nagar, Bemina, Soura, Hazratbal, Nowhatta, Dalgate, Qamarwari* and *Pantha Chowk*. Besides, *Ganderbal, Budgam, Pampore* and *Narbal* are other important market places within the Local Area. Srinagar Haat is a government designated

⁵ This is exclusive of commercial area permissible under mixed use regulations along roads

formal market and is known for display of local handicrafts ranging from woollen clothes to silk shawls, carpets, wooden carved artefacts, *paper-mache* etc. The Sangarmal Shopping Complex at Lal Chowk is the only Mall constructed by SDA. There is a significant mixed commercial development along Dal Lake along Boulevard in the form of hotels, restaurants, shops etc. This is an important tourist activity area in whole Srinagar providing all sorts of services to the tourists.

Most of violations are apparent in landuse conversions from residential to commercial activities especially along important arterials. As such in this master plan commercial uses under mixed use policy have been made concomitant to road hierarchy save some exceptions. It is believed that intensity of commercial activity shall be sustained by a particular order of road hierarchy and availability of public transport making it functionally more efficient. At one shop per 50 persons, SMR is expected to have 66,000 shops creating roughly 1.20 lac jobs. In order to cater to the city needs by 2035, the Master Plan proposes a poly-nodal commercial structure of the city. As such, it is envisaged to provide one city centre at *Batamaloo* and two Sub-city centres one each at *Patha Chowk* and *Parimpora*. Besides, District Centres one each in *Budgam*, *Ganderbal*, *Soura*, *Lawaypora*, *Pampore* etc in Planning Zone *MHDR_Zone_IV*, *MDR_Zone_XVI*, *MDR_Zone_X* *MHDR_Zone_VII*, *LDR_Zone_I* & *LDR_Zone_II* are also proposed to decentralize the commercial activities in the Local Area as well as take care of future needs including warehousing also as recommended by the Committee. The master plan also proposes a number of mini-CBDs at *Hazratbal*, *Soura*, *Zakura*, *Shalimar*, *Peerbagh*, *Rawalpura*, *Narbal* and *Khomeine chowk Bemina* and their location shall be defined in the Zonal Plans. The master plan also proposes that IFC located at *Parimpora* Fruit Mandi be shifted out and a new Integrated Freight Complex (IFC) be developed at *Budgam* adjoining Railway Station as shown in the PLUP-2035. In addition another such facility is proposed near the *Nowgam* Railway Station. Both these IFCs need to be connected with the Outer Ring Road as per the hierarchy of road proposed in the Transportation Plan-2035 of this master plan. The IFC shall have all facilities of wholesale markets, loading /unloading, Truck Terminal, petrol pumps, parking, workshops etc.

5.5.1 Informal Economy

Due to lack of employment opportunities and viable economic base to accommodate the unemployed youth and people thrown out of agriculture, most of them are engaged in the informal economic activities. Informal sector, has thus to be viewed as an integral part in the process of physical planning. Besides, being the seat of capital and administrative headquarters, the share of unemployed skilled/unskilled people may consequently enlarge the Informal sector. The informal shopping encroaching along roadsides has come up in every corner of the city. Huge number of workers is engaged in the informal sector which is evident from the statistics of occupation although no relevant database on street vendors is available. Consistent with the National Policy on Street Vendors, designated areas need to be earmarked for informal shopping as provided in the Policy on Street Vendors. The SMC, SDA and concerned ULBs are duty bound to document the street

vendors and keep on updating the database for policy formulation and other programmes. The informal sector commercial activities, except easy entry, face the brunt of various local agencies. The Master Plan, therefore asserts that efforts should be made to enable the street hawkers to carry out their business activities with dignity and honour. Thus, in planning for informal sector activities, the aspects of prime consideration would be:

- i. Making space available for such type of activities in the form of Sunday Market, morning/evening vegetable markets, and other bazaars at vantage points like *Lal Chowk, Eidgah, Soura, Hazratbal, Bemina, Pantha Chowk, Ganderbal, Budgam* etc.
- ii. Provide in-built mechanism for space adjacent or in the major activity centres including all neighbourhoods, terminal centres, industrial estates, administrative centre, and even in major commercial centres.
- iii. It is envisaged that in any commercial centre, 15% of the area shall be reserved for the Informal area.
- iv. For institutional, administrative and industrial area, one shop per 100 working population shall be provided.
- v. Provision of easy access to institutional finance with low rate of interest/subsidy to provide opportunities to consolidate the economic base.
- vi. Introduction of different self-employment schemes to eradicate unemployment/absorb unemployed youth and people thrown out of agriculture as a result of implementation of different developmental programmes.

5.6 Directions for Future Economic Growth

The above discussions are summarised to conclude that the city's economy has two major facets— *urban economy and rural economy*—and both these economies need to be connected and diversified for economic vitality of the city. While the rural economy should have its focus on policies aiming at increased production and productivity, the urban economy should be driven by promotion of entrepreneurship and development of relevant skillsets. Innovation and technology have to be at the centre-stage of both the economies. After increasing capacities and skillsets, focus should be on developing efficient rural-urban connections by creating an interface for marketing rural products as well as connecting them to urban skillsets. In principle, urban and rural economies need to enjoy a symbiotic and sustained relationship as cities benefit when agricultural productivity increases. Similarly growing rural areas provide new markets for urban services and manufactured goods. Mechanization and the use of fertilizers, pesticides, and herbicides spur demand for these products. A boom in commercial agriculture boosts demand for marketing, transportation, construction, and finance, which urban centres often provide⁶. Nearby

⁶ In Africa, every \$1 of additional output in the agricultural sector generates an extra \$1.50 of output in the non-farm sector. In Asia that figure is \$1.80. Rural areas also benefit from the growth of cities. (Source: World development Report, 2009-2010)

cities provide ready markets for agricultural products such as vegetables and dairy products and for rural nonfarm output. Rural industries often supply parts and components to nearby urban manufacturers. Urbanization can also help raise rural productivity through technology transfers, educational services, and training. The master plan recommends that the agro-economic sectors need to be presented as a single package by devising targets based on inter-sectoral objectives. In this connection, an Agro-Economic Board needs to be established as an umbrella institution. The primary function of this institution shall be framing of agro-economic programs and policies.

Besides, in a situation characterized by uncertainty and increased market risk, the Government should aim at catalysing opportunities for innovation and cooperation. In the debates over subsidizing industry, both policy makers and the entrepreneurs too often forget that the inputs – labour costs, skills, natural resources, climate, etc – most relevant to economic development, are often beyond their control. *Now the question remains, can government become partners in start-up ventures on equity basis?* In our situation, some argue that cities need this kind of **Municipal Entrepreneurship on benefit-risk sharing model** to cope up with the enterprise challenges. One intellectual justification for this model is infant industry existing in unpromising environment which supports sharing risk in a line of industrial activity until it achieves sufficient local scale to be viable. Although such arrangements are rare, they may become more common in the State given the continued failure of industrial policy even after granting capital subsidies of not less than 30%.

The proposed economic structure will have a range of benefits for both rural and urban population. While the agro-economy will shift from subsistence economy to progressive economy, the urban economy will be more diversified driven by locally available resources. The master plan envisions this as a sustainable economic model for the city. Besides, it is believed that promotion of tourism will be an added capital towards city's economic growth. The prerequisites for economic development model are:

- Consolidation, innovation and technology to increase production and productivity of agriculture and allied sectors
- Strengthening and mobilisation of innovations
- Identification and promotion of relevant skillsets
- Efficient rural-urban linkages both physical and technological by way improved road connectivity and telecommunication
- Adequate reliable power supply
- Risk sharing by public institution
- Carrying products to consumers by establishing a regulated supply chain



6. COMMUNITY DEVELOPMENT, HOUSING & HUMAN HABITATS

Photograph Source: TPO Kashmir

6 COMMUNITY DEVELOPMENT, HOUSING AND HUMAN HABITATS

Community Development has been one of the cornerstones of this master plan. Srinagar is one of the oldest cities in India with its documented history of more than 2000 years. Historically planned as a walkable city supported by water transport, the city has evolved in the shape of *Mohallas*. These would develop either because of distinctive nature of functions or location of some important religious landmark¹. Over a period of time, the city has changed in design and style. The city's extension areas developed in its north, south and west directions have not only changed the broad contours of neighbourhood design but also affected its historic human scale of design. In order to improve the quality of urban living, the master plan underlines the need for enhancing and maintaining the vitality and livability of neighbourhoods through Neighbourhood Action Plans (NAPs). The city needs to work with *Mohalla Committees* or *Neighbourhood Associations* for the preparation and implementation of community plans. The Master Plan has identified **fifty three [53] Planning Zones**, and provided a framework of landuse designations and a unique Development Code. While preparing the Zonal Plans a detailed inventory of existing landuse, public facilities and services, capacity will be prepared, and in the light of master plan policies and objectives, these plans shall be prepared. Since, Zonal Plan is the first step towards master plan implementation, it is therefore recommended that the Zonal Plans should clearly identify and recognize residential neighbourhoods through layout plans. The master plan envisages following important objectives and guiding principles for the planning and development of neighbourhoods:

- Efficiency and maintenance, livability and vitality of neighbourhoods
- Connected neighbourhoods
- Human scale of design
- Fire and emergency risk response time
- Safety of women and children

6.1 Housing and Human Habitats

The Master Plan tries to address the subject of housing in its totality with its focus on improving the quality of life in residential neighbourhoods. As per 2011 census, the State had a population of 12.54 million; out of which, 3.34 million (27.38%) lived in urban areas. During 2001-2011, urban population of the State grew @ 36% against 19.42% decadal growth rate in case of rural areas at the State level². The

¹ This has been discussed in length in Chapter "Heritage Conservation" of this report.

² The population of the State during the decade (2001-2011) increased @ 23%.

level of urbanization increased from 24% to 27%. As per the Census 2011, the {urban} housing stock in the State stood at 4.96 lakh for 5.17 Lakh {urban} households meeting the demand by 96%. Though the demand supply gap is narrow, however; actual demand will be high due to housing dilapidation and multi-family housing and single room housing. While vacant houses account for about 8%, the dilapidated houses constitute about 2% of the total housing stock. Of the total housing stock, while 76% houses are in good condition, 22% houses are in a liveable condition. In addition, 10% houses were damaged during September 2014 floods in Srinagar district alone³. As per the Census 2011, Srinagar Metropolitan Region (SMR) has a net housing shortage of about (4%) dwelling units. Almost 10% of the households are living in one room accommodation, 18% in two room accommodation and 68% have more than two room accommodation. In case of census houses, 96% houses are owned which is at par with the State average.

Housing is more than four walls and a roof. Provision of adequate basic facilities and services is integral part of any human habitat as they are directly related to the quality of living. Housing is a social issue and is one of the indices of human development. In city's high density areas, houses are huddled together with poor ventilation and sanitation conditions. The households are accommodated across a variety of housing types ranging from single storey to four storey structures in unplanned settlements, high density core areas and peripheral village settlements.

As of 2015, the residential area is spread over 125 sq. km which is 53% of the existing Developed Area with a gross residential density of 136 PPH. In view of the limited land available, the city needs judicious use of land resources which *inter-alia* can be achieved by increased densification, Infills in sparsely developed areas, plot sub-division for multi-family housing and promotion of vertical growth. To harmonise the residential development, the Master Plan envisages re-densification of low and medium density areas especially the along North-South axis. These areas are envisaged to be planned with increased densities for efficient use of limited suitable land. Besides, Satellite townships at *Ganderbal, Bemina, Pampore, Budgam* and Dormitory townships at *Nowgam, Lawaypora, Zakura* etc need to be developed to ensure supply of adequate serviced land to increase housing choices for people of all categories. To rationalize the growth of housing clusters or neighbourhoods, the following residential densities are provided:

- a) Low Density [up to 80 PPH],
- b) Medium Density [81 - 160 PPH],
- c) High Medium Density [161 - 240 PPH], and

³ Source: J&K Housing Board

d) High Density [241 PPH & Above]*

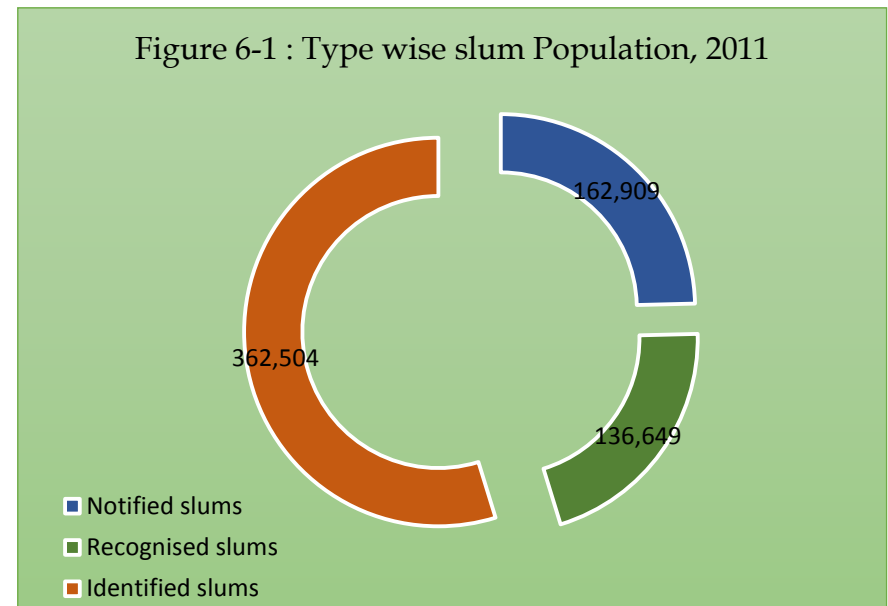
** As recommend by the Committee, in case of flatted development under group housing scheme, the maximum density shall be restricted to 120 DUs per hectare subject to other conditions as laid down in Table 1-7-1 and section 1-7-3 of Development Code of this master plan.*

Based on the projected population of 28.50 million by 2035, the estimated housing stock is projected around 5.93 lakh dwelling units against existing housing supply of dwelling units in 2011. In other words, for additional future population and meeting out the backlog of about 0.12 lakh units, about 3.0 lac houses will be required over next two decades. Over and above, the Master Plan envisages additional 10% housing (i.e. 25000 DUs) for floating population, move population and for the rehabilitation of those affected by the implementation of Master Plan proposals which shall have to be catered to in phased manner.

The contribution to housing stock through institutional agencies is quite insignificant. The housing demand has been worked out on the basis of certain broad assumptions:

- a) Household size will decrease periodically from 5.50 to 5.0 during the horizon period of 20 years;*
- b) Average household to house ratio of 1.0 for the horizon period of 20 years;*
- c) Dilapidation of housing stock @ 2% by 2035;*
- d) Anticipated population growth as per the growth rates assumed.*

It has been roughly estimated that around half of the housing demand can potentially be met through infill, plot sub-division and up-gradation/expansion of existing areas within the present master plan limits⁴. This implies that remaining 50% of the demand (i.e.; 1.75 housing units) will have to be provided in extended or new areas. In order to ensure that housing in suburbs is provided in a planned manner, the authorities should focus on restructuring and re-densification of existing areas, development of integrated townships and up-gradation of peripheral village settlements as self-sustained neighbourhoods. It is required that no individual permissions shall be granted in areas reserved for group housing projects in **Planning Zones MDR_Zone_XV, HDR_Zone_VIII, MHDR_Zone_IV, HDR_Zone_IX, HDR_Zone_X, MDR_Zone_VI, MDR_Zone-X, LDR_Zone_XI, LDR_Zone_V and MDR_Zone_XVII, and these areas shall be notified under J&K Town Planning Act 1963 for execution of Town Planning Schemes (TPS) in the first phase of master plan implementation.** The Master Plan proposes additional about 7500 hectares for accommodating around 2.50 lac additional households over next twenty years. The Local Area of 766 sq. km is presently inhabited by around 3.0 lac households with about 15.0 lac residing within urban areas and the remaining in rural settlements.



The Master Plan-2035 has the spotlight on ‘Suburban Housing’ where land costs and wages are relatively cheaper which will essentially cut down the overall cost of a building thereby making housing more affordable for a majority of people. It is foreseen that affordability is going to be big challenge in time to come. In this connection, suburban housing and provision of institutional rental housing will play a key role.

More than 90% investment in housing is through informal (private) means as the sector is highly disorganised. Srinagar is an environmentally and ecologically fragile city. It is also a multi-hazard city with limited areas suitable for development. The city is growing in an amorphous and unplanned manner with most of the development coming up in low-lying and flood prone areas devouring prime agricultural lands, thereby increasing threshold costs and giving rise to stagnation of rainwater and drainage problems. Most of the housing

⁴ Master Plan 2021 which is presently under revision

colonies have come up devoid of services and public amenities. In nut shell, the city needs a complete overhaul and proper urban restructuring. It is as such strongly recommended that the formulation of Zonal Plans be fast-tracked to ensure the planned development of residential neighbourhoods as envisaged in this master plan. The Master Plan also has a spotlight on the identification of blighted and grey areas in Zonal Plans for their redevelopment with active participation of locals. Also, urban fringe settlements notified as part of local area SDA are also envisaged to be improved by way of upgrading the amenities, utilities and services on neighbourhood concept. *Linkages between the mother city and new townships and urban villages have to be significantly upgraded to reduce travel time and cost.*

6.1.1 Slum Population

As per the Primary Census Abstract for Slums released by the Office of the Registrar General and Census Commissioner India in September, 2013, there are three types of slums classified as Notified, Recognised and Identified. Among 86 statutory towns in J&K, 40 towns are reported as 'slum towns' in the Abstract with a population of 6.62 lakh as per the break up shown in the **Figure 6-1**. Slum population accounts for more than 5% of the total population of the State. Unlike other states, 65% slum households live in good housing conditions while another 30% need upgradation of housing units. As per the 2011 Census data, just 4% households in slum areas are actually houseless; however, slums in general are devoid of basic facilities. As per the statistics, more than half (52%) of the total slum population of the state is living in Srinagar district only.

In the DPR prepared for Srinagar city under Rajiv Awaz Yojna (RAY)⁵, Srinagar city has 77 slums pockets with all of them un-notified. Besides, there are large number of informal housing clusters spread over the city and its suburb especially along highways which are predominantly inhabited by the service population. Slums constitute less than 10% of the total population of Local Area. In the DPR, around 18,000 households spreading across 77 slum pockets have been identified in Srinagar city only.

6.1.2 Issues in the Development of Affordable Housing

Developing affordable housing faces significant challenges due to several economic, regulatory and other urban issues. Lack of availability of serviced land, rising threshold costs of construction, regulatory issues and access to housing finance are some of the major constraints which impact the ability of a common man to buy a house in the organised sector.

⁵ A CSS now known as "Housing For All"

6.1.3 Housing Strategy Outlined

HOUSING in Srinagar is a people's activity with the informal private sector investments accounting for more than 90% of the total investment. While housing shortage is modest in terms of new construction, the problem is more serious in terms of affordability as well as up-gradation of existing housing stock (24%). The Master Plan proposes that not less than 70% of the housing demand shall be met through government interventions, private developers and housing co-operatives. The main objective of the master plan is to not only meet the housing demand but also improving the quality of neighbourhoods. Development of allied housing infrastructure (utilities and services) in residential neighbourhoods is far below the standards when compared with the growth of housing. Social services especially for the poor, women, children and elders are comprehensively missing in almost all residential neighbourhoods. The approach lanes are very narrow and winding often non-trafficable for bi-directional movement. In view of this, the Master Plan envisages "Housing for All by 2025" through development of self-contained residential neighbourhoods across all sections of society.

The Government of India has been focussing on shelter and planned development through various schemes and promulgated the National Urban Housing and Habitat Policy in 2007. The policy intends to promote sustainable development of human habitats with a view to ensuring equitable supply of land, shelter and services at affordable prices to all sections of society. The policy provides the basic framework for the State and Central Governments for facilitating the affordable housing stock. **The Government needs to revisit the J&K Housing Policy 2004 and frame a comprehensive Housing and Habitat Policy with defined role for key stakeholders as given in subsequent paras of this report.** The new policy will go a long way in the production of housing in the State and target the relevant groups for affordable housing. The Master Plan envisages that housing is a multi-layered phenomenon and cannot be met through Government resources only. In fact, there are different agencies whose roles have to be properly recognised or defined in the provision of housing stock.

6.1.4 Role of the State Government

Jammu & Kashmir State Government is desired to:

- **prepare Housing and Habitat Policy and Real Estate Development and Regulation Policy** and implement them through various public and private agencies including NGOs/CBOs/Ward Committees/Village Committees etc;
- act as a facilitator and enabler in collaboration with other agencies for the development of group housing projects, Integrated Townships and other Infrastructure Development Projects with a view to give a boost to housing;
- prepare a State Land Utilisation Plan, Regional Plans for each District and Master Plans along with Zonal Plans as a regulatory mechanism to promote balanced regional development as provided in the National Housing and Habitat Policy-2007;

- amend the existing laws and procedures or promulgate legislation for the effective implementation of the policy with a particular reference to easy disposal of serviced land by government and private agencies;
- promote and incentivise private sector and cooperatives in undertaking housing and infrastructure projects for all sections;
- identify financial resources to supplement and complement the efforts of Central Government for the provision and creation of adequate basic facilities like water supply, connectivity, waste disposal, power supply etc;
- promote and incentivise decentralised production and availability of building material;
- develop MIS at State and local levels through a Nodal Agency to be set up in Housing Department;
- provide fiscal covenants and rationalization of tax rates on housing and housing inputs.
- set up the J&K State Institute of Housing and Habitat Management Studies to promote and encourage R & D activities in the field of housing and habitat development through tailor-made and captioned programmes for capacity building of planners, architects, engineers, construction workers including masons, carpenters etc. The Institute will be also responsible to undertake research in housing and related infrastructure in order to promote affordable, viable and cost-effective delivery of houses and services. It will provide guidance and training in collaboration with Building Centres to develop and promote standards on building components, materials and construction activities to be taken up by agencies in public and private sector. It will also develop disaster mitigation techniques for new constructions as well as strengthening of existing houses.
- promote setting up of building centres across the State to provide not only building materials, but also technical assistance to individuals and group housing societies during the construction process;
- encourage Cooperative Group Housing Societies, Employees Organizations, Labour Housing Promotion Organizations, Non-Government Organizations (NGO), Community Based Organizations (CBO) and private developers to have Partnerships with Urban Local Bodies in housing and related infrastructure;
- promote innovative financial instruments in relation to credit appraisal norms to benefit EWS and LIG beneficiaries.

6.1.5 Role of Local Self Government Institutions (Municipalities and Panchayats) and Local Authority(s)

These institutions have a key role in so far as the provision of affordable housing is concerned. The master plan stipulates these local bodies to:

- identify specific housing shortages in each ward and village, and prepare local level Housing and Habitat Action Plans;
- devise target programmes {stand-alone and PPP ventures} to meet housing shortages and augment the supply of serviced land for housing as well as the development of integrated townships for all groups;

- plan expansion and creation of infrastructure services like roads for safe and swift commuting, water supply, waste treatment and disposal, power supply, facilities like education, health and recreation etc; either through direct efforts or incentivising the private/voluntary sector or a combination of both;
- Implement central and state sector schemes and programmes pertaining to housing and infrastructure sector;
- enforce effectively regulatory measures for planned development and devise guidelines for the development of group housing projects as part of bye-laws and master plan regulations;
- devise capacity building programmes at the local level in collaboration with the proposed J&K State Institute of Housing and Habitat Management Studies, NGOs/CBOs etc;
- facilitate public-private partnerships in areas of land assembly, plot reconstitution, housing, infrastructure and financial intermediation;

6.1.6 Role of Private, Cooperative and Community Sector Agencies

These would:

- undertake an active role in terms of land assembly, housing and development of amenities within group housing projects for the target groups including the vulnerable sections;
- create housing stock on ownership and rental basis;
- work out schemes in collaboration with the public sector institutions for public housing, social infrastructure and slum reconstruction on cross-subsidized basis;

6.1.7 Role of Housing Finance Institutions (HFIs):

These would:

- reassess their strategies in terms of outreach and inclusiveness to enhance their coverage portfolio including poorer sections of the society;
- adopt a more flexible and innovative approach in their credit appraisal norms;
- promote innovative mechanism like mortgage guarantee and title insurance to augment fund for housing sector.
- provide loans at concessional rate of interest to specified persons for purchasing a house site or house.
- devise innovative housing finance schemes for targeting the EWS and LIG segments of the housing market with suitable subsidy support from the Central and State Governments.

- promote MFIs and Self-Help Groups for mobilizing savings and playing a significant role in the housing finance sector. Provide housing loans to EWS and LIG segments as a priority sector of banking as in the case of rural development programmes.
- encourage housing beneficiaries to take insurance cover to save lives and property from any eventuality.

6.1.8 Specific Action Areas

Land is the most critical input considering the specific requirements of housing and urban infrastructure projects, both in public and private sector. The prime and valuable agricultural lands and orchards are being urbanized in both rural and urban areas without any planning and in violation of standing laws. Agrarian laws shall have to be amended to preserve prime agricultural lands also ensuring that it does not become an impediment in the release and utilization of serviced land for developmental activities within and outside local planning area. Though there are no elaborate statutory provisions for land pooling, yet modalities for a Town Planning Scheme (TPS) are already incorporated in the J&K Town planning Act 1963. Land assembly, plot reconstitution and/or development by private sector shall also be encouraged ensuring the stakes of the landowners with detailed modalities.

Various initiatives have been taken at the national level in the recent past to restructure the housing credit system in the country, resulting in lowering of interest rates, subsidy in the interest rates, simplification of procedure and a sharp rise in the net inflow of housing credit. Commensurate benefits of these changes have not flown to the state of Jammu and Kashmir. Efforts shall be made to significantly scale of the net inflow of housing credit in the state. In this direction Government shall persuade the Jammu and Kashmir Bank, National Housing Bank, Housing Finance Institutions (HFIs), commercial banks and insurance sector to extend the network of their operations in the state to provide affordable housing credit to the people. Jammu & Kashmir State would consider creation of State Shelter Fund with a corpus of annual accretion of Rs.50 crore for leveraging in the creation of larger financial flows for EWS/LIG needs. A “Housing Risk Fund” with an initial corpus of Rs. 50 crore (to be contributed by the government) is to be set up, to cover repayment risks on loans up to Rs. 1,00,000/- provided by HFIs to EWS/LIG households. Foreign Direct Investments, Investment from Non Resident Indians and Persons of Indian Origin would be encouraged in housing, real estate and infrastructure sectors. FIIs would also be allowed to invest in RMBS issues. “Real Estate Investment Trusts (REITS)” / Real Estate Mutual Funds (REMF) would be recommended to be set up to serve as a mutual fund for real estate development through State level financial intermediaries. REITs through the pooling in of resources would allow individuals with small amounts of cash to take advantage of returns available from the buoyant housing and real estate market. Larger funds would thus, become available for investment in housing related projects.

6.1.9 Architecture and Design

Architectural designs of houses have significant bearing on the character and aesthetics of human settlements and the standardization of technology. Unique architectural heritage developed over the years is badly threatened at many places by mindless copying of designs from outside which are not in accordance with the local conditions. Government through urban local bodies, local authorities, shall promote development of a range of model type designs of houses of different sizes and specifications that are in harmony with the local environment. Government shall also institute awards for the best designed buildings in different regions to encourage innovative designs that are sensitive to local conditions.

6.1.10 Housing for Urban Poor

Though the '*Housing For All*' is a national agenda, however, it needs huge financial resources and robust institutional set up to achieve the national goal by 2022. There are various centrally sponsored schemes which need to effectively implemented, monitored and periodically reviewed to achieve the targets. Besides, the State Government should encourage PPP arrangements in the provision of social housing especially for EWS and LIG. It is enunciated to provide 20% allocation of dwelling units in the flatted group housing projects for Economically Weaker Section (EWS) and Low Income Group (LIG) preferably at cross-subsidized rates. In case of plotted housing projects, 20% of plots shall be reserved for urban poor along with all requisite facilities as per prescribed norms. However, the promoter shall have the option of providing the housing to EWS/LIG either in the same block/housing unit or some other alternative place with the consent of concerned authority. In case the Developer fails to provide housing to the EWS in the same housing unit/complex or else, '**Shelter Fee**' equal to the cost given below shall be collected from him –

- a) Construction cost including land cost of the FAR reserved for EWS housing;
- b) Amount of subsidy earned through cross-subsidization for total FAR;
- c) Any additional cost which may be necessary for the housing of EWS at other alternative site.

The concerned authority shall maintain a separate account for this fund to be used for the construction of EWS/LIG housing as well as for the maintenance of services etc; in the area.

6.1.11 Urban Villages

The Master Plan-2035 seeks to enhance focus on the development of sustainable human habitats based on '*regional planning approach*' and deepen the role of Government as a 'facilitator, partner and regulator'. The Government should earmark budgetary allocations for social

housing programmes within the ambit of annual District Development Plans (DDPs) linked with the master plans of the area. Srinagar is a fast growing city engulfing more and more surrounding villages. From planning perspective, it is imperative that these settlements shall be provided with a wide range of urban amenities and facilities for the benefit of local population. The Master Plan proposes provision of basic urban amenities, services and utilities in these settlements so that the same could blend with the growing urban continuum in years to come. Education, health, recreation, sanitation, water supply and improved transportation networks as well as work centres need to be developed in these villages so that they could keep pace with urban areas rather than remaining behind as blighted areas. These settlements are required to be developed as self-sustaining entities with efficient linkages with the mother city. It is necessary to mention here that mere incorporation of these villages within the Planning Area limits of this Master Plan shall not bar them drawing benefits guaranteed under various rural development schemes. The Government shall converge resources available under various central and state schemes for the overall development of these villages. Creating a growth centre and developing a planned Composite Cluster Settlement within a group of villages will provide a necessary trigger for balanced regional development and simultaneously lessen the burden on mother city.



7. URBAN GOVERNANCE AND PUBLIC INSTITUTIONS

Photograph Source: TPO Kashmir

7 URBAN GOVERNANCE AND PUBLIC INSTITUTIONS

7.1 Urban Governance

Governance is the enabling environment that requires adequate legal frameworks, efficient political, managerial and administrative processes to enable the local government response to the needs of citizens. It can be defined as the many ways that institutions and individuals organize the day-to-day management of a city, and the processes used for effectively realizing the short term and long-term agenda of a city's development. Urban governance is the software that enables the urban hardware to function. Effective urban governance is characterized as democratic and inclusive; long-term and integrated; multi-scale and multilevel; territorial; proficient and conscious of the digital age. (UN Habitat)

One of the focus areas in this millennium has been a paradigm shift in the global demographics with urban population surpassing rural population. Compounding this shift is the increasing correlation being established between economic successes of a nation to that of the extent of its urbanization. This has seen a phenomenal impact in the developing world where urban areas are being increasingly termed as the engines of economic growth. Such an impetus to the area necessitates policies and strategies addressing the ever-changing dynamics of the urbanization processes and the accompanying glitches of an emerging economy. Urban poverty alleviation, devolution processes, municipal administration, land management, governance, accountability, urban financial management and town planning processes are some of the areas that have seen focus in the urban sphere world over. Ensuring transparent governance and preventing corruption has become a policy priority for governments across the world. In other words, addressing corruption and ensuring accountability in the formulation of policies, implementing programmes and delivering services in a convenient, accessible and responsive manner is a non-negotiable priority for all nations. The introduction of concepts like New Public Management, Good Governance and rights-based approach to development has indeed brought about paradigm shifts in the way Governments approach the delivery of public services. The city needs to partner in piloting social accountability initiatives, evaluation of accountability institutions and mechanisms, preparation of toolkits for social audits, enabling the formulation and review of citizen's charters, and review of grievance redress mechanisms within its domain.

The three elements of good governance model are citizen engagement, performance measurement and government policy and implementation.

- **Citizen engagement** refers to the involvements of citizens in the broadest sense to include individuals, groups, non-profit organisations and even business corporate citizens. Private organisations are included primarily in the sense of their participation for public purposes rather than only to protect narrow private interests. In this view, citizen engagement in a community is best when it is broad, inclusive and representative of citizens.

- **Performance measurement** refers to the development of indicators and collection of data to describe, report on, and analyse performance. Social audit is an effective method to ensure some of these objectives.
- **Government policy and implementation** refers to the developments of public policy decisions about issues government chooses to address, the strategies it employs, the resources it commits and the actions it takes to carry out these decisions. This element covers the full cycle of planning, budgeting, implementing and evaluating government operations

The experience of the communities that have involved citizens in identifying priority issues and developing goals and performance indicators confirms that citizens can participate intelligently in these processes without having the years of technical knowledge and expertise. Citizen's participation is both an end in itself, and a means to an end. Citizens both men and women have a right to take part in making decisions that affect their community. This is because it affects their own development and future. Citizen Governance is about responding to people's needs and demands. It can be considered as a means of achieving better governance. Involving the people themselves in identifying their needs and demands, and in designing policies and programmes to meet them, is an excellent way of doing this.

7.2 Stages of Citizen Participation

One way to characterise participation is to identify the stage or phase of the process in which citizen participation is sought. The following stages have been identified:

1. **Problem identification:** investigation and discussion aimed at identifying the root cause or the most important aspect of a problem or issue.
2. **Problem analysis:** analysis of the context and factors influencing the issue or problem, followed by the development of possible interventions and/or policies.
3. **Policy preparation:** examining the feasibility of various policy options and identifying potential.
4. **Policy design:** choosing the optimal policy option, followed by refining and concretisation, so that it can be put into practice.
5. **Policy implementation:** putting the chosen policy into practice.
6. **Monitoring, evaluation and follow-up:** supervising implementation, gathering feedback on the effectiveness and efficiency of the chosen measures, and adjusting policies, plans and implementation in accordance with the feedback, in order to ensure sustainability.

7.3 Tools for Participation

1. **Standing Citizens' Panels:** The Panel which can consist of 10 to 25 members drawn from related fields of expertise or public concern who will advise government on policy issues on improving the services rendered by the department.

2. **Round-Tables:** Developed in Canada, the purpose is to bring together groups of interested parties and stakeholders to deliberate on various issues periodically.
3. **Participatory Planning Communities:** This tool can be used successfully for citizen participators right from problems identification and analysis to planning and implementation.
4. **Forums:** These are similar to round tables, but are less formal and less engaging than round-tables.
5. **Public Hearings:** Public hearings enhance citizen participation. Hearings have the explicit aim of soliciting people's opinions and reactions to proposals, with the intention of taking this feedback into account.
6. **Citizen/Community Outreach:** This is a popular way of motivating citizens to participate by arranging lunch, parties or events where citizens want to give suggestions, ideas or express support to the initiatives of the government.
7. **Citizen Committees:** A committee with 8 to 10 concerned citizens may be formed for each department, which helps the government in policy making, implementation etc.
8. **Joint Project Teams:** Project teams represent infusive interaction. They enhance citizen participation. Administrators should delegate powers to project teams to allocate funds and manage complementation.

The city needs to comprehensively engage with the works carried out in the realm of public service delivery with all institutions in tandem to ensure that people have a strong voice in the governance of the state and local body institutions. Key areas of work may include citizen's charters, community score cards, right to public services bill, right to information, capacity building of officials engaged in public service delivery and the evaluation of existing and new mechanisms of public service delivery.

Urban governance is at the heart of a city's efficiency. It is primarily about decision making and translating decisions into actions through a series of processes and institutions. In a democratic set up, decision making generally rests with political institutions though some powers are delegated to public institutions also. The world's most prosperous cities are those that are governed efficiently. Accountability and transparency are two key facets of efficient governance. The public institutions and systems have to be made as much accountable and transparent to people as they are made towards these institutions. In this connection, the state government has already taken some historic steps which include the following:

- Public Services Guarantee Act, 2010
- Right to Information Act
- Online disposal of building permission cases
- Biometric Attendance System
- File tracking system

No doubt these are landmark steps to improve delivery of services and efficiency of public institutions, however, a lot more needs to be done which should focus on following key areas:

- Administrative and service reforms
- Public Accountability and Service Delivery
- Change Management and Organisation Development
- Human Development or Social capital formation
- Public Finance Management
- E-Governance

In light of these focus areas, following recommendations are made to improve urban governance.

- 1- Establishment of a Ministry of Human Resource Development with a full-fledged minister in-charge. The ministry shall have a mandate to work for human capital formation by imparting trainings through ITI's, polytechniques, skill development and craft development institutes as well as JKEDI. Besides the department will work for upgradation of public institutions by way of trainings, capacity building and more importantly rationalisation of staff and mandatory periodical revision of recruitment rules.
- 2- Innovation is key to the efficiency of delivery of public services. Functioning of systems generally improves with least human interference. In present day world, ICT provides us opportunity to benefit from smart solutions to redress our day-to-day problems. The city needs to introduce smart solutions to a wide range of problems related to public facilities and services like water supply, sewerage, solid waste, traffic and transportation, health, education, power, disaster risk reduction etc.
- 3- Another innovative step could be creation of a *common e-platform* for uploading the departmental data, layouts, projects etc. This could be done by establishing a state-wide meta-data web connecting all departments for seamless information flows.
- 4- Since some 300 villages constitute as part of Local Planning Area (LPA) of this master plan, it is equally important to improve efficiency of existing infrastructure in each panchayat village. In this connection, it is recommended that the Panchayat Garhs be upgraded to village town halls which shall house local panchayat as well as provide accommodation/facilities to field officers of various departments engaged in the developmental works of the area.
- 5- Constitution of a Department of Economic Affairs for PPP projects within the Department of Finance.
- 6- Strengthening of Local Self-Government Institutions by way of financial devolution and decentralization of more powers and functions as enlisted in 73rd and 74th CAAs can be key instruments towards effective governance. These local institutions need to

partner with civil society groups, community organisations, NGO'S and eminent citizens for the formulation, execution and monitoring of projects as well as delivery of public services.

7.4 Administrative Re-structuring of Srinagar Capital City

Srinagar is the Summer Capital of the State. It is also the seat of District and Divisional administration. Besides, the city houses a number of highest order health and educational facilities. The predominant public and semi-public uses are the Secretariat, Legislative Complex, High Court, Doordarshan, Medical College and associated hospitals, SKIMS, University and academic colleges etc. In view of the high land values and low intensity use in the CBD, the master plan envisages consolidation all district level offices and the seat of divisional administration under-one-roof in Mini-Secretariat by way of re-organising the administrative offices and other activities as shown in **Table 7-1** given below. The spaces so created shall be used for business development, tourism infrastructure and other activities besides creating some green spaces in the area. The reuse of these highly precious urban spaces for other purposes is imperative for a slew of measures like the limited availability of developable land, high land costs and the impediments faced in the release of land for the implementation of master plan proposals. The government accommodation provided to Government employees working in the Secretariat shall be replaced by flatted development in Pampore planned in the vicinity of JKEDI in *Planning Zone MHDR_Zone_I*. Government accommodation in the form of apartments will facilitate high rise and high density development. The two pronged strategy of reuse of underutilized lands and provision of government accommodation in the form of high rise apartments will go a long way in the implementation of Master Plan objectives. The comprehensive list of the shifting and reuse of the offices etc from city centre is given below:

Table 7-1: Public and Semi-public uses to be phased out to alternative sites

Sl. No.	Activity/Use	Proposed use of the site	Alternative location
1	Secretariat /Capital Head	As per Committee recommendations, the Secretariat shall continue to function at its present location till such time as Government may decide.	The Committee also recommended to reserve the site at Nowgam abutting N/H Bypass near proposed Traffic Rehabilitation Park/ Arboretum for placement of Secretariat in future.
2	Forest Department at Lal Chowk	Tourism infrastructure	Mini-Secretariat
3	Government Press near KMDA	Commercial and a Public Park	Pampore near JKEDI
4	Doordarshan	Tourism infrastructure	Airport
5	Chief Justice Accommodation	Tourism infrastructure	Gupkar

6	CAPD Godowns at Shaheed Gunj	Public park, Playfield, craft centre and multilevel parking	Dry Port at Budgam near Railway Station
7	Old Assembly Complex	Tourism infrastructure	Mini-Secretariat
8	Old Secretariat Complex	Museum and Art Gallery	Mini-Secretariat
9	Div. Com/DDC Complex	Tourism Infrastructure	Mini-Secretariat
10	Office of DSEK	Education (expansion of school)	Mini-Secretariat
11	Deputy Chief Minister Accommodation	Banquet Hall and State Guest House	Sonawar
12	Director Information and DIG Traffic at polo View	Central Park	NH Bypass Bemina
13	District Police Lines Srinagar	Institutional housing	Eidgah, Noorbagh
14	Chest Disease Hospital	Community facility	Zewan
15	Central Jail at Badamwari	Craft Centre	Khunmoh
16	Mental Hospital	Craft Centre	Khunmoh
17	Govt. Poultry Farm, Badamwari	Disaster Cell	-
18	Leper Hospital and Leper Colony	Tourism Infrastructure	Khimber/Shuhama/Saidpora Humchi
19	Veterinary Hospital, Maisuma	Tourism/Commercial	Eidgah, Noorbagh
20	District Court Complex	Tourism	Tengpora
21	Horticulture and Agriculture Department at Lal Mandi	Tourism and allied	Proposed Mini-Secretariat
22	Fire & Emergency at Batamaloo	To be retained as recommended by the Committee and the proposed library to be developed at City Centre, Batamaloo as envisaged in the master plan.	

7.5 Rationalisation and Strengthening of Public Institutions

In order to achieve the development targets over next 20-25 years, the institutions and supportive legislative tools need to be made consistent with policy directives conceived in this master plan. The institutional framework which is unable to cope up with the requirement of city development has to be upgraded and re-organized to make it structurally more robust and effective. While the current structure is fragmented, it is held together by good people who are technically and professionally competent. The institutions need to be built on strengths to improve public services delivery system. Action must be taken now to reform the public institutions, their structures,

implement process improvements and develop a “one-stop” permit information and Developmental Services Centre for the entire Srinagar Metropolitan Region. By 2035, Srinagar is going to be 3.0 million city sprawling over an area of 766 sq. km. The existing institutions have to be upgraded especially in terms of professional manpower and knowledge for which the respective departments should be duty bound. In the first place, the SDA should be re-designated as Srinagar Metropolitan Regional Development Authority (SMRDA) for which necessary provisions in the existing legislation need to be made. Srinagar Municipal Corporation (SMC) also needs to be made more vibrant in terms of socio-economic development including town planning and delivery of functions as per the 74th Constitutional Amendment. It is strongly felt that SMC should also be re-organised as per the proposal submitted to the Government. Also the institutional capacities of Town Planning Organisation Kashmir, ULBs etc have to be upgraded equally on mission mode as they have a key role to play in the overall development of the city.

The Srinagar Metropolitan Regional Development Authority (SMRDA) with well-established departments shall ensure that planning and development become a continuous process and does not caluminate with the formulation of a Master Plan only or piecemeal execution of individual projects. It shall ensure implementation of Master Plan as per priorities, its timely review and updation, assessment of policy domain, preparation of Core Area Plan, Zonal plans, reform priority as per the changing requirements of the city etc. Unlike existing arrangements, SMRDA act an interface between developers/investors and primary stakeholders in urban development.

Further, the building permission process is so protracted and becoming an *alibi* for violations. The building permission regime needs to be simplified so that planned development is not impeded by the protracted building permission process. A single window BOCA clearance system needs to be adopted within stipulated time period. It is also envisaged that the Authority shall be kept abreast of any activity, and the execution of any development activity or project shall start only after securing permission from the Authority.

Recapitulation of Recommendations:

- A time-bound review of all departments in terms of their functions, staff and capacities.
- Assessment of public departments *vis-à-vis* the best public institutions of most efficient cities in the world.
- Review of recruitment rules and rationalisation of existing staff across all departments.
- Consolidate and transfer all existing municipal planning and economic development functions to Srinagar Municipal Corporation as per the 74th CAA.
- Creating a robust, modern Municipal Planning and Development Department that includes the planning, building inspection and enforcement, city engineering, economic development, community development and neighbourhood services, redevelopment, urban renewal, downtown development, housing, historic preservation and parking services in a single administrative agency.

- Create easy public access to information, procedures and processes.

Use of Technology

One of the main reasons for the non-regulation of building activity has been the overwhelming dependence on the human element in the enforcement by the Municipal Corporation and Development Authorities. These institutions need to use the available technologies like the satellite imageries, aerial photographs, GIS software and detection software for planning, building permission and enforcement. Technological intervention will facilitate transparent planning, building permission and the regulation of the building activity in the local area. These institutions should hire professional town planners who shall be supported by proper technological platform for taking the Municipal Corporation and Development Authorities to 21st Century. The trend of the employment of the Architects, Engineers and Draftsmen in the planning wing of these institutions should be stopped forthwith.

Accountability

One of the key reasons for the violations in Srinagar Local Area is the lack of individual accountability of the planners, engineers and enforcement officers in the SMC, SDA and other ULBs. The institutions should create systems for not only fast tracking the processes but also shall be prompt in holding the officers and officials accountable for violations and dilatory tactics adopted in dealing with the citizens. One major intervention which can take the Municipal Corporation and the Development Authorities a long way towards planned development and restore its credibility is the outsourcing of the building permissions, initially the residential, by registering qualified Architects and Town Planners after building their capacities to handle the permissions simultaneously eliminating the role of draftsmen in the process. Town Planning Organization shall be designated as the nodal agency for assisting the ULBs and Local Authority to set the systems in place initially till the process takes off.

7.6 Defense Use

As per the existing landuse, the defense use is spread over an area of 23.0 sq. km. including many military and paramilitary establishments. The widespread existence of military and paramilitary establishments across Srinagar has actually surpassed its area under public infrastructure. The statistics reveal that there is more area occupied by defense use than the area used for the development of District, Divisional and State level public and semi-public infrastructure. The indiscriminate dispersal of defense establishments in every nook and corner of the city including the civilian areas is construed as a major impediment in city development. Adopting the guidelines of the Ministry of Defense, the situation will become more grim causing undesirable strain on urban infrastructure. **Undoubtedly defense is a non-urban use which if not shifted needs to**

be consolidated at select locations in the periphery of city. As such, it is strongly recommended that the existing defense establishments need to be consolidated or re-organized by shifting such establishments located deep inside civilian areas, important commercial areas, public buildings, etc. As an immediate policy measure, the army establishments at Tatoo Ground, Alouchibagh and civilian areas need to be shifted at the earliest.



8. ECOLOGY & ENVIRONMENT

Photograph Source: TPO Kashmir

8. ECOLOGY AND ENVIRONMENT

Rapid population growth and unplanned urbanization is fast resulting in depletion, deterioration and over-extraction of the ecological resources. Protecting our rich biodiversity is directly tied with the city's sustainability and attractiveness as a place to live, work and visit. It is also clear that addressing environmental issues at the city level will not be possible without appropriate urban planning interventions. *Resilience to potential environmental disasters can be increased through proper urban and land use planning (UN-HABITAT, 2010)*. The Master Plan has the spotlight to integrate urban planning to environmental sustainability emphasizing governance by environmental agencies, institutions and stakeholders. This chapter is focused on protecting and restoring our ecology, and improving the environmental conditions of the city to sustain urbanization.

Srinagar City and its surrounding areas has an extensive ecological footprint of rivers, streams, lakes, canals, wetlands, forests, hills, gardens, orchards and agricultural fields. Anchar, Kushalsar, Dal Lake, and Nageen Lake are some of the significant lakes and Hokersar and many smaller wetlands are the ecological assets of the region. River Jhelum runs through the Valley and old Srinagar city was built around it. The Kashmir Valley is surrounded by lofty Himalayas on all sides. The Glacial Flooding and Jhelum River have sculpted much of the city's topography over tens of thousands of years. Srinagar City lies in an ecologically fragile region with a number of wetlands, lakes and other water bodies. The Floods of September 2014 exposed the vulnerabilities of the city and the inevitability of a cautious and structured planning process for its survival. The structure of the planning process has to be comprehensive and hierarchical using the scientific data in the form of layers based on geology, hydrology, soils, fault lines, floods and seismic vulnerability.

8.1 Lakes, Wetlands and Waterways

8.1.1 Lakes

Last four decades of "urbanization" has compromised many water bodies, and fragmented the complex ecosystems connecting these water bodies. The water bodies and the complex ecosystems including their connectivity need to be further researched in detail and both at Srinagar Master Plan Level as well as the regional level. So far the focus has only been on the Dal Lake as a tourism asset. The Dal Lake is connected to Jhelum, its outfall channels go to *Brari Numbal, Khushalsar, and Gilsar*. Water from *Khushalsar* goes to *Anchar* Lake which is also fed by *Sindh Nallah*. The *Sindh Nallah* also feeds the *Rakhi Shallabug, Harran Forest* and then joins Jhelum River at *Sangam*. The complex systems of these water bodies and their relationships need to be studied in detail. *Khushalsar* and *Anchar* Lake, the major urban lakes are facing serious urbanization challenges and their death in turn will lead to the death of the Dal Lake. These water bodies have huge environmental and

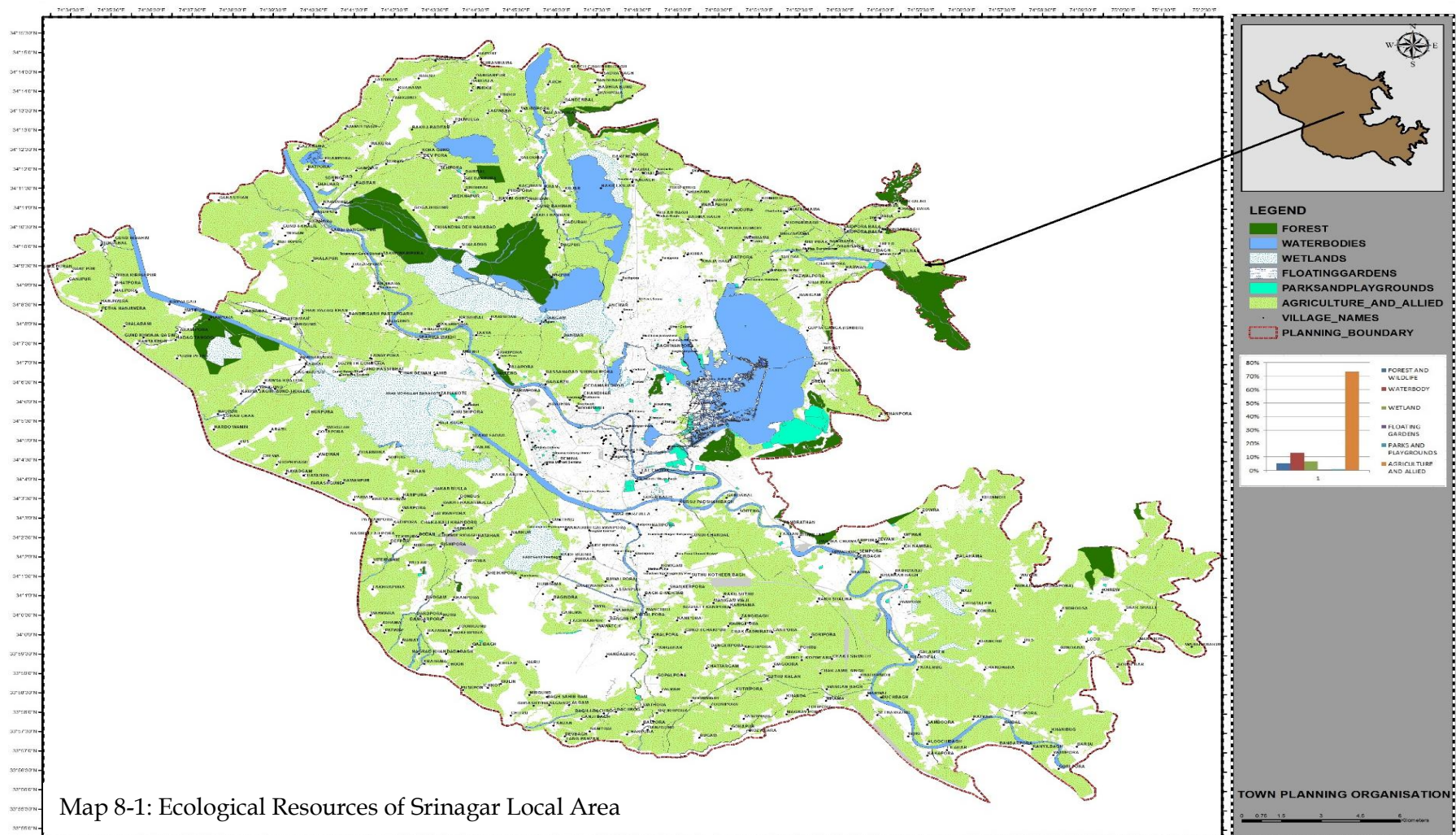
ecological value and potential for tourism and economic development of Srinagar. The vegetable demand of Srinagar has historically been met by the *Dal*, *Anchar* and *Khushalsar* lakes; hence the city owes its existence to these lakes and wetlands.

The lakes and wetlands have not been only the reserves of biodiversity and ecology but also acted as flood sponges. Lakes are cultural, ecological and economic resources and the vision for the preservation and conservation of the lakes should be comprehensive encompassing all these aspects. Ignoring one aspect may lead to skewed vision with disastrous consequences for lakes and water bodies. Srinagar was very much a 'landscape of gardens' in Mughal days, closely linked to other historical layers such as the *Naga/Tirtha*. The senseless urbanization of these fragile areas has not only compromised the status of Srinagar as an ace tourist destination in South Asia but has affected the resilience of the city to withstand to flood and other vulnerabilities.

Freshwater resources are considered to be the wealth of a nation, but our indiscriminate exploitation of these resources has led to their deterioration and caused them to lose their importance. Lakes not only provide the most easily accessible source of freshwater for humans but also provide a habitat for much of the planet's aquatic biological diversity. Lakes exhibit a complex interaction among physical, chemical, and biological processes but the human interventions are modifying all three of these drivers, resulting in the service functions and ecology of lakes getting compromised. Excessive water withdrawals, exotic biota, and overfishing also threaten the integrity of lakes. As a general rule, it is more cost-effective to control problems at their source than to undertake remedial action (*World Bank, 2003*).

8.1.2 Wetlands and Marshes

The lakes and wetland system of Srinagar city is unique providing natural habitat, migration routes and other ecological services, and contribute to residents' health, recreation and enjoyment. Unlike Dal Lake, other water bodies which *inter alia* include the *Hokersar*, *Anchar*, *Khushal Sar*, *Brari Numbal*, *Numble Narkara*, etc have been grossly ignored. *Hokersar* is a natural perennial wetland contiguous to the Jhelum basin remaining with the Reed beds of Kashmir and pathway of (68) waterfowl species. *Hokersar* covers an area of around 13.75 Sq. Km. and



was officially declared as a RAMSAR Site No: 1570 on 08/11/2005^{1,2} The Dal Lake which has been focus of conservation by the government will not be able to survive if the degradation of other water bodies continues. Due to complex interconnectivity of these water bodies, comprehensive environmental studies of other water bodies need to be undertaken immediately.

8.1.3 River Jhelum

The River Jhelum is the back spine of city's ecology and its importance can be equated with that of the jugular vein in human body. Besides natural ecology, Jhelum is the chord of our cultural ethos of over 2500 years. The river connects us to our past and guides us through our future.

The city's heritage and its renaissance are painted on the banks of river Jhelum in terms of historical buildings, *Khanqas*, temples, churches etc. The River Jhelum flowing through heart of Srinagar has attained the title of **Venice of East for the city**. Preservation of this precious treasure is another spotlight of this master plan. However, its preservation has to be linked to the conservation of its heritage resources from Zero Bridge to Cement Kadal along its both banks. Apart from historic seven bridges, there are 26 *ghats* which need immediate restoration. Jhelum which has been thrown into backyards has to be made as face of old city which it historically used to be. The I&FCD has already started restoration of its banks under

Designated-Best-Use	Class of water	Criteria
Drinking Water Source without conventional treatment but after disinfection	A	1. Total Coliforms Organism MPN/100ml shall be 50 or less 2. pH between 6.5 and 8.5 3. Dissolved Oxygen 6mg/l or more 4. Biochemical Oxygen Demand 5 days 20oC 2mg/l or less
Outdoor bathing (Organised)	B	1. Total Coliforms Organism MPN/100ml shall be 500 or less 2. pH between 6.5 and 8.5 3. Dissolved Oxygen 5mg/l or more 4. Biochemical Oxygen Demand 5 days 20oC 3mg/l or less
Drinking water source after conventional treatment and disinfection	C	1. Total Coliforms Organism MPN/100ml shall be 5000 or less 2. pH between 6 to 9 3. Dissolved Oxygen 4mg/l or more 4. Biochemical Oxygen Demand 5 days 20oC 3mg/l or less
Propagation of Wild life and Fisheries	D	1. pH between 6.5 to 8.5 2. Dissolved Oxygen 4mg/l or more 3. Free Ammonia (as N) 1.2 mg/l or less
Irrigation, Industrial Cooling, Controlled Waste disposal	E	1. pH between 6.0 to 8.5 2. Electrical Conductivity at 25oC micro mhos/cm Max. 2250 3. Sodium absorption Ratio Max. 26 4. Boron Max. 2mg/l

Table 8-1: Use based Classification of Surface waters in India (Source: CBCB)

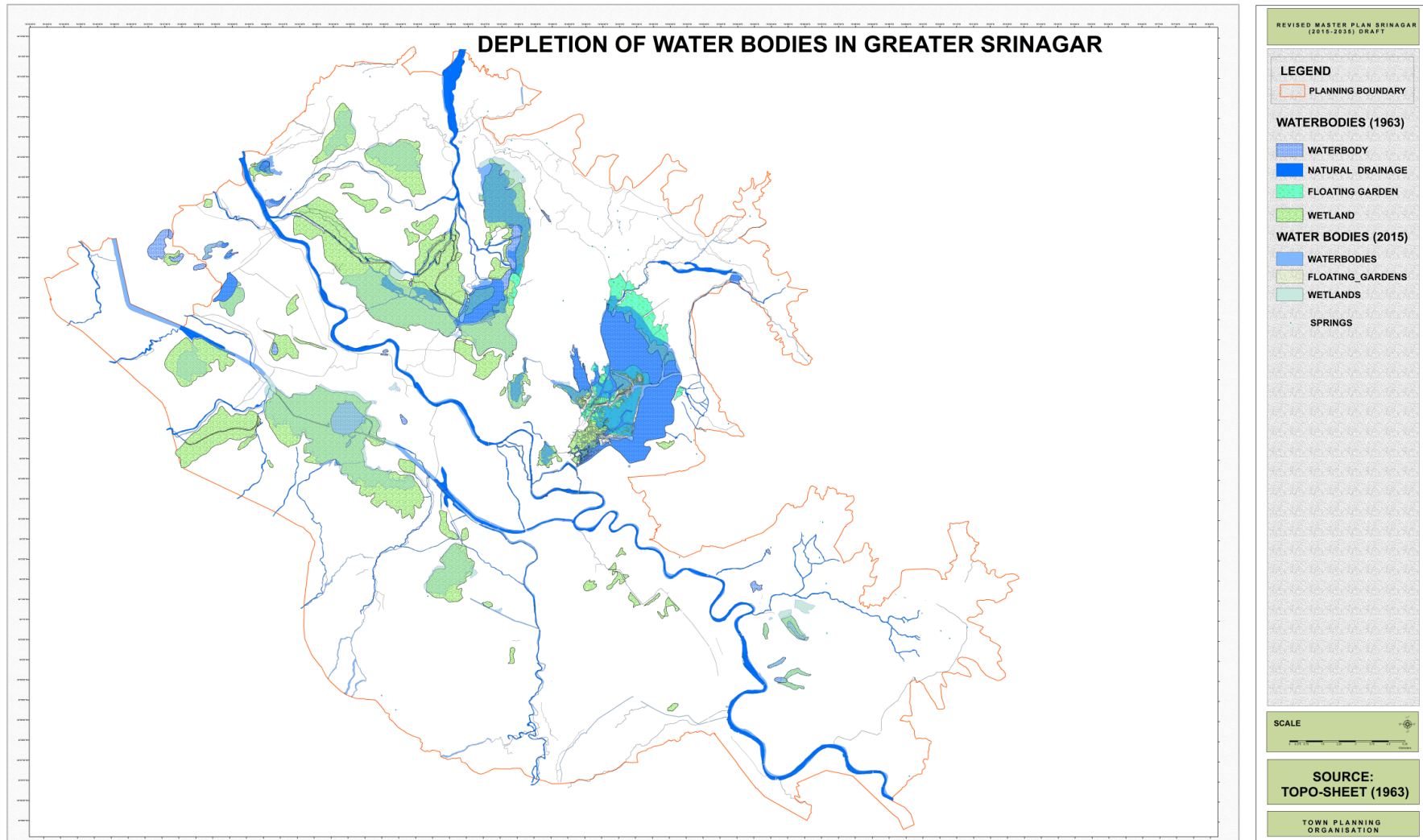
¹ (Source: Department of Ecology Environment and Remote Sensing, J&K)

its Jhelum Riverfront Project; however, the project needs to be made broad-based and upgraded to a Jhelum Revitalisation Plan. The project area shall be delineated on the basis of natural watershed. The main components of this project can be:

- Ecological restoration of river banks, historical bridges and *ghats*
- Retrofitting of historical buildings, religious shrines, temples etc. as part of its Conservation Plan
- Development of pathways
- Provision of public facilities and services
- Sullage and Sewerage
- Drainage
- Water transport
- Activity spaces for child recreation
- Display centres for showcasing out local craft and arts.

Water Quality

The direct disposal of waste into the water bodies has not only declined the quality of water in these water bodies but has also generated a number of health problems. There shall be proper disposal plans for solid and liquid waste ensuring that these do not harm our environment any more.



8.2 Rationale for conservation

The conservation and management of lakes and reservoirs must enter the mainstream of the economic development process through comprehensive water resources management and regulated urban development. Actions to improve management of lake basin resources on a

sustainable basis are necessary due to high levels of direct and indirect pressures on lakes and reservoirs from large populations inhabiting lake watersheds, rapid population growth, urbanization, excavation, growth of irrigated agriculture fields and impacts of climate change which are altering ecosystem processes and threatening the capacity of lakes and reservoirs to perform the requisite ecosystem functions and provide basic services for human needs. The Master Plan endeavours to get the lake and wetland conservation in the mainstream urban planning and development process by prescribing strategies which *inter-alia* include buffers for their conservation.

8.2.1 Dal Lake

Dal Lake has historically supported the city supplying vegetables and fish also playing an important role in sustainable water management, supporting a number of human activities, including horticulture, commerce, transport, sports and recreation, tourism, food production etc. Lake dwellers have historically been part of the lake ecosystems and the lake is also home to a variety of unique animal and plant organisms. **The settlement plan for the rehabilitation of Dal dwellers needs to be revisited to the extent to uphold this symbiotic relationship, and the Vision Document under preparation by IIT Roorkee shall provide the basic platform for the same defining the carrying capacity of the lake in more concrete terms.**

i. Issues

- i. Rampant construction of houses within the lake;
- ii. Shrinkage in area due to development of hamlets and conversion of water body into floating gardens within the lake;
- iii. Lake pollution: Sewage, Solid waste, agriculture run-off with harmful pesticides etc.;
- iv. Drastic reduction in the capacity of water channels leading to reduced circulation;
- v. Reduction in fresh water inflow;
- vi. Excessive weed growth and eutrophication;
- vii. Depletion of lake bed and choking of springs within the lake;
- viii. Loss of habitat of many aquatic species;
- ix. Resettlement of Dal dwellers;
- x. Large-scale destruction of forests and erosion in the catchment area;
- xi. Ecologically unsound irrigation practices;
- xii. Water and soil contamination from uncontrolled use of pesticides, raw sewage disposal and lake siltation;
- xiii. Uncontrolled urban and other forms of development;
- xiv. Pressure from increasing and uncontrolled tourism development; and

- xv. Use of polythene and plastics.

ii. Causes of Dal Lake Degradation – as per DPR of AHEC- IIT Roorkee

- i. The Dal Lake boundary is not properly defined along western periphery.
- ii. Encroachment due to unplanned urbanization and tourist activities.
- iii. Drastic change in land use/land cover of catchment area.
- iv. Reduction in volume by siltation mainly due to catchment area degradation.
- v. Increased pollution because of the increasing number of lake dwellers and floating gardens.
- vi. Entry of untreated sewage and solid waste from the peripheral areas and from the hamlets and house boats and agricultural return flow from catchment into the lake.
- vii. Construction of roadways disturbs the routine and smooth flow or hydraulic movements of water within the lake.
- viii. Reduction and clogging of water channels within the lake because of encroachments leading to reduce circulation.
- ix. Loss of settling basin and bio-filters due to dumping of dredged material from the lake.
- x. Lack of adequate infrastructure – sanitation infrastructure of Dal dwellers and catchment areas.
- xi. Reduction of fresh water inflow into the lake.
- xii. Institutional deficiency, hence data deficiency vis-à-vis water quality monitoring, mushrooming of alien species, weed growth etc.
- xiii. Lack of integrated planning and weak inter-sectorial co-ordination;
- xiv. Inappropriate water management;
- xv. Lack of financial and technical resources for ecosystem management and conservation;
- xvi. Limited income generation opportunities leading to unsustainable use of natural resources and pressure on the ecosystem.
- xvii. Limited incentives or disincentives to prevent or control environmentally unsustainable practices.
- xviii. Lack of awareness among key stakeholders and general public about the ecological values of the lake, its potential, and the corresponding need for its conservation.

iii. Recommendations

It is felt that we may permanently lose the water body if measures are not taken to firmly define the boundaries followed by types of actions – treatment within and outside the lake – to protect the Dal Lake from being depleted by inside/outside demands and to preserve this precious treasure of Kashmir valley. Based on the comprehensive study of all reference documents, the Master Plan-2035 makes following policies:

iv. Treatment within the Lake

- i. Clearly demarcate the lake margin especially along its western side by way of some physical delineation as shown in the Master Plan (Western Foreshore Road from Dalgate to Saidakadal as greenway), ensuring that both encroachment and entry of pollutants into the lake are completely restricted.
- ii. Ensure Un-interrupted flow of water towards Nallah Amir Khan.
- iii. Maintain gauges for maintaining water level of at least [11 feet] from the bed level.
- iv. Strong flushing and recirculation of water should be done periodically.
- v. The State Pollution Control Board shall regularly check the water quality of both *Dal* and *Nigeen* lakes and the quality norms prescribed shall be the guiding principles of lake conservation.
- vi. Revival of defunct springs by the removal of sediments and garbage.
- vii. Encouraging freshwater supply through inlets for maintaining health of the lake.
- viii. Restricting the growth of alien species within the lake.
- ix. Integrated approach for the conservation of *Dal and Nigeen Lakes, wetlands and water channels* connecting them through Nallah Amir Khan.
- x. Improvement of the settling basin.
- xi. The floating gardens are unique feature of the Dal Lake but their proliferation in the water expanse is also a potential threat to the Lake ecosystem. These along with other encroachments need to be monitored using the real time data and detection software on periodical basis minimizing the human element in monitoring.
- xii. Alignment of houseboats to houseboat zone which is fully equipped with trunk infrastructure. The implementation of the alignment of houseboats along the *Dole Demb* has been tardy with insignificant progress. However, its effect on the lake ecology and impact of winds on the realigned houseboats at *Dole Demb* needs to be scientifically assessed before its implementation.
- xiii. Preventing new arrivals of invasive species and reducing the spread of those already here. Reduction of nutrient load to reduce the dominance of blue-green algae. Comprehensive efforts for the replacement of water lilies – *Nymphia* – by *lotus*.
- xiv. Action needs to be taken now to protect and restore the remaining natural habitats in the Lake so that future generations can enjoy them as we do today.
- xv. Improvement of lakeshore scenery aesthetic appearance of the lakeshore should be improved by afforestation, development of parks and gardens, planting of trees.

All these proposals based on scientific understanding have to be translated in the form of robust urban development policy framework for the Dal catchment.

Catchment Management Plan / Urban Development Regulation

The objective of the Master Plan is to provide the land use policy for the city which will also facilitate the preservation of the complex lake and wetland system within the city and on its periphery. The specific objective of the Master Plan for Dal lake catchment is to prescribe the Land use which will ensure that the lake is preserved for posterity. The Vision Plan for the lake has been assigned to Civil Engineering Department, IIT Roorkee and the Master Plan Team interacted with the IIT Roorkee Team a few times but the policies of the Vision Document could not be incorporated in the master plan as the document was not finalised. However, the proposals of the Master Plan will need to be readjusted through Zonal Plans based on the policy framework prescribed in the Vision Document after it is finalized by the Consultants.

Objectives

- Protect and enhance water quality
- Reduce consumption of potable water
- Increase use of captured or recycled site water
- Reduce and manage surface runoff as storm water

Drainage System

Goal: Reduce and manage the material considered WASTE

Objectives

- 1. Consider waste as a resource for the input stream
- 2. Decrease consumption and increase recycling of organic and non-organic materials
- 3. Promote on-site waste management strategies: construction waste, household, institutional, energy
- 4. Increase community awareness of waste management strategies to rethink, reduce, reuse, recycle and repair
- 5. Foster partnerships with business and industry to demonstrate waste management strategies
- **Restoring the inflow and outflow channels entering or coming out of water body including Jhelum.**
- **Restoration of Drainage network:** There is a need for urgent plans for the revival of all water bodies and wetlands in Srinagar city along with their historical channels for the preservation of Dal Lake and other water bodies saving the city from the imminent flood

disasters. However; the revival of Nallah Mar may be difficult but comprehensive plans for the revival of water bodies including the *Tchuntikul, Sunrikul, Kitha Khul, Doodganga Nallah* and other water bodies needs to be undertaken immediately. The IFCD has already started the dredging and cleaning of River Jhelum and the similar work needs to be taken up for other channels ensuring their survival.

- The urban runoff from the Catchment needs to be controlled and treated by the setting up of bio-filter around the lake and other measures.
- Dockyard for houseboat repairs has to be upgraded.
- Nitrogen and Phosphorus elements entering into the Lake seem to be a major threat to its existence; as such their direct passage into the lake shall be restricted or their impact neutralised.
- **Reduce and Restrict run-off from farm fields:** Rainwater carrying nutrients, sediments, fertilizers and pesticides from farm fields into Dal Lake needs to be restricted, reduced and redirected into the *Anchar* Lake **by constructing a hillside drainage channel along the proposed *Shalimar-Pandach Road (ORR) from Shalimar to Anchar***. The agricultural practices in the lake catchment should adhere to the environmental guidelines of Lake DPR with major focus on *plantation and pasture development*.
- **Reduce use of pesticides and fertilizers in catchment:** Many of the chemicals used in lawns end up being washed away into sewers and eventually into the lake. Once in our waterways, the additional nutrients provided by these contaminants can cause algal blooms and harm aquatic species. Lakes and Waterways Development Authority in consultation with experts should come up with an alternative – plant native species that are easier to maintain and that can survive without extra pesticides and fertilizers.
- Use organic gardening techniques such as composting and mulching to control weeds and keep plants healthy.
- **Preserve and restore wetlands of the local area.**
- **Restore river and near shore habitats to support the return of native fish.**
- Inspection of manure management and enforcement of regulations at livestock breeding farms shall be improved.
- **Repair aging sewage treatment systems:** Sewage treatment plants in the Lake area are five in number with overall capacity of about 37 MLD currently treating about 32 MLD. Three of these STPs based on FAB technology are old, unable maintain the standards of effluent quality and demands of a growing population and increased service areas. There is a need for comprehensive review of existing sewerage system and plan for complete sewage treatment along with the specific recommendation regarding the technology shall be undertaken in the vision document under preparation. Other two are based on SBR technology whereas *Telbal* and parts of *Zakura* area do not have STPs which need to be taken up on priority basis. It is imperative in this context to look at alternate decentralized waste water system like DEWATS and PHYTORID as measures for managing sewage and preventing degradation of the lakes and water bodies.

- There should be a separate and effective solid waste management in the Dal Lake and its catchment area to reduce the inflow of waste into the lake.
- Denudation of city forests resulting in excessive soil erosion in catchment areas, increasing the siltation in lakes and wetlands, indiscriminate discharge of domestic effluents and run-off from agricultural fields leading to environmental degradation of rivers, eutrophication of lakes and wetlands and stone quarrying and excavation of hill slopes/*karewas* for building material are some of major environmental concerns city is facing.

Strategies for ecological restoration of lakes, water bodies, forests and open spaces

- Increase the green footprint in the city by profuse plantation on open spaces, along roads for avenue planation, hills and hillocks, conservation Reserve, flood absorption basin etc.
- It would be desirable to prepare a **Comprehensive Environmental Management Plan for Srinagar Local Area on Regional Environmental Assessment (REA) approach**. The REA approach allows for comprehensive and cumulative assessment of environmental issues and impacts arising from multiple projects and activities that are planned and expected to be implemented during the plan period, and can be used to establish environmentally sound development policy.
- Comprehensive incorporation of seismic building code, rainwater harvesting, green belt protection, etc.

Land Use Policy

Objectives

1. Protect, restore and enhance natural features, functions and linkages
2. Limit and manage the environmental impact of new development
3. Promote native species, increase urban tree canopy and enhance habitat to support natural community health, linkages and biodiversity, absorb CO₂, and reduce the heat island effect
4. Plan for walk able and age-friendly communities
5. Increase local food production and use

Encourage Low Impact Development and Comprehensive Land Use Planning:

The Master Plan should be followed by a detailed Zonal Plan of the Dal Catchment area and the same shall be implemented through a Town Planning Scheme (TPS) to specify the detailed land use taking into account the topography, hydrology, vegetation, ecology and settlement pattern of the area. The Land use policy for the catchment area shall be based on land suitability analysis supported by the research classifying the Dal catchment into high, moderate and low priority zones with the bottom-line of the preservation of lake. However, till the preparation of Zonal Plan, the Master Plan recommends a set of building bylaws which need to be followed for lake area till the specific byelaws are framed and *per se* should be consistent with the Vision Document for the lake area presently under preparation.

Buffer Zones/Green Belts

Buffers are the zones of vegetation between waterways and developed land that act as natural filters of toxins and contaminants. They also prevent erosion providing habitat for many species. The ecotones (the transition area) need to be preserved by restricting any form of construction from the lake periphery. Buffers are vital elements of watersheds and are essential to mitigate and control pollution from nonpoint sources. The purpose is to provide regulations for planting trees, shrubs and landscaping in these areas as well as to prevent soil erosion.

Table 8-2: Dal and Nigeen Lake Buffers

Sl. No.	Zone/ Area	Green Belt /Buffer (mtr.)
1	Dalgate and Nehru Park	50 meter from edge of the lake or building line whichever is more
2	Nehru Park to Nishat junction (NFR)	100 meter from edge of the lake
3	Nishat Garden to Naseem Bagh	
4	Naseem Bagh to Ashai Bagh Bridge, Nigeen	
5	Around Nigeen Lake from Nigeen Club up to Saidakadal	As shown in the Proposed Landuse Plan
6	Western periphery of Dal Lake from Saidakadal to Dalgate	50 meter from centre of the proposed Dalgate – Saidakadal Western Foreshore Road or the required green belt whichever is more
7	Telbal Nallah (from edge of Nallah)	50
8	Nallah Amir Khan	20
9	Other Tributary Nallahs that feed into the Lake	20
10	Circulation/ Navigation Channels /Irrigation Channels	20

Buffer zones/Green Belts around wetlands, lakes and other water bodies shall be adequate to ensure that their functions are protected and maintained in the long term. Buffer zone widths and management shall take into account the ecological functions of the water bodies, the potential impacts associated with the adjacent land use, and other relevant factors including flood plain. Buffers also add aesthetic value to the system. With all these benefits, it makes sense to propose buffer zones/green belts around each water body as ecotones in which vegetation is protected and maintained. The Committee recommends that the buffers envisaged in the master plan around important water bodies and wetlands like Dal Lake, Nigeen Lake, Brari Numbal, Khualsar, Gilsar and Anchar and other wetlands shall be subject to the outcome of standing pill filed in the Hon'ble High Court.

8.2.2 Other wetlands

General Recommendations

- In order to support ecologically sound mobility in tourism, the activity needs to be taxed based on externalities of each type of tourism.
- In order to reduce the burden of mobile recreational traffic, the public routes leading from the area around the lake to the lakeside communities must be greatly improved.
- Navigational infrastructure must be established in accordance with the needs of nature and the landscape, i.e. no extension of the harbours along Lake

Table 8-3: Buffers around Lakes/ Wetlands other than Dal & Nigeen Lake

Sl. No.	Name of Water body	Buffer in Meters
1	Anchar lake/ Shalbug Nambal /Haran Forest	200 metre along south, north and west sides and 30 eastern side from Soura to Pandach
2	Baba Demb/ Brari Nambal	As per the proposed Building Line
3	Hokarsar Wetland	200 metre from Sahriefabad to Narbal along South and west sides
	Hokarsar Wetland along eastern boundary	50 metre from Sahariefabad to Narbal along east and north sides
4	Khushalsar/Gilsar	50 metre from lake fringe
5	Phashakun Pampore	50 metre from lake fringe
6	Sukhnag Nallah	50 metre from edge of the Nallah
7	Small lake near Phashakun	20 metre from lake edge
8	Drangbal Nambal and Budсар	50 metre from lake fringe
9	Doodhganga Nallah	20 metre from edge
10	Mirgund Jheel	50 metre from edge of the Jheel

11	Nambal Narkur	100 meter metre from edge
12	Rakhi Rabitaar	50 meter from edge
13	Sind Nallah	50 meter from edge of the Nallah
14	Wudin	20 meter from edge
15	Other Small Water bodies	20 meter from edge of the water body
16	Sharab Kul	20 metre downhill side
17	Circulation/ Navigation Channels /Irrigation Channels	20 meter uphill metre from edge of the Channel

- Interests of traditional users of lake should be protected by compensation or by providing them employment opportunities in cleaning and dredging the lake.
- Making lakes centre of recreation alone only will destroy them beyond repair. Therefore; tourist levy should be charged for using the lake directly or indirectly.

8.2.3 Wetland Reserves

The buffer zones for wetland reserves are same as listed, however those wetland reserves which are not listed in the same Chapter shall follow the **100 meter buffer** around them to protect and enhance the terrestrial and aquatic health of the natural heritage system. Some regulations are being laid on the mining, quarrying works and industrial uses in close proximity of the national forests or sanctuaries under the Wildlife Protection Act Rules.

No SEZs may be planned in the sensitive areas such as the forests, archeologically important sites, sensitive ecosystems, etc. A buffer zone of 1000 m shall be maintained from such sensitive areas and a greenbelt with tree density of 1000 trees/ acre shall be developed in the said buffer zone. Buffer zone in case of Mining Lease (ML) area up to 25 ha is to be considered as 5 km all around the periphery of the core zone and for ML area above 25 ha, an area 10 km all around the periphery of the core zone.

Table 8-4: Eco-sensitive areas and Natural Reserves

Category	Name	Area (Sq. km.)	Proposed width of Buffer Zones (Metre)
National Park	Dachigam National Park	141	1000 (metre)
Conservation Reserves	Khrew	50.25	As indicated in the proposed Land use Plan-2035
	Khonmoh	67.00	
	Brain Nishat	15.75	
	Khimber Dara Shrazbal	34.00	
Wetland Reserves	Hokersar (Ramsar Site)	13.75	As provided in Table 4-6 below
	Mirgund	4.00	
	Shalbug	16.00	
	Pampore	0.25	
	(Chatlam)	0.25	
	Manibugh, Kranchoo, Chandhara	-	

8.2.4 Dachigam National Park

Dachigam National Park located at a distance of 22 km from Srinagar covering an area of 141 Sq. Kms. is famous for Hangul – Kashmiri Stag. Considering it as a precious environmental asset of the national importance, the buffer zone of **ONE KM** radius is provided around its primary boundary *[to be established with the concerned]* which is in sync with the standing Wildlife Protection Act and its Rules.

8.2.5 Conservation Reserves

As per National Wildlife Action Plan (NWAP) 2002-2016, “All identified areas around protected areas and wildlife corridors are to be declared as ecologically fragile under the Environment (Protection) Act, 1986.” Conservation Reserves include *Khrew, Khunmoh, Brain, Nishat, Khimber, Dara and Shrazbal*. In the buffer zone, adjoining or surrounding core zone, uses and activities are managed in the ways that help in protection of core zone in its natural condition. These uses and activities include restoration, demonstration sites for enhancing value addition to the resources, sustainable recreation, eco-tourism, fishing, grazing, etc. which are permitted to reduce its effect on core zone. Research and educational activities are to be encouraged. Human activities, if natural within these areas may continue provided these do not adversely affect the ecological diversity of the area.

8.2.6 Natural Endowment and Landscape Areas

Known for historical Mughal Gardens, Srinagar city is ironically lacking sufficient organised green spaces³. Even more precarious situation is seen in the Core City which is comprehensively without any natural vegetation presenting a desolate outlook. The once lush green forest areas, the *Zabarwan* hills, *Kohi Sulauiman* and *Kohi Maran* or *Hari Parbat* have turned into barren hillocks with a huge footfall of habitations in their foothills. Being a tourist city, Srinagar needs careful **Landscape Planning** in terms of plantation of indigenous trees along hills, open lands, roads, buffers, parks and gardens. Presently, the city has around 480 hectares under parks and gardens⁴. Except for few gardens, it has lost many historic gardens due to indifference and apathetic attitude. Gardens like *Dewan Bagh*, *Baghi Ali Mardan*, *Baghi Dilawar Khan* have already been lost. The Master Plan provides the last opportunity to rediscover the plethora of these gardens which still exist and connect them with other gardens and other open spaces and take it further through a comprehensive plan for redeeming the open spaces of the city. To increase the tree canopy, it is strongly recommended that plantation of non-local trees along road medians or buffers should be discarded and replaced by local species at the earliest. Priority should be given to trees having better environmental value in terms of foliage and growth. **Historic trees like Chinar need to be protected to preserve character of the city.** The Government should incentivise plantation of trees inside the premises of properties abutting roads. It is also provided that the green belt along the NH Bypass shall be brought under profuse plantation including Kashmiri Willow and Chinars and a series of connected green spaces for leisure and recreation.

The Master Plan upholding the vision of Srinagar Municipal Corporation of 'Clean Srinagar Green Srinagar' envisages that a series of interconnected open spaces and public parks need to be developed. With just less than 1.5% of its developed area under recreation, Srinagar is unusually far behind other metro cities in India in terms of its organised green cover⁵. Need of the hour is to have an Action Plan for holistic development of organised public open spaces in each ward and village. In this direction, Town Planning Organisation Kashmir has already prepared a draft sketch of Action for augmenting the green cover in Srinagar city.

Action Plan for augmenting the green cover in Srinagar city

Due to unprecedented urbanization, the gap between city inhabitants and nature is increasing. The concretization of cities and towns has adversely impacted the natural environment. The space to be utilized for open green has become limited as the cities and towns experience growth. Urban greenery is one of the ways to bridge this gap

³ The master plan proposes a minimum of 3.5% of organised green space in terms of public parks and open spaces

⁴ As per data, Srinagar city has more than 200 parks which are maintained by Department of Floriculture

⁵ Studies show that most of the green cities in the world have more than 15% of their surface area under green spaces

between people and nature. High population density is also another reason for poor development of urban greenery. An attempt has been made to analyse the area under recreation/open space for different cities based on the data given in their respective Master/Development Plans. It has been found that the quantum of per capita green space required for cities varies across different countries of the world. Green space coverage in world cities varies marked ranging from 1.9% (Reggio di Calabria, Italy) to 46% (Ferrol, Spain). Aarhus, with a population of 0.3 million is the second largest city in Denmark. Its Green Structure Plan was prepared as part of the planning reforms of the 1970s with a mission as “no dwelling should be more than 500 metres from a green area of at least 6,000 SQM”. In Curitiba (Brazil) with a population of over 1.7 million, witnessed reduced per capita urban green space of 1.0SQM in 1970 which through consistent efforts by local authorities has been successfully increased to 51.5 SQM over next 40 years.

Currently developed countries have tended to adopt a general standard of green space of 20SQM per capita. The World Health Organization (WHO) recommends that cities should provide 9 SQM of undeveloped (unpaved) open space for every inhabitant. The WHO also suggests designing green area networks so that all residents live within a 15 minute walk to an open space. There is yet another yardstick, which refers to London but has relevance to any other city. Sir Patrick Abercrombie formulated the Greater London Plan in 1946 proposing that 1.62 Ha of open space per 1000 population was a reasonable figure to adopt for London. The plan also explained that all forms of open spaces need to be considered as a whole, and to be co-ordinated into closely-linked park system, with parkways along existing and new roads forming the links between the larger parks. Canberra planned by Sir Walter Griffin has an extensive integrated network of open spaces that harbour more than 40% of the nationally listed threatened ecological vegetation. Despite development pressures, Wellington in New Zealand has 200 SQM per capita of green space.

In India, the existing availability of per capita open space varies from 0.81 SQM in Chennai to 278 SQM in Greater NOIDA signifying the wide variation. Cities like Varanasi, Chandigarh, Jaipur, Bhopal, Allahabad and NOIDA have more than the WHO prescribed norm of 9 SQM whereas cities like Bengaluru, Ludhiana and Amritsar have less than the norm ranging from 1% to 5%. It is interesting to note that in Greenfield Townships like Greater NOIDA, the per capita availability of open space works out to 278 SQM which is very high. This is illustrated by the fact that Greater NOIDA Master Plan has provided ample space for urban greens with most of the residential sectors earmarking large chunks of land under green.

Urban Green Space Standards:

The open spaces can include the following three categories, namely:

- a) Recreational space
- b) Organised green
- c) Other common open spaces (such as vacant lands/ open spaces including flood plains, forest cover etc. in plain areas).

As per the URDPFI Guidelines, the suggested standards for open spaces in large and metropolitan cities are **1.2 to 1.4 ha per 1000 persons**, depending upon the land availability. The older parts of the large cities have normally been found highly deficient with respect to the availability of open spaces, thus additional provisions in the new development may also take care of the existing deficiencies. For large and metro cities, provisions shall also be made for city level special parks such as botanical and zoological parks, picnic huts, children parks, amusement parks, etc.

Considering open spaces including all the above-mentioned categories, provision of 10-12 SQM per person may be desirable. However; in hilly areas, the protected zones and ecological conservation areas shall be considered to be over and above this open space requirement. In the built up areas (excluding recreational space, vacant land, flood plain, forest) the National Building Code suggests per capita green space @ 3 SQM as minimum norm. The hierarchy for organised green such as parks, play fields and other open spaces like specified park, amusement park, maidan, a multipurpose open space, botanical garden and zoological parks, traffic parks etc. are as under:

Sl. No.	Planning Unit	Population Served	Area Requirement per unit	No. of units
1	Housing Cluster	5000	0.50	3-4 local parks and playgrounds
2	Neighbourhood	15000	1.00	3-4 local parks and playgrounds
3	Community	100,000	5.00	2-3 community parks and playgrounds
4	District/ Zone	500,000	25.00	1 district level park and sports centre, maidan
5	Sub city centre	10,00,000	100.00	1 city level park, sports complex, botanical / zoological garden, maidan

Concerned Line Departments

The departments which are directly responsible for the development and maintenance of public parks in J&K are as follows—

- Department of Floriculture
- Srinagar Municipal Corporation;
- Srinagar Development Authority
- J&K Housing Board;
- Landscape Division, PW(R&B) Department

As per the statistics provided by various departments who are responsible for the development and maintenance of parks in their respective jurisdictions, there are as many as 169 parks existing in Srinagar city with a total area of about 287 ha against the minimum standard of 570 ha as provided in the Urban and Regional Development Plans Formulation and Implementation (*URDPFI, Vol. I*) Guidelines, 2015. This implies that the total area available under organised parks and gardens is deficient by close to 50% of the total requirement. There is no denying the fact that Srinagar city is grossly deficient in organised green spaces (*parks and gardens*). **As such, the city needs to have a long term Action Plan across departments/sectors to meet out the deficiency of green spaces in incremental manner over a period of time.**

Guiding Principles for Urban Green Spaces:

Urban green space is a significant part of sustainable development. Development of urban green spaces needs to consider interdisciplinary and integrative approaches such as economic, political, social, cultural, management and planning aspects to improve existing urban green spaces' facilities and services, and to optimize urban green space policies. The definition of urban green spaces which is agreed on by ecologists, economists, social scientists and planners is public and private open spaces in urban areas, primarily covered by vegetation, which are directly (e.g. active or passive recreation) or indirectly (e.g. positive influence on the urban environment) available for the users. Based on the studies of different cities, different researchers provide some guiding principles to evaluate the nature of green spaces.

- Firstly, one of the main principal factors in determining the nature of green spaces is their *quantity* in the city.

- Secondly, existing *qualities* like activities and experiences, and perceived benefits to the users determine the utilization of green spaces.
- Thirdly, the functionality of those green spaces is equally influenced by the location and distribution (*accessibility*) in the whole city.

Urban Green Space Interventions (UGSIs):

Open spaces serve a very important purpose in the relationship of man and the nature. If planned properly, they help in maintaining ecological balance. Highlighting this, it is recommended that a system of open spaces be provided as part and parcel of the Master Plan of the city. These open spaces, depending upon their function can be within the city and/or on its outskirts. They should include, apart from organized open spaces for recreational purposes, areas preserved as conservation reserves, forests, natural landscape areas, wetlands, biodiversity zones etc. The essence of urban planning is to provide adequate and equitable services to all groups. They have influence and impact on regional patterns of development, environmental impacts, and on maintaining socially acceptable levels of quality of life. The access to these basic amenities is critical determinants of urban quality of living. Though these facilities form an important and integral part of life of any community, but they are unequally distributed with the city. Inequalities in access to these facilities may be as a result of inefficiency in their distribution and allocation among various wards/zones. **Therefore, the first key step in this direction will be to understand the nature and pattern of their distribution across city before one makes an attempt to project and plan their future development to bridge the existing gap.** As a policy measure, it is stated that a comprehensive study needs to be done to:—

- Analyse the spatial distributional pattern and disparity of green spaces in Srinagar city;
- Identify the over served and underserved wards/zones for future planning of these amenities in the city.

It is strongly recommended that depending upon the requirement of the city, these open spaces should be adequately and uniformly distributed, and should be well defined in area and landuse. This will help in checking encroachments and changes in their functional use. It is emphasized that a *whole-to-part approach* of spatial planning be practiced. This calls for delineation and preparation of spatial development plans of each zone after approval of the master plan.

Urban Green Space Interventions can be defined as actions that significantly modify the quality, quantity and accessibility of urban green space. This can be done by establishing new urban green spaces or by changing the characteristics and functions of existing ones. A broad spectrum of intervention types can be implemented at different scales in open spaces. These include:

1 Pan City Interventions:

i. Implementation of Master Plan proposals:

The Master Plan upholding the vision of Srinagar Municipal Corporation of ‘Clean Srinagar Green Srinagar’ proposes that a series of interconnected open spaces and public parks need to be developed. The Master Plan proposes a minimum of 3.5% of organised green space under parks and gardens. Besides, the Master Plan Srinagar-2035 envisages a slew of other important proposals which can be taken up as important tasks under this Action Plan to increase the footfall of green spaces in Srinagar—

- Development of Greenways or Green Corridors along arterial roads and water streams, transmission line corridors (RoWs) in partnership with locals. It is envisaged that the open space along the NH Bypass shall be developed into a green belt with a provision for multiple recreational activities. It is emphasized that a provision for profuse plantation of Kashmiri Willow and Chinar's within a series of connected parks be developed along the road;
- Connecting ‘Green with the Blue’ by implementing shoreline/lake-fringe and riverfront development plans for Lakes, wetlands, rivers and other water bodies;

- iii. Creation of a baseline inventory of all ecological resources including parks and gardens, and maintaining a Green Register for their preservation and protection from encroachments and land use change;
- iv. To desist the practice of converting the open spaces into community or marriage halls by various departments;
- v. All green spaces that have been encroached over a period of time due to negligence of authorities, inadequate funding etc shall be retrieved in the first phase to bridge the existing gap;
- vi. Afforestation and biodiversity conservation along all hill slopes and open spaces;
- vii. Restricted open spaces maintained by various agencies and institutions be made accessible to common people for leisure and recreation during morning and evening hours;
- viii. Profuse plantation of native trees along roads, green trails, walkways, cycle tracks etc to increase green foliage and maintain green to asphalt ratio. A minimum of 15% geographical area in residential settlements, commercial establishments and public offices shall be brought under tree cover.

2 Zone/Neighbourhood Level Interventions:

- i. Formulation and implementation of Zonal Plans within the ambit of an approved master plan to identify the areas or zones/neighbourhoods with adequate or deficient green spaces. This will provide basis for the preparation of Neighbourhood Action Plans;
- ii. Prepare Neighbourhood Action Plans for the identification and development of community and neighbourhood parks with active participation of local community;
- iii. The SMC and SDA in partnership with Urban Forestry Division shall start a “Neighbour Wood Program” for each neighbourhood in collaboration with *Mohalla* Committees to enhance and promote biodiversity of local cluster/community parks, green belts, buffer zones, incidental open spaces, individual lawns etc;
- iv. Creating green spaces for community use by identifying and executing urban renewal, Urban Regeneration and Redeployment projects in the blighted and grey areas of old city;
- v. Development of green spaces as a buffer around all historic mosques and shrines as part of their conservation plans as mandated by various conservation laws;
- vi. Formulation of Town Planning Schemes under the provisions of the J&K Town Planning Act, 1963 for planned development of residential neighbourhoods with an adequate provision for green space;
- vii. Strict enforcement of Zoning Regulations and Development Promotion Rules & Regulation /Municipal Bylaws;
- viii. Promoting and encouraging group housing schemes (*both colonies and flatted development*) as per the group housing policy envisaged in the Master Plan-2035 for maintaining the desired green space ratio in residential neighbourhoods.

It is expected that with these steps at city and zone level, the deficiency of green spaces in Srinagar can be reduced by a significant proportion. Implementation of Town Planning and group housing schemes on PPP basis will respectively ensure 15% and 30% of the total area earmarked for the development of organised public parks in such residential neighbourhoods. Under such schemes, the Government’s role is that of a ‘facilitator and regulator’ only, and there wouldn’t be any financial implications accruing to the state exchequer. These models have yielded good results in other parts of the country as they do not involve any land acquisition.

3 Atal Mission for Rejuvenation and Urban Transformation (AMRUT) Scheme:

Providing basic services to households and build amenities in cities which will improve the quality of life for all, especially the poor and the disadvantaged is a national priority. Under the scheme, enhancing amenity value of cities by creating and upgrading green spaces, parks and recreation centres, especially for children is one of the key thrust areas. In this regard, the State Government has already its State Action Annual Plan in 2015 (annually reviewed) in which it has been communicated that the existing

per capita green space cover in Srinagar city will be upgraded to 4.5 SQM by 2020. To achieve the said target, the Housing & Urban Development Department has identified a number of projects which will be completed up to 2020.

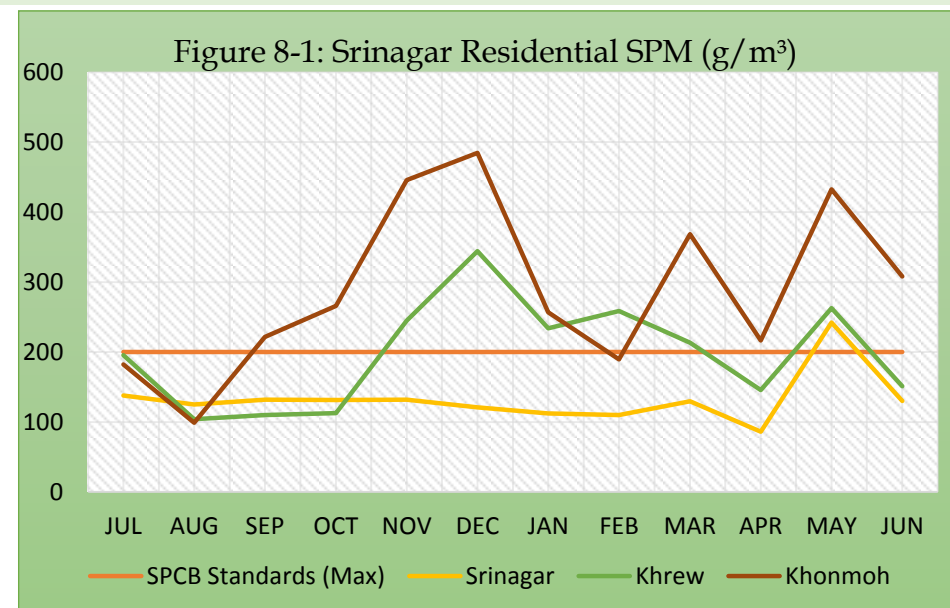
4. Srinagar Smart City Proposal:

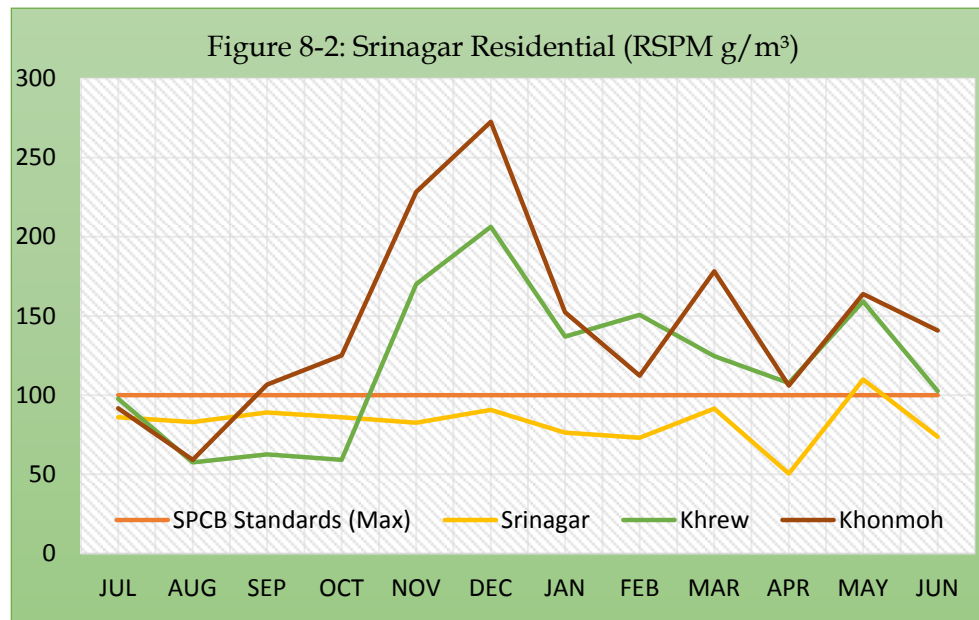
- The Smart Cities Mission is new initiative by the Government of India to drive economic growth and improve the quality of life of people by enabling local development and harnessing technology as a means to create smart outcomes for citizens.
- Smart Cities Mission is an urban renewal and retrofitting program by the Government of India with a mission to develop 100 cities all over the country making them citizen friendly and sustainable. Smart Cities Mission envisions developing an area within 100 cities in the country as model areas based on an area development plan. It is a five-year program, wherein financial aid will be given by the central and state government between 2017- 2022 to the cities and the mission will start showing results from 2022 onwards. Srinagar was one of the 100 cities to be selected based on the Smart Cities challenge.
- The Government has constituted ‘Srinagar Smart City Limited’ for implementation of Smart City Development Projects in Srinagar under Smart City Mission of Government of India. Smart Cities Mission Strategy include Greenfield development under which one of the smart city proposal for Srinagar is “Preserving and developing open spaces - parks, playgrounds, and recreational spaces— in order to enhance the quality of life of citizens, reduce the urban heat effects and generally promote eco-balance”.

Monitor and Evaluate Urban Green Space Interventions:

It is vital to monitor and evaluate urban green space interventions. Effective monitoring and evaluation starts at the beginning of a project by reflecting on the indicators that should be used to document the project outcomes, and by incorporating monitoring and evaluation activities in the project timeline and budget. Ensure that monitoring identifies whether the urban green space has activated new users or whether visitors simply used other green areas before. Mixed monitoring methods should be used involving civil societies, NGOs, CBOs, Mohalla Committees etc. There are a range of social, educational and economic benefits associated with community led green space renewal.

About 15% of area of any development project shall be earmarked for the development of organised recreational facilities. Under centrally funded scheme (CAMPA), intensive plantation drive should be kick-started to grow trees along the *Zabarwan hills, Kohi Sulaiman and Hari Parbat* etc. Areas earmarked for Ecological Reserves, City and District Parks, buffers etc. need to be developed without fail. Srinagar city has a large chunk of land under graveyards and other burial and cremation grounds. Malkhah in the old city abutting Kalai can





be developed into a vital lung space in this area. It is recommended that the State Government should ensure proper landscaping of historic graveyards and Eidgahs for enriching biodiversity and ecology in these areas. The CBD especially the area from Dalgate to Lal Chowk has plethora of green spaces disparate and not properly connected. All these spaces including the Polo Ground, Emporium Garden, TRC Park/TRC Ground, Golf Course, Chinar Bagh, and Sher-i-Kashmir Park will have to be integrated into a **Central City Park** providing multi-faceted experiences to the people.

The Master Plan takes cognizance for the need of promoting **avenue plantation** along all city roads. In this connection as recommended above, the government should partner with local people especially the owners having roadside properties to

grow trees insides their premises along the wall abutting the road especially in such cases where the roads are devoid of side and central green verges. It is strongly recommended that the **construction of concrete and brick walls along the public buildings/offices shall be totally banned and those having them shall be de-walled for creating see-through and a sense of more openness. It shall be started from Lal Chowk and along the NH Bypass Bemina. The practice of constructing walls between two government buildings shall also be banned and instead be constructed on the Concept of Connecting Lawns.**

8.3 Air Quality and Water Resource and Management

The components, air, water and land, are core elements of the environment that sustain a city. Measures to reduce the City's impact upon these resources will have a strong influence on city's quality of life and its ecology and thus improving its overall environmental performance.

Air Quality

The Valley cannot afford risking its quality of environment for more direct localised impacts. Smoke emissions and diesel exhausts are the most harmful airborne source of pollution to human health. The city needs to partner with the Department of Forest and Urban Forestry for increasing tree canopy to desirable level of 25% of its surface area. The SMC and SDA in partnership with Urban Forestry Division shall start

“NeighbourWood Program” for each neighbourhood in collaboration with *Mohallah* Committees to enhance and promote biodiversity of local cluster parks, green belts, buffer zones, incidental open spaces, individual lawns etc.

Industrial Pollution

Some industries [*RED Category as per the J&KSPCB norms*] like stone crushers, cement plants etc. having sprawled mainly in the southeast of Srinagar not only declined the quality of environment but have become disasters for humans as well as wildlife. Some of them, as per the Hon’ble Supreme Court Guidelines, 2010 are even falling within the buffer zone and the Conservation Reserve of *Dachigam Wildlife Sanctuary* as highlighted by the Department of Wildlife, J&K. The undesirable environmental effects of these industries lead to health related problems among the locals in *Khunmoh*, *Khrew* and other nearby settlements. **Figures 8-1 & 8-2** based on the inputs collected from State of Environment Report J&K, 2013, prepared by the Department of Ecology, Environment & Remote Sensing, J&K clearly indicate that the concentration of SPM and RSPM exceeds the standards of CPCB for industrial, residential as well as eco-sensitive zones for *Khrew* and *Khunmoh* areas. It is therefore, recommended that these industries shall be phased out and the area be developed for replenishing the biodiversity lost over a period of time. This shall however be subject to EIA as recommended by the Committee.

Objectives

1. Decrease corporate and community emissions released by vehicles, buildings and operations
2. Create walkable, bike and transit supportive urban environments
3. Enhance natural areas and increase the urban tree canopy.
4. Develop a strategy to support active transportation and traffic demand management

8.4 BUFFER ZONES

Settlements existing within Buffer Zones

All the buffer zone areas shall remain in a natural condition. There shall be no clearing or cutting of trees, altering of watercourses, dumping of trash, soil, dirt, vegetative, construction and demolition waste or other debris except for removal of dead vegetation and pruning for reasons of public safety or for the replacement of invasive species with indigenous species. No new construction, development use, activity, encroachment, or structure shall take place in a buffer zone, except as specifically authorized in this Section. **However, the existing built up within the areas specified as buffers shall be retained and considered for minor repairs till the finalisation of Relocation and Rehabilitation Plan or as the Government may deem necessary.** The Committee constituted vide Government Order No: 226-HUD of 2017 dated 09.11.2017 for scrutiny of objections and suggestions recommended that the structures requiring repairs and renovation or

reconstruction or construction within 200 metres green buffer around Dal lake shall be governed by the master plan landuse policy. Further, the built up within the specified green reserve around Dal and Nigeen Lakes and within the Dal shall be phased out on priority.

Open spaces and green reserves primarily passive in character have been extended into buffer zones/ green belts along Dal and Nigeen lakes for creating connected green spaces. These green reserves may include wildlife reserves, nature preserves, fishing areas, game farms, and fish hatcheries and fishing reserves operated for the protection and propagation of biodiversity. Such areas shall also be used for public and private parklands including unpaved hiking, bicycle and bridle trails provided that said trails have been stabilized with pervious materials.

Roads can be permitted in such zones but as far as possible be located away from natural channels. Recreational trails, storm water lines, sanitary sewer lines, water lines and public utility transmission lines shall be allowed provided that the land disturbance is limited and shall be, subject to approval by the competent authority. The following uses other than above mentioned shall also be permitted within these zones for purposes of mitigating erosion and water pollution and for sustenance of livelihoods without compromising the basic objective of ecological restoration:

- a. *Open air cafes*
- b. *Privately owned Floriculture parks*
- c. *Mini golf courses*
- d. *Honeybee rearing centres*
- e. *Fish hatcheries*
- f. *Herbal gardens, Rose gardens*
- g. *Community parks (privately owned on membership basis)*
- h. *Plant Nurseries*

The city shall partner with the Department of Floriculture for incentives and technical support to the land owners for developing such facilities within the buffer zones and also shall frame flexible policies in this context. The State Government shall provide soft loans to the entrepreneurs for carrying out such sustainable practices.



9. TOURISM & CULTURE

9 TOURISM AND CULTURE

City tourism potential is yet to be exploited with only a single corridor being in the list of tourist products in Srinagar. Srinagar is the museum of natural and cultural heritage possessing the vast diversity of both. It is home to lakes, rivers, wetlands, hills, forests, wildlife and a place with pleasant weather. The architectural repertoire of Srinagar presents the rich diversity and is live theatre of the legacy of its past rulers and citizens. There is a need to put the whole of Srinagar city on the tourist map exposing its unique tourism product diversity to the world; however these resources need to be tapped without externalities to the environment. Every tourism related development should be framed on the basis of three principles; environmental benefits, economic benefits and social benefits.

9.1 Governing Bodies

The J&K Tourism Department is a single governing body responsible for the development regulations of all tourism activities in Srinagar city. The Master Plan proposes to use tourism for local economic development by the diversification of the tourism package with following stakeholders.

- Tourism Department
- Wildlife Department
- Forest Department
- Floriculture Department
- Agriculture Department
- Horticulture Department
- Sericulture Department
- Srinagar Municipal Corporation
- Srinagar Development Authority
- Lakes and Waterways Development Authority
- Archaeological Survey of India
- State Archaeology Department

9.2 Existing Tourism Assets and Package

Although Srinagar local area is a museum of natural, built and cultural heritage, only few tourism products are enlisted with most of them being part of Boulevard Tourism corridor. These are –

- Dal and Nigeen Lake
- Mughal Gardens (Nishat, Shalimar, Cheshma shahi, Pari Mahal)
- Zabarwan Park
- Nehru Park
- Harwan Garden
- Tulip Garden
- Botanical Garden
- Hazratbal Shrine
- SKICC (Convention Tourism)
- Houseboats and Shikaras
- Shankracharaya (Takht-e-Sulaiman)
- Royal Spring Golf course

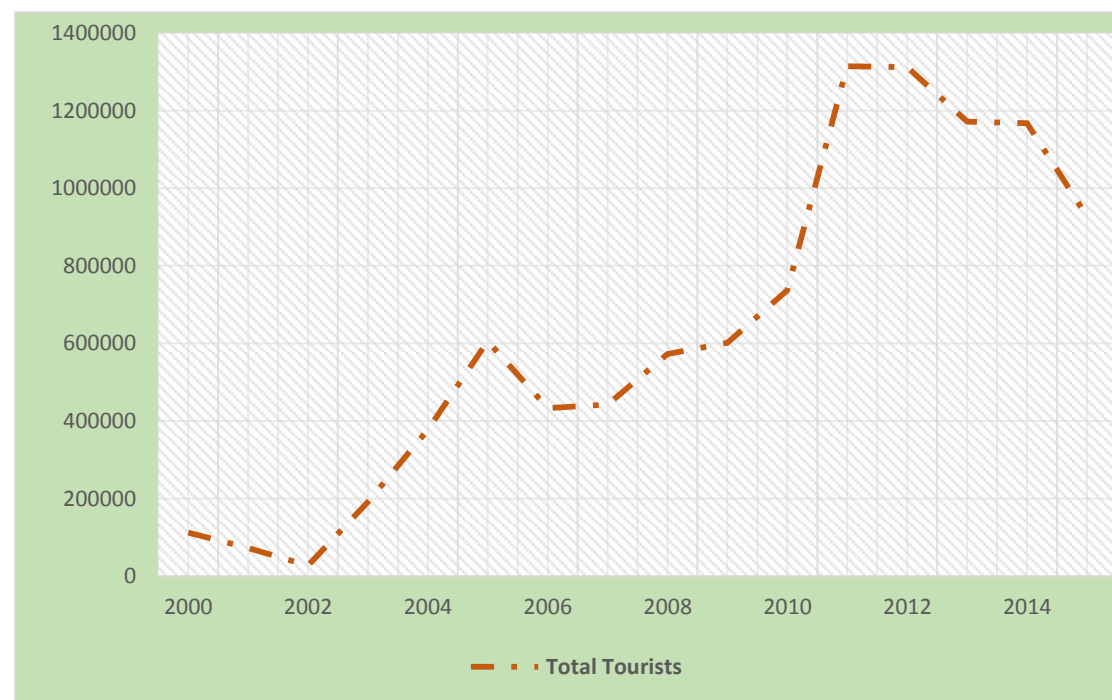


Figure 9-1: Tourist Arrivals in Srinagar

9.2.1 Diversity Potentials and Opportunities for Tourism Expansion

- **Leisure Tourism:** Srinagar has historically been the city of gardens and lakes with enormous potential for leisure tourism.
- **Eco-Tourism:** There are numerous natural sites— wetlands, forests and wildlife park in Srinagar Local Area with huge potentials which have not been explored. The rich biodiversity of wetlands like Hokersar, Anchar and Dachigam National park is perfect recipe for Eco-Tourism in the city.
- **Agri-Tourism:** The saffron crops in the Kerawas, orchards, cherry blossom, Vineyards have huge potentials for tourist activity. Floricultural nurseries and herbal farming recommended in the lap of Zabarwan hills will add to the potential for Agri-tourism in long run.

- **Cultural and Heritage Tourism:** Srinagar city is one of the oldest cities in Himalayas, having continuously existed for last 2500 years. Characterised by rich culture and heritage, historic Srinagar – *Shahri Kashmir* – situated on the bank of River Jhelum is a museum of vernacular architecture representing the evolution of the city. Mosques, Khankhas, temples, fort, old wooden bridges, narrow lanes and precincts are important architectural elements of Srinagar city. SLA is also the home to plethora of artisans with the Mohallas named on the type of handicraft. A number of handicraft artisan clusters with diverse skills are found across the city. Besides, Burzahama, Buddhist Monastery at Harwan and Parihaspora are important Archaeological sites rich for culture tourism.
- **MICE Tourism** (Meetings and Convention tourism): This tourism activity is on the rise as Srinagar has the advantage of moderate climate in comparison to the mainland India. SKICC on the bank of Dal Lake is one of the finest convention centres in India.
- **Adventure Tourism:** Srinagar local area is bestowed with Zabarwan Mountain Ranges, a number of Lakes and Rivers. The city has Adventure Tourism possibilities which *inter-alia* includes Rock climbing, trekking, Mountain biking, camping and water sports

Using the potential index based on the existing tourist products, new diverse potential sites have been identified for expansion and diversification of tourism activities.

9.2.2 Allocations of new Tourism Products on the basis of Potential Index

1. Eco-Tourism sites

- Hokerser Wetland
- Anchar Wetland
- Khushalsar and Gilsir
- Narkara Wetland
- Willow forest/Haran Forest, Dabsir
- Lake & Willow Forest proposed near Railway Station, Srinagar
- Dachigham Wildlife Sanctuary

2. Agri-Tourism

- Saffron crop fields, Pampore
- Orchards in the Dal Lake catchment, Gandarbal and floating gardens in Dal Lake
- Floricultural Nurseries and Herbal gardens along Dal lake

3. Cultural and Heritage Tourism

- Core 1
- Core 2
- Nine artisan clusters across the city
- 4. Ancient Site**
 - Burzahama Archaeological Site, Burzahama
 - Parihaspora Archaeological Site, Parihaspora
 - Buddhist Monastery Site, Harwan
- 5. Adventure Tourism:**
 - Cycling Track along the Sharab Khul in Zabarwan hills.
 - Paragliding and camping in Astan Marg, Darah
 - Mountaineering in Zabarwan Hills.
 - Rock climbing in Zabarwan Hills near Brein, Nishat.
 - Water sports in Dal and Nigeen Lake
 - Camping site at Willow forests, Dabsir at Anchar, Hokersar, Astanmarg Dhara
- 6. Other Tourism Activities**
 - Cycling and walkways along River Jehlum and around Dal and Nigeen Lake.
 - Central park in Lal Chowk as a multi-functional public space
 - New Gardens: Kalai Andher Hariparbat
 - Saif Khan Bagh be developed as Tourist Village-cum-Urban Haat
 - Mulsahai Bagh should be developed retaining its Mughal character.
 - Water Park at Baba Dem
 - Cherry Bagh, Nigeen
 - Fossil Park at Khunmoh
 - Amusement Park/Theme Park Mirgund Narbal

9.3 Tourist Projections [2035]

The estimated tourist population calculated by the Department of Tourism, J&K for year 2035 is expected to be seven million.¹ Further it may be advisable to focus on quality of tourism rather than the quantity as it will jeopardise the fragile ecology of the Valley. It is assumed that around 50% of the tourist population will be visiting Srinagar in peak [four] months during summer which implies an average 28,000 tourists per day by the year 2035. Assuming the average two days stay at Srinagar, the city will require about 56,000 beds per day by the year 2035. Presently, the existing bed supply of Srinagar city is 42,875 implying that 13,000 additional beds will be required to cater the tourist demand by 2035.

Table 9-1: Tourist Projections

Year	Tourist Population	Supply /day (Existing Bed Capacity)	Demand/day (Beds)	Analysis
2015	9,27,815	42,875	10,309	Surplus
2035	7 Million (Projected)	--	56,000	13,000 (additional beds required)

Although a number of heritage buildings across city are required to be transformed into tourism infrastructure, there is a potential requirement of about 100 hectare of land for green-field development in different Tourism zones for tourist Accommodation in Srinagar Metropolitan Region.

9.3.1 Bases for Allocating Tourism infrastructure

A number of parameters were adopted to earmark the suitable sites for tourism infrastructure in Srinagar Local Area [SLA]. New potential sites for tourist accommodation and other related infrastructure have been identified on the basis of scientific analysis using GIS. The parameters adopted *inter alia* include parameters –

¹ The studies commissioned by Ministry of Tourism, Government of India prescribe the carrying capacity at 2.5-3.0 million putting question mark on the projections of Tourism Department.

- **Site Suitability:** it should not be in the eco-sensitive zones, flood vulnerable area, prime agriculture land, forest land, steep slopes etc.
- **Accessibility and connectivity:** Site should be well connected and accessible by transport.
- **Location:** it should be located at an efficient location which is approachable to more than two tourism products and should also cater in the regional context.

The brief background of the analysis is given below:

Step 1: Identification and mapping of existing and proposed tourism products (discussed above) in Srinagar Local Area.

Step 2: Seven tourism zones (as shown in Map) are delineated on the basis of close proximity of tourist products, for the allocation of Infrastructure.

Step 3: Zones are distributed into Grids.

Step 4: Different layers like land suitability and Accessibility are overlapped on the Grids

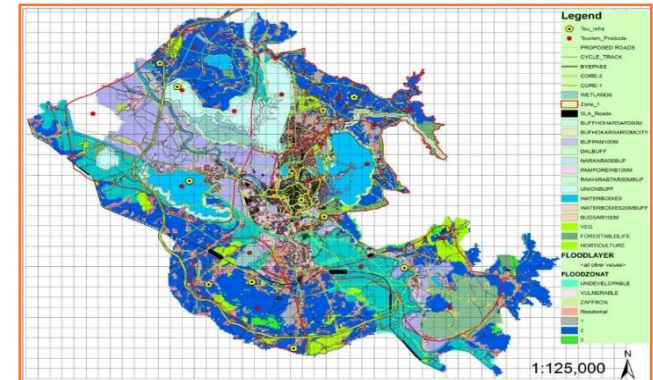
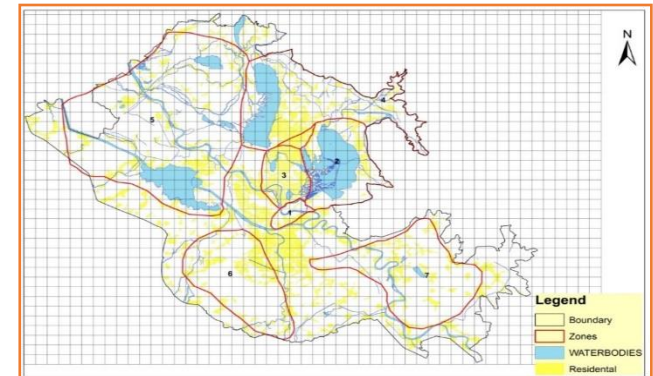
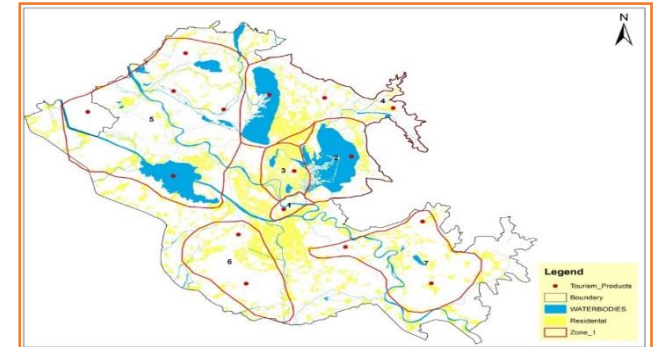
Step 5: By analysing even a single grid in the zones, suitable site is identified for tourist infrastructure.

MAP 1-3 [↓]:

Map-1: Tourist Products and Zones,

Map-2: Distributing Zones into Grids

Map-3: Locating Suitable site for Tourism Infrastructure



9.4 PROPOSALS

Mushroom growth of hotels and guest houses has not only compromised the quality of tourist accommodation but has drastically spoiled the pristine aesthetics and urban design of the city. Taking cognizance of this widespread phenomenon, the Master Plan proposes to align the tourist infrastructure by *creating tourist clusters and tourist circuits for tourism infrastructure* and further integrating the growth of individual hotels or guest houses with

road hierarchy, functional nodes (Airport, Railway stations, bus terminals etc as envisaged in the Landsue Plan) and potential mixed landuse zones.

Based on comprehensive suitability and potentials, new sites have been identified in different tourism zones for the development of tourist accommodation in Srinagar Local Area. **Besides, following office complexes/buildings are identified for cessation of their existing functions so that they are put to some more subtle and compatible use preferably on PPP mode as provided earlier in this report for the economic revitalization and improved capital base of local authorities:**

- Forest Department Building, Sheikh Bagh, Lal chowk
- Old Secretariat Complex
- District Court Complex Lal Chowk and Veterinary Hospital *Maisuma*
- Old Assembly Hall, Budshah Bridge, Srinagar
- Divisional Commissioner/DC's Office complex
- Doordharshan complex
- Official Residence of Chief Justice opposite SK Stadium
- Other Buildings to be transformed into Hotels include those located along Church Lane, Sonwar
- CAPD godowns at Shaheed Gunj
- In addition to the heritage buildings (*to be listed by the Heritage Conservation and Development Authority*) within the core city, the Master Plan envisages development of a tourist Spine along both banks of River Jhelum from Fateh Kadal to Safakadal and around the *Brari Numbal* lagoon to act as a gateway to the Old city.

a) Eco-Tourism

***Dachigam Wildlife National Sanctuary, Hokersar wetland, Anchar wetland, Narkara wetland, Haran Forest and Pampore Lagoons and Dabsir* are potential sites for the development of eco-tourism activities.** These sites would be the new eco-tourism destinations in Srinagar city, regulated and controlled by wildlife and forest department. Carrying capacity of these sites shall be scientifically calculated to regulate the tourist flow. These sites need to be developed using eco-friendly processes without any externalities to the environment strictly compliant to ecotourism guidelines. In light of this, areas have been earmarked and put to least impact growth for tourist infrastructure by promoting Rural Tourism² on environmentally sustainable considerations in areas like *Brein, Nishat, Shalimar and Harwan* in the Lake area and abutting

² Tourism growth potential can be harnessed as a strategy for Rural Development. The development of a strong platform around the concept of Rural Tourism is definitely useful for a State like J&K where almost 70% of the population resides in villages. The stresses of urban lifestyles have led to a

the *Hokersar* and *Narkara* wetlands. The projects under rural tourism can be taken up on stand-alone basis or in partnership with other stakeholders by pooling land and other resources in order to meet the basic minimum requirements as laid down in the by-laws in subsequent sections.

Flood Absorption Basin [FAB] along the N/H Bypass to be developed as Biodiversity Park or Willow Forest (commonly called *Veriwaar*) and an Urban Lake near Mehjoor Nagar. Rest of the area from *Kakpora* to *Padshahi Bagh/Mehjoor Nagar* on the L/s of the river *Jhelum* be developed into an *Urban Farm* rather than existing paddy fields. The preservation of this belt is important for the safety of *Srinagar* city from floods. *As such, it is strongly recommended to preserve this area from the onslaught of urban development including even earth filling.* The preservation of this area on scientific lines will not only create a new tourist destination but will also increase the water holding capacity of the basin during floods. The existing *TRC at Nowgam* which normally should not have come up because of the vulnerability of the area is retained for provision of tourist accommodation.

Ancient sites: *Burzhama* Archaeological Site, Ancient Buddhist Monastery *Harwan* and *Parihaspora* Archaeological Site (*Kan-i-Shaher*) are important tourist destinations presently unexploited. *Burzhama*, Buddhist Monastery and *Parihaspora* archaeological sites are yet to be exposed to the tourists. Their location is favourable in terms of tourism activities. *Parihaspora* is located on the table land surrounded by the vast green fields on one side and orchards on the other. *Burzhama* and Buddhist Monastery are favourably located in the lap of *Zabarwan* hills overlooking *Dal Lake*. These sites need to be preserved by adopting various regulatory and restrictive measures suggested in subsequent section. The Master Plan also provides for a Tourist Village-cum-Urban Haat at Shadad Bagh, Habbak for the promotion of ethnic and culture tourism. The Tourist village-cum-Urban Haat shall truly be representative of ethnic architecture and rural ethos in terms of tangible and intangible components. The concept and design of the project shall be approved by Town Planning Organisation Kashmir. It has to be an integrated single project developed on partnership basis implemented through a Town Planning Scheme. The objective is to permit low impact development in the area which is environmentally sustainable, economically viable, repository of heritage and representative of rural ethos and culture.

"counter-urbanization" syndrome. This has led to growing interest in the rural areas. Rural Tourism is one of the few activities which can provide a solution to these problems. Besides, there are other factors which are shifting the trend towards rural tourism like increasing levels of awareness, growing interest in heritage and culture and improved accessibility, and environmental consciousness.

9.5 Boulevards/Cycle Tracks/ and Walkways

Recognising the rampant encroachment along the western side of Dal Lake from Dalgate to Saida Kadal and Nigeen Lake in the absence of proper physical demarcation, the master plan envisages construction of a 30 meter wide Boulevard from Dalgate to Saidakadal having provision for NMT in terms of walkways and cycle tracks as integral part of road cross section. From Kathidarwaza to Nigeen, a 15 metre wide Foreshore Road is proposed along the Nigeen Lake as shown in the proposed Landuse Plan-2035. The section of the proposed road shall have 7.5 metre wide carriageway and the remaining 7.5 metre shall be earmarked for cycle tracks and pedestrian walkways. The construction of western Foreshore from Dalgate to Saidakadal and Nigeen Foreshore as stated above on one hand will open up this entire area for tourism related activities and the other hand will act as a physical deterrent for illegal encroachment and pollution to these precious water bodies in these directions. In addition, the houseboats from Dal and Nigeen lakes are proposed to be relocated and realigned along the proposed tourist corridors as envisaged in the plan. The Leper Colony is proposed to be relocated to alternative site as proposed in this master plan and the same area be used for the development of multiple tourist activity like MICE. Development of organised cycle tracks and walkways along these and other water bodies including Jhelum, *Dachigam Nallah*, *Sharab Khul*, *Khushalsar*, *Gilsar*, *Anchar* will increase citizen awareness towards their cleansing and conservation. Vast lands along the Boulevard from Nehru Park to Nishat and onwards to Naseem Bagh along the NFR which constitute part of the come within the restricted limits of buffers/green belts could be developed as floriculture nurseries, honeybee farms or herbal gardens using organic farming. In this connection, Floriculture Department should incentivise and also provide technical support to the land owners. The Department should frame flexible policy in this context with the possibilities of open air cafes along the stretch.

a) Adventure Tourism:

- Rock climbing in the *Zabarwan* hills (near *Brien*, *Nishat*): Hard rock vertical clips of *Zabarwan* hills are suited for the rock climbing bringing the high end tourism activity within the city.
- Cycling along the along *Sharab Khul* with the development of cycle track from *Dalgate* to *Harwan* will give impetus to the tourism in the city. Exposing the tourists to cycling at the lofty heights in the backdrop of mountain and nature will be boon to the tourism and economic development of Srinagar.
- Paragliding in *Astan Marg*, *Darah* and camping: This unique activity is going to add to the diversity of Srinagar tourism attracting more tourists. Accordingly a **Paragliding Park** for multiple activities with provision for tourist infrastructure needs to be developed on the left bank of *Telbal Nallah* in *Chandpore* as low impact development.

- Develop camping site at Willow forests near *Dabsir, Hokersar, Astanmarg, Dhara* and along *Dachigam Nallah* will add to the diversity of tourism product.
- Water sports in *Dal* and *Nigeen Lake*

b) Kalai Hariparbat should be developed as a Tourist product

The *Kalai of Nagar Nagar, Kathi Darwaza, Sangeen Darwaza with Hariparbat Fort, Mullah Akhun Shah Mosque, Badamwari*, remains of Mughal palaces, *Nigeen front, Makhdoom shahib, Gurwara Chatti Padshahi* and historic temple is an agglomeration of diverse tourism products and a great recipe for tourism development. Accordingly, a Craft Centre and a Museum are proposed in the Badamwari area by relocating Central Jail and Mental Hospital.

c) Central Park in Lal Chowk: Central park should be developed in the Historic Lal Chowk as a multi-functional public space.

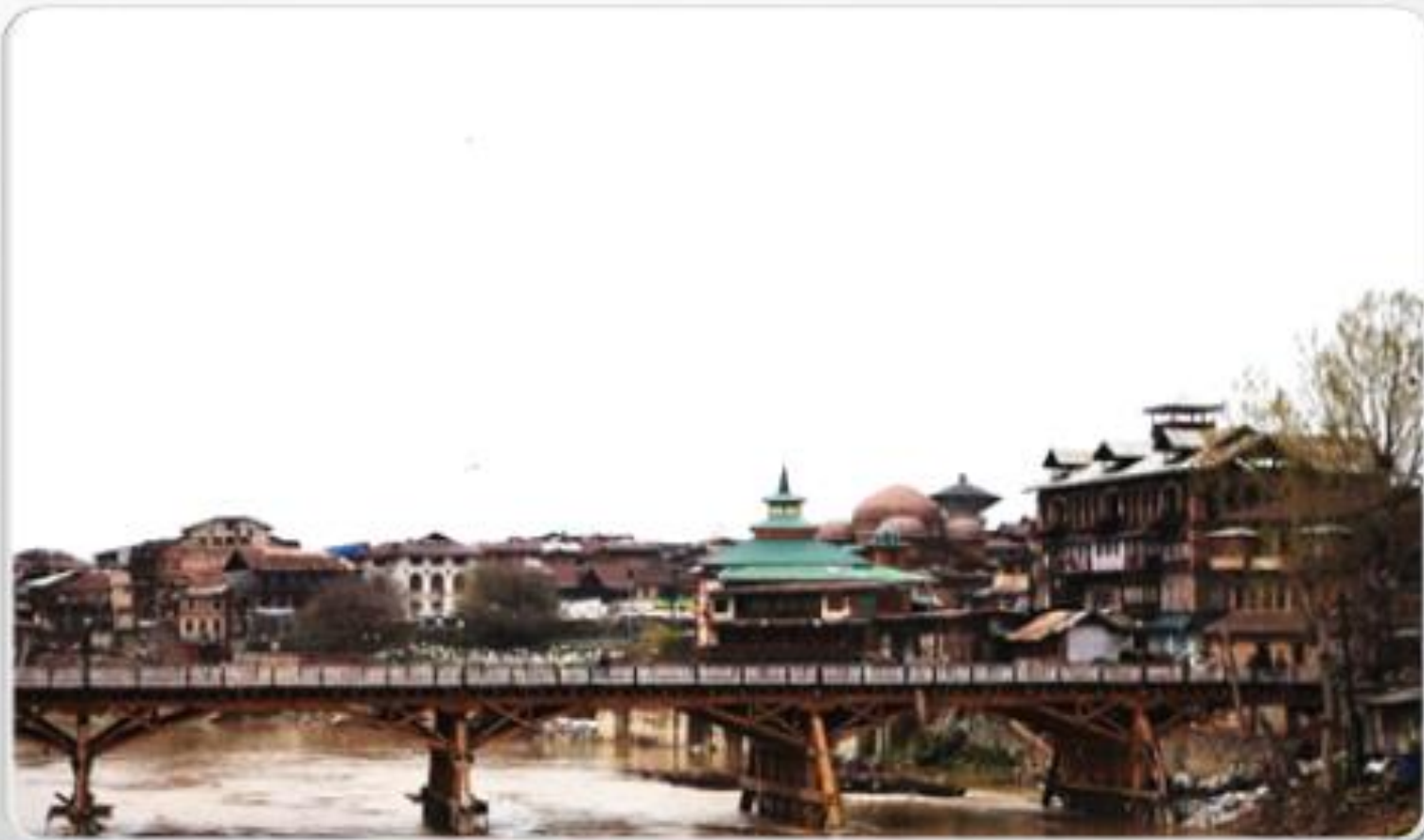
CBD especially the area from Dal Gate to Lal Chowk has plethora of green spaces disparate and not properly planned. All these spaces include the Polo Ground, Emporium Garden, TRC Park and ground, Golf Course, Chinar Bagh, *Sher-i-Kashmir* Park will need to be integrated into central park providing multi-faceted experiences to the people. Its entry should be free and it should be without any fencing. A well experienced team of local Landscape Architects and Urban Planners should be engaged to prepare master plan of the central park. The parks shall be connected by eco-bridges without affecting the aesthetics of the area.

d) Heritage Walk and Artisan clusters exploration

e) Development of Jhelum river front with the provisions of craft bazaars and the improvement of Ghats as public spaces

- Babadem lagoon to be developed as an urban lake and should act as Gateway to historical Shahri-Kashmir restoring and revitalizing the inlet channel making it accessible by water transport through Dal Lake.
- *Malshahi* Bagh on the bank of *Anchar* Wetland at *Ganderbal* is also proposed to be declared as 'Tourist Product' and has been identified as recreation of pristine Mughal Garden. It has only the Mughal layer and provides the best views of *Anchar* Lake and its adjoining wetlands.
- *Tulmul* to be developed as a 'Pilgrim Village' with facilities for pilgrims, locals and leisure tourists including accommodation etc.

A **state-of-the-art Tourism and Culture University** is proposed to be developed at *Silk Factory Rambagh* with spotlight on specialisations like tourism, local craft, culture and heritage. The University can pool its human resources from Hotel Management Institute, Raj Bagh and Craft Development Institute, Zadibal.



10. NATURAL & CULTURAL HERITAGE

Photograph Source: TPO Kashmir

10 NATURAL AND CULTURAL HERITAGE

“Srinagar survives today as one of the world’s most complete and intact cities of pre-modern vernacular and timber architecture”.

- *Randolph Lang.*
World Monuments Watch

The city of Srinagar praised for its beauty has rich resources both natural and cultural (tangible and intangible). Like most of the medieval settlements along river banks, the evolution and expansion of Srinagar was centred on the meandering course of river Jhelum. The river served not only as a principal spine of transportation but also as the centre of social and cultural life of the inhabitants. The daily life of the citizens revolved around the river and the numerous water channels linked to it. The labyrinthine streets and alleys are similar to host of medieval cities scattered around the world. Over the course of history, around the 19th century, the city got organized into *Mohallas/neighbourhoods* based on occupations. Similarly clan or family based Mohallas also grew in the core area. As more and more members of the family became associated with traditional crafts and skills, *Mohallas* developed as a close-knit community. Historic environment is important to society as a whole or a community within it. These areas merit recognition and conditions for enhancement while ensuring protection of their inherent values. **The aim of this section is to establish direction for the protection of heritage resources in historic areas by legislation, conservation and further enhancement through compatible development.**

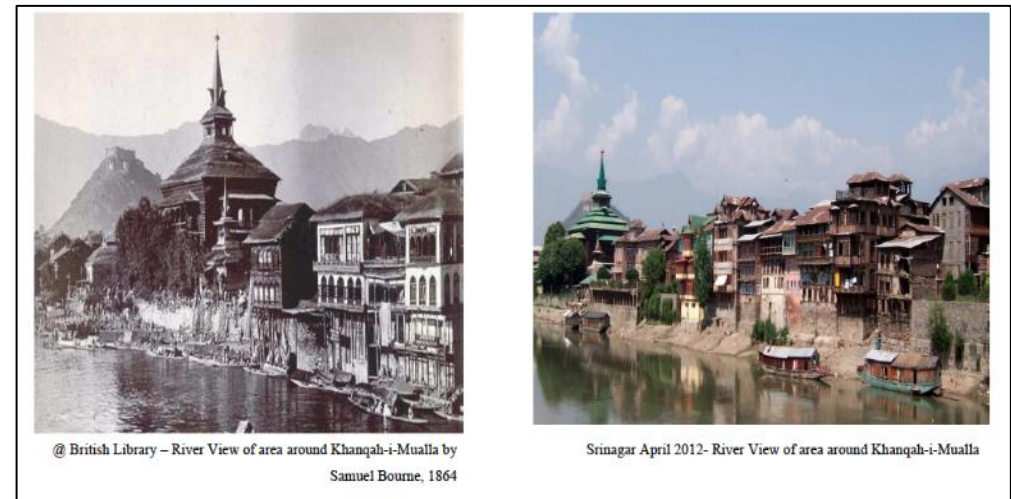
The Master Plan provides information on historic buildings, gardens and also buildings and sites of cultural and religious significance, the current initiatives, of both government and non-government bodies to protect, conserve and integrate them into the urban environment and further ways of enabling the need through statutory framework of planning and guidance. It is well recognised that conservation of heritage buildings and sites, and provision of improved infrastructure in historic areas promote tourism development which in turn leads to enhancement of livelihood opportunities for local communities, and hence economic development. A fundamental step towards heritage conservation and improvement of historic areas requires mapping of heritage—buildings, open spaces, mapping of use of public/community spaces (such as ghats along the rivers, gardens) and also identification of local artisans and traditional markets etc.

Heritage protection and conservation at the national level is undertaken by the Archaeological Survey of India and at the state level by Directorate of Archives, Archaeology and Museums, Government of Jammu and Kashmir. There are 20 nationally protected monuments/ buildings of historic and architectural significance falling in the local planning area, among which 13 are located in Srinagar. Similarly, the Department of Archives, Archaeology and Museums, Kashmir has listed 10 monuments in the local planning area with 09 of them located in Srinagar district only. Besides, 09 sites stand notified as Heritage Sites under the provisions of Jammu and Kashmir Heritage (Conservation and Preservation) Act 2010¹.

The Ancient Monuments and Archaeological Sites and Remains Act (Amendment and Validation of 2010) stipulates need for development guidelines in a 300 metre buffer around ASI protected monuments and the state act known as Jammu and Kashmir Ancient Monuments Preservation Amendment Act, *Samvat* 2010 specifies a 100 metre buffer² area around state protected monuments.

Building and sites are recognised as of significance based on the following values:

- Historical: connected with past events, personalities or historical narrative
- Archaeological
- Architectural
- Aesthetic : beauty, harmony Cultural / Social : association, a sense of identity
- Spiritual : understanding, enlightenment
- Traditional : uniqueness



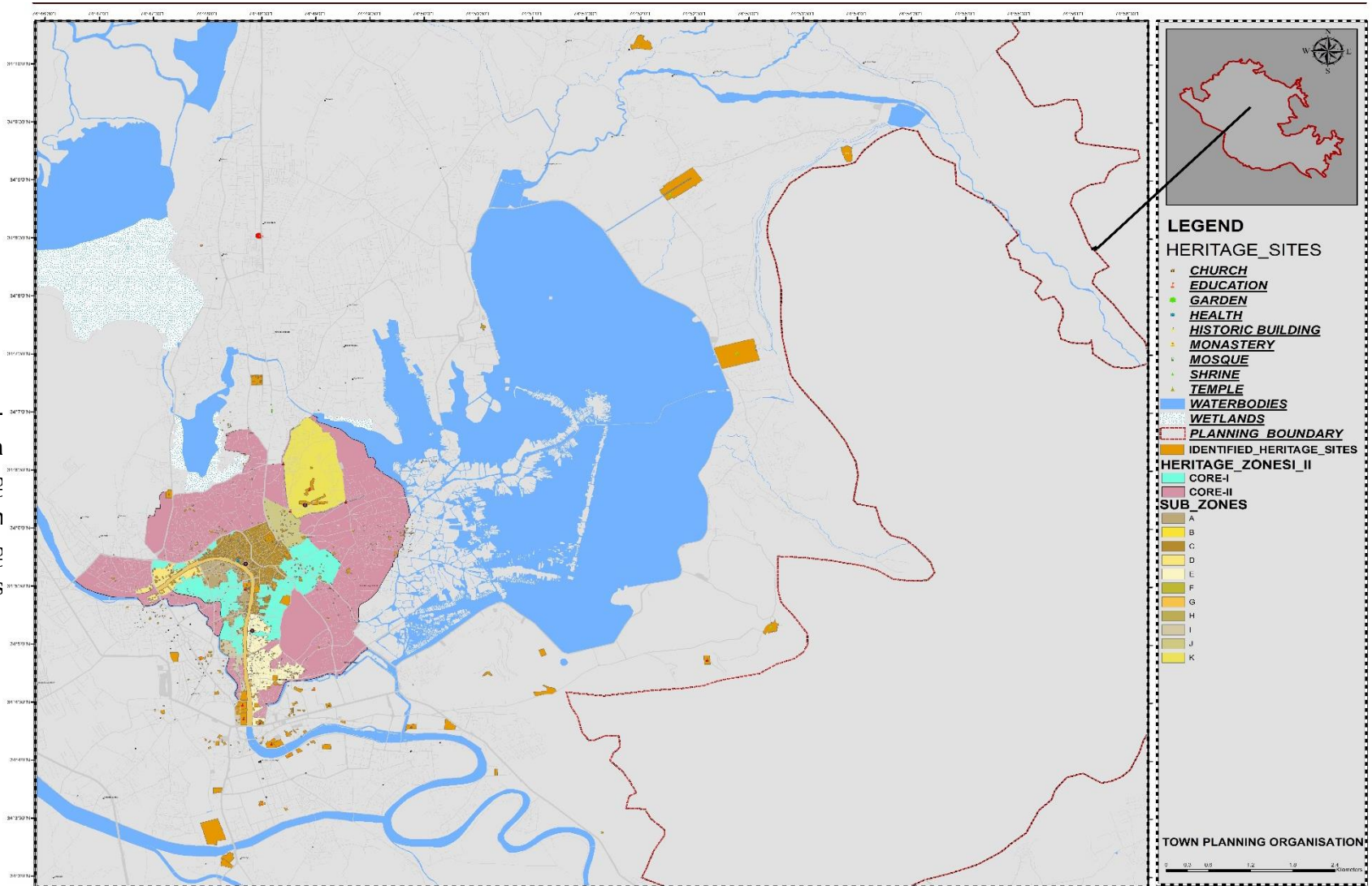
@ British Library – River View of area around Khanqah-i-Mualla by Samuel Bourne, 1864

Srinagar April 2012- River View of area around Khanqah-i-Mualla

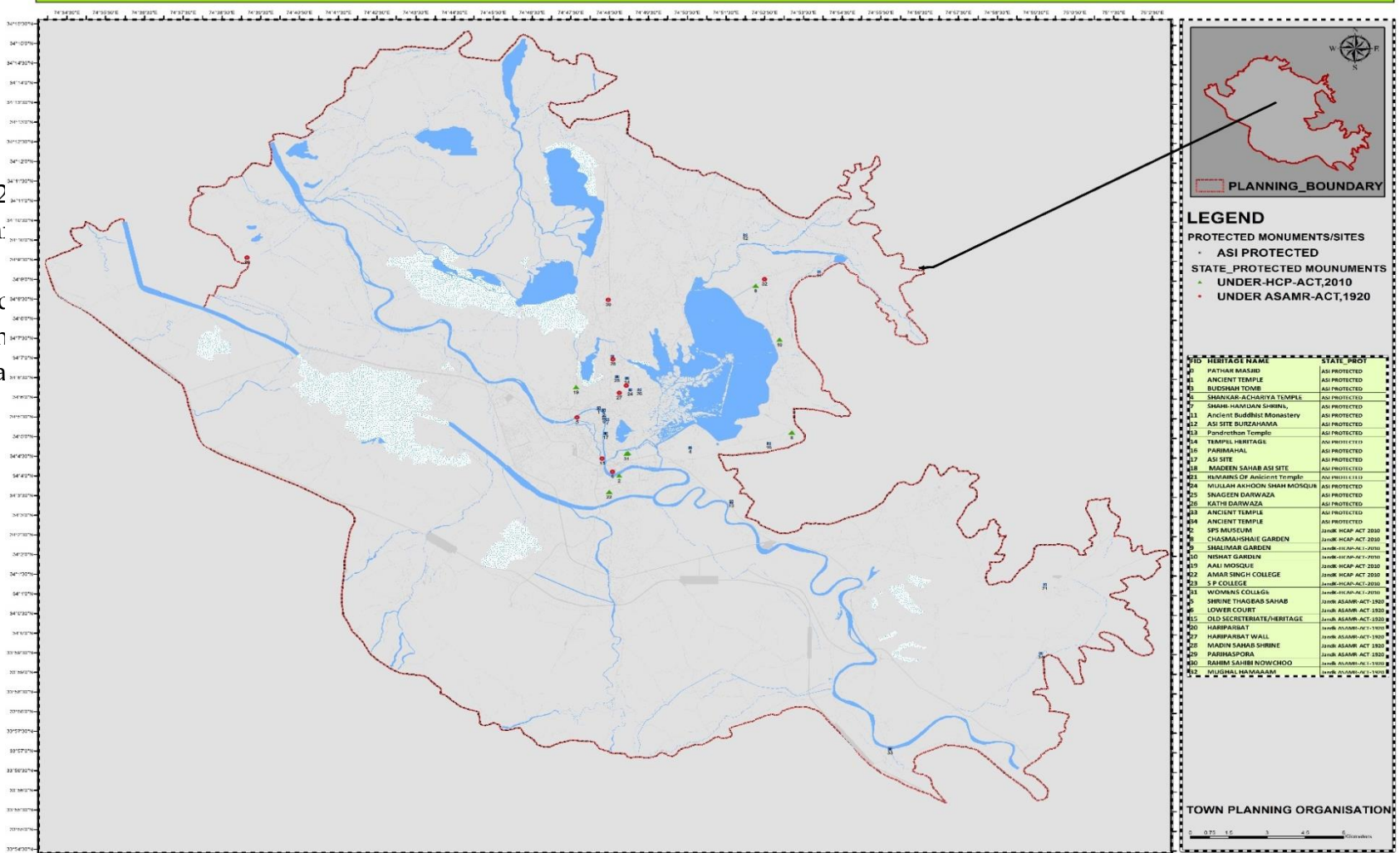
¹ A list of over 850 buildings of heritage significance in Srinagar has been prepared by Indian National Trust for Art and Cultural Heritage (INTACH).

² Section 10 B Jammu and Kashmir Ancient Monuments Preservation Amendment Act 2010

Map 10-
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Map 10-2
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10.1 Vernacular/Traditional Heritage of Srinagar

Architecture of Srinagar is a combination of stone, wood and brick. It is the architecture of kings, governors and of city dwellers spanning over fifteen centuries. Stylistically, it has Chinese, Greek, Central Asian, Persian and European influences. Srinagar is not only significant for its historical monuments and precincts, but also for its rich and diverse mix of tangible and intangible heritage resources: *built and natural heritage, communities of traditional craftsmen and ordinary people with their beliefs, practices and rituals*. Heritage buildings and sites are of varied scale and range from modest residential houses to religious structures of monumental scale, structures along the river such as the ghats built of stone to timber bridges.

Over the course of history, the city got organized into *Mohallas* based on occupations and clan. By 19th century, the city had *Mohallas* like *Qalamdanpora, Sheeshgari Mohalla, Bandukkhari Mohalla, Bhand Mohalla, Bhan Mohalla, Razdan Kucha, Mir Mohalla* etc. *Ziarats, temples and shrines* also became the focal points around which large habitations were established, however the city is fast losing this character of *Mohallas*.

Buildings are graded by INTACH based upon scale, associational value, architectural and historical significance etc. Several sites exhibit an inherent relationship between nature and culture, response of human to the scenic natural setting, for instance, the forts and palaces and the Mughal gardens. Cultural expressions are seen in organic forms such as the floating gardens within Dal Lake. From the perspective of architectural style that exhibits a certain knowledge system in use of materials, techniques, structural systems and aesthetic, the buildings can be broadly classified into three distinct styles **Monuments, Colonial and Vernacular**.

Multi-tiered recognition of heritage buildings and sites:

As mentioned above, heritage buildings can be categorized as under:

- a. Monuments that are notified under ASI or those which the State Government under the Ancient Monuments Preservation (Amendment) Act, 2010.
- b. Heritage sites notified under the Jammu and Kashmir Heritage Conservation and Preservation Act, 2010
- c. Monuments/ religious buildings that are under the management of different religious Trusts such as Waqf Board, Gurudwaras, temple trust etc.;
- d. INTACH, J&K Chapter's listing of heritage monuments ; and
- e. Mughal Gardens in the tentative list of of UNESCO World heritage sites
- f. Floating Gardens of Dal Lake

10.2 Heritage Zones [Core I & Core II]

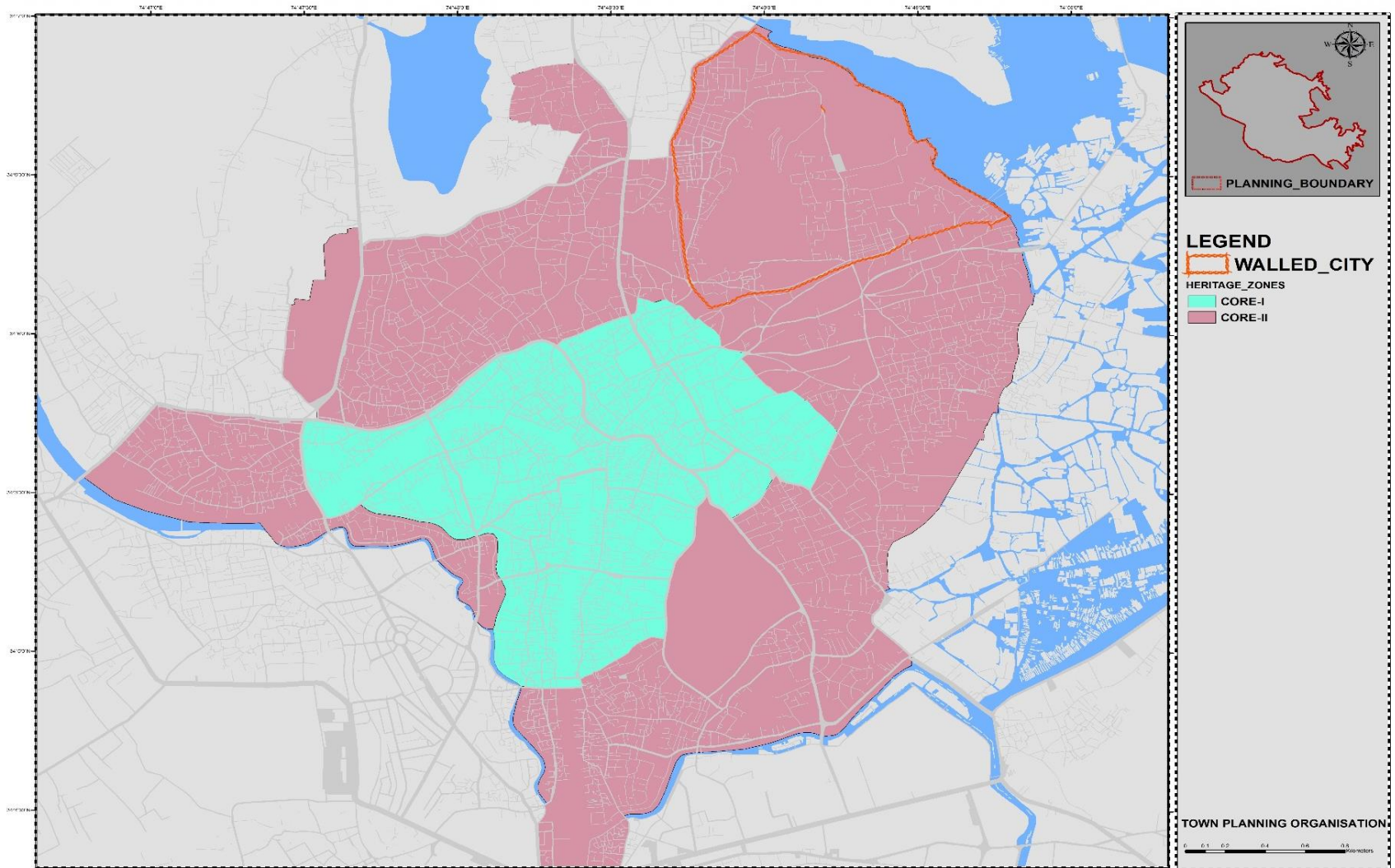
The listing and mapping of the buildings and precincts is the first step for structured conservation approach which can substantially contribute towards other important spatial planning goals, tapping its potentials through leisure, tourism and economic development. Listing of the heritage buildings was undertaken by INTACH J&K Chapter in 1989. A survey of listed buildings and other heritage was undertaken by Town Planning Organization during the preparation of the Master Plan in 2015. About 1000 buildings and historically important sites have been mapped with their geographical coordinates and other attributes. This work requires to be further expanded from the standpoint of conservation of heritage of city. The listed buildings, precincts and places of historic interest are recommended to be immediately notified under Jammu and Kashmir Heritage Conservation and Preservation Act 2010 and the rules framed thereunder. Guidelines for the conservation and development would be prepared and notified by the Srinagar Municipal Corporation. Effort would be made to ensure consistency between the provisions in guidelines in the 'special areas' and for listed buildings and their settings. The Master Plan envisions restoring the city's unique historic character and for this purpose Core I and Core II have been delineated in accordance to the heritage zone identified in 1989 (*Identification of the Architectural Heritage Zone in Srinagar City by Romi Khosla*). These include the unique built heritage on both the banks of river Jhelum- **Heritage Corridor around the 14th century Jamia Masjid**. On the basis of the historic layers of the city, the master plan has delineated the core city into two major zones:

Core I: This zone has developed mainly during the period of Sultans and also has footprint of the buildings of earlier historic period of *Parvarasen II*. This is mainly on both sides of the River Jhelum extending upto *Nowhatta* in the east and upto *Sunri Khul* in the west containing the most important historic built heritage of the city, and as such needs to be preserved on top priority.

Core II: This part of the core city has mostly developed during Mughal period and *Pathan* and *Dogra* periods. **The walled city –Nagar Nagar (Qilla and Kalai) – of the Mughal era and the fort are central part of core II.**

Regulations to control or mediate development within a Heritage Zone, including new construction, demolition or modification to existing buildings around historic structures or within historic precincts are recommended to be formulated and incorporated within the "Special Area Plans" at zonal level and supplemented by a different set of building byelaws.

Map 10-3:
Walled City
Kalai Andha
Srinagar an
Core City Zon



Therefore, it becomes highly essential to identify the vast array of built heritage – both vernacular as well as timber based monumental architecture. Srinagar despite having a documented history of many centuries has seen extensive vandalism of its diverse cultural landscape by both natural as well as manmade factors.

The cultural heritage of Srinagar is spread across the entire city. From the Mughal gardens along the northern edge of the town, the down town areas along the south western and western edge of the Dal lake, to the city forest and floating gardens the heritage (and much more), the heritage responsive development strategies must be responsive to the varied character and their needs. Protection must be accorded to the assets through legal tools for protection and planned development. Heritage sensitive building and development guidelines require to be provided on one hand and on the other management structures for continued protection and sustained maintenance are also required. An economic model which provides enhanced livelihood opportunities' linked with local skills is necessary. The Master plan recommends that planning for cultural heritage management and development of cultural heritage tourism in the city must be addressed in the Zonal Plans.

10.3 Existing Planning and Regulating Mechanism

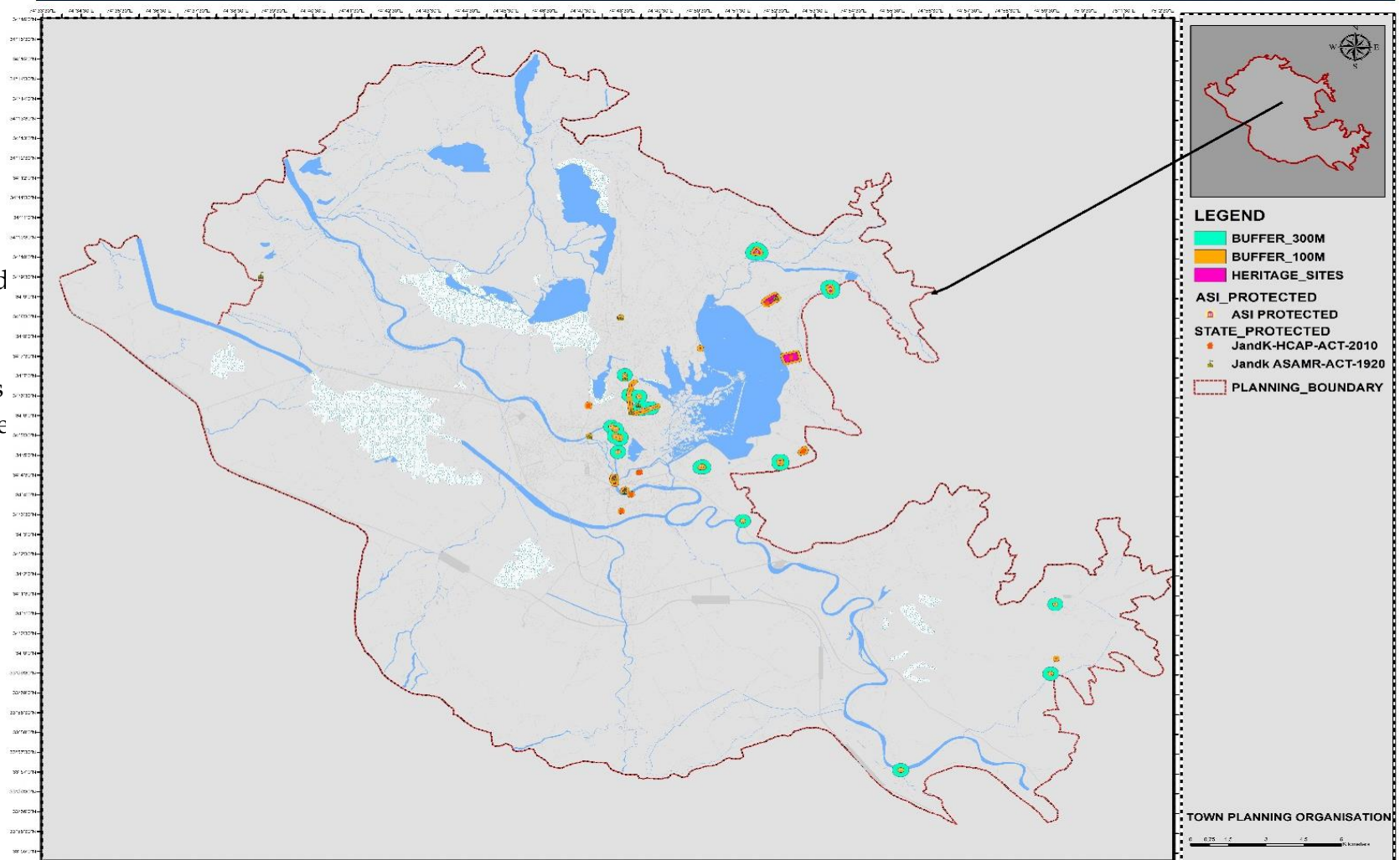
Guidelines for planning and development around monuments and heritage sites are required to follow the legal regulatory framework as stipulated in the Ancient Monuments and Archaeological Sites and Remains Act (Amendment and Validation 2010), Jammu and Kashmir Ancient Monuments Preservation (Amendment Act) 2010 and Jammu & Kashmir Heritage Conservation and Preservation Act, 2010.

Buffer Zones – Prohibited and Regulated Areas

- **National Protected Monuments/Sites:** As mentioned above buffer zones of 300 metres have been provided around ASI protected monuments under the Ancient Monuments and Archaeological Sites and Remains (Amendment and Validation) Act 2010. **This comprises 100 metre prohibited area and 200 metre regulated area³** subject to change from time to time as Governmnet under law may prescribe.

³ AMASR Act 2010. Section 20A and 20B

Map 10-4:
Buffers
around
National and
State
Protected
Monuments
and Heritage
Sites



- **State Protected Monuments/Sites:** The monuments and structures protected by Directorate of Archives, Archaeology and Museums are provided with **100 metre buffer zone as prohibited and regulated area**⁴ for regulating development in the surrounding areas stipulated by the Ancient Monuments Preservation (Amendment) Act, 2010⁵ subject to change from time to time as Governmnet under lay may prescribe.

It is broadly understood that no new construction is permitted within the 100 metre buffer (prohibited area) of the protected monuments and development in the next 200 metre (*i.e.; regulated area beyond 100 metre prohibited area*) requires to be based on guidelines prepared by the Competent Authority (*Director, Archives, Archaeology and Museums*) and approved by the National Monuments Authority. As per the AMASR Act 2010, INTACH can be asked to prepare the guidelines by the Competent Authority. Also as per the communique received from GoI, the State Government can nominate a nodal agency like Town Planning Department for the preparation of heritage by-laws for protected buildings and sites.

[The competent authority is required to prepare the guidelines for building and development activities in the buffer zones of both ASI and state protected monuments and obtain approval from the National Monuments Authority (for ASI protected monuments)].

The Jammu and Kashmir Heritage Conservation and Preservation Act 2010 provides for conservation and preservation of Heritage both tangible and intangible, including buildings, structures, monuments, precinct, areas/sites, artefacts, sculptures, paintings, handicrafts, manuscripts etc. and music, dance, drama, performing arts, poetry, living traditions like crafts and cuisine, traditional knowledge systems, folklores, spiritual traditions ; respectively of historic or cultural or religious or aesthetic or architectural or environmental significance and for matters connected therewith or incidental thereto. The sites notified under JKHCPA 2010 are referred as Protected Sites/Heritage Sites. The acts provides for the preparation of Conservation and Preservation Plans⁶ for both tangible and intangible heritage vide sub-section

⁴ Jammu and Kashmir Ancient Monuments Preservation (Amendment Act) 2010 Section 10 B Prohibited and Regulated Areas

⁵ The JKAMPA Act 2010 restricts new construction activities around the protected monuments as well as those which are proposed to be protected under Section 10-B of this act. However, there is no distinction between the prohibited and regulated area of the protected monuments as distinguished in AMASR Act 2010. The roles and responsibility of the State Archaeology is restricted to maintenance of the monuments only as per the act. There are no clauses in the act for the conservation and repair of the monuments.

⁶ Under Sub-section 10(2) following matters are required to be addressed in the Heritage Conservation/Preservation Plans:

- (a) Regulations for preservation, conservation and administration of heritage (objects, buildings, sites etc.)
- (b) Listing and grading of heritage
- (c) Prescription for development control for conservation of heritage
- (d) Specific urban/rural design proposals in the case of heritage sites in order to preserve and protect the character of the area.

10(1) and lists the matters under sub-section 10(2) such as regulations, listing and grading, development control etc. that should be part of the plan. These plans are to be prepared by the Jammu & Kashmir Heritage Conservation and Preservation Authority constituted under the act. The Master Plan recommends preparation of these plans for heritage sites and included in the zonal plans

10.4 Challenges for Conservation and Infrastructure Development in Areas of Heritage Significance

- i. Absence of a **comprehensive approach** followed in identifying heritage resources.
- ii. The heritage structures of high significant value are in a serious state of **dilapidation** due to absence of technical and financial assistance from the Government for conservation. There are no incentives for conservation and maintaining them.
- iii. Absence of **Conservation, Revitalisation and Management Plans** for buildings of heritage values
- iv. Inadequate data and hence poor understanding of community needs in the historic areas, more specifically the down town area.
- v. **Poor quality** of roads and inadequate sanitation in the historic areas
- vi. Original owners are **disposing off** their properties due to increase in land value and maintenance cost of these heritage structures.
- vii. Non-availability of **parking space leads to on street parking** of vehicles which reduces the carriage width of road **and further blocks the visibility** of these heritage structures of high significance.
- viii. Inadequate public open spaces which adversely impacts quality of life more specifically for children
- ix. Lack of conservation and development of the water front, ghats and open spaces
- x. Streetscape and **street furniture** are not adequate.
- xi. Inadequate conservation and upgradation of the buildings of heritage significance housing community facilities such as schools, primary health centres etc.
- xii. Absence of **guidelines for proper signages** to control haphazard visually disturbing hoardings.
- xiii. Need for community development activities for community engagement, education and outreach.
- xiv. Lack of a comprehensive urban design and conservation toolkit for the authorities.

-
- (e) Proposals for incentives such as tax exemption, transfer of development right or acquisition of property, if found necessary for the protection of heritage or heritage sites.
 - (f) Proposals on a case to case basis, for any relaxation to development control regulations necessary for the protection and enhancement of the heritage values of the heritage sites;

10.5 Special Areas⁷ / Heritage Conservation Plans⁸

10.5.1 Mughal Gardens

The whole of Kashmir Valley was an area of leisure for the Mughal emperors more specifically Jehangir and Shah Jehan and later Dara Shikoh. They created a large number of gardens and built several structures including forts and *Sarais*. Research has been undertaken by several experts both national and international including MIT. Srinagar city can also be described as having been the laboratory of garden/development of pleasure landscapes in the Mughal era.

Srinagar had hundreds of these gardens of Mughal era, however several have been lost due to urbanization and encroachments, further constructions have come up in close vicinity of even the well-known ones compromising the integrity of their surroundings. The citizens have remained ignorant of the Mughal treasure and hence indifferent to this loss. Gardens like *Baghi Ali Mardan*, *Baghi Dilawar Khan*, *Dewan Bagh* and *Choudary Bagh* have already been lost in entirety. Gardens like *Saif Khan Bagh* and *Mullah Shah Bagh* which are almost untampered hence a treasure to understand pristine Mughal style. Mullah Shah Bagh may be a great treasure for research and archaeology as due to its authenticity with almost no later interventions by the users. INTACH (Kashmir Chapter) organized International Seminar on Mughal Gardens in 2015 which was attended by international experts on Mughal gardens who opined that these gardens are precursor to the concept of *Char Bagh* found in the monuments of Taj Mahal and several others.

Recognising the significance of these gardens, they have been nominated by the Jammu and Kashmir Government for inclusion on the tentative list of UNESCO World Heritage sites. In order to protect the integrity and authenticity of the Mughal gardens, 100 metre Buffer Zones are recommended around *Shalimar Bagh*, *Nishat Bagh*, *Chashma Shahi* and *Pari Mahal* following their notification under the Jammu and Kashmir Heritage Conservation and Preservation Act 2010 or J&K Ancient Monuments Preservation Act Svt. 1977 (1920 A.D.) Detailed bye-laws need to be prepared for buffer zones which shall subsequently become part of the Master Plan. In this connection, the Director, Archives, Archaeology and Museums, SMC etc shall prepare the heritage bye-laws for these areas for which services of Town Planning Organisation Kashmir can be requisitioned. The Master Plan proposes establishing of management structure for the conservation and management of Mughal Gardens. The conservation and landscape development within the gardens and its setting must be guided by national and international experts building the capacity of local experts, creating the inventory of the gardens and to prepare and undertake conservation using the modern tools like drone technology and GPR.

⁷ As per Section 3(A) Jammu & Kashmir Town Planning Act 1963

⁸ Section 10 of Jammu and Kashmir Heritage Conservation and Preservation Act 2010 enables preparation, approval and sanction of Heritage Conservation and Preservation plans

Important Heritage Sites

- i. *Nishat Garden*
- ii. *Shalimar Garden*
- iii. *Chashma Shahi*
- iv. *Pari Mahal*

The Master Plan envisages that a comprehensive list of Mughal Gardens in Srinagar (and further in Kashmir valley) be prepared following the example of the 'Register of Historic Gardens and Parks' as part of a comprehensive Register of Historic Places (on US or any other International pattern).

10.5.2 Floating Gardens

While the life giving water system in the valley comprises streams, springs, rivers, wetlands and lakes. The floating gardens of the Dal Lake represent symbiotic relationship between people and the natural heritage. While the gardens are a source of livelihood for the local community they are maintained by the community using the ever growing weeds and plant life in the water system. This practice contributes to conservation of the water system. The vegetable produce from the gardens provides the much needed fresh food supply to the people of Srinagar. These further are an area of immense interest to the visitors and tourists thus further enhancing the livelihood opportunities' for the local communities. The mode of transport and housing along the floating garden provides a unique character for promotion of cultural tourism in the region (the houseboats and *Shikaras* are closely associated with the waterways between the floating gardens). Floating gardens are an example of extraordinary knowledge system of the local communities used for the preservation of the lake. The floating gardens of *Chinampas* – Floating Gardens of Mexico are the other known floating gardens in the world. In the midst of a network of small canals, on the edge of the residual lake of *Xochimilco* (the southern arm of the great drained lake of *Texcoco*), some *Chinampas* or 'floating' gardens can still be found. Parts of this half-natural, half-artificial landscape are now an 'Ecological Reserve'. The UNESCO declared *Xochimilco* a World Heritage Site in 1987.

Floating gardens is the unique heritage with only a few parallels in the world. **If properly managed, preservation of these floating gardens will be help for their inscription on the UNESCO list of world heritage sites. While it is critical that the floating gardens with their attributes of value are mapped and ways and means developed for their conservation and continued sustenance it is necessary to ensure that further growth is discourage to ensure the conservation of the lake as a water body.**

The blanket policy of relocation of the Dal dwellers adopted in the aftermath of the approval of the DPR for Conservation and Management of Dal Lake under National Lake Conservation Plan prepared by IIT Roorkee is recommended to be re-examined by the scientific advisory committee appointed by the J & K Government to examine the need for protection of the floating gardens while ensuring protection of the Dal lake in a sustainable manner. The proliferation of the families of Dal dwellers within lake may not be sustainable, however a strategy for protection of an optimum number / area of floating gardens while being used for vegetables planting which additionally provides food security for the city (providing fresh vegetables more specifically during the time of emergency) should become part of the sustainable conservation framework for the lake. Detailed mapping of this area including extents of the floating gardens, use, household surveys of the communities inhabiting the floating gardens is recommended to be undertaken. An in-depth understanding of the socio economic -eco system of the area (the floating gardens and houseboats) is also recommended to inform the comprehensive cultural – natural tourism development plan for the Dal Lake area.

10.5.3 City Forests of Kohi Maran and Kohi Suleiman (Hari Parbat and Shankar Acharya)

Kohi Maran and Kohi Suleiman –the two hillocks are fundamental parts of Srinagar’s townscape character. These are well-developed city forest on the banks of Dal and Nigeen lakes. The hills, the city forest along with the connecting lakes and gardens have ‘outstanding universal value’. The Kohi Suleiman/ *Shankaracharya* Forest is notified as a reserved forest under section 11 of the Forest Act, 1987 and the Kohi Maran also known as Hari Parbat is a repository of monuments which represent the syncretic tradition of region. The complex comprises the fort with rampart walls and gates and a temple. While the fort and the rampart walls are notified monuments under State Archaeology the temple is protected under the AMASR 2010

The buffer zone of state protected monuments of Hari Parbat comprising the walls and the gates has a prohibited area⁹ of 100 m where no development activity is permitted and development around the temple is guided by the provision of the AMASR Act of 2010. Special Area designation for this zone is recommended in the Master Plan.

Further development activities in the city would ensure that the townscape value of these hills is not compromised. Urban Design Scheme will be prepared under the zonal plans (Srinagar Development Authority) to ensure protection.

10.5.4 The Walled City

The *Walled City of Srinagar –Nagar Nagar* – was built initially by Mughals during Akbar’s reign. The fort of *Hari Parbat* in the current form was built by Pathans and the fort has been conserved by Directorate of Archives, Archaeology and Museums, Govt. of Jammu & Kashmir. Both the Fort and the Wall (Qilla and Kalai¹⁰) are structures of historic significance. However, the wall is under serious threat with large scale

⁹ Jammu & Kashmir Ancient Monuments Preservation (Amendment) Act 2010

¹⁰ Both the Fort and the Qalai are protected by Directorate of Archives, Archaeology and Museums, Jammu & Kashmir

encroachments. The Mughal palaces were located on the Nigeen Lake near the existing *Badamwari*. The entire walled city along with the city forest is of extraordinary heritage value and is recommended to be protected, conserved and managed to prevent any encroachment.

The Master Plan proposes that the Walled city be designated as a ‘Special Area’ and a Comprehensive Walled City Conservation and Development Plan be prepared by SMC/TPO(K) in coordination with the Directorate of Archives, Archaeology and Museums, Government of Jammu and Kashmir and the same shall be subsequently approved by the competent authority for its effective implementation. The squatters and shanty spots have to be removed to enforce the provisions of state and central heritage legislation protecting the *Kallai (Wall) and its historic Gates*. The affected families shall be rehabilitated under the CSS “Housing for all” and other group housing projects. To minimise the impacts of growing building activity in the area, the master plan envisages this distinct zone as a “Walled City” with medium population density and restrictions on height and bulk.

10.5.5 Other Areas

‘**Special Areas**’ or Heritage Zones or Eco-Sensitive Areas are recommended for the following list of monuments and heritage zones:

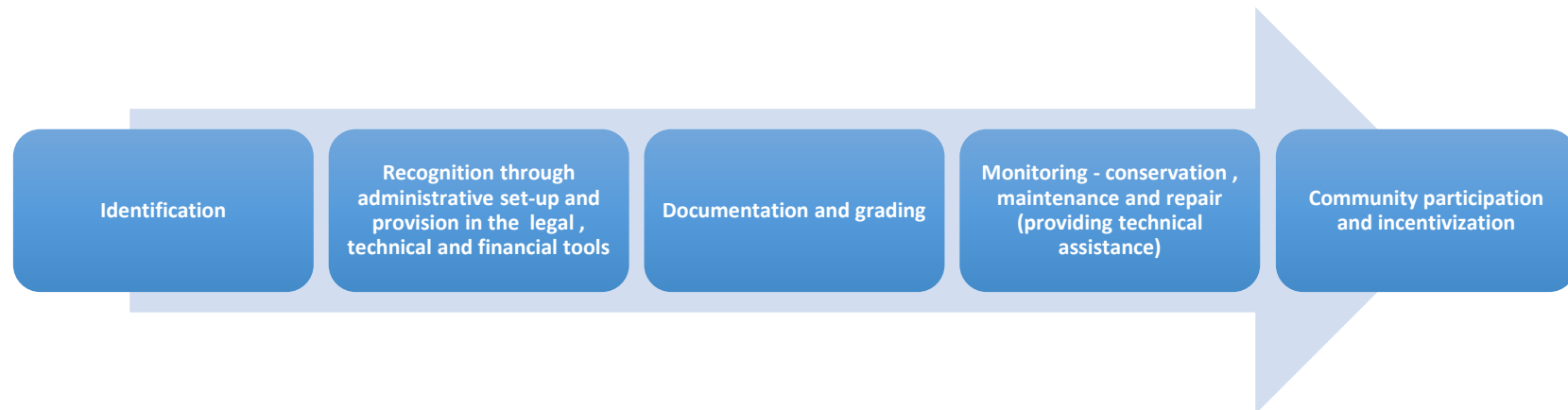
- a) Baghs at Nigeen Lake
- b) Bagh at Habak/Naseem/Hazratbal
- c) Wetlands (Hokersar, Anchar, Haran Forest, and other lagoons)
- d) Old Walled City Nagar Nagar and Hari Parbat
- e) Chasma Shahi and Pari Mahal
- f) Shankaracharya Hill
- g) Floating Gardens in Dal Lake including Passageways and historic Bridges
- h) Dal Lake & Char Chinars
- i) Core city comprising Core-I and Core II/Jhelum Riverfront

The competent authority can further designate **other areas** of significance due to cultural or natural heritage values, in order to retain the distinctive characteristics which will further enable development of tourism in the region

10.6 Cultural Heritage Policy in the Master Plan-2035

- i. Identifies significant cultural heritage resource for protection and conservation
- ii. Recommends planning mechanisms for integrated conservation and area development around heritage sites

- iii. Recommends financial incentive schemes to be provided by the government to enable and encourage conservation of heritage buildings through innovative Public Private Partnership models to achieve community engagement and tools of development such as Transfer of Development Rights
- iv. Recommends technical assistance be provided for heritage owners
- v. Recommends improvement and enhancement of social infrastructure and public spaces in the down town area
- vi. Recommends participatory approach for planning in the historic areas
- vii. Recommends improved disaster risk responsive infrastructure in the inner city (earthquake, fire and flooding)
- viii. Recommends enhancement of livelihood opportunities in the historic areas more specifically related to traditional skills such as crafts and entrepreneurship



The policy provides a framework for the management of the city's cultural heritage. Heritage has the potential to be a catalyst for regeneration of areas, in particular through leisure, tourism, enhancement of artisan clusters thus positively impacting economic development.

One of the focus areas of this Master Plan is to promote city's unique cultural heritage assets essentially for the benefit of local community and future generations to improve their quality of life, economic revitalization and to raise awareness for conservation and maintenance of the same by engaging local stakeholders. The Master Plan *inter-alia* provides for establishing the mechanism of heritage conservation and marketing and other need based facilities for artisan communities in the *Mohallas* traditionally known for the skills. The master plan also provides for the mechanism dovetailing heritage with development of cultural heritage tourism and traditional arts, crafts clusters for

improved productivity and to attract tourists leading to the rejuvenation of these areas as viable living and economic entities generating the resources for the upkeep of the identified heritage resources of the city.

10.6.1 Objectives

It is the master plan's overarching aim that the historic environment of the city of Srinagar and its heritage assets should be conserved so as to contribute to the quality of life and uniqueness they bring to the current and future generations.

Key objectives of the heritage policy:

- I. Support the **reinvigoration of Srinagar's unique cultural heritage** through conservation and revitalisation of its heritage buildings, historic character of streetscape, open spaces, historic gardens and living traditions for the benefit of present and future generations.
- II. Encourage capital **investment** in the conservation and **adaptive re-use** of heritage buildings for the purpose of revitalisation of the city and appeal as a desirable place to live work and visit.

The other objectives of the Heritage policy vis-à-vis different aspects include:

1. Heritage:

- to protect the unique architectural and historical area;
- to promote conservation of identified buildings and sites and ensure protection of the historic character of heritage zones through enforcement of prescribed guidelines, zoning by-laws, standards of maintenance and urban design guidelines;
- to conserve the heritage character, heritage value and character-defining elements of heritage sites and precincts;
- to promote excellence in architectural design and new construction that is compatible with the character of vernacular architecture in the core area; and
- to preserve and improve the street character in the core area

2. Pattern of Development:

- to retain the identified heritage zones (*demarcated in Core I, II*) as a predominantly residential community; and
- to limit further subdivision to protect the original character of the core area in accordance with the Jhelum riverfront

3. Vehicle Parking and Circulation:

- to minimize on-street parking by allocating common parking areas that are identified in the Master Plan;
- to discourage vehicular traffic in narrow lanes and by-lanes
- to pedestrianize identified roads and develop road-side cafes/ bazaars by designating commercial activities

4. Community Involvement:

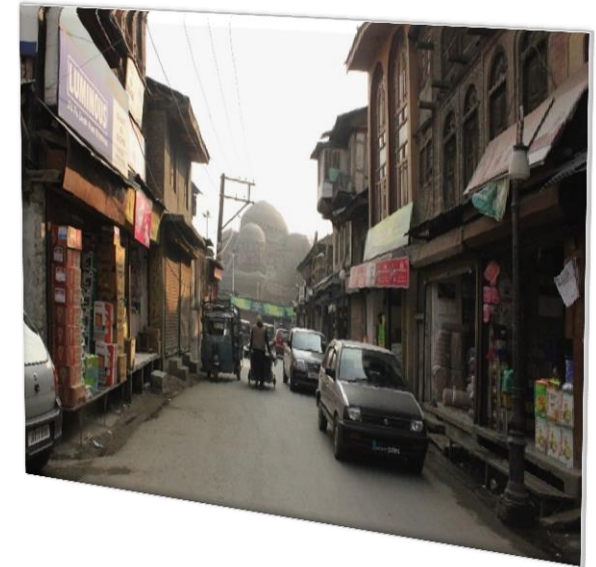
- to provide residents and property owners the opportunity to create vibrant communities
- to sustain local economies
- to encourage adaptive re-use for sustainable development
- to maximise the participation of people by means of bringing awareness

10.6.2 Organisation Structures, Capacities and Management Framework

The policy objectives for protection, conservation, development and regulation of heritage resources in the city require ensuring appropriate and equitable balance between conservation and sustainable development. In the current context of changing demographics and climate, growing inequalities, diminishing resources, and growing threats to heritage, the need has become apparent to view conservation objectives within a broader range of economic, social and environmental values. A fundamental objective of heritage conservation is to safeguard the significance of historic, cultural, architectural and natural heritage as an inter-generational responsibility. Further, following the principle of sustainable development, it is important to recall that traditional sources of income in the core city were closely linked with traditional skills related to crafts, trade and tourism. Effort needs to be made for revitalisation of the intangible heritage.

The primary responsibility to achieve the above objectives rests with **Directorate of Archives, Archaeology and Museums** as well as **Department of Housing and Urban Development** and its agencies such as Srinagar Development Authority, Srinagar Municipal Corporation, Directorate or Urban Local Bodies, Lakes and Waterways Development Authority and Town Planning Organisation. Further, protection and conservation of heritage and guiding development in the buffer zones is the mandate of several organisations. Some of the organisations manage aspects which have direct impact on the state of conservation of heritage, other organisations manage aspects which have indirect impact. Organisations which have direct impact include ASI and Directorate of Archaeology, Archives and Museums, Department of Floriculture and Religious bodies. Urban local bodies impact heritage through the legal framework which provide development guidelines in the buffer zones.

Based on ownership and current condition, heritage can be broadly classified into four categories determined by ownership of the resource:



- *Government owned buildings – There is a need to demonstrate through conservation and reuse the appropriate vocabulary of materials and techniques for government owned heritage buildings.*
- *Religious buildings – these are managed by Wakf Board, Gurdwaras and Temples.*
- *Abandoned buildings which are significant due to architectural style or/and location and can be acquired by government for conservation and adaptive reuse.*
- *Privately owned and occupied buildings where conservation effort can be subsidised by government.*

Several activities are necessary for appropriate conservation, development and management of cultural heritage resources. These activities and responsibilities are shared by multiple agencies. In order to ensure appropriate conservation and management of the resource it is critical to ensure that all tasks that undertaken by the trained professionals in the sector. A systematic integrated conservation and management process requires a well-coordinated structure based on an assessment of ownership, legal framework provided by law or government orders, human resource / capacity of each of the organisations, available financial resources , further informed by the desired outcome or vision.

10.6.3 Conservation Strategy

Tasks necessary to be undertaken to achieve conservation, revitalisation and appropriate management of heritage are as follows:

S. No.	TASKS	Agency/Department
1	Comprehensive listing / mapping and notification of the heritage buildings, sites and precincts under the Jammu and Kashmir Heritage Conservation and Preservation Act 2010	JKHCP Authority
2	Identification of buildings of heritage significance in Srinagar owned by the several government departments	JKHCP Authority
3	Socio Economic (household surveys) in down town area (to determine needs for conservation and area level up- gradation)	JKHCP /Srinagar Municipal Corporation
4	Surveys of artisans and identification of needs for common facilities	Craft Development Institute
5	Cultural mapping of heritage areas	JKHCP /Srinagar Municipal Corporation / INTACH
6	Mapping and house hold surveys of the floating gardens and detailed socio economic cultural and scientific studies of the area	SMC and LWDA
7	Identify the nodal agency where the data is housed for research, integrated planning, project development and periodic updating of the database	Directorate of Archives Archaeology and Museums , JKHCP and SMC
8	Preparation of a Cultural Heritage Policy for Built heritage, Documentary heritage and	Directorate of Archives Archaeology and

	Intangible heritage	Museums , JKHCP ,
9	Preparation of Conservation Management Plans (and implementation) for notified heritage structures (state protected and ASI protected monuments)	ASI/ INTACH
10	Conservation and Adaptive reuse of government owned heritage buildings/sites;	Srinagar Municipal Corporation + Directorate of Archives Archaeology and Museums
11	Building and development guidelines for buffer zones of ASI and state protected monuments and notification	Directorate of Archives, Archaeology and Museums / SMC and obtain approvals from the National Monuments Authority
12	Preparation of guidelines for development for heritage buildings more specifically for the Core I and II (including financial credit programs etc.)	Srinagar Municipal Corporation
13	Preparation of Conservation and Upgradation Plan for Jhelum's waterfront as lively public destination	SMC and Lake and Waterways Development Authority
14	Integrated conservation, revitalisation and development planning for heritage precincts ensuring improved conditions for the local community and promote cultural heritage tourism as part of the 'Special Area Plans'	JKHCPA + DAAM + SDA/SMC + Department of Tourism
15	Preparation of Vision documents by each of the department listed (for aspects which have a direct or indirect impact on the heritage resources) to inform zonal plans and 'special area plans'	All Departments / SDA
16	Preparation of Integrated plans for Crafts Development for Srinagar and identification of projects	Craft Development Institute
17	Preparation of Integrated plan for Tourism Development for Srinagar and identification of projects	Department of Tourism & Culture
18	Innovative policy and guidelines to convert residential buildings in the down town into bed and breakfast/ home-stay and other supporting activities	Department of Tourism
19	Implement programs for education , outreach and community involvement;	DAAM/ SMC/ Department of Tourism
20	Regulations for signages and hoardings	Srinagar Municipal Corporation
21	Urban design guidelines for heritage precincts	Srinagar Development Authority in consultation with JKHCPA +ASI
22	Preparation of toolkits for landscape, streetscape development (including street furniture, lighting design in public spaces) and design of public amenities in historic sites, precincts and areas.	Srinagar Development Authority
23	Preparation of the Nomination Dossier for inclusion of the Mughal gardens in the UNESCO World Heritage List	ASI
24	Multi modal mobility planning and Non-Motorised Transport system in historic areas	SDA/ TPOK

	while providing parking facilities to enable this	
25	Provision of Pedestrian areas, walkways and greenways in historic areas;	Srinagar Municipal Corporation + Srinagar Development Authority
26	Inclusion of Srinagar City in the UNESCO list of 'Creative Cities Network' (in the craft sector)	SMC
27	Conservation and Revitalisation of heritage buildings under Public Private Partnership; and	SMC + JKHCPA
28	Heritage Impact Assessment studies for large scale public projects in areas of cultural or natural heritage significance and including in the public project development framework	INTACH/ DAAM/ SDA

In order to achieve a streamlined process for implementation of the recommendations in the Master Plan, the current systems in operation in the city have been closely examined from the standpoint of legal mandate, organisation structures, available capacities of human resource, allocated financial resources for activities related to heritage management. Recommendations have been made to address the gaps in the section on Regulations for Building Controls, Development Code and Plan Review and Monitoring.

10.7 Heritage and Economic Development

In the context of Srinagar Master Plan, it is the character of the area in addition to the individual buildings that is sought to be preserved, enhanced and revitalized. A major constituent will be the preservation of social fabric as planning for such sites cannot be done without keeping the socio-economic profile of the area in mind. The traditional source of income in the core city was closely linked with crafts, trade and tourism. However, of late there has been a breakdown of the systems which are required to be revitalized as reintegrated in the master plan. Pursuing sustainable development involves seeking positive improvements in the identified heritage areas. Heritage is not just something to preserve for future generations, but is in fact an asset that can be leveraged to bring real economic benefits to the community.

10.7.1 Incentivising Heritage Conservation

Heritage places contribute to the quality of life and cultural identities of communities.

- Generating economic value
- Contribution to local and regional income
- Raising the image of the city as:
 - A place to visit
 - A place to live in
 - A place to invest

In cases of buildings located in non-commercial use zones included in the Heritage Conservation List *[to be authenticated by the SMC or Heritage Conservation Committee]*, if the owner/owners agree to maintain the listed heritage building as it is in the existing state and to preserve its heritage state with due repairs, and the owner/owners/lessees give a written undertaking to that effect, the owner/owners/lessees may be allowed within permissible use zone to convert part or whole thereof of the non-commercial area within such a heritage building to commercial/office use/hotel. Provided that if the heritage building is not maintained suitably or if the heritage value of the building is spoiled in any manner, the commercial/office/hotel use shall be disallowed. **The listed heritage building owners shall be issued TDR certificates by Town Planning Organisation Kashmir based on additional FAR which shall be Purchasable for the owner(s). Accordingly, a provision for 15% additional FAR over and above the permissible FAR is reserved to be granted as TDR to the owners in lieu of restoration of such buildings. The TDRs can be used by the owners themselves or sold to other beneficiary in CBD/City Centre, Mixed Use Zone or along roads having RoW not less than 20 metre for areas permissible under mixed use regulations.**



11. URBAN MOBILITY

Photograph Source: TPO Kashmir

11 URBAN MOBILITY

Srinagar with annual population growth rate of 2.0 per cent has registered a phenomenal increase in vehicular population during the last decade. Its vehicular traffic is increasing rapidly at more than 7.0 per cent per annum¹. Due to this rapid growth of vehicles *vis-à-vis* marginal increase in road infrastructure, the problems related to transportation have grown manifold. Traffic congestion is already severe on many city roads and the gridlock plaguing Srinagar has reached a tipping point, with the region spending millions of man hours in traffic congestion each year. Vehicular pollution is assuming critical dimensions and parking problems are aggravating. These problems among others will grow in size and scale unless action is taken now. Two comprehensive Traffic and Transportation Plans have been prepared for Srinagar city which include the Srinagar Urban Transport Project 1992 and Comprehensive Mobility Plan (CMP), 2012 (by Rail India Technical and Economic Services) but not a single step has been taken so far. As per CMP, about 36% of urban road space is consumed by private modes (Cars/TWVs) which share about 30% of the total motorised passenger trips. On the other hand, public transport using 44% of road space caters to 71% of the total motorised passenger trips in main city areas; however, in the periphery at outer cordon stations, public transport consumes only 13% of the road space while sharing about 70% of the motorised passenger trips. Interestingly, buses and mini-buses occupying just 8% of the existing road space cater to 32% of the total motorised passenger trips.

Existing transport network is characterised by inefficient pattern, inadequate widths, missing links, bottlenecks, flawed design of intersection curves etc. The total existing road network of Srinagar Local Area (SPA) is 03 percent with average link length of 0.50 Km. As per CMP, 60 percent road length measures less than 10 metre in RoW (6.5 metre c/w) while only 15 percent road length is having RoW more than 20 metre. The four-lane to six-lane c/w configuration is only for almost 12% length while about 90% of the existing road network has undivided carriageway without roadside footpaths² even though pedestrians constitute a major proportion of road users. The Master Plan proposes to create streets for everyone, and reform the practice of designing streets solely for use by automobiles. They are designed and operated to enable safe access for all users, including pedestrians, cyclists, motorists and transit riders of all ages and abilities.

Srinagar has geographical disadvantages with physical thresholds like mountains, wetlands, and water bodies which turn out to be the major constraints in the development of an organised road network. The city road network is cramped because of missing links, incomplete rings, inefficient radials, bottlenecks, etc. Some of the radials like Rangreth Road, Airport Road are virtually dead ends as they are not connected to any major arterials. Also the location of strategic installations across city has been another key impediment in the development

¹ As per the traffic Police Department, around 80,000 vehicles enter the Srinagar city on daily basis.

² Just 10% road length is having side-walks in Srinagar city though it has more than 22% walk trips.

of efficient transport network. Srinagar has historically developed with a radial road network spanning in north, south and west directions. All the radials are witnessing extreme traffic flows much beyond their capacities, hence poor level of service. The city road network needs a complete relook so that an efficient and sustainable transport network is developed to cater to the future demand.

As per the travel demand model based on 'Business As Usual' (BAU) scenario given in the CMP, daily intra-city travel demand is projected to 3.6 million person trips by 2031³. As per the model, overall modal share for public transport by 2031 is estimated to be 61% down from 80 percent recorded in 2011. Therefore, major challenge will be to sustain the modal choice in the years to come. The Master Plan envisages a sustainable and inclusive transportation system for Srinagar city and underlines the need for keeping the share of non-personal transport at 65- 75% to achieve the goal of National Urban Transport Policy (NUTP), 2006. If Srinagar city and its suburb are allowed to grow without any intervention towards sustainable transport system, the city may witness systemic breakdown. The guiding principle of this Master Plan, accordingly is to place '**People before Cars**' for their mobility on city roads. For this, walking and bicycling have to be made safer and public transport more proficient and attractive.

The traffic characteristics of Srinagar reveal that there are huge enablers existing in our city which need to be properly exploited to develop a safe, reliable and comfortable public transport system. The primary requirement would be the identification of potential public transport corridors supported by a High Capacity Transport System (HCTS). The policy has been supported by strategic densification linked to the road hierarchy as one of the basic concepts adopted in the landuse model of Srinagar. Accordingly, a mass transport network has been identified to meet the future travel demand of the city.

11.1 Urban Transport Strategy

Objectives:

- **Improve, enhance and provide high quality public transport** - Having 80:20 modal share in favor of public transport, which exclude the walk trips, by 2035.
- **Improve Air Quality** - reduction in vehicular emissions to meet the National ambient air quality standard.
- **Promote accessibility, not just mobility** – Accessibility ensures that all users of the transportation system have equal access to safe and quality facilities, regardless of transportation mode. Motorists, pedestrians, bicyclists and transit riders should all be able to use the transportation system in a safe, efficient, and uniform way.
- **Equitable allocation of space** - Bringing about more equitable allocation of space with people, rather than vehicles, as its main

³ By 2035, the city will have around 5.0 million trips per day

focus.

- **Promoting Walkability and Inclusiveness**—nearly everyone walks and does so every day. Streets need to be more accessible and safer for pedestrians. Streets affect the way people live, work, and play. Streets should be viewed as part of a dynamic, integrated land use and transportation system. Street treatments (paving type, sidewalks, lighting, street trees, signs, and furniture such as benches and trash cans) should address the needs of regular users and the surrounding area.
- **Have good connections throughout**—Connected, continuous street systems make activities of daily living easier to accomplish. Upgradation of existing Skewed/Irregular Road Network to Ring Radial system will help in enhancement of Multi-Dispersal Trip distribution system.
- **Support all travel modes**—Promoting multi-modal system—one that provides a range of travel choices. This will require planning and providing facilities for automobile, bus transit, high-capacity transit, pedestrian, and bicycle travel, etc.
- **Support transportation and landuse improvements**—Majority of the city supports Mixed Use development especially the core city. Mixed-use areas are often favourite places with lots of activity easily accessible by different transportation modes. Streets with an attractive and interesting street atmosphere, where land uses and the transportation system are mutually supportive, create a vital and interesting focus for the community. In addition, by offering a mix of housing, employment and services near each other, the areas benefit the transportation system by reducing the total number of trips and trip length, and by keeping them off the major highway system.



The following strategy will be followed in order to meet these objectives:

- i. Preparation and operationalization of an integrated and mutually complementary multi-modal transportation and traffic plan comprising the Road, Rail and Metro-rail network, so that work centres/ residences are within a walkable distance.
- ii. Providing safe facilities for pedestrians, bicyclists, differently abled persons, children, women and the elderly and Intelligent Transport System (ITS) enabled public transport, taxis and three-wheeled scooter rickshaws (TSR) to arrive at truly integrated multimodal system.
- iii. Optimal use and utilisation of the existing road network and full development of ROW by removing all impediments and

- equitable distribution of road space as per National Urban Transport Policy. All arterial roads will be restructured to allow for smooth and safe flow of buses non-motorised transport and pedestrians to minimize pollution and congestion.
- iv. Restructuring of the finer street networks and creating alternate access ways and reducing congestion on the existing roads to the extent possible. New Urban Link Roads should also be identified as additional or alternative links, wherever possible, to reduce congestion.
 - v. Planning of new road network in such a manner as to prevent possibilities of future congestion by modifying road sections to promote use of public transport, non-motorized transport and walking, which would reduce use of private transport modes.
 - vi. Making all roads usable and safe at all times for women, children, elderly and the differentially abled.
 - vii. Planning for High capacity bus system, BRTS for city travel and Metro for high-speed inter-city travel.
 - viii. Developing an integrated relationship between the bus, rail and metro-system to provide for seamless multi-modal transport, through provision of additional stations, park and ride facilities, introduction of single multi-modal ticketing, etc. The choice of technology for the multimodal public transport system (Bus Rapid Transit System, Metro, Mono-Rail, Light Rail etc.) be based on comparative cost-effectiveness analysis studies to ensure rapid development of public transport and to ensure judicious use of public funds. Public transport modes be made more reliable and affordable to the end-user to induce shift from private modes.
 - ix. Development of a comprehensive parking policy by the concerned local bodies in line with the broad aims of the Plan for transportation mentioned earlier, including measures for linking new vehicle registration with owner parking facilities.
 - x. Establishment of a quick and efficient transport network between Srinagar city and Srinagar Metropolitan Region.
 - xi. Provision of directional Goods and Passenger Terminals with adequate infrastructure.
 - xii. Review of the licensing policy and systems, and effective arrangements for training of drivers / transport operators.

11.2 Transportation Network Plan

In the Master Plan, a three tier transport network is proposed to restructure the existing radial pattern into a sustainable Ring-Radial network increasing the per capita availability of road space. The road network and its hierarchy given below are provided taking into consideration the following factors:

- Existing transit systems (road, rail, airport etc)
- Relief and Topography of the area

- Vision of the master plan
- Location of important activity nodes like terminals, hospitals, educational institutions, administrative offices and business centres.

As stated above, the Srinagar Metropolitan Region (SMR) is planned on a Ring-Radial pattern with a well-defined functional hierarchy. The road network is designed to address regional, intra-city and local traffic demands.

10.3 Synergy between Transport and Land Use

The concept of the Master Plan is based on a poly-nodal, polycentric, distribution of work centers, largely based on road transport nodes. A major fall-out of this is the distortion between infrastructure, transport and land use. To achieve spatial balance, development should take place according to new corridors of mass movement. This has implications in terms of land use planning along the Transit System. This would not only help to solve, to some extent, the enormous problems of mass transportation, but would also generate a dynamic potential for growth and employment. In this context, the High capacity Bus corridors up to 200m depth on either side from center line of Road would require selective re-development and re-densification / intensification of existing land uses based on site conditions. The concept of Transit Oriented Zone (TOZ) needs to be adopted such that maximum number of people can live, work or find means of recreation within walking/ cycling distance of the High capacity bus corridors/ stations.

11.2.1 Hierarchy of Road Network

a. Arterial Streets

For the purposes of this master plan, the arterial roads are the regional corridors or outer bypass meant for access controlled high speed traffic. These roads are recommended to have a RoW of more than 60 metres.

b. Sub-Arterial Streets

All major city roads and other district roads creating important communication lines for inter-city and intra-city traffic are classified as Sub-Arterials Roads. These roads will have the RoW of 30 - 60 metres.

c. Collector Streets

All urban streets providing transition to sub-arterials within the master plan limits are defined as the Collector Streets. These roads include the roads with recommended RoW of 20 metres but less than 30 metres. These roads will have comparatively lesser speeds and will have the maximum intensity of city traffic.

d. Local Streets

These are the non-high capacity bus corridors generally meant for paratransit traffic. These roads include the streets with recommended RoW of 10 metres but less than 20 metres are designated as Sub-Arterials.

e. Access Streets

All such roads directly abutting properties with recommended RoW less than 10 metres are designated as Access Streets.

As per this classification, the city will have at least 50% of its road length under two-lane dual carriageway configuration with footpaths mandated for the pedestrians.

As a matter of general policy, it is enunciated that for all categories of roads, the full cross section should be developed in future and no encroachments shall be permitted on the existing road network. Further, the development of roads should start from the extremes ends of the designated ROW.

The following definitions for various components of Roads may be considered for planning and enforcement purposes:

- i) 'Right of Way' (RoW) is a reserved space for movement of all modes of traffic which includes pedestrian, cycles, cycle rickshaws, buses, cars, scooter, taxis, auto-rickshaws, etc. RoWs are shown on the zonal plan and master plan of Delhi with designated widths. Space for services, underground/ over-ground utilities, public conveniences and amenities, vendors drinking water kiosks, etc., must be planned and reserved within the row, without encroaching on walking space or motor vehicle movement space, as per street design regulations.

Table 11-1: Guidelines for Road Hierarchy

Type	Arterial Roads	Sub-Arterial Roads	Collector Roads	Local Streets	Access Streets
Right of Way	> 60 M	30 - 60 M	>20 - 30 M	>10 - 20 M	5.5 - 10 M
Suggested speed limit	40-50 km/hr	30-40 km/hr	20-30 km/hr	10-20 km/hr	>10-20 km/hr
Speed control	Enforcement & Traffic Calming required	Enforcement and Traffic Calming required.	Enforcement and Traffic calming required.	Enforcement and Traffic calming required	Enforcement and Traffic Calming required.
Busways	Segregated busways (3.5M) per direction	Segregated busways (3.5M) per direction	Demarcated bus-lanes (3.3M) per direction.	No segregated bus lanes required.	No segregated bus lanes required.

Motorized lanes	2 to 3 motorized lanes (min. 3.3 m wide each) per direction, excluding busways	2 to 3 motorized lanes (starting from footpath edge towards median: 2.75m, 3m, 3.3m, 3.5m, 3.5m) per direction, excluding busways	1 to 2 motorized lanes (min. 3m wide each) per direction, excluding bus lanes	No minimum lane width specification.	No minimum lane width specification.
Cycle/ NMV tracks	Segregated cycle tracks required; min. 2.5 m wide for two-way movement.	Segregated cycle tracks required; min. 2.5 m wide for two-way movement.	Segregated cycle tracks required or Traffic calming essential where segregated cycle lanes (min. 2.5m) are not provided.	Cycle lanes (min 2m.) to be painted on road and traffic calming required.	No special provision for cyclists
Service lanes	Service lanes required.	Service lanes required above 45m RoW.	No service lane required	No service lane required	No service lane required
Medians and junctions	Continuous median; all openings at intersections accompanied by signals and traffic calming.	Intermittent or No median; openings/ intersections accompanied by signals and traffic calming.	Intermittent or No median; openings/ intersections accompanied by signals and traffic calming.	No medians; traffic calmed crossings, or mini roundabouts	No medians; traffic calmed crossings, or mini roundabouts

- ii) 'Carriageway' is a reserved space for movement of motorized vehicles only, in case segregated space is reserved for non-motorized vehicles within the RoW, and for mixed traffic in case segregated space is not reserved for NMT.
- iii) NMV/Cycle Track - is a reserved space for movement of non-motorized vehicles like cycle, cycle rickshaws and hand pull carts.
- iv) X-section of the road- shows the typical space reservation along the width of the RoW for all motorized vehicles (cars, scooter, buses etc.) non-motorized vehicles (cycle, cycle rickshaws etc.), pedestrians, medians, street furniture, utilities, etc. within the Right of Way (RoW).

In the current scenario, sub-arterial and collector roads are forming the network system of the city. Local streets and access streets in newer areas and in some places even collector roads are missing resulting in restricted distribution of traffic over a network and concentration of even local traffic on sub-arterial roads, resulting in congestion on these roads. Further, closure of medians all along arterial/ sub-arterial roads to have signal-free corridors, have restricted movement of traffic/ people between neighbourhoods on either side. Moreover, connections between colonies are also not planned to enable direct connectivity to local destinations, forcing people to come on to arterial

roads to make even short local trips.

In order to reduce congestion on the existing roads, there is dire need to identify additional/alternative links and access corridors to augment the current network, with the following measures:

- i. Augmentation of road network to distribute high traffic volume over multiple roads, instead of stand-alone corridor/ junction capacity improvement strategies.
- ii. Road networks to be planned with a vehicular route network of approximately 250m c/c, as also specified in the NMSH parameters, 2011. Additional pedestrian/ NMT thoroughfares should be provided as required.
- iii. Road networks/ alignments need to be planned with minimum disruption of existing settlements/ structures and environmentally significant areas sensitive to such development.
- iv. All roads to be cleared from impediments and developed as per street design regulations.
- v. Area level parking management should be taken up as part of network improvement for effective utilization of the capacity of roads to augment the network.
- vi. A parallel connection (or connecting missing links) around the Boulevard and Foreshore road to be planned and perpendicular connections from Boulevard and Foreshore road to the parallel road to be planned to complete the network.

Three-tier road network as envisioned is required to be developed to restructure the predominantly radial pattern into a Ring Radial network as given below:

i. Tier -1: Inner Ring Road (IRR)

The Inner Ring Road will be an important Collector street having at least two-lane dual c/w configuration in inner city areas and minimum three-lane dual c/w configuration in the remaining areas. The tier is provided to have dedicated bus-bays (one km apart) and mandatory side-walks for pedestrians. Traffic management has to be ITS-enabled conditioned by installation of synchronised traffic signals, CCTV Cameras, remote sensors, automated traffic control room etc. The indicative alignment of the IRR is as follows:

Qamarwari-Sakidafar-Nowakadal-Rajoiuri Kadal-Khanyar-Fakhr-e-Kashmir bridge-MA Road-Raj Bagh-Padshahi Bagh-Nowgam NH Bypass-Hyderpora--Tengpora-JVMC upto State Motor Garages near Hajj House-Qamarwari along proposed new link.

The proposed IRR is already available from Qamarwari to Raj Bagh and from Pohru to State Motor Garages Bemina. Development of this Ring road will require constructing three important missing links:

- i) from the (under-construction) bridge at PC School *Rajbagh* to MA Road through/around Polo Ground;
- ii) from Raj Bagh Police Station to Pohru NH Bypass via *Padshahi* Bagh along existing Bridge at Flood Spill. The bridge has to be upgraded as per the cross section of the road. This link is viewed as the most potential one as it would drastically reduce average travel time between core city/Lal Chowk and *Nowgam* Railway Station from half an hour to about 10 minutes. As such, this link will redeem the functional importance of *Nowgam* Railway Station for city dwellers and the regional commuters whose work places are located within the Central Business District (CBD).
- iii) From NH Bypass near State Motor Garages to *Qamarwari* Chowk. The missing link is proposed through existing built up area which will involve acquisition/demolition of not more than 20-25 existing residential structures. However, the proposed link will have enormous functional importance in the corridor development besides improving accessibility of core city from central and western parts of Kashmir.

The Master Plan proposes low-floor high capacity bus-based transport system on tier-1. It is proposed that the Raj Bagh Bund Road and the Gogji Bagh Road be made as one-way streets up to IG Airport Road and both the roads be developed into three lane undivided c/w configuration with dedicated NMT lanes for pedestrians and cyclists.

- ii. **Tier-2: Inter-Mediate Ring Road (IMRR):** The IMRR is proposed to be developed of sub-arterial hierarchy with minimum 35 metre RoW. The road is proposed to be based on three-lane dual carriageway configuration with shared NMT lanes. It shall have properly located bus-bays (one km apart) and ITS-based traffic management measures in place. The indicative alignment of the tier-2 road is as follows:

Sempora near JKEDI – Khanda - Gogoo – Humhama Chowk – Sheikhpora - Sebdan – Haran - Soibough – Haji Bagh - HMT – Parimpora – Zonimar - Zadibal – Lal Bazaar – Hazratbal – Saidakadal – Dalgate - Sonwar- Pantha Chowk and back to Sempora

For the development of tier-2 corridor, the missing links in South, West and North directions from *Pampore to Humhama, Sheikhpora to HMT via Sebdan, Haran and Soibough and Parimpora to Zadibal via Khushalsar* will have to be developed not later than second phase of this master plan (2020-25). However; its alignment shall be finalised on ground immediately after the approval of this master plan. *It is also proposed that the part of the road traversing through flood plains shall be constructed on piers to avoid any constriction to flood waters.*

- iii. **Tier-3: Outer Ring Road (ORR):** This is the main spine of regional network and third tier/Outer Ring of Srinagar city's. Passing through five districts the road connects important functional nodes⁴. The outer bypass is proposed to be an ITS-enabled Wi-Fi access controlled corridor based on smart traffic solutions. The proposed alignment of the ORR is as follows:

Galandhar – Khanda – Budgam – Narbal – Rambirgarh – Sumbal – Ganderbal – Pandach – Zakura – Shalimar Bagh – Dalgate – Pantha Chowk – Pampore and back to Galandhar.

The objective is not only to promote mobility but accessibility and efficient connections. Therefore, the 3-tier Ring-Radial road network will have to be rationally connected to existing and proposed radials as shown in the Plan. As discussed earlier, for the three stage dispersal of traffic in and around Srinagar, the city will have to have at least nine radials entering it from different directions viz; *Anantnag (NH-44), Pulwama, Chadoora, Rangreth, Airport, Baramulla, Bandipora and Ganderbal (NH-1D)*. While the existing radials suffer from severe congestion with v/c ratios measuring above 1.0, most of the road intersections are based on poor geometric design. Besides widening of some important radials, new radials are proposed to improve the overall efficiency of transport network. The city needs significant investments in public transport on the concept of equality and inclusivity.

Table 11-2: Proposed Improvement of Intersections

Sr. No.	Location	Proposed Design of the Intersection
1	Pantha Chowk	Grade Separator
2	Nowgam Chowk	Grade Separator
3	Sanat Nagar Chowk	Grade Separator
4	Tengpora-Batamaloo Crossing	Full Grade Interchange/Cloverleaf
5	Bemina Chowk	Full Grade Interchange/Cloverleaf
6	Parimpora Chowk	Full Grade Interchange/Cloverleaf
7	Shalteng Chowk	Full Grade Separator

⁴ The 61 km long ring road from Galandhar to Ganderbal is already approved by the GoI for a 60 metre RoW forms part of the tier-3 ring road. The outer bypass from Galandhar to Rebtar near Sumbal will form part of the proposed Outer Ring Road. The Galandhar-Ganderbal ring Road is proposed to be a fully access-controlled high speed corridor with segregated Service Roads (7.50 mtr.) on both sides (Refer X-section). The road has to be developed as an expressway for regional traffic and shall be designated as a new bye-pass to Srinagar city. The ORR is proposed to be signal free constructed for the design speed of 100 KPH. The section of the road traversing through flood plains shall be constructed on piers so that the natural flood basin is not affected.

8	Humhama Chowk	Elevated corridor from Airport Gate over Humhama Chowk
9	Jhelum Bund near GPO to Sangar Mall	Elevated Corridor from Jhelum Bund connecting Skewed Bridge with Eastern Foreshore near Sanagar Mall
10	Soura Chowk	Signalised Intersection
11	Dalgate crossing	Grade Separator
12	J&K Bank Corporate Office Crossing	Grade Separator/half cloverleaf(trumpet)
13	Narbal Crossing	Grade Separator
14	Jawaharpora Narbal Crossing	Full Grade Interchange/Cloverleaf
15	Mirgund Crossing	Full Grade Interchange/Cloverleaf
16	Kandizal Crossing	Full Grade Interchange/Cloverleaf
17	Ichigam Crossing	Full Grade Interchange/Cloverleaf
18	Elahi Bagh Crossing of IMRR	Signalised Intersection

In view of the potential loss to heritage, widening of city roads is not viewed as a preferred strategy in this Master Plan and in fact, has been limited to inevitable areas as and where required. These long term measures have to be dovetailed in a phased manner to achieve the master plan targets. It is also recommended that the alignments of all existing and proposed roads identified in the master plan need to be physically demarcated on ground so that the proposed RoW remains free of any encumbrance and encroachment. Besides provision of missing links, following road intersections need to be re-designed as shown in **Table 11-2**:

Intersections and crossings are the most crucial components of a road network system as they allow directional traffic to move through the junctions, resulting in complex movements and conflict points for MV, NMV and pedestrian traffic. Intersections must be designed to reduce delays and increase safety for all road users, with a priority to non-motorized and public transport modes. The design of intersections with proper signalization and signage, markings etc. is very important for regulated and safe movement of all modes. Road owning agencies concerned shall be responsible for installing the appropriate road signage and markings, and maintaining them on regular basis. To facilitate easy interchange between modes and allow local trips to be made on NMT or foot, mid-block crossings need to be provided at approximately every 250 meters or less. In addition, pedestrians including children, women, elderly and the differentially-abled, must be given the shortest possible direct route to cross the street, therefore the most preferred crossing for them is “at-grade” with signalization, both at intersections and mid-block crossings. Pedestrian signals should be synchronized with the nearest traffic signals, for smooth movement of traffic along with safe pedestrian/ NMT crossing. Grade separators may also be provided at junctions as per codes, where thoroughfare traffic may be in high volume. Care must be taken that local level connectivity at the ground level and safe at-grade

crossings are provided for all modes as per the criteria of this Section. In any case, grade separator should not be implemented as a standalone project but as part of a comprehensive network plan with traffic circulation system and traffic management measures for an influence area around the junction.

Road Widths and Building Lines

In order to review the Building Lines/Right-of-Ways (RoWs) of important city roads on the basis of actual ground realities, Town Planning Organisation Kashmir constituted a number of teams to collect first-hand information from the field. The data regarding existing RoW and existing building line for each listed road was collected and analysed vis-à-vis the violations w.r.t. RoW and building line as proposed in the Master Plan-2021. It was found that RoWs and Building lines for most of the roads proposed in the Master Plan -2021 were inconsistent with a number of them in deviation from the actual site conditions as existed in 2000 and others having advertently been violated. Accordingly, attempt has been made to rationalise the RoWs and building lines of important city roads as given in **Table 11-3** below and are proposed to be incorporated in the Master Plan.

Table 11-3: Proposed Right-of-Way and Building Line

Sl. No.	Name of Road	RoW in Metres	
		Proposed RoW	Proposed Building Line
1	Gallandhar - Ganderbal Expressway via Chadoora, Badgam, Narbal, Sumbal	60	50
2	N.H- 44 from Gallandhar to Planning Area Limits towards Awantipore	60	50
3	Road from Outer Bypass intersection at Mirgund to Planning area limits towards Pattan	60	50
4	N.H.-44 from Gallandhar along railway line upto existing N/H Bypass near Peaks Auto Ltd	50	40
5	Existing N/H Bypass from Pantha Chowk - Parimpora Chowk via Nowgam, Hyderpora and Bemina	50	35
6	Road from Parimpora to Mirgund connecting Outer Bypass via HMT-Lawaypora	50	40
7	Proposed Road from Bandipora Road at Mujgund to NH-44 at Lawaypora	35	25
8	Proposed road from Pandach to Shalimar Bagh (Part of ORR)	35	30
9	Proposed Intermediate Ring Road (Partly) from Sempora - Deharmuna via Wagoora, Humhama, Sebdan connecting ORR near Farash Gund Crossing	35	25
10	Proposed Road from Expressway near Sumbal upto Pandach (ORR-Partly existing and partly realigned)	35	25
11	Existing NH from Gallandhar - Parimpora Via Pantha Chowk-Sonwar-Lal Chowk-Batmaloo-Qamarwari	35	25

12	Proposed Intermediate Ring Road (Partly) from Soibugh to HMT Crossing via Hokersar - Zainakote	35	25
13	Road from Shalimar Bagh to Nehru Park along Dal Lake via Nishat (Part of ORR) partly realigned at Ishber to avoid large-scale demolition	35	40 metre upto Northern Foreshore Road intersection wherefrom upto Shalimar Bagh it shall be 25 metres
14	District Road from the intersection of ORR at Galandhar to Pulwama	35	30
15	Proposed Ganderbal Necklace Road from ORR intersection near proposed Terminal to Planning Area limits and beyond	35	25
16	Existing Srinagar - Bandipora Road from HMT crossing at Shalteng to Planning Area limits and beyond	35	30
17	IG (Airport) Road from Jehangir Chowk to Airport Gate (Outer)	30	25
18	Proposed Road from Parimpora chowk to Zadibal connecting Bagh-e-Ali Mardan Khan along the Western Bank of Khusahalsar lagoon with a proposed bridge on Jhelum River at Parimpora	30	20
19	Existing Road from Jehangir Chowk - SKIMS Chowk (Ali Jan Road) via Shaheed Ganj, Karan Nagar, Safa Kadal, Sekidafar and Zonimar	30	20
20	Proposed Upgradation of Hazratbal Road from Zadibal Crossing to Hazratbal Crossing via Lal Bazaar, Kanitar	30	20
21	Proposed Western Foreshore road from Kohankhan near Baba Dharamdass Temple to Hazratbal	30	20
22	Existing Narbal - Tangmarg Road (NTR)	30	20
23	Proposed Bund Road from N/H Bypass at Puhroo behind Natipora, Padshahi Bagh to Presentation Convent Rajbagh along Kitab Lane	30	20
24	Proposed Road from IMRR at Khushipora to N/H Bypass near State Motor Garages Bemina via Rakh-e-Gandakshah	30	20
25	Proposed Road from Batmaloo to Sheikhpura connecting IMRR via Tengpora and Nambali Narkura (partly existing)	30	20
26	TRC Road from Radio Kashmir Crossing to M. A. Road near J&K Bank Corporate Office	30	20
27	Old Airport Road from Baghat chowk to Rangreth via Sanat Nagar	30	20
28	Bemina Road from Tadoo Ground to Outer Ring Road via Bemina, Khumoini chowk and Sebdan	30	20
29	Hazratbal to Pandach via Zakura connecting Outer Ring Road	30	20
	North-South Corridor from SKIMS crossing to Pandach (Realigned)	30	20
30	Chadoora - Rambagh Road via Mochow, Bagh-i-Mehtab and Chanapora	25	18
31	Upgradation of Link Road from National School Karan Nagar to Batamaloo along Cremation Ground	25	18

32	Existing Road from Fire & emergency office at Batamaloo to Nawakadal connecting Nalamar Road via Choota Bazaar, Zaldagar, Nawab Bazaar, Syed Hamidpora	25	18
33	Road from Exhibition Ground to Kohankhan near Baba Dharamdass Temple along Tsunti kul via Shaheed Gunj, Barbarshah with bridges proposed across kutkhul and Jhelum	25	18
34	Ichgam Road from Badgam main Chowk to Ichigam and beyond	25	18
35	Badgam - Beeru Road from Budgam main Chowk to Nasrullahpora and beyond to ORR	25	18
36	Ompora to Badgam near DC office connecting ORR /Expressway via Wadipora, Lakhripora with RoB across Railway Link Road	25	18
37	Existing Road from ORR intersection at Pandach to Planning Area Limits via main market Ganderbal	25	18
38	Road from NH Bypass at Ansari Tyota upto new bridge on FSC near Kushipora	25	18
39	Northern Foreshore from Nishat to Naseem Bagh	25	18
40	Baba Demb Western Foreshore Road from Nallamar Road near Khanyar Police Station to M.A Road via Barbarshah	25	18
41	Baba Demb Southern Foreshore Road from Azad Filling Station to Barbarshah	25	18
42	Badgam - Humhama Road from IMRR intersection at Sheikhpura to Budgam main chowk	25	18
43	Southern Anchar Foreshore Road from ORR to Ali Jan road via Sangam Village	25	18
44	Road from Nowgam Chowk to Newa onwards to Pulwama via Kani Pora and Khanda	25	18
45	Harwan Road from NFR to Harwan via Shalimar	25	18
47	Habbak - Khimber Road via Batapore Inderhama	25	18
48	Panthachowk to Khrew via Zewan - Khunamoh - Wuyan and onwards to Lethpora connecting N/H-44	25	18
49	Link Road from N/H Bypass Bemina near State Motor Garages to Qamarwari	25	18
50	Existing Ganderbal - Manigam Roadthrough main town from Intersection at ORR to the intersection of with Ganderbal Ring Road	25	18
51	Ganderbal - Manasbal Road connecting Central University including Re-Alignment upto Planning Area Limits	25	18
52	Ganderbal Central Road from Dudrehama Junction to ORR behind Saloora Forest Nursery	25	18
	Road from Nagbal to Harwan via Alusteng, Khimber, Chaterhama, Saidapora Bala and Muftibagh	25	18
53	Proposed Road from Hyderpora Junction near Galwanpora Crossing to Soibugh via Narkura - Khomeini Chowk - Rakhi Haran	25	18
54	Existing Road from Aali Masjid to Hawal via Sazgaripora	25	18
55	Gousia Hospital to M.A Road near Sangarmaal City Centre via Fakhri Kashmir bridge and onwards to Residency Road via Polo View (elevated stretch)	21	18

56	Haft Chinar to Raj Bagh via Wazir Bagh and Ikhrājpora connecting IRR at Police Station and beyond to Hatrick Restaurant <i>(to be uni-directional)</i>	21	18
57	Bakshi Stadium to TRC Chowk near Radion Kashmir via Abdullah Bridge along right bank of River Jhelum <i>(to be uni-directional)</i>	21	18
58	Boulevard from Dalgate to Nehru Park connecting ORR near proposed Tunnel	21	40
59	Nallamar Road from Qamarwari Chowk to Baba Demb near Gousia Hospital ⁵	21	10.5
60	Road from Baba Dharamdass Temple to SKIMS via Khanyar, Nowhatta, Hawal and Nowshehra	21	18
61	Road from Khanyar Chowk to Saida Kadal via Rainwari connecting proposed Western Foreshore Road	21	18
62	Residency Road from Sonwar Chowk to Jehangir Chowk over Amira kadal	21	10.5
63	Jawahar Nagar Road from Lal Mandi junction to Mehjoor Nagar Bridge on Rambagh FSC	21	15
64	Wuyen to Sempora connecting N/H-44 via Balahama at IMMR intersection	21	18
65	Road from Nawab Bazaar to Bemina Chowk via Shah Mohalla, Kak Sarai Chowk, & Chana Mohalla <i>(partly realigned)</i>	21	15
66	Batpore - Shalimar Road via Telbal	15	15
67	Road from Busberg to Chandpore via Saidapore Humchi, Inderhama, Mulphak and Daniham along with a new bridge on Telbal Nallah at Chandpore	15	15
68	Proposed Eastern Anchar Bundh Road from Zonimar behind SKIMS upto Umarhear	15	15
69	Upgradation of a road from Umerhear to Darbagh via Zakura, Burzahama	15	12
70	(Existing) Shalimar Road from Nishat to Ishber connecting proposed ORR	15	10
71	Gupkar Road from Sonwar Boulevard near Police Golf Course	15	15
72	Budgam - Magam Road from Nasrullapore to Soibugh and onwards to ORR and beyond to Planning Area Limits <i>(partly realigned)</i>	15	12
73	Upgradation of existing from Barbarshah to Khyam vial Ihkwan Hotel	15	15
74	Upgradation of existing road from Srinagar – Baramullat at Mustfaabad HMT upto Khusipora via Zainakote Industrial area	15	12
75	Road from Sheikhpore to Badgam via Ompora	15	12
76	New Zainakadal to Nawab Bazar junction via Shah Mohalla & Dalal Mohalla	15	12
77	Road from Aali Kadal to Fateh Kadal via Urdu Bazaar	15	12

⁵ As per the recommendation of the Committee constituted for the scrutiny of objections and suggestions, the master plan envisages that detailed plan aiming at the restoration of architectural essence on both sides of this road shall be put in place.

78	Road from Chota Bazaar to Western Foreshore Road Brari Numbal (Naqashpora) via Kani Kadal, Babapora, New Habakadal	15	12
79	Nai Sadak from Gaw Kadal to Kathidarwaza via Kralkhud, Habbakdal, Chinkral Mohalla, Fatehkadal, KK Mohalla, Qaziyar, Bohri Kadal, Pandan, Nowhatta and Malakhah	15	12
80	Tankipora Zainadar Mohalla Road upto Habbakadal	15	12
81	Zaldagar to Western Foreshore Road via Biscoe Bridge and Malik Angan		
82	Road from Kaksarai to Shah Mohalla Bazaar		
83	Budoo Bagh - Koolipora Road connecting Eastern Foreshore Road with SMS Road at GHSS Khanyar	15	12
84	Road from MK Saheb Chowk to Ownta Bawan connecting 90 Feet via Bagh-e-Ali Mardan Khan, Madeen Saheb, Doonibagh, Tawheedabad over Akmal Bridge	15	12
85	Link Road from Habak crossing to Proposed Eastern Anchar Bund Road connecting 90 Feet and Buchpora road via Malbagh	15	12
86	Road from Lasjan Bypass Bridge to Pampore and onwards to Kakapora via Tengan, Summerbug along Left Bank of river Jhelum upto ORR	15	12
87	Pampore - Khrew Road via from Kadlbal to Khrew main chowk via Konabal	15	12
88	Buchpora Road from SKIMS Crossing to Pandach via Buchpora	15	10
89	Mahjoor Nagar to Lasjan near Bypass via Padashashi Bagh	15	12
90	Walled city Road from Firdous Cinema Junction to Saida Kadal via Sangeen Darwaza, Devi Angan, Baghi Waris Khan, Khojyabal along the shore of Nageen Lake	15	12
91	Narkura Road from Ompura to Gangabug near Rambagh FSC	15	12
92	Chattabal Road from Qamarwari to Safa Kadal Road near Shareen Bagh	15	12
93	Jamallatta Road from Safa Kadal Bridge to Gojwara Chowh via Nawa Kadal, Ali Kadal and Rajouri Kadal	15	12
94	Pandan Road from Bohri Kadal to Chatti Padshahi Gurudwara via Pandan, Nowhatta and Malkhah	15	12
95	Up-gradation of a Road from Shahampora to Vishwa Bharti College via Jogilankar	15	12
96	Jhelum Bund Road from Cement Bridge upto Anchar Foreshore Road via Noorbagh, Palpore and Taken	15	15
97	Batapora - Alusteng Road	15	12
98	Burzahama - Dhanihama - Chatterhama Road	15	12
99	Rambagh Flood Spill Channel (FSC) Bund Roads along both banks	15	12
100	Road from Nowgam Chowk to Natipora crossing	15	10
101	Road from Puhroo Chowk to Pampore Railway Station via Suth connecting Outer Ring	15	12

	Road/Expressway		
102	Other Bund Roads other than those specified separately	15	12
<p>Note:</p> <ul style="list-style-type: none"> • <i>The proposed Building Line and proposed RoW for any road specifically not mentioned above shall be decided on the basis of same pattern as proposed above or its functional hierarchy, existing road width and continuity.</i> • <i>In case of approved housing colonies, the individual plot setbacks as prescribed in the approved layouts of said colonies shall prevail over the proposed Building Line(s) as envisaged above.</i> • <i>Other than Lanes/By-lanes/Access streets, rest of the roads/link roads specifically not mentioned above shall not be less than 11.50 metre in RoW and their Building Line from centre of the road shall not be less than eight (08) metre.</i> • <i>In case of a road / link existing in between two roads in the same alignment, the RoW and Building Line specifically not mentioned in this master plan shall have the RoW and Building Line of the road with maximum RoW and Building Line.</i> 			

11.3 Integrated Intercity and Intra-city Bus Terminals/ Bus Depots

Location of bus terminals is key to optimal rationalization of city routes. At present all bus/mini-bus operations whether intra-city, inter-city or inter-state originate and terminate at Pantha Chowk, Batamaloo, Soura and Hazratbal terminals. It is proposed that Batamaloo terminal be shifted to Parimpora for “Intra-city Bus and Mini-bus operations” in Phase -I while as **Pantha Chowk Bus Terminal be shifted to Galandhar along Galandhar - Pulwama Road for Inter-city and Inter-state transport operations.** The existing Batamaloo and Pantha Chowk terminals are proposed to be developed as City Centre and Sub-city Centre respectively. Besides, to meet the future demand, following regional bus terminals for intra-city and intra-state traffic operations are proposed in Phase -II (2020-25):

- 1) Ganderbal along the ORR ear District police Line (New)
- 2) Narbal along proposed *Lawaypora – Mujgund Road*
- 3) Budgam [*existing bus terminal to be upgraded*]
- 4) *Nowgam Railway Station along existing parking lot*

11.3.1 Bus Depots

At present all the buses whether intra-city, inter-city or inter-state use *Pantha Chowk* and *Batamaloo* bus stands as halting places as well as repair and servicing points. It has been estimated that for the future demand, more than 2000 standard buses will be required by the year 2035. For these buses, at least five bus depots at various places will be required. In addition there will be 1000 minibuses by 2031 which will

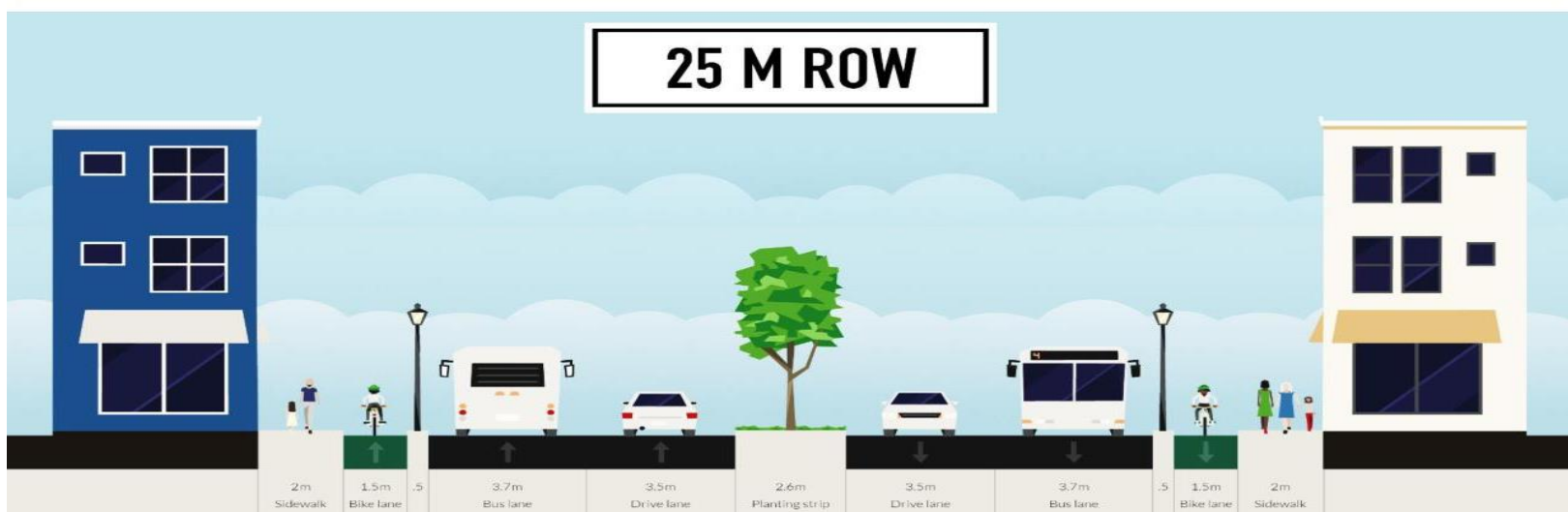
also ultimately need stabling and servicing facilities. To meet the future demands of buses and mini buses, three bus depots besides *Parimpora* are proposed one each at *Galandhar*, *Ganderbal*, *Narbal* and *Budgam* regional terminals along with other facilities of a bus terminal.

Table 11-4: Proposed Bus Depots in Srinagar Metropolitan Region

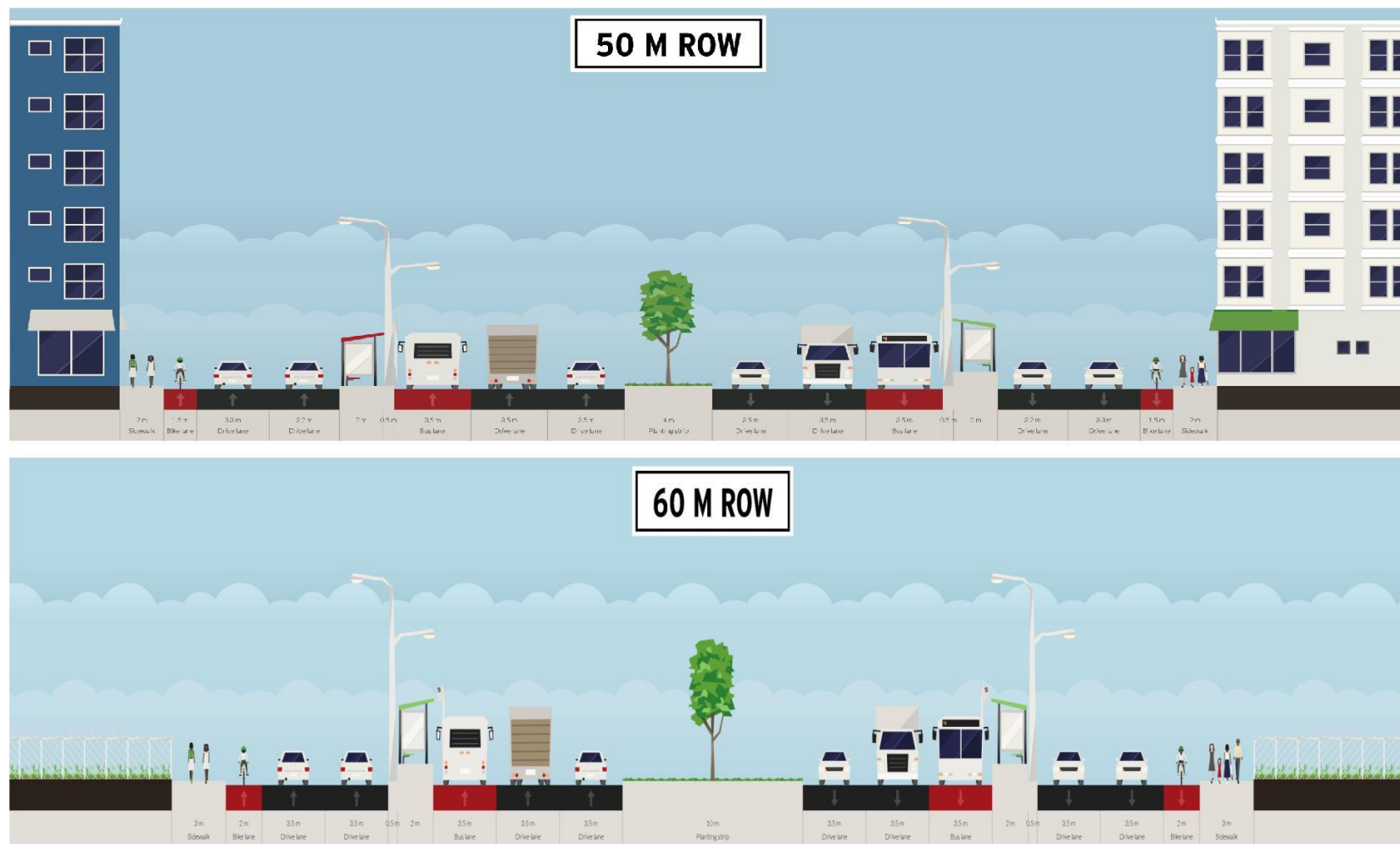
Sr. No.	Bus Depots	Implementation Phasing	Proposed Bus Capacity	Remarks
1	Narbal	I	500	Inter-city and local buses
2	Galandhar	II	600	Inter-city and local buses
3	Ganderbal	III	400	Inter-city and local buses
4	Parimpora	I	200	Intra-city buses
5	Budgam	I	300	Inter-city and local buses
Total			2000	

PROPOSED ROAD CROSS-SECTIONS









11.4 Inland Multimodal Container Depot/Dry Port

At present all goods traffic gets concentrated at Pantha Chowk and Parimpora Mandi. In addition, FCI godowns in Shaheed Gunj also attract heavy goods traffic into main CBD. Unlike CMP⁶, the master plan envisages development of an Inland Multimodal Container Depot near Budgam Railway Station which *inter-alia* shall comprise IFC, Truck Terminal, grain mandi, Fruit and Vegetable Mandi with all facilities for wholesale businesses, warehousing, cold storage, loading /unloading facilities, parking, workshops etc. The facility shall be supported by concrete steps to ensure ease of doing businesses in the Dry Port. By developing IMCD at Budgam, heavy goods traffic entering city will be directed along its periphery, and light/small goods carrier vehicles can be used for intra-city freight movement. The development of Outer Ring Road is also going to facilitate diversion of [through] freight traffic. The access road and the connecting roads are proposed to be developed/widened as per the configuration proposed in Transport Plan. In addition, a mini-IFC is proposed at Nowgam along the railway line as shown in the Proposed Landuse Plan-2035. Since the activities aim at facilitating doing commerce and business, both the uses have been put under Commercial Use for building and regulations.

11.5 Public Transport

Public transport despite its poor quality of service has been the major provider of transport services catering to 75 percent of total trips in 1989 which has reached to 80 percent in 2011. Despite this Srinagar has been facing traffic congestion, traffic jams and gridlock which is affecting the economy and the quality of life of its citizens. To ensure safe, affordable, reliable and quick access to work places for the growing population, the GoI announced the **National Urban Transport Policy (NUTP) in 2006**. The policy seeks to achieve its objectives through—

- *more equitable allocation of road space with people rather than vehicles as the main focus;*
- *establishment of a Unified Agency to handle the transport systems at all levels;*
- *integration of public transport systems;*
- *encouragement of non-motorised transport;*

⁶ The CMP upholds the proposed location of IFC at Nowgam Railway Station and proposes develop all facilities of wholesale markets, loading /unloading facilities, parking, workshops etc in this IFC.



- *rational pricing and innovative financing for addressing the issue of affordability versus viability*

The Master Plan envisages public transport as the backbone of mobility in Srinagar city. The basic premise is to develop an efficient, cost effective and extensive coverage of public transport corridors providing sustainable, convenient and affordable means of travel to commuters. This is also consistent with the objective of 12th FY Plan (2012-17) which seeks to promote faster GDP growth while reducing the intensity of emissions. It calls for policies to encourage greater use of public and non-motorised transport in Indian cities. The Plan sets a target of 50% of motorised trips to be catered by public transport which seems to be less ambitious when compared with the mega cities⁷ of India. As per the CMP, the city will have 36 lakh trips by 2031 with 61% public motorized trips. As such, the city will need a robust public transport system to sustain this modal choice simultaneously reducing the congestion on city roads.

11.5.1 Augmentation and Improvement of City Bus System

Unlike other metro-cities of India, Srinagar does not have its own significant city bus service. However, the J&K SRTC provides a limited bus service despite the fact that it used to be the main public transport service provider till 1980s. The department has lost its sheen due to official apathy and archaic management system. Seventy five (75) buses procured under JnNURM for strengthening public transport of Srinagar city are unfortunately being used for purposes other than improving the public transport system. At present a huge fleet of Multipurpose Vehicles (MPVs) and approximately 2000 mini-buses are plying on city roads whose operations are entirely managed by private operators. The Master Plan envisages establishing a City Bus Service (CBS) for Srinagar and recommends the replacement of existing mini-bus services with a High Capacity Bus System (HCBS) operated by a unified authority. The owners and operators of mini-buses and other MPVs however, shall be rehabilitated by evolving a suitable policy safeguarding their interests.

As per CMP, the city will need at least 900 standard size buses and 1700 mini buses by the year 2021 and about 1100 buses along with 2000 mini buses by 2031 subject to the condition that the MRT components do not lag behind in implementation. The quality of services will also have to be of much higher standard if the city wants to achieve the NUTP objectives of changing the passenger preference from personalized vehicles to public transport. Accordingly, it is recommended that all the new buses to be added to fleet, either as “addition or replacement” should be low floor good quality air conditioned buses considering the commuter comfort. Besides, the proposed city transport authority should introduce gender based transport services in Srinagar city. One of the hallmarks of sustainable and people-centric transport planning

⁷ As per the study conducted by the MoUD, GoI (2008), 44% of urban motorised trips (27% of all trips) were already being catered for by Public Transport and in Mega cities, the share of public Transport was already 63% of motorised trips.

is its inclusiveness as such, it is recommended that besides aforesaid special buses for women, mandatory seat reservations shall be made for senior citizens and the persons with disabilities. It is proposed that the Srinagar Metropolitan Transport Corporation shall initially purchase a fleet of 500 modern comfortable air conditioned low floor buses during first quarter of this master plan (2016-2020). It is recommended that the inter-district public transport other than MPVs plying from other districts shall be restricted to the proposed regional bus terminals and shall act as feeder service for the HCBS. With the introduction of HCBS, most of the passengers are expected to switch over to this modern bus system. In spite of the fact that a comprehensive service coverage has been proposed under HCBS, BRTS for promoting public transport, the Paratransit (mini-buses, MPVs etc) shall continue to operate as feeder service on some of the city roads where HCBS cannot be made operational.

11.5.2 Short-term Measures

Besides, various short-term measures are also suggested to improve the efficiency of city transport to a minimum desired level of service. These measures will optimise the use of available infrastructure comprising construction interventions having least rehabilitation and resettlement implications. Among the short-term measures focus shall be on traffic engineering and management measures like –

- improvement of road geometrics and intersection design;
- removal of traffic bottlenecks;
- provision of ITS measures like traffic signals, CCTV cameras, road signs and markings;
- ban on certain turning movements at intersections and closing of unwanted side roads and critical median gaps especially along the designated North – South and East – West Corridors;
- identification of No ‘On-Street Parking’ roads, One-way streets, No-Traffic Zones in CBD Lal Chowk and core city area;
- provision and improvement of ‘Off-Street Parking’ lots;
- Detailed plans of parking lots on the periphery of CBD ensuring least personalised traffic movement within CBD;
- design improvement of footpaths in terms of height, width, levelling, ramps, and removal of obstructions therefrom;
- provision of footpaths along important city roads;
- provision of Multi-Purpose Vehicle (MPV) Stands/TSM Stands at suitable locations
- comprehensive provision of bus bays and passenger shelters

As per the surveys, about 75% of the passengers using multiple modes have shown their willingness to shift to public transport with about 56% ready to pay even higher fare rates (1.25 times). Therefore, an efficient public transport system based on High Capacity Bus Transit and

Light Rail Transit is one of the 'USPs' of this Master Plan. Accordingly, multi-modal integrated mass transport corridors are proposed in the north-south and east-west directions. It is proposed that following priority shall be adopted in the promotion of public transport systems:

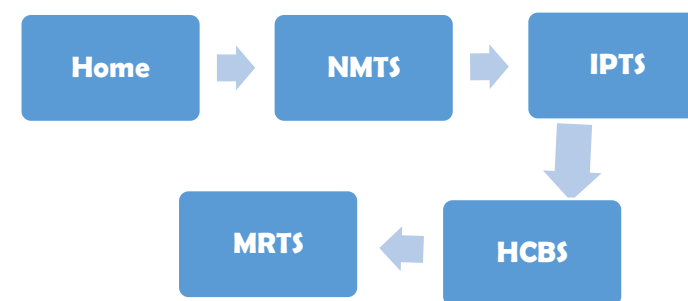
11.5.3 Public Transport Systems

- i) **1st Priority:** High Capacity Bus System;
- ii) **2nd Priority:** Bus Rapid Transit System; and
- iii) **3rd Priority:** Mass Rapid Transit System

Initially the Government should procure a fleet of low floor high capacity buses and introduce the same on important city corridors replacing the present mini-buses in a phased manner. In order to improve the efficiency and quality of public transport in the city, sustained efforts should be made to facilitate people to switch over from present IPT system (Mini-buses and shared cars like Sumos) to High Capacity Bus System (HCBS) on below listed routes. The Master Plan besides envisaging the augmentation of bus fleet significantly, proposes the **rationalization of bus routes** as High Capacity Bus Corridors in North – South and East – West directions:

Bus Rapid Transit (BRT) is a high quality, ultra-modern, customer oriented transit option to deliver fast, comfortable and cost-effective urban mobility. It is an integrated system of facilities, equipment services, and amenities that improves the speed, reliability, and identity of bus transit. BRT can easily handle passenger flow in the range of about 4000 to 10,000 passengers per hour per direction – depending upon the lanes (number, type) dedicated to bus system. The main features of BRT system include the following:

- Dedicated bus-ways (preferably, physically separated from other traffic)
- Accessible at same level, safe, secure and attractive stations
- Easy-to-board, attractive and environment friendly buses.
- Efficient (preferably off-board) fare collection



- ITS application to provide real time passenger information, signal priority and service command and control.
- Frequent and distinctive system identity

Considering the expected traffic demand, a BRT corridor along the designated Inter-Mediate Ring Road is proposed in the 2nd phase of this master plan. The BRT corridor will have space for two dedicated bus lanes one on each side having priority at signalized junctions. On the other hand, corridors expected to have likely traffic demand of less than 10,000 PHPDT and having ROW less than 20 metre, High Capacity Bus System (HCBS) is recommended.

Taking into consideration the likely travel demand in the metro region of Srinagar by 2035, BRT system as 2nd priority following HCBS is proposed along following corridors:



Table 11-6: Bus Rapid Transit (BRT) Corridors

Sr. No.	Name of Corridor	BRT Type	Implementation Phase
01	Pampore – Pantha Chowk – Sonwar – Lal Chowk – Batamaloo – Qamarwari – Parimpora – Narbal	Fully dedicated corridor	Phase I
02	Pantha Chowk – Nowgam – Sanat Nagar – Hyderpora – Bemina – Parimpora – Zonimar – Soura – Elahibagh – Ganderbal	Fully dedicated corridor	Phase II

It is proposed that priority signaling for buses at the junctions (in case of BRTS), provision of proper road-side bus stops and integration points with the other modes will have to be provided effectively for efficient use of this bus transport system.

11.6 Mass Rapid Transit System

As per CMP, only 12% trips are more than 10 km. As per CMP, the recommended PPHPDT for having a Metro system is 30,000 and above. The maximum passenger demand is 9,100 - 14,400 PPHPDT on high capacity corridors for which Metro will be inefficient and very expensive. Also, 12% trips are too few to be considered for a high capacity metro rail system for the city. However, inter-city travel trips, which are majorly dependent on private transport, should be replaced with a high-speed public transport system. Srinagar, being the socio-

economic hub of Kashmir Region has an immense inter-city travel requirement. However, Srinagar is the primate city in Kashmir Region enjoying the influence on its regional and sub-urban centers as a result of which a large number of commuters shuttle between Srinagar City and nearby towns viz; Anantnag, Pulwama, Budgam, Baramulla, Ganderbal etc. Most of these commuters travel by buses, para-transit modes, personal vehicles as well as by trains. Since road based transport is time consuming, expensive and uncomfortable, the general preference is to use the rail system which is faster, comfortable and economical. As per CMP, it is provided that by developing a dedicated public transport service between Srinagar and its regional/sub-urban towns, at least 60% modal shift will take place from road-based transport system to rail based system. It is proposed that all towns and cities around Srinagar be connected by this system in a phased manner with improved interchange facilities in the city at well-designed interchange stations.

The city needs to have a long term Mass Rapid Transit System implantable over next two decades as metro rail provides a safe and efficient public transport. This will elevate the overall level public transport systems and range of user choice in the city. The MRTS is proposed to be partly elevated and partly underground. Primarily the focus area should core city in Phase I followed by its extensions to suburbs in subsequent phases. It has to be properly integrated with Commuter Rail System to provide efficient interchanges for the commuters.

- **MRTS Corridors (Phase-I):**

- i) Airport to Pandach via Hyderpora, Bagat, Solina, Batamaloo, Nawa kadal, Rajouri Kadal, Hawal, Labazaar, Soura touching 90 feet Road.
- ii) Pantha Chowk to Parimpora via Sonwar, Dalgate, Lal Chowk, Batmaloo, Qamarwari.
- iii) Lal Chowk to Batpora via Konakhan along the proposed Western Foreshore Road behind Nowpora and Rainawari upto Saida Kadal to Hazratbal connecting proposed Outer Ring Road near Batpora.

- **MRTS Corridors (Phase-II):**

- i) Extension of Phase I corridors to Budgam, Pampore, Ganderbal and Narbal adjacent to proposed and existing bus terminals for ensuring integration of traffic modes.



Plate-: People using roof top of a Local train in 2015 for travelling from Anantnag to Srinagar

11.7 Commuter and Goods Rail System (CGRS)

Srinagar is the primate city in Kashmir Region enjoying the influence on its regional and sub-urban centres as a result of which a large number of commuters shuttle between Srinagar City and nearby towns viz; *Anantnag, Pulwama, Budgam, Baramulla, Ganderbal* etc. Most of these commuters travel by buses, para-transit modes, personal vehicles as well as by trains. Since road based transport is time consuming, expensive and uncomfortable, the general preference is to use the rail system which is faster, comfortable and economical. As per CMP, it is provided that by developing a dedicated commuter service between Srinagar and its regional/sub-urban towns, at least 60% modal shift will take place from road-based transport system to rail based system. Although Srinagar does not have a commuter rail system available with all sub-urban towns, as such road transport is the most widely used mode of transport in the Valley floor. Srinagar city will require gradual growth in the number of commuter trains together with increased frequency along existing and proposed new tracks. It is proposed that the frequency of daily train services along the existing tracks be increased sufficiently especially during morning and evening peak hours. About 15-20 trains per day shall be allowed to operate between *Srinagar, Anantnag* and *Baramulla* ultimately putting up additional and separate tracks connecting other towns in all directions in a phased manner. The commuter rail routes given below are proposed to be developed in a way to not restrict the natural flood plain of any river. It is recommended that these tracks shall be constructed on piers in the flood prone areas.

Table 11-7: Commuter Rail Corridors

Sl. No.	Routes	Proposed Action
1	Srinagar - Qazigund	Additional tracks
2	Srinagar - Baramulla/Uri	Additional tracks
3	Srinagar - Pulwama - Shopian - Kulgam	New Track
4	Srinagar - Sopore - Handwara - Kupwara	New track from Sopore to Kupwara

11.8 Dal Ring Transport Service

Dal Lake is home to national and international tourists and residents alike. It is one of the most important tourist attractions and a place to relax and spend time. Due to traffic congestion and air pollution, the area is currently not as enjoyable and relaxing. Also, the haphazard parking creates traffic mess around the Dal lake. It is recommended that Dal Lake should have its own Ring Transport Service which is not only a service that takes people around the lake and stops at demarcated points. It is recommended that this DRTS could be through an electric tram system or by electric bus or CNG bus which is environmentally sound and also does not create noise pollution. Electric buses if

provided could be given a charging system at parking locations. The system could be run on PPP arrangement with operations managed by a public/ semi-public or private enterprise on annual subsidy provided by government.

11.9 Air Traffic

Srinagar is the summer capital of Jammu & Kashmir State and also the largest urban settlement of the State. It is one of the preferred tourist destinations in India. In order to develop Srinagar as a global city, one of the key requirements will be to upgrade its air transport system as air transport has gained significance with increase in the number of tourists and the flow of foreign investments. *Shiekh-ul-Alam International Airport* located 10 km from city centre is the lone airport of Srinagar. Besides being strategically very important, the Srinagar Airport is among the first twenty airports in India in terms of percentage share of total passenger traffic. It is proposed that Srinagar city needs to be connected by air to southern and eastern states of India. The airport shall be made open to international aircraft operations under Limited International Airport Category especially to the Gulf and SAARC countries. This move is expected to boost the economic development of the State by way of promoting tourism, horticulture, handicrafts, etc. The Master Plan proposes following measures to promote air traffic at *Shiekh-ul-Alam Airport*:

- i) Up-gradation and modernisation of terminal building reflecting the vernacular architecture to meet the future volume of air traffic;
- ii) Provision of a waiting hall outside terminal building;
- iii) Up-gradation to Night Landing System for introduction of night flights and landing during poor visibility in winters;
- iv) Face-lifting of main entry gate and provision of more lanes and x-ray machines;
- v) Development of a dedicated elevated corridor from *Humhama Chowk* to inside Airport main gate for hassle free movement of passengers;
- vi) Development of night stay facilities near the Airport.

The expansion of the Airport/Terminal Building as envisaged in the Master Plan of Srinagar Airport prepared by the Airports Authority of India has been incorporated in the Master Plan Srinagar-2035.

11.10 Inland Water Transport (IWT) System

The River Jhelum has been the historical spine of the city. The remnants of ghats along the Jhelum banks point to the fact the city used to have an inland water transport system. There is a need to revive the city's water transport to supplement its road based transport system. At the same time, it will be an important attraction for tourists to enjoy the historicity and beauty of this city also leading to awareness amongst

local inhabitants for keeping the water bodies clean. The famous Mughal gardens, *Dal Lake, Hazratbal, NIT, Soura, Khankah* etc can be made accessible by IWT. As such following routes are identified in the master plan for the development of a viable IWT system in Srinagar city:

Table 11-8: Proposed Inland Water Transport

Sl. No.	Proposed Water Transport Routes	Phasing
1	Raj Bagh to Chhatabal Weir (along Jhelum River)	Phase-I
2	Dalgate to Hazratbal /NIT	
3	Dalgate to Soura via Nallah Amir Khan and Khushalsar	
4	Dalgate to Hazratbal via Nishat, Shalimar	
5	Pampore to Raj Bagh	Phase-II

11.11 IPT System (Mini-Bus System/ Shared Taxis)

Intermediate Public Transport—Paratransit—includes services like auto-rickshaws, taxis, carpools, vanpools, subscription buses and demand-responsive (dial-a-ride) vehicles. In other words, IPT includes all modes which provide a transport service for a price, filling the gap between public transport and private modes. As per the statistics given in the CMP regarding the travel characteristics, about 80% trips (excluding walk trips) are performed by IPT modes. Also more than 33% education trips are performed by mini-buses and shared taxis, auto-rickshaws etc. The basic issues associated with the system include the archaic policy regulations—licensing, route permits—private operators, safety and regulatory violations, inexistence proper institutional structure, fare policy and incompatible road infrastructure. The Master Plan proposes that IPT shall continue to complement the mass transport as feeder service. It is also that some of the educational institutions and government offices located in *Lal Chowk* need to be phased out to reduce the concentration of trips in the area. As a policy measure, it is proposed that new educational institutions shall be allowed in the periphery of Srinagar city preferably along arterials and sub-arterials in areas which are not flood prone and agriculture rich.

11.12 Non-Motorised Transport (NMT)

In million plus cities, more than 75% trips are less than 10 km and average trip length for such cities is less than five km⁸. Unlike other metro cities⁹ in India, the NMT modal share for Srinagar city is about 25%. According to the MoUD Report (2008), 'walking remains the dominant

⁸ Economic and Political Review, November, 2013

⁹ The average modal share of NMT for metro cities in India is 30% (MoUD).

form of travel in cities with pedestrian share remaining around 24 - 25%.' Every public transport trip has a component of walk at its both ends. Though pedestrians are short distance travellers, they are spread all over the city. As per the CMP, about 22% of the total trips are walk trips in Srinagar city. Also more than 60% households do not own a vehicle and 2% of the households possess just a bicycle only. Per capita trip rate including walk is 1.72 and excluding walk, it is 1.35. All these figures point towards a healthy pedestrian traffic which has to be sustained and given impetus by developing adequate pedestrian infrastructure in terms of FoBs, underpasses, footpaths, pedestrian signals at intersections etc. **Unfortunately, only 15% of our roads has footpaths with 25% of them having it on one side only.**

Pedestrians are among the most vulnerable road users in our cities and as such need sufficient infrastructure for their safe and sound movement along city roads. As per the Index of Conflict (PV²)¹⁰, a number of roads and intersections have been identified where the pedestrian - vehicular conflict ratios are very high. The highest pedestrian-vehicular conflict ratios are observed at Jahangir Chowk, Karan Nagar Chowk, SKIMS Chowk, *Batamaloo*, SMHS Hospital, *Pantha Chowk*, Dal Gate, JVMC *Bemina*, Kashmir University *Hazratbal*, etc. Basics of pedestrian infrastructure are absent and even street poles stand in the middle of footpaths. The Master Plan emphasizes the adherence to design codes in the development of pedestrian facilities and the ramps required for persons with disabilities. The roads need to be properly marked with stop lines, cross-walks, direction arrows and other delineators to streamline pedestrian movement. It is also proposed that pedestrian cycle be added in traffic signal phase at all signalised locations for at-grade movement of pedestrians instead of forcing them to use FoBs. Besides, at other critical locations other than intersections, a dedicated pedestrian signal be installed for safe movement of pedestrians.

Preferred walking distance is 500 metre or less hence persons living within 500 metre distance from an interchange station have the highest accessibility to it. Beyond 500 metre distance, the commuters will need reliable and cost effective feeder services. According to CMP, about 5200 commuters travel by Auto in Srinagar on a typical day. Though average trip length by Auto is not available, it is assumed that 75% of such trips will be short trips less than two km in distance. A trip by Auto is not economical and is roughly 10-15 times costlier than a bus trip. As such, it is proposed to introduce E-Rickshaws (4-6 seats) within city limits as a short trip feeder service. It is emphasized that the number of E-Rickshaws be initially restricted to 250 and subsequently reviewed as per the demand. Besides, their operations shall be restricted to local streets or access roads only or to the nearest bus stop as provided in this master plan.

¹⁰ It is measured by the product of peak hour pedestrian volume (P) crossing the road and square of peak hour vehicular traffic (V)

As per CMP, average walking trip length is 1.2km or less hence persons living within 1.2km distance from an interchange station have the highest accessibility to it. Beyond 1.2km distance, the commuters will need reliable and cost effective feeder services or cycling infrastructure to fill in the gap.

Bicycle could be an important mode of travel, particularly with reference to short and medium trip lengths. To the extent that it meets individual or public transport requirements, it is a non-energy consuming and non-polluting mode of transport. However, there are several issues which have to be kept in view while planning in respect of these modes. With a mixed type of fast moving traffic on the roads, travel by bicycle and rickshaws is very unsafe. Data has shown that a fraction of commuters use cycles for commuting due to the lack of safe cycling facilities or cycle-parking facilities.

In view of the above, the following actions should be taken:

- i. Prepare a cycling master plan for the city that creates a network of routes integrating all arterial roads, eco-mobility corridors along nallahs, heritage routes, school precincts as well as other recreational routes.
- ii. On all arterial and sub-arterial roads fully segregated cycle/NMT tracks should be provided with provision for safe parking in park and ride lots. Wherever full ROW is not available, the cycles/ NMT may be allowed to flow in mixed-traffic condition.
- iii. In all areas of the city, the use of cycles as a non-motorised mode of transport should be consciously planned along with pedestrianisation.
- iv. Plan and implement city wide, affordable and accessible cycle sharing / rental schemes to encourage public transit users in particular and public in general to use cycle as a mode to perform their first and last mile journey as well as to make regular short trips without using private vehicles.
- v. A cycle sharing/ rental system should be planned and implemented by any government public transport agency comprising of an owner and an operator, where the operator could be a private agency providing necessary services. The extant guidelines in this regard may be followed.
- vi. In case new pedestrian/ NMT networks need to be added in built-up/ developed areas, appropriate incentives may be given. Detailed cycle sharing system policy and guidelines shall be prepared by concerned local body separately.

Good bicycle infrastructure needs to be provided and a convenient bicycle sharing system should be developed, which will help take shorter trips off the arterial roads (thereby reducing congestion). Encroachment of bicycle tracks and theft or vandalism of bicycle sharing infrastructure should be made a cognizable offence under the Municipal Act/MV Act or any other applicable Acts.

1. The bicycle infrastructure needs to be continuous, obstruction free and with clearly demarcated bicycle tracks or lanes with good signage, road marking, lighting, at least one line of tree shade and more bicycle parking areas. The bicycle infrastructure needs to be

provided at a higher level with protected edges, to prevent monsoon flooding or encroachments by parked vehicles. Intersections need to have bicycle queuing arrangement and dedicated bicycle signals for easy cross over. For large junctions, rotaries and for obstruction by arterials or waterways or railways, special bicycle underpasses, bridges or ramps may be designed/ provided for.

2. Bicycle tracks should be a minimum of 2m wide for single direction and a minimum of 3m wide for both directions. For tracks having pedal rickshaw movement, a minimum of 2.5m wide for single direction and 4m wide for both directions should be provided.
3. All streets above 30m right of way need to have dedicated bicycle tracks.
4. The bicycle sharing system should be based on a dense network of stations placed approximately 300-400m apart and having fewer bicycles per station (10-50) with docks 1.5 times the number of bicycles in each station.
5. The system with smart cycles should be able to communicate with the stations and the control centre to help track them and make the checking out and checking in of cycles seamless.
6. The cycle sharing system should be accessed by a common mobility card that will help make the system easy to use. The system should be procured by the government and will be run on long term basis by private operators who will be able to market and expand the system incrementally.

Walking is the most important and sustainable mode of transport. In Srinagar, about 22% of the commuters of the city use walking as the only means of travel for short trips, in addition to public transport users. Therefore, the right to walk safely is a non-negotiable condition. For this, the following steps need to be taken:

- i. All roads must provide proper footpaths as per street design regulations and adequate share of walking space within ROW.
- ii. All pedestrian facilities should be barrier free for universal access by all persons with reduced mobility including those with hearing and visual impairments.
- iii. All impediments/ encroachments shall be removed from footpaths all over the city to create safe walking environment in all colonies, office / shopping areas, terminal areas etc. which will encourage more people to walk.
- iv. As mentioned in the NMSH Parameters (MOUD, 2011), at least five safe street-level crossing opportunities per kilometre of road with approximately 250m being maximum spacing between two crossings should be provided. Depending on context, these

- crossings may be signalized and/ or traffic calmed to reduce vehicular speed and increase safety.
- v. Pedestrian Signals should be synchronized with the nearest full-traffic signals, for smooth movement of traffic along with safe pedestrian/ NMT crossing.
 - vi. Pedestrian oriented vehicle-free spaces throughout Srinagar need to be created. Major work centres, where large number of pedestrian networks emerge and culminate, should have enhanced facilities for the pedestrians.
 - vii. New areas should plan for pedestrian zones, plazas, activity spaces based on locations of public transport nodes/ stations, employment centres, residential communities and local/city level destinations.
 - viii. Street-level activity and well-watched streets need to be created through mixed-use, avoiding opaque boundary walls, creation of hawking/vending zones and round-the-clock activities, to ensure a safe environment for pedestrians.
 - ix. Planning, design, implementation and maintenance of pedestrian routes and facilities needs to be prioritized.
 - x. As per NMSH parameters, to create active streets for pedestrian security and enjoyment: (1) Primary pedestrian access for buildings should be from the main street, with location as per shortest walking distance from nearest bus-stop; (2) The main building facade should face the street, located on the property line without setback or with active use within set back and transparent edge that contribute to street safety. Commercial frontages should have facades with minimum 50% transparency (untinted) to facilitate visual surveillance of streets, Compound walls, if present, should be transparent above a height of 100cm. High security government buildings may apply for exemption.
 - xi. Vending spaces should be marked in addition and adjacent to the walking path, especially along high pedestrian volume areas to activate the street and make it safe. Space to be planned for utilities including drinking water kiosks and toilets, so that the walking space is enhanced but not compromised.

Old City Area

Old city of Srinagar consists of a number of small access roads forming a dense street network. Population densities of the old city is also the highest in the city. While there are pressures of motorization, the old city's charm and architecture demands that it should be dealt with separately as a zone and served with a high quality public transport service, with an emphasis on walking and cycling, thereby reducing demand on parking provision. It is therefore recommended that a set of rules governing the transportation inside the old city shall be framed subsequently, in consultation with the stakeholders. The rules shall be framed in the spirit of promoting walking, cycling, public transport and reducing parking demand with increase in shared spaces for recreation and transportation use.

11.13 Multi-modal Integration

It is not possible to provide end-to-end services to all commuters by a single mode. However; the driving force has been to minimize the need to interchange, and whenever change is inevitable, make it as convenient as possible. The Master Plan, therefore, proposes an integrated multi-modal transport system consisting of HCBS, BRT, Light Metro, CRS, IWT and IPT System to meet the existing and future travel demand. Feeder services will be important in order to provide convenient and quick transfer of passengers from one mode of transport to the other. It is proposed that any distance less than half a kilometer (<0.5 km) is considered a 'walkable distance'. People residing in 0.5 – 1.5 km catchment can reach the first interchange station either by non-motorized mode like cycles, e-rickshaws etc., or by 2-wheelers, auto-rickshaws etc. Areas outside the 1.5 – 3.0 km catchment area will require regular feeder services of higher order like MPVs, mini-buses etc. Accordingly, it is recommended that route plans of aforesaid modes be decided accordingly restricting their operations on corridors earmarked for mass modes like high capacity buses, BRT etc.

Provision of interchange facilities is the most important element of multimodal integration and shall be provided at the interchange of proposed mass transport systems and feeder services. Integration facilities at stations would depend upon expected station load to ensure proper system utilization. Besides systemic integration, their integration at operational level is significant to synchronize the timings of mass transit and feeder services. For efficient modal interchange, walking/waiting time at these stations shall have to be minimized. Introduction of common ticketing and their availability at convenient places is proposed to be made mandatory to ensure projected patronage of the system. An integrated passenger information system covering all modes through publication of common route guides, time-table and information boards at terminals for providing up-to-date information for the system users shall also be an essential feature of public transport system.

11.14 Parking Plan

While the population of Srinagar for the last decade has been growing at the modest rate of about 2% per annum, the vehicles have been increasing at around 7-8%. The parking demand is constantly growing with increasing number of vehicles. However, the demand for parking is directly influenced by pricing, cost-effective and reliable traffic alternatives. As per parking survey conducted by RITES Ltd. (2012), the parking demand for Central Business District is 5581 ECS requiring around 30 acres of physical space in busy city centre. The off-street parking lots have limited capacities and do not cater to the ever increasing parking demand which results in parking spill-overs along main streets. There are eight parking lots within the city centre having parking capacity of approximately 1161 ECS¹¹ against the total peak

¹¹ Source: CMP, Srinagar

parking accumulation of 1528 ECS with 736 ECS on-street and 792 ECS off-street. The government and semi government office vehicles which at present are parked on roads will have to be provided with parking facilities within their own premises.

With the phenomenal increase in personalized motor vehicles, one of the major problems being faced today is an acute shortage of parking space. In the absence of adequate organized parking space and facilities, valuable road space is being used for vehicular parking. The problem of parking in the city can be broadly divided into the following categories:

- i) Along streets
- ii) In commercial centres.
- iii) In residential colonies.
- iv) In the large institutional complexes.

Experience has shown that:

- (a) The provisions relating to parking within the plot area are normally not adhered to resulting in vehicles spilling over on to the roads and adding to congestion; and
- (b) The lack of enforcement and inadequate policy interventions has resulted in growth of parking demand along with growth of vehicles in the city.

In the above background, the whole subject of parking has become a matter of serious public concern and requires a carefully considered policy and planned measures to alleviate the problem to the maximum feasible extent in existing areas and for adequate provisioning with reference to future developments. The approach should be focused more on demand management (restricting vehicle numbers) through enforcement and pricing policy rather than only on increasing supply of parking.

Parameters for the National Mission on Sustainable Habitat (NMSH) of 2011 state that parking management strategies should be aimed at encouraging more efficient use of existing parking facilities, reduce parking demand and shift travel to non-private modes. Individual user of personal vehicle should pay for the use of the space for parking. Therefore, the 'user pays' principle should govern the pricing of parking. Parking is a consumer commodity, not a legal right. No subsidized parking is to be provided in public spaces. To ensure accessibility to maximum number of people, parking for para-transport / feeder modes/ NMT is to be prioritized and subsidized. In areas designated for public parking, short term parking must be prioritized over long-term parking, in order to maximize turnover and enable economic vibrancy. The parking policy for the Srinagar aims to deliver the objectives of NMSH, through its vision, policies, following strategies and standards:

- Private vehicle must be parked on 'a fully-paid rented or owned' space, based on the 'user pays' principle.

- Parking management must be effectively used as a tool to reduce overall demand for parking space.
- Pricing and enforcement will be key drivers to eliminate or reduce long term on-street parking demand for private vehicles.
- Planning and design of public parking facilities (surface, underground or multi-level) in an area need to provide for all modes and include creation of pedestrianized areas/ public spaces in the area with necessary amenities.
- Parking is permitted in all use zones except Recreational Open space, which shall not be used or converted for parking. No environmentally sensitive lands shall be used/ converted for parking of any kind. Surface Parking would only be provided to meet the parking requirement of the park premise. Creation of underground parking structures within or under green recreational open spaces is prohibited under all circumstances.
- Parking spaces will be adequately provided on priority basis for IPT, pick and ride and feeder systems especially non-motorized transport and fully subsidized.

In this background, as a policy measure, the following interventions need to be made:

- The Residency Road from *Polo View* to *Hari Singh High Street* be restricted for vehicle movement and the area is proposed to be developed into a pedestrian precinct/ pedestrian plaza;
- The core city within 0.5 km from Jhelum bunds on both sides is envisaged as a “**Vehicle-Free-Zone**” which shall be developed by rationalization of bus routes around besides provision of bisectonal links etc;
- The Multi-tier parking lots within *Lal Chowk* area shall have direct access from the *Moulana Azad Road* as shown in the Plan and there shall be no vehicular movement along the *Residency Road* as stated above.

I) Public Parking

Major efforts will have to come through the creation of public facilities in designated commercial/ work centres and other areas and corridors where significant commercial activity has developed by way of mixed use. In the context of the latter, it would also need to be linked to pedestrianisation within the identified areas. In the above context following steps would be necessary:

II) Parking Management Districts

Parking Management District (PMD) provide comprehensive facilities for all modes including pedestrians, NMT, cycle tracks, NMT and IPT parking, vending zones, bus stops, public amenities, etc. in addition to on-street and/or off-street parking for private vehicles. PMDs are to be planned to improve availability of on-street and off-street parking and promote greater walking, cycling and public transport use. A PMD provides more net available parking space in an area by increasing parking turnover through good design, management and pricing strategies. A portion of the revenue generated could be used for local improvement of footpaths, cycle-tracks, and maintenance of facilities with involvement of the local communities.

Parking facilities be provided as part of the overall PMD plan incorporating all modes, with a clear cut community benefit strategy. Any development of multilevel parking facilities shall be strictly as per PMD plan.

SMC/ SDA should develop detailed parking management plans for such districts, with physical design and demarcation of spaces on ground and strict enforcement. PMDs shall be run and managed by an SPV setup by the SMC which will also manage the public transport of the city or by Srinagar Metropolitan Transport Corporation. The following strategy should be applied:

- i. PMD to be identified which should be not less than 1sqkm in area and preferably having a mix of residential and other land uses. Total parking capacity of the PMD to be defined based on ground surveys, capacity analysis and Transport Impact Assessment (TIA) if required.
- ii. On-street parking, in a PMD, should be priced at 3-5 times the off-street parking lots. On-street Parking to be priced for every half hour slots, increasing exponentially as per the formula $(2X+10)$, where X is the charge for the previous hour, up to a maximum of three hours. Heavy penalties must be levied beyond 3 hours to discourage long term users like shopkeepers and office employees using on-street parking. Penalty for first one hour beyond the two hour slot could be an additional Rs.100 and beyond that a fine of more than Rs. 2000 and/or impounding of the vehicle;
- iii. Penalties and fines levied on On-street parking shall be 10 times of those levied on Off-street parking lots, within a PMD.
- iv. Base parking price could be charged on real-time basis or peak hour/ non-peak hour basis. Peak hour and Non-peak hour should be separately defined for each PMD, as they may differ in time and duration.
- v. All on-street parking lots shall be marked and numbered with its database operated from the central operations control center or from de-centralized control centers with the data feed shared with central server through hard or cloud based technology.
- vi. All PMDs to be managed by used of technology to have real-time data and sharing of information.
- vii. PMDs shall be contracted out by the local body to PPP mechanisms, where the entire technology, operations and maintenance is managed by the private party and is paid a monthly remuneration by the local body computed with incentives and penalties. All parking charges come to local body and local body distributes it back to the operator. Encroachments and impediments to be removed to provide more space for pedestrians, NMT, vending zones and public amenities.
- viii. Approximately 70% of the total parking space/slots capacity to be kept for short term parking, primarily for shoppers/visitors, not for long term parking by shopkeepers or office goers.
- ix. Parking charges should be levied as per size of vehicle; if two wheelers and auto-rickshaws are charged Rs.'A', cars and LCVs should be charged Rs.5 x 'A' and Trucks should be charged Rs.10 x 'A'. No parking charges should be levied for non-motorized vehicles;
- x. 'Short-Term' and 'Long term' parking spaces with the PMD must be identified, demarcated and priced appropriately to reduce

- demand, and be managed by a single agency.
- xi. Stringent provisions by way of fines and other penal actions need to be provided for violation of parking rules. Proper signage and markings must be provided to enable effective enforcement.
 - xii. A graded parking fee structure should be evolved as a measure of parking demand management, and encouraging use of public transport.
 - xiii. In congested areas, 'park and walk' / 'park and ride' facilities may be planned in PMDs. Street improvements must be implemented in about 10-minute walking catchment of such facilities to make it comfortable and convenient for commuters/ shoppers.
 - xiv. All existing areas of concentration of business/ commercial activity, where absence of adequate parking and congestion is visible, should be identified and listed based on studies of vehicle/ modal volumes. Comprehensive area level PMD plan must be prepared by SMC in consultation with SDA, multi-disciplinary experts and local stakeholders.
 - xv. Major corridors along which commercial activity has grown over the years by way of mixed land use should be identified and taken up for redevelopment with a major objective being the identification and development of areas for parking, green development and pedestrianisation.
 - xvi. In all new Commercial/ Business/ Industrial centers, adequate parking on the surface as well as below and above the ground must be provided.
 - xvii. The development of multilevel parking facilities may be taken up, wherever, feasible in a public private partnership framework, with private sector investment and involvement.
 - xviii. Entire stretches of road or areas other than the demarcated/ designated/ managed parking areas, should be declared as 'no parking zones' in the PMDs. Enforcement agency/ traffic police to be responsible for penalizing, removing or taking action against violators.
 - xix. Advanced public information systems regarding parking supply availability should be provided through websites, on-ground display and digital media, to guide people in making travel/ mode choices.
 - xx. The use of basement wherever provided for parking, must be strictly adhered to.
 - xxi. Serious consideration should be given to evolve a policy linking registration of new vehicles to availability of owner parking facilities.
 - xxii. All encroachments on land earmarked for public parking should be removed.
 - xxiii. Wherever feasible, space on roofs, under stilts and basements should be exploited to the optimum for parking so as to reserve the maximum ground space for landscape development, pedestrian movement, etc.

III) Parking Pricing

The supply of free/ inexpensive parking at the final destination is a key decision factor for people choosing to drive a personal vehicle, rather than taking a bus, Metro, IPT, NMT, walk or carpool. It is suggested that the following pricing strategies be employed to manage and bring down public parking space demand:

- i) Pricing of parking should be based on principle of 'user pay', reflecting the cost of the public good – precious urban space. Current parking rates in cities are low and act as a hidden subsidy to the car owners. Parking rates should be freed up and market driven. Parking revenue should be augmented and utilised to create a dedicated fund for public transport.
- ii) No government subsidized parking for private motor vehicles is to be provided in public spaces or roads. High parking fee should be charged in order to make the use of public transport attractive. Efforts should be made to make cycle parking attractive to promote use of cycling.
- iii) Implement localized variable scale of parking fee based on time, location and use based local demand and congestion levels. As a thumb-rule – higher the congestion, higher the fee to be levied in the area to reduce parking demand.
- iv) Curb Spill over Parking Impact: Spill over parking from high-priced areas should be minimized (through pricing and enforcement) as it may cause excessive congestion within neighbourhood streets making access difficult for emergency vehicles. Market-rate parking pricing is to be applied to this entire zone, not just a few streets. The entire area should be implemented as a PMD zone.
- v) Actual Parking pricing rates may be taken up by SMC from time to time as per their notifications based on the above suggested principles.

It is proposed to introduce differential parking charges which shall be based on actual economic cost of parking. The concerned authority should manage parking through PPP arrangement so that appropriate technology can be deployed and utilized to recover parking charges and to gather data of vehicles, duration and area of parking. The implementation of public transport upgradation and introduction of differential parking rates, the parking demand is expected to come down in commercial and business areas. However, under the proposed public transport strategy, the multimodal traffic integration points or interchange stations will generate parking demand for auto-rickshaws, bicycles which shall be taken care of at each station.

Table 11-9: Proposed On-Street Parking Base Fee Structure¹²

Sl. No	Duration	Parking Fee (Rs.)	
		Car	2-Wheeler
1	Up to 30min	10	2
2	31-60min	20	5
3	61-119min	40	10
4	120-179min	60	15
5	180-239min	80	20
And so on...			

Example: From above table, total base parking fee for a car which is parked for 2 hours: $10 + 20 + 40 = \text{Rs.}70$. Total base parking fee for a two-wheeler which is parked for 3 hours: $2 + 5 + 10 + 15 = \text{Rs.}32$.

IV) Park and Ride

Apart from providing Park and Ride facilities with reference to integration between the Road, HCBS, BRTS and Metro Rail / Rail Transport systems, such facilities would also need to be provided to reduce the problem of parking on main arterial roads in the context of identified work and activity centres which may not be directly connected by the MRTS and to encourage use of public transport.

- (i) Park & Ride facilities for private vehicles should be provided at peripheral locations abutting Highways and MRTS/BRTS stations as per requirement, coupled with excellent public transport linkages to the city center and various work centers. Subsequently, highway entry tolls for private transport should be increased substantially to discourage private vehicle commutes and cross-subsidize public transport.
- (ii) Subsidized park and ride facilities for bicycle users with convenient interchange at all Bus/ MRTS stations are a mandatory requirement, to promote this sustainable mode of transport.

¹² to be linked to actual economic cost of parking and shall vary from one parking place to another. The proposed Parking Fee is the minimum to be applied to any area. Actual computation of parking fee shall depend on real estate value of the area, size of the vehicle, duration of parking allowed, parking slab, peak/ non-peak hours and Parking Zone.

V) Parking Facilities for Buses in Depots

There is an acute shortage of parking facilities for buses in the city. Therefore, the planning for bus depots and terminals capacity and future requirement needs to be done comprehensively.

- i. As per norms of bus parking, adequate bus parking and terminal spaces in the city should be provided in the city.
- ii. The selection and allocation of depot lands needs to be planned in sync with the routing of buses, so that dead mileage and other losses to the transport agency may be minimized.
- iii. To ensure optimum utilization of land, multi-level parking for buses is to be prioritized.
- iv. As far as possible, all bus depots must function as Terminals as well.
- v. Large public parking facilities, underside of flyovers, wide arterial roads and underused areas of the city should be permitted for use in off-peak hours for parking of public/private buses and commercial vehicles, chargeable at appropriate rates.
- vi. Planning and provision of space for private buses, private commercial vehicles, trucks and logistics terminals at the peripheries of the city, need to be planned at the Zonal Plan level.

VI) Parking for NMT and IPT

Fully subsidized parking facilities for IPT and NMT modes are mandatory at all terminals, stations and bus stops, on all roads of 10m and above (and not prohibited on any road), near all major public buildings and destinations. In areas where provision of adequate IPT/ NMT parking is not possible within ROW, setbacks of use premises may be acquired. Parking spaces for differently abled to be provided as per code.

VII) Parking in Residential Areas

Some measures required to alleviate the problem of parking in residential areas are:

- i. Parking of all vehicles of any residential building, group housing, commercial building etc to be provided within the plot area/ building only. Parking outside the plot area (i.e. on the ROW of road, public spaces) will not be permissible and should be penalized. RWAs/ Local community organizations/ Societies should be encouraged to enforce the same, with the help of police.
- ii. Road cross sections may be redesigned wherever possible to accommodate planned car parking along the residential streets, and also creating more surface movement space.
- iii. Paid on-street and off-street parking to be developed for long term and short term parking provisions.
- iv. Resident Welfare Associations will have to be called upon to participate in this process by raising contributions from the residents on the basis of objective criteria such as number of cars owned, etc.
- v. Problem of congestion arising on account of the traffic generated by schools have to be specifically addressed, and the main

responsibility for putting up the required additional facilities has to be borne by the schools themselves.

VIII) Parking Standards for Public Parking

- i. Public parking for all modes may also be provided at designated/ demarcated locations at off-street parking locations in form of surface, underground or multi-level parking. Short term and long term parking should be differentiated and provided based on local demand and provided as per comprehensively planned Parking Management Districts.
- ii. On-street parking may be planned as per Street Design Regulations. Majority of on-street parking spaces should be for hired/ shared IPT and NMT modes. Only short-term parking for private modes may be provided on street.
- iii. Off-street parking may be provided as per the following:

1. Bi-Level Parking for Public Buses

Land is scarce and efficient use of land for bus parking is essential. At the same time, in order to reduce dead mileage and making buses travel to locations outside the city to depots in large plots of land, it is more desirable to provide them parking within developed urban areas in multi-use multilevel parking facilities with bus-parking in upper-basement and lower ground levels, and parking for smaller vehicles may be provided in other levels

Within developed urban areas, bi-level parking should be developed as mixed use projects with the following norms:

- i. Minimum Plot Size - 10,000 sq.m.
- ii. An FAR of 200 is permissible over 50% of plot area. Norms for podium based buildings shall be applicable as per Development Code.
- iii. Operational structures and circulation areas may cover 100% of the plot area and shall not be counted towards FAR. The site must accommodate at least the required bus parking space on site at the rate of minimum 1 bus per 70 sq. m.
- iv. If the bus depot site lies with the TOZ, special norms shall be applicable, which shall be published as TOZ Regulations after notification of Master Plan.
- v. The maximum height shall be as per local constraints like flight paths, heritage zones, etc.
- vi. There will be no restriction on the number of levels of basement subject to structural safety, or till minimum 1m above post monsoon ground water level of the site or safe distance above post monsoon ground water table.
- vii. In case of integrated schemes, development controls including height shall be as per approved scheme or as per local restrictions if any.

2. Multi-Level Parking for Private Modes

In about any city in the country, none of the parking lots are being used even to half their capacity due to availability of unlimited subsidized parking on streets/ public spaces in the vicinity of these projects. In other words, low-pricing of on-street parking is leading to failure of off-street multilevel parking facilities. Therefore, multi-level parking projects should be integrated as part of comprehensive PMD schemes at designated locations. In order to ensure viability of the projects and optimum use, strict enforcement and appropriate pricing of on-street parking, is required. Preferably, on-street and off-street parking (including multi-level) should be managed and enforced by a single agency. All multi-level or exclusive parking facilities for private parking shall also provide at least 10% of total space provision for IPT modes, NMV and feeder buses, as per local requirement.

Being cardinal business/ commercial area, there is huge parking demand in Lal Chowk, Batamaloo, Dalgate, Batwara, Hari Singh High Street, and Karan Nagar. To curb on-street parking, seven locations are identified for the development of Multilevel parking lots either as automated or otherwise. These multi-level parking lots will take care of both existing on-street parking and future demand of the core area. The multilevel parking facilities are proposed near Sheikh Bagh in Lal Chowk (500 ECS), KMD Adda Lal Chowk (400 ECS), Shaheed Gunj (400 ECS), Badamwari (200 ECS), Press Enclave (300 ECS), Opposite Sara Mall (400 ECS) and Airport (300 ECS).

Detailed regulations and comprehensive parking policy may be worked out subsequently, in consultation with all stakeholders.

For plots for multi-level car parking already earmarked/ designated by local bodies, the existing development control norms will continue, as follows:

- i. Minimum Plot Size - 1000 sqm.
- ii. In order to compensate the cost of Multi-level parking and also to fulfil the growing need of parking spaces within urban area, a maximum of 25% of gross floor area may be utilized as commercial /office space.
- iii. In addition to the permissible parking spaces on max. FAR, 3 times additional space for parking component shall be provided.
- iv. Maximum FAR permissible shall be 100 (excluding parking area) or as per the comprehensive scheme.
- v. Maximum ground coverage shall be 80%.
- vi. In case of comprehensive schemes, development controls including height shall be as per approved scheme.
- vii. Number of basements - No Limit, subject to adequate safety measures.
- viii. For development of Multilevel Parking, models should be worked out to encourage the private sector initiative with restricted commercial component, not exceeding 10% limited to FAR 40 on the plot.
- ix. Specific proposals requiring relaxation in above-mentioned norms for already designated sites would be referred to the Authority.

To address the parking problem in a holistic way, the **Srinagar Metropolitan Area Parking Policy 2011** has divided the city into three major parking zones.

Zone I (CBD): The CBD which is predominantly a commercial and institutional area has been delineated in the parking policy bound by *Bemina Chowk* near *Tatoo Ground* in the west, *Sonwar* in the East, *Munawar Abad* in the north and *Rajbagh* in the south.

Zone II (Mixed Zone): The zone mostly covers the core city areas which significant commercial and institutional activities mixed with residential uses.

Zone III (Peripheral Areas): The area comprises predominantly residential areas with upcoming commercial centres.

As per the policy, the movement of personal vehicles shall be discouraged within Zone I. On-street parking shall not be allowed in this zone and high parking fee shall be levied to discourage parking in the area. Public transport has to be made cost-effective, reliable and incentivized to lure road users in this zone. Similarly, impetus shall be given to the development of parking facilities through relaxed FAR/TDRs in Zone II especially towards the periphery of Zone I to promote "*Park-and-Ride*" or "*Park-and-Walk*" in the area. Paid on-street parking can be allowed along certain designated corridors in Zone II. Zone III is also proposed to have parking lots and paid on-street parking on important roads after proper delineation of such parking areas.

Besides, SMC and SDA shall promote the creation of parking spaces at individual plot level by giving special subsidies or schemes and by linking it with the property tax. Various incentives should be given to the plot owners who build and/or rent parking spaces for public purpose. The administrative, business and commercial areas are the major attractions of vehicles and generate huge parking demand. It is as such proposed that provision of parking facility as per the norms given in the Development Code of this master plan within every public building, public office, institutional area, shopping complex etc shall be made an integral part of building permission. Similarly in case of a residential building whether detached, semi-detached, group housing or apartments, parking demand shall be worked out by linking it with the individual plot size.

The master Plan also proposes following four pronged strategy to meet the potential parking demand:

I. Multi-Level Parking

Being cardinal business/ commercial area, there is huge parking demand in *Lal Chowk*, *Batamaloo*, *Dalgate*, *Batwara*, *Hari Singh High Street*, and *Karan Nagar*. To curb on-street parking, seven locations are identified for the development of Multilevel parking lots either as

automated or otherwise. These multi-level parking lots will take care of both existing on-street parking and future demand of the core area. The multilevel parking facilities are proposed near *Sheikh Bagh* in *Lal Chowk* (500 ECS), *KMD Adda Lal Chowk* (400 ECS), *Shaheed Gunj* (400 ECS), *Badamwari* (200 ECS), *Press Enclave* (300 ECS), *Opposite Sara Mall* (400 ECS) and *Airport* (300 ECS).

II. Surface/Sub-surface /underground Parking

Besides, multi-level parking lots, a number of surface and sub-basement parking spaces are proposed in different areas of city. These include the following:

Table 11-10: Proposed Surface and Sub-Surface /Underground Parking Lots

Sl. No	Location	Capacity in ECS	Remarks
1	Pantha Chowk	300	Surface Parking
2	Nowgam Railway Station	400	
3	Budgam Railway Station	300	
4	Dalgate	200	
5	Hazratbal	200	
6	Mughal Gardens	400	
7	Syed Mansoor	200	
8	Rambagh	100	
9	Polo view in between MA Road and Residency Road opposite Bank	300	Sub-surface with green turf on top to be used as a park
10	Batamaloo /Tatoo Ground	500	Sub-surface parking garages
11	SKIMS Soura	200	
12	Khanyar	100	
13	Nowhatta	200	
14	Along proposed western Foreshore Road of Dal and Nigeen Lake at various locations	500	

III. On-street Parking

Unregulated on-street parking is one of the main causes of traffic jams as it significantly reduces the effective c/w widths. As mentioned earlier, unregulated on-street parking has to be completely banned in Srinagar at the outset along the main arterials and sub-arterials.

IV. No Parking Roads/Road stretches

The roads/road stretches listed below are proposed to be declared as 'No-Parking Streets':

- *Residency Road from Polo View to Jehangir Chowk;*
- *NH-44 from Pantha Chowk to Parimpora via Lal Chowk along MA Road;*
- *Nallamar Road;*
- *Karan Nagar Road from Fire & Emergency Office to Safa Kadal;*
- *Shaheed Gunj Road upto Karan Nagar Chowk;*
- *Bemina Road from Tatoon Ground to Bemina Chowk*
- *NH Bye-pass from Pantha Chowk to Parimpora;*
- *KZP Road from Dalgate up to Soura; and*
- *SMS Road from Khanyar up to Hazratbal*
- *Ali Jan Road from Safa Kadal to Soura*

With the improvement of existing parking lots and the construction of other off-street parking facilities, on-street-Parking shall be completely prohibited within first parking zone as defined above. The parking charges need to be reviewed in terms of economic value of land, parking duration, parking load, to discourage long duration parking tendencies also by installing automated parking metres. It is proposed to introduce differential parking charges which shall be based on actual economic cost of parking. The concerned authority should install parking meters and parking sensors at important parking places.

The implementation of public transport upgradation and introduction of differential parking rates, the parking demand is expected to come down in commercial and business areas. However, under the proposed public transport strategy, the multimodal traffic integration points or interchange stations will generate parking demand for TWVs, auto-rickshaws, bicycles which shall be taken care of at each station.

Table 11-11: Proposed Parking Fee Structure*

Sl. No	Duration	Parking Fee (Rs.)	
		Car	2-Wheeler
1	Upto two hours	20	10
2	Upto three hours	20/hour	10/hour
3	Upto four hours	35/hour	20/hour
4	Upto five hours or more	50/hour	25/hour

*to be linked to actual economic cost of parking and shall vary from one parking place to another.

a. Accidents and Road Safety

Road safety is a public health issue requiring concerted efforts for effective and sustainable prevention. There are more deaths from road accidents in some developing countries than from communicable diseases and yet road related fatalities are not addressed as a public health issue. India has the highest number of road deaths globally. According to Ministry of Health and Family Welfare, traffic road injuries are the sixth leading cause of deaths in India. As per the latest report on road accident related deaths released by the National Crime Records Bureau (NCRB), 51 accidents claiming 16 lives took place every hour across the country in 2014. The report says a total of 1,41,526 people were killed and 4,77,731 injured in road accidents last year. The road deaths amounted to 83.7% of fatalities in traffic accidents and increased by 2.9% in 2014. **The J&K is one of the few states in India having lowest incidence of accidental deaths. However, 63% of its accidental deaths higher than the national average of 36.4% are attributed to road accidents only which are the highest in India.**

(As per the World Health Organisation (WHO), road safety is not an accident. Road traffic deaths and injuries are predictable and preventable. While there are structured programmes to combat communicable diseases with substantial allocation of public funds and lead agencies to implement such programmes, there is no such well-thought-out strategy to combat road-related morbidity and mortality).

We cannot become a modern automobile State unless our roads are safe and there is no conflict between people and vehicles. It is time to start developing and implementing programmes to promote road safety using the public health approach. Time has come to have a strong political commitment to reverse the trend of increasing road-related mortality. **The increase in road accidents in the State has led to the need of**

having a State Road Safety Policy in place. *The State of Jammu & Kashmir is one of the few states in India to have taken initiative towards having its own road safety policy¹³. The policy needs to be finalised at the earliest and shall focus on following key aspects:*

- *Road safety standards, road safety audits at all stages of road design/ construction and eliminate accident black spots;*
- *Promote education and campaigns on road safety among all user groups;*
- *Encourage concerned agencies to effectively implement the traffic laws;*
- *Provide infrastructure and prescribe safety standards for NMT;*
- *Set guidelines for capacity building of traffic police and other organisations involved in road safety;*
- *Provide measures for revisiting relevant laws in a comprehensive manner;*
- *Set guidelines for establishing trauma care centres across the state*

The Master Plan proposes first of its kind the development of a *Traffic Rehabilitation and Training Park* along N/H Bypass near Nowgam Railway Station. The facility is proposed to be developed as a low impact development under Parks and gardens use without filling of the area. However, allied infrastructure like office, layout of roads as per standard geometrics, traffic signals etc can be considered in the proposed facility. The training park is envisaged to rehabilitate the traffic offenders and learners as a step to reduce road accidents. Moreover, it is recommended that at the time renewal of driving licence, every applicant shall be required to undergo three days training at the said facility. As long term policy strategy, it is also recommended to introduce study of basic traffic principles as part of curriculum to create awareness and sensitivity among children at tender age. The objective is to achieve change in road user behaviour and imbibe an element of responsibility among them towards traffic laws and rules.

II) Traffic Impact Assessment (TIA)

The goal of a traffic impact assessment is to determine potential impacts of traffic changes caused by large proposed developments on city level transportation infrastructure i.e. capacity of roads and transit systems, and to identify any infrastructure and transit improvements or mitigation measures needed to ensure that transport networks will operate acceptably and safely upon completion of the proposed development. Comprehensive policy about Traffic Impact Assessment (TIA) should be prepared and placed for approval.

The benefits of Traffic Impact Assessment are:

- i. Providing decision makers with a consistent basis on which to assess transportation implications of proposed development applications.

¹³ The Draft Road Safety Policy (2016) is presently under review.

- ii. Providing a rational basis on which to evaluate if the type and scale of the development is appropriate for a specific site and what improvements may be necessary to provide safe and efficient traffic, pedestrian, cycling and transit flow.
- iii. Providing a basis for determining existing or future transportation system deficiencies that should be addressed.
- iv. Addressing transportation related issues associated with development proposals that may be of concern to neighbouring residents, businesses and other stakeholders.
- v. Providing a basis for negotiations for improvements and funding in conjunction with planning applications.
- vi. A traffic impact assessment may vary in scope and complexity depending on the type and size of the proposed development.

a. Institutional Framework

There are various departments whose activities have a bearing on road infrastructure and the management of transport on city roads. However; policy formulation and implementation of transport planning and infrastructure development seem specifically not assigned to any department. In the absence of a Srinagar Unified Metropolitan Transport Authority, the Transport Department is responsible for the formulation of public transport policies etc. Traffic enforcement is handicapped by inadequate manpower, equipment and lack of proper training to traffic police personnel. Normally it is seen that specifications in regard to traffic signs/road markings are not adhered to as suggested by IRC. Maintenance of these signs/markings is also very dismal. The monitoring, evaluation and co-ordination of projects and schemes are generally poor. For planning and development of an integrated system, and implementation/enforcement of the policies, establishment of a single authority has become inevitable. Inter alia, this would help to avoid wasteful expenditure and other problems that could arise from duplication, overlap and even mutually exclusive or/ and contradictory facilities. Therefore; a single unified Metropolitan Transport Authority, on the lines recommended by the National Transport Policy Committee and specifically recommended in the Srinagar Urban Transport Project 1992 and Comprehensive Mobility Plan 2012 needs to be established on priority.

i. Srinagar Unified Metropolitan Transport Authority

Srinagar Unified Metropolitan Transport Authority (SUMTA) is needed to ensure co-ordination, co-operation, and continuity in transport programs and planning interventions. The National Urban Transport Policy has recommended setting up of Unified Urban Transport Authorities (SUMTA's) in million plus cities to facilitate more coordinated planning and implementation of urban transport programs and projects and integrated management of urban transport systems. Such Metropolitan Transport Authorities would need statutory backing in order to be meaningful.

ii. Functions of proposed SUMTA

Initiative for balanced development of urban transport system of any city lies with the city itself. It is believed that the most important institutional arrangement is at the city level. Therefore, it is important that adequate planning, financial and supervising powers are vested with the unified city level authority. The authority should be vested with a number of functions ranging from planning to supervision and coordination, As per CMP, the authority (UMTA) shall have perform following functions:

1. Planning:

- Detailed planning upto DPR stage of major projects
- Develop and implement transport system management measures in coordination with traffic police
- Periodical traffic and travel surveys, data collection, analysis, and maintenance of data bank
- Plan introduction of new modes and extension of existing PT services
- Evolve rational fare policy for all public and IPT modes in consultation with State Transport Department

2. Operational Supervision:

- Monitor performance of different modes of operation (including routes, frequency, interface facilities)
- Introduction and monitoring the implementation of new modes, new agencies, area of operation

3. Co-ordination between and in respect of :

- Operation of different modes of passenger transport
- Public/para-transit operators
- Implementation agencies of schemes
- Traffic regulation and traffic planning (TSM)
- Parking planning and control
- Integrated fare policy and sharing earnings
- Road network development
- Laying and repairs in roads and utilities
- Pollution control board and vehicle licensing authorities

4. Financials:SUMTA Shall

- Administer 'Urban Transport Fund' and assure financial responsibility on behalf of the city for all matters regarding urban transport. Finances for various urban transport projects to various implementing agencies may be routed through UMTA
- Arrange for grants/loans from government lending agencies
- Take action to foster private-public partnership in urban transport and act as the nodal agency for the purpose
- Monitor expenditure on projects funded

5. Organizational Set up

The desired institutional set up should be a single level authority with representatives drawn from various departments and agencies involved. It shall have a chairman who may be the minister concerned. The Executive head shall be the Vice-Chairman who should be an administrator, specialist or an executive with wide experience in transport systems, physical planning or transport economics.

An interim structure called Planning, Design and Coordination Cell for Urban Transport (PDCUT) may be formed under the Urban Development Department which may be dissolved or subsumed under SUMTA when SUMTA is formed. This Cell will provide the required Technical support to all departments and take up planning and design work on behalf of government agencies. PDCUT will have a Technical Head who will be responsible for all the core technical functions of the Cell. She/ he will report to the Chairman of the Cell who will also be the Administrative head. The Divisional Commissioner is proposed to be the Administrative head. PDCUT will have technical staff hired on contractual basis or deputed reporting to the Technical head. The salaries of all the staff shall be made by the Urban Development Department or by the parent body from where the staff is deputed. The core functions of PDCUT will be:

- i. To Coordinate between agencies for Urban Transport projects
- ii. To take up planning and design work on behalf of government bodies and provide plans, designs, reports, assessments, for urban transport projects.
- iii. To hire consultants for planning and design work when deemed necessary.
- iv. To provide policy support to Urban Development Department relating to urban transport and landuse-transport integration.
- v. Research | Capacity Building of Government departments.

vi. To provide technical assistance to government bodies on urban transport projects, such as:

- Providing conceptual framework for transport projects, reviewing the same.
- Attending meetings and providing inputs in meetings.
- Reviewing the work of consultants and providing inputs.
- Reviewing plans/ reports/ ToRs/ RFPs/ tenders, etc. and providing inputs.

All planning and design works proposed by PDCUT will be taken up for implementation by the implementing bodies – SMC, R&B, SDA, ERA, JKPCC, Traffic Police, etc. All implementing bodies shall also support PDCUT with data, surveys, hiring of consultants, etc. whenever required.

iii. Srinagar Metropolitan Transport Corporation (SMTC)

The present city bus service in Srinagar is operated by a large number of private minibuses or bus operators with permits from RTO. Most of the operators are single bus operators and they operate under the umbrella of their bus union. This system does not offer a good quality of bus service. As car ownership will grow in the city, the commuter will abandon the present bus service and shift to his own personal vehicle. The present institutional structure of Transport Department or State Road Transport Corporation is not geared up to handle city bus service in a professional and corporate manner. Therefore; it is important that a separate body for the City Bus Service is established which may be named as Srinagar Metropolitan Transport Corporation (SMTC).

The Corporation shall set standards for its city buses induct modern low floor urban buses on its own and/or it may also invite private sector to operate buses on different routes. It may also involve existing bus operators under some schemes. The SMTC shall work under the overall guidance of Unified Metropolitan Transport Authority (UMTA). It could be a Joint Venture company on equity bases and arranging funds through equity, long term bonds, market borrowings or loans from national or international financial institutes or Banks and / or raise long term bonds.

The SMTC may be responsible for:

1. Operations and Maintenance of Bus Services including BRTS and MRTS
2. Operations and Maintenance of Feeder Services including mini-bus services, taxi services, etc.
3. Operations and Maintenance of Cycle Sharing System
4. Operations and Maintenance of Parking Management System
5. Operations and Maintenance of any other public transport system

6. Operations and Maintenance of Bus Depots, Terminals, Bus Parking in the city, Interchange terminals, etc.

The organizational structure of SMTC shall be discussed with stakeholders and carried out subsequently. The organization shall have the required technical expertise to manage all the above functions and have adequate staff for the same. The organization shall have training, operations, IT, procurement, HR, technical – planning and design, administration, contracts/ legal, verticals to manage operations and also enforce contracts in an effective way.

iv. Transport Planning Unit (TPU)

Transport planning is essential ingredient of town planning. The CMP has rightly held that presently there is no proper technical body for transport planning inputs. It is necessary that technical expertise is created within Town Planning Organization to undertake this task. The proposed Transport Planning Unit (TPU) will perform the following specific functions:

- i) To prepare a strategic plan for long term development and utilization of transport facilities
- ii) To formulate schemes for implementing the strategic transport plan
- iii) To entrust to appropriate local authorities the work of execution of transport schemes
- iv) To coordinate activities of various bodies concerned with transport
- v) To define a strategic transport network for the Kashmir Region
- vi) To define and prepare a Metropolitan Transport Policy.

The other important responsibilities of Transport Planning Unit will include the establishment of criteria for capital investment and methods for fixing the priorities for road and transport schemes and feasibility studies. The TPU will also be responsible to prepare definite policies related to public transport, freight, road safety, environmental protection etc.

The TPU shall be headed by a Senior Transport Planner who will be of the rank of Superintending Engineer under the control of Chief Town Planner. He shall be assisted by a professional and expert group of planners with specializations in (Transport Planning, Urban Planning, and Environment Planning etc.), engineers, financial experts, economists and environmentalists.

Conclusion

The most significant aspect in the context of pollution relates to the phenomenal growth in personalized vehicles as compared to the availability of public transport. So far, public transport is largely seen as the transport mode for the poorer sections of the community who

cannot afford to own /use personal transport. Public transportation planning must drive the future policy. An important element of policy should be to make public transport a preferred mode for all users through a mix of incentives and disincentives. Apart from aspects like frequency, inter-modal integration, a possible single ticketing system, use of parking policy as a means to influence vehicle use, etc., the quality of public transport, particularly buses, would need to be significantly upgraded keeping the element of clean transport in view. It is well known that public transport occupies less road space and causes less pollution per passenger-km than personal vehicles. As such, public transport is a more sustainable form of transport.



12. PUBLIC INFRASTRUCTURE & COMMUNITY SERVICES

Photograph Source: TPO Kashmir

12 PUBLIC INFRASTRUCTURE AND COMMUNITY SERVICES

The quality of life depends upon the availability and accessibility to quality infrastructure. Access to facilities, services and programs can lead to improved employment opportunities, increased workforce participation and an increased in human capital. Infrastructure involves much more than the provision of core public services such as schools and hospitals. It includes provision and delivery of facilities and services necessary for a community to develop like facilities pertaining to health, education, sports, facilities, socio-cultural activities, recreation, etc. These are generally planned in terms of population norms with stipulated permissibility conditions and development controls. The assessment of infrastructure for Srinagar Local Area is largely based on URDPFI Guidelines-2015 and examined in particular, the requirement of service provision in each of these sectors for next two decades to three decades. The current Master Plan has attempted to provide for reservations of land use through designating it as Public and Semi-public landuses. However; due to lack of data pertaining to the existing infrastructural services, the present gaps are not identified in all sub-sectors.

12.1 Social Infrastructure

“Social infrastructure is the interdependent mix of facilities, places, spaces, programs, projects, services and networks that maintain and improve the standard of living and quality of life in a community. It includes both hard and soft infrastructure. It is believed that rural and urban populations cannot grow without critical supportive infrastructure”.

----- (SGS Economic and Planning)

12.1.1 Educational Facilities

Srinagar Metropolitan Region being the educational hub of the Kashmir Valley has the presence of national and state level premiere educational institutes both academic and professional. Increased learning opportunities help people to innovate in thinking, technology, economy and governance. There is a need to improve the quality of education provided in schools to arrest and reverse the decline in enrolment in government schools and improve the educational outcomes in both public and private schools. An important contributor to improvement in the quality of education would be an increase in the percentage of qualified teachers besides quality infrastructure. As per the Census 2011, the SMR has about 15% [450,000] of its population below six years age which shall be the basis for the provision of elementary education infrastructure. As per URDPFI Guidelines 2015, SMR requires 1800 Pre-primary/preparatory schools @ one school per 250 toddlers. These can either be provided separately through ICD programs of Social Welfare Department or in the form of integrated Primary Schools functional in the private establishments. The SMR, keeping universalization of education under consideration, will have an additional requirement of 440 Primary schools, 150 Senior Secondary School [class VI to XII @ one school per 7500 population] in a phased manner to cater the needs of additional population [1.10 million] upto 2035. In addition, the State Government should establish five

additional Special Schools one each in *Budgam, Ganderbal, Pulwama, Bandipora* and *Baramulla* districts for both differently-abled children. About eleven additional academic colleges have to be provided by 2035 in Srinagar Metropolitan Region @ of 1 college/1.0 lakh population. Backlog of three Technical Education Centres of category (B) which shall include one ITI, one Technical Centre and one Coaching Centre are recommended for the planning period. Besides, three Engineering Colleges, and four Professional Colleges are also proposed to be established during next 20-25 years within the local area. *It is proposed that the locations for such higher order facilities shall be finalized as per the landuse policy and Development Code of this Master Plan.*

Historically, Srinagar has been the seat of learning which dates back to seventh century. Known for its serene environment and picturesque setting in the lap of Himalayas, Kashmir Valley in general and Srinagar in particular provides huge potentials for **developing the city into a Knowledge Hub which shall include the development of a Cyber city and a Tech-city**. In this connection, the master plan envisages that the State Government should facilitate joint ventures PPP format engaging the local entrepreneurs and the investors from country and abroad.

12.1.2 Health Facilities

Srinagar capital city is strategically located at the centre of Kashmir Valley making it accessible from all districts. The city has many specialized health facilities used by the local and regional population. The urban healthcare scenario in Srinagar district has seen visible improvement during last two decades with the creation of multispecialty healthcare services for the whole province. However, there is a need for robust health infrastructure in the local area as it serves whole valley in terms of higher order social services especially healthcare. Except for Srinagar city, the standard of healthcare facilities is comparatively very poor in other cities and towns which increases the possibility of referral system from district hospitals to tertiary hospitals in Srinagar. Hence, there is need to provide quality and affordable infrastructure to the growing urban and rural population across all districts and tehsils.

From the above table, it is clear that the average **Doctor Patient Ratio** in District and Sub-District Hospitals is quite low requiring institutional redressal for enhancing the quality of healthcare system. In order to meet the requirements of health related infrastructure and to tackle the problems of sub-optimum health delivery system, the following broad strategies are proposed:

- Establish easily accessible primary healthcare units in each planning unit as per the standards mentioned in Development Code, 2016 of this master plan.
- Physiotherapy and fitness centers should be established in each planning unit to control diseases related to lifestyle modification.
- Obstetric health units should be evenly distributed throughout the city and should cater to normal deliveries and identify high risk deliveries for referral to obstetric hospital. Each unit should have in-built state of art neonatology services to cater to the newborn.

- Dedicated and fully equipped ambulance services must connect basic health units with advanced health units.
- The quality of health services offered in the existing hospitals should be improved in terms of Hygiene and treatment offered.
- It is proposed that four state-of-art trauma units should be established in four directions of the Srinagar City; each unit should be in proximity to Arterial Roads and services should be available round the clock.
- To promote medical tourism as a thriving economic activity in Srinagar Local Area, Medi-city should be developed in the region.

Table 12-1: Proposed Bed Capacity across different Healthcare Verticals-2035

Table: Proposed Healthcare Infrastructure-2035 ¹	Proposed Facility (No.)	Proposed Beds-2035	Number
Dispensary	-	-	One for 2500 people
Health Sub-Centre	125	250	83 @ 3 beds /unit
Primary Health Centre	60	300	60 @ 5 beds/unit
Community Health Centre	30	600	30 @ 20 beds/ unit
Sub-District Hospital	31	1550	08 @ 200 beds/unit
District Hospital	3	1500	03 @ 500 beds/unit
General Hospital	3	2000	03 @ 700 beds/ unit
Multi-Specialty Hospital	2	1500	02 @ 750 beds/unit
Trauma Hospital	4	45	03 @ 15 beds/ unit
Total/ Average	-	7745	-

In the light of these strategies, the Master Plan envisages a robust healthcare system in the Srinagar Metropolitan Region. There is need to improve the patient-bed and doctor-patient ratio across all hospitals. Rural healthcare needs huge investments for infrastructure upgradation so that referrals to tertiary healthcare system are drastically reduced. The Master Plan proposes re-structuring of overall healthcare infrastructure both horizontally and vertically. As per the data collected from Health Department Kashmir, there are 3015 beds available in Srinagar city while 346 beds are available in the adjoining areas with a total bed strength of 3361 for a population of 1.90 million in 2015². Aiming at 25 beds per 10,000 population, the SMR will have total requirement of 7500 beds which implies additional requirement of 4139 beds over next twenty years. The distribution of beds across various verticals is proposed as above in **Table 12-1**.

¹ Facilities given below are inclusive of existing infrastructure as in 2015

² Excluding the requirements for regional population generally through referrals.

The proposed healthcare infrastructure shall include both provision of new facilities and upgradation of existing infrastructure. The number of tertiary care beds is proposed to be increased to 1500 at SKIMS Soura in a phased manner. In order to reduce daily patient referrals to tertiary hospitals like SKIMS, it is recommended to improve the quality of healthcare at local and regional levels at a mission mode. There is unequivocal need for improving the quality and functioning of primary healthcare system in the State. **The Department of Health shall come up with a Healthcare Policy focusing on enhancing efficiency in service delivery across all verticals. Improved doctor-patient ratio and bed-patient ratio shall be the basic parameter of healthcare system.** The Master Plan precisely envisages to upgrade the healthcare infrastructure at PHCs, CHCs and Sub-District Hospitals as given above. The bed strength at these levels be increased from about 700 beds to 2700 beds during the horizon period of twenty years. Besides, three 500-bedded District Hospitals one each in *Budgam*, *Ganderbal* and *Pampore* town are also proposed. Among other proposals include the following:

1. The Sub-district Hospital Magam, Chattergam and Chadoora be upgraded to 200 bedded hospital
2. Gousia Hospital Khanyar to be upgraded to 200 bedded hospital by *in-situ* upgradation
3. PHC Khrew, Khunmoh, Lal Bazaar, Ompora, Brein, Noorbagh, Batamaloo, Chanapora, Soibough, Narbal, etc to be upgraded to 200 bedded hospital each

Given this scale of infrastructure, the city needs to have a stand-alone central Bio-medical Waste Management System for proper disposal of medical waste. Besides, a Central Ambulance Workshop and a central Warehousing and Services Centre for which provisions have been made in the Proposed Landuse Plan-2035 are proposed at Bemina along the NH Bypass.

Summary:

The master plan intends to redeem Srinagar city's position as "a seat of learning". The city's climate, cuisine and its hospitality are major endowments for attracting investments in health and education sectors. At present, a huge number of our students are pursuing education in various academic institutions across different states in India. The government should take all possible measures to not only check the capital outflow from the State but simultaneously work towards attracting capital inflows in these sectors. However, this is not possible unless Government takes a holistic review of health and education policies to ensure that necessary legal and regulatory framework is put in place for establishing a world class and par excellent education and health care infrastructure. The Government should engage advisors to prepare a mix of projects taken up under different PPP formats. **The Government should develop a network of technical and professional institutions under the umbrella organization like the J&K State Technical University. The State needs to have at least one state level University for Medical and Paramedical Sciences.** The Greater Srinagar by 2035 will also need two Medical Colleges, four Nursing and Paramedical Institutes, three Trauma Hospitals and three Veterinary Institutes for which locations shall be decided on the basis of road hierarchy as per the landuse policy of this Master Plan. The Kashmir Valley having immense potential for medical tourism, the Master Plan proposes *Medi-*

city at Budgam in Planning Zone MHDR_Zone_IV for which an area of 116 hectares has been earmarked. The Medi-city shall be developed on Public-Private Partnership basis facilitated by the State Health Department. These institutions will have a long lasting impact on local economy and availability of competitive health and education infrastructure. It is believed that these two sectors will be key drivers of local economy.

12.2 Leisure and Sports Facilities

Besides, infrastructure for children recreation is completely missing in our city. In these days of psychological and mental strain experienced by our children on account of multiple factors, development of children recreation is of paramount importance. The Master Plan in this connection proposes the development of various children parks providing varied means of recreation in all directions of the city. An Arboretum along with an Adventure Children Park is proposed near *Nowgam* Railway Station abutting the N/H Bypass. Also, a Theme Park is proposed along the Western Foreshore Road near *Nowpora*. In addition, an Amusement Park is proposed along the ORR at *Narbal*. These facilities are proposed to be developed on PPP mode with the Government providing technical and financial assistance to the investors for the preparation of DPRs and capital subsidy as per the State Industrial Policy 2016. **In addition, as discussed in subsequent sections, the master plan envisages construction of Museums, Art Galleries, Aquarium and Science Museum at various places which besides enriching the cognitive faculties of the children would provide added recreation to them.**

With the formulation of Zonal Plans within the ambit of this Master Plan, areas for neighbourhood and cluster level parks should be identified for the benefit of locals. **Besides, the SMC or SDA should identify the blighted areas in core city and through Redevelopment Plan create public open spaces for outdoor recreation.** To increase the green cover, it is proposed that plantation of non-local trees along road medians or buffers should be discarded at the earliest. Priority should be given to trees having better environmental value in terms of foliage and growth. The Government should incentivise plantation of trees inside the premises of properties abutting roads. The practice of growing trees within footpaths should also be banned. It is also proposed that the green belt along the NH Bypass shall be brought under profuse plantation including Kashmiri Willow and Chinars and a series of connected open spaces be developed along the road. The River Jhelum being the spine of the city has a series of open spaces on both banks which can be connected and will go a long way in drastically increasing the public open spaces for recreational activities of citizens.

The Master Plan takes cognizance for the need of promoting **avenue plantation** along all city roads. In this connection as recommended above, the government should engage the owners of roadside houses and other structures to grow trees inside their premises along the wall abutting the road especially in such cases where the roads are devoid of side and central green verges. It is strongly recommended that **the construction of concrete and brick walls along the public buildings/offices shall be totally banned and those having them shall be de-walled for**

creating see-through and a sense of more openness. It shall be started from Lal Chowk and along the NH Bypass Bemina. The practice of constructing walls between two government buildings shall also be banned and instead be constructed on the Concept of Connecting Lawns.

Table 12-2: Proposed Structure of Recreational Facilities

Sl. No.	Planning Unit	Number of Organized Green Spaces
1	Housing Cluster	600
2	Neighbourhood	200
3	Community	30
4	District/ Zone	7
5	Sub-city Centre	3
6	Sub city level multipurpose ground	4
7	District level multipurpose ground	6
8	Community level Multipurpose ground	30

Srinagar City has a major deficiency of active spaces for all classes of people with very limited supply of play grounds at city level. As per the land use analysis very insignificant area is under playfields. The master plan proposes the development of active spaces in each planning unit as per the standards mentioned in Development Code. Also, to promote more sports activities in the city and upgrading of sports infrastructure, a **Sports Village has been proposed near JKEDI, Sempora**, which shall include all indoor and outdoor sports activity centers for training of local youth and sports enthusiasts. The proposed Sports Village shall also include an International Cricket Stadium for promotion of sports culture in the state.

12.3 Electricity

J&K is a power starved state despite its huge hydel potentials pegged at 25,000 MW against installed capacity about 1500 MW which is just 6% of its potential capacity. The State has established two Gas turbines at *Pampore* with a total capacity of 175 MW. **The Indus Water Treaty 1960 has put J&K State in a disadvantageous position as the Treaty allows for the run-of-the-river projects which do not infringe the water rights of neighbouring country.** Based on the estimated requirements of power supply as per the National Electricity Policy published in 2005, the recommended consumption is 2 kW per household which includes domestic, commercial, industrial and other requirements. However, the actual estimation of power can be made based on the industrial development (type and extent), commercial development, domestic and other requirements. As per these estimates, the expected power demand of the Valley is going to be 2500 MW by 2035 while that of the

Srinagar Metropolitan Region is worked out to be 1164 MW.³ Adopting one electric substation of 11KV for a population of 15,000, the SMR would need 210 substations by 2035 which have to be provided in a phased manner. Though the sector-wise consumption of electricity is yet to be ascertained; however, it is estimated that the domestic consumption accounts for half of the total consumption followed by defense (13%) and industries (12%).⁴ To meet the power supply pressure, **besides focusing on the development of mini-hydel power projects, alternative sources of energy need to be explored in the site and situation to meet the domestic and commercial demand within the region.** Ministry of New and Renewable Energy has come out with a strategic plan for new and renewable energy sector for the period 2011-17. The Ministry has identified local bodies as one of the main users who can be encouraged to utilize energy from biomass and urban waste etc. The ULBs shall establish Refuse Derived Fuel (RDF) plants to utilize the non-recyclable waste having high calorific value (1500K/ca/kg or more for generating energy either through refuse derived fuel or by giving away as feed stock for preparing refuse derived fuel. It is in place to mention here that high calorific waste shall be used in cement plants.

A National Rating System - GRIHA has been developed, to promote green buildings, which is suitable for all types of buildings in different climatic zones of the country. A green building designed through **solar passive concepts** and including active renewable energy systems can save substantial conventional energy apart from generating energy for meeting various requirements in different seasons. **The Government should focus on Smart Grid System which uses analogue or digital information and communications technology to gather and act on information, such as information about the behaviour of suppliers and consumers, in an automated fashion to improve the efficiency, reliability, economics, and sustainability of the production and distribution of electricity.** Metering and Smart power generations are the two basic steps taken in the direction of handling power in cities. The T&D losses have to be reduced significantly to 20% against existing 60%. To ensure safety from high-tension power line, reduce disruption and for increasing life, infrastructure lines are to be well designed within the RoW for infrastructure corridors, by allocating Right of Use as per regulations of each facility.

- **Smart meter-** Smart meters help utilities to better detect and manage outages. Smart meters coupled with advanced metering infrastructure (AMI) helps to pinpoint problems in the grid, allowing determination of faults and failures in no time.
- **Smart power generator-** Smart power generation is a concept of matching electricity production with demand using multiple generators, alternatively to buffer the peak and high demand for load balancing. These generators are designed on smart technologies to operate efficiently at chosen load.

³ It is inclusive of power demand of military establishments also.

⁴ Source: District Handbook

As per the proposals received from Power Department, the development of power infrastructure at EHV level in district Srinagar for 12th and 13th FY plans ending 2021-22 includes construction of two new grid stations and their associated transmission lines with district Srinagar. The sites suggested below for the construction of the proposed grid stations are tentative and the actual locations would be as per the load centre and availability of the land and corridor for transmission lines. The brief details are as under:

- Construction of 150 MVA, 132/33 kV *Tengpora* (GIS) with associated TR line
- Construction of 100 MVA, 132/33 kV *Khanyar* (GIS) with associated TR line
- Construction of 160 MVA, 220/33 KV *Telbal* (GIS) with associated TR line

In view of the corridor constraints in Srinagar city, 132 KV underground cables are proposed in certain sections of the 132 KV *Bemina-Budgam* Transmission line to be loaded with *Tengpora* grid station and in the feeding line of the grid station *Khanyar* to be fed from *Habbak* grid station. Besides, Gas Insulated Sub-stations (GIS) have been proposed for the grid stations because of their less land requirement.

The Master Plan also envisages constructing the **Utility Corridors** initially in CBD [I] and CBD [II] for underground cabling of electricity and telecommunication lines. Subsequently it shall be followed in Core [I] and Core [II]. Construction of these underground Utility Corridors will improve city's image and its urban scape.



13. PUBLIC HEALTH AND URBAN SANITATION

Photograph Source: GOOGLE

13 PUBLIC HEALTH AND URBAN SANITATION

Public Health and Sanitation are some of the most basic needs for human health and survival. These are also crucial components in freeing people from poverty. **Still, 1 out of 10 people do not have access to an improved source of drinking water and more than a third of the world's population does not have access to a hygienic means of basic sanitation.** Environmental sanitation envisages promotion of health of the community by providing clean environment and breaking the cycle of disease. It depends on various factors that include hygiene status of the people, types of resources available, innovative and appropriate technologies according to the requirement of the community, socio-economic development of the country, cultural factors related to environmental sanitation, political commitment, capacity building of the concerned sectors, social factors including behavioural pattern of the community, legislative measures adopted, and others. As per estimates, inadequate sanitation costs India almost 6% of the country's GDP. Over 70% of this economic impact is health-related, with diarrhoea followed by acute lower respiratory infections accounting for 12% of the health-related impacts. Evidence suggests that all water and sanitation improvements are cost-beneficial in all developing world sub-regions.



National Urban Sanitation Policy 2008 was the recent development in order to rapidly promote sanitation in urban areas of the country. Ministry of Urban Development, GoI commissioned the survey as part of its National Urban Sanitation Policy in November 2008. In rural areas, local government institutions in charge of operating and maintaining the infrastructure are seen as weak and lack the financial resources to carry out their functions. In addition, no major city in India is known to have a continuous water supply and an estimated 72% of Indians still lack access to improved sanitation facilities. A number of innovative approaches to improve water supply and sanitation have been tested in India, in particular in the early 2000s. These include demand-driven approaches in rural water supply since 1999, community-led total sanitation, Total Sanitation Campaign, Individual Household Latrines (IHHL), School Sanitation and Hygiene Education (SSHE), Community Sanitary Complex, Anganwadi toilets supported by Rural Sanitary Marts (RSMs), and Production Centers (PCs), and lately the SBM. The main goal is to eradicate the practice of open defecation in the country by October, 2019.



Water, Sanitation and Hygiene (WASH)

India's National Urban Sanitation Policy (NUSP, 2008) defines sanitation as "safe management of human excreta, including its safe confinement treatment, disposal and associated hygiene-related practices." The Census of India 2011 results indicate that nearly 17 million urban households (more than 20 percent of the total 79 million urban households) suffer from inadequate sanitation. According to the report of the Central Pollution Control Board (2009), the estimated sewage generation from Class - I Cities and Class - II Towns is 38254.82 million liters per day (MLD), out of which only 11787.38 MLD (30%) is being treated and the remaining is disposed into the water bodies without any treatment due to which three-fourths of surface water resources are polluted. The Ministry of Urban Development conducted a rating of class I cities on sanitation related parameters in 2009-10.

According to the Constitution of India, water supply and sanitation is a State subject and the States are vested with the responsibility for planning, implementation of water supply and sanitation projects including O&M and cost recovery. However, the Ministry of Urban Development GoI has adopted service level benchmarks for the water and sanitation sector with a view to shift the focus of urban development projects from infrastructure creation to improvement of service levels. The 13th Finance Commission has made it mandatory for all cities having municipalities and municipal corporations to disclose their performance in terms of these benchmarks annually. The benchmarks are given under each head:

Water Supply Coverage of water supply connections	100%
Per capita supply of water	135 lpcd
Extent of metering of water connections	100%
Extent of non-revenue water	20%
Continuity of water supply	24 hours
Quality of water supplied	100%
Cost recovery in water supply services	100%
Efficiency in redressal of customer complaints	80%
Efficiency in collection of water supply-related charges	90%

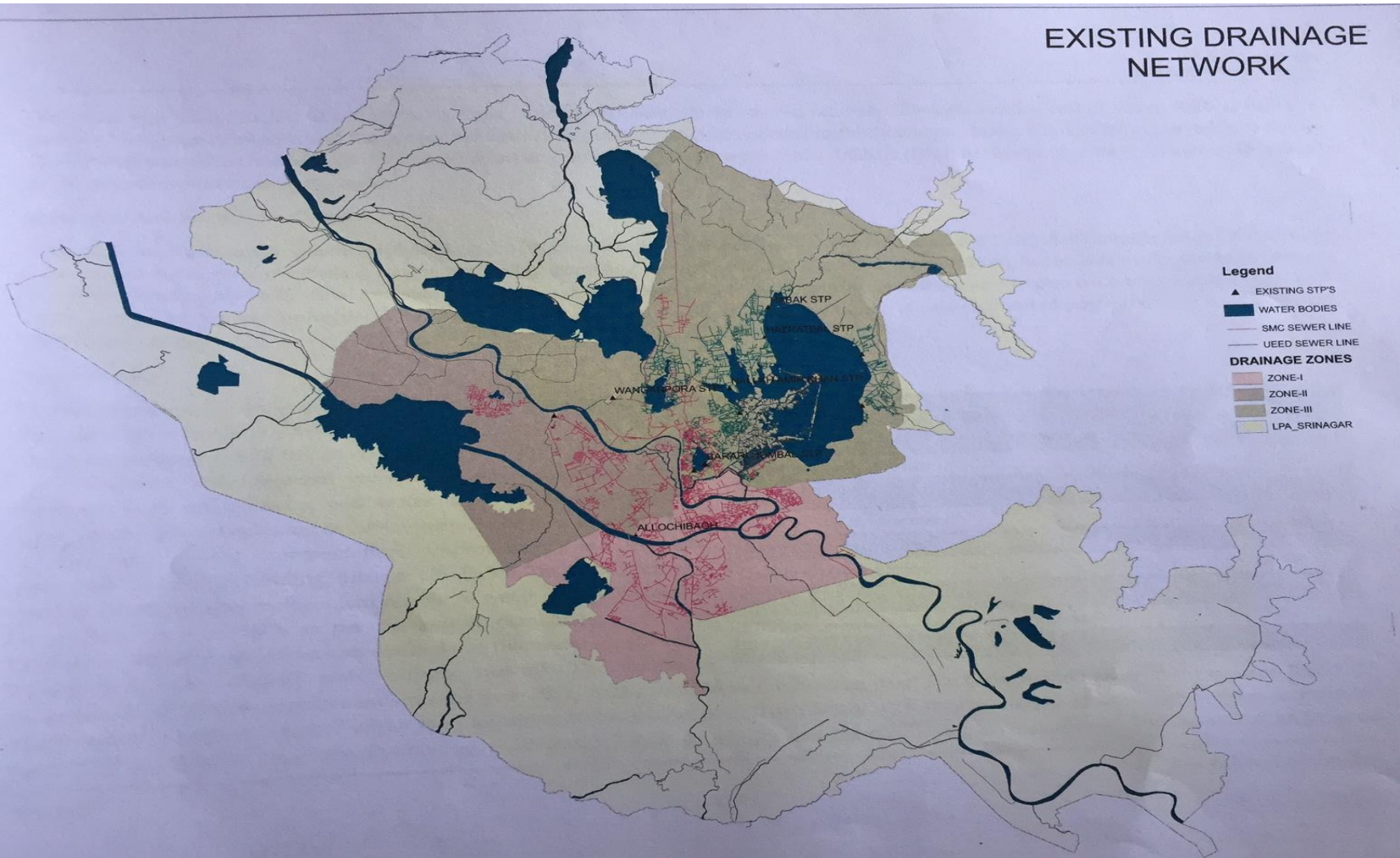
The Ministry is committed to mainstreaming these benchmarks through its various schemes. Though a major part of Urban India is yet to be provided with sewer system and the people are mainly dependent on conventional individual septic tanks. Census 2011 (provisional) results show 30 million urban households (38 percent of urban households) have septic tanks. USAID (2010) estimates, that by 2017, about 148 million urban people would have septic tanks

Legislative and Regulatory Context

Central Laws, Rules and Regulations [Environment (Protection) Act, 1986 and the Water (Prevention and Control of Pollution) Act, 1974 provide a framework for control of effluent, wastewater and septage discharge. The Municipal Solid Waste (MSW) Rules, 2016 under the Environment (Protection) Act apply to the final and safe disposal of post-processed residual faecal sludge and septage to prevent contamination of ground water, surface water and ambient air. Further, the MSW Rules 2016 will apply to the final and safe disposal of post-processed residual faecal sludge and septage

13.1 Water Supply

Sectoral demands for water are growing rapidly in India owing mainly to urbanization and it is estimated that by 2025, more than 50% of the country's population will live in cities and towns. Population increase, rising incomes, and industrial growth are also responsible for this dramatic shift. Organized piped water supply was introduced in Srinagar city at the beginning of 20th century. Since then there has been gradual and steady augmentation, improvement and requisite extensions to cover expanding Srinagar city limits. The PHED Srinagar framed



a comprehensive document related to water supply system for the notified area of SDA as per the Master Plan-2021. As per the document, the entire local area was divided into five water supply zones having their own distinct water supply systems. The document projected the zone wise requirements for the year 2021, 2023 and 2038 as the horizon year. For the extended areas, it is proposed that four additional w/s zones be created under the provisions of this master plan. The present w/s systems consist of seven sub-systems as given in **Table 13-1** of Nishat (2 No.), Rangil/Aluesteng, Doodhganga, Pokhribal, Sukhnag and Tangnar having an installed capacity of 90.925 MGD as in 2015. As per the projections, the future w/s demand for the local Area of 766 sq. km. has been pegged at 115 MGD for 2035 and 147 MGD by 2045. The projections are based on Census 2011 data with 135 LPCD and additional 15% as Non-Revenue Water (NRW).

Table 13-2: Existing Zone-wise W/s systems

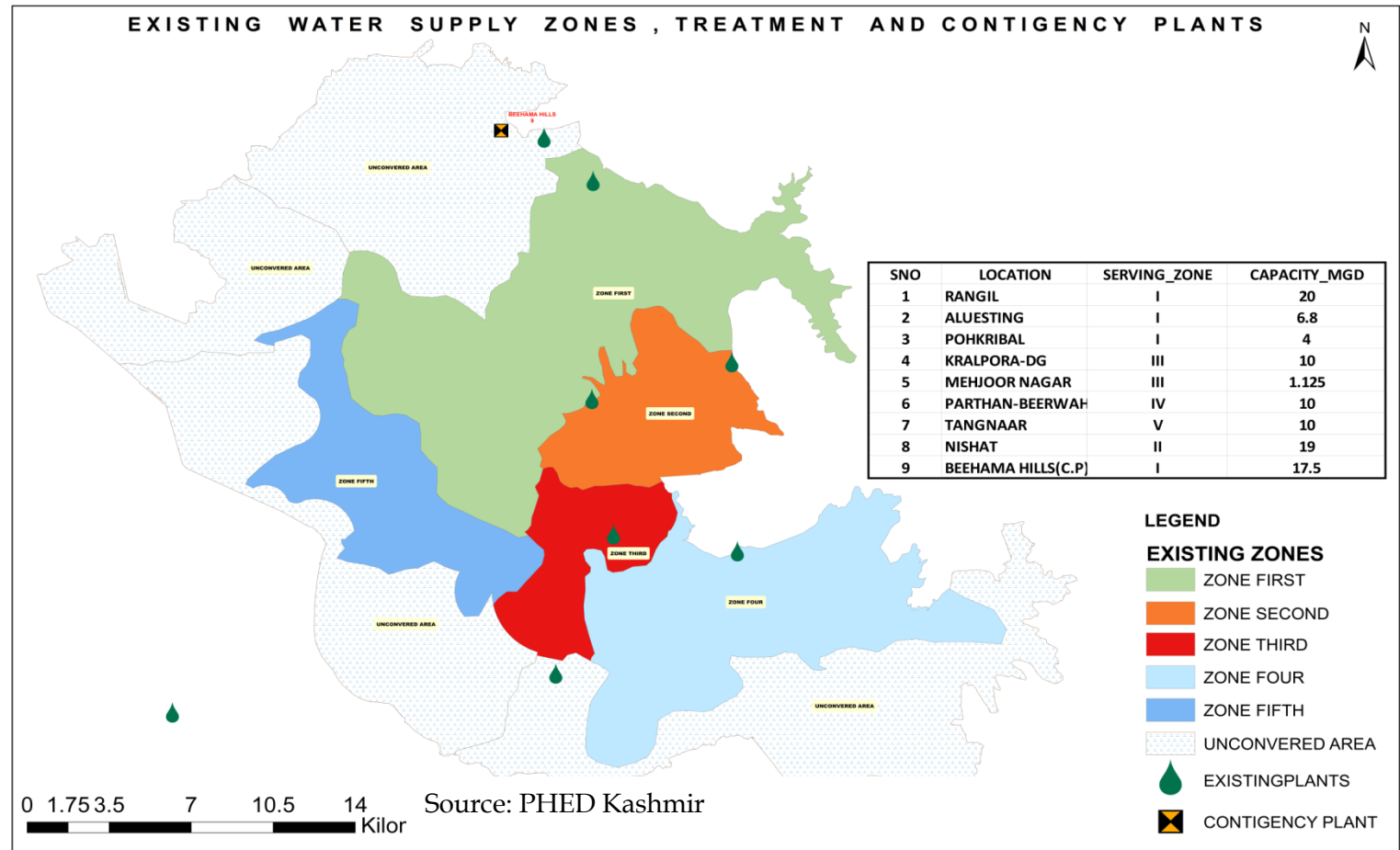
Water Supply Zone	Location of WTP	Installed Capacity by 2015 (MGD)	No. of water Treatment Units	Source of Raw Water
W/s Zone -I (Rangil)	Rangil	30.00	02	Sindh Nallah
	Alusteng	6.80	02	Sindh Nallah
	Pokhribal	4.00	01	Nigeen Lake
Sub-Total	-	40.80		
W/s Zone-II (Nishat)	Nishat	19.00	05	Dal Lake & Sharab Khul
W/s Zone (III) Doodhganga	Doodhganga	10.00	04	Doodhganga Nallah
W/s Zone -IV (Sukhnag)	Parthan	10.00	01	Sukhnag Nallah
W/s Zone-V (Tangnar)	Padshahibagh (1.12)	11.12	01	River Jhelum
	Sempora (10.00)		01	
Total	-	90.92		

According to the PHED, against the present installed capacity of 90.925 MGD, the available generation is 68.55 MGD while the demand is 59.00 MGD, which clearly indicates the city is water surplus. Though the city may be water surplus at macro-level however, there are micro-level distributional issues which require comprehensive replacement and upgradation of network system across city.

Proposals

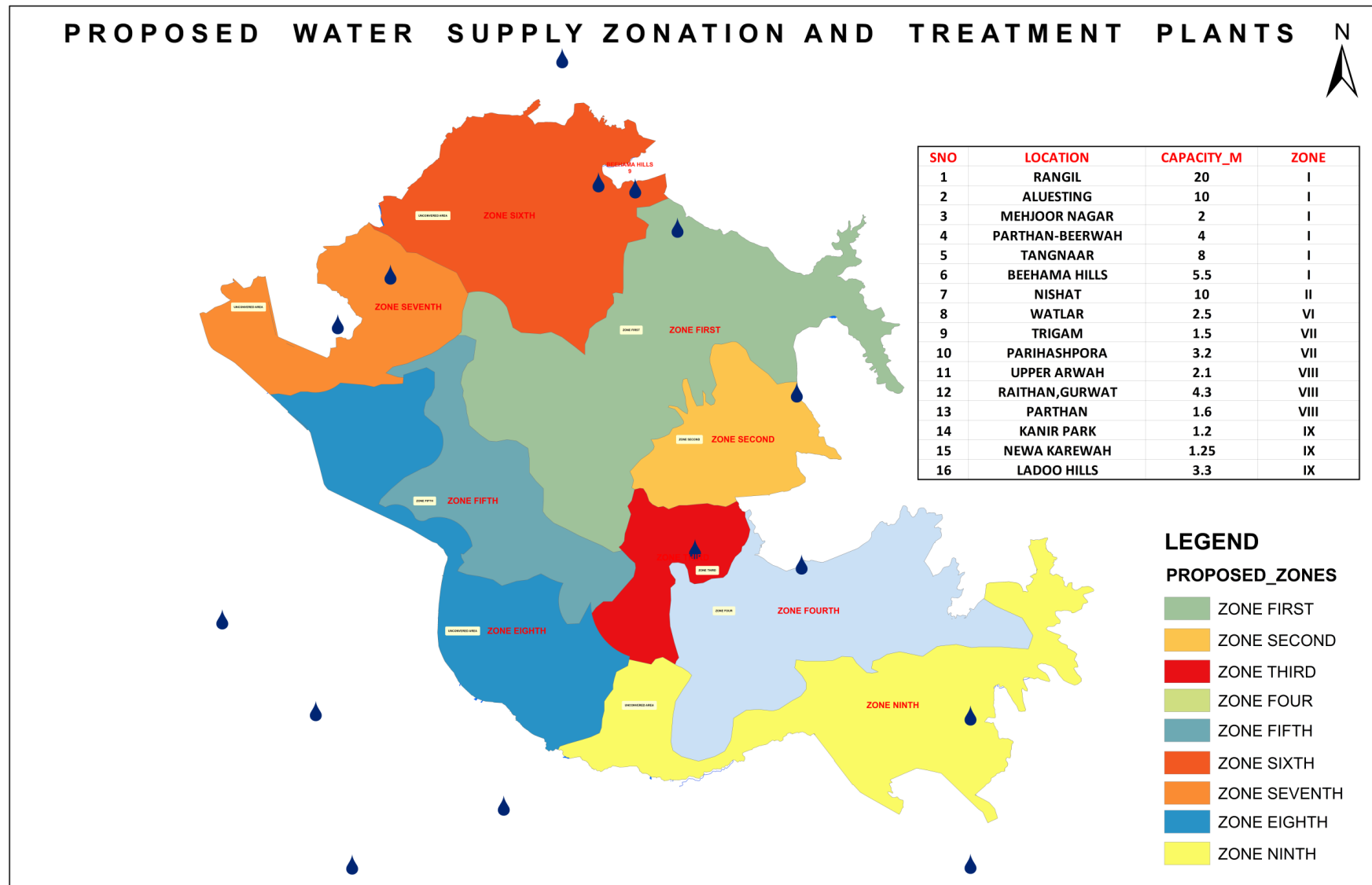
To meet the future water supply requirements of Srinagar local area of 766 Sq. Km, four new water supply zones having a total area of 314 Sq. Km and seven new WTPs in a phased manner are proposed to be added using the existing sustainable water sources from *River Sind, River Jhelum, Dal Lake, Doodhganga, and Sukhnag Nallah*. Since the new areas incorporated in the Master Plan are

mostly rural in character, they presently receive water supply through local minor w/s schemes with per capita supply 15-40 LPCD. Any existing infrastructure related to w/s system shall be dovetailed with major w/s schemes for the areas to be executed for enhancing daily



per capita supply to 135 LPCD meeting URDPFI norms. With the approval of this master plan, zone wise project reports for additional w/s zones shall be prepared by concerned departments for the extended areas as per the following:

- **W/s Zone-VI:** Comprising *Ganderbal* town and surrounding villages of *Ganderbal* and *Lar* tehsils notified under this master plan as local area of SDA. The raw water for this zone can be tapped from the sustainable sources of *River Singh* and *river Jhelum* besides and local sustainable if available.
- **W/s Zone-VII:** Comprising the notified village settlements of tehsil *Sonwari* and tehsil *Pattan* with raw water to be exploited from *river Jhelum*. A rural w/s scheme *Pattan Parihaspora* with *Jhelum* as source which is in execution is proposed to be upgraded to meet the demand of 5.0 MGD.
- **W/s Zone-VIII:** The village settlements of tehsil *Budgam* and tehsil *Beeru* are proposed to constitute Zone-VIII. The zone can have perennial water sources from *Shaliganag* and *Sukhnag* rivers.
-
- **W/s Zone-IX:** The proposed w/s zone shall comprise the extended areas of *Chadoora*, *Pulwama* and *Pampore* tehsils. It is also proposed that to take up some villages of *Chadoora* tehsil with *Doodhganga* as source through a gravity main. For rest of the area in this zone, *river Jhelum* can be used as a source with lift station at *Samboora* and Treatment Plant complex at *Chandhara* subject to any post detailed analysis in DPRs.



Long-term Proposals

Due to increasing urbanisation and depleting water sources, the water shortages are expected to be experienced in forthcoming decades. To overcome any such shortage, the PHED has put forth the following proposals for their incorporation in this master plan:

- a) Raw Water Supply: at present, the Sindh Extension Canal is the backbone of Srinagar water supply. The canal is lined near the *Rangil* WTP and the rest of the Canal is unlined. Leakages and excessive irrigation demand in the area is a worrying factor. Presently the canal is maintained by I&FCD. To meet the present and potential water demand of W/s Zone I and Zone II, the raw water requirement is pegged at 211.50 cusecs with the *Sindh Nallah* as source. In this connection, the proposal made by the PHED of constructing a tunnel for carrying water from the *Sindh Nallah* will mark a major development in the overall w/s system of Greater Srinagar. In this direction, some headway has been made as there is a standing proposal with JKPDC to construct a composite joint tunnel for *Ganderbal* Power House with *Sindh Nallah* as source. With its successful completion, the project will provide committed six cumecs of raw water.
- b) To carry leakage and pollution free water from this proposed tunnel outlet to *Rangil*, it is proposed to lay a closed conduit and extend it to *Nishat* WTP besides carrying raw water to all existing and future WTPs en-route.
- c) To minimise the use of raw water from *Nigeen* Lake which is source for 04 MGD *Pokhribal* WTP, it is proposed to lay a raw water pipe line from *Rangil* to WTP *Pokhribal* with *Sindh Nallah* as source. Alternative treatment measures to eliminate colour and odour by introducing Activated Carbon Treatment Technology is proposed to be adopted at *Pokhribal* WTP for making use of raw water from *Nigeen* Lake as well.
- d) The *Doodhganga* W/s scheme is suffering from pollution and turbidity load that it carries during rains. In this direction, the J&KERA has already taken up the proposal to change the scheme from lift to gravity by laying raw water pipe line from a higher contour 25 km ahead of existing lift stations at *Kralpora*.

Besides, as put forth by PHED, following proposals are made:

- Replacement of outlived 1200mm dia pre-stress trunk main of *Rangil* system, *Saidapore* by 1200mm dia D1 pipe line;
- Replacement of worn out and outlived pipe system at most places in Greater Srinagar;
- Shifting of w/s pumping station on Dal bund inside Dal Lake to an offshore location which is presently feeding *Nishat* WTP;
- Upgradation and Augmentation of water testing labs to ensure quality supply of water to customers;

- Regular water auditing to reduce the NRW or unaccounted flow of water;
- Universal metering of households to collect water usage charges;
- Introduction of e-billing and establishing citizen facilitation centres;
- Adoption of e-governance measures like e-payments, mobile alerts, etc.
- Computerization and GPS tracking of tankers.

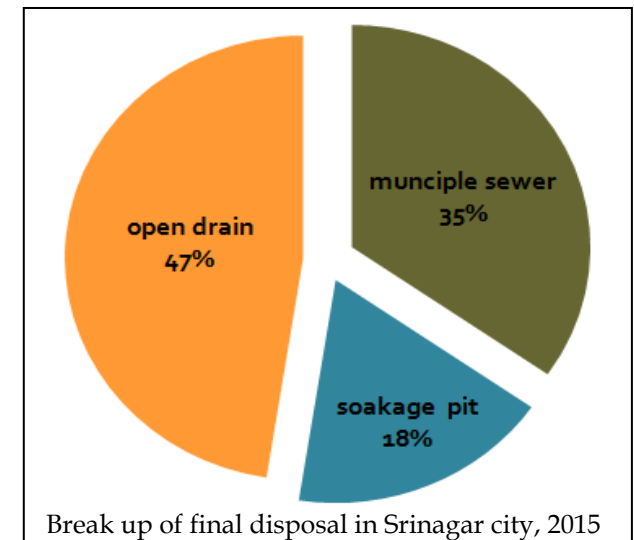
13.2 Sewerage and Septage Management

Srinagar city historically evolved along the banks of river Jhelum. Subsequently, the city developed around the peripheries of some water bodies like *Dal Lake*, *Nigeen Lake*, *Khusalsar*, *Brari Numbal* etc. Over a period of time, the city increased in size and scale to such an extent that the domestic waste found its way own nearby water bodies. As of now, Srinagar city as a whole lacks modern sewerage facilities. Septic tanks are prevalent and those without such facility discharge their wastewater into open drains. As per UEED statistics, about 40% area has been provided with surface drains for the conveyance of household sewage. At present, most houses in the old city have service privies connecting surface drains which finally drain into water bodies. The

Sewerage Master Plan of Srinagar City was prepared by Project Management Consultants in the year 2006-07 under the Multi-Sector Project for Infrastructure Rehabilitation. The total area of the city under the Sewerage Master Plan was 417.44 sq. km. In the DPR, combined sewerage system is proposed for Srinagar city only in the areas having minimum road width of 2.0 m.

Gap Analysis and Proposals

The gap analysis has been performed on the basis of 2015 population data and the proposed per capita water supply received from the Public Health Engineering Department, Kashmir. Considering average water supply @ 135 LPCD including provision for floating population and water losses and taking 80% as sewage generation, the total sewerage which is expected to be generated will be approximately around



The State Government has identified septage as one of the focus areas under AMRUT Scheme for funding and procurement of Suckers/jettors and Alternate Technology for bio-remediation. This will improve the level of service both by way of increased household coverage and efficient treatment and management of septage.

386.99 MLD by the year 2035. As per the Pre-Feasibility Report (PFR) prepared by UEED, Srinagar has been divided into four main zones besides the zones of *Budgam and Ganderbal* proposed in the master plan.

a) Zone I – (134.40 km Trunk, Lateral and Secondary network length)

This zone covers the areas from *Sonawar to Amirakadal, Rajbagh, Gogjibagh, Saraibal, Huzuribagh, Rambagh, Solina, Natipora, Bagh-e-Mehtab, Kralpora, Wanabal, Rangreth, Ompora* etc.

b) Zone II – (213.0 km Trunk, Lateral and Secondary network length)

Covers the areas like *Karanagar, Shaheed Gunj, Chattabal, Bemina, Qamarwari, Parimpura Shalteng, HMT, Maloora, Narbal* etc.

c) Zone III – (257.74 km Trunk, Lateral and Secondary network length)

Covering the remaining and newly developed areas like *Nowpora, Khyam, Bagh-e-Roop Singh, Saida Kadal, Habakadal to Zainakadal, Nowhata, Soura, Malbagh, Buchpora, Nagalbal, Ganderbal* etc. The Zone III has been further sub-divided into following sub-zones –

- I. Barai Numbal Sub-zone
- II. Nowpora-Saida kadal Sub-zone
- III. Noor Bagh Sub-zone

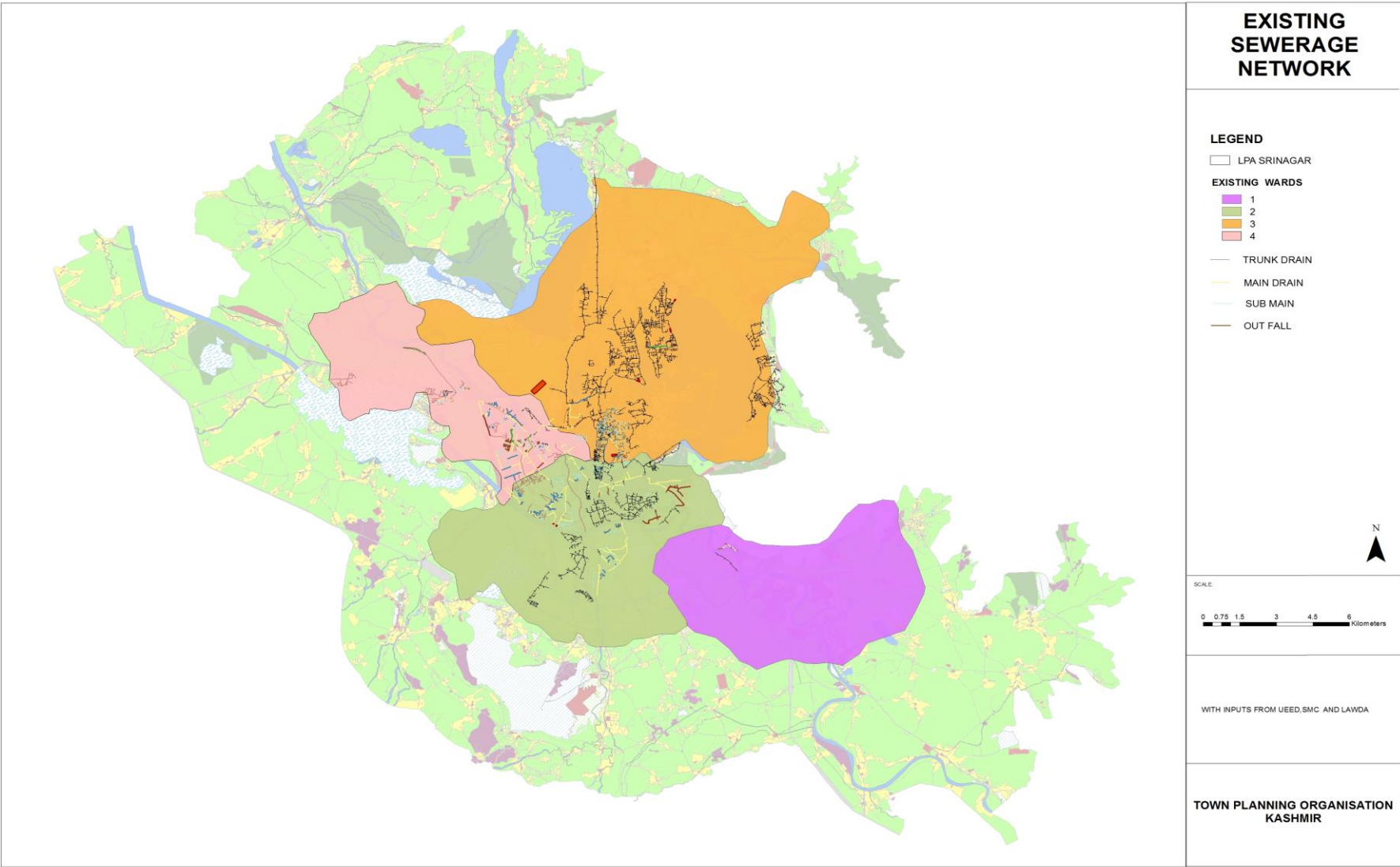
d) Zone IV (70 km Trunk, Lateral and Secondary network length)

This zone covers the areas of *Pantha chowk, Zewan, Lasjan, Khunmoh, Athwajan, Khrew, Pampore* and surroundings etc.

Indicator	Target
Coverage of toilets	100%
Coverage of sewage network services	100%
Collection efficiency of the sewage network	100%
Adequacy of sewage treatment capacity	100%
Quality of sewage treatment	100%
Extent of reuse and recycling of sewage	20%
Efficiency in redressal of customer complaints	80%
Extent of cost recovery in sewage management	100%
Efficiency in collection of sewage charges	90%

Table 13-4: Gap Analysis-2015

Sl. No	Particular	Quantity	Physical indicator	Gap
1	Existing Population	1.9 million and 5,0000 (floating)	100% network and household coverage	185.97 MLD (78%) untreated
2	Sewerage Generation	239.75 MLD		
3	Sewage Treatment	53.78 MLD		



Out of the four zones, only Zone-III has 70% of its area covered under sewerage network while the rest areas are still uncovered. UEED, NBCC, LAWWDA and J&K ERA are presently involved in the development of sewerage system in Srinagar city. These agencies execute various Sewerage Schemes in Srinagar which are listed below:

- I. **UEED:** Various areas in Zone III under two pilot Sewerage Schemes of *Brari Numbal* and *Khushalsar*.

Table 13-5: Proposed town-wise Sewerage / Septage Technologies

Town/Category	Conditions	Recommended Technologies	Capital Cost	O&M Cost	Management
Unsewered Class-III, IV and V towns and rural communities	Remote land area avoidable with suitable sit and soil condition	Sludge drying beds and waste stabilization pond	Low	Low User fees to recover O&M costs	Municipality or private (if implemented by private sector through a management contract)
	Land available but close to neighbour	Lime stabilization, Sludge drying beds and waste stabilization pond	Low to medium	Low to medium. User fees to recover O&M costs.	Municipality or private (if implemented by private sector through a management contract)
	inadequate land area with unsuitable site and soil condition, but available STP capacity within 20-30 km distance	Disposal at STP	Low to medium	Low to medium. User fees to recover O&M costs	Municipality
Partially sewerer Medium size (class-II towns)	Land area available with suitable site and soil condition but close to settlements	Lime stabilization, Sludge drying beds and waste stabilization pond	Low to medium	Low to medium. User fees to recover O&M costs.	Municipality or private (if implemented by private sector through a management contract)
	Inadequate land area, but available STP capacity	Disposal at STP	Medium	Medium. User fees to recover O&M costs.	Municipality or private (if implemented by private sector through a management contract)
	Inadequate land area; no available STP capacity	Disposal at independent mechanical treatment facility	High	High. User fees to recover O&M costs.	Municipality or private (if implemented by private sector through a management contract)
Class-I and Metro-cities	Available STP capacity	Disposal at STP	Medium	Medium. User fees to recover O&M costs	Municipality or private (if implemented by private sector through a management contract)

No available STP capacity	Disposal at independent mechanical treatment facility	High	High. User fees to recover O&M costs.	Municipality or private (if implemented by private sector through a management contract)
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- II. **NBCC:** Other areas of Zone III taken up under JNNURM.
- III. **LAWWDA:** Peripheral areas of Dal Lake (areas along *Dalgate – Harwan Road*; areas right of *Dalgate – Rainawari Road*; areas on left and right of *Saida Kadal- Hazratbal Pandach Road*) taken up by LAWWDA under conservation plan.
- IV. **J&KERA:** Areas of Zone I and Zone II are proposed to be taken up under ADB funding.

The sewerage network has to be planned in a way to avoid or minimise the number of pumping stations. The rising mains shall be considered as intermediate pumping stations and designed to carry ultimate peak flow of trunk mains. The STPs should be sited at locations which will result in minimum travel time for sewage in the trunk mains and can cover maximum area. The STPs shall be constructed in Modular form particularly in modules of 6, 10, 20, 30, and 50 MLD etc. It is also desired to standardise the units of STPs so as to reduce the capital cost and spare parts inventory from motors, pipe work, valves electrical panels etc.

Table 13-6: Storm Water Drainage Benchmarks	
Coverage of storm water drainage network	100%
Incidence of water logging/flooding	0

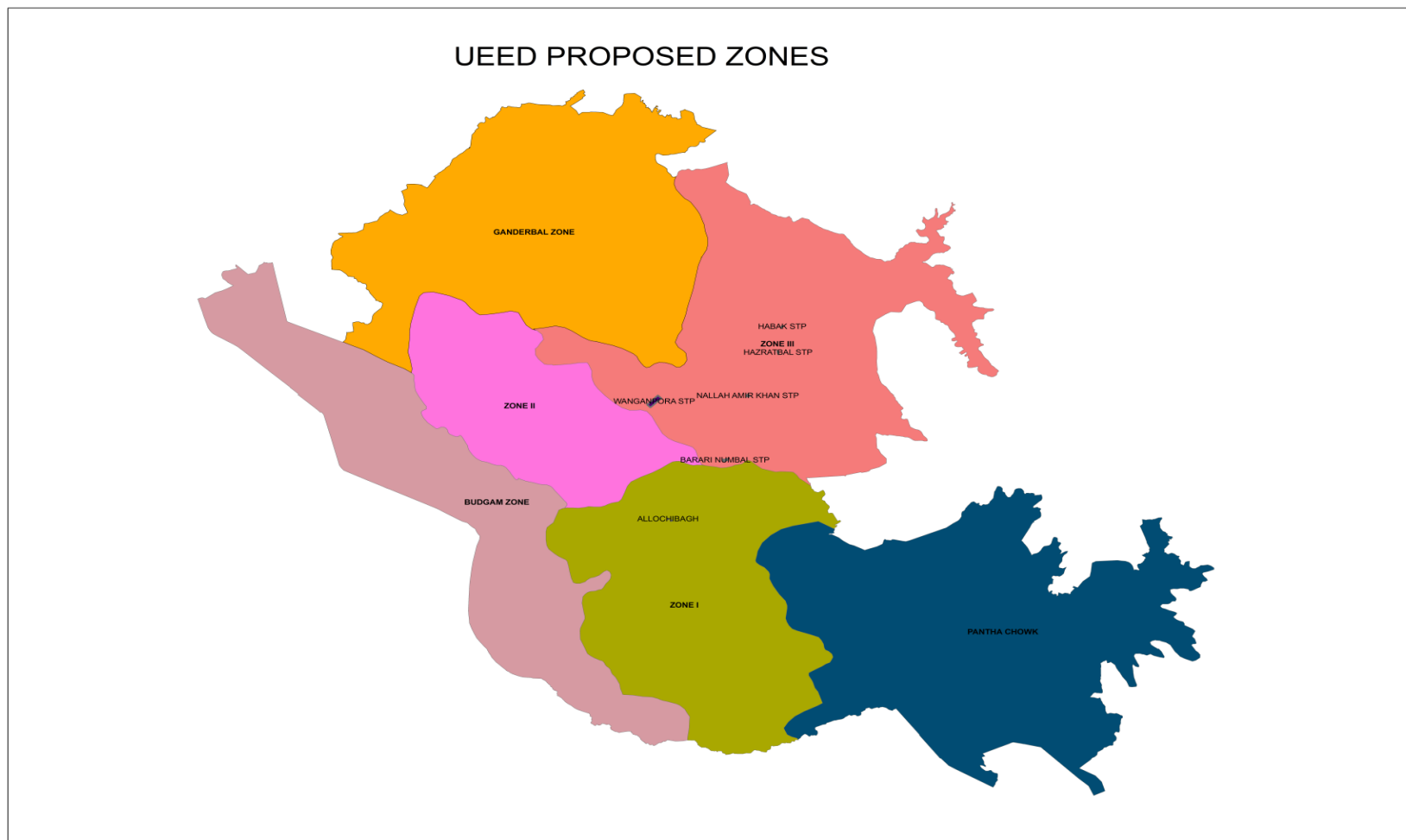
13.3 Storm Water Drainage (SWD)

Urban Environmental Engineering Department (UEED)¹, Town Drainage (SMC) and Town Drainage (DULBK) are responsible for the drainage plan and storm water management of Srinagar local area. The natural drainage of Srinagar is provided by three main rivers viz; River Jhelum, *Doodhganga* and *Sindh Nallah* which are joined by numerous rivulets and canals. River Jhelum forms the main drainage basin.

Despite being a hilly region, the city is located on a flat terrain with most the areas on L/S of Jhelum being low-lying. Because of

¹ The mandate of the Urban Environmental Engineering Department is to undertake job of planning, designing and construction of works of sewerage and drainage in urban areas of the State.

unprecedented urbanization, these areas face the persistent problems of water logging and stormwater drainage. The master plan asserts to



work as per the stormwater performance standards effectively with 100% coverage and zero incidence of waterlogging. It is also envisaged to adopt different types of stormwater management systems to comply with the stormwater performance standard including subsurface, rooftop and stormwater recycling systems. These systems store and slowly release stormwater to the sewer system (detention) or dispose of stormwater onsite (retention) through infiltration to soils below, evapotranspiration, and recycling onsite. Accordingly the master plan proposes following measures –

- **Source Controls** in urban areas store stormwater onsite and release it at a controlled rate to mitigate the impacts of increased runoff rates associated with development. By detaining and delaying runoff, source controls reduce peak flow rates and city sewers are protected from excessive flows. In highly urbanized areas, development professionals must consider source controls on rooftops, driveways, parking lots, and open spaces. As a result, rooftop and subsurface systems are identified as two categories of stormwater source controls.
- **Greening** a site with vegetation, as well as using pervious materials, reduces impervious surfaces. Non-paved areas reduce a site's weighted runoff coefficient and calculated developed flow. Both subsurface and rooftop systems can be designed to retain stormwater by evapotranspiration and infiltration. In particular, rain gardens and vegetated swales are encouraged in the design and construction of onsite source controls to provide stormwater retention. The addition of vegetation provides other benefits for property owners and the surrounding neighbourhoods, such as reducing the urban heat island effect, improving air quality, saving energy, increasing property value and mitigating climate change. Stormwater can also be diverted through the use of systems that recycle stormwater onsite.
- **Rainwater Recycling Systems** (*also known as Rainwater Harvesting*) can reduce demand on the city's water supply, as runoff is captured, stored, and repurposed to irrigate planted areas, gardens etc during periods of low rainfall. Rainwater can also be used in place of potable water for supplying water closets and urinals, cooling tower makeup, washing of sidewalks, streets, or buildings, and laundry systems. Recycling systems can range from a simple rain barrel connected to a downspout to several large polyurethane tanks or cisterns connected by a series of pipes. In line with stormwater performance standard, the departments should establish a "Plumbing Code".
- **Green Infrastructure Plan** presents a "green strategy" to reduce CSOs into surrounding waterways by some ratio. Five key components to reduce the overall costs of CSO improvement strategies are identified as follows:
 - (1) Construct cost effective grey infrastructure (e.g. sewer improvements, CSO facilities, and WWTP upgrades);
 - (2) optimize the existing wastewater system through interceptor cleaning and other maintenance measures;
 - (3) Control runoff through green infrastructure;

- (4) Institute an adaptive management approach to better inform decisions moving forward; and
- (5) Engage stakeholders in the development and implementation of these green strategies.

The Drainage Plan prepared by City Drainage Division which was incorporated in the Master Plan Srinagar (1971-1991) was revised from time to time. **As per the Drainage Master Plan of Srinagar City, the entire city is divided into three zones –**

- Zone- I:** This zone includes areas from *Pampore to Gawkadal, Dalgate to Nehru Park, Civil line areas, Raj Bagh, Jawahar Nagar to Alouchi Bagh* and areas across flood spill channel including *Ram Bagh, Natipora, Barzulla* etc.
- Zone- II:** The zone includes areas from *Amira kadal to Parimpora /Shalteng, including areas of New and Old Sectt. Batamalloo, Bemina, Nawa kadal, Nawa Bazaar and Safa Kadal* etc.
- Zone -III:** This zone includes areas from *Dalgate to Noorbagh* on one side and *Dalgate to Naseem Bagh* and areas around *Idgah, Nowshera, Ali Jan road, Soura, Buchpora* etc.

There are about 50 existing drainage schemes having about 119 km of primary and secondary storm water drains. In addition to such drains, there are tertiary drains and deep drains. List of such existing drainage schemes is given in Table:

Table 12-4: Zone-Wise List of Drainage schemes in Srinagar City

Sl. No	Name of drainage scheme	Length of drain (m)
1	Storm water drainage zone I:	55262
2	Storm water drainage zone III:	11487
3	Storm water drainage zone III:	51914
	Total	118663

Three types of drainage Schemes viz. Lift, Gravity and Lift-cum-gravity schemes exist in the city. Approximately 89 drainage pumping stations exist in Srinagar City having 69 permanent/temporary dewatering stations and few mobile units which are being utilized during flash floods in various areas of Srinagar City. Zone wise details of the drainage pumping stations are given in **Table 12-5** below:

Table 12-5: Existing storm water drainage pumping stations in Srinagar City

Area	Lift	Number of Pumping Stations		
		Gravity	Lift/Gravity	Total
Zone I	17	2	4	23
Zone II	14	3	16	33
Zone III	5	13	7	25
S and D-I	2	3	3	8
Total	38	21	30	89

i. Proposals

The Master Plan proposes that the entire SDA Local Area of 766 sq. km. be divided into various drainage zones in conformity with natural drainage pattern. These drainage zones could be –

- Areas east and west of Dal lake with their storm water flowing into the lake;
- Watershed Nigeen and Anchar (partly) draining into Nigeen and Khushalsar;
- Watershed of Anchar (partly) draining into Anchar Lake;
- Zainakote and Bemina draining into Rakh-e-Gund Aksha and FSC;
- Adjoining areas of river Jhelum on its both banks draining into it; and so on

In the development of such drainage zones and provision of a comprehensive drainage system, priority shall be accorded to areas draining into natural water bodies. Besides, it is also recommended to –

- a) undertake periodical desilting of water bodies, drains etc to increase their carrying capacities;
- b) discourage any kind of development in marshy areas and natural drainage basin;
- c) stop encroachment of natural water bodies, canals, wetlands, lakes;

Table 13-6: Solid Waste Management Benchmarks by MoUD

Household coverage of solid waste management services	100%
Efficiency of collection of municipal solid waste	100%
Extent of segregation of municipal solid waste	100%
Extent of municipal solid waste recovered	80%
Extent of scientific disposal of municipal solid waste	100%
Efficiency in redressal of customer complaints	80%
Extent of cost recovery in SWM services	100%
Efficiency in collection of SWM charges	90%

- d) Increase the green footprint of surrounding hillocks and *Zabarwan* hills which will subsequently reduce the natural storm water discharge

13.4 Solid Waste Management (SWM)

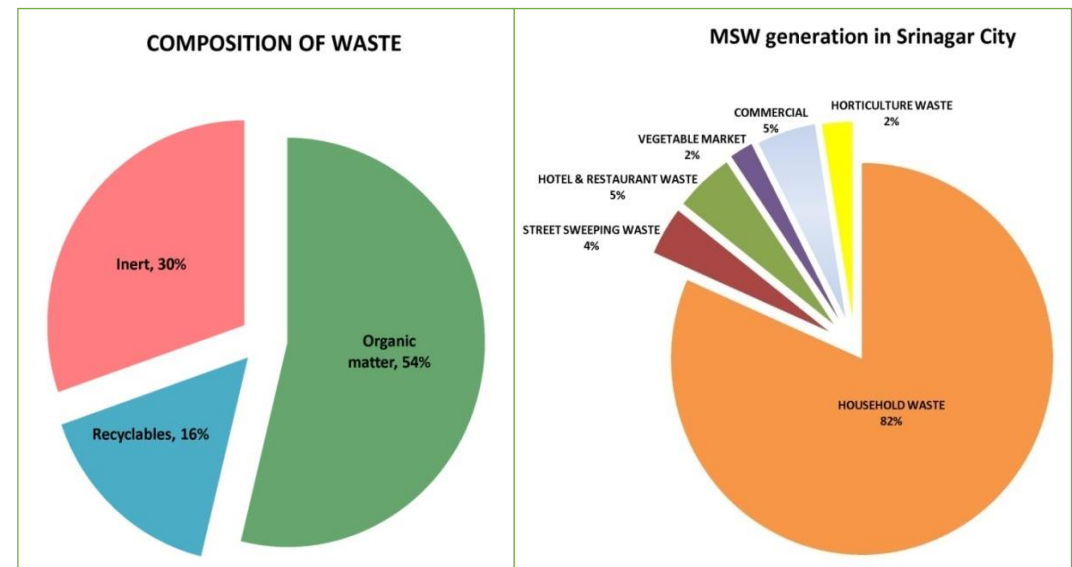
Municipal Solid Waste (MSW) is the trash or garbage that is discarded on day-to-day bases in a human settlement. According to the United Nations Development Programme (UNDP), the second most serious problem that city dwellers face (after unemployment) is insufficient solid waste disposal.

Composition of waste

The composition of Municipal Solid Waste (MSW) based on three different analyses— National Environmental Engineering Research Institute (NEERI) for the Central Pollution Control Board (CPCB) in 2004-05, Economic Reconstruction Agency (ERA) in 2008-09 and one conducted for Solid Waste Management DPR for Srinagar by Srinagar Municipal Corporation (SMC) in 2013 is the given figure.

MSW Generation

In 1995, average per capita waste generation was 210g for a city with a population range of 1-5 lakh (NEERI). The Municipal solid waste study conducted by CPCB for Srinagar in 2004 shows that for Srinagar city, it measured 428 g which increased to 550 g in 2010. Using the above data, calculations for MSW for Srinagar local area have been worked out and it was found that the **total waste generated including treated biomedical, construction and demolition etc in 2015 is 914 MT/Day.**



Source: Solid Waste Management DPR for Srinagar, SMC-2013

Current Waste Collection

Srinagar Municipal Corporation does sweeping and collection of waste/garbage. There are 520 collection points within municipal limits with the existing strength of *Safai-karamcharies* being 60% of the demand.

Primary Waste Collection It is done by individual workers going from door to door, collecting waste onto handcarts before being transferred to bin points where manual sorting takes place, often on the roadway by rag pickers. Around 60% of the waste is taken to the dumping site on daily basis. The storage of waste at source is not common and only 30% of households practice storage of domestic waste, resulting in open dumping points across the city.

S. No	Component	CPCB - NEERI	ERA	SMC	Average
1	Organic matter	61.77 %	58.5 %	41.19 %	53.82 %
2	Recyclables	17.76 %	10.3 %	19.54 %	15.87 %
3	Inert	20.47	31.2 %	39.27 %	30.31 %
4	Moisture	61 %	25.88 %		43 %
5	HCV	1264 kcal/kg	1579 kcal/kg		1421 kcal/kg

Intermediate storage

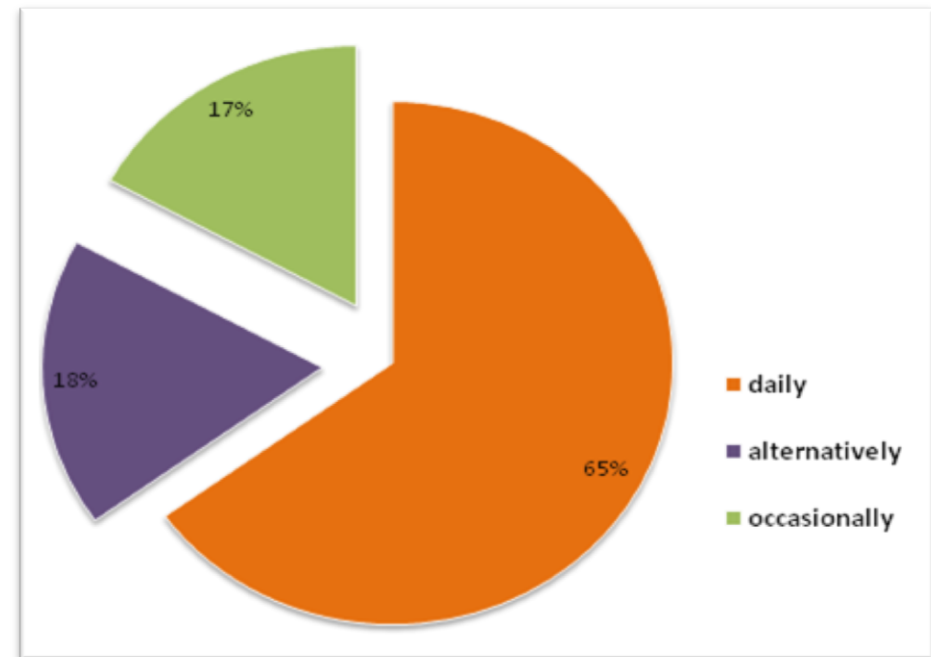
Srinagar city has four functional waste storage depots where the waste collected from primary sources is stored for secondary transportation. The process of waste removal from these depots is mechanised using tipper trucks using front end loaders.

Transportation of waste

At an average, 350 MT of waste is transported to the dumping site daily using frontend loaders with tippers and dumper placers along with containers.

Recommendations:

- e) Vehicle routes should be properly planned for proper utilization of manpower, saving of fuel and reduction of time as various factors like width of the road, transport



volume, road conditions, etc. play important role in selection of vehicles.

Waste Treatment

About 350 MT (38% of waste projected waste generated) of solid waste is disposed of at *Achan* and about 62 MT is collected by rag pickers. The site was modernized into a scientific landfill site – with two sanitary engineered landfill cells – by J&K Economic Reconstruction Agency with the support of Asian Development Bank. While the first land fill has been capped, the second cell is operational since December 2013 but due to flood related debris/garbage, its life was reduced and a third cell is being constructed. National Green Tribunal (NGT) has directed SMC to install a 5 MW waste to energy plant.

Recommendations:

- f) Practices mandated by CPHEECCO SW Manual *inter-alia* including sanitary landfill technique, compaction of waste, daily earth cover impervious clay liner etc.

Solid Waste Projections

The MSW generation numbers have been projected using projected population to calculate per capita waste generation, assuming that most of the waste generated is in urban areas and only a small fraction comes from rural areas. Waste generation varies as a function of affluence and those for rural and urban can be significantly different. Based on per capita waste generation ranges from 0.25 to 0.448 kg per person per day for the entire planning region the solid waste generation is projected as given below:

Table 13-6: Estimation of Total Land Requirements for disposal of Solidwastes

Sl		
1	Population during construction stage of the project	31,20,904
2	Total Solid Waste (SW) generation at the rate of ___ kg/capita/day	1398.16 kg/day
3	Considering the fraction of bio-degradable waste as 45% of total SW generated, Total quantity of biodegradable waste to be generated (for composting)	629.174 T/day
4	Inorganic waste for disposal (48% of total waste) to landfill (considering that recyclable waste in form of paper, glass, metals, plastic etc. constitute 7% of total waste)	671 kg/day
5	Quantity of rejects generated from the compost plant to be disposed to landfill, assuming the rejects as 30% of waste going to compost plant	188.75T/day
6	Hence total waste to be disposed in landfill at present	860 T/day

Taking the average annual increase of population (@ 4 gm each year) into consideration and assuming the same for solid waste growth rate also, the waste generation in 2035 is expected to be 1723 MT/day inclusive of other wastes like biomedical, construction and demolition etc.

Solid Waste Management Strategies

A major shortcoming of the existing SWM is the environmental damage caused by the inadequate consolidation facility and needs to be addressed. The collection system is the critical link that supports the rest of the waste management chain.

The strategies are:

a) TOWARDS ZERO WASTE

The fundamental approach to managing solid waste is to not produce it in the first place. By reducing the production at source, it is possible to control solid waste without the need for increased infrastructure or processing.

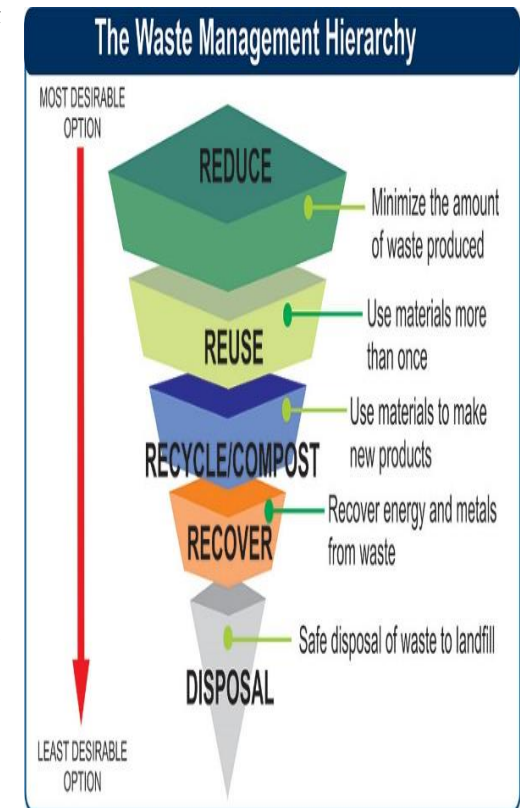
b) SOLID WASTE AS A RESOURCE

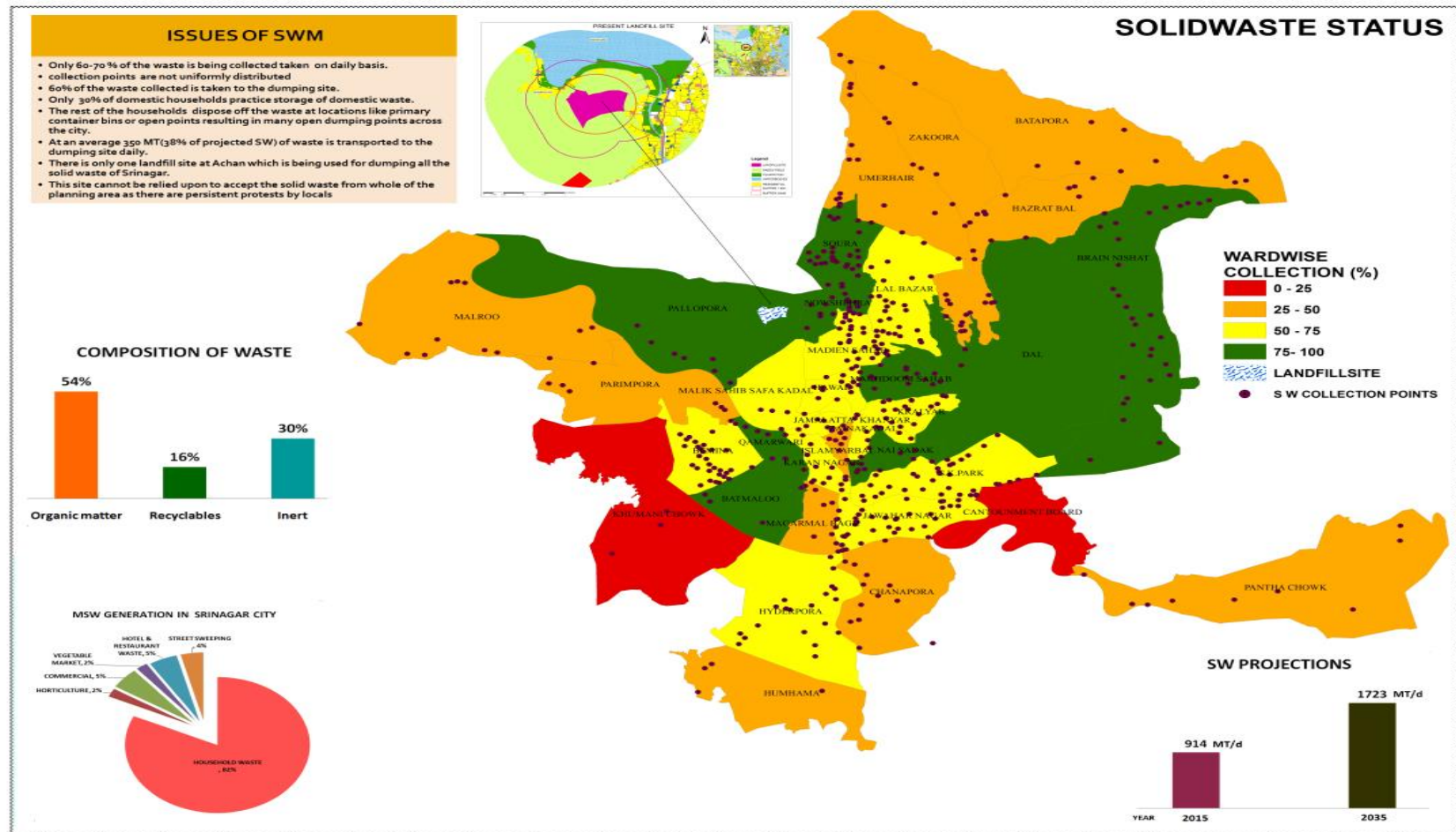
By managing waste from the point of the production all the way to disposal – recyclable waste like plastics, metals and organic waste; Combustible waste for energy production and Organic matter for composting – several types of resources can be recovered from the waste.

c) RECOVER ENERGY FROM WASTE

Energy recovery from waste – concept of converting non-recyclable waste material into heat, electricity or fuel – can be accomplished by the use of Waste to Energy (WTE) Plant. This is most commonly done in the form of an incinerator that can burn solid waste and use this energy to produce electricity but for solid waste containing majority of organic waste this option is not so feasible

An approach to design sustainable waste management system is outlined below.





Treatment/Recycling of Waste

Considering the composition of waste generated in Srinagar, composition can be considered

- There is a need for popularization of the product among the farmers and to exploit the manure value of the product.
- NGOs may come forward to promote Waste minimization.
- Waste pickers may be trained so that the segregation of recyclable items can be done in a more systematic and organized way.

Financial Structure

A new tax scheme can be introduced to meet the expenditure for modernization of SWM system and to improve the financial status of SMC. Additional charges can be collected from the individuals availing house-to-house collection facility as directed under SWM Rules 2016.

Community Participation

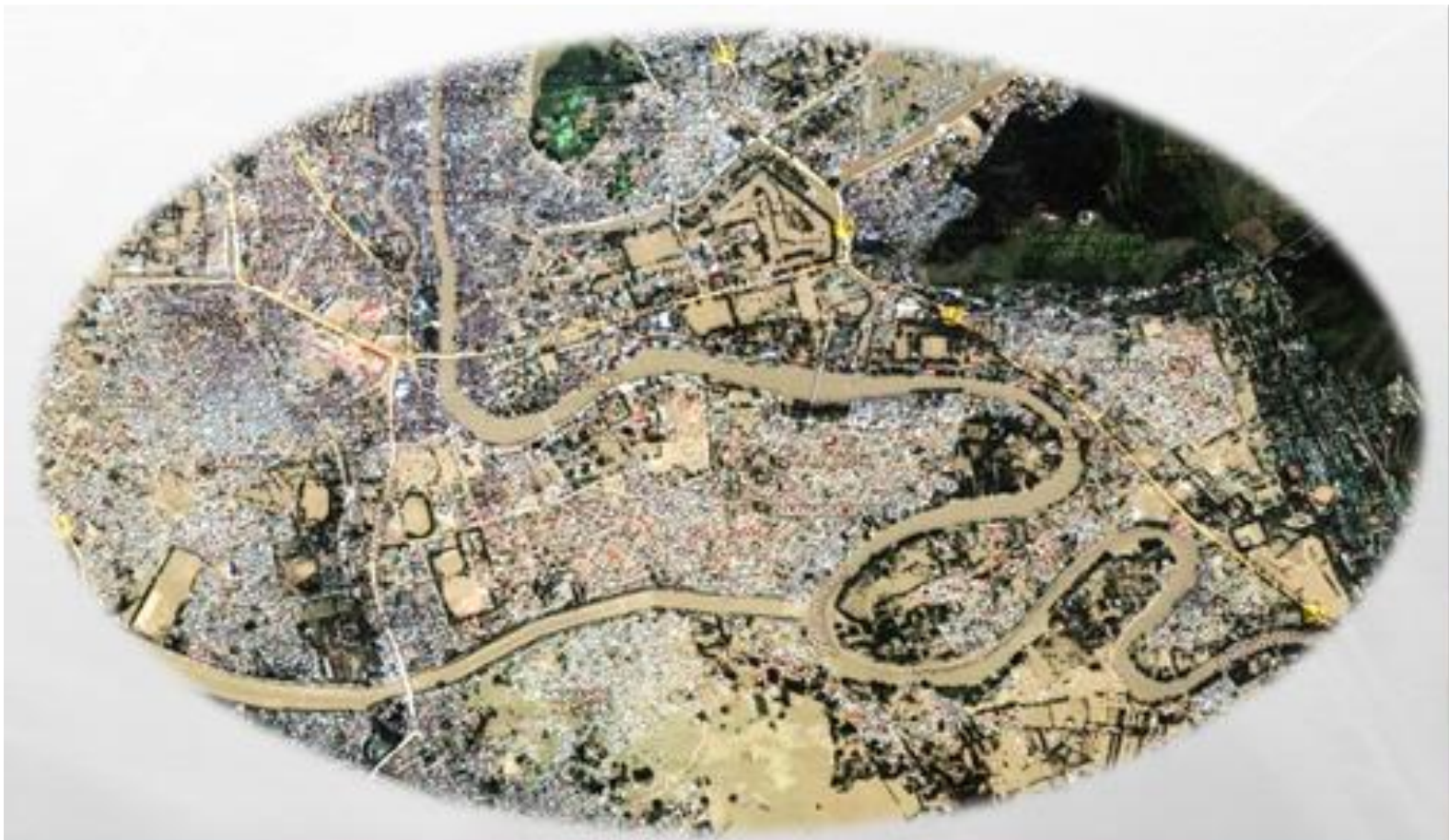
Community participation is essential for smooth and efficient operation of SWM system. In every area, citizen forums comprising citizen's representatives, social workers and municipal officers shall be formed. Immediate action based on feedback from such forum will go a long way in improving the situation. Various programs should be conducted for increasing public awareness

Treatment of Waste at Integrated Solid Waste Management Facility (ISWMF)

Integrated Solid Waste Management is a comprehensive waste prevention, collection, recycling, composting, and disposal programme. The major ISWM activities are waste prevention, recycling and composting, and combustion and as well as disposal in properly designed, constructed, and managed landfills.

The following is a list of typical facilities in an Integrated Solid Waste management facility:-

- Sorting/material recovery plant
- Anaerobic Digestion (AD/COMPOST PLANT)
- WTE (Waste-To-Energy) Plant
- Engineered Landfill
- Bio medical waste incinerator



14. DISASTER MITIGATION & MANAGEMENT

Photograph Source: GOOGLE

DISASTER MITIGATION AND MANAGEMENT

The world is facing an increasing frequency and intensity of disasters - natural and man-made - that has had devastating impacts on the pace of development. According to UN International Strategy on Disaster Risk Reduction-2013, “Economic losses from disasters have exceeded \$100 billion annually from 2010 to 2012” and as per the Secretariat of the International Strategy for Disaster Reduction (ISDR), “the last ten years have seen 478,100 people killed more than 2.5 billion people affected and about US\$ 690 billion in economic losses globally”. There has been considerable concern on natural disasters throughout the World. Even as substantial scientific and material progress is made, the loss of lives and property due to disasters has not decreased. It was in this backdrop that the United Nations General Assembly in 1989 declared the decade 1990-2000 as the International Decade for Natural Disaster Reduction with the objective to reduce loss of lives and property and restrict socio-economic damage through concerted international action especially in developing countries.

14 DISASTER MANAGEMENT

The State of Jammu and Kashmir is a multi-hazard region and has a long history of facing disasters. The State has witnessed a number of earthquakes, floods, forest fires, landslides, avalanches and other smaller events since the early 19th century and has paid heavily in terms of social, environmental and economic losses. Such events lead to a significant loss of human lives as well as public and private property. Enhanced vulnerabilities of the built-up environment make the city highly prone to natural hazards. The disaster management dimension of the Master Plan is based on the disaster management cycle wherein the aim is to facilitate improved disaster mitigation, preparedness, and infrastructure for response. Within this approach, the Master Plan will focus largely on the mitigation aspects, since they deal with land use, environment, infrastructure and participatory processes integral to urban planning. Risk mitigation measures focus on the context of urban Srinagar, and also its environs that have a direct influence on the city and the risks therein. Further, the approach is founded on principles of community based disaster management and response, since in contexts like Srinagar where capacities often short fall of needs, the community is the primary resource for ensuring efficient and effective action towards a disaster safe city.

Finally as a principle, the approach of the chapter is to look at Disaster Risk Reduction (DRR) along with Climate Change Adaptation (CCA), as these are linked phenomena and have closely related impacts. The context of climate change brings an additional element of high variability and low predictability, thus making trend based planning less relevant.

14.1 Disaster Risk Context of Srinagar

Srinagar, being a densely populated and rapidly growing city in the Himalayan region, is exposed to the following risks:

- **Ageing buildings and infrastructure:**
The buildings and infrastructure particularly in the old town area are very old and pose risk of damage from prevalent hazards, thereby making the residents vulnerable.
- **Densification of core areas:**
The increasing density of population in the core areas of the city is putting additional pressure on infrastructure systems. Dysfunctional infrastructure translates into increased vulnerability and collapse of functionality during disaster situations.
- **Rapid growth in peripheral areas:**
Rapid growth in the peripheral areas including the new town and peri-urban zone is attracting more population and the built form is being developed on a much faster rate than that of services being provided. This is creating unplanned growth scenarios in new locations that will be virtually impossible to correct if not checked immediately.
- **Encroachment of water bodies and drainage channels:**

This causes blockage in the natural flow of water and in turn when water level rises people face severe flooding as the water body takes its original shape and the people staying in the reclaimed area face disaster. Encroachment of water bodies also disrupts the natural water sources and creates water stresses.

- **Increasing seismic stresses, soft soils, and high earthquake risk:**

Srinagar falls in a seismic gap zone, where due to centuries of tectonic plate movement stresses have been building up that have not been released by any major earthquakes or a large number of smaller earthquakes in reliably recorded history. In addition to this, soft soils of the Jhelum's alluvial context are devoid of bedrock and make buildings and infrastructure highly prone to liquefaction during an earthquake.

- **Increase in climate change induced hydro-meteorological risks:**

Climate change is having clear impacts in the Himalayan region and the consequences include an increase in hydro-meteorological disasters that is already defying trends.

- **Multi-hazard profile:**

- Geological hazards (Earthquakes, Landslides, and Avalanches etc.)
- Hydro-Meteorological hazards (Wind storms, floods, flash floods, droughts, hailstorms, cloudbursts, snow, lightening, heat and cold waves, etc.)
- Industrial (Urban fires, accidents, gas and chemical leakages etc.)
- Biological hazards (epidemics, pest attacks etc.)
- Others (Building collapse, crowd stampede, accidents, terrorist attacks, armed conflict etc.)

- **Economic vulnerability:**

- The concentration of GDP within the state on critical functions provided by Srinagar makes it a vital economic link for not just the city's residents but also for the entire state and region. Effects of a disaster on the city will put the stakes of the entire state at risk due to this economic dependence, and thus this vulnerability ranks high in the risk assessment of the city.

14.2 Risk Zones in Srinagar

Srinagar can be geographically broadly divided in the following risk zones:

- Old Town
- Old buildings
- Narrow lanes
- Old infrastructure and services

- High population density
- High percentage of commercial area
- Small plot sizes with negligible open spaces
- Low-lying inundation prone areas
 - Flooding situations in rainy seasons from riverine floods as well as local water-logging due to encroached surface water bodies and drainage channels
 - High liquefaction potential in soil and high water table, leading to risk of building and infrastructure damage in earthquakes
 - Encroachment on low lying areas leading to blockage of drainage channels and occupation of lakes, creating settlements with high flood risk
- New Development Areas (including peri-urban areas)
 - Influx of population from rural areas and smaller towns
 - Development along and beyond the city boundaries not fully compliant with regulations
 - Large scale construction of new buildings without adequate infrastructure and safety provisions

14.3 Risk Sensitive Planning

The Master Plan takes a risk sensitive urban planning approach, involves mainstreaming Disaster Risk Management (DRM) within the spatial planning, governance and operations of public and private spaces, buildings and infrastructure. It incorporates DRM through recognition of disaster management legislation and policy so that all themes and upcoming plans, programmes and projects are sensitive to prevailing urban risks and accordingly dictate land use, land management, and infrastructure development. It provides directions for zonal plans to protect environmentally sensitive areas, reduce vulnerability and disaster risk, mitigate climate change and increase resilience. In order to be effective, risk-sensitive urban planning and development process should consider multiple steps from data collection to plan design and its implementation in a time-bound manner.

Towards this purpose, the following planning approach is laid down for different risk zones:

Risk Zones	Planning Approach
Old Town	<ul style="list-style-type: none"> - Designation as special zone due to high level of risk and population density - Inventory and strengthening of buildings - Rehabilitation of critical infrastructure and services - Creation of open spaces and widening of critical access routes through land pooling

Low-lying inundation prone areas	<ul style="list-style-type: none"> - Elevation model based inundation mapping as basis for zonal plans - Zonal regulations to address flooding, earthquake and liquefaction risks - Conservation of existing drainage channels and revival of regional critical drainage channels - Notifying identified critical water bodies as restricted activity zones
New Development Areas (including peri-urban)	<ul style="list-style-type: none"> - Risk sensitive landuse planning - Open spaces and access to be planned with disaster response actions in mind - Zonal plans to be based on neighbourhood concept and to follow compatible mixed landuse model including risk reduction
City Level	<ul style="list-style-type: none"> - Strengthening of lifeline buildings and infrastructure - Linkage with regional topography - Revision of building codes and zoning regulations to include learnings from recent disasters - In-situ redevelopment of slum areas

14.4 Resilience Building Strategies

Towards making Srinagar a resilient city, the following strategies are outlined under the Master Plan:

14.4.1 Built Environment

- Create a building inventory of the city, and keep it updated in real time
- Based on Rapid Visual Screening (RVS) of building stock – especially in old city, flood prone areas, along river edges and lake edges, and areas with soft soils or high slopes, an approach of assessments and targeted retrofitting is proposed. For this purpose a policy of building retrofitting needs to be put in place with appropriate incentives and disincentives, including tax, insurance, awareness and penalty based instruments
- Publicise in simple terms the key aspects of safe construction for new buildings, and maintaining and retrofitting for existing ones
- Strengthen training, certification and monitoring of architects, engineers, construction contractors, and masons for risk sensitive development
- Identify low income areas with non-engineered buildings, and apply Mandatory Rules of Thumb (MRTs)
- Encourage green buildings with water harvesting, solar-passive design, solar Photo Voltaic (PV) energy, waste management and landscaping.

14.4.2 Infrastructure

- **Physical Infrastructure:** Ensure that the design of housing, roads, airports, electricity network, sewerage, water supply, public and commercial buildings, and public utilities are assessed for their exposure to disaster risks due to their location, quality of construction and maintenance. Follow up with risk reduction measures through planning and retrofitting.
- **Social Infrastructure:** Ensure that the schools, health facilities, and community spaces are assessed for their risk exposure, and appropriate mitigation and preparedness plans are put in place.
- **Economic and Institutional Infrastructure:** Banks, financial institutions, administrative establishments and emergency services are lifelines for the city, and need to be assessed for risk and their safety ensured through planning and retrofitting interventions.

14.4.3 Capacity building for disaster risk reduction:

- Capacity building of urban managers, planners, architects, engineers, construction workers, and communities to be taken up as an essential step for effective risk reduction. It is based on local capacities that effective technology deployment for preparedness, forecast and rapid urban response can be made possible. The human as well as technological capacities are thus to be mapped and put in effect towards this goal.
- Community awareness and engagement in urban management to be a key aspect for ensuring the implementation of this risk reduction approach in Srinagar. A comprehensive community engagement element is thus integral to the Master Plan approach and will include risk reduction elements.
- Finally, the inclusion of all the above elements in bye laws, landuse and zoning regulation and codes is an essential requirement for seeing these plans translate into action on the ground. The techno-legal framework of the Master Plan will thus also deal with disaster risk reduction appropriately for meeting this purpose.

14.4.4 Hazard specific Action Plans

14.4.4.1 Earthquake:

Earthquakes cannot be prevented however, their impact can be mitigated by taking a slew of measures. The Kashmir Region has been known for its traditional earthquake safe construction practices since centuries as is evident from the built structures of the Valley especially in Core city. There are two types of construction practices followed mainly i.e; *Taq* system (timber laced masonry) and *Dhajji-Dewari* system (timber frame with infill walls). Unfortunately in the present context these traditional earthquake resistant construction practices have been replaced by the use of cement concrete structures. Buildings are being constructed in the city using load bearing wall construction as well

as RCC methods and are highly vulnerable to earthquakes as they lack both design and structural considerations, and often are constructed without adequate steps to ensure that modern materials gain their full strength through prescribed processes. Residential houses are mostly built by local masons without consulting experts. These structures completely lack provision of required risk reduction features including seismic resistance features. In order to mitigate the future catastrophe caused by earthquakes, following considerations should be strictly adhered to:

- Building control regulations including permitted setbacks and floor area ratios to be strictly designed and enforced
- Arresting further development around low-lying areas, rivers, water bodies, wetlands and marshy lands
- Slope cuttings and construction along hill locks/edges of *karewas* to be discouraged
- Towards efficient and planned development of the city, *Town Planning Schemes* to be introduced
- In order to avoid any confusion and panic during disasters, the layout of roads and streets to be kept as simple as possible, and with back-ups
- Traditional techniques of *Dhajji-Dewari* and *Taq System* for house construction to be integrated in planning in order to demonstrate their advantages over modern techniques with respect to the local conditions.
- Building permissions to be granted as per the Indian Standards and guidelines for hazard safety i.e.; **ARE: 1893-1984 'Criteria for Earthquake Resistant Design of Structures'**. Homogeneity in the form and structural design of the buildings to be promoted.
- Architects/Structural Engineers to be hired by SMC/SDA for assisting building permissions and free technical advisory to the applicants to be provided as majority of applicants cannot afford professional services.
 - Addition of green/open spaces especially in residential areas to use them as safe passage/shelter in case of disasters.
 - Grouping of houses shall be done such that it minimises the risk due to the collapse of adjacent structures.
- All existing structures especially those falling in low lying areas and flood basin to be given incentives/subsidies for retrofitting of their houses.

14.4.4.2 Floods:

A coordinated policy based on multi-hazard approach is needed to provide organisational and technical guidelines for the incorporation of disaster risk reduction strategy in spatial planning. Srinagar city has grown haphazardly despite five decades of planning legacy. The

conversion of green and sponge areas into physical development at a greater pace has led to increased chances of flooding. As a strategy for long term and sustainable solution, following proposals are envisaged:

- Comprehensive watershed mapping of the Lidder, Veshaw, Brengi, Sandran, Rambaira, Arpath, Rumshi, Veth, Sindh, Arizal, Doodhganga and other rivers which shall form basis for the watershed based landuse and infrastructure planning of the entire valley floor.
- Make concerted efforts for afforestation, forest regeneration and slope stabilisation for retention of water in upper reaches during rains and create a time lag to alleviate the scale of flood intensity in the valley floor
- Construction of mini-check dams, reservoirs, ponds, diversional canals, natural levees to mitigate the impact of floods

A supplementary Flood Spill Channel from Dogripora to Wullar, designed for 55,000 Cusecs has been conceived by Department of Irrigation and Flood Control. Alternative and supporting measures can be taken to mitigate the losses inflicted by floods. Some of these measures are:

- Preservation of natural flood absorption basin from *Lethpur* to *Lasjan* on the L/S of River Jhelum. The area often gets inundated during floods causing heavy losses to the locals. In the interest of city's safety and a sustainable solution to mitigate the impact of recurrent floods, the Master Plan envisages the demarcation of Flood Zone from *Lelhar* to *Lasjan* on the L/s of River Jhelum on the basis of 25 year flood plain and notify the area as Protected Natural Flood Absorption Basin to be used as city forest for enriching biodiversity and promoting tourism in the area. **The time flood mitigation measures as proposed by the I&FCD Kashmir enclosed as Annexure C are put in place, the area can be considered for the development.**
- A Rehabilitation and Resettlement Plan for the development of an Integrated Satellite Township be prepared for the people residing within the designated Flood Absorption Basin as an alternative to the construction of a Supplementary *Flood Spill Channel form Dogripora to Wullar*. It is held that the construction of *Dogripora – Wullar* FSC will create an unnatural watershed between rural settlements besides having various implications on locals as well as the ecology of *Wullar* wetland. The proposed FSC will also devour a sizeable portion of prime agriculture land further threatening the food security of the Valley. The proposal of Supplementary FSC can also consider an alternative proposal for the Rehabilitation and Resettlement of people residing in the 25 year flood plain with HFL upto plinth level that may be prepared for which financial implications may be lesser than construction of a Supplementary *Flood Spill Channel*. As a policy measure, the Master Plan proposes *no further expansion of these village settlements* however, retrofitting by way of minor repairs can be considered till the Rehabilitation and Resettlement Plan is implemented.
- Provision of flood protection measures by way of constructing bund road from N/H Bypass near Pohru Chowk up to Mehjoor Nagar Bridge on the eastern side of Natipora and Mehjoor Nagar.

- Carrying capacity of the river be increased to 55,000 Cusecs with 25,000 cusecs to be diverted through the Flood Spill Channel (FSC) by way of dredging and de-siltation process.
- Reviving all major natural water bodies including dredging and desiltation. This process will contribute to an increased carrying capacity of the respective water bodies/wetlands to hold excess waters. Urban green spaces and wetlands like *Rakhi Shallabugh*, *Nowgam Willow Forest*, *Hokersar*, *Narkura*, *Anchar Lake* can also serve as ground water recharge points and can otherwise be used for leisure activities as well.
- Revival of water channels for interconnected natural water dynamics in the area. The water channel from Dalgate to Nallah Amir Khan and onwards to Khushalsar and Anchar needs to be redefined so that the impact of floods on Dal ecology is minimised and the discharge of the Jhelum is substantially increased. Revival and Channelizing of Nallah Amir Khan would radically increase the discharge in Jhelum due to suitable grade.
- Periodic dredging of all water channels, Nallahs and rivers from Khanbal to Khadanyar so that carrying capacity is sufficiently increased.
- Training of upstream natural water channels and maintaining proper riparian buffers for their protection.
- Strict measures for the removal of encroachment of the said water bodies by civic agencies need to be ensured on a fast track basis. To keep a check on pollution of all these water bodies especially dumping of solid waste and toxic substances.
- Preparation and implementation of a Flood Management Plan including conducting periodic mock drills, regular strengthening of bunds, sealing of rat holes, relocation of w/s and sewerage pipes from bunds.
- Construction of a Supplementary Discharge Channel to drain out the overflow of Natural Flood Absorption Basin into Hokersar/Doodhganga reducing the stress at the take-off point of Flood Spill Channel Ram Munshi Bagh.

14.4.4.3 Fire Safety:

Srinagar City being one of the oldest cities in the world has been built using wood as main source of local construction material best suited to climatic conditions of the region. Over a period of time, the wooden material used for the construction of residential and religious structures has dried up and the vulnerability to catch fire has increased especially in the Core city such as *Zaina Kadal*, *Habba Kadal*, *Gaw Kadal*, *Aali Kadal*, *Nowhatta*, *Khayam*, *Khanyar*, etc where houses are huddled together providing limited access for firefighting during such calamities.

The planning area shall be demarcated into distinct zones based on fire hazard inherent in the buildings and structures according to occupancy that shall be called as Fire Zones. *The number of Fire Zones in the area shall be decided on the existing layout, types of building construction*

as defined in Part IV (Section 3.3) of the National Building Code 2005, classification of existing buildings based on occupancy as provided in Part IV (Section 3.1) of the NBC-2005 and expected future development of the city or area. The Fire Zones shall be made use of in the Landuse Plan and shall be designated as follows:

Fire Zone No. 1 – this shall comprise areas having residential (Group A), educational (Group B), institutional (Group C), and assembly (Group D), small business (Subdivisions E-1) and retail mercantile (Group F) buildings as classified in the NBC-2005, or areas which are under development for such occupancies.

Fire Zone No. 2 – this shall comprise business (Sub-divisions E-2 to E-5) and industrial buildings (Sub-division G-1 and G-2), except high hazard industrial buildings (Sub-division G-3) as classified in the NBC-2005 or areas that are under development for such occupancies.

Fire Zone No. 3 – this shall comprise areas having high hazard industrial buildings (Sub-division G-3), storage buildings (Group H) and buildings for hazardous used (Group J) as classified in the NBC-2005 or areas which are under development for such occupancies.

The design of any building and the type of materials used in its construction are important factors in making the building resistant to a complete burn-out and in preventing the rapid spread of fire, smoke or fumes, which may otherwise contribute to the loss of lives and property. For buildings 15 m in height or above non-combustible materials should be used for the construction and the internal walls of staircase enclosures should be of brick work or reinforced concrete or any other material of construction with minimum of 2h rating. The walls for the chimney shall be of Type 1 and Type 2 Construction as classified in the NBC-2005 depending on whether the gas temperature is above 200 °C or less.

Restrictions on the Type of Construction for New Buildings

1. Buildings erected in Fire Zone No. 1 shall conform to Type 1, 2, 3 or 4 classification of construction of NBC-2005.
2. Buildings erected in Fire Zone No. 2 shall conform to Type 1, 2 or 3 classification of construction of NBC-2005.
3. Buildings erected in Fire Zone No. 3 shall conform to Type 1 or 2 classification of construction of NBC- 2005.

Table 13-1: Estimation of Total Land Requirements for Disposal of Solidwastes

Sl. No.	Category	Distribution or Population Served per unit
1	Sub Fire Station/Fire Post	Within 3-4 km radius
2	Fire Station	2 lakh population or 5-7 km radius
3	Disaster Mitigation and Management Center	Airport
4	Disaster Cells	North/South/ East/West and Central
5	Fire Training Institute/ College	Eidgah Noorbagh

14.5 Linkage with Disaster Management Plans and Provision of Disaster Mitigation and Management Centre

In order to effectively mitigate the devastation caused due to disasters, the Srinagar Master Plan-2035 will be aligned with the provisions of the state and city level disaster management plans developed by concerned authorities. In order to support this, it also envisages establishment of an ICT based Disaster Mitigation and Management Centre (DMMC) at proposed site near *Sheikh-ul-Aalam International Airport* supported by Disaster Cells in North/South/East/West directions and one in the Core city for real time data dissemination. Most importantly, the Disaster Mitigation and Management Centre will also be the Cornerstone of the Implementation of the State Disaster Management Plan and are to be planned in alignment with the plan and under the coordination and supervision of the concerned disaster management authorities. It will become the nodal point for facilitating and monitoring the process of implementation under the supervision of the State Disaster Management Authority and should register over time the development of various components of the State Disaster Management Plan. At any given point of time, it will provide ready information of the progress of implementation, the available infrastructure, the level of readiness in human resources and capacities and a transparent view of the remaining gaps and deficiencies. For effective management and quick response during disasters, Srinagar Metropolitan Region has been broadly divided into Five Zones and each zone supplemented by a Disaster Cell interlinked together and connected to the DMMC at Airport.

14.6 Risk Reduction to be addressed in Zonal Plans

The present plan lays out the risk reduction approach, strategies and intervention areas at the city level. Further details of site specific disaster risk reduction actions needs to be planned in zonal/site plans. The following directions are laid down for the sub city planning process to be subsequently taken up:

1. Hazard Risk Vulnerability Capacity Assessment (HRVCA) to be the basis for risk sensitive planning at zonal and site levels

2. Follow participatory planning approach to capitalise on local knowledge and ensure local ownership
3. Include development of disaster risk reduction infrastructure
4. Zonal development controls, regulations and guidelines bases on local risk profiles
5. Identification of safe locations/evacuation places, routes and emergency infrastructure including emergency operations centres, relief shelters and prepositioning of emergency equipment and relief supplies
6. Resource inventory to be managed for emergency response
7. Detailing of all risk reduction strategies outlined in the Master Plan to be carried out.



15. URBAN DESIGN

15 URBAN DESIGN

'Urban Design' brings together the issues of planning, engineering and architectural design to create a vision for a city. It primarily involves the design of buildings, groups of buildings, public spaces including their landscape. It is a complex inter-relationship between different buildings and the relationship with streets, squares, parks and other spaces that make up the public realm in its actual context. Good urban design brings people together and will encourage a vibrant mix of self-supporting uses and activities within the city. It will help create a place which is greater than the sum of individual parts and allow an urban life and culture to evolve out of a collection of buildings and spaces. It is a sense of civic pride based on social inclusion and interaction, improved safety & access to goods and services for the community, enhanced heritage and ecological value, increased energy efficiency and reduced waste and pollution.

Urban Design theory deals primarily with the design and management of a public space and the way public places are experienced and used. *Public space includes the totality of spaces used freely on a day-to-day basis by the general public, such as streets, plazas, parks and public infrastructure. Some aspects of privately owned spaces, such as building facades or domestic gardens, also contribute to public space and are therefore also considered by urban design theory.*

15.1 Urban Design considerations

- Urban structure – How a place is put together and how its parts relate to each other;
- Urban typology, density and sustainability;
- Accessibility – Providing for ease, safety and choice when moving to and through places;
- Legibility and way-finding – Helping people to find their way around and understand how a place works;
- Designing places to stimulate public activity;
- Function and fit – Shaping places to support their varied intended uses.

15.2 Principles of Urban Design

Following are the principles of good urban design:

1. **Character** – Protect and enhance the buildings, street, materials, landmarks and views that are unique and give the campus/city its identity. The appearance of the built environment defines an area's identity and character and creates a sense of place. Many areas of the city have a well-established character that needs to be protected and enhanced. No site is a blank slate. It will have shape and there will be adjacent development and a history which make it a distinctive place. This context should be established for each site and

responded to in order to build something that is recognizable and special to the particular development. High quality contemporary design that has evolved from its context is encouraged. Places that are distinctive are memorable and popular. A common element within an area will distinguish it from adjoining areas and create a sense of place.

2. **Continuity and Enclosure**—Create streets and public spaces that are well connected and enclosed by attractive building frontages. Every building is just one part of the fabric of a City which is held together by the network of streets and spaces. Well enclosed and connected spaces allow using and enjoying the city conveniently and in comfort. It will help remove gap sites and inappropriate developments and severance caused by overly wide roads.
3. **A Quality Public Realm**—Create high quality public spaces that are attractive, safe, comfortable, well maintained, welcoming and accessible to everyone. Places which feel good will encourage people to use them and places which are well used stand a better chance of being well cared for.
4. **Ease of Movement**— Make the city simple and safe particularly for pedestrians and cyclists. Transport planning should acknowledge that streets have vital social, economic and amenity roles besides being channels for vehicles. A well designed urban structure will have a network of streets and spaces that can accommodate these roles as well as the traffic.
5. **Legibility**—Create a place that both residents and visitors can understand and easily navigate. Streets, buildings, vistas, visual details and activities should be used to give a strong sense of place and to provide an understanding of destinations and routes. Routes, landmarks, focal points, views, signage etc make a legible urban environment.
6. **Adaptability**—Create a design that can adapt to change; e.g buildings may come and go, but the streets last a lifetime. Successful design accepts change and continually remain vibrant over time. Thoughtful and good urban design is required to achieve this flexibility. New developments and public realm improvements should be designed both to respect the existing context and to accommodate future change.
7. **Diversity and Sustainability**—Urban design based variety and choice. Encourage a mix of uses (institutional, residential, leisure,) and architectural styles to create vibrant and diverse urban design of a city. It should be supported by a social, economic and environmentally sustainable concept.

15.3 Improving the Public Realm

Srinagar's identity is defined by a particular set of physical features like the mountain ranges enclosing the valley and the river Jhelum meandering through it in a serpentine fashion. The city has essentially grown in an organic fashion and is further defined by an almost uniform skyline. The Urban Design Framework should focus on the broad scale and the long term goal, and sets an overall planning and

design context within which more detailed and localised strategies, studies and projects can be coordinated. Sensitive urban design and development policies should enhance livability and quality of life of the residents in the public as well as private domain. This in turn can also encourage private sector investment in Srinagar. The shared public spaces must be planned to take advantage of natural topography and vistas as the design of the built environment fosters a sense of identity. A lot needs to be done to improve Srinagar's physical appearance by maximizing the benefits of the existing assets for the visual integration of the city. The basis of **Crime Prevention Through Environmental Design (CPTED)** is that proper design and effective use of the built environment can reduce the incidence and fear of crime. This in turn leads to improvements in the quality of life and can be applied without altering the original character of the space. Open space and plazas shall be designed to be easily accessible and comfortable for as much of the year as possible. Vandalism is an important factor to be considered in all the design considerations mentioned above.

The future design decisions must be more inclusive in nature and must keep into consideration the "image of the city" as a whole. The traditional neighbourhood units included housing with either a private or shared open space, near transit, pedestrian-oriented shopping streets, and densities that gave rise to a lively street life. In *Sheher-e-Khas*, the *mohallas* contain a patchwork of building forms and styles spanning various periods in the city's history. Urban design has a direct implication on people's quality of lives. It can increase or reduce feelings of security, stretch or limit boundaries, promote or reduce mobility, and improve or damage health. Economic and social inequalities must not come in the way of how people experience the city.

Conservation of heritage, architectural, and culturally significant features should be encouraged to enhance cultural and historical continuity. The refurbishment and re-use should be compatible with the surroundings. Suitable new uses should be found for heritage features for a sustainable approach. Zoning should include incentives or requirements for facade features and other exterior architectural elements that improve the compatibility of structures, including roof structures, with their surroundings while promoting high architectural quality.

There are many potential urban waterfront areas, which can be developed to strengthen Srinagar's image as a waterfront city. New waterfront buildings should be appropriately related to each other and should correspond to the water's edge. The development of new and/or enhanced public gathering spaces along each of the city's waterfronts, as well as parks, plazas and promenades is essential.

Urban design needs to be used to link existing neighbourhoods with new development and redevelopment. It is important for a community to have an identity, and form a sense-of-place for its residents. New development does not have to mimic existing urban form. However, the

design characteristics of new development should blend with the aesthetic environment of existing neighborhoods to make both new and old areas more visually appealing.

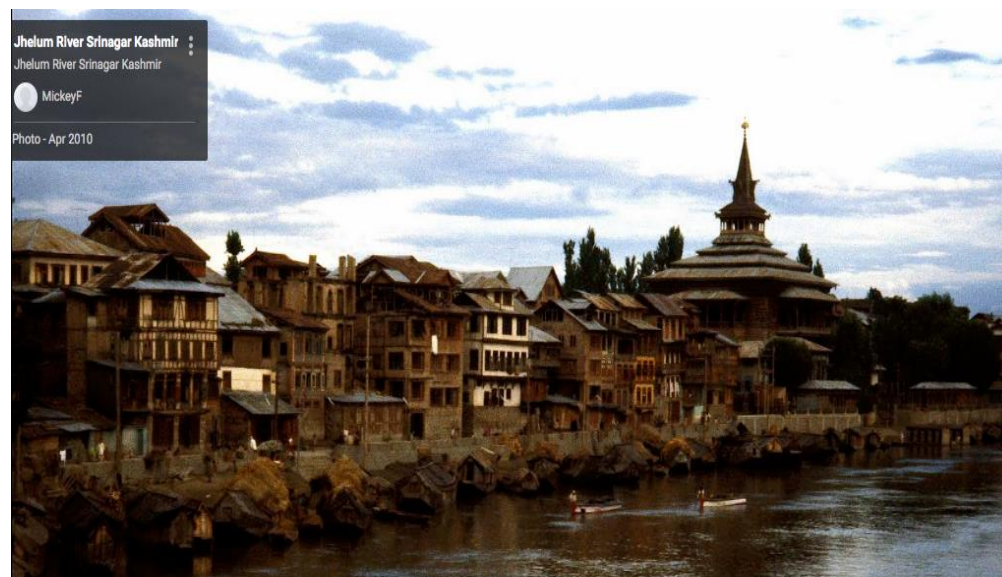
Design Standards for this area include that the height of new buildings should be consistent with adjacent rooflines or should not exceed adjacent rooflines by more than one story.

Buildings should maintain a consistent building wall along the sidewalk.

The design and placement of signage graphics on buildings and along the streetscape should contribute to the character of the community and influences the public's perception of a community. The streets/mohallas must be clearly defined along with trails for the identified heritage walks.

15.4 Streetscape

- It is essential to create a walkable, pedestrian-friendly environment that invites repeat visits from near and far. All roads should be made pedestrian, disabled and bicycle friendly. Removal of encroachments from sidewalks is a key factor in achieving this. Persons with Disabilities Act 1995 (Sec 44) recommends guidelines for the disabled persons. There must be provision for introducing cycle tracks, pedestrian and disabled friendly features in arterial and sub-arterial roads as detailed in the transportation chapter. Provision of adequate pedestrian facilities as per applicable design and engineering guidelines on all streets is required. Sidewalk and footpath materials must be slip-resistant and easy to maintain (smooth for snow removal and resistant to buckling and cracking).
- National Policy on Urban Street Vendors, 2009 recommends guidelines for proper vending zones, as they are service providers on sidewalks. The Policy recognizes street vendors (or micro-entrepreneurs) as "an integral and legitimate part of the urban retail trade and distribution system." Thus, designated zones for such activities must be planned at the zonal level.



- Trees are an important component of all streets and contribute towards the “image of the city”. Trees and planters can be installed at seating areas, along edges of parking lots, in pedestrian plazas, and in clustered furnishing areas. Street trees species should be selected so as to create a continuous canopy at maturity. The branching height of mature trees shall be a minimum of 8 feet in height for an unobstructed footpath or sidewalk.
- Street furniture including benches in areas of high pedestrian traffic and/or areas of interest is very important and the design must take into consideration the local context in terms of weather resistance and material selection.
- Dustbins and garbage collectors are an important streetscape element and should be conveniently located for pedestrian traffic near benches, bus stops, and other activity nodes.
- Flyovers inevitably have a major visual impact, generally being unattractive. They must be tackled accordingly keeping the mass and scale in size by using plantation (climbers), or other ways like art to generate a visual interest as mitigative measures. Public art encourages pedestrian activity and humanizes the scale of a street. Important nodes can be identified for permanent or temporary art installations. A successful example of the impact of public art is the mural under the Hyderpora flyover that received an overwhelming response from the public.
- Quality street lighting helps define a positive urban character and can help create a safer and desirable environment. Street lighting includes roadway and pedestrian lighting in the public right-of-way.

15.5 Hoardings & Signage

- Advertisements should respect the character or appearance of the locality. In residential areas advertisements must be restricted to commercial premises, and the minimum amount of advertising should be used.
- Advertisements fixed to buildings should be designed to suit the scale, proportions, period, architectural detailing and use of the building. They must not harm the character of the building or hamper the architectural features.
- Advertisements will be discouraged wherever they harm the setting of heritage assets. Advertisements on listed buildings must be designed and attached to the building with particular care. The number of advertisement should be kept to the minimum necessary to convey essential information.



16. TRACKING THE IMPLEMENTATION

16 TRACKING THE IMPLEMENTATION OF MASTER PLAN-2035

Master Plan is the only document presenting a holistic vision of a future city. Its policies are broad-based, comprehensive and visionary. It is a blueprint for the future development of a city. The plan provides a unique platform to discount the interdepartmental dependencies by creating an opportunity for coordination in overall schedule of development tasks both in space and time. Such an implementation strategy will minimize threshold costs otherwise accruing to the State exchequer. However, it remains only a paper document if it is not backed by proper implementation strategy, appropriate legal framework and robust institutional structure. All the three have been quite ineffective and redundant in the city making its planned development a far distant dream. There is an imminent need for overhauling the system removing the systemic problems in the planning setup including the legal framework and institutional structures.

Master Plans provide a vision for capital project plans and investments. They provide a vision for the government that should be supported by realistic planning documents, solid financial policies targeted for the implementation of stated goals and trends on the government's accomplishments and progress toward these goals. Such plans forecast the outlook for the government, illustrating the alignment between demand generators, capital improvement programs and funding policies. In doing so, Master Plans help address the management factors that are critical in rating analysis and investor communication. *Governments should make capital project investment decisions that are aligned to their long-range Master Plan targets.* The list of potential projects for inclusion in the Capital City Investment Plan (CCIP) comes from a variety of sources, including department requests, plans for facility construction and renovations, long-term capital replacement programs, citizen requests, neighbourhood plans and projects for which grants/funds are available. These projects should always be reviewed for consistency with the government's Master Plan(s). It is important that Master Plans strike a balance between stakeholder vision and the government's financial capacity in order to reach the desired goals. This balance can be accomplished by considering financial implications during the development phase of a Master Plan.

The perusal of Master Plan-19971 and Master Plan-2021 abundantly makes it clear that both have relied on urban policy tools and institutional framework which has not yielded the desired benefits of urban development. Urban development in Srinagar has rather been elusive with respect to implementation of the master plans. As a matter of fact, these master plans have turned redundant to address the city's issues. Growth of Srinagar city is going to be inescapable; therefore sheer scale of its future development has been taken care of in the Master Plan. Efforts would be made to transform the Srinagar city into a vibrant city. Therefore, revision has been focused on conceiving a viable urban policy for master plan with following objectives:

- a) effectively manage and enforce city development plans to harness the true benefits of urban development;
- b) provisions of major /critical infrastructure by urban development agencies and other players;

- c) ensure regular review of applicability and effectiveness of master plan proposals and policies;
- d) improve the financial health of SDA to take its mission of city development to logical conclusion;
- f) ensure effective enforcement, implementation, monitoring, governance, participation, decentralization, transparency and accountability.
- g) to create enabling rather than controlling environment for urban development with inbuilt mechanism for flexibility in every sphere of master plan implementation without eluding quality, amenity and standards.

16.1 Financing Urban Land

The first thing needed to implement the master plan is the 'Land' which is indisputably scarce and non-renewable. In other words, its supply is relatively inelastic in urban areas. As such, effective and judicious use of urban land is in the best interest of a community for which the instrument of Landuse Plan is the starting point. In Srinagar city, judicious use of land cannot be overlooked due to soil characteristics, ecological sensitivity, disaster vulnerability and food security. It shall be obligatory on local authorities to reassess land potentials and regulate the land market by discouraging land speculation as most of the land parcels¹ in our city are in private ownership which is viewed as the first stumbling block in the seamless implementation of the Master Plan. Due to such constraints, the city has failed to achieve the desired goals of planned development. There is no way forward unless land is procured either by way of acquisition or private negotiation. Land procurement through such means naturally requires huge capital investment which is beyond the fiscal capabilities of all local authorities. There is a growing consciousness that urban planning should be self-financing with minimum burden on local authorities or the government. In the following section, **a slew of 'best practices' as innovative models for self-financing of the master plan is given.**

i. Negotiated Land Acquisition

The Master Plan proposes Negotiated Land Acquisition in place of compulsory land acquisition as an innovation in land acquisition procedures for speedy urban development. This method of acquisition has recently been implemented by the Greater Noida Industrial Authority successfully for promoting planned development in Greater Noida. The Authority estimated the compensation package for land acquisition on the basis of sale price of land registered in the sale deeds during the last three years, *Solatum* and *Interest*, and subsequently negotiated the compensation with the landowners on the basis of these rates. To meet the future requirement, the Master Plan envisages that SDA shall adopt similar land acquisition process for execution of priority projects to scale up the planned urban development of Srinagar Metropolis.

¹ (though details are not available)

ii. Land Pooling Technique

Though not yet popular in this part of the country, land pooling is emerging as a long- term strategy to ensure the availability of serviced urban land for controlled growth. It is increasingly being viewed as a solution to the problems of scattered development, private unauthorized urban sprawl and heavy backlog in public utility services. Land pooling involves assembling of small landholdings into a large land parcel, and reconstituting it with provision for infrastructure, amenities and utilities in a planned manner. Thereafter, returning the reconstituted land to the owners with additional benefits like roads, parks and access to other public utilities and services. The infrastructure expense is recovered by the sale of some of the serviced land. However, there must be valid legislation to absorb such activity into the system without procedural hurdles and financial implications like registration charges. The Government also has to enforce building regulations and provide attractive tax concessions to encourage pooling. In India, land pooling technique has been successfully implemented in vibrant states like Maharashtra, Gujarat, Tamil Nadu, Punjab, Haryana and some other States as well. The Gujarat Town Planning and Urban Development Act, 1976 is one of the cornerstones in the evolution of land pooling. In our State, it would require modifying the J&K Town Planning Act, 1963 or the J&K Development Act, 1970 to incorporate necessary provisions to that effect.

In the UDPFI guidelines prepared by the Ministry of Urban Development, Land Pooling has been included as a technique for assembling land for planning and development. A full-fledged section on Land Pooling Scheme has also been included in the Model Urban and Regional Planning and Development Law. It envisages that every planning and development authority shall for the purpose of implementation of the master plan proposals, prepare one or more land pooling schemes for any part of the area within its jurisdiction. It also provides time frame and procedure for preparation, approval and implementation of Land Pooling Scheme. Therefore, land pooling as concept is strongly recommended to regulate development especially the residential expansion for which necessary legislative changes would be required to be made in the existing urban legislation along with the restructuring of organizational set up to avoid overlapping and jurisdictional problems in the implementation of these schemes.

iii. Land Adjustment/ Sharing Mechanism

Land adjustment mechanism is extensively used for urban extension and has been successfully implemented in Hyderabad for development of slum areas located on private lands. Under the Hyderabad Slum Improvement Project (HSIP), part of the land was retained by the private owners while the slum households were assisted to build low cost houses at a higher density on a smaller area of land. Under this procedure instead of acquiring land for the development, the scheme allows landowners to participate in the development work. The role of the public agencies is restricted to the development of basic infrastructure and growth centres which act as catalysts for urbanization and development of the area. The compulsory land acquisition plan for the development of infrastructure and growth centres is formulated in a

manner so as to acquire not more than one-fourth of the land of an individual owner. The land owners are entrusted with the responsibility of developing their lands by providing internal infrastructure. These could be connected by the land owners with the peripheral development of public agencies on payment of development charges. Under this Scheme, land owners are paid monetary compensation for compulsory acquisition of 25% of their lands; they can choose one among the following compensation packages in lieu of land in excess of 25% of their holdings.

The Land Readjustment (LR) method envisaged to be implemented for improving land supply for urban use and to induce better use of idle farmlands. The modified form of LR method called Guided Land Development (GLD) enables the introduction of very rudimentary infrastructure and partial realignment of the old property boundaries and is considered to hold easier and quick implementation potential as compared to the LR method. But the success of the GLD approach would depend on the efficiency of the SDA. GLD would act as a key instrument to plan and to pre-empt the haphazard spontaneous growth in new areas.

iv. Private Sector Participation

Since the urban development agencies are unable to meet the requirements of urban growth, therefore; the Master Plan envisages the standard market economy approach to land development. This is in view of the inability of the State urban development agencies to supply adequate quantum of serviced land to meet the housing needs of growing population. There is a need to involve the private sector in real estate and infrastructure development. The private developers need to get the residential layouts approved by the authority within the purview of this Master Plan. License to develop land should be given to the colonizers by the SDA. This shall be subject to the evaluation of the title of the land, extent and situation of the land, capacity of the applicant to develop a colony, the layout of the colony etc. Under this scheme, private developers may be required to furnish the Bank Guarantee equivalent to 25% of the estimated cost of land development along with an undertaking to carry out and complete the development works within a stipulated time period. In addition, the colonizers have to pay proportionate development charges if the main lines of roads, drainage, sewerage, water supply and electricity are to be laid out and constructed by the Government or any other Authority.

The responsibility for the maintenance and upkeep of all roads, open spaces, public parks and public health services shall be with the developer for a period of five years after the date of issue of completion certificate. Thereafter, all such roads, open spaces, public parks and public health services shall be transferred free of cost to the State Government or the local Authority as the case may be. The proposal also stipulates that, in addition to physical infrastructure, the colonizer shall provide land for social amenities properly shown in the layout plan. Finally, the developer can transfer these lands free of cost to the State government or the authority for development through convergence which can be allotted to any person or institution for the purpose.

v. Transfer of Development Rights (TDR)

In determining the fair price of land to be acquired, Governments generally try to rely on the past records of sale transactions. These are rarely reported or recorded correctly since transaction taxes are high and the role of black money in the economy is large. Today, Local Bodies or the State Governments do not have adequate funds to acquire the necessary land even at the recorded low rates. A pragmatic solution to this problem could be the use of 'Transfer of Development Rights'. The Urban and Regional Development Plans Formulation and Implementation (URDPFI) Guidelines, MOUD, Government of India defines the Transfer of Development Rights (TDRs) as Development Right to transfer the potential of a plot designated for a public purpose in a plan, expressed in terms of total permissible built space calculated on the basis of Floor Space Index or Floor Area Ratio allowable for that plot, for utilization by the owner himself or by way of transfer by him to someone else from the present location to a specified area in the plan as additional built up space over and above the permissible limit in lieu of compensation for the surrender of the concerned plot free from all encumbrances to the Planning and Development Authority. Mumbai is the first city in India, which has adopted the TDR concept in a regulated manner as an alternative mechanism for land acquisition for providing the essential amenities in accordance with the development plan proposal for slum redevelopment and urban renewal through reconstruction of dilapidated buildings.

16.2 Financial Plan

The Master Plan has inherent mechanism for raising finances for funding of its development projects. This would require SMRDA to execute following innovative master plan fiscal instruments for making Srinagar Metropolitan Region as a vibrant and attractive destination for investments by various financial institutions including public funding.

i. Off-Budget Financial Instruments

- Mopping of unearned value of urban land through change in landuse, Purchasable FAR, Floating FAR and Accommodation Reservation, TDRs etc;
- **Purchasable Green FAR:** The Green FAR is applicable as premium on non-developable areas like agriculture and allied, buffers, plantation zones, parks and multipurpose open spaces and shall be consumable in Group Housing schemes, Commercial, Institutional, Industrial and Tourism projects as well as Government Offices for plots falling within mixed use areas of designated roads having existing RoW not less than 20 metres. An FAR of not more than 10% of the plot area in non-developable areas shall be permitted as **Purchasable Green FAR under TDR**. *It shall be worked out as per the Model for Purchasable FAR given in the URDPFI Guidelines 2014 or as decided by the Government.* The Green FAR can be either used by the owner himself in a Developable Zone or sell to other beneficiary after prior approval from Town Planning Organisation Kashmir. *The maximum purchasable Green FAR shall not be permitted beyond 20% of*

permissible maximum FAR and not exceeding the permissible height by more than one storey or 10.0 feet except for the 500 metre Investment Zone proposed along the ORR. In case of Investment Zone, the maximum Purchasable Green FAR can be permitted upto 50% of the FAR permissible in the respective zone; however, the maximum height shall not be permitted beyond two storeys over and above the permissible height. The additional FAR purchased by the beneficiary however, shall not be permitted beyond permissible maximum ground coverage. The TDR certificate issued on the bases of Green FAR shall be tradable and shall be deemed as added value on a particular plot/site for its valuation/stamp duty and cost of compensation to the owner in case of acquisition.

- **Landuse change Fee:** For opting permissible use as envisaged in the Mixed-use Model and Composite Mixed Landuse Model, Landuse Fee @ 1/3rd of the increased value which is caused due to change of landuse shall be charged for the non-residential use based on the valuation cost of the land.

$$(P2 - P1)/3$$

Where; P1 is the value of existing landuse and P2 is the value of changed landuse

- **Development Cost:** For any proposed landuse other than residential (group housing/plotted housing) and industrial landuses, Development cost @ 2 times the Building Fee shall be charged. The Development cost charged shall be over and above the normal Building Fee.
- Levy of Betterment charges
- Levying of Internal and External Development Charges
- Creation of Special Purpose Vehicles (SPVs) on shared basis
- PPP Ventures and Private Sector involvement in Development Projects
- Remunerative Projects to tap in Seed Capital as Revolving Fund for other development projects
- Recovery of shelter fee or land in lieu of provision of proportionate housing for EWS category and to ensure appropriate provisions for affordable housing in the city.
- Vacant land Tax needs to be imposed to avoid land speculation and undesired sprawl of the city along with the benefits of efficient utilization of the city infrastructure and amenities;
- Imposition of the rational Property Tax to strengthen the fiscal base of urban local agencies and make them responsible to the city needs and for furtherance of the urban development;
- Rationalization of the stamp duty to encourage planned development and availability of land for housing. The stamp duty needs to be reduced to 5% from existing rate of 7%. Out of 5%, 2% should be transferred to urban local agencies and remaining 3% to state exchequer. The financial resources generated shall be utilized for the development of city infrastructure;

ii. Budgetary Allocations

- Creation of a Financial Capital Plan for the SMR instead District Development Plan
- Budgetary allocations under Master plan head in annual budget of the State for the implementation of Master Plan projects

iii. Market Borrowings

In addition, the city can also explore other funding sources for furthering growth in various sectors of development. Some of the options could be:

- Institutional Finance
- Issuing Public Bonds
- Cess on petrol /diesel as contribution towards City Development Fund

16.3 Legal Framework

In J&K, planning and development of towns is either directly or indirectly governed under the J&K State Town Planning Act-1963, the J&K Development Act-1970 and the J&K Municipal Corporation/Municipal Act-2000. Besides these Acts, there are other Acts which carry peripheral reference with respect to matters related to planning and development of towns. Among these Acts mention can be made of the J&K Control of Building Operations Act-1988, the J&K (Prevention) of Ribbon Development Act. Most of the Planning documents in the State are notified and implemented under the provisions of Jammu and Kashmir Development Act 1970. The acts are not comprehensive and have remained static and archaic and no significant amendments have been carried out to account for the dynamic in planning and development. The Town Planning Act is limited in scope with the provisions for the preparation of Town Planning Scheme whereas the Development Act has the provisions for the preparation of master plan and zonal development plans with archaic concepts of the large-scale land ownership. J&K Municipal Corporation Act 2000 guides the Municipal Corporation in day to day working with limited provisions for economic development plans. There is an urgent need for the comprehensive revamping of the legal umbrella for the effective implementation of the master plan. Efforts are already underway to bring in a new comprehensive Town and Country Planning Act with the features of regional plan, master plan, town planning scheme based on the model of the states which have created effective urban planning mechanism for planned development. The Act has to be supported by a dynamic and vibrant institutional structure for Srinagar Development Authority, Srinagar Municipal Corporation and Lakes and Waterways Development Authority.

16.4 PHASING AND REVIEW

The Master Plan -2035 is likely to establish a foundation for new programs necessary to achieve its targets. Most of the programs have varying levels of priority, depending on the criticality involved. Consequently, the city will have to initiate programs periodically at different levels, individually or in collaboration with various other urban development players and stakeholders. The Master plan shall provide platform for inter-departmental coordination while executing development projects. It has also been seen that most of the city administrations after preparation of Master plans go in hibernation and rely on the isolated and remunerative projects, yielding only financial dividends and in the process sacrifice the long term needs and development requirements of the urban centre. Ironically even the Zonal Plans which are pre-requisite for the implementation of master plan are not prepared resulting in tardy and flawed implementation mechanism. Therefore, it shall be made obligatory on the part of local authorities to fast-track the formulation of Zonal Plans immediately after the approval of Master Plan by State Cabinet. It shall be a time bound exercise to ensure that the planning of city becomes more effective and responsive to urban needs.

The Master Plan asserts that SMRDA should evolve the mechanism stated above for resource mobilization and implementation of development proposals. It is envisaged that the *Authority* shall provide conducive environment for public-private participation and should develop a mechanism to safeguard the area through effective monitoring of development carried out by private developers. Based on priority of targets, potential demand and fiscal investment, it is held that the Master Plan Srinagar will have a horizon period of 20 years from 2015 to 2035. To promote development, it is proposed to prioritize development in such a way that initially those components are proposed that would induce development in the region and connectivity to all major urban centre's. It proposes that Phase-I shall comprise all those components which may act as catalysts and contain multiplying effects for development.

The Master Plan is a guiding policy document exploring scope and direction for accommodation of future development. It shall remain responsive to necessary amendments and ever-changing financial positions of implementing agencies during the horizon period. As such, the Master Plan proclaims inherent flexibility through simplification of zoning regulations as spelt out in its Development Code, thereby rendering it more responsive to necessary adjustments and/or re-adjustments based on physical development and ground realities. It envisages that Master Plan of Srinagar metro city has not an un-changeable Land Use Plan while piece meal adjustments and/or readjustments shall remain invariably incessant in the implementation of its proposals. During implementation and enforcement of various proposals, piecemeal modifications made in the Landuse or in the basic framework of policies of land development should be incorporated in the Plan and corrections so made be updated at the close of every five-year (maximum) plan period under the provisions of the J&K Development Act, 1970. It is proposed that a mechanism for monitoring the progress of the Master Plan on annual basis be established on sound footing at appropriate levels by the State Government. To this effect, **it is stressed that a high level Master Plan Implementation**

Review Committee (MPIRC) be constituted to look into the periodic progress of the Master Plan. The committee should review the progress on periodic basis at least twice a year. It is also proposed that State Government shall establish a vibrant and proactive enforcement wing with state-of-the- art technology in consultation with concerned line departments to monitor the progress of decisions which are aligned to the proposals of master plan. Also, **separate funding mechanism for implementation of Master Plan projects needs to be incorporated in the State Annual Budget wherein funding of departmental projects within Srinagar Metropolitan Region (SMR) should be converged in a way to seek implementation of the projects envisaged in the master plan.** It is also recommended that like District Development Plans, the Government should propose City Development Plan for Srinagar Metropolitan Region.

Projectization and Phasing of Important Master Plan Proposals - 2035					
Sr. No.	Activity/Project Identified	Project Timeline			
		2017-2020	2021 - 2025	2026 - 2030	2031 - 2035
A	Urban Governance and Public Administration				
1	Human Resource Development Department	█	█		
2	Committee for Economic Affairs for PPP projects under Department of Finance	█	█		
3	Creation of department of Project Evaluation and Monitoring (Independent)	█	█		
4	Time Bound Rationalization and Redesignation of staff in all Govt. Departments	█	█		
5	Review of existing recruitment rules across all departments	█	█		
6	Development of State Administrative Complex			█	█
7	Creation of Srinagar Unified Metropolitan Transport Authority	█	█		
8	Reorganization of Town Planning Organization, Kashmir	█	█		
9	Reorganization of Srinagar Development Authority	█	█		
10	Reorganization of Srinagar Municipal Corporation	█	█		
11	Reorganization of Jammu and Kashmir Housing Board	█	█		
12	Reorganization of Urban Local Bodies	█	█		
13	Office Establishment of Srinagar Conservation and Heritage Management Authority	█	█		
14	Creation of Mughal Gardens Conservancy Authority	█	█		
B	Policy and Legislation				
15	Framing up of Sectoral Policies	█	█		
16	Framework and strengthening of Town and country Planning Act	█	█		
C	Urban Mobility and Accessibility				
17	Installation of Intelligent Transportation Network in Srinagar City	█	█		
18	Purchasing of Low Floor Public Transport Buses	█	█		
19	Development of BRTS Corridor Phase I	█	█		
20	Development of BRTS Corridor Phase II		█	█	
21	Development of MRTS Corridor Phase I		█	█	
22	Development of MRTS Corridor Phase II			█	█

MASTER PLAN SRINAGAR-2035
DEVELOPMENT CODE

DEVELOPMENT PROMOTION RULES AND REGULATIONS

Zoning Regulations and Building Bye-Laws are the basic tools for implementation and enforcement of a master plan within the frame of the landuse proposals with the intention of achieving orderly growth and development of a city as envisaged. Zoning regulations help in controlling density as well as landuse in ensuring standards provided for the future expansion of each zone in an appropriate manner.

Urbanization in the recent past and present context exhibits not only rapid growth, but as importantly the changing face of urban centres. The planning approach also needs to respond to these transformations to meet the very basic objective of town planning. The fundamental structure of the cities is now being dominated by 'Flexibility'. The technological advancements are now making the importance of location fade day by day. Hence, the strict segregation of land uses is being replaced by flexible and mixed land uses. The quantitative norms are losing shine to performance standards. It is required that planning rather than imposing interventions shall facilitate the market forces to enable urban development in a streamlined and cohesive manner. The regulations are formulated in a way providing strong support in attracting private investments for infrastructure, housing, commercial complexes, industries and IT parks, hotels, malls, and also in developing facilities like, schools, colleges, hospitals, transport terminals, etc. Some of the higher order activities like shopping malls, multiplexes, colleges, large hospitals are permitted in most of the zones, provided they are located on major arterials. Thus, mixed uses are permitted considering the symbiotic dependency, and absence of any detrimental effect to the main use. As the transport corridors play a vital role in enhancing the development potential of adjacent lands, it is important to permit similar kinds of such uses along major roads, irrespective of land use boundaries. Intensive use of land along transport corridor justifies the investment made after them and the opportunity made available by such roads.

The enforcement of zoning regulations will require a detailed landuse of the area. The adoption of these regulations will, therefore, guide to undertake the necessary physical surveys and also to keep the land record up-to-date so as to enable the effective enforcement of the zoning regulations. Zoning regulations shall be applicable to the entire planning area and shall be subject to changes warranted under relevant laws. These shall be governed by a separate set of norms applicable as per the ground situation amenable with the development code of this master plan.

1-1 Definitions

For the purpose of these regulations, the words or terms used in this master plan shall have the same meaning as contained in **Section 1.2.2 [Definitions] of J&K Municipal Corporation (Building) Bye-Laws, 2011 and Part (I) of National Building Code, 2016 subject to such change(s) as proposed in the Development Code of this Master Plan.**

1-2 Applicability

- a) These Regulations shall form integral part of the Master Plan Srinagar-2035 and shall be called Development Promotion Rules and Regulations of the Srinagar Metropolitan Region (SMR).
- b) The requirements of these Regulations shall extend to the whole of the Local Area of SDA in addition to other requirements of 'The Jammu & Kashmir Development Act, 1970', and rules made thereunder, or as amended from time to time.
- c) These Regulations shall have **overriding power over all municipal by-laws/building regulations** presently in vogue in the area (SMR) from the date of approval/notification of this Master Plan.
- d) All non-conforming developments other than those proposed to be phased out are retained in this master plan on **"as-is-where-is-basis"** till such time and condition as the Government may deem fit. The Committee also recommends that all existing structures shall continue to function as per standing permissions till such time as the Government may deem necessary. In case of such developments/structures, only minor repairs by way of retrofitting shall be permitted without any change in façade, foot-print, height and FSI/FAR or as the Competent Authority may decide. **However, in case of reconstruction, the permission shall be granted as per the by-laws of this Master Plan save any relaxations if any.**
- e) Structures already raised in violation of the earlier master plans however falling in permissible use zones as per the land use policy of this master plan, shall not be deemed to have been regularised or legalised unless permission is sought. **However, the violations have to be considered as per the provisions of the Violation Policy formulated in compliance to Government Order No: 230-HUD.**
- f) Any violation/deviation of this Master Plan proposals made by any agency/department or person shall be treated as **Illegal for all times non-compoundable by any authority and shall be a cognizable offence which shall warrant penal action under law.** It is stipulated that the Master Plan-2035 shall have **overriding powers on all other regulations, proposals, relevant acts** etc. presently in vogue to regulate the development within the proposed Local Area limits of SDA. It is also provided that **Section 133 of J&K Land Reveune Act shall cease to apply in areas falling within Srinagar Metropolitan Region.**

- g) The space requirements and other conditions laid down in the Development Code shall not be applicable to such cases existing prior to this master plan for Reconstruction without change in footprint and bulk provided having valid building permission issued by competent authority as the Government or Competent Authority may deem necessary for implementation of a development project involving compensation or rehabilitation.

1-2-1 Conformity with other Acts or Rules and Regulations

- a) Situated and abutting on any of the classified Roads of the State Government shall also be regulated and controlled by the Building line and Control line prescribed under the Govt. Department Resolution (if any) as amended from time to time.
- b) Situated in the vicinity of the Grid Lines laid by the PDD Electricity Board under the Indian Electricity Rules, 1956 or State PDD Rules, shall be regulated and controlled by the horizontal and vertical clear distances to be kept open to sky.
- c) In restricted/critical zone near the Air Port, construction of building shall be regulated as per the provisions of Civil Aviation Department.
- d) Situated in the vicinity of the Railway Boundary, construction shall be regulated and controlled according to the standing orders/instructions in force of the Railway Authorities and as amended from time to time.
- e) Situated anywhere in the Development area, construction shall be subject to provisions of the Acts related to telecommunication, archaeology and conservation/ preservation of monuments and amendments made from time to time or as per the provisions of this Master Plan.

1-3 Planning Divisions (SMR)

The Srinagar Metropolitan Region (SMR) has been divided into Fifty Three (53) Primary Planning Zones for the implementation efficiency. The Special (Secondary) Zones have been identified among the Primary zones for special set of bylaws and relaxation of building norms.

Table 1-3(1): Description of Planning Zones

Sl. No.	Nature of Zones	Planning Zone	Zone Number
1	PRIMARY ZONES	Low Density Residential Zone	LDR_Zone-I to LDR_Zone-XII
2		Medium Density Zone Residential	MDR_Zone-I to MDR_Zone-XVIII
3		Medium High Density Residential	MHDR_Zone-I to MHDR_Zone_XI
4		High Density Zone Residential	HDR-Zone-I to HDR-Zone-X
5		Restricted/Defense Zone	Zone-I and Zone-II
5	SPECIAL [SECONDARY] ZONES	Mixed Use Zone	MHDR_Zone-V, MHDR_Zone-VI & MHDR_Zone-IX
6		Central Business District	HDR-Zone-V, MHDR-Zone-VII
7		City Centre/Sub-City Centre	HDR_Zone-VI
8		Core City Zone other than Walled City	HDR-Zone-I & HDR_Zone-II
9		Walled City Zone	MDR_Zone-XIV

1-4 Mixed Landuse Regulations Permissible within [Designated Use] based on Hierarchy of Road Network

Notwithstanding anything contrary to the zoning regulations envisaged in this Master Plan, all uses stated hereunder shall be permitted as per the hierarchy of road network along all designated roads listed in **Table 1-5(1)** provided availability of minimum plot area subject to the condition that the area is earmarked for **[any Developed Use] in the Landuse Plan-2035**. *However, in case of CBD, City Centre/Sub-city Centres and Mixed Use Zones, the uses stated hereunder shall be permitted irrespective of road hierarchy provided minimum plot area is available for the proposed construction in such zones.* **These regulations shall be read in continuation with the regulations stipulated under Section 1-6 [Permissible Uses and Regulations] of the Code and the mixed use regulations defined under public, semi-public uses as stipulated under Col: 2 of Table 1-6(1) at (ii), (iv) and (v) shall be made permissible along all roads subject to road hierarchy and minimum plot requirements. Also Plot depth restrictions as specified above under mixed landuse policy shall not apply to public, semi-public activities as stipulated under Col: 2 of Table 1-6(1) except for (iii) and (vii).**

Table 1-4(1): Mixed Use Regulations (in mtr.)

Sl. No.	Activities Permitted	Existing RoW*	Permissible area measurable from Centre of the Road
1	<ul style="list-style-type: none"> i) Residential other than group housing and flatted development ii) Commercial uses of day-to-day nature in the form of Retail shops not more than 150 sft. built up; iii) Auto-stand, Parking Lot, Electric sub-station, OHTs, Post offices; iv) Fire Stations; Public amenities, facilities, Services essential for Residential neighbourhoods; 	7.5	12.0
2	<ul style="list-style-type: none"> i) All uses mentioned at (1) above; ii) Diagnostic centres, Testing labs, Food Courts, Retail shopping, Boutiques; Educational Institutions of primary and upper primary standard only; iii) Health Institutions up to Primary Health Centres level only, clinics; Mini-bus stand; Police posts, etc; iv) Homestays, Paying Guest Houses with bed limitation; v) Craft centres, 	7.6-12.0	18.0
3	<ul style="list-style-type: none"> i) All uses mentioned at (2) above except those at Sl. No. 1(ii) and 2(ii) and 2(iii); ii) Banks, IT/ITES centres, Public Library/Community Hall (Govt. Only); iii) Arboretum, Indoor stadia; Educational Institutions up to 12th standards only; iv) Polyclinics, Nursing Homes; v) Health—General Hospitals (less than 500 beds); vi) Educational institution of senior level and Academic colleges, vii) Wholesale shops, Departmental stores; viii) Group housing Schemes other than flatted housing; ix) Flatted Housing including institutional housing [15 mtr. wide RoW]; 	13.0-20.0	35.0

	<ul style="list-style-type: none"> x) Guest Houses, Hotels, Restaurants, Shopping Centres [general retail and wholesale excluding godowns], xi) Non-automobile Showrooms; Electric Distribution and receiving stations, Post & Telecommunications; xii) IT/ITES centres; Police Stations, Govt. offices of sub-divisional level; Public amenities, facilities, Services essential for residential neighbourhoods. 		
4	<ul style="list-style-type: none"> i) All uses mentioned at [3] above; ii) Govt. and public offices; Sub-District/District Park, Amusement Park; Outdoor stadia, Club, Theatre; Education: Academic Colleges, Polytechnics, ITIs, Research Centres; Corporate Offices iii) Health – General Hospitals (500 beds), Super-Sociality Hospitals; iv) Power Infrastructure, Grid Stations; Post and Telecommunication; v) Petrol Pumps, Tourist Centre, Tourist Complexes etc; vi) City Park/District Park; vii) Industrial Estates, Industrial Parks; Garbage Dumping Yards/sites; viii) Public amenities, facilities, Services essential for residential neighbourhoods; ix) Auditorium, Museum, Art Galleries, Central library; x) Workshops, Slaughter Houses, 	21.0-30.0	50.0
5	<ul style="list-style-type: none"> i) All uses mentioned at [4] above; ii) Professional colleges, University Campuses, other campuses; iii) Hospitals treating contiguous diseases etc; iv) Govt. offices [regional and state level]; v) Star Hotels, International Conference Centres etc; 	31.0-40.0	60.0

6	<ul style="list-style-type: none"> i) All uses mentioned at [4] however, excluding non-residential uses mentioned at [1] above; Cinema, Cineplex, Multiplex, Shopping Malls/Complexes; ii) Stadium, Zoological Park, Botanical garden, Shooting Range; Police Lines; iii) IFC, Truck Terminals, Railway Station, Airport; Reformatories, Jails etc; iv) Commercial Showrooms of all kinds, Godowns; v) Banquet Halls, Marriage halls; vi) Automobile Service and Repair Workshops; Exhibition Grounds; Film and Studios; Gas Bottling Plants; Storage Depots of inflammable materials; 	more than 40.0	100.0
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* Existing RoW of any road designated for mixed use regulations shall be authenticated by the PW(R&B) Department.

1-5 Mixed-use Landuse Policy

The mixed use is primarily attributed to the use of a single building or a group of buildings. Any building(s) having a combination of more than one use at a specific point of time is said to have 'mixed use'. For example, a building having one use in the ground floor and other use(s) in the upper floor(s) is said to have mixed use. In common Indian jargon, it known as —*Neechay Dukaan Oóper Makaan*. It is a vertical landuse change of a building across its floors. Mixed use is always a combination of main use and the uses which are incidental to the main use. While the main use is defined as the Primary use, the incidental use is defined as Secondary or subsidiary use. However, in this master plan the policy has been stretched to include the landuse changes observed over space laterally. It is an important planning tool to accommodate the unforeseen landuse changes resulting because of competitive market forces in city centres and along important streets. Mixed use has also become inevitable because of limited scope for horizontal expansion as well as scarcity of land in such areas. For example, commercialisation along main arterials within the residential areas is an illustration of landuse conversion resulting because of such factors. The main requisition underlined for the mixed use model is the compatibility of the uses in terms of their type and intensity. In no case, the uses defined as obnoxious or hazardous in this master plan under landuse regulations are permissible under mixed use category both vertical and lateral. The uses have to be essentially subsidiary in case of vertical model and conforming in nature in case of lateral model having manageable impact on the surrounding landuse. Therefore, attempt has been made in this Master Plan to regulate and restrict such changes for numerous benefits and accordingly, have been for purposes of this Master Plan defined objectively to avoid its misuse while issuing building permissions.

1-5-1 Vertical Mixed Landuse Policy

For purposes of this Master Plan, mixed use under Vertical landuse Model is defined where:

—a building or a set of buildings is said to have a combination of more than one use at a particular point of time with main (primary) use accounting for not less than 2/3rd of permissible FAR/FSI as envisaged in the Master Plan regulations (DCRs).

In case of mixed use distribution, the secondary use shall be restricted to one floor only (preferably the ground floor) which is more susceptible to landuse changes. While issuing the mixed use permits, care should be taken to consider the Secondary use as ancillary use to the main use in size and scale within the structure. However, *such mixed-use regulations are permissible for areas proposed for development in the Landuse Plan.*

1) In case of Vertical Mixed-use Model, mixed use is permitted for a plot depth as envisaged in **Table 1-4(1)** along the roads having existing RoW up to 15 metre as per the description given in. *In case of a building or a set of buildings existing on plots abutting the roads having existing RoW less than 7.5 metre, mixed use regulations in either in a single building or a set of buildings shall not be permitted.* However, for roads having existing RoW more than 15 metres, mixed use regulations under Composite Mixed Landuse Model shall also be applicable. The mixed use shall be permitted subject to the condition that adequate parking space as per the prescribed standard is provided by the applicant. Notwithstanding anything contrary to this master plan, in case of plot(s)/building(s) abutting the –

- roads having existing RoW less than 7.5 metre, only residential use shall be permitted or as designated in the Landuse Plan;
- roads having existing RoW more than 7.5 but less than 15 metre, only vertical mixed use model is permitted; and
- roads having existing RoW more than 15 metre, mixed use model as prescribed at 1-5(1) below is permitted.

1-5-2 Composite Mixed Landuse Policy

As a policy measure, the proposed landuse is viewed as a Composite Use broadly segregated and integrated across sectoral uses. As an inherent flexibility in the Landuse Policy of this master plan, it is envisaged to calibrate and integrate the proposed landuses to the hierarchy of road network in a horizontal mix, however, essentially segregating the hazardous and obnoxious uses. For example, up to 15 metre wide roads, only mixed-use (vertical) model as discussed above is made applicable, however, for more than 15 metre wide roads, a Composite Mixed Landuse Model is proposed as spelt out in **Table 1-4(1) and 1-5(1)** under zoning regulations. The policy is applicable to those uses which have been made permissible in a particular landuse. For example, the commercial/public, semi-public/industrial/recreational uses proposed as permissible in a residential use shall be guided by the parameters given in **Table 1-6(1)** and subject to such conditions laid down in Development Code provided in the subsequent section. In case of Composite Mixed Landuse Model, plot depth as envisaged along a particular road from its centre shall be allowed for mixed use development. *In case the plot depth exceeds the mixed use limit, remaining part of the plot shall be allowed for ancillary uses but not more than 15% of the permissible mixed use, or the use as prescribed in the proposed Landuse Plan subject to fulfilment of other norms.*

Notwithstanding anything contrary to the zoning regulations envisaged in this Master Plan, all uses stated in the aforesaid table shall be permitted as per the hierarchy of road network along the designated roads listed in **Table 1-5(1)** provided availability of minimum plot area

permissibility for development as the proposed Landuse Plan-2035. However, in case of CBD, City Centre/Sub-city Centres and Mixed Use Zones, the uses stated hereunder shall be permitted irrespective of road hierarchy provided minimum plot area is available for the proposed construction in such zones. These regulations shall be read in continuation with the regulations stipulated under **Section 1-6 [Permissible Uses and Regulations]** of the Development Code. The Committee however recommended that designated corridors passing through mixed use zones be earmarked for commercial uses while the inner areas in such zones shall not be used for any retail and general business activities.

Table 1-5(1): List of Designated Road Permitted for Mixed-use subject to availability of RoW and other conditions

Sl. No.	Name of Road	Mixed use Restrictions
1	Bandipora Road (N/H) from Shalteng crossing to Planning Area limits	Permitted for 500 metre from Shalteng crossing on b/s
2	Gallandhar - Ganderbal Expressway via Chadoora-Badgam-Narbal-Sumbal	Permitted 500 metre Investment Zone from centre of the road on both sides as designated in the Landuse Plan-2035
3	Ichgam Road from Badgam main Chowk to Ichigam and beyond	Permitted within settlement area only
4	Badgam - Beeru Road from Budgam main chowk to Nasrullahpora and beyond to Gundpore	
5	Road from Exhibition Ground to Kohankhan in front of Secretariat along the Tchsunti khul via Shaheed Gunj, Barbar shah with bridges across <i>kutkhul</i> and Jhelum	Permitted from Barbarshah to Baba Dharamdass Temple
6	Bakshi Stadium to TRC via Abdullah Bridge along left bank of River Jhelum	Permitted at Wazir Bagh and Raj Bagh
7	NH-44 from Gallandhar to Planning Area Limits towards Awantipore	Permitted from IFC godown to Barsu
8	Existing N/H Bypass from Pantha Chowk - Parimpora	Permitted from Pantha Chowk to Parimpora for permissible area
9	Road from Parimpora to Mirgund connecting Outer Bypass via Lawaypora	Permitted from Shalteng Chowk to ORR near Mirgund
10	Pampore - Khrew Road from Kadlabal to Khrew main chowk via Konabal	Exempted
11	Buchpora Road from SKIMS Crossing to Pandach via Buchpora	
12	Budgam - Magam Road from Nasrullapore to Soibough and onwards to ORR and beyond to Planning Area Limits (partly realigned)	Permitted within settlement area only
13	Residency Road from Sonwar Chowk to Jehangir Chowk via Polo View-Lal Chowk-Hari Singh High Street	Exempted
14	Lal Mandi junction to Mehjoor Bridge via Jawahar Nagar	
15	Hazratbal to Pandach via Zakura connecting Outer Ring Road	
16	Chattabal Road from Qamarwari to Safa Kadal Road near Shareen Bagh	

17	Jamallatta Road from Safa Kadal Bridge to Gojwara Chowh via Nawa Kadal, Ali Kadal and Rajouri Kadal	
18	Pandan Road from Bohri Kadal to Chattipadshahi Gurudwara via Pandan, Nowhatta and Malkhah	
19	Road from Nowgam Chowk to Natipora crossing	
20	From National School Karan Nagar to Batamaloo along Cremation Ground	
21	Gallandhar - Parimpora via Pantha Chowk, Sonwar, Lal Chowk, Batmaloo and Qamarwari	
22	Dr. Ali Jan Jehangir Chowk - SKIMS Chowk via Shaheed Ganj, Karan Nagar , Safa Kadal, Sekidafar and Zonimar	
23	Existing Road from ORR intersection at Pandach to Planning Area Limits via main market Ganderbal	
24	Gousia Hospital to M.A Road near Sangarmaal City Centre via Fakhri Kashmir bridge and Onwards to Residency Road via Polo View on piers	
25	Haft Chinar to Presentation Convent Junction via Wazir Bagh and Ikhrajpora	
26	Existing Road from Nishat to Shalimar via Ishber	
27	Road from Nowgam Chowk to Newa onwards to Pulwama via Kani Pora and Khanda	Permitted for one km from Nowgam Chowk on b/s
28	Chadoora - Rambagh Road via Mochow-Bagh-i-Mehtab-Chanapora	Permitted from Chanapore Bridge upto Rambagh
29	Airport Road from Jehangir Chowk to Airport	Permitted from Jehnagir Chowk upto Baghat Chowk
30	Old Airport Road (Rengreth Road)	Permitted from Baghat Chowk upto Sanat Nagar Bypass Chowk as recommended by the Committee
31	Hazratbal Road from Zadibal Crossing to Hazratbal Crossing via Lal Bazaar, Kanitaar	Permitted from Nallah Amir Khan Bridge onwards
32	Narbal - Tangmarg Road (NTR)	Permitted from Narbal crossing at Baramulla Road up to intersection of ORR near Jawaharpura connecting ORR
33	Panthachowk to Khrew via Zewan - Khunamoh - Wuyan and onwards to Lethpora near Police Line connecting N.H. Way	Permitted from Pantha Chowk to Zewan Morh and within settlement areas beyond Zewan Morh
34	Bundh Road along Tchuntikul (Rt. Bank)	Permitted from Baba Dharamdas Mandir to Pratab Ishwar Temple
35	Harwan Road from Shalimar to Harwan Bridge	Permitted from Shalimar to Harwan Bridge
36	Bemina Road from Tatoo Ground to Outer Ring Road via Bemina, Khumoini chowk and Sebdan	Permitted within settlement areas only
37	Ganderbal - Manasbal Road connecting Central University including Re-Alignment upto Planning Area Limits	

38	Ganderbal Central Road from Dudrehama Junction to ORR behind Saloora Forest Nursery
39	Harwan - Saidpora - Chatterhama Road
40	SMS Road from Khanyar to SKIMS via Hawal and Nowshehra
41	Habbak - Khimber Road via Batapore Inderhama
42	Road from Nagbal to Harwan via Alusteng, Khimber, Chaterhama, Saidapora Bala and Muftibagh
43	Road from Sheikhpura to Badgam via Ompora
44	New Zainakadal to Nawab Bazar junction via Shah Mohalla & Dalal Mohalla
45	Batapora - Alusteng Road
46	Burzahama -Dhanihama - Chatterhama Road
47	Jhelum Bund Road from Cement Bridge upto Anchar Foreshore Road via Noorbagh, Palpore and Taken

Note: As per the recommendation of the Committee, important corridors as designated in Table 1-5(1) passing through mixed use zones are earmarked for commercial use, while the inner areas in such zones shall not be used for any retail and general business activities as spelt out in Table 1-6(1) under mixed use category.

1-6 PERMISSIBLE USES AND REGULATIONS

The uses permitted in various zones are given under. Uses permitted, permissible and prohibited in different categories of land use zones are described against each. **The uses are not to be treated as exhaustive. Similar uses and activities may be permissible in the appropriate locations and shall be subject to such restrictions and conditions as may be imposed by the competent authority.** It is mandatory that all uses permissible under mixed use regulations shall be governed by the hierarchy of road network as spelt out in the Development Code above. Any use(s) permitted under mixed use regulations without taking cognizance of the conditions as laid down in these DCRs shall be deemed as violation under this Master Plan.

Table 1-6(1): Zonal Landuse Regulations

Zone Description (1)	Uses Permitted (2)	Uses Permissible (3)	Uses Prohibited (4)
RESIDENTIAL	i) Residential uses of all types (formal/informal/institutional) with density limitations and group housing regulations etc.	i) All uses mentioned spelt out in Table-1-4(1) subject to conditions laid down at Para 1-4 and fulfilment of other physical (plot)/ancillary requirements, except for the uses specifically prohibited at Col. [4] of this zone.	i) All Heavy, Extensive, Obnoxious, Hazardous, Extractive & Polluting Industry ii) All activities which promote nuisance and are obnoxious in nature iii) Poultry Farms, Dairy Farms, sheep farms and any such activity having environmental implications. iv) Hospitals and Research Labs treating Contagious Diseases v) Dumping Yards, Storage of perishable and inflammable goods, Turnkey yards except for utilities and services
COMMERCIAL			
RETAIL, GENERAL BUSINESS AND WHOLESALE	i) Informal Shopping, Retail shops, Showrooms, Services Centres / Shops ii) Restaurants, Food Plazas, Cafes iii) Handicraft Bazaar & Urban <i>Haat</i> iv) Clinic, Professional Office v) Banks, Post Offices, Public buildings vi) Parking Lots, Museums, Art Gallery,	i) All uses mentioned in Table-1-4(1) subject to hierarchy of road network and fulfilment of other physical/ancillary requirements except for the uses specifically prohibited at Col. [4] .	i) All Heavy, Extensive, Obnoxious, Hazardous, Extractive & Polluting Industry, ii) Dumping Yards, Storage of perishable and inflammable goods, Turnkey yards iii) Hospitals and Research Labs treating Contagious Diseases iv) All activities which promote nuisance and are obnoxious in nature v) Poultry Farms, Dairy Farms and Agricultural Uses
CBD/CITY CENTRE/SUB-CITY CENTRE	i) All uses mentioned at Col.[2] under Retail, General Business and	i) All non-commercial uses except for the uses specifically mentioned at Col. [4] .	i) All uses specifically mentioned at Col. [4] under Residential and

	<p>Wholesale category</p> <p>ii) Warehousing etc</p> <p>iii) Institutional Buildings, Offices, Auditorium,</p> <p>iv) Hotels, Guest House, Shopping Malls, Business centres</p> <p>v) Hospitals, Multi-level parking, Food Courts, Shops, Cinemas, Convention Halls</p>		Commercial use zones.
MIXED USE	<p>i) Residential uses of all types (formal/informal/institutional) with group housing regulations etc.</p> <p>ii) Except Col: 2(i) of Commercial use under <i>Retail, General Business and wholesale category</i>, all other uses mentioned at Col. [2].</p> <p>iii) Except Col: 2(ii) of Tourism, all other uses mentioned at [Col. 2].</p>	<p>i) All uses mentioned in Table-1-4(1) along designated roads subject to hierarchy of road network and fulfilment of other physical/ancillary requirements except for the uses specifically prohibited at Col. [4] of this use zone.</p>	<p>i) All uses specifically not mentioned at Col. [2 & 3] of this use zone.</p>
INLAND MULTIMODAL CONTAINER DEPOT /DRY PORT /LOGISTIC PARK	<p>i) Warehousing, Storage Facilities, Servicing, Workshops and Service Centres;</p> <p>ii) Loading and Unloading Facilities,</p> <p>iii) Terminal Centres, Auction Areas,</p> <p>iv) Packing Facilities, Storage of non-inflammable materials,</p> <p>v) Weighing Facilities for Trucks,</p> <p>vi) Public Utilities, Banks,</p> <p>vii) Sewerage Treatment Plants, Slaughter Houses etc;</p> <p>viii) Hotels, Guest Houses, Recreational,</p> <p>ix) Truck Yards, Taxi Stand,</p> <p>x) Workshops, Petrol Filling Station & Service Garages</p> <p>xi) Fire Fighting Post Office etc;</p>	<p>i) All non-commercial uses except for the uses specifically mentioned at Col. [4].</p>	<p>i) All uses specifically mentioned at Col. [4] under Residential and Commercial zones.</p>
INDUSTRIAL	<p>i) All industries except heavy and obnoxious industries</p>	<p>i) LPG Godowns as per norms applicable under relevant rules.</p>	<p>i) All uses specifically not mentioned at Col. [2] & Col. [3] of</p>

	<ul style="list-style-type: none"> ii) Light/Small, Medium and Service Industry iii) Warehousing and Storage of Non-Inflammable material; iv) Sewerage Treatment Plants, Slaughter Houses etc; v) Workshops, Petrol Filling Station & Service Garages vi) Parking, Loading and Unloading Facilities vii) Transport Terminals for Goods and Passengers, Cold Stores, Warehousing Facilities, Booking Agencies / Bus Stop / Taxi Stand viii) Health Care Facilities ancillary to Industrial Use ix) Wholesale Business, Offices, Retail Shops, Banks, <i>Dhabas</i>, Restaurants, Insurance Offices, etc. x) Residential building for Industrial Workers and Other Public utilities xi) Sports/Recreational Areas 	<ul style="list-style-type: none"> ii) Storage of Inflammable Goods based on norms iii) Waste Treatment plants Ancillary to Industrial use iv) Quarrying of Gravel, Sand, Clay and Stone. v) Dumping of Industrial Waste (subject to N.O.C and conditions laid down by Pollution Control Board) vi) All non-industrial uses permitted at Col. [2] under Freight Centre except for Tourism related activities. 	<p>this use zone</p>
<p>TRAFFIC AND TRANSPORTATION</p>	<ul style="list-style-type: none"> i) Railway Yard, Railway Station & Railway Siding ii) Transport Hubs, Truck Terminals, Truck Stand iii) Intercity and Intra City Bus Terminals, Bus Depots, iv) Roads, Parking space for all kinds of vehicles, v) Restaurants, <i>Dhabas</i> , Workshops, vi) Public amenities including Bus Queue Shelter, vii) Public utilities like transmission lines, viii) Residential Component for essential Watch and Ward Staff at approved 	<ul style="list-style-type: none"> i) All other uses permitted at Col. [2] under Freight Centre except for [viii] (Tourism related uses) and Col. [3] under Industrial category. 	<ul style="list-style-type: none"> i) All uses specifically not mentioned at Col. [2] & Col. [3] of this zone.

	<p>sites</p> <p>ix) Sewerage Treatment Plants, Slaughter Houses etc;</p> <p>x) Petrol Filling Station & Service Garages</p> <p>xi) Ancillary uses related to Transport Terminals viz. Retail/Automobile Shops, Shopping Complex, Office Buildings, etc.</p>		
PUBLIC AND SEMI-PUBLIC	<p>i) Government / Public Offices/Semi-Public Offices</p> <p>ii) Educational and health facilities of neighbourhood level</p> <p>iii) Hostels and Boarding Houses</p> <p>iv) Civic/Cultural Institutions including Library, Museum, Open Air Theatre, Auditorium, Sport Complex/Stadiums</p> <p>v) Fire Station, Post offices and Telephone Exchange, Other Amenities and Facilities</p> <p>vi) Broadcasting Station, TV & Radio Station, Telephone Exchange</p> <p>vii) Canteens, Restaurant & <i>Dhabas</i></p> <p>viii) Education and Health Care Institutions all types, Research Institutions etc</p>	i) All other uses permitted at Col. [2] under Residential and commercial categories.	i) All uses specifically not mentioned at Col. [2] & Col. [3] of this zone.
PUBLIC UTILITIES	<p>i) Water supply installation including Storage, treatment and distribution</p> <p>ii) Drainage, Sewage treatment plant,</p> <p>iii) Dewatering stations,</p> <p>iv) Intermediate Pumping Stations</p> <p>v) Sanitary installation, Disposal Works, Solid Waste Management sites,</p> <p>vi) Electric Grid/sub-station,</p> <p>vii) Gas installation & Gas works</p>	i) All other uses permitted at Col. [2] under Residential and Public and Semi-public categories.	i) All uses specifically not mentioned at Col. [2] & Col. [3] of this zone.

	<ul style="list-style-type: none"> viii) Sub-offices of utilities ix) All uses ancillary to the main use 		
PARKS AND GARDENS	<ul style="list-style-type: none"> i) Play Field / Playground, ii) Floriculture Nurseries, iii) Plantation / Buffers iv) Car and Scooter parking 	<ul style="list-style-type: none"> i) Open Air Theatre, Amphitheatre, Indoor Stadium, Art Gallery, Aquarium and Uses incidental to recreational use which will not create nuisance or hazard. ii) Amusement Park, Theme Park iii) Concept gardens, Swimming Pools, iv) Zoo, Aquarium, Exhibition Ground, v) Golf course, Buffer green, etc, vi) Picnic spots, Regional Park, Botanical Gardens vii) Bird sanctuary, viii) Restaurants and Cafes, Snack bar, Food Plaza subject to availability of primary use as given in [Col. 2] under parks and Gardens use. 	<ul style="list-style-type: none"> i) All uses specifically not mentioned at Col. [2] & Col. [3] of this zone.
TOURISM AND CULTURE	<ul style="list-style-type: none"> i) Restaurants, Food plazas, Open Air Cafés, Snack Bars ii) Retail Shops and Handicrafts showrooms iii) Amphitheatre's, Theme Parks, Golf Courses, Health and Wellness Centres, iv) Museum, Art and Craft Centres, Art Galleries v) Parks and Open Spaces, Tourist Office, etc. vi) Taxi Stand, Cycle Stands, Parking lots, vii) High End Camping/ Tentage, viii) Hotels, Guest House, Tourist Huts, Cottages, Home Stays ix) Tourist Village, Rural Tourism x) Picnic Hut/ Camping Sites, Rope Ways, xi) Amusement Parks and Recreational 	<ul style="list-style-type: none"> i) All other uses permitted at Col. [2] under Residential and Commercial categories. 	<ul style="list-style-type: none"> i) All uses specifically not mentioned at Col. [2] & Col. [3] of this use zone.

	<ul style="list-style-type: none"> xii) Clubs, Planetarium/Aquarium Botanical and Zoological Parks 		
SPECIAL INVESTMENT CORRIDOR/ZONE	<ul style="list-style-type: none"> i) Informal Residential not beyond <i>Abadi Deh</i> areas ii) Organized investment across health, education, commerce, industry, tourism, housing sectors. 	<ul style="list-style-type: none"> i) Botanical and Zoological Parks ii) Herbal Gardens, Horticulture iii) Storage of petroleum products, Gas Bottling Plant 	i) All uses specifically not mentioned at Col. [2] & Col. [3] of this use zone.
AGRICULTURE	<ul style="list-style-type: none"> i) Paddy farms, Urban Farms, Saffron ii) Fish ponds, irrigation ponds 	<ul style="list-style-type: none"> i) Dairy & Poultry farms subject to NOC/ approved by concerned department ii) Nurseries, Botanical Garden, iii) Uses Pertaining to Processing of Agro /Farm/Milk Product after approved by concerned department iv) Public utilities like Water supply, Sewerage, drainage, telecommunication towers, power grid station/distribution lines, petrol pumps, v) Parking and terminal facilities 	<ul style="list-style-type: none"> i) All Heavy, Extensive, Obnoxious, Hazardous, Extractive & Polluting Industry ii) All uses specifically not mentioned in Col. [2] & Col. [3] and uses which tend to commercialize the uses in the zone and change the basic character of Agricultural Zone with or without construction. iii) Residential use except those ancillary uses permitted in Agriculture use zone
HORTICULTURE	<ul style="list-style-type: none"> i) Orchards, Orchard Nurseries 	<ul style="list-style-type: none"> i) Eco-tourism/Rural tourism on sustainable parameters as an allied activity after carrying out EIA/EMP of the project area ii) Watch and Ward (max. 500 sft) iii) Public utilities like Water supply, sewerage, drainage, tele-communication towers, power grid station/distribution lines, petrol pumps etc iv) Parking and terminal facilities 	i) All uses specifically not mentioned in Col. [2] & Col. [3] and uses which tend to commercialize the uses in the zone and change the basic character of the Zone
ECOLOGICAL RESERVES/ CONSERVATION RESERVES/ GREEN RESERVE OR CITY FOREST	<ul style="list-style-type: none"> i) Water bodies, lakes, wetlands, plantation, forest, biodiversity reserves and wildlife, ii) Natural hills and hillocks, iii) Restricted Green belts, Buffers 	<ul style="list-style-type: none"> i) Nurseries, ii) Nurseries, parks and gardens iii) Public utilities like Water supply, sewerage, drainage, telecommunication towers, power grid station/distribution lines 	i) All uses specifically not mentioned in Col. [2] & Col. [3] of this use zone.

DEFENSE	i) All uses required for Defense Establishments including Residential Quarters, Hostels, Barracks, Convenient Shopping Centres, Parks and Playgrounds, , Helipads, Bunkers, Gated Walls, etc.	i) Health, education, commercial and recreational uses.	i) All uses specifically mentioned at Col. [4] under Residential and Commercial zones. ii) Any activity involving erection/ construction and cutting and filling of slope gradients, deforestation of any kind of physical structure.
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1-7 DEVELOPMENT REGULATIONS FOR VARIOUS USES

Zone-wise regulations have been spelt out in commensurate with distinctive zone character and the proposed scale of development in such zones. *No detailed development norms/regulations have been spelt out for the Restricted or Defense areas; however, such zones can be treated as Medium High Density Zones with provision for mixed use. As per the recommendations of the Committee constituted for scrutiny of objections and suggestions, the structures and land parcels affected in the acquisition process shall be given special relaxation in terms of minimum plot area and side setbacks on case-to-case basis.*

- a. *In case the height of a residential house is restricted to 40 feet in core city and 30 feet in all other zones, minimum setback margins on South and West side can be retired by five feet maximum.
- b. In case of core city, the side setback margins other than building line can be relaxed by 100% if the plot area is less than 75 sq. mtr.
- c. In case of LIG/EWS housing colonies, the maximum coverage shall be 60% with dwelling units in a semi-detached pattern with setbacks not less than [5] feet.
- d. Clear height of each storey in a residential house shall not exceed 3.0 mtr and also be not less than 2.75 mtr.
- e. Staircase mount height up to 2.5 mtr shall be in addition to permissible height.
- f. Basement floor shall not be permissible save flatted housing.
- g. Garage/Porch to the extent of 16 sq. mtr each shall be allowed in semi-detached and detached housing. Room over porch shall not be allowed.
- h. No servant quarter shall be permitted in case the plot area is less than 505 sq. mtr. or one kanal.
- i. Roof height shall not be more than 3.50 mtr measurable from eaves boarding to ridge top.

1-7-1 Development Regulations for Residential use (Detached and Semi-detached Housing under Plotted Development)

Sl. No.	Zone Description	Zone Number	PLOTTED RESIDENTIAL AND ROW HOUSING [in feet]					
			Max. Ground Coverage	Max. FAR	Max. Height	Minimum Setback Norms*		
						Front	Rear	Sides
1	Low Density Zone (Upto 80 PPH)	LDR_Zone-I to LDR_Zone-III and LDR_Zone-IX to LDR_Zone-XII	35%	1.05	<i>Height to be determined as per the maximum permissible ground coverage and maximum FAR/FSI specified under Col (4) & Col. (5)</i>	10	10	{10 / 10}
		LDR_Zone-IV to LDR_Zone-VIII	30%	0.90		10	10	{10 / 10}
2	Medium Density Zone (81-160 PPH)	MDR_Zone-I to MDR_Zone-XVIII	40%	1.20		10	10	{10 / 10}
3	Medium High Density (161-240 PPH)	MHDR_Zone-I to MHDR_Zone-IX and MHDR_Zone-XI	40%	1.60		10	10	{10 / 10}
4	High Density Zone (+241 PPH) other than core city	HDR-Zone-I to HDR-Zone-X	50%	2.0		10	10	{10 / 10}
5	Mixed Use Zone	MHDR_Zone-V, MHDR_Zone-VI MHDR_Zone-IX & MHDR_Zone-X	50%	2.0		10	10	{10 / 10}
6	Central Business District	HDR-Zone-V, MHDR-Zone-VII	50%	2.0	10	10	{10 / 10}	
7	City Centre/Sub-City Centre	HDR_Zone-VI	<i>To be determined on case to case basis or by the design parameters in the layout plan of the area</i>					
8	Core City Zone other than Walled City	HDR-Zone-I & HDR_Zone-II	60%	2.4	55	10	10	{10 / 10}
9	Walled City Zone	MDR_Zone-XIV	40%	1.0	30	10	10	{10 / 10}

Note: The minimum Plot size shall be 75 sq. mtr for all zones other than Low Density Zones wherein the minimum plot area shall be 125 sq. mtr with minimum width of the plot not be less than [8] mtr.

1-7-2 Development Regulations for Residential Use [Flatted Development]:

The minimum Plot size shall be [8.0 kanal] located on an approach road not less than [15 metre] in RoW. It is envisaged that the norms recommended by the Committee for the construction of apartments in the core city have also been added below in Table 1-7(2). **The minimum plot size on an approach road of 6.0 Mtr RoW shall be 500 Sq.M in the core city.**

Table 1-7-2: Development Regulations for Residential use (Flatted Housing)

Sl. No.	Zone Description	Zone Number	RESIDENTIAL (FLATTED HOUSING) [in feet]					
			Max. Ground Coverage	Max. FAR	Max. Height	Minimum Setback Norms		
						Front	Rear	Sides
1	Low Density Zone (Upto 80 PPH)	LDR_Zone-I to LDR_Zone-XII	<i>Not Permitted</i>					
2	Medium Density Zone (81-160 PPH)	MDR_Zone-I to MDR_Zone-XVIII	35%	2.00	<i>Height to be determined on the basis of maximum ground coverage and maximum FAR/FSI consumed</i>	1/4th of height of Building or 15 feet whichever is more		
3	Medium High Density (161-240 PPH)	MHDR_Zone-I to MHDR_Zone_IX and MHDR_Zone-XI	40%	2.50				
4	High Density Zone (+241 PPH) other than core city	HDR-Zone-I to HDR-Zone-X	40%	3.00				
5	Mixed Use Zone	MHDR_Zone-V, MHDR_Zone-VI MHDR_Zone-IX & MHDR_Zone-X	40%	2.50				
6	Central Business District	HDR-Zone-V, MHDR-Zone-VII	30%	3.00				
7	City Centre/Sub-City Centre	HDR_Zone-VI	30%	3.00				
8	Core City Zone other than Walled City	HDR-Zone-I & HDR_Zone-II	40%	1.60	55	Front setback as per applicable Building line or 1/3 rd of height of Building whichever is more and other setbacks of 10 feet.		
9	Walled City Zone	MDR_Zone-XIV	<i>Not Permitted</i>					

Note:

- a. Single level basement (max. depth of 3.0 metre) shall be permitted as per the conditions which the competent authority may deem necessary.
- b. Basement, if constructed and used for parking and services only shall not be counted in FAR. 10% of area should be reserved for services in the basement.
- c. Stilt Floor and/or podium (single level permitted only), if constructed and used for parking only shall not be counted in FAR. The slab height of stilt floor shall not exceed 2.7 mtr.
- d. In case of group housing projects having plot area more than one hectare, for providing facilities for the senior citizens, crèche, library, gym, multi-purpose halls and society offices, in aggregate shall be given as additional FAR of 500 sq. mtr.
- e. In case of group housing with flat size more than 1500 sft, provision for accommodation of the service population shall be made with minimum 15 sq. mtr built up area.
- f. The area of basement shall not exceed beyond the line of setbacks and/or building line as applicable and shall be used for parking/services only.
- g. In-house back-up facilities for electricity/power and water supply to be provided for building beyond four storeyes.
- h. In group housing, in-house provision of facilities like STPs, Transformers, Pump Stations, water sumps, firefighting etc. shall be made mandatory.
- i. The clearances/ NOCs from fire department and a qualified Structural Engineer are mandatory.
- j. The facilities of convenient shops should be provided within complex.
- k. Minimum of 15% area shall be reserved as organized green. Remaining area outside ground coverage shall be treated as Common Area.

1. Parking Norms:

i. Area to be considered under parking in basement/Stilts/Podium/Open shall be as under:

▪ Basement	=	32 sq. mtr. per ECS
▪ Stilt	=	28 sq. mtr. per ECS
▪ Open/ Surface	=	23 sq. mtr. per ECS

ii. Parking shall be provided @___

- a) 1.0 ECS per 100 sq. mtr floor area;

1-7-3 Development Regulations for Housing Colonies:

1. A person or a group of persons or a co-operative society or firm intending to plot out an estate into more than four (4) plots (4048 Sq. mtr. or more) shall give notice in writing to the competent authority which will be accompanied by a layout plan of entire land showing the areas allotted for roads, open spaces, plot and public buildings, the specification of the roads, drains and other infrastructures.

2. Min. Width of Approach road

i) Housing colony up to twenty (20) Kanals –

Entry from the main road shall not be less than 12.0 mtr and no internal road shall be less than 6.0 mtr.

ii) Housing colony more than twenty (20) Kanals –

Entry from the main road shall not be less than 15.0 mtr and no internal road shall be less than 6.0 mtr.

3. Roads, drains, water mains and electric lines required for the colony shall be constructed by the developer at his own cost and no plot shall be eligible for any services and utilities by the govt. and/or Municipality unless the colony is developed properly and approved by the competent authority, and no building plan shall be considered by the Municipality or prescribed authority in any plot of such a colony which has not received the prior approval of the competent authority. Developer in this case will mean the person, co-operative or the firm intending to plot out the land into more than four (04) plots.

4. No housing colony can be allowed in the area not specified as the residential in the proposed Master Plan (if approved by Govt.) unless considered in any special circumstances by the competent authority with the approval of Govt. In such housing colonies, the following standards shall apply:

- a) *Area under roads Min. 15% to 20% of the total area of land under the proposed colony.*
- b) *Land to be allotted for open spaces, schools and public building for a housing colony of 20 plots and above shall not be less than 15% of the total area of the colony.*
- c) *Area under commercial use shall be 4% to 5%.*

5. After the developed land is sold by the developer, the roads and drains etc. constructed by the developer shall be transferred to the concerned authority for their maintenance.

6. Land use of the layout plan approved by the competent authority shall not be changed unless with the prior consent of the competent authority.

7. Open spaces allocated for parks, play-fields, school sites and public building in a colony shall be deemed to have been sold along with the plots as amenities of the colony by the developer to the plot holders of the colony. The development of such open spaces shall be the responsibility of the Municipality/Development authority which may levy betterment charges on the plot holders of the colony in accordance with the provisions of the Act.

8. No permission shall be accorded for construction of a building in any notified area which shall cause nuisance by way of odour, smoke, noise or disturbance to inhabitants of the locality or be injurious to health of the residents of the buildings or to the inhabitants in the surrounding areas.

1-7-4 Development Regulations for Commercial Use

Table 1-7-4: Development Regulations for Commercial Use

Sl. No.	Zone Description	Zone Number	COMMERCIAL [in feet]					
			Max. Ground Coverage	Max. FAR	Max. Height	Minimum Setback Norms		
						Front	Rear	Sides
1	Low Density Zone (Upto 80 PPH)	LDR_Zone-I to LDR_Zone-XII	35%	1.40	<i>Height to be determined on the basis of maximum ground coverage and maximum FAR/FSI consumed</i>	15	10	{10/5}
2	Medium Density Zone (81-160 PPH)	MDR_Zone-I to MDR_Zone-XVIII	40%	1.60		15	10	{10/5}
3	Medium High Density (161-240 PPH)	MHDR_Zone-I to MHDR_Zone_IX and MHDR_Zone-XI	40%	2.00		20	10	{10/10}
4	High Density Zone (+241 PPH) other than core city	HDR-Zone-I to HDR-Zone-X	40%	2.50		20		
5	Mixed Use Zone	MHDR_Zone-V, MHDR_Zone-VI MHDR_Zone-IX & MHDR_Zone-X	40%	2.00		20	10	[10/10]
6	Central Business District	HDR-Zone-V, MHDR-Zone-VII	50%	3.00		20	15	[0/0]
7	City Centre/Sub-City Centre	HDR_Zone-VI	40%	3.00		30	1/4 th of height of Building or 20 feet whichever is more	
8	Core City other than walled city	HDR-Zone-I & HDR_Zone-II	40%	1.60		15	10	0/0
9	Walled City	MDR_Zone-XIV	40%	1.20		15	5	{10/5}

Note:

- *Minimum Plot size for Hotel Should not be less than 2020 Sq. Mt.*
- *Minimum Plot size for Hostel/Boarding House Should not be less than 1010 Sq. Mt.*
- *Minimum Plot size for Guest House/Lodging House Should not be less than 750 Sq. Mt.*
- *Minimum Plot size for Paying Guest House should not be less than 500 Sq. Mt.*

Parking Norms for Commercial Use:

- Single tier basement parking and stilt floor are permissible within all commercial use zones for parking and services use.
- 15% of the basement area shall be reserved for locating services like generator room, electric room/plant room etc. Portion of the basement where these services are proposed should be segregated suitably from the other uses so as to ensure adequate safeguards against fire hazards.
- Basement/stilt floor used for parking shall not be counted towards FAR/FSI.
- Parking space shall be worked out as following norms:
 - Basement = 32 sq. mtr. per ECS
 - Stilts/ Podium = 28 sq. mtr. per ECS
 - Open to sky = 23 sq. mtr. per ECS
- Parking space shall be provide as following norms:
 - Wholesale, Retail shops = 2.0 ECS for 100 sq. mtr. of floor area
 - Multiplex = 2.5 ECS for every 100 sq. mt. of floor space.
 - Cinema/Cineplex = 2.5 ECS for every 100 sq. mt. of floor space.
 - Banquet/Marriage Halls = Min. 100 ECS up to 12 kanal, and 6ECS for every additional Kanal
 - Hotel/Guest House = 3.0 ECS for every 2 guest rooms.
 - Hotel-cum-Banquet Hall = 1.0 ECS for every 2 guest rooms and Min. 100 ECS up to 12 kanal, and Six ECS for every additional Kanal

1-7-5 Development Regulations for Mixed Use

Table 1-7-5: Development Regulations for Mixed Use

Sl. No.	Zone Description	Zone Number	MIXED USE REGULATIONS (in feet) [for activities permitted as per Table-1-4(1)]					
			Max. Ground Coverage	Max. FAR	Max. Height	Minimum Setback Norms		
						Front	Rear	Sides
1	Low Density Zone (Upto 80 PPH)	LDR_Zone-I to LDR_Zone-XII	35%	1.00	<i>Height to be determined as per the maximum permissible ground coverage and maximum FAR/FSI specified under Col (4) & Col. (5)</i>	15	15	{10 / 10}
2	Medium Density Zone (81-160 PPH)	MDR_Zone-I to MDR_Zone-XVIII	40%	1.20		20	15	{15 / 10}
3	Medium High Density (161-240 PPH)	MHDR_Zone-I to MHDR_Zone_IX and MHDR_Zone-XI	40%	1.60		20	15	{15 / 10}
4	High Density Zone (+241 PPH) other than core city	HDR-Zone-I to HDR-Zone-X	40%	2.0		20	15	{15 / 10}
5	Mixed Use Zone	MHDR_Zone-V, MHDR_Zone-VI MHDR_Zone-IX & MHDR_Zone-X	40%	2.40		20	1/3 rd of the height of Building or 15 feet whichever is more	
6	Central Business District	HDR-Zone-V, MHDR-Zone-VII	40%	3.00		20		
7	City Centre/Sub-City Centre	HDR_Zone-VI	<i>Not Applicable</i>					
8	Core City other than Walled city	HDR-Zone-I & HDR_Zone-II	40%	1.60	<i>To be determined as per the maximum permissible ground coverage and maximum FSI/FAR</i>	20	15	15/10
9	Walled City	MDR_Zone-XIV	40%	1.20		20	15	15/10

1-7-6 Development Regulations for Public and Semi-Public (Govt./Semi-Govt./Autonomous Bodies other than Commercial Projects) Use

Table 1-7-6: Development Regulations for Public and Semi-Public (Govt./Semi-Govt./Autonomous Bodies other than Commercial Projects) Use

Sl. No.	Zone Description	Zone Number	PUBLIC AND SEMI-PUBLIC <i>(in feet)</i> <i>(Govt./Semi-Govt./Autonomous Bodies other than their Commercial Projects)</i>					
			Max. Ground Coverage	Max. FSI	Max. Height	Minimum Setback Norms		
						Front	Rear	Sides
1	Low Density Zone (Upto 80 PPH)	LDR_Zone-I to LDR_Zone-XII	<i>Maximum Ground Coverage to be determined on the basis of permitted maximum FSI and prescribed minimum setbacks</i>	2.00	<i>Height to be determined on the basis of maximum ground coverage and maximum FAR/FSI consumed</i>	<i>1/3rd. of the height of Building or 15 feet whichever is more</i>		
2	Medium Density Zone (81-160 PPH)	MDR_Zone-I to MDR_Zone-XVIII		2.50				
3	Medium High Density (161-240 PPH)	MHDR_Zone-I to MHDR_Zone_IX and MHDR_Zone-XI		2.50				
4	High Density Zone (+241 PPH) other than Core city	HDR-Zone-I to HDR-Zone-X		3.00				
5	Mixed Use Zone	MHDR_Zone-V, MHDR_Zone-VI MHDR_Zone-IX & MHDR_Zone-X		3.00				
6	Central Business District	HDR-Zone-V, MHDR-Zone-VII		3.00				
7	City Centre/Sub-City Centre	HDR_Zone-VI		3.00				
8	Core City other than Walled city	HDR-Zone-I & HDR_Zone-II		3.00				
9	Walled City	MDR_Zone-XIV		2.00				

1-7-7 Development Regulations for [other] Public and Semi-Public Use (Commercial Govt. Projects, Private and Non-Government Use)

Table 1-7-7: Development Regulations for other Public and Semi-Public Use (Commercial Govt. Projects, Private and Non-Government Use)

Sl. No.	Zone Description	Zone Number	PUBLIC AND SEMI-PUBLIC (in feet)					
			Max. Ground Coverage	Max. FSI	Max. Height	Minimum Setback Norms		
						Front	Rear	Sides
1	Low Density Zone (Upto 80 PPH)	LDR_Zone-I to LDR_Zone-XII	<i>Maximum Ground Coverage to be determined on the basis of permitted maximum FSI and prescribed minimum setbacks</i>	1.00	<i>Height to be determined on the basis of maximum ground coverage and maximum FAR/FSI consumed</i>	1/3rd. of the height of Building or 15 feet whichever is more		
2	Medium Density Zone (81-160 PPH)	MDR_Zone-I to MDR_Zone-XVIII		1.50				
3	Medium High Density (161-240 PPH)	MHDR_Zone-I to MHDR_Zone-IX and MHDR_Zone-XI		2.00				
4	High Density Zone (+241 PPH) other than core city	HDR-Zone-I to HDR-Zone-X		2.50				
5	Mixed Use Zone	MHDR_Zone-V, MHDR_Zone-VI MHDR_Zone-IX & MHDR_Zone-X		2.00				
6	Central Business District	HDR-Zone-V, MHDR-Zone-VII		2.50				
7	City Centre/Sub-City Centre	HDR_Zone-VI		3.00				
8	Core City other than Walled city	HDR-Zone-I & HDR_Zone-II		2.50				
9	Walled City	MDR_Zone-XIV		2.00				

Parking Norms for Public, Semi-Public Building:

Parking space shall be provided as per following norms:

- Nursing Home, Hospitals = 2 ECS per 100 sq. mtr. of floor area
- Socio-cultural and other institutions = 3 ECS per 100 sq. mtr. of floor area
- Govt. & Semi-Govt. Offices = 1.5 ECS per 100 sq. mtr. of floor area
- Health & Educational Institutions = 0.75 ECS per 100 sq. mtr. of floor area

1-7-9 Development Regulations for Tourism Use Zone

The zone-wise regulations for tourism use are envisaged in Table 1-7-9 and shall not be applicable for Tourist Village and Rural tourism for which separate regulations have been provided below.

A) Development Regulations for Tourism Use Zone other than tourism use specified at 1-7-9(B)

Table 1-7-9: Development Regulations for Tourism Use Zone

Sl. No.	Zone Description	Zone Number	TOURISM (in feet)					
			Max. Ground Coverage	Max. FAR	Max. Height	Minimum Setback Norms		
						Front	Rear	Sides
1	Low Density Zone (Upto 80 PPH)	LDR_Zone-I to LDR_Zone-XII	35%	0.70	<i>Height to be determined on the basis of maximum ground coverage and maximum FAR/FSI consumed</i>	1/3rd. of height of Building or 20 feet whichever is more		
2	Medium Density Zone (81-160 PPH)	MDR_Zone-I to MDR_Zone-XVIII	35%	1.00				
3	Medium High Density (161-240 PPH)	MHDR_Zone-I to MHDR_Zone_IX and MHDR_Zone-XI	40%	1.50				
4	High Density Zone (+241 PPH) other than core city	HDR-Zone-I to HDR-Zone-X	40%	2.50		1/4th of height of Building or 20 feet whichever is more		
5	Mixed Use Zone	MHDR_Zone-V, MHDR_Zone-VI MHDR_Zone-IX & MHDR_Zone-X	40%	2.00				
6	Central Business District	HDR-Zone-V, MHDR-Zone-VII	40%	3.0		1/4th of height of Building or 15 feet whichever is more		
7	City Centre/Sub-City Centre	HDR_Zone-VI	30%	3.0				
8	Core City other than Walled city	HDR-Zone-I & HDR_Zone-II	40%	2.50		1/4th of height of Building or 15 feet whichever is more		
9	Walled City	MDR_Zone-XIV	35%	1.0				

B) Development Regulations for Tourist Village-cum-Urban Haat and Rural tourism

- Tourist Village-cum-Urban Haat has been proposed subject to the condition that the area is developed under a Town Planning Scheme (TPS) and fulfilment of following mandatory conditions:
 - *Maximum Ground Coverage* = 15%

- *Maximum Height* = 25 feet
- *Minimum Plot area* = 3.0 acres

- **Eco-tourism/Rural Tourism:** The policy envisaged in the Draft Master Plan for Eco-tourism /Rural Tourism under Urban Greens and Orchard use has been omitted as per the recommendations of the Committee.

1-7-10 Development Regulations for Industrial Use

Table 1-7-10: Development Regulations for Industrial Use

Sl. No.	Zone Description	Zone Number	INDUSTRIAL (in feet)					
			Max. Ground Coverage	Max. FAR	Max. Height	Minimum Setback Norms		
						Front	Rear	Sides
1	Low Density Zone (Upto 80 PPH)	LDR_Zone-I to LDR_Zone-XII	35%	1.0	Height to be determined on the basis of maximum ground coverage and maximum FAR/FSI consumed	25	20	{20 / 20}
2	Medium Density Zone (81-160 PPH)	MDR_Zone-I to MDR_Zone-XVIII						
3	Medium High Density (161-240 PPH)	MHDR_Zone-I to MHDR_Zone_IX and MHDR_Zone-XI	40%	1.5	Height to be determined on the basis of maximum ground coverage and maximum FAR/FSI consumed	30	25	{25 / 25}
4	High Density Zone (+241 PPH) other than core city	HDR-Zone-I to HDR-Zone-X						
5	Mixed Use Zone	MHDR_Zone-V, MHDR_Zone-VI MHDR_Zone-IX & MHDR_Zone-X						
6	Central Business District	HDR-Zone-V, MHDR-Zone-VII	Not Permitted					
7	City Centre/Sub-City Centre	HDR_Zone-VI						
8	Core City other than Walled city	HDR-Zone-I & HDR_Zone-II	40%	1.2	Height to be determined on the basis of maximum permissible ground coverage and maximum FSI/FAR specified under Col. (4) & Col. (5)	30	25	{25 / 25}
9	Walled City	MDR_Zone-XIV	Not Permitted					

Parking Norms:

Parking space shall be provided @ 0.75 ECS per 100 sq. mtr of floor area.

1-7-11 OTHER REGULATIONS

A. Distance between Buildings

Table 1-7-11: Minimum distance between two buildings, or as part of same building unit

Sl. No.	Building Height	Min. Distance between Two Buildings on same plot
1	Up to 40 feet	15 feet
2	Above 40 feet and up to 55 feet	20 feet
3	Above 55 feet up to 75 feet	25 feet
4	Above 75 feet	½ of the height of building

Note: In case of two buildings of different height, the height of taller building shall be considered for determining the minimum distance between such buildings.

1-7-8 Petrol Pumps / Filling Stations

Building-units for use as Filling Stations shall comply with Petroleum Rules 1976 under the Petroleum Act 1934 and any such regulations enforced from time to time by the Central or State Government. The following regulations are recommended for locating petrol pump cum service stations:-

- i) Minimum distance of Petrol Pump/Filling Station from the road intersections or junction of two or more roads shall be 150 mtr.
- ii) New petrol pump/filling station shall be permitted on roads having existing RoW not less than 65 feet (20 mtr.).
- iii) Plot size (minimum) for basic and ancillary uses-
 - *Only filling stations* : 1010 sq. mtr.
 - *Filling-cum-service station* : 1515 sq. mtr.
 - *Filling-cum-service station-cum-Workshop* : 2020 sq. mtr.
 - *CNG Filling Station* : 1010 sq. mtr.
- iv) Maximum ground coverage : 45%
- v) Maximum Height : 25 for building and canopy [both]

vi) Setbacks are as mentioned under:

Table 1-7-8: Development Regulations for Petrol Pumps/Fuelling Stations

Sl. No.	Components of Fuelling Station	Front Setback [Feet]	Other sides Setback
1	Filling Pedestal/ Curb	30	20 feet (min. distance between building and fuelling pedestal, and between two fuelling pedestal shall also be 20 feet)
2	Canopy	20	20 feet in case of canopy height up to 20 feet. 25 feet in case canopy height above 20 feet.
3	Administrative or Other Building	20	15 feet

Notes:

- a. Shall be acceptable to explosive /Fire & Emergency Department.
- b. Ground coverage will include canopy area.
- c. Mezzanine if provided shall be counted in FAR.
- d. In case of CNG Mother Station, building components shall be control room/office/dispensing room.
- e. No basement shall be allowed.

1-7-12 Safety against Natural Disasters like Earthquakes

The application for seeking building permit shall be accompanied with a report of registered qualified Architect/Structural Engineer certifying that the proposed structure has been designed structurally keeping in view the safety measures against earthquakes as indicated in the following Bureau of Indian Standards (B.I.S).

Bureau of Indian Standards (B.I.S):

a) IS: 13935: 1993

Repair and Seismic Strengthening of building guidelines

b) IS: 1893 (part i): 2002

Criteria for Earth quake Resistant Design of structure

c) IS: 4326 1993 (2002-04)

Earthquake Resistant Design and Construction of building – Code of practice

d) IS: 13920: 1993

Ductile Detailing of Reinforced Concrete structures subjected to seismic Forces – Codes of Practice

e) IS: 13827: 1993

Improving Earthquake Resistant of Earthen Building – Guidelines

f) IS: 13828: 1993

Improving Earthquake Resistance of low strength Masonry Building Guidelines

1-7-13 Water Harvesting

Water harvesting by way of storage of rainwater in all new buildings existing on plots of 1000 sq. mtr and above, and all group housing shall be mandatory. The plans submitted to the local authority shall indicate the system of storm water drainage along with points of collection of rain water in surface reservoirs or in recharge wells.

1-7-14 Fire Protection and Fire Requirements

A) Scope:

This part covers the requirements of fire protection for the multi-storeyed buildings (high rise buildings) and the buildings which are 15 mtr and above in height and low occupancies of categories such as Assembly, Institutional, and Educational more than two storeyed and built-up area exceeding 1000 sq.mt. Business where plot area exceeds 500 sq. mtr, mercantile where aggregate covered area exceeds 750 sq.mt., Hotel, Hospital, Nursing Homes, Underground complexes, Industrial storage, Meeting/Banquet halls, Hazards Occupancies.

B) Fire Protection Requirements:

Buildings shall be planned, designed and constructed to ensure fire safety and this shall be done in accordance with [Part IV] (Fire protection of National Building Code) of India. The building schemes as such also be cleared by the District Officer of the Fire and Emergency Services Department before issuance of building permit.

1-7-15 Mulba Stacking

In the cases of plots falling under any land use approved under the Master Plan, stacking of building materials shall be done within the plot premises if the plot area is above 500 sq. mtr. An undertaking shall be sought for stacking of materials on the adjoining Govt. land i.e. Road, land etc. but the same shall be removed on daily basis by the applicant. If the same is not done, the local authority shall remove the mulba on the cost and expenses of plot owner and initiate legal action under rules against the erring beneficiaries.

1-7-16 Provision for Physically Challenged Persons in the Public Buildings:

A) Scope:

These bye-laws are applicable to public buildings and exclude domestic buildings. Buildings which shall provide access to ambulant and non-ambulant physically challenged persons are listed below. Distinction is made for buildings to be designed for the use of large wheel chairs and small wheel chair.

B) Buildings to be designed for Ambulant Physically Challenged People (Besides Hospitals):

Higher Secondary School, Conference Hall, Dance Halls, Youth centres, Youth clubs, Sports centres, Sports pavilion, Boat club houses, Ice/roller skating rinks, Swimming pools, Police stations, Law courts, Court houses, Sports stadiums, Theatres, Concert halls, Cinemas, Auditoriums, Small offices (the maximum plinth area 1400 sq.mt.), Snack bars, Cafes and Banqueting rooms (for capacity above 50 dinners).

Note:

- a. In sport stadiums provisions shall be made for non-ambulant spectators (small wheel chair) @ 1:1000 up to 10,000 spectators and additional 1:2000 for spectators above 10,000.
- b. In Theatres, Concert halls, Cinemas and Auditorium provisions shall be made for non-ambulant spectators (small wheel chairs) @ 1/250 up to 1000 spectators and additional 1/500 for spectators above 1000.

C) Buildings to be designed for Non-Ambulant Physically Challenged People:

Schools for physically challenged persons, cremation grounds, public/semi-public buildings, Botanical gardens, Religious buildings, Old people clubs, Village halls, Day centres, Junior training centres, post offices, Banks, Dispensaries, Railway stations, Shops, Super markets, and Departmental stores.

Note:

- a. Large wheel chair criteria shall be applicable on ground floors of the following buildings:
- b. Post offices, Banks, Dispensaries, Railway station, Shops, Super markets and Departmental stores.

D) Building to be designed for Non-Ambulant Physically Challenged Persons (using small wheel chairs):

Public lavatories in Tourist spots, Club motels, Professional and Scientific institutions, Museum, Art galleries, Public libraries, Laboratories, Universities, College for further Education, Teachers Training Colleges, Technical College, Exhibition halls, Dentist surgeries, Administrative department of the Hospitals, Service stations, Car parking, Building airports terminals, Bus terminals, Factories employing handicapped for sedentary works, large offices (with plinth area above 400 sq.mt.), Tax offices, Passport offices, Pension offices, Labour offices, Cafes, Banqueting rooms and Snack bars (for capacity above 100 dinners).

1-7-17 Space Standards

Space standards are fundamental to obtain the basic objective of zoning regulations to achieve desirable pattern of development in a city. Strict enforcement is needed to achieve articulated urban development as envisaged in the Master Plan of a City.

Table 1-7-17: Spatial Norms and Standards

S. No.	Description	Standard prescribed	Area/Unit (Hectares)
A	<i>Educational Facilities</i>		
1	Pre-Primary School	1 for 2500 Persons	0.10
2	Primary School (Class I - V)	1 for 5000 Persons	0.40
3	Middle School (Class VI - VIII)	1 for 5000 Persons	0.60
4	Senior Secondary School (Class VI-X)	1 for 7500 Persons	1.20
5	Higher Sec School (Class X-XII)	1 for 10000 Persons	1.60
6	Integrated School (Class I - XII)	1 for 10000 Persons	2.00
7	Integrated School with Hostel	1000-1500 Students	2.50
8	School For differently abled	400 Students/45000 Pop	0.70
9	Academic College	1000-1500/1 Lac Pop	3.50
10	ITI	500 Students/ 10 Lac Pop	1.60
11	Polytechnic	400 Students/ 10 Lac Pop	2.40
12	Engineering College	1500-1700 students	10.00

13	Medical College	1500-1700 students	15.00
14	Other Professional College	250-500 Students/10 Lac Pop.	4.00
15	Para-Medical Institute	500 Students/ 10 Lac Pop	1.60
B	Health Care Facilities		
18	Health Unit/Dispensary	1 for 15000	0.10
19	Nursing Home/Maternity Centre	30 Beds/1 per 45000	0.25
20	Polyclinic	1 per 1 Lac Pop	0.10
21	General Hospital (500 Beds)	1 for 1 to 2 Lac	6.00
22	Multi-Speciality Hospital	200 Beds/1 Lac Pop	3.00
24	Intermediate Hospital (A)	200 Beds/1 Lac Pop	3.00
25	Intermediate Hospital (Maternity)	80 Beds/ 1 Lac Pop	1.00
C	Socio-Cultural Facilities		
24	Community Room	1 per 5000 pop	0.075
25	Community Hall and Library	1 for 15000	0.20
26	Recreational Club	1 for 1 Lac	1.00
27	Music, Dance & Drama Centre	1 for 1 Lac	0.10
28	Socio-cultural Centre/Exhibition-cum-fair ground	1 for 10 Lac	12.00
29	Club Houses	1 for 1 Lac	0.40
30	Museum	-	2.5
31	Community Centre/Janjghar/Banquet Hall	1 for 15000	0.60
32	Botanical /Zoological Park	1 for 1 Lac	20.00
33	Exhibition Area(s)	1 for 1 to 10 Lac	4.00
34	Cinema/Cineplex	1 for 1 Lac	0.30
35	Multiplex	1 for 1 Lac	0.60
36	Stadia/Sports Centre/Sports Complex	1 for 1 Lac	20.00
37	Playfield	1 for 25000	1.00
38	Mini-Playfield	1 for 15000	0.50
D	Distribution Services		
39	Post & Telegraph Office	1 for 1.5 Lac	0.20
40	Post Office	1 for 40000	0.10
41	Telephone Exchange (20,000 lines)	-	1.50

42	LPG Godown	1 for 50000(500 cylinder capacity)	0.10
43	Electricity Sub-Station 11 KV	1 for 15000	0.10
44	Electricity Sub-Station 66 KV	1 for 1 Lac	1.00
E	<i>Police and Fire Services</i>		
45	Police Station	1 for 90,000 pop	0.50
46	Police Post	1 for 40000 pop	0.20
47	Central/District Jail	1 for 10 Lac	5.00
48	Police Line	-	4.00
49	Civil defence and Home Guards	-	2.00
50	Police Training Institute	-	5.00
51	Fire Station	1 for 90,000 pop	0.50
F	<i>Slaughter House</i>		
51	Slaughter House	-	0.20
52	Abattoir	-	0.50

Note:

The space standards spelt out above shall not applicable to the Government Departments wherein the cases shall be decided on case-to-case basis in the interest of public welfare.

ANNEXURES

ANNEXURE "A"

Areas declared as the local area of SDA under section 3 of the Jammu and Kashmir Development Act, 1970 –

A) SRO-43 dated 2nd February 1971

Sl. No	Name of Village	Sl. No	Name of Village	Sl. No	Name of Village
1	Rawalpora	23	Naider Gund	45	Kanipora
2	Chandapora	24	Brathna	46	Bagati Kanipora
3	Harwan	25	Parimpora	47	Baghi Mahtab
4	Banigam	26	Zainakoot	48	Kursu Padshahibagh
5	Nishat	27	Goripora	49	Bagi Barzulla
6	Theed	28	Hassanabad Shunglipora	50	Haiderpora
7	Dharbagh	29	Baghwanpora	51	Wawatch
8	Zewan	30	Noorbagh	52	Humahama
9	Paristabal	31	Dedamari Bagh	53	Wanaduri Galwanpora
10	Kadalbal	32	Bagi Chandpora	54	Chawni Padam Singh
11	Sompora	33	Dachhingam	55	Khushipora
12	Soiteng	34	Shalimar	56	Bagi Lal Pandit
13	Naugam	35	Guptaganga	57	Palapora
14	Manigam Waji	36	Panthchokh	58	Shalteng
15	Zangibagh	37	Zowra	59	Gaggar Zoo
16	Kralpora	38	Nambalbal	60	Chandihar
17	Manchua	39	Drangabal	61	Lasjan
18	Shankerpora	40	Iihha Nambal	62	Nowgam
19	Natipora	41	Gundi Chandal		
20	Rawalpora	42	Suthu Kotheer Bagh		
21	Rangar	43	Gogjibagh		
22	Gangway	44	Dangerpora		

Annexure 'B' to SRO 28 of 2003

DISTRICT SRINAGAR

1) Tehsil Srinagar

01	Athwajan	02	Murinderbagh
03	Danpura	04	Muftibagh
05	Inderhama	06	Burzhama
07	Saidpora	08	Chattarhama
09	Khimber	10	Gund-i-Hassibhat
11	Krishibal	12	Bari-Udar
13	Lawaypora	14	Dara
15	Sangam	16	Balahama
17	Khunmoh	18	Batapora
19	Mujgund	20	Bakshipora
21	Takya	22	Danmar
23	Danihama	24	Mulaphak
25	Mulnar	26	Malru

2) Tehsil Ganderbal

01	Wanihama	02	Dadinabug
03	Gulabbagh	04	Pandach
05	Basarbagh	06	Shuhama
07	Warapora	08	Bakra
09	Hodura	10	Alasteng
11	Khalmul	12	Nagabal
13	Rangil	14	Malshah Bagh

DISTRICT BUDGAM

3) Tehsil Budgam

01	Pirbagh	02	Sheikpora
03	Ompora	04	Sabdan
05	Batahar	06	Narkara
07	Bemina	08	Dondus

09	Rakhi Gakarmula	10	Haripora
11	Hakarmulla	12	Haran
13	Dharamanas	14	Soyibug
15	Hanjik	16	Sharifabad
17	Hajibagh	18	Pohar
19	Doru	20	Gund-i-chakpur
21	Gurteng	22	Chowderibagh
23	Galwanpora	24	Warapora
25	Kulshipora	26	Shoparibagh
27	Khajabagh	28	Bhagindra
29	Dadach	30	Domodarkara
31	Rakhi arth(Part i)	32	Rishipora
4)	Tehsil Chadura		
01	Ganipora	02	Chakpur Kalan
03	Waingipur	04	Wanibal
05	Rakhi Shalina	06	Rakhi Sathu
07	Shalina	08	Seirbagh
09	Sumarbug	10	Manipur
11	Konihom	12	Taraz-e-Khud
13	Chak-i-Fatidin	14	Chak-e-Azam
15	Kabar Bagh	16	Chak-i-Badrinath
17	Goripora(near pohar)	18	Gandabal
19	Yayil	20	Khankah Bagh
21	Gotapur	22	Astanpur
23	Handalbug	24	Chattargam
25	Gopalpora	26	Dharambagh
27	Malik Gund	28	Dooniwara
29	Bonen	30	Zalwah
31	Wathura	32	Khutipora
33	Wagoora	34	Sathu-kalan
35	Gund-e-Kozweara	36	Zoonipora

3) Tehsil Beerwah

01 Sozyeth Goripora

02 Watalpora

DISTRICT PULWAMA

1) Tehsil Pulwama

01 Chattalam

02 Kunnabal

03 Khrew

04 Khandizal

05 Muradara

06 Maij

07 Wuyan

08 Sirmuth

DISTRICT BARMULLA

1) Tehsil Sonawari

01 Tengpora

02 Sharika Mukhi

03 Chak Dewan Sahib

04 Gorthaj-Ghat

05 Khush Bagh

06 Gund-e-Hirat

07 Rakhi Arth(Part ii)

08 Ranbirgarh partapgarh.

B) Annexure to notification SRO 429 dated 21-10-2014 (Annexure A)

Sl. No.	Name of Settlement /Revenue Village	Khasra /Survey. Nos.(including entire settlement)
A) SRINAGAR DISTRICT		
I. Srinagar North Tehsil		
1	Faqir Gujri	1-146
2	Saidpora Bala	1-520
3	Anchar	1-4447
4	Takunwaripora	1-2086
II. Srinagar North Tehsil		
5	Panjinara (Abdullah Pora)	1-612
B) GANDERBAL DISTRICT		
I. Ganderbal Tehsil		
A) Ganderbal Local Area falling in Ganderbal Tehsil		
6	Ganderbal M.C.	
	I. <i>Duderhama</i>	1-1001
	II. <i>Beehama</i>	1-885
	III. <i>Fatehpora</i>	1-744
	IV. <i>Gangerhama</i>	1-361
7	Darend	1-201
8	Shahpora:	1-324
9	Bandi bagh	1-180
10	Sarch chaudari bagh	1-864
11	Arch	1-617
12	Malarpora	1-224
13	Tulmulla	1-4737
14	Saloor	1-3882
15	Kujar	1-811
16	Rakh-i-kujar	1-276
17	Harran	1-601
18	Rakh-i-harran	1-1967
B) Areas other than Ganderbal Local Area falling in Ganderbal Tehsil		
19	Badhra kund	1-717
20	Kurag	1-1433
21	Gadurah	1-285

22	Shalabug	1-2802
23	Chhandna deh nauabad	1-1349
24	hatbur	1-1189
25	Gogajhigund	1-492
26	Gund rahman	1-938
27	Hakim gund	1-478
28	Kastooripora	1-195
29	Shekhapur (gondmumin)	1-489
30	Sehpora	1-2575
31	Devpora	1-1129
32	Koha gund (koka gund)	1-545
33	Rabitar gund roshan	1-1953
II. Lar Tehsil		
A) Ganderbal Local Area falling in Lar Tehsil		
34	Wahidpora	1-666
B) Areas other than Ganderbal Local Area falling in Lar Tehsil		
35	Thuru	1-948
36	Bardala	1-398
37	Dangarpur	1-130
38	Khranihama	1-541
39	Rapore	1-826
40	Wandhama	1-317
41	Barsu	1-1546
42	Krahama	1-1438
43	Zarigund	1-163
44	Latiwaza	1-315
45	Rakh rabitar	1-841
46	Wakhura	1-2068
47	Nawab bagh	1-345
48	Gazahama	1-504
49	Khanpora	1-385 b
50	batpora	1-995
51	Baghi-i-dab	1-35
52	Dab	1-1537
53	Gamwar	1-351
54	Naranbagh	1-275
C) BANDIPORA DISTRICT		

I.	Sonawari Tehsil	
55	Shadipur/sharda pora	1-411
56	Sarai dangarpur	1-1517
57	Gund-i-khalil	1-1102
58	Trigam	1-1171
59	Malikpur	1-183
60	Wudin	1-994
D)	BAAMULLA DISTRICT	
I.	Pattan Tehsil	
61	Mirgund	1-1002
62	Marichmar	1-210
63	Chanabal	1-598
64	Hanjiwera	1-4074
65	Gund Khwaja Qasim	1-356
66	Kantarbug	1-352
67	Habaq Tango	1-436
68	Arampora	1-315
69	Matipur	1-4740
70	Singpura	1-885
E)	BUDGAM DISTRICT	
I.	Beerwah Tehsil	
71	Narbal	1-803
72	Gagharpur	1-506
73	Chak Kowus (Kawsa Khalisa)	1-1455
74	Gund-I- Khalil	1-209
75	Yarigund	1-311
76	Kowus (Kawsa Jagir)	1-13350
77	Naupur	1-139
78	Lohar Chal	1-54
79	Hardo Wamin	1-87
80	Rus (Rassoo)	1-869
II.	Budgam Tehsil	
a)	Budgam Local Area falling in Budgam Tehsil	
81	Budgam M.C.	1-1511
82	Khanpora	1-859
83	Warpora	1-103
84	Zoorigund	1-739

85	Tekipora	1-114
86	Zooribagh	1-89
87	Patway	1-668
88	Choon	1-719
89	lakhrapora	1-924
90	Vitervainie	1-721
91	Nasirullah Pora	1-749
92	Kadipora	1-267
93	Defpur	1-181
94	Dardpora	1-355
95	Razwan &rDangarpora	1-1227
96	Surad (uninhabited)	1-102
97	Mamat	1-508
98	Nagrad Khah	1-404
99	thokerpora	1-152
100	Huru	1-295
101	Mahwara	1-688
102	Johama	1-245
103	Reshipora	1-522
104	Pallar	1-1356
105	Bodan	1-511
106	Mirgund	1-187
107	Chak-i-Kali Khan	1-368
108	Ichgam	1-2132
b) Areas other than Budgam Local Area falling in Budgam Tehsil		
109	Arath	1-1657
110	Chawa	1-700
111	Gotapora	1-1327
112	Shopribagh	1-62
113	Wadwan	1-1591
114	Nayadgam	1-456
115	Chatabug	1-618
116	Kamanpur (kamahopur)	1-100
117	Paimas	1-871
118	warsangham	1-689
119	Haripura	1-826
120	Harjigund	1-102

121	Krahama	1-385
122	Naru	1-1100
123	Ichkot	1-1481
124	Bagh Sahib Ram	1-93
125	Gudasuthu	1-1125
126	Lalgam	1-833
127	Lalgund	1-207
128	Chitru dangerpora	1-605
III.	Chadoora Tehsil	
129	Gulnaz	1-1015
130	Ganji bagh	1-203
131	Bachroo	1-602
132	Bagh bachroo	1-454
133	Bulbul Pora (lang panzan)	1-134
134	Repora namthal	1-1089
135	Chakpora (hardu chit chockpora)	1-882
136	Bugam batpora	1-1839
137	Sanzipora	1-550
138	Kuthipora	1-1200
139	Khanda	1-1424
F)	PULWAMA DISTRICT	
I.	Pulwama Tehsil	
140	Lolipora	1-356
141	Nihama	1-2397
142	Khadarmoh	1-1930
143	Marwal	1-849
144	Sethargund	1-775
145	Wukh (Okhoo)	1-1037
146	Kakapora	1-1566
147	Wudiora	1-521
II.	Awantipora Tehsil	
148	Kanyilbagh (Kanlibagh)	1-436
149	Wudipora (Udipora)	1-521
III.	Pampore Tehsil	
150	Barsu	1-3805
151	Lethpora	1-7511
152	Aloochibagh (Karnabal)	1-165

153	Samboora	1-4539
154	Patalbug	1-2821
155	Chandhara	1-3417
156	Krunts (Kranchu)	1-1605
157	Dus (Dussu)	1-1676
158	Gundabal	1-407
159	Lodu (ladhu)	1-4654
160	Mandikpal	1-596
161	Ondrus (Androosa)	1-871
162	Shar shalli	1-3325

ANNEXURE-B

1. List of ASI Protected Monuments

Sl. No.	Name of Monument / Site	Location
1	Monolithic Shrine	Khrew
2	Remains of Ancient Temple	Khrew
3	Remains of Ancient Temple	Pampore
4	Pathar Masjid	Zaina Kadal
5	Ancient Temple	Bohri Kadal
6	Tomb of Zain-ul-Abedin's mother	Zaina Kadal
7	Khankah of Shah Hamdan	Shah Hamdan
8	Mulla Akhund Shah's Mosque	Kathi Darwaza
9	Gates in the Rampart of the fort	Fort
	a) Kathi Darwaza	Kathi Darwaza
	b) Sangeen Darwaza	Sangeen Darwaza
10	Ancient Temple	Hari Parvat
11	Ancient sites and Remains	Burzahom
12	Ancient Monastery and Stupa	Harwan
13	Group of arched terraces / structural complex	Pari Mahal
14	Shankaracharya Temple	Kothi Bagh / Durganag
15	Ancient Site	Pandrethan
16	Excavated Remains	Pandrethan
17	Pandrethan Temple	Pandrethan
18	Ancient Temple	Lodu

2. State Protected Monuments

- i. Hari Parbat Fort
- ii. Hari Parbat Wall (Kalai)
- iii. Mosque and Tomb of Madin Sahib, Hawal
- iv. Old Ceremonial, Old Secretariat
- v. Thagbab Sahib, Safa Kadal
- vi. Historical Tomb, Soura