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PART I
EXECUTIVE SUMMARY

To have a quick review of the Master Plan Jalandhar a summary has been prepared under the following sub-headings:

History: The city of Jalandhar is one of the oldest cities since it finds earliest mention in the times of King Kanishka (100 A.D.). Jalandhar has seen various ups and downs in the course of its growth as it was visited by numerous Emperors namely Chinese Traveler Hiven Tsang, Ibrahim Shah, Jasrath Khokhar, Muhammadan Governors, Adina Beg etc,

Location: Jalandhar is situated at North latitude of 30°19' and East longitude of 75°36'48" with general elevation of 780 m above mean sea level. Jalandhar city, the district headquarterof District Jalandhar which is centrally located district of Punjab state.

Linkages: The city is well connected with other areas of state as well as the country through roads like NH1, NH1A, NH 70 and NH 71 and by rail links like Amritsar – New Delhi, Jalandhar – Pathankot, Jalandhar – Hoshiarpur, Jalandhar – Nakodar and Jalandhar – Kapurthala Railway line. However, the city has no air link with rest of the state or country so far.

Population: The population of Jalandhar city has increased from 67735 persons in 1901 to 754608 persons in 2001. The population growth rate of Jalandhar for the decade 1991-2001 was 39.47% with sex ratio of 865 / 1000 which is less than the state average of 876 women per thousand men. On the other hand, literacy rate of Jalandhar is 70.89% which is marginally higher than the state average of 70% in 2001. Jalandhar is dominated by Hindu population.

Trade and Commerce: Jalandhar is very famous trade and commerce centre of the state. There are about 25738 commercial establishments in Jalandhar which cater to the needs of the residents and provide employment to about 1.25 lakh persons in trade and commerce.

Industry: Jalandhar is internationally specialized in manufacturing of Sports Goods, Leather Goods, Hand Tools, Pipe Fittings and Surgical Implements etc. Large scale industrial units constitute only 0.23% of the total industrial units whereas the share of Small Scale Industries has been found to be of the order of 99.77%. The percentage growth rate of Large and Small Scale Industrial Units has been tabulated in Table No. 6.2 of the report. The main industrial estates in Jalandhar are Industrial Area (130.50

acres), Industrial Estate (5.30 acres), Focal Point (105.00 acres), Focal Point Extension (200.00 acres), Leather Complex (220.00 acres) and Sports & Surgical Complex (52.75 acres). The concentration of industry is on Kapurthala Road and areas around Pathankot Road and Bypass Road.

Employment: Out of the total employment generated in year 2004 by industries, the share of Small Scale Industrial Units was found to be 97.14% as compared to 2.86% large scale industries in the year 2004. The details of employment generated along with the growth rate and percentage of total employment generated are given in Table No. 6.3 of the report.

Tourism: Jalandhar provides varied type of tourism such as Religious and Historical Tourism, Medical Tourism, Educational Tourism, Recreational Tourism and Rural Tourism. The eminent tourist attraction points are Devi Talab Mandir, Tulsi Mandir, Shiv Mandir, Gurudwara Chhevin Patshahi, St. Mary's Cathedral Church and Pushpa Gujral Science City etc.

Housing: Housing is one of the important needs of human for survival. Thus to promote appropriate shelter parastatal agencies have contributed to Household stock in Jalandhar. In order to cope up housing demand numerous housing schemes have been framed by Department of Housing and Urban Development, PUDA, Improvement Trust, House fed and Municipal Corporation etc. As per Census 2001, the number of houses has increased from 81639 in 1981 to 142815 in 2001. Thus experiencing 24.82% growth in 1981-1991 and 40.15% in 1991-2001.

Slums: About 97 slums are also present in the city and about 25% of city's population lives in these slums. The detail of which is given in the report.

Rail and Road network: Jalandhar has ring and radial type of road network. It has an access to 4 National Highways namely NH1, NH-1A, NH70 and NH71.The major railway lines passing through Jalandhar are Amritsar – New Delhi, Jammu – New Delhi. Besides this Jalandhar – Nakodar, Jalandhar – Kapurthala and Jalandhar – Hoshiarpur railway lines also pass through Jalandhar it linking with other areas of the state / country. The terminals present in Jalandhar are Bus Stand, Truck Stand and Railway Station. The zig – zag street pattern, narrow roads, absence of pedestrian pathways, movement of mixed traffic, high dependency on personal vehicles and on-street parking results in chaotic situation in the city.

Water Supply and Sewerage System: 80% of the city area is covered under the intermittent water supply system leaving behind just 20% as un-served area. The source of drinking water is ground water. About 82% of the population of city is served with sewerage facilities through 682 km of sewer line of different sizes ranging from 200 mm to 2440 mm. On the contrary, only about 5% of city area is covered under Storm water network i.e., about 95% of the city area is devoid of this facility due to which rain causes havoc in the city especially during monsoon period. A sewerage treatment plant at village Pholriwal is in operation for the treatment of sewage of the entire city.

Fire Services: To safeguard the residents of the city from the hazardous effects of fire, Municipal Corporation Jalandhar has provided three fire protection centres at distinct locations in the city. The headquarter of fire protection centre is located at Old GT Road opposite Central Jail while sub fire stations are located in Partap Bagh and in Industrial Area, Dada Colony.

Education: Jalandhar is a predominant educational centre of the state. It has the privilege to provide education at different levels ranging from Primary Schools to Universities. Two universities namely Punjab Technical University and Lovely Professional University and six engineering colleges are working in the city. In addition to this, there are 3 B.Ed Colleges and 2 Law Colleges while the number of Senior Secondary Schools is 102 and that of Primary Schools is 354.

Health Care: Similar to its predominance in educational sector, Jalandhar is also the hub of Medical facilities. The total number of health care units operating at various levels in the city is 396 which provide latest health care facilities at regional and international level.

Sports and Recreation: Jalandhar has sufficient number of recreational centres in form of Organized Parks, Cinemas, Multiplexes, Stadium, Museum, Swimming Pools, Clubs, Amusement Parks, Library and Banquet Hall etc.

MASTER PLAN FORMULATION

Local Planning Area: With the objective of formulating the Master Plan for Jalandhar its' Local Planning Area constituting 5 urban settlements namely Jalandhar Municipal Corporation, Phagwara Municipal Council, Kartarpur Municipal Council, Adampur Municipal Council and Alawalpur Municipal Council and a Jalandhar Cantonment Board, along with 268 villages comprised in three districts namely Jalandhar, Kapurthala and Shaheed Bhagat Singh Nagar has been notified vide

Notification No. 12/9/2007-4HG1/5541 dated 18.07.2007 and amended vide notification no. 12/9/2007-4Hg1/2026 dated 16.07.09 and amended vide notification no. 12/9/2007-4Hg1/2365 dated 26.08.09. The total area of Local Planning Area is 77538 hectares (775.38 sq km) and total population is 1260592 persons.

Legal Backing: The Master Plan Jalandhar is being prepared under the provisions of **"The Punjab Regional and Town Planning and Development (Amendment) Act 2006".** The relevant sections of this act are discussed in the course of this report. The other legal tools which assist in the implementation of Master Plan are listed as below:

a) Chapter XI of Punjab Regional and Town Planning and Development (Amendment) Act 2006.
b) Chapter XIV of Punjab Regional and Town Planning and Development (Amendment) Act 2006.
c) Town Development Schemes (Chapter 12, Section 91 of Punjab Regional and Town Planning and Development (Amendment) Act 2006)
d) Punjab Apartment and Property Regulation Act, 1995.
e) Punjab Town Improvement Act, 1922.

Think Tank: For visualizing the future of the city, a "Think Tank" comprising members from public sector, private economic sector and social sector has been constituted vide letter no. 7463-72 dated 1-12-2008 under the chairmanship of Worthy Deputy Commissioner, Jalandhar. The basic objective of this committee is to discuss SWOT for the Master Plan, Jalandhar and to ensure the stake holder's participation so that the Master Plan so prepared is technically foolproof and readily acceptable to the public.

SWOT: The present strengths, the opportunities likely to be presented by the surrounding region, the present weaknesses of Jalandhar city and the threats emanating in the region have been deliberated in the meetings of "Think Tank". The strength and opportunities of Jalandhar are its central location in state with very good regional linkage, provision of regional level educational and health infrastructure, strong NRI Base, industrial hub, employment potential, regional level commercial potential, religious pilgrimage, vast catchment's area and availability of vast tracts of fertile agricultural land. On the other hand, weaknesses and threats of the city are unplanned and haphazard urban development, lack of air travel facility, competing development in the vicinity, concentration of commercial centres in congested areas,

choked road intersections, inadequate water supply, sewerage system and storm water drainage, exorbitant urban land prices and height restriction due to proximity to Air Force Station and Defense installations.

Vision – 2031: Based on the outcome of discussions held with the members of the "Think Tank" comprising various intellectuals, Non – Governmental Organizations, Community Based Organizations, professionals and officials of the urban local body and other department's a vision has been formulated as **"To make LPA Jalandhar an economically vibrant city with quality infrastructure and housing for all its citizens in environmentally sustainable manner achieved through effective partnership between the public, private and community sector",** so that Jalandhar must become a centre of rapid economic and physical growth. The above stated vision is to be achieved through better urban governance, providing sufficient land for economic and social activities, through higher order of economic productivity, rationalized land use pattern, improved transport network, introducing eco-friendly economic and physical activities and through provision of social and physical infrastructure etc.

Strategies to obtain land for public purposes: In order to make sufficient land available for the public purpose, strategies for obtaining land has been formulated such as Land Acquisition through 1894 Act, TDR, Development of land through Punjab Apartment and Property Regulation Act 1995, Land Pooling and Govt / Panchayat / Waqf Board lands. None of the single alternative may be applied on entire area of LPA and thus different alternatives have to be used depending upon the nature, size, location and necessity of the project.

Master Plan Objectives: Considering the role, impact, growth and contribution made by the city of Jalandhar to the economy, employment and productivity of the State of Punjab, the future growth and development strategy for Jalandhar needs to be viewed in the larger canvas of regional context. Therefore, the task of preparation of Master Plan, Jalandhar with the perspective year 2031 has been undertaken with the objectives to have optimal city structure, to have better quality of life, efficient traffic and transportation plan, to have rational distribution of physical and social infrastructure, to have good governance and to promote sustainable development.

Evaluation of alternative city structures: Based on the trends of growth identified in Local Planning Area, Jalandhar and keeping in mind the expected doubling of

urban population in 2031, three different patterns of development have been identified namely:

- Compact development of the city with intensification of core
- Intensive growth along transport radials.
- Development of Ring Towns.
- Extension of peri urban areas

On the basis of current trends of development in the area, accessibility corridors and availability of land resources, no single alternative can be adopted for LPA, Jalandhar hence a combination of all the three alternatives need to be applied for coordinated planning and development of Local Planning Area, Jalandhar.

Projected Population: The population of LPA Jalandhar has been projected to be 25.36 lakh persons by 2031. Out of which the urban population is 22.49 lah persons while rural population is 2.87 lakh persons. The population growth rate for urban and rural settlements for 2021-2031 is 55.75% and -24.67% respectively. The assumptions which have been kept in consideration while working out the population projections detailed out in the course of this report.

Jalandhar Urban Area 2031: To accommodate the projected population of 25 lakh by the year 2031 in Local Planning Area, Jalandhar, a four-pronged strategy is adopted:

Intensification of central core

Intensive growth along transport radials

Development of ring towns

Extension of peri urban area

Residential (Housing): Based on the projected population of 25 lakh by 2031 for Local Planning Area, Jalandhar, the additional demand for housing has been estimated keeping in view the number of urban and rural settlements which falls within LPA. It has been estimated that approximately 36765 hectares of the area is required for residential purpose. The different strata of society are also kept in consideration while determining housing demand.

Mixed Land use zones: The co-existence of residential with commercial and residential with industrial activities is a common character of our cities. This character is more prevalent in inner zone of the city. The economic role played by these areas cannot be ignored. Hence an attempt is made in the present Master Plan to make these areas continue to play an active economic role and the strategy is to provide suitable

framework for allowing mixed use activities appropriate to the character of the areas with greater flexibility in terms of permitting a variety of uses like commercial (retail shops), household and green category industry or outlets for specialized services etc along with residential use.

Two types of mixed land use are proposed for Master Plan Jalandhar viz., industrial mixed use and commercial mixed use.

Transportation: In order to support the required level of economic and physical development and to provide for the easy and efficient flow of goods and people in order to overcome the traffic hazards. A number of proposals have been put forth such as BRTS and LRTS; Road Improvements, provision of flyovers / Rail over bridges, underpasses, subways, service lanes; provision of parking lots, pedestrian pathways, cycle / rickshaw tracks etc.

Industry: Industrial sector is an employment intensive sector which provides employment to about 35.1% of the population. But the existing and continuous growth of industries in non-designated areas and lack of planned industrial estates has given birth to the pollution and negative environmental impact of industries. Keeping this industrial scenario in view, the area between Jalandhar – Pathankot road and Jalandhar – Hoshiarpur road, Jalandhar – Kapurthala road, Jalandhar-Nakodar road,Old GT Road, Phagwara Ludhiana road and on Phagwara Hoshiarpur road are proposed for the industrial sector so that dominance of Jalandhar in Sports Goods, Tanning, Hand Tools, Surgical equipments and Casting industries can be maintained. s

Trade and Commerce: Trade and Commerce is an important land use component of a Master Plan which reflects the economy and image of the city. Higher the level of shopping and commercial activity, stronger is the economy resulting in more employment and infrastructure. Presently trade and commerce provides an employment to about 1.25 lakh persons which are expected to increase. In addition to these, a large number of enterprises in other sectors such as restaurants and hotels, finance and insurance, real estate and business are operated from commercial centres which will generate additional employment and promote economy of the city.

With a view to provide appropriate level of commercial activity and to cover the entire city to meet day today needs and special requirements of the public a three – tier system of Commercial activity is envisaged to accommodate required shopping. Central Business District has been proposed at City level, District / Community Centre has been proposed at sub – city level and Local Shopping / Convenience Shopping Centre have

been proposed at Sector level. Decentralization of core area is also envisaged in the master plan.

Environment: Urbanization has major environmental impacts over ecosystem of an area. A balance is required to be maintained between urbanization and environmental health of the settlement. Master Plan Jalandhar aims to create sustainable physical and social environment for improving the quality of life. Thus to control ambient air quality of Jalandhar, it has been proposed to run all commercial vehicles (like trucks local buses, taxis / auto rickshaws and tempos etc) on CNG**.**

By proper land use planning, a buffer can be created between location of public, semi-public and commercial activities along major transport routes and residential zones. Green buffer of thin leaved trees, land formations, mounds embankment, etc along major roads could also provide effective barriers to transmission of noise. It is also necessary to improve monitoring and implementation of the Noise Pollution, (Level) Rules 2000 and, to notify certain areas as 'No Horn Zones'. The design and surface material of roads and pavements should also ensure reduction of noise. Certain measures have been envisaged for the rejuvenation of Chitti Bein and Black Bein.

Physical Infrastructure: The continuous and haphazard urban growth has put severe pressure on basic physical infrastructure viz., water supply, sewerage, power, drainage and solid waste management. As a result these facilities are deficient and over burdened. Master Plan Jalandhar envisages an integrated approach for the provision and up gradation of physical infrastructure components i.e., water, sewerage - drainage for recycling, harvesting, optimal use of water, power generation etc. Master Plan aims to encourage innovative techniques and use of alternative technologies like solar energy, recycling of solid waste etc. Augmentation of sewerage network, water supply and drainage, provision of sewerage treatment plants and waste dumping sites, are some of the proposals which should be on priority.

Social Infrastructure: The requirements for social infrastructure for Local Planning Area, Jalandhar has been worked out on the basis of existing scenario of each component and the projected demand by 2031 using UDPFI Guidelines

Development Controls: To promote planned and organized development of different land uses, certain development controls have been formulated pertaining to ground coverage, FAR, permissible height etc.

Zoning Regulations: Zoning regulations have been detailed out in the last section of this report so as to have planned and organized development in the future course of

time. These rules pertain to land use zones and procedure for permission for development / change of land use in area where Master Plan is in operation and application for licence of a colony and documents to be submitted for grant of licence etc.

PART II: REGIONAL SETTING AND HISTORICAL BACKGROUND

2.0 REGIONAL SETTING

2.0.1 State of Punjab

Punjab is one of the advanced states in the country, with highly productive agriculture, a well-developed physical infrastructure and a high human development index with industrious, painstaking and entrepreneur skills. It accounts for almost 1.53 per cent of India's geographical area and 2.37 per cent of its population. State is credited with ushering in the green revolution and white revolution in the country. It today contributes nearly 35% of the wheat and 70% of rice procured for distribution through the public distribution system. An agro-based and agro-oriented industrialization is another prominent feature of the state economy. The cumulative effect of all this is manifest in the high per capita income of the state, a position which Punjab has been holding for most of the years since its formation in 1966.

Historically, Punjab has experienced many upheavals and turmoil, which, in turn, have influenced building brave and unique character of Punjabis and opened its path of development. The contours of administrative map of Punjab have undergone extraordinary changes in the past. The nomenclature 'Punjab' was widely used during the reign of Akbar (A.D. 1556-1605). It was known as the Kingdom of Lahore during the reign of Maharaja Ranjit Singh (1700-1839). The British occupied it in 1849 and merged Delhi and the Hissar division of the former Northwest Province (now Uttar Pradesh) with Punjab in 1858. In 1901, Punjab's border districts situated across the Indus were taken away to form the Northwest Frontier Province. Subsequently, Delhi was separated from Punjab.

At the time of the partition of the India sub-continent in 1947, Punjab was bifurcated into two parts: West Punjab (Pakistan) and East Punjab (India). Of its 3, 59,179 square kilometers and 29 districts, only 1, 52,649 square kilometers and 13 districts were left with Indian Punjab.

With massive migration, post-partition Punjab was faced with the daunting task of providing basic infrastructure necessary to accommodate 40 lakh displaced persons. They were put in refugee camps, institutions and other available structures in in-sanitary conditions. The immediate task was to create the infrastructure to accommodate the refugee population. New towns were constructed and economic projects initiated for the resettlement of refugees from rural areas. The pattern, established during the period, has continued to guide the path of development in the state.

In 1956, at the time of the reorganization of states, the former PEPSU territory was merged with Punjab. In 1966, the state was further reorganized under the Reorganization Act 1966. There was a strong demand for the reorganization of the state on a linguistic basis so that satisfaction of regional sentiments could be harmonized with the process of development. The Punjabi speaking areas were carved out of the erstwhile Punjab on 1 November 1966. The Hindi speaking areas in the north were merged with Himachal Pradesh. The southern Hindi speaking areas were constituted into a new state of Haryana. The Punjabi speaking state was created in 1966, with 11 districts, including Rupnagar. The reorganization reduced Punjab to about two-fifths the size attained after the merger of PEPSU in 1956. This was one-seventh the area of Punjab before Independence. At present, the state is a linguistic unit inhabited by Punjabi speaking people with 20 districts.

2.0.2 Rapid Urban Growth

Punjab is urbanizing rapidly and its future seems to be urban. With urbanization standing at 33.95%, Punjab is ranked fifth major urbanized state of India after Tamil Nadu (43.86%), Maharashtra (42.40%), Gujarat (37.35%) and Karnataka (33.98%) and most urbanized states in the northwest region of the country. The percentage of urban population in Punjab has been on the rise continuously.

Looking at the growth of urban population vis-à-vis total population of state during last century (1991-2001) it has been observed that while total population of the state increased approximately 3 times (7.5 to 24.28 millions), during this very period urban population recorded enormous increase of 9 times (0.9 to 8.25

million) However, during the same period rural population grew only by 2.5 times (6.61 to 16.2 million). In 1901 when every 8th person was an urbanite, in 2001 every 3rd person came to live in the cities/ towns. The trends of urbanization were slow in the first half of century when urban population merely doubled (0.93 to 1.98 million) in the space of 5 decades (1901-1951). However, it picked up in the post-independence era and urban population grew by more than 4 times (1.98 to 8.25 million) during the second half of century (1951-2001). In absolute numbers, increase in urban population recorded during the last century was 73.11 lakh persons whereas level of urbanization increased from 12.39% to 33.95% indicating the massiveness of the state's urbanization. Last decade witnessed a sharp rise of 37.38% in urban population whereas in absolute number the addition to the urban centers was of the order of 2252341 persons. From the ongoing trend it can be envisaged that urban growth will be much faster in years to come.

Table No. 2.1: Trends in Urbanization – Punjab (1901 – 2001)

Census year	Total number of UA's / Towns	Total population	Total urban population	Percentage of urban population	Decennial growth		Annual exponential growth rate (urban)
					Absolute	Percent	
1901	76	7544790	934766	12.39	-	-	-
1911	62	6731510	813224	12.08	-121542	-13.00	-1.38
1921	59	7152811	869526	12.16	56302	6.92	0.67
1931	66	8012325	1168413	14.58	298887	34.37	3.00
1941	75	9600236	1657415	17.26	489001	41.85	3.56
1951	110	9160500	1989267	21.72	331853	20.02	1.84
1961	106	11135069	2567306	23.06	578039	29.06	2.58
1971	106	13551060	3216179	23.73	648873	25.27	2.28
1981	134	16788915	4647757	27.68	1431578	44.51	3.75
1991	120	20281969	5993225	29.55	1345468	28.95	2.58
2001	157	24289296	8245566	33.95	2252341	37.58	3.24

(Source: Census of India)

State of Punjab recorded a population of 24289296 in 2001. During 1991-2001, population of state increased by 40.07 lakhs out of which addition to urban population was of the order of 22.52 lakhs (56%) due to the fact that number of urban centers recorded a sharp increase from 120 to 157. Concentration of population in urban areas of Punjab is very high as compared to rural areas. Villages recorded low density as compared to urban areas giving a density ratio of 1:12 in favor of urban centers. Apparently, Punjab is one of the most densely populated states in India.

It is expected that by 2011[1], population of the state would be of the order of 276.78 lakhs out of which urban component would be 38.59% i.e. 106.18 lakhs people will be the urban residents. This would further result in excessive concentration of urban population.

Table No. 2.2: Trends in Urban Population in different size–categories of Cities & Towns

Year	Class I	Class II	Class III	Class IV	Class V	Class VI	All Classes
1951	3 [33.11] (658725)	2 [7.73] (153719)	17 [26.17] (520558)	20 [14.44] (287223)	36 [13.18] (262197)	2 [5.37] (106845)	110 [100.00] (1989267)
1961	4 [38.25] (981890)	5 [10.15] (260707)	23 [28.11] (721684)	20 [10.44] (267913)	35 [10.38] (266439)	19 [2.67] (68673)	106 [100.00] (2567306)
1971	4 [40.52] (1303128)	8 [15.84] (509389)	22 [22.20] (714176)	31 [13.32] (428413)	29 [6.84] (219911)	12 [1.28] (41162)	106 [100.00] (3216179)
1981	7 [46.38] (2155714)	10 [14.39] (668780)	27 [20.24] (940482)	36 [11.28] (524505)	40 [6.50] (301905)	14 [1.21] (56371)	134 [100.00] (4647757)
1991	10 [54.16] (3246224)	18 [19.91] (1193171)	25 [12.92] (774453)	46 [10.82] (648230)	14 [1.72] (102945)	7 [0.47] (28202)	120 [100.00] (5993225)
2001	14 [58.38] (4814405)	19 [16.45] (1356386)	35 [12.50] (1030623)	54 [9.82] (809366)	28 [2.52] (207891)	7 [0.33] (26895)	157 [100.00] (8245566)

(Source: Census of India, 1951, 1961, 1971, 1981, 1991 and 2001)

Note: -

Number of towns in each category (without bracket)
Percentage population in each class [ ]
Total population in each class ( )

Increase in share of Class I towns in total urban population of Punjab has resulted in over concentration of population and resources in few larger towns majority of which including Jalandhar are situated on the Grand Trunk Road. Map 1 shows spatial pattern of urbanisation and growth rate of Class I towns in Punjab.

2.0.3 State Economy

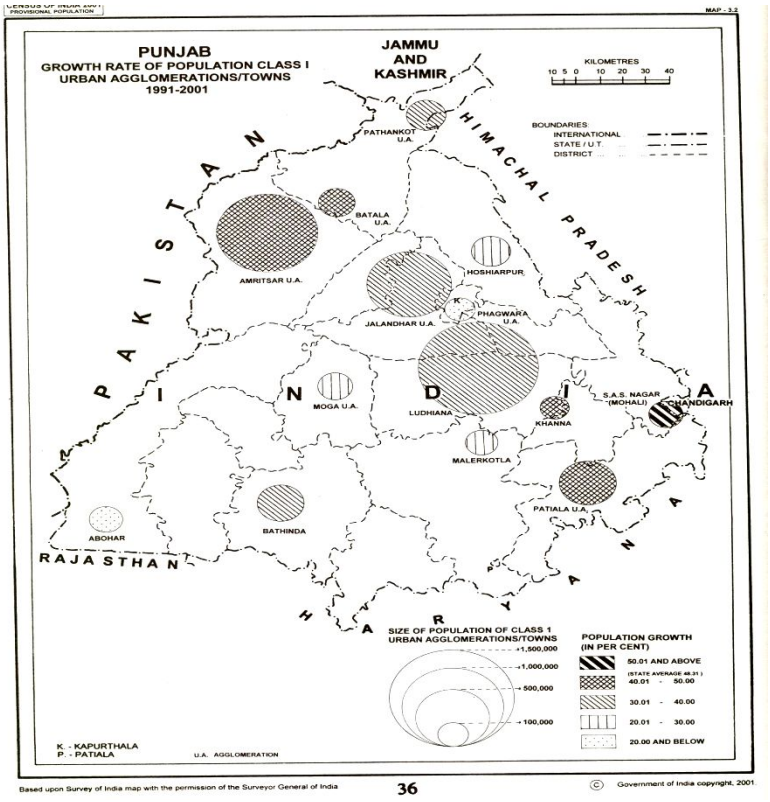
The Net State Domestic Product of the state has been tabulated as follows:

[1] Population Projections for India and states 2001-2026 Report of the Technical Group on Population Projections constituted by the National Commission on Population May 2006, Office of the Registrar General and Census Commissioner, India.

Table No. 2.3: Net State Domestic Product at Factor Cost by Industry of origin at 1999-2000 prices

Sr. No.	Sector	Rs. (in Lacs)							
		1999-2000	**2000-2001**	**2001-2002**	**2002-2003**	**2003-2004**	**2004-2005**	**2005-2006**	**2006-2007**
1	Agriculture	2403771	2559626	2644008	2555356	2785312	2915231	3165630	3617231
2	Forestry and Logging	20843	17055	21342	20184	19838	32285	32522	37101
3	Fishing	15210	16616	18147	21191	25463	22769	27615	30904
	Agri and Allied	2439824	2593297	2683497	2596731	2830613	2970285	3225767	3685236
4	Mining and Quarrying	429	351	1194	2614	2807	2640	2902	3026
	Sub total of Primary	**2440253**	**2593648**	**2684691**	**2599345**	**2833420**	**2972925**	**3228669**	**3688262**
5	Manufacturing	824963	875874	817157	896175	956934	1066040	1221776	1352700
	Manu – registered	495366	524193	472389	514154	520815	583085	671227	733718
	Manu – unregistered	329597	351681	344768	382021	436119	482955	550549	618982
6	Construction	286176	349307	386182	357921	438918	552564	703393	881140
7	Electricity, Gas and Water Supply	129602	151740	187201	177551	208112	146721	188230	201105
	Sub total of Secondary Industry	**1240741**	**1376921**	**1390540**	**1431647**	**1603964**	**1765325**	**2113399**	**2434945**
		1241170	**1377272**	**1391734**	**1434261**	**1606771**	**1767965**	**2116301**	**2437971**
8	Transport, Storage and Communication	248847	283576	340504	368182	416423	455417	519489	577516
	Railways								
	Transport by other means	248847	283576	340504	368182	416423	455417	519489	577516
9	Trade, Hotels and Restaurants	798461	1052177	1161192	1267789	1332332	1501375	1791833	2013662
10	Banking and Insurance	289762	309139	351329	407832	441021	471011	510670	549532
11	Real Estate, Ownership of dwellings and business services	242920	250244	251727	261205	269797	279991	284619	292361
12	Public Administration	275955	289163	304030	341854	366852	388153	425839	458884
13	Other Services	572417	619010	643428	673457	700179	790845	864075	930782
	Sub Total of Tertiary	**2428362**	**2803309**	**3052210**	**3320319**	**3526604**	**3886792**	**4396525**	**4822737**
14	State Domestic Product (Rs. Lacs)	6109356	6773878	7127441	7351311	7963988	8625042	9738593	10945944
15	Calculated State Domestic Product (Rs. Lacs)	6109356	6773878	7127441	7351311	7963988	8625042	9738593	10945944
16	Population	23854000	24310000	24621000	25076000	25540000	26012000	26493000	26983000
17	State Per Capita Income (Rs.)	25611	27865	28949	29316	31182	33158	36759	40566

Map 1: Spatial Pattern of Urbanization and Growth Rate of Class I Towns in Punjab.



2.1 THE LOCAL PLANNING AREA JALANDHAR – PUNJAB

The concept of Local Planning Area for the preparation of Master Plans of cities and towns in Punjab has been introduced under section 56 of the Punjab Regional and Town Planning and Development (Amendment) Act 2006 (earlier this act was known as the Punjab Regional and Town Planning and Development Act 1995). The Government of Punjab has declared Local Planning Areas for 44 cities / towns for providing better planning and regulating the development and use of land in planning areas. Out of these, 24 cities / towns (including Jalandhar) are in the priority list of the state government. In the above context the Local Planning Area, Jalandhar has been notified vide Notification No. 12/9/2007-4HG1/5541 dated 18.07.2007 and amended vide notification no. 12/9/2007-4Hg1/2026 dated 16.07.09 and amended vide notification no. 12/9/2007-4Hg1/2365 dated 26.08.09. The Chief Town Planner, Punjab has been designated as planning agency for Local Planning Area, Jalandhar by the govt vide notification 12/9/2007-4HGI/5694 dated 19/20 July 2007.

Jalandhar is located in District Jalandhar which is almost centrally located district among the 20 districts of Punjab State. It falls within Doaba region of the state. The city is located at the distance of about 160 kms South-East of Chandigarh, “The capital of Punjab”. River Beas flows at a distance of about 35 kms to the North of city. Jalandhar is third largest city of Punjab State

after Amritsar and Ludhiana having population (including Jalandhar Cantt.) of 7,54,608 persons as per 2001 Census.

Jalandhar is situated at North Latitude of 30° 19' and east Longitude of 75° 36' 48" with the General elevation of 780 m above mean sea level. A broad gauge railway line connecting Amritsar on one side and Delhi on the other sides makes the city easily accessible and is considered as the backbone of the state.

Jalandhar, the Divisional headquarters of the state and is situated on the national Highway 1 viz., the Grand Trunk Road and has an access to main Railway Line of Amritsar – New Delhi. The city is well connected with other areas of state and country through Road and Rail links. It is directly connected by road and rail with cities namely Ludhiana, Pathankot, Hoshiarpur, Kapurthala and Nakodar.

Jalandhar is specialized in manufacturing of sports goods, leather goods, hand tools, pipe fittings, surgical implements, agriculture implements & electrical goods etc. and is also famous for publishing houses and nearly 18 dailies are published in English, Punjabi, Hindi and Urdu.

2.2 CONSTITUENT AREAS AND JURISDICTION

As a first step towards the preparation of Master Plan Jalandhar, Local Planning Area has been delineated and notified under section 56 (1) of "The Punjab Regional and Town Planning and Development (Amendment) Act, 2006" in the official gazette. The Local Planning Area Jalandhar includes 5 cities / towns namely, Jalandhar, Phagwara, Adampur, Kartarpur and Alawalpur and Jalandhar Cantonment Board along with 268 villages. Out of these settlements, 4 towns and 229 villages fall in Jalandhar district, 2 villages in Shaheed Bahagat Singh Nagar district while Phagwara town and 37 villages come under the administrative boundary of Kapurthala district. The total area of Local Planning Area is 77538 hectares (775.38 sq kms); out of which 65893 hectares fall in Jalandhar district, 618 hectares in Shaheed Bhagat Singh Nagar district and rest of the 11027 hectares come under Kapurthala district. The detail of areas and population of Local Planning Area Jalandhar has been detailed out in Annexure I while the schedule of boundary has been detailed out in Drawing No. DTP (J) 7/2007 dated 21-06-2007 / 21-04-2009.

While delineating Local Planning Area of Jalandhar, the following factors mentioned in Rule 22 of the Punjab Regional and Town Planning and Development (General Rules 1995) have been considered:

- Administrative boundary limits of the villages and the district has been followed for better identification and management of the Local Planning Area.

- Geographical features of the area like Eastern Bein, Western Bein, Kala Sanghian Drain etc and other physical features like roads and railway lines have been also kept in mind.
- For better accessibility, the means of transportation and communication have been considered for better development of the area.
- The present and future growth trends and distribution of the population is another important factor considered for delineation of this area.
- Industrial location and trends of industrial growth.
- Economic base and commercial activities of the city / towns and their surrounding areas.
- Urban expansion trends and management of periphery areas for ecological and environmental balance have also been kept in mind.
- Dispersal of economic activities to alleviate pressure on Jalandhar city and balanced development of the area is another important factor which governed the delineation of Local Planning Area, Jalandhar.

2.3 PHYSIOGRAPHY AND CLIMATE

The physiography of Jalandhar city and its surrounding areas is a typically representative of an alluvial plain and it owes its origin to aggravation work of river Beas. The city is centrally located in the plain region which is marked for its flatness and featurelessness.

2.3.1 River and Drains

The Beas River, Western or Kali Bein and Eastern or White Bein, constitute the chief hydrographic features of the areas.

The Eastern Bein: - The drainage of the Shivalik hills passes through the Jalandhar Doab in two streams, the Eastern or White Bein and the Western or Black Bein. The Eastern Bein is first formed by a couple of drainage channels bringing rain water from villages of the Garhshankar Tehsil. It enters Nawanshahr Tehsil about 8 Kms from the Sutlej and is known as Jadla Bein there. Thence it runs north-west for about 26 Kms till it is joined by the Garhshankar Bein in village Bhaura. From Bhaura it continues in north-westerly direction for about 22 Kms in Nawanshahr Tehsil and 13 Kms in Phagwara Tehsil of Kapurthala district till it touches Ucha village in Jalandhar Tehsil. From Ucha, the stream takes south-westerly direction and is joined by Kali Nadi from the western part of Nawashahr Tehsil. It then reaches the Nakodar bet 6 Kms to the south west of Malsian and runs amongst west through the bet joining the Sutlej about 6 Kms above the confluence with the Beas. The stream is mostly knee-deep in winter but after heavy rains, it rises rapidly and overflows its banks flooding the lands on either side. Even the

bridge or Grand Trunk Road between Jalandhar and Phagwara used to get submerged during rainy season but had been raised appreciably.

The Western Bein: - The north-west of Jalandhar Tehsil drains into the Western Bein. This stream touches the district only two villages of Kudowal and Dhirpur, 6 Kms north-west of Kartarpur. There are three main drainage channels in the area which run westward to join the Western Bein. The most northerly channel is on the Hoshiarpur border. The middle one lies 4 to 6 kilometers southward. The most southerly channel is known as the Kingra Cho. During the rainy season this cho causes considerable soil erosion and when in fury it leads to loss to human life and property.

2.3.2 Climate

Climatic divisions and seasons and their duration: The cold season is from about the middle of November to the early part of March. The succeeding period upto June is the hot season. July, August and the first half of September is monsoon. Mid September to about the middle of November may be termed as the post monsoon or transitional period.

Temperature: June is generally the hottest month with the mean daily maximum temperature at $44.^0$C and the mean daily minimum at 27.2^0 C. January is the coldest month of the year. The mean daily maximum in January is 19.5^0 C and the mean daily minimum is $6.4\ ^0$C.

Rainfall: About 70 percent of the annual rainfall is received during period from July to September. The rainfall during the period of December to March accounts for about 16 percent of the rainfall. The average annual rainfall in the district is 649.9 mm (25.59”).

HISTORICAL BACKGROUND

3.0 BRIEF HISTORY OF THE CITY AND ITS LANDMARKS

According to a legend, this place used to be part of an ocean which receded to create kingdom for the "Daitya, King Jalandhar" from whom the city takes its name. It finds earliest mention in the times of King Kanishka (100 AD) when a conference of Buddhist theologians was held to collect manuscripts and preparing commentaries on them. Jalandhar gave rise to the Nath Movement and remained centre of its activity during the 8th to 10th century AD. The Samadh of Jogi Jalandhar Nath was situated at the place where now stands the shrine of Nasir-ud-din Chishti, constructed in the 15th Century. It was visited by Chinese traveler Hiuen Tsang when it was capital of Katoch Chiefs. At that time, the town was more than 3 km in circumference. It was occupied by Ibrahim Shah of Ghor in 1179-80 AD. Thereafter it remained in considerable importance in the struggle between Jasrath Khokhar and Muhammadan Governors in 1422-42 AD. During the Mughal period it served as capital of Jalandhar Doab. The last of the Mughal Governors was Adina Beg who indulged in intrigues with Marathas and Sikhs. It was during the

Governorship that Jalandhar was allowed to be burnt by Baba Badbhag Singh of Kartarpur in retaliation of burning of Kartarpur by Ahmed Shah Abdali in 1756 AD. In 1766 it fell in the hands of Sikhs of Faizullapuria misl under Khushal Singh. His son Budh Singh built a masonry fort which is known as Qila Mohalla. In 1811 it was annexed to Maharaja Ranjit Singh's dominions under the command of Diwan Mohkam Chand. Thereafter it served as capital of Lahore state in Jalandhar Doab. It later passed over to the British after the first Anglo Sikh War in 1845-46.

The city comprise of bastis founded and inhabited by the Pathans, which are as follows : Basti Danishmandan, Basti Sheikh (Darvesh), Basti Ghuzan, Basti Bawa Khel, Basti Pirdad, Basti Shah Kulli, Basti Shah Ibrahim, Basti Mithu Sahib, Basti Nau. The town had 12 Kots, 12 gates and 12 bastis. The kots were having predominantly Hindu population whereas bastis were mostly Muslim dominated areas. Since after 1947, the city has regained its lost glory.

It was made temporary capital of Punjab in 1947 but later shifted to Shimla and ultimately to Chandigarh. Jalandhar was known as mint city as copper coins were minted here during the reign of Akbar. It was also famous for copper, brass and bronze utensils. Besides, jars of earth and brass were manufactured here. Cotton and wool weaving industry and preparation of silk yarn for looms was also an important industry which has vanished with the Muslims, who migrated to Pakistan after partition of sub-continent.

After partition the town has made good progress in the field of industries, especially, sports goods, pipe fittings, hand tools, rubber goods, leather products, surgical instruments, auto parts, agricultural implements, ball bearings, motor body building, electrical appliances, household appliances, valves and cocks etc.

There are number of religious places in the city, such as temple of Varinda, wife of Jalandhar (also known as Tulsi Mandir) and a tank associated with Jalandhar ; Gupha Mandir, where image of Annapurana is installed; Brahm Kund; Shitla Mandir (as old as town itself); Devi Talab Mandir (Since renovated) with old Kali temple; Sanyas Ashram; Nathan-di-Bagichi; Darbar Muhammad Jamal Zohra; Baba Jhandianwala; Tomb of Imam Nasir-ud-din and Samadh of Baba Sodhal (a child deity). A two days fair is held at the Samadh of Baba Sodhal in August-September every year. Besides a musical festival is held every year in the month of December in memory of Saint Harballabh, a great singer of his times, at Devi Talab, which continues for four days. All the renowned musicians from different parts of country actively participate in this fair.

Institutional Development: The Municipal Committee, Jalandhar was created in 1867 and raised to Class-I in 1950 under the Punjab Municipal Act 1911. Under the Punjab Municipal Corporation Act. 1976, it was further elevated to Municipal Corporation by Punjab Government

on 5th July 1977. Many villages surrounding the city are now part of Municipal Corporation Jalandhar.

Educational, Health Care and Recreation – Entertainment Infrastructure: Jalandhar is a Municipal Corporation city, which reported a population of 714077 persons as per 2001 Census, against 509510 persons reported in 1991 Census. The city has 12 colleges, 2 B.Ed. training colleges, a Guru Nanak Dev University Regional Centre, an Ayurvedic College, a Dr. B.R. Ambedkar National Institute of Technology, 2 Polytechnics, 2 ITIs, 21 Senior Secondary Schools, 26 high schools, 18 middle schools and 117 primary schools. Besides there are 9 hospitals (one Ayurvedic), 5 health centres, 27 dispensaries (13 ayurvedic, 1 homeopathic, 1 unani), 4 family centers, a TB hospital, 7 other clinics/ hospitals, 3 stadiums, 15 cinemas, 10 public libraries and 48 reading rooms. There are two research stations and one research sub-station engaged in sugarcane, cotton and potato research, a central institute of hand tools and a leather institute. The government has also opened number of quality marking centers for standardizing quality of various products locally manufactured.

3.1 MAJOR EVENTS IN THE PLANNING HISTORY

The events in the history are important to know since these give the idea about the type of development a city underwent over the passage of time. The events in the planning history of Jalandhar city are listed in chronological order as follows:

Table No. 2.4: Major events in Planning History

Sr. No.	Year	Event
1	7th Century AD	Chinese traveler Huen Tsang described Jalandhar as independent identity
2	Mughal era	Jalandhar was the capital of Northern India
3	Till 1846	Jalandhar Doaba was ruled by the Sikhs
4	1846	British Commissioner's headquarter set up & Jalandhar Cantonment established
5	1852	The Municipal Committee founded (one of the oldest)
6	1870	First rail link established
7	1945	Establishment of first Town Planning Scheme
8	Till 1947	Remained under British Rule and was a Divisional Headquarter
9	1947	Remained State Capital Headquarter
10	1947	Made temporary capital of united Punjab after partition
11	16.05.1948	Establishment of AIR
12	1950	Municipal Committee raised to Class-1
13	1951	Establishment of first Industrial Area
14	1960	Establishment of first Development Scheme
15	1971	Development of First Urban Estate
16	5th July 1977	Municipal Committee elevated to Municipal Corporation
17	13.04.1979	Establishment of Doordarshan Kendra
18	1987	Establishment of Dr. B. R. Ambedkar National Institute of Technology
19	January 1997	Establishment of Punjab Technical University
20	2005	Establishment of Pushpa Gujral Science City
21	2005	Establishment of Lovely Professional University
22	18.07.2007	Constitution of Local Planning Area, Jalandhar

(Source: District Gazetteer, Jalandhar)

4.0 LEGAL FRAMEWORK FOR MASTER PLAN

4.0.1 Legal Set Up

Legislative support is an essential tool to control the planning and development activity in a state. Some states like Goa, Gujarat, Himachal Pradesh, Karnataka, Madhya Pradesh, Maharashtra, Manipur and Mizoram etc have comprehensive legislation which provided for urban planning and development in a regional perspective beyond the city limits and coordinated with the overall framework of economic development, priorities and resource availabilities.

Punjab state is the new entrant in this field. The first ever legal tool namely The Punjab Regional and Town Planning and Development Act, 1995 (PRTPDA) was enacted in the year 1995 (Punjab Act No.11 of 1995) which has been amended in the year 2006 and now this act is known as "The Punjab Regional and Town Planning and Development (Amendment) Act 2006" (Punjab Act No. of 2006). This is an act to make provision for better planning and regulating the development and use of land in planning areas delineated for that purpose, for preparation of Regional Plans and Master Plans and implementation thereof, for the constitution of a State Regional and Town Planning and Development Board, for guiding and directing the planning and development processes in the State, for the constitution of a State Urban Planning and Development Authority. Special Urban Planning and Development Authorities and New Town Planning and Development Authorities, for the effective and planned development of planning areas and for undertaking urban development and housing programs and schemes for establishing new towns and for matters connected therewith or incidental thereto.

Prior to the enactment of the Act ibid the Town Planning Activity within urban areas was being governed by different legislations such as The Town Improvement Act 1922, The Punjab Municipal Act 1911, The Punjab Municipal Corporation Act 1976, The Punjab Urban Estates (Development and Regulation) Act 1964 etc but no comprehensive legislation was available for the overall control and development at local and regional level.

4.1 MAIN PROVISIONS OF THE LAW

The Punjab Regional and Town Planning and Development (Amendment) Act 2006

The act is the sole legal framework available for preparing Master Plans and Regional Plans. It is a comprehensive act and provides for the manner in which the use of land in the area of a planning authority shall be regulated. The act also prescribes specific time period for various steps in the plan preparation process.

The act intends to achieve the following main objectives:

I. To consolidate, with suitable modifications, in one place laws dealing with the different aspects of urban development.

II. To set up a high powered Board to advise the State Government and to guide and direct planning and development agencies, with respect to matters pertaining to the planning, development and use of urban and rural land.

III. To set up a State level Urban Planning and Development Authority and to provide for the setting up of a Special Urban Planning and Development Authorities and New Town Planning and Development Authorities to promote and secure better planning and development of different regions, areas and cities.

IV. To create a legal and administrative set up for the preparation and enforcement of Master Plans for regions, areas and for existing and new cities.

V. To make the whole programme of urban development mainly a self - sustaining and self - paying process.

VI. To interlink land development and house construction permitting full exploitation of the urban land resource to provide a boost to the programme of house construction, especially the Economically Weaker Sections of the Society.

VII. To provide a legal, administrative and financial framework for the preparation and execution of Town Development Schemes aimed at filling the gaps in the required civil infrastructure and securing the renewal and redevelopment of congested and decayed areas in the existing towns.

The following sections of the Act deal with the preparation of Master Plans:

U/s 56(1)

Under section 56(1) of this chapter, Local Planning Areas are notified in the official gazette for preparing Master Plan. Once an area has been declared under section-56 (1), no person can institute or change the use of land for any purpose or carry out any development in respect of any land without the previous permission of competent authority until the Master Plan comes into operation. However, this prohibition does not apply to any area comprised in abadi deh of any village falling inside its lal lakir or phirni.

U/s 57

This section deals with the designation of Planning Agencies. As soon as may be, after declaration of a local planning area or a site for new town, the State Government may designate planning agency for that area.

U/s 58

Section 58 of the act states that the

(1) Designated Planning Agency will work under the overall directions and control of the State Government.

(2) The state Government may assign any or all of the following functions to the Designated Planning Agency, namely to

(i) Carry out survey of the regional planning area, local planning area or a site for new town, as the case may be, and prepare reports on the surveys so carried out;

(ii) prepare an existing land use map and such other maps as may be necessary for the purpose of preparing regional plan and outline master plan, a new town development plan or a comprehensive master plan, as the case may be;

(iii) Prepare a regional plan, an outline master plan, a new town development plan or a comprehensive master plan.

(3) Subject to and in accordance with the directions of the Govt., a designated planning agency shall exercise all such powers as may be necessary or expedient for the purposes of carrying out its functions under this act and also perform any other functions which are supplemental, incidental or consequential to any of the functions specified in sub section (2) or as may be prescribed.

U/s 59

This section deals with the preparation of present land use map and fixes six months time for this purpose, which may be extended by the State Govt. from time to time.

U/s 60

Section 60 provides for expenses that the State Government may determine for payment to the designated planning agency as contribution towards the expenses incurred by it in the discharge of its functions.

CHAPTER X

This chapter deals with the preparation and approval of Master Plans of towns / cities.

U/s 70 (1)

This section states that the planning agency shall not later than one year after declaration of planning area and after the designation of that agency for that area shall prepare and submit to the state government a master plan for its approval. The Master Plan so prepared shall –

a) Indicate broadly the manner in which the land in the area should be used.
b) Allocate areas or zones of land for use for different purposes.
c) Indicate, define and provide the existing and proposed highways, roads, major streets and other lines of communication.

cc) Indicate areas covered under heritage site and the manner in which protection, preservation and conservation of such site including its regulation and control of development, which is either affecting the heritage site or its vicinity, shall be carried out.

d) Include regulations to regulate within each zone the location, height, number of storeys and size of buildings and other structures, open spaces and the use of buildings, structures and land.

U/s 70 (2)

Section 70(2) regulates the form and contents of the master plan and shall include such maps descriptive matter as may be necessary to explain and illustrate the proposals in the master plan.

U/s 70 (3)

This section has the provision for the state government to direct the designated planning agency to publish the existing land use plan and master plan and the information regarding the place or places where copies of the same may be inspected by the public for inviting objections in writing with respect to existing land use plan and master plan within a period of 30 days from the date of publication.

U/s 70 (4)

Under this sub section, the state government after considering the objections and in consultation with the board may direct the designated planning agency to modify the master plan or approve it as such.

U/s 70 (5)

Under this sub section, the Designated Planning Agency after approval of the state government shall publish the final master plan in the official gazette after carrying out the modification if any under intimation to the state government within a period of 30 days from the date of according approval by the state government.

U/s 75

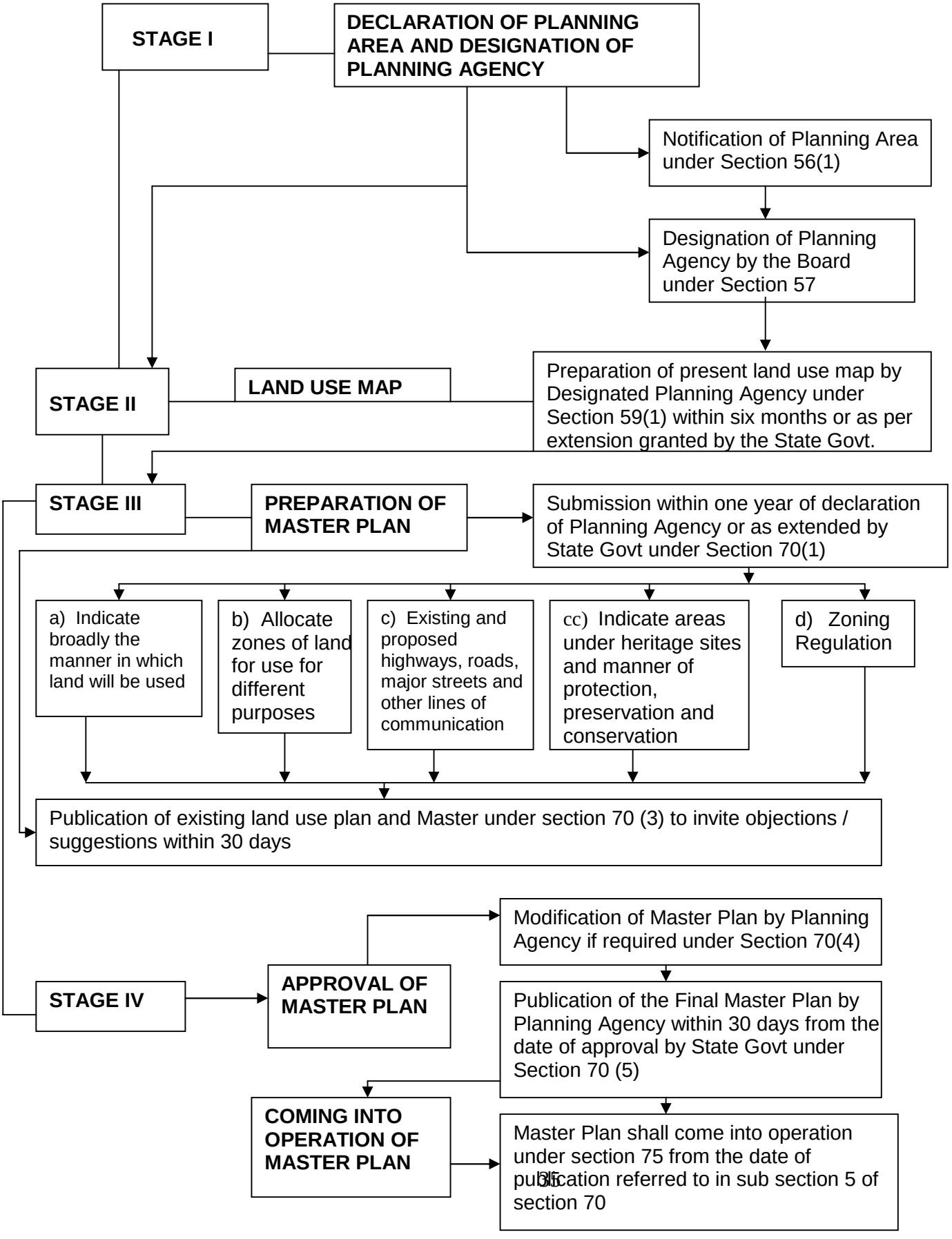
According to this section, the Master Plan shall come into operation from the date of publication. Refer to sub section 5 0f section 70.

U/s 76

This section provides for the amendment in the master plan and says that at any time after the date on which the master plan for an area comes into operation, and at least once after every ten years, after that date, the Designated Planning Agency shall after carrying out such fresh surveys as may be considered necessary or as directed by the government, prepare and submit to the government, a Master Plan after making alterations or additions as it considers necessary.

The flow chart showing the process of Master Plan preparation and approval is illustrated below:

STAGES OF MASTER PLAN PREPARATION
(As per the provisions of the Punjab Regional and Town Planning and Development (Amendment) Act 2006



4.2 OTHER LEGAL TOOLS

The legal provisions / acts mentioned below though do not have direct role in the preparation of Master Plan, but they have a definite role to play in the implementation of the proposals of the Master Plan.

CHAPTER XI OF PUNJAB REGIONAL AND TOWN PLANNING AND DEVELOPMENT (AMENDMENT) ACT 2006:

This chapter describes the legal provisions available for the control of development and use of land in area where Master Plan is in operation. As per the legal provisions, the Master Plan has a statutory force and the land cannot be used for a purpose which is not permitted by the same. Section 79 to 90 under this chapter lay down the procedure for grant of permission / prohibition of development, power to revoke or modify the permission for Conversion of Land use, penalty for unauthorized development or for use otherwise than in conformity with Master Plan.

Section 87 to 89 of this chapter lay down the procedure for the removal of unauthorized development whereas Section 90 empowers the Competent Authority to cancel the permission granted under Section 81, if such permission is found granted in consequence of any material misrepresentation or any fraudulent statement or information furnished by the owner of the building / land as the case may be.

TOWN DEVELOPMENT SCHEMES (Chapter 12, Section 91 of **the Punjab Regional and Town Planning and Development (Amendment) Act 2006**)

Chapter 12, Section 91 of the Act deals with the preparation of Town Development Schemes. Although Town Development Scheme does not have any role to play in the preparation of Master Plan but has a significant role in the implementation of Master Plan by way of planned development and through making land available for the open spaces, recreation, education and health services, transport and communication network, water supply, sewerage, sewage disposal and other public utilities including electricity and Gas etc.

PUNJAB APARTMENT AND PROPERTY REGULATION ACT, 1995

The Punjab Apartment and Property Regulation Act, 1995 has been enacted with a view to regulate the promotion of the construction, transfer and management of apartments on ownership basis, to regulate colonies and property transactions and to provide for registration of promoters and estate agents and enforcement of obligations on promoters and estate agents and for matters connected therewith or incidental thereto. Before the enactment of 1995 Act, the Punjab Regulation of Colonies Act, 1975 occupied the field. However, it was felt that the private colonizers were operating in the State with the sole motive of making profits without regard to the interest and rights of individual buyers of plots / flats. In order to check, control and regulate the activities of private colonizers and protect the interest of the consumers keeping in view the National Housing Policy, the legislature enacted the 1995 Act.

Though this Act does not have any bearing on the formulation of the Master Plan, but the act is an important tool for ensuring planned development within the framework of Master Plan. Master Plan envisages neat and clean living environment with a reasonable level of social and physical infrastructure for the inhabitants. This act helps in achieving these objectives of the Master Plan if enforced in the right manner enacting proper urban land development policies in the following manner:

1. It provides planned development by checking, controlling and regulating the activities of the private developers.
2. It makes funds available for off-site or external development.
3. It provides land for the development of social and physical infrastructure through the mechanism of planned development.
4. It also has the provision to make social housing available at low prices for Economically Weaker Section of the society.

PUNJAB TOWN IMPROVEMENT ACT, 1922

The Punjab Town Improvement Act, 1922 is another tool which plays a significant role for the implementation of Master Plans in the following manner:

2. It helps to provide planned development through the mechanism of Development Schemes.
3. It makes land available for the development of social and physical infrastructure like schools, health, parks and play grounds, good road network etc.
4. It also provides social housing to Economical Weaker Sections and thus helps to check the growth of slums.

Note:

- The Punjab Municipal Act 1911 and the Punjab Municipal Corporation Act 1976 is not being mentioned because of the reason that Section 192 (1c) of the Act ibid under which Town Planning Schemes were being prepared has been struck down by Hon'ble Supreme Court in a case reported as AIR 1994-SC-2550 and till date no amendment to this section has been effected by the Local Government.

PART III: EXISTING SITUATION

5.0 POPULATION GROWTH AND CHARACTERISTICS

The population study of Jalandhar city is done decade wise which helps in bringing out the trends of the growth rate, literacy level, sex ratio etc. of the city. The identity of the town depends upon the character of population so; it is an important component for town planning. The following studies related to demographic factors for Jalandhar city has been conducted to know the demographic character of Jalandhar city.

Jalandhar city had a population of only 135283 in the year 1941. However due to sudden influx of refugees from West Pakistan, around 67,000 more people descended in Jalandhar. The city population profile indicates that during the decades of 1941-1951 and 1951-1961, it registered a growth of 49% whereas in 1981-1991, the growth in population touched 31%. However, during the period of 1991-2001, the growth rate came up to 39.47 % because of normalized social and economic conditions which is almost 2% above the urban population of Punjab.

The urban growth is dynamic and continuous process. The city today faces multifarious physio-socio-economic and infrastructural problems. These, in turn, has lead to haphazard growth, overcrowding, congestion, insanitation, housing shortage, acute traffic problems, thereby further deteriorating the healthy living environment.

5.0.1 Population density

The population density of the city within municipal limits has been tabulated below:

Table No.5.1: **Population density (within Municipal Limit)**

Year	Population	Area (In hectares)	Population Density	
			Persons / sq km	Persons / hectare
1981	441552	10903	4050	40.50
1991	541050	10903	4962	49.62
2001	754608	10903	6921	69.21

(Source: Census of India, 1981, 1991, 2001)

Population density of M.C. Jalandhar has increased from 40.5 persons per hectare in 1981 to 69.2 persons per hectare in 2001. This is because of large scale migration taking place to Jalandhar city caused by the growth of industrial and trade and commerce sectors. Population density in 1981 in Jalandhar city was on lower side as there was increase in M.C. area i.e. 77.78 sq. km. in 1971 to 109.03 sq. km. in 1981. Local Planning Area, Jalandhar has a gross density of 16.3 persons per hectare in 2001.

In order to study population density of Jalandhar city a ward wise map has been prepared. The existing population of 2001 census has been depicted in circle diagrams for each ward. Orange colour depicts low population density of range up to 50 persons per acre, red colour is used for those wards having medium population density ranging between 51-150 persons per

acre and green colour shows the wards with high population density above 150 persons per acre. A careful study of the map brings out the following pattern in municipal limits of Jalandhar:

1. The core area of the city mainly comprising ward number 6, 7, 8, 9, 17, 25, 26 and a part of 30 has high density of population viz., above 150 persons per acre. This is because the core area has small plot sizes with high rise (up to four storeyed) and congested development with minimum area under narrow roads, open spaces and other physical and social infrastructure. Secondly the mixed land use character of this zone is also a factor which results in high population density.
2. As we move away from the core of the city, the ward wise density of population starts decreasing as seen in the ward number 5, 32, 23, 24, 11, 16, 19, 22 etc. This is due to the reason that the nature of development in these areas is comparatively low rise, plot sizes are bigger than those in the core area, thirdly the roads are wider and level of social and physical infrastructure in these wards is also better. Ward number 30, 52, 53 and 40 are the exceptions in this zone with low population density (less than 50 persons per acre) as most of the schools, colleges, railway station and railway colonies fall in these wards.
3. As we further move away from the core of the city we find wards with low population density (less than 50 persons per acre). These areas are either sparsely built up or under development. The ward numbers 10, 13, 14, 15 etc are work areas (industrial) with minimum living areas. Also the area of these wards is larger than the wards in the core area of the city.

Table No. 5.2: Population Density of wards of Jalandhar city

Sr. No.	Population Density	No. of wards	Wards
1	Up to 50 persons per acre	29	1, 2, 3, 4, 10, 12, 13, 14, 15, 18, 27, 29, 30, 33, 34, 37, 40, 44, 45, 46, 47, 48, 49, 50, 51, 52, 53, 54, 55
2	51 – 150 persons per acre	19	5, 11, 16, 19, 20, 21, 22, 23, 24, 26, 28, 32, 35, 36, 38, 39, 41, 42, 43
3	Above 150 persons per acre	7	6, 7, 8, 9, 17, 25, 31

(Source: Municipal Corporation, Jalandhar)

5.1 POPULATION GROWTH SINCE 1901 OF THE CORE CITY

The population of the core city since 1901 has been tabulated in the following table so as to determine the population growth trends:

Table No. 5.3: Population Growth since 1901 of the core city

Sr. No.	Year	Population of Jalandhar Municipal Corporation (persons)	Decadal growth rate of population of Jalandhar city (percent)
1	1901	67735	-
2	1911	69418	2.48
3	1921	71008	2.29
4	1931	88430	24.53
5	1941	135283	52.98
6	1951	201990	49.30
7	1961	264393	30.89
8	1971	329830	24.74
9	1981	441552	33.87
10	1991	541050	22.53
11	2001	754608	39.47

(Source: Census of India)

5.2 POPULATION GROWTH OF CONSTITUENT PARTS 1981 – 2001

The decadal population of the constituent parts of the planning area has been tabulated as follows so as to determine the growth rate of population. In the table no. 5.3, the population of urban settlements as well as rural settlements has been tabulated while in the table no. 5.4, the growth rate has been determined from 1981 to 2001.

Table No.5.4: Population of constituent parts of LPA, Jalandhar

Area	1981	1991	2001
M.C. Jalandhar including Cantonment Board	441552	541050	754608
Phagwara, Municipal Council	72499	88316	102253
Kartarpur, Municipal Council	17878	21093	25157
Adampur, Municipal Council	10960	15331	16707
Alawalpur, Municipal Council	5851	6468	7172
Villages of District Jalandhar (229)	217529	251927	291172
Villages of District Kapurthala (37)	40097	46451	55958
Villages of District Shaheed Bhagat Singh Nagar (2)	5160	6389	7565
Total	**811526**	**977025**	**1260592**

(Source: District Census 1981, 1991, 2001)

Table No.5.5: Population growth of constituent parts of LPA, Jalandhar

Year	Population (in persons)	Growth Rate (%)
1981	811526	-
1991	977025	20.39
2001	1260592	29.02

(Source: District Census 1981, 1991, 2001)

5.2.1 Population growth of Local Planning Area

In order to study the pattern of population growth in Local Planning Area, Jalandhar a settlement wise population growth map has been prepared. Population of three decades viz., 1981, 1991 and 2001 has been depicted in circle diagrams for each settlement. Blue colour depicts population of 1981, red colour is used for population figures of 1991 and green colour shows the population of 2001. A careful study of the map brings out the following pattern of growth in Local Planning Area, Jalandhar:

1. Sharp increase (above 20% decadal growth) has been noted in the settlements falling in the peri urban areas of Jalandhar, Phagwara and Adampur settlements. This is because of the fact that a considerable percentage of population especially belonging to lower income group which cannot bear the burden of paying high price for housing accommodation within the urban areas tend to reside in the rural settlements which are in the near proximity of the urban settlements and secondly the new housing, commercial and industrial establishments also tend to establish in the peri urban area of the urban settlements due to its near proximity to the urban infrastructure etc. This increase is mostly concentrated in the southern part of the city. This is because most of the living areas of the city are concentrated in this part and the

environment is also conducive to living. The north and north – eastern parts shows less number of settlements as most of the industrial areas are located in this direction.

2. Map also shows that the most of the settlements located along or near to the major transport corridors have also shown a considerable increase (between 11 to 20%) in population during 1981 – 2001 i.e., the settlements on Jalandhar – Phagwara Road (NH-1), Jalandhar – Amritsar Road (NH-1), Jalandhar – Hoshiarpur Road (NH-70), Jalandhar – Pathankot Road (NH-1A), Jalandhar – Nakodar Road (NH-71) and Jalandhar – Kapurthala Road have shown comparatively higher increase in population during the past two decades than other settlements which are away from the major transport corridors or are distantly located from urban settlements.

5.3 DEMOGRAPHIC PARAMETERS

5.3.1 Sex Ratio

The numerical measurement of sex composition of population is often expressed in terms of sex ratio. According to 1981 census, there were 863 females for every 1000 males in Local Planning Area of Jalandhar. In 2001, the sex ratio was 865, which show the sex ratio has increased from 1991 to 2001. The sex ratio of Punjab state is 876 in 2001, which is on higher side as compared to Jalandhar city.

Table No. 5.6: Sex ratio

Year	Total	Males	Females	Sex ratio
1981	811526	435602	375924	863
1991	977025	518041	458984	886
2001	1260592	675987	584605	865

(Source: District Census, Jalandhar)

The paucity of females has been attributed to the practice of female infanticide in the past. This legacy of the past is still having its impact felt on the sex ratio of the Local Planning Area of Jalandhar city. This also shows that more male labour has migrated to Jalandhar for job purpose. Thus, the sex ratio puts impact on the occupational structure of the city and its local planning area and it decides the requirement of various facilities and services.

5.3.2 Literacy

Table No. 5.7: Literacy Rate

Year	Total Population	Total literates	%age of total pop	Males		Females		Literacy Rate (in %age)
				Number	%age	Number	%age	
1981	811526	335064	41.29	203503	61	131561	39	41.29
1991	977025	608422	62.27	345507	57	262915	43	62.27
2001	1260592	893917	70.91	473382	53	420535	47	70.91

(Source: District Census, Jalandhar)

Above table depicts that the literacy rate is increasing According to 2001 census the total literacy rate of Local Planning Area is 70.91%. Out of the total literate population 53% are male and

47% are females. In comparison with 1981 and 1991 the rate is growing. In 1991 male literates were 57 % and female were 43% where as in 1981 male literates were 53 % and female were 47% respectively.

Literacy rate is high in comparison with Punjab state i.e. 70 % in 2001; this means the people of this city are more aware about education. The literacy rate is high in Local Planning Area of Jalandhar city because its resources are been utilized properly and it is developing at a fast pace and people of Jalandhar are aware. Due to N.R.I status of most of the families which also contribute toward literacy rate. The increasing literacy rate is also a potential for the city because with this the civic sense is increasing along with the optimum use of resources. It affects physical and economic development in a positive way.

5.3.3 Religious Composition

Table No5.8: Existing Religious Composition

Religion	No. of Persons	% age of total population of Jalandhar LPA
Hindu	744254	59.04
Sikh	475873	37.75
Muslim	11093	00.88
Christian	14245	01.13
Others	15127	01.20
Total	**1260592**	**100.00**

(Source: District Census, Jalandhar)

Hindus constitute majority i.e.59.04% in Jalandhar while 37.75% are Sikhs, 1.13% Christian, 0.88% Muslims and rest of the population comprise of other religions. This religious community composition decides the number, location and area under various religious places like Temples, Gurudwaras, Mosques, and Churches etc. The past trend shows Christian population is increasing at a very higher rate, hence special planning consideration to be given to their religious sentiments as well as to other respective religious communities.

5.3.4 Caste Composition

Table No. 5.9: Scheduled Caste population & %age of SC Population to total Population

Year	SC Population	%age of SC Pop to Total Pop
1981	191717	23.6
1991	337811	34.6
2001	421520	33.4

(Source: District Census, Jalandhar)

The total SC population in the Local Planning Area of the Jalandhar city is 421520 persons which is 33.4% of the total population in 2001. Where as the average of SC population in Punjab state 28.85% of total population, which shows that the percentage of SC population in Local Planning Area is more than that of Punjab state.

5.4 POPULATION GROWTH IN THE CONTEXT OF PUNJAB STATE

Table No.5.10: Growth Trends – Urban Population in Punjab and Jalandhar

Year	Urban population of Punjab (persons)	Population of Jalandhar M.C. (persons)	Population of Jalandhar M.C. as percent of total urban population of Punjab	Decadal growth rate of urban population of Punjab (percent)	Decadal growth rate of population of Jalandhar city (percent)
1901	934766	67735	7.24	-	-
1911	813224	69418	8.53	-13.00	2.48
1921	869526	71008	8.16	6.92	2.29
1931	1168413	88430	7.56	34.37	24.53
1941	1657414	135283	8.16	41.85	52.98
1951	1989267	201990	10.15	20.02	49.30
1961	2567306	264393	10.29	29.06	30.89
1971	3216179	329830	10.25	25.27	24.74
1981	4647757	441552	9.50	44.51	33.87
1991	5993220	541050	9.02	28.95	22.53
2001	8245566	754608	9.15	37.58	39.47

(Source: Census of India)

It is evident from the above table that growth rate of Jalandhar city is more than Punjab state while in tri-decade of 1971-1991, urban growth rate is marginally less than that of the state while overall urban growth rate of the city is more as compared to the whole state.

The growth rate of urban population has been so volatile in the post 1961 period because of following mentioned factors:

The city sufficiently away from the International Border of Pakistan, thus it is considered as one of the safe city to live in.

Centrality factor plays pivotal role in this increase of the population.

Better accessibility and the presence of better health and educational facilities.

Clean and spacious city

A city with fertile tract of the land

The city which is least affected in the terrorism era.

From 1971 to 2001, Jalandhar grew almost 2.5 times in population (from 3.29 lakh to 7.54 lakh) but more than 5 times in physical size (from 19211 to 26930 Acres). Most of city growth was haphazard and unplanned, resulting in highly uneconomical use of agricultural land for urban purpose. Outcome of such a development was visible in serious shortfall in urban infrastructure.

Table No. 5.11: Population of Punjab State (1981-2001)

Sr. No.	Population	1981	1991	2001
1	Total	16788915	20281969	24358999
2	Urban	4647757	5993225	8262511
3	Rural	12141158	14288744	16096488

(Source: Census of India)

Table No. 5.12: Population Growth of Punjab State (1981-2001)

Sr. No.	Population	1981	1991	2001
1	Total	-	20.81%	20.10%
2	Urban	-	28.95%	37.86%
3	Rural	-	17.69%	12.65%

(Source: Census of India)

Table No. 5.13: Population of Local Planning Area (1981-2001)

Sr. No.	Population	1981	1991	2001
1	Total	811526	977025	1260592
2	Urban	548740	672258	905897
3	Rural	262786	304767	354695

(Source: Census of India)

Table No. 5.14: Population Growth of Local Planning Area (1981-2001)

Sr. No.	Population	1981	1991	2001
1	Total	-	20.39%	29.02%
2	Urban	-	22.51%	34.75%
3	Rural	-	15.98%	16.38%

(Source: Census of India)

Table No. 5.15: Share of Local Planning Area in Punjab

Sr. No.	Share of LPA	1981	1991	2001
1	Total	4.83%	4.82%	5.18%
2	Urban	11.81%	11.22%	10.96%
3	Rural	2.16%	2.13%	2.20%

(Source: Census of India)

6.0 ECONOMY AND EMPLOYMENT

6.1 SALIENT FEATURES OF PUNJAB'S ECONOMIC GROWTH

Punjab being an agrarian state, agriculture has played a pivotal role in the economic development of the state. Through green revolution in the sixties, Punjab took a major strike in increasing its productivity of food grains, especially of wheat and rice. It contributed significantly towards strengthening India's self sufficiency by contributing a major share in the central pool over time. During 2006-07, it contributed 75.3% wheat and 31.2% rice. However, the growth of secondary sector especially of manufacturing sector is not of satisfactory level. Neighboring states got an edge over Punjab in the growth of manufacturing sector due to Locational advantages and more conducive policies regime. Punjab has grown at the rate of 5.08% during tenth 5-year plan, as compared to 7.77% at All India level. Its secondary sector has grown at 8.40% as compared to 9.46% at all India level.

Table No.6.1: Key Economic Indicators

Item	Unit	2004-05	2005-06	2006-07
GSDP at 1999-2000 prices	Rs (Crores)	81229.39	85729.29	91148.12
Growth rate of GSDP at 1999-00 prices	Percent	5.20	5.54	6.32
Per capita income at 1999-00 prices	Rs	27851	28872	30158
Food grain production	000 Tonne	25662	25180	25309
Contribution to Central pool	Lakh Tonnes			
Wheat	Lakh Tonnes	92.4	90.1	69.5
Rice	Lakh Tonnes	91.1	88.6	78.3
Percentage share to Central pool				

Wheat		55.0%	60.9%	75.3%
Rice		36.9%	32.0%	31.2%
Electricity generated	mkW.h	21296.00	24642.00	23965.00
Per capita power consumption	kW.h	871	906	968
Net Irrigated Area	000 hectares	4035	4060	4078
Cropping Intensity	Percent	189.00	189.00	187.88

(Source: Economic Survey of Punjab 2007-08)

As per provisional estimates, the overall economy of Punjab has witnessed a growth rate of 5.54% at constant (1999-00) prices during 2005-06 and it is expected to grow by 6.32% during 2006-07 as per quick estimates.

The Gross State Domestic Product (GSDP) at Constant (1999-00) prices has increased to Rs 85729 crores in 2005-06 from Rs 81229 crores in 2004-05 showing a growth rate of 5.54% in 2005-06 as compared to 5.20% in 2004-05, quick estimate of GSDP at Constant prices for 2006-07 is Rs 91148 crores showing the growth rate of 6.32%.

The GSDP from primary sector which comprises mainly of agriculture and livestock activities has increased from Rs 27541 crore in 2004-05 to Rs 28004 crore during 2005-06 registering a growth rate of 1.68% at constant prices as compared to 2.16% in 2004-05. According to quick estimates, it will further increase to Rs 29138 crore in 2006-07 showing a growth rate of 4.05 percent.

The GSDP from the secondary sector which covers the manufacturing, construction and power sectors has increased from Rs 19086 crore in 2004-05 to Rs 21408 crore in 2005-06 showing a growth rate of 12.17% at Constant Prices as compared to 9.66% in 2004-05. Its share in 2006-07 is Rs 23609 crore registering a growth rate of 10.28%.

The tertiary sector which comprises of trade, transport, banking and insurance and public administration etc recorded a growth rate of 4.95% during 2005-06 against a growth rate of 5.34% in 2004-05. Quick estimates show a growth rate of 5.74% during 2006-07. Under this sector, transport, storage and communication and banking and insurance have shown the growth rate of 10.45% and 9.00% respectively during 2006-07 over the previous year.

The per capita income at constant prices in Punjab is Rs 28872 during 2005-06 as against Rs 27851 during 2004-05 registering an increase of 3.67%. It is expected to increase to Rs 30158 as per quick estimates in 2006-07 showing a growth rate of 4.45%. The per capita income at current prices is Rs 36759 in 2005-06 as against Rs 33158 in 2004-05 showing an increase of 10.86%. As per quick estimates, per capita income is

Rs 40566 during 2006-07, registering a growth rate of 10.36 percent.

6.2. EMPLOYMENT

The economy of the city and its Local Planning Area is based mainly on trade and commerce and on manufacturing industry including sports goods, leather goods, surgical instruments, rubber

industry and casting and forging units and other industries. Real estate like multiplexes, malls and other commercial establishments, financial and banking services etc also contribute to the economic wellbeing of the people of the city. Maximum number of families has gone to foreign countries which also contribute towards economy. The employment data covering categories such as Agriculture, Hunting and Forestry, Fishing, Mining and Quarrying, Manufacturing, Electricity, Gas and Water Supply, Construction, Wholesale and Retail Trade, Hotels and Restaurants, Transport, Storage and communications, Financial Intermediation, Real Estate, Renting and Business Activities, Public Administration and Defence, Compulsory Social Security, education, health and Social Work, Other community, Social and personal Service Activities, Private households with employed persons, Extra-Territorial Organizations and Bodies of the Punjab and Jalandhar has been attached in the annexure.

6.3. MANUFACTURING INDUSTRY

Industries have been found to be the prime movers of the physical and economic growth of the urban areas. Rapid growth & development of Jalandhar Municipal Corporation in the post-independence period can also be attributed to the momentum generated by the various Industrial segments in the city. The post- independence period has witnessed enormous growth in small and large scale industries. City is known for dominance of the industrial development in various segments such as Casting, Hand Tools, Sports and Surgical equipments etc. The industrial growth of the city under went various stages during the course of the time. In other words, the growth rate remained positive as well as negative over years. But slowly and gradually the population growth became positive and now it is moving constantly at the same rate.

6.3.1 Industrial Growth

There is sizeable number of large and small scale industries in Jalandhar. The growth of Industries during the initial period of post-independence period has been very rapid. However, the growth has slowed down in the last decade as indicated by the data in table No 6.2. Table shows that the growth has been of higher order in the small scale sector as compared to large scale industries. Large scale industrial units constitute only 0.23% of the total industrial units existing in the city whereas share of small scale industries have been found to be of the order of 99.77%. From the data of the Industries complied from 2004-2007, it is evident that there has been no establishment of Large Scale Industrial Units in 2007.

The trend of the Small Scale Industrial Units has been far different as compared to the Large Scale Industrial Units. Since the percentage growth during the decade has never been at zero percent. Talking in the absolute terms, it may be said that starting from 9183 in 2004 it has

increased to 9,581 in 2007. The percentage growth rate of the Large and Small Scale Industrial Units has been tabulated in the following table:

Table No. 6.2: Growth of Large & Small Scale Industrial Units in Jalandhar

Year	Large Scale Industries		Small Scale Industries	
	Number of Units	%age Growth	Number of Units	%age Growth
2004	22	-	9,183	-
2005	22	0	9,286	1.12
2006	22	0	9,402	1.25
2007	22	0	9,581	1.90

(Source: GM, DIC, Jalandhar)

It is evident from the above table that the trend of the percentage growth rate has been increasing gradually over the period from 2004-07. The trend of the Small Scale Industrial Units has been increasing from 2005 to 2007. Although the increase in the percentage growth is slow over these three years as it has increased only from 1.12% to 1.90%.

6.3.2 Employment

Keeping in view the trends prevailing in the Industrial Units, small scale industrial units have been found to be not only largest in number but also generator of major proportion of employment in the city. Out of the total employment generated in the year 2004 by the Industries, the share of small scale industry was found to be 97.14% as compared to 2.86% in the year 2004. Thus the small scale industries share was found to be 34 times as that of large scale industries. During the last decade, small scale industries units have continued to be major employment provider with 97.06% share in the year 2007 as against 2.94% for the large scale industries. During the last decade despite the fact the share of employment in the large scale industries have grown from 2.86% to 2.94%. It is interesting to note that the percentage of total employment of Large Scale Industries have been increasing gradually and resulted in 2.94% in 2007. As against this, the Small Scale Sector has always contributed largely to the generation of employment during this period. During this period large scale industries provided employment to 1700 (2004) to 1860 (2007). The details of employment generated along with the growth rate and %age of total employment generated are given in Table 6.3 below:

Table No. 6.3: Employment in Small & Large Industrial Sector

Year	Small Scale Industries			Large Scale Industries			Total Employment
	Employment	%age Growth	%age of total employment	Employment	%age Growth	%age of total Employment	
2004	57,818	-	97.14	1,700	-	2.86	59,518
2005	58,904	1.88	97.05	1,790	5.29	2.95	60,694
2006	60,034	1.92	97.06	1,820	1.68	2.94	61,854
2007	61,314	2.13	97.06	1,860	2.19	2.94	63,174

(Source: GM, DIC, Jalandhar)

6.3.3 Investment & Production

Keeping in view the positive contribution made by the Small Scale Industrial Units in the Employment generation, these units have also substantially contributed in terms of industrial production. These units have also attracted considerable investment. Despite the fact that the growth of small scale industrial units during the time from 2004-07 has been below moderate but looking at the investment and the production generated by these units, it can be observed that contribution of these units to the economy of the city and the State has been considerable. Looking at the investment, it has been observed that during the year 2004 the total investment made in this sector was found to be Rs194801.00 lakhs which has been steadily growing on annual basis till 2007. The total investment recorded during the year 2007 was of the order of Rs. 20324.30 lakhs. During the same period, the production also experienced same trend from Rs. 89965.07 lakhs (2004) to Rs.93865.81lakhs (2007). Similar to the trend of the investment, the production has been of the same order since it also shows the rate of 46.79% growth over the decade's time which has resulted in the economy of the Jalandhar city. Table No. 6.4 indicates the trends of investment & production in the small scale industrial units during 2004-2007.

Table No. 6.4: Small Scale Industrial Investment and Production

Year	Investment (Rupees in Lakhs)	Production (Rupees in Lakhs)
2004	19480.00	89965.07
2005	19700.59	90930.49
2006	19944.66	92070.90
2007	20324.30	93865.81

(Source: GM, DIC, Jalandhar)

6.3.4 Industrial Focal Points:

Jalandhar is known for its Industry in the Small and Large Scale particularly in the segments of Hand Tools, Tanning, Casting, Sports and Surgical. The city of Jalandhar has varied types of the Industrial Establishments which have been developed over the period of time on the major transportational networks. The area of the Focal Point is 105 acres in which 132 Small Scale Industrial Units and 3 Large Scale Industrial Units are functioning. Keeping in view the expansion of the Industries in the past years, another tract of land measuring 200.00 acres has been developed as Focal Point Extension in the close proximity of the Focal Point where 166 Small Scale Industrial Units are functional.

The Industrial Area has been spread on an area of 130.50 acres in which 289 Small Scale Industrial Units while 1 Large Scale Industrial Unit are operational. There has been an Industrial Estate of 5.30 acres in which only 28 Small Scale Industrial Units have been functioning. Taking the benefit of Jalandhar – Kapurthala Road, Leather and Sports and Surgical Complexes have been established here. The Leather Complex has been spread over an area of 220.00 acres in

which 167 Small Scale Industrial Units have been functioning. Similarly 142 Small Scale Industrial Units are operating in Sports and Surgical Complex which is spread over an area of 52.75 acres. The Industrial Establishments have been tabulated in the Table No. 6.5.

Table No. 6.5: Details about Industrial Establishments

Sr. No.	Type of Establishment	Area (in acres)	No. of Industrial units		
			Small	Large	Total
1	Industrial Area	130.50	289	1	290
2	Industrial Estate	5.30	28	-	28
3	Focal Point	105.00	132	3	135
4	Focal Point Extension	200.00	166	-	166
5	Leather Complex	220.00	167	-	167
6	Sports & Surgical Complex	52.75	142	-	142

(Source: GM, DIC, Jalandhar)

The major Industrial Establishments have been planned along the National Highways viz., National Highway 1 running between Amritsar and New Delhi, National Highway 70 running between Jalandhar and Pathankot and National Highway 71 running between Jalandhar and Hoshiarpur. All these establishments are concentrated in the northern direction of the city. Thus making the northern part of Jalandhar as a major industrial node. This part has been developed as an Industrial Zone keeping in view the better accessibility. But at present, the situation has got worsened up and needs special care at the earliest since the large volume of the traffic viz., both inter as well as intra traffic carried by the above mentioned national highways and inflow as well as outflow of the traffic from establishments has emerged as the major problem. The mixed traffic has added fuel to the flame and made the condition further critical for the smooth flow of the traffic.

The industrial establishment namely Industrial Area does not have adequate provision of storm water drainage resulting in the accumulation of water in the area particularly during the rainy season. In the process, every year considerable expenditure is incurred on the repair of the roads after the rainy season. There is requirement of the provision of efficient system of storm water drainage in order to minimize the problem which the residents face during the rainy season.

It is also mandatory to mention here that there are numerous industrial units which are located within the residences itself. At present various polluting industries are in operation in the densely populated residential areas thus creating pollution viz., noise as well as water etc.

In order to minimize the problem caused by the location of polluting industrial units within the residential areas and to improve the environment within the city, it becomes important that all the polluting industrial units shall be shifted out of the residential areas and located in the defined industrial zones. The shifting of the small scale industry would require a well defined strategy based on providing incentives/disincentives. In addition, large scale industrial development

would be required to be taken up around Jalandhar in order to shift the polluting industrial units from the residential areas. Such a development should be based on creating built up space where number of small scale industrial units could be housed in a single building rather than providing a plotted development.

Besides the planned industrial areas, a number of other areas have come up as clusters of industrial concentration. The prominent unplanned areas in Jalandhar are mainly around Jalandhar Bypass road and Jalandhar – Pathankot and Kapurthala and Old Hoshiarpur Road and include the revenue estates of the villages Dhogri, Gadaipur, Bulandpur, Salempur, Sangal Sohal, Suchi Pind, Dhadda, Chak Zinda, Basti Pir Daad, Basti Sheikh, Basti Guzan, Basti Bawa Khel, Kutlupur, Randhawa Masandan, Fazilpur, Raowali, Mubarkpur, Nurpur, Reru, Kotla etc.

In practical terms, these areas are deficient in terms of services and endanger the environment. The redevelopment for the widening of roads, laying of services, development of open spaces and parking etc in these areas should be taken up with the participation of owner / entrepreneur in a systematic manner.

6.3.5 Key Issues:

With a view to rationalize the growth and development of industries in Jalandhar and to provide a supportive and enabling environment which would attract higher investment, generate more employment and improve productivity of the industrial units, following key issues have been identified:-

a) Large scale planned industrial development needs to be taken up to provide for existing shortfall and future land requirement of the industrial units.
b) The infrastructure and services within the existing Industrial Establishments needs to be upgraded in order to improve the environment and productivity of the existing units.
c) Open spaces present within the industrial establishments should be developed / landscaped. Large scale plantation of trees should be taken up along the road berms and the open spaces.
d) Approach to the existing industrial establishments needs to be appropriately upgraded to facilitate the movement of traffic within and outside these units.
e) All polluting industries operating from the residential areas needs to be shifted on priority to the defined industrial zones.
f) All polluting industries should be provided with Effluent Treatment Plants in order to treat the toxic industrial waste. The treated industrial waste should be recycled to be used by the industrial units in order to minimize pollution of the ground water or surface water sources.
g) All polluting industries should be located and segregated from the residential areas by creating appropriate green buffer so as to maintain the healthy living environment.

h) Multiplicity of agencies operating within the domain of industrial development should be eliminated and a nodal agency for growth and development of industrial establishments in Jalandhar should be designated.

6.4 WAREHOUSING AND WHOLESALE TRADE

As per the data of Municipal Corporation, Jalandhar there are 25738 commercial establishments which cater to the needs of the residents and in turns gives employment to a large proportion of population. There are 5 ware housing units in Jalandhar. Apart from these establishments, there is the system of Apni Mandi at distinct locations which are held on weekly basis at Guru Nanak Pura, Babreek Chowk, Urban Estate, Model Town, Partap Bagh, basti Sheikh etc.

6.5 TOURISM AND HOSPITALITY

Tourism is for leisure or recreation purposes. The World Tourism Organization defines tourists as people who "travel to and stay in places outside their usual environment for not more than one consecutive year for leisure, business and other purposes not related to the exercise of an activity remunerated from within the place visited".

Recently, the tourism industry has shifted from the promotion of inbound tourism to the promotion of intrabound tourism, because many countries are experiencing tough competition for inbound tourists. Some national policymakers have shifted their priority to the promotion of intrabound tourism to contribute to the local economy. Examples of such campaigns include Medical Tourism, Educational Tourism and Recreational Tourism.

TOURISM IN LPA, JALANDHAR

Jalandhar being a Non Resident Indians state, religious & historical district, has highest per capita medical facility in Asia, an educational center of Northern India, a sports goods, leather products & hand tools manufacturer of International repute enjoys the privilege of intrabound tourist destination. The following type of tourism is envisaged in Jalandhar:-

1. Religious and Historical Tourism
2. Medical Tourism
3. Educational Tourism
4. Recreational Tourism
5. Rural Tourism

1. RELIGIOUS AND HISTORICAL TOURISM

Jalandhar District boasts of many religious and historic monuments. Prominent among them are the mausoleum of Imam Nasir, the fort at Phillaur which once served as Maharaja Ranjit Singh's line of defence against the British, a Shiv Mandir which dates back to the Lodhi era, Devi Talab

Mandir, Tombs at Nakodar, Sarai at Nurmahal, Gurudwara at Kartarpur etc. The domestic as well as national tourists visit the following religious as well as historical sites of Jalandhar.

2. DEVI TALAB MANDIR

It is situated in the heart of Jalandhar City. The old Devi Talab has been renovated and, in its centre, a new temple has been built. Recently a model of Amarnath Yatra has been built in the premises. An old temple of goddess Kali also stands by the side of the Devi Talab. On an average 10 lakh tourists visit this temple annually.

3. TULSI MANDIR

An ancient monument in the City is the temple of Vrinda, wife of Jalandhara, a demon, in the Kot Kishan Chand locality. It is now also known as Tulsi Mandir. On one side of the temple is a tank which is said to have been the bathing place of the demon Jalandhara. At some distance is the Gupha temple, with the image of Annapurna, the goddess of plenty, installed in it. Also nearby lies the Brahm Kund and some temples dedicated to Shiva. Near the Balmiki gate is the Sheetla Mandir, said to be as old as the City of Jalandhar. Within its premises are also two small old temples of Hanuman and Shiva.

4. SHIV MANDIR

Situated at Gur Mandi, Shiv Mandir is reputed to have been built by a Nawab of Sultanpur Lodhi near Masjid Imam Nasar.

5. GURDWARA CHHEVIN PADSHAHI

Guru Hargobind visited the city of Jalandhar during his tour of Doaba area. Gurdwara Chhevin Padshahi in Basti Shaikh, Jalandhar city, stands on the spot where Guruji granted interview to a Muslim holy saint popularly known as Shaikh Darvesh. The saint blindfolded his eyes so that he could swear before the Mughal authorities that he had not seen the Guru. The great Guru had in depth discussion with the Shaikh Darvesh about spiritual matters which created good impact on the holy man.

A few other places worth mentioning are

1. Sanyas Ashram (popularly known as Bahrian-da-Talab) on the Kapurthala road.
2. Nathan-Di Bagichi,
3. Darbar Muhammad Jamal Zahra (in Basti Sheikh),

4. Baba Jhandianala (in Basti Nau),
5. Shrines of Baba Lakki Shah Pir and Dargah Pir Hazi Shah Qutab situated in the Jalandhar Cantonment.

Jalandhar has been in the thick of the fight for freedom from the British Raj and has produced many patriots. A **Desh-Bhagat Memorial Hall** has been constructed here to perpetuate the memory of such martyrs.

The Gurudwara at Kartarpur (16 km from Jalandhar town) was built by the Fifth Sikh Guru, Guru Arjun Devji in 1656 A.D. Every year, a fair is held on the birth anniversary of the Guru when a large number of devotees gather to pay homage. Kartarpur is also known as the birth place of Swami Virjanand who was the teacher of Swami Dayanand Saraswati, the illustrious founder of the Arya Samaj. A memorial (Guru Virjanand Smarak) has been constructed here in his memory.

6. ST MARY'S CATHEDRAL CHURCH (JALANDHAR CANTT)

The old church dedicated to St. Patrick was built by Rev. Fr. John Macodnnel, Q.F.M.CAP of the Vicariate Apostolic of Agra, in 1947 at the same site of old church which existed since 1886. The Catholic Mission of the Indian Punjab was raised to the status of Apostolic Prefecture with it's headquarter at Jalandhar and the church at Jalandhar Cantonment became the Cathedral or the Mother Church of Punjab.

2. MEDICAL TOURISM

Jalandhar has a distinction of having a highest per capita medical facility in Asia. It has a few medical institutes of repute such as Kidney Hospital, Satyam Hospital for brain, Tagore Hospital, Pruthi Hospital, BBC Hospital, Oxford Hospital Guru Nanak Mission Hospital, Thind Eye Hospital and Pasricha Hospital for cosmetic surgery. Besides, there are Dental hospitals. The local as well as outsiders come to the hospitals for specialized treatment even Non Residents Indians prefer to get treatment from here.

3. EDUCATIONAL TOURISM

Jalandhar has been the educational hub of Northern India since independence. It has three Technical Universities namely Punjab Technical University, Lovely Professional University and National Institute of Technology (Deemed University) besides many reputed colleges such as D.A.V.Institute of Engineering & Technology, D.A.V.College, Layalpur Khalsa College, H.M.V.College & K.M.V.College for girls, APJ College of Fine Arts, Govt. College of

Education, MGN College of Education. Jalandhar is also famous for providing excellent education at Secondary level. St. Joseph's convent school, APJ School, MGN School, Swami Sant Das School is a few examples. Students from Other States as well as Abroad come to get Education in these institutions.

4. RECREATIONAL TOURISM

Jalandhar is credited of being the most beautiful, spacious, clean, green, pollution free, and well organized city. It is the most sought after place for residential purposes. Being an NRI region, people here are fond of enjoying life after working hours or holidays. So many recreational centers of good quality have come up here. Prominent among them are Pushpa Gujral Science City on Kapurthala road, Wonderland on Nakodar road, and Gymkhana Club. More than 3, 00,000 persons and 1, 08,000 persons visit Science City and Wonderland respectively each year from all over India and abroad.

PUSHPA GUJRAL SCIENCE CITY

The establishment of the Pushpa Gujral Science City at Kapurthala, in the heart of Punjab, is a major step towards enhancing the growth potential and spurring the entrepreneurial spirit amongst the people of the State. The Project which primarily aims at popularizing science through "edutainment" i.e. education through entertainment, has been set up on the 72 acres of land on the Jalandhar-Kapurthala Road. The biggest project of its kind in India, it is intended to fire the imagination and creativity, foster the spirit of inquiry and exploration especially in the young minds.

The Science City derives its strength from the association of several top ranking scientists of the country for development of its various galleries and selection of exhibits. It had the privilege of having Prof. APJ Abdul Kalam, Hon'ble President of India as its Chief Patron. Prof. Yash Pal, Padma Bhushan, known as the Carl Sagan of India, is a Patron of the Science City.

Pushpa Gujral Science City is a unique place which offers entertainment with learning experience for the whole family. The Science City offers a blend of education, curiosity and fun to ensure longer and repeated visits. The project has something for everyone, regardless of age, education, profession or social strata.

5. RURAL TOURISM

Jalandhar has the most beautiful villages with the best infrastructure. The living standard of rural people is more advanced. The people are rich, well to do, hard working and fond of cleanliness. They have created a healthy environment in and around their areas of living. The NRI people

along with the local people and government had contributed financially and have laid the best physical infrastructure, e.g., roads, street lights, parks and swimming pools etc. Villages Dosanjh Kalan, Palahi are the best examples.

HOSPITALITY

Punjab state is known for its Hospitality in the whole world. In order to fulfill the requirements of the tourists, there are number of hotels and Guest Houses in Jalandhar. 55 Hotels and 16 Guest Houses which include Hotel Raddison, Hotel Leo Forte, Hotel President, Hotel Residency, Hotel Kamal Palace, Lily Resorts etc. Apart from these, there are number of restaurants which provide good and hygienic food at competitive prices, for instance, Haveli, Lucky Dhaba, Sanjha Chullah, Rangla Vehra etc.

6.6 MAJOR ECONOMIC DRIVERS OF THE LOCAL PLANNING AREA

There are numerous economic drivers which will be playing an eminent role in the near future. These are listed as follows:

1. Locational advantage – located on NH-1 and Jammu – Amritsar – Delhi Railway Line
2. Strong regional linkages – well connected through rail and road with neighboring towns/cities and states
3. Regional level educational infrastructure – Punjab Technical University, Lovely Professional University, Pushpa Gujral Science City, Dr. B.R. Ambedkar National Institute of Technology and four Engineering Colleges
4. Strong NRI base – a potential for Foreign Direct Investment
5. Industrial hub – Internationally known – sports – Leather, Surgical Instruments, Casting, Forging, Rubber and Pipe Fittings
6. Employment – Good employment generator due to industries, Trade and Commerce
7. Regional level commercial center – Sheikhan Bazaar, Rainak Bazaar etc
8. Health Infrastructure – Asia's highest per capita health facility available
9. Rich economic, social and cultural heritage of city
10. Religious pilgrimage – Baba Sodal, Devi Talab Mandir etc
11. A reasonably good public transport system
12. A vast catchment area – No competing urban settlement within radius of 60km
13. Rich agricultural hinterland – A potential for industrial, trade and commerce development
14. New infrastructure investments in future – Punjab Institute of Medical Science, Development of Burlton Park by British architects etc
15. New traffic improvement investment – elevated road on Mahavir Marg – Flyover near Bus Stand, Flyover on Jalandhar – Amritsar Railway Line near Chandan Nagar

16. Development of Multiplexes – An opportunity to upgrade the commercial environment and to decentralize commercial activity existing in the old congested bazaars
17. Economic Corridor to be extended from Mumbai to Amritsar

7.0 HOUSING

As per the Central Statistical Organization (CSO) estimate, the Housing Sector contributed 4.5% to India's Gross Domestic Product (GDP) in 2003-04 at current prices. The contribution of housing in urban areas to the GDP in 2003-04 was 3.13%. Further, the spotlight is focused on the fact that 16% of the Indian work force is engaged in Construction and Transport Sectors. It is estimated that overall employment generation in the economy on account of additional investment in the Construction/Housing Sectors is eight times the direct employment (IIM Ahmedabad : 2005). In view of the substantial use of cement, steel, marble/ceramic tiles, electrical wiring, PVC pipes and various types of fittings; construction activity has a multiplier effect on industrial demand for these items.

The latest housing policy framed by the Government of India – National Urban Housing and Habitat Policy-2007. The preamble of the National Policy states:

"Shelter is a basic human need next only to food and clothing. At the end of the 10th Five Year Plan, the housing shortage is estimated to be 24.7 million. However, urban areas in our country are also characterized by severe shortage of basic services like potable water, well laid out drainage system, sewerage network, sanitation facilities, electricity, roads and appropriate solid waste disposal. It is these shortages that constitute the rationale for policy focus on housing and basic services in urban areas. This policy intends to promote sustainable development of habitat in the country with a view to ensuring equitable supply of land, shelter and services at affordable prices to all sections of society. Given the magnitude of the housing shortage and budgetary constraints of both the Central and State Governments, it is amply clear that Public Sector efforts will not suffice in fulfilling the housing demand. In view of this scenario, the National Urban Housing and Habitat Policy, 2007 focuses the spotlight on multiple stake-holders namely, the Private Sector, the Cooperative Sector, the Industrial Sector for labor housing and the Services/Institutional Sector for employee housing. In this manner, the Policy will seek to promote various types of public-private partnerships for realizing the goal of Affordable Housing for all".

Housing is not merely confined to the four- walls which make a house but also all supporting infrastructure which are required to sustain the human beings in terms of physical & social infrastructure. Accordingly, National Urban Housing Policy laid emphasis not only on providing affordable shelter but also creation of appropriate quantity and quality of essential services etc.

7.0.1 Growth of Housing in Jalandhar

Housing is an activity which is mainly driven by individuals to provide itself with an appropriate shelter. With the rapid increase in population, number of houses has also recorded an increase. Besides individuals, parastatal agencies have also contributed to the household stock of the Jalandhar Municipal Corporation. In order to facilitate the construction of housing, large number of schemes has been framed by the Department of Housing & Urban Development, PUDA, Improvement Trust, House fed and Municipal Corporation, Jalandhar etc. These agencies have not only created built up houses but also have provided developed plots by framing Housing Schemes in LPA Jalandhar. It is mandatory to mention that Improvement Trust, Jalandhar and Phagwara have also made a notable share as far as planned development is considered. Improvement Trust, Jalandhar alone has transferred 43 Development Schemes developed at different parts of the city to Municipal Corporation Jalandhar for maintenance. The table illustrating the Development Schemes of Improvement Trust, Jalandhar is as follows:

Table No. 7.1: Development Schemes of Improvement Trust, Jalandhar

Sr. No.	Development Scheme	Location	Area
1	Adarsh Nagar	Bastian Road	79.0 acres
2	Opposite Police Line (GT road)	Along GT Road	14.0 acres
3	Baba Banda Bahadur Nagar	Mahavir Marg	18.0 acres
4	Rainak Bazaar Chowk	Rainak Bazaar	5.5 kanal
5	Shivaji Park	Ladowali Road	3.65 acres
6	Gopal Nagar	Gopal Nagar Old G.T. Road	31.66 acres
7	Vijay Nagar	Bastiat Road	22.5 acres
8	Bhai Ditt Singh Nagar (Dhannn Mohalla)	Old Railway Road and New Railway Road	14.5 acres
9	Shakti Nagar	Bastian Road	23.0 acres
10	Opposite Sub-Divisional Court	Opposite Sub-Judge Court	2.44 acres
11	Lajpat Nagar	Model Town Road	73.5 acres
12	Bhagat Singh Park	Ladowali Road	15.73 acres
13	Pratap Bagh	Model Town Road	8.05 acres, 0.98 acres, 3.5 acres
14	Subash Nagar, Mai Hiran Gate	Mai Hiran Gate Road	2.90 acres
15	Rajinder Nagar behind Commissioner Office	Police Line Road	12.36 acres
16	Near Kapurthala Chowk	Kapurthala Chowk	2.84 acres
17	Kirti Nagar on Ladowali Road	Ladowali Road	8.0 acres
18	New Jawahar Nagar	Model Town Road	112.8 acres
19	Post Office Road	Post Office Road	22 kanal
20	Empress Garden Colony	Empress Garden Road	5.62 acres
21	On Abbas Road	Abbas Road	3.7 acres
22	Shaheed Udham Singh Nagar	Backside Civil Hospital	84 acres
23	Kapurthala Road	Kapurthala Chowk	13 kanal
24	Area between Jail and Kapurthala Road	Jail and Kapurthala Chowk	4 acres
25	Milap Chowk	Milap Chowk	15.3 kanal
26	Backside Civil Hospital	Backside Civil Hospital	0.87 acres
27	Defence Colony	Cantonment Road	50.0 acres
28	In front of Nehru Garden	Nehru Garden Chowk	7.1 kanal
29	J.P. Nagar	Bastian Road	74.3 acres, 33.0 acres

30	Master Tara Singh Nagar	Police Line Road	55.0 acres
31	Master Mota Singh Nagar	Garha Road	81.6 acres
32	Guru Tegh Bahadur Nagar	Nakodar Road	110.0 acres
33	On Basti Guzan Road	Basti Guzan Road	2.5 acres
34	Gujral Nagar adjoining TV Centre	Mahavir Marg	25.0 acres
35	Street scheme winding of Road connecting Nijatam Nagar	Nijatam Nagar Road	19 marla
36	Guru Ravidass Nagar	Nakodar Road	13.37 acres
37	Guru Amardass Nagar	GT Road Bypass	51.5 acres
38	Bhagat Singh Nagar	GT Road Bypass	26.8 acres
39	Scheme on GT Road Bypass	GT Road Bypass	9 kanal 14 marla
40	GT Road	GT Road Bypass	5 kanal 3 marla
41	On Basti Guzan Road	Basti Guzan	9 marla

(Source: Improvement Trust, Jalandhar)

Table No. 7.2: Development Schemes of Improvement Trust, Phagwara

Sr. No.	Development Scheme	Location	Area (In acres)
1	Development Scheme of Area No. 6	Adjoining SDM Court	4.60
2	Development Scheme of Area No. 7,8 and 9	Phagwara- Banga Road	36.75
3	Development Scheme of Area No. 3	Hoshiarpur Road	50.00
4	Development Scheme of Area No. 4	Cinema Road	0.541
5	Development Scheme of Area No. 1	Along GT Road	76.00
6	Development Scheme of Area No. 2	Adjoining Grain Market	1.50

(Source: Deputy District Town Planner Office, Kapurthala)

On the other hand, the schemes which are in operation by Improvement Trust, Jalandhar are tabulated as follows:

Table No. 7.3: Development Schemes in operation by Improvement Trust, Jalandhar

Sr. No.	Scheme	Area
1	BSF Colony (G T Road)	41.6 acres
2	Niwi Chakki (Railway Road)	1.47 acres
3	Swami Shardhan Nand Nagar, Link Road	43.0 acres
4	Rishi Nagar	143.56 acres
5	Sarasvati Nagar Part of 118.05 acres	10.85 acres
6	Major Raman Dada Commercial Complex	3.71 acres
7	Transport Nagar (Amritsar Bypass)	74.9 acres
8	Surya Enclave (Pathankot Bypass)	170.0 acres
9	Master Gurbanta Singh Enclave (Maqsudan)	13.96 acres
10	Gazi Gulla Scheme	17 kanal 1 marla
11	Maharaja Ranjit Singh Enclave (Pathankot Bypass)	70.5 acres

(Source: Improvement Trust, Jalandhar)

Sr. No.	Name of Scheme	Locality	Area (in acres)
1	Gyan Singh Kahlon	Nijatam Nagar	3.62
2	Town Planning Scheme Area No. 25A	Ranjit Nagar	22.80
3	Town Planning Scheme K.S. Mohammad and other G.T. Road	Radio Station	4.79
4	Town Planning Scheme Kundan Lal and other	Ladowali Road and Old Jawahar Nagar	7.71
5	Town Planning Scheme C.D. Tiwari	Residential opposite Central Jail Market	9.77
6	Town Planning Scheme Fatehpuri	Abadi Fatehpuri	1.70
7	Town Planning Scheme Atma Niwas	Abadi Atma Niwas	27.70
8	Town Planning Scheme Dada Colony	Industrial Area	29.00
9	Town Planning Scheme Area No. 27	Civil Lines	9.90
10	Town Planning Scheme Area No. 16 and 19	Gobindgarh	10.00

11	Town Planning Scheme 12 D	Harbans Nagar	52.53
12	Town Planning Scheme Area No. 17 B and C	Sant Nagar	16.24
13	Town Planning Scheme Badri Dass and other	Badri Dass	54.00
14	Town Planning Scheme Central Town	Central Town	46.70
15	Town Planning Scheme Area No. 36	Basti Pir Daad	579 kanali marla

Municipal Corporation has contributed by framing 15 Town Planning Schemes offering residential plots on sites varying from 1.70 acres to 52.53 acres in area. The Town Planning Schemes sanctioned by Municipal Corporation Jalandhar and Municipal Council Phagwara, are tabulated as follows giving details about the area of each scheme.

Table No. 7.4: Town Planning Schemes in Jalandhar
(Source: Municipal Corporation, Jalandhar)

Table No. 7.5: Town Planning Schemes in Phagwara

Sr. No.	Name of Scheme	Location	Total Area (in acres)
1	Town Planning Scheme of Area No. 1	Near Railway Station	36.40
2	Town Planning Scheme of Area No. 2	Along Hadiabad Road	39.91
3	Town Planning Scheme of Area No. 3 Part II	Along GT Road	
4	Town Planning Scheme of Area No. 5 Part I	Along Hadiabad Road	48.15
5	Town Planning Scheme of Area No. 5 Part II	Along Hadiabad Road	50.85
6	Town Planning Scheme of Area No. 6	Along Banga Road	111.59
7	Town Planning Scheme of Area No. 7 and 7A	On Banga Road	30.27
8	Town Planning Scheme of Area No. 8	Along Hoshiarpur Road	177.40

(Source: Deputy District Town Planner Office, Kapurthala)

In addition to these schemes, Department of Housing and Urban Development has established two Urban Estates in Jalandhar, thus serving each strata of society by providing plots of variable sizes for building houses. The details of Urban Estates are tabulated as below:

Table No. 7.6: Urban Estates in Jalandhar and Phagwara

Sr. No.	Scheme	Location	Area
1	Urban Estate Phase I, Jalandhar	Along Jalandhar – Nakodar railway line	162.60 acres
2	Urban Estate Phase II, Jalandhar	Along Jalandhar – Nakodar railway line	173.34 acres
3	Chotti Baradari Phase I, Jalandhar	Garha Road	59.00 acres
4	Chotti Baradari Phase II, Jalandhar	Garha Road	60.72 acres
5	Urban Estate, Phagwara	Along GT Road	109.91 acres

(Source: PUDA, Jalandhar)

The erstwhile Punjab Housing and Development Board also added to the housing stock of the city by constructing houses for various segments of society. In addition, private developers have also taken up large number of colonies licensed under the Punjab Apartment & Property Regulation Act, 1995 and various private builders are offering various options of built up houses in Jalandhar city.

The growth of residential houses and households has been found to be keeping pace with the growth of population in the Jalandhar Municipal Corporation. As per the Census 2001, the number of houses has increased from 81639 in 1981 to 142815 in 2001. Thus experiencing

growth rate of 24.82% in 1981-1991 and 40.15% in 1991-2001. The decade wise growth rate of houses is tabulated as follows:

Table No. 7.7: Number of Houses in Jalandhar (decade - wise)

Sr. No.	Year	Number of houses	Growth rate
1	1981	81639	-
2	1991	101902	24.82
3	2001	142815	4015

(Source: Census of India, 1981, 1991, 2001)

The high growth rate of housing in Jalandhar can be attributed to large migration from the rural to urban area during the period. However, the growth was found to be higher than the last decade and was of the order of approximately 40%.

7.0.2 Pattern of using housing stock

Looking at the pattern of use of the existing housing stock, it has been observed that majority of houses are being used as residential houses which comprise of nearly 2/3rd of the total housing stock (64.7%). Mixed use of houses has also been observed in large number of cases. Every 6^{th} house in the city is being used both for residential and commercial/office purposes. In addition, every 14^{th} house has been found to have additional use besides serving for residential purposes. Despite the fact that the occupation density in the housing is very high, every 12^{th} house in the city remains a vacant or unoccupied. Thus it has been observed that the available housing stock is also not being put to optimal use. The large number of vacant houses can be attributed to the legal framework including the Rent Control Act which leads to unwillingness on the part of the owners to rent out the houses. Accordingly, favorable environment needs to be created in order to minimize the number of vacant houses so as to ensure the optimum use of the housing stock. Details of use pattern of housing stock available in the city are given below:-

Table no. 7.8: Pattern of use of Census houses - Category wise (year 2001)

S. No.	Category	No. of houses	%age of total houses
1.	Residential	119182	64.7
2.	Residential cum other use	7708	4.2
3.	Residential cum shop cum office	29881	16.2
4.	School/college	555	0.3
5.	Hotel/Lodge/Guest House	248	0.1
6.	Hospital/dispensary	537	0.3
7.	Factory/Workshop/Work shed	4533	2.5
8.	Place of Worship	754	0.4
9.	Other Non Residential uses	5445	2.9
10.	Vacant houses	15383	8.4
	Total census houses	184226	100.0

(Source: Census of India 2001)

7.1 HOUSING CHARACTERISTICS

7.1.1 Predominant use of materials in the Housing Stock

Besides looking at the housing stock in term of various uses, the use of material for the roof of the residential houses has also been looked into in order to qualitatively ascertain the housing stock. It has been observed that the majority of the housing stock has a permanent roof which constitutes around 92.7% of the total housing stock. As against this only 7.3% of the housing stock has temporary roofing which includes materials like grass, thatch, bamboo, wood, mud, plastic, polyethene, slates, GI material and stones etc. This indicates that the economic conditions prevailing in the city are much better. Most of the housing stock having temporary roofing have been found to be located in the 97 existing slums of the city

It has also been observed that among the predominant material used for roof approximately 72% of the housing stock has cement concrete roofing whereas 8.71% of houses use brick as the predominant material of roofing. Approximately 11.79% residential houses have used tiles as the material for making the roof. Despite the fact that majority of housing stock is fairly placed so far as quality of roofing is concerned but still there are more than 13462 houses which require up-gradation of their roofs in order to improve the quality of housing. Table no. 7.9 indicates the distribution of residential houses by predominant material of roof in Jalandhar (year 2001).

Table no. 7.9: Distribution of residential houses by predominant material of roof in Jalandhar (year 2001)

Material	Grass, Thatch, Bamboo, Wood, Mud	Plastic, Polyethene	Tiles	Slate	G.I. Metal, Asbestos Sheets	Brick	Stone	Concrete	Any other material	Total no. of Census Houses
No. of Houses	8,001	827	21,730	756	3,025	16,041	853	1,32,384	609	1,84,226
%age of total	4.34	0.45	11.79	0.41	1.64	8.71	0.46	71.87	0.33	100.00

(Source: Census of India 2001)

7.1.2 Slums

A **slum**, as defined by the UN agency, is a run-down area of a city characterized by substandard housing and squalor and lacking in tenure security.

For the purpose of Census of India, 2001, the slum areas broadly constitute of:-

(i) All specified areas in a town or city notified as 'Slum' by State/Local Government and UT Administration under any Act including a 'Slum Act'.

(ii) All areas recognized as 'Slum' by State/Local Government and UT Administration, Housing and Slum Boards, which may have not been formally notified as slum under any act;

(iii) A compact area of at least 300 populations or about 60-70 households of poorly built congested tenements, in unhygienic environment usually with inadequate infrastructure and lacking in proper sanitary and drinking water.

7.1.3 Slum Demographics

A) PUNJAB

Urban population in Punjab is estimated to have reached nine million by the year 2001, with two cities- Amritsar and Ludhiana figuring in the million plus cities. It is expected that Jalandhar will also have a million plus population by the year 2011. Punjab has the highest per capita income in the country, despite that; one fourth of the urban population in the state resides in slums.

The existing studies indicate that emergence of slums in Punjab is essentially the:-

1. Product of demographic growth in the cities.
2. Inability to meet the housing demands.
3. Existing urban land policies which prohibit the access of the poor to the urban land market.

B) JALANDHAR

Jalandhar ranks high in rate of urbanization and has the density of population at 598 persons per square km, as per the 1991 census. The reason for this is growing industrialization. However, Jalandhar which is acting as magnet for industrialization is also a center of pollution and growth of slums.

The main reasons for setting up of slums in Jalandhar are:-

1. Due to significant number and variety of industries operating in the city, there has been influx of people from the neighboring towns/ villages to work in these industries.
2. Migration of poor people from other states in search of work and money.
3. High prices of land in approved colonies force the poor workers to live in slums.
4. Lack of planned social housing

Jalandhar has an urban population of 714077 persons comprising 137390 households. The slum population is 177557 persons comprising 34820 households, which is 24.86% of the total urban population. Average size of the household in slum is 5.19 as

compared to 5 in non-slum areas. There is dominance of male population in the slum areas. The sex ratio of population of slums is 703 females per 1000 males.

7.1.4 Slums In LPA Jalandhar

According to a recent survey, there are 97 slums in Jalandhar city. A slum wise status of number of households, civic facilities such as water supply, sewerage, storm water drainage, street lights, road etc are given in Table 7.10.

Table No. 7.10: Survey of Slums of Jalandhar city (year 2007)

Sr. No.	Description	Number
1.	Total No. of Slums	97
2.	Authorized	73
3.	Un-authorized	25
4.	Total Population	177557
5.	Approx. Households	34820
6.	Water supply	44+6 Partial
7.	Sewer	42+5 Partial
8.	Storm Water Drainage	Nil
9.	Public/Baths	1
10.	Toilets	1
11.	Existing Lanes Paved/Roads	43+14 Partial
12.	Street Lights	42+23 Partial
13.	Community centers	9
14.	Crèches	24
15.	Dispensaries	28
16.	Non-formal Education Centers	Nil
17.	Primary Schools	40
18.	Parks	10
19.	Established	22

As per the details of above table, 1.81 lacs of population i.e. nearly 25% of the city population live in slums. It practically coincides with the State average of urban population living in slums in Jalandhar. Nearly 34318 households are living in 97 slums. The survey also indicates that water supply, brick paved pathways and street lighting are available in most of the slums. Majority of slums are located on private lands. Concentration of slums has been found to be high in the unplanned areas as compared to planned areas.

Existing Civic facilities in Slums:

The table No. 7.11 depicts the level of existing civic facilities in the slums:

Table no. 7.11: Existing Civic facilities in Slums

Sr. No.	Facilities	% of slums
1.	Water supply	52% of slums
2.	Sewerage	45% of slums
3.	Paved roads	60% of slums
4.	Street lights	66% of slums
5.	Storm water drains	Nil
6.	Community centers	9% of slums
7.	Primary schools	38% of slums
8.	Dispensary	30% of slums

It is also noted that in a large number of slums in Jalandhar, people have built pucca houses with their own initiative. However the infrastructural facilities are to be provided at an acceptable standard. Approximately 25% of the slums are listed as ‘unauthorized’. Some of these may have to be relocated at alternative sites or re-planned at the same sites.

Generally the past efforts to improve slums suffered from the following:

a) Slum identification was not done according to well-accepted criteria and similarly identification of beneficiaries was not according to the norms specified.
b) Inadequate support structure due to non-representation of beneficiaries, lack of inter sectoral representation and co-ordination with line departments, untrained and non-responsive resident community volunteers (RCVs), lack of networking within community organizations and poor community mobilization/participation.
c) The quality of training was poor and training provided for skill-upgradation was a mere formality. Such services as drainage and sanitation were poor in slums.
d) Sanctioning of loans was arbitrary and beneficiaries were not identified according to the criteria of the scheme. Judged by established norms, the majority of beneficiaries of loans, training and other facilities were found ineligible.
e) Leakages of loan money were as high as 12 per cent. Delay in processing of loan applications, inadequate raw material inputs and poor marketing of products, were the other shortcomings.
f) Skill-up gradation was poor as training of women beneficiaries was limited only to stitching and sewing. Once trained, they were unable to utilize their skills, since there was no linkage between skill-up gradation and setting up of micro enterprises.

Most of the deficiencies in implementation of up gradation of slums' programmes in Punjab in general and Jalandhar in particular are due to weak functional and fiscal base of municipalities. The improvement of slums is joint responsibility of Government of India as well as state governments. But unfortunately they have been unable to play the effective role in up gradation of slums due to variety of reasons as stated above.

7.1.5 Conclusion

Jalandhar is second most urbanized city of the state and slums and poverty are two major challenges to the policy makers and planners. Large numbers of slums have concentration of urban poor, who do have adequate livelihood options. The migration is continuing and encroachment of public and private land by the urban poor/ slum dwellers is affecting social and environmental fabric of the city. Master plan and its proper implementation are needed to guide the future growth of urban area in Jalandhar. Concerned Development Agencies must speed up the slum development and poverty alleviation activities. A strong institutional mechanism is required for improving planning and local governance in the city. This will also help in protecting the interest of underprivileged sections.

8.0 EXISTING TRANSPORT INFRASTRUCTURE

Jalandhar contribute in financial health of state of Punjab and is the major centre of sports goods, leather units, surgical instruments, casting and forging units, rubber industry and small scale industry. The city growth has largely been haphazard and unplanned. The road network accordingly does not follow any well defined hierarchy. With Jalandhar recording high growth in the industry, trade and commerce, higher education, Medicare, vehicular ownership and travel demand in the city are increasing at a rapid pace. Further due to absence / inadequacy of reliable / efficient public transportation system, there is a growth of Intermediate Public Transport (Cycle rickshaws and Auto rickshaws). The existing transportation network has not has not kept pace with ever rising travel demand within and outside the city, accordingly roads have lost their functional character and are carrying traffic beyond their service capacity. The traffic and transportation in Jalandhar remains chaotic for major portion of the day and road users suffer enormously in the process.

8.1 ROAD NETWORK

The existing road network of the city is ring and radial, in other words, the roads are radiating outward from the core of the city. A series of major roads passes through Jalandhar city which all converge at one point in the centre. It has four National Highways and number of important roads passing through the city. The Bypass road runs from Bidhipur Phatak to PAP Chowk facilitating the traffic not to enter the city. Thus reducing the journey time and increasing the speed.

The National Highways and major roads give access to the city and make it a centrally located city with better linkages. The important roads are listed as follows:

Amritsar - Jalandhar- Ludhiana Road, NH-1

Jalandhar – Pathankot Road, NH-1A

Jalandhar – Hoshiarpur Road, NH-70

Jalandhar – Nakodar Road, NH-71

Jalandhar – Kapurthala Road, MDR

Jalandhar – Nurmahal Road, ODR

Jalandhar – Kala Sanghian Road, ODR

It is mandatory to mention here that the Old G.T. Road running through the city is one of the most congested road because of the mixed land use, mixed traffic and on street parking of the vehicles by the residents on this stretch. Due to which the effective road width decreases drastically which results in various traffic jams.

To prepare the Master Plan for the city of Jalandhar and to meet the future traffic needs and to facilitate movement of vehicles on the roads, the following transport studies related to length of

carriages, right of way have been carried out. The carriage way and right of way of all the major roads passing through the Jalandhar city are tabulated in the following table:

Table No.8.1 Carriage way and length of major roads passing through Jalandhar city

Name of road	Length (km)	Right of way (m)	Carriage way (m)
National Highway			
Jalandhar – Amritsar Road (NH-1)	24	39-82	10+10
Jalandhar – Ludhiana Road (NH-1)	24	39-82	10+10
Jalandhar- Pathankot Road (NH-1A)	15.075	32-34	10+10
Jalandhar – Hoshiarpur Road (NH-70)	20.375	30-34	7
Jalandhar – Nakodar Road (NH-71)	17	27.34	10+6
State Highway			
Jalandhar – Kapurthala Road (SH)	17	18-48	10+10
Byepass			
Jalandhar-Amritsar Byepass (PAP chowk to Maqsudan Chowk)	9	61	26

(Source: Municipal Corporation, Jalandhar)

It is very much evident from the above table that the Right of Way of all the roads varies from 18 m to 82 m while the carriage way varies from 7 m to 26 m. It also indicates that the total lengths of the four National Highways ie., Jalandhar – Ludhiana (NH – 1), Jalandhar - Amritsar Road (NH-1), Jalandhar – Pathankot Road (NH-1A), Jalandhar – Hoshiarpur Road (NH-70) and Jalandhar – Nakodar Road (NH-71) are 24m, 24m, 15.075 m , 20.375m and 17 m respectively. A bypass road has been provided in order to check the through traffic but due to the scarcity of the land the road is much more exposed to the commercial activity. Due to which there has been the mushrooming of the Bus body building companies, marriage palaces etc.

Despite the adequate width of National and State Highways, their right of the way varies at certain points due encroachments. Therefore, the efficiency of these sufficiently wide carriageways decreases due to these encroachments.

The carriageways of all these National Highways are uniform with a width of 20 meters at all points with dual carriage way are provided with the width of 10m + 10m.

8.2 FLYOVERS / ROB'S IN THE CITY

On the bypass road running from Bidhipur Phatak to PAP Chowk, four flyovers have been constructed which help in the free movement of the people at junctions since grade separators avoid the intra-traffic to mingle up with the inter-traffic. The existing flyovers / ROB's are tabulated in the following table:

Table No.8.2: Existing Flyovers / ROB's within city limits

Sr. No.	Location	Carriage way (in meters)
1.	Reru Chowk	20
2.	Lamba Pind Chowk	7
3.	ROB near Guru Gobind Singh Avenue	26
4.	ROB near Ladhewali Chowk	26
5.	Hoshiarpur Road	7

(Source: Municipal Corporation, Jalandhar)

It is evident from the above table that the flyovers are dual carriage way which results in speedy distribution of the traffic and as a result decreases the delays. However, road network neither has nor expanded in proportionate with the increase in number of vehicles and other traffic generated in the city. Further due to large scale encroachments made by the informal sector and others road capacity has reduced considerably. Parking of the vehicles on the roads adversely affects to the freely movement of the vehicles. Due to all these reasons, the fly over / ROB's are being constructed in the city at five different locations and at four locations is under construction.

Table No.8.3: Flyovers / ROB's under construction within city limits

Sr. No.	Location	Carriage way (in meters)
1.	Near Sadar Thana	30
2.	Near DAV College	26
3.	Near Bhagat Singh Colony	26
4.	Domoria Bridge	7

(Source: Municipal Corporation, Jalandhar)

The above table details about the various flyovers which are under construction in the city. Due to the construction of all these flyovers, the local residents are suffering too much because of traffic congestion, dust etc. The bridge on the Domoria Bridge is lying in-complete since various years due to lack of coordination between different development agencies. Thus to speed up the construction, there must be strong coordination between different departments so that the implementation of the projects must not be a failure.

Table No. 8.4: Existing under passes within city

Sr. No.	Location	Carriage way	Name of Railway Line/ Road
1.	Ikehari Pulli	6 m	Amritsar – New Delhi
2.	Near PAP	7 m	Bypass Road

(Source: Municipal Corporation, Jalandhar)

The table No. 8.4 illustrates the underpasses present in the city. There are only two underpasses existing in the city.

8.3 TERMINALS

Terminals are the nodal points of the transportation network. In the city, all the three terminals exist viz., Bus Stand, Truck Stand and Railway Station.

8.3.1 Bus Stand: In Jalandhar the bus terminal is located in the center of the city, from where buses move in all the directions on the inter city and intra city roads. In order to facilitate the residents of Jalandhar city, the Inter State Bus Terminal has been developed on an area of 11.8

acres on Build-Operate-Transfer basis by a private firm for the tenure of seven years. The Bus Stand caters to 1,25,000 commuters who commutes daily to and fro the city with total number of Bus Trips accounting to 2700. The bus terminal has 34 counters for Long Route Buses while 24 counter for the Local routes. Also there is the provision of ATM's, Restaurants, Medical Stores and Police Station etc for the convenience of the users. Thus the objective of the convenience, self sufficiency has been attained.

8.3.2 Truck Terminal: The Truck Terminal has been planned and designed on the outskirts of the city in the Northern direction, in the close vicinity of the Industrial Area along the Bypass Road. The earlier truck terminal was present in the Patel Chowk. But due to increase in traffic, it has been shifted to the outskirts of the city so as to check the in flow of the trucks and trailers in the city and leading to traffic jams' situation.

8.3.3 Railway Station: The city of Jalandhar has the very strong railway linkages due to which it is well connected with the state as well as country. The railway linkages are listed as follows:

Amritsar-Jalandhar-New Delhi Railway Line

Jalandhar – Pathankot Railway Line

Jalandhar – Hoshiarpur Railway Line

Jalandhar – Kapurthala Railway Line

Jalandhar – Nakodar Railway Line

For the convenience of the people, there exist railway stations at various different locations namely:

Main Railway Station, in the center of the city

Suranussi Railway Station

Jalandhar Cantt Railway Station

Besides above Railway Stations in Jalandhar, the following Railway Stations also exist in LPA, Jalandhar:

Phagwara

Kartarpur

Adampur

Alawalpur

Cheharu

Bolina

Suchi Pind

Kala Bakra

The railway lines cut the road network of the city at numerous level crossings which become centre for traffic bottlenecks. To facilitate the people with the smooth traffic flow, four flyovers are under construction at different parts of the city.

8.4 INTENSITY OF BUS SERVICE

Following table depicts the number of buses plying on the different routes from the Bus Stand, Jalandhar to different cities. There has been an increase in the number of buses drastically since there has been an increase in the commuters.

Table No. 8.5: Yearly Bus traffic route-wise

Sr. No.	Year	Per Day	No. of Routes	No. of buses		
				Incoming	Outgoing	Total
1	1997	2200	803000	803000	803000	1606000
2	1998	2250	821250	821250	821250	1642500
3	1999	2300	839500	839500	839500	1679000
4	2000	2375	866875	866875	866875	1733750
5	2001	2400	876000	876000	876000	1752000
6	2002	2500	912500	912500	912500	1825000
7	2003	2520	919800	919800	919800	1839600
8	2004	2600	949000	949000	949000	1898000
9	2005	2750	1003750	1003750	1003750	2007500
10	2006	2801	1022365	1022365	1022365	2044730

(Source: Punjab Roadways, Jalandhar)

Table No. 8.6: Yearly Mini Buses traffic route-wise

Sr. No.	Year	Per Day	No. of Routes	No. of buses		
				Incoming	Outgoing	Total
1	1997	245	89425	89425	89425	178850
2	1998	270	98550	98550	98550	197100
3	1999	290	105850	105850	105850	211700
4	2000	325	118625	118625	118625	237250
5	2001	400	146000	146000	146000	292000
6	2002	500	182500	182500	182500	365000
7	2003	530	193450	193450	193450	386900
8	2004	550	200750	200750	200750	401500
9	2005	560	204400	204400	204400	408800
10	2006	581	212065	212065	212065	424130

(Source: Punjab Roadways, Jalandhar)

Table No. 8.7: Yearly number of passengers

Sr. No.	Year	No. of passengers
1	1997	5978700
2	1998	578817000
3	1999	62999000
4	2000	611557550
5	2001	67160000
6	2002	71175000
7	2003	249109434
8	2004	74460000
9	2005	78438500
10	2006	80048150

(Source: Punjab Roadways, Jalandhar)

It is very much evident from the above tables that buses have recorded rapid growth from 178850 in 1997 to 424130 in 2006. Thus depicting that there has been an abrupt increase in the

number of commuters, table number 8.7 shows that number of passengers have increased almost 13 times from 5978700 in 1997 to 80048150 in 2006. Effective transport is the need of every city and for cities that are growing at rapid pace. The concept of public transport is quite old in the city but could not meet with any reasonable success so far. In Jalandhar, the services of the city transport started in operation of buses by Punjab Roadways in way back 1980's which shifted to Municipal Corporation. But the services were withdrawn by Municipal Corporation which is largely handled by the private owners these days and now again as a pilot project; Jalandhar City Bus Service is in operational at four distinct routes. It this pilot project becomes a successful project, then it would be extended to the whole city.

All the routes originate and terminate at Main Bus Terminal leading to the congestion in central areas of the city. Due to the inefficient services and un-organized system of public transport, predominant modes used for the intra city passenger travel are personalized vehicles, cycle rickshaws, auto rickshaws etc, which enhance the problems such as congestion, accidents, parking as well as pollution. In the city, there is an urgent need of the provision of efficient and reliable public transport system, which can effectively meet the existing as well as the future transport demand for the next 20-25 years.

However, the location of the existing Bus Terminal needs a review. Though from the point of view of users, the bus terminal has very convenient location, but it is one of the important reasons for the increased number of problems of traffic and transportation. Since most of the traffic originate and terminates at the Bus Terminal and preferred mode of travel is also the bus, accordingly, areas attract large volume of the traffic in process. In addition, terminal caters to large number of daily commuters who come to work and business places and in process terminal also attracts large number of informal commercial activities. With large number of cycle rickshaws, auto rickshaws, taxies etc occupying the space around the bus terminal, movement of traffic in the area largely remains chaotic for major part of the day. Accordingly, it is important that the existing position of the bus terminal should be critically reviewed in order to minimize the traffic congestion in the area.

8.5 REGISTERED VEHICLES

There has been a tremendous increase in the number of the vehicles over the last decade since it grew from 18,532 in 1995 to 38,020 in 2007. The number of registered vehicles has recorded more than two fold growth during this period. However, despite the large influx of the vehicles in the city, the road network has not kept pace in vehicular growth leading to numerous problems merging in the city. With large addition of the vehicles on the roads of the city, the problem parking has increased manifolds and has become an important issue. Most of the roads of the city

are converted in to parking lanes in order to accommodate the increased vehicle ownership. Due to small sizes of the residential plots in the core of the city, the entire parking spills over the road side only. With economic conditions recording higher order and attitude changing very fast, city is likely to witness further acceleration of the vehicles. Thus, the strategies need to be worked out in order to minimize personal ownership of vehicles by offering better options of the public transport in the city. Table below indicate the pattern of growth of registered vehicles and category wise addition to the city on annual basis:

Table No. 8.8: Total Registered Vehicles

Year	No. of vehicles
1995	18532
2001	30647
2006	35267
2007	38020

(Source: District Transport Officer, Jalandhar)

The number of the vehicles has been categorically divided into various categories of two-wheelers, three-wheelers, four-wheelers etc. There has been drastic increase in the number of two wheelers as well as four wheelers from 2001 to 2007 while increase in the number of three – wheelers is found to be meager with just increase from 514 in 2001 to 753 in 2007. Keeping in view the growing number of the vehicles, the road infrastructure needs to be improved upon so that the intensity of the traffic jams can be reduced and the objective of the convenience may be achieved.

Table No. 8.9: Registered vehicles category wise

Year	4- wheeler	3-Wheeler	2-Wheeler	Others	Total	%age growth rate
2001	6815	514	20316	15	27660	-
2002	5577	430	20558	12	26577	-3.92
2003	6128	515	22708	15	29366	10.49
2004	6672	523	27496	33	34724	18.24
2005	7300	675	29042	26	37043	6.68
2006	8149	668	25951	10	34778	-6.11
2007	9981	753	26758	13	37505	7.84

(Source: District Transport Officer, Jalandhar)

Table No. 8.10: Traffic Composition in Jalandhar city year wise

Year	Fast moving		Slow Moving		Grand total
	Total vehicles	%age of Total vehicles	Total Vehicles	%age of total vehicles	
2001	27660	61.22	17522	38.78	45182
2002	26577	56.31	20619	43.69	47196
2003	29366	58.42	20898	41.58	50264
2004	34724	62.91	20474	37.09	55198
2005	37043	64.68	20225	35.32	57268
2006	34778	62.58	20797	37.42	55575
2007	37505	64.15	20963	35.85	58468

(Source: District Transport Officer, Jalandhar)

Due to presence of large number of slow moving vehicles on the Jalandhar roads, large conflicts, delays, pollution have been observed in the city. Mixing of traffic also reduces the speed of

vehicles causing the further delays and congestion in the city. Most of the major roads passing through the city have large number of commercial activities abutting these roads and generating considerable amount of slow moving traffic. These areas including Mahavir Marg, Patel Chowk, Old Sabzi Mandi, Old G.T. Road, Railway Road, Kapurthala Road, Model House, Nakodar Road etc. As a result there is perpetual conflict between fast moving and slow moving vehicles leading to lowering of the road capacity and posing hindrance to road safety.

8.6 TRAFFIC CHARACTERISTICS

The study has been conducted by RITES in April 2006 on the corridor of about 5 km passing through the six important intersections namely:

BMC Chowk

Guru Nanak Mission Chowk

Ambedkar Chowk

Football Chowk

Kapurthala Chowk

HMV Chowk

The traffic characteristics as detailed out in the report of RITES have been included in this section.

8.6.1 Traffic Surveys

The proposed study is aimed for a feasibility of grade separators along Mahavir Marg passing through all major intersections like BMC Chowk. Guru Nanak Mission Chowk, Ambedkar Chowk, Football Chowk, Kapurthala Chowk and HMV Chowk. Traffic surveys are integral part of the study as these will establish to forecast the demand for grade separators on the intersections.

In order to fully understand the nature and pattern of traffic / travel movement along the Mahavir Marg, a wide variety of field surveys were carried out along the corridor. Following types of survey were carried out by RITES:

- Road Network Inventory: This survey was carried out along the influence area of the road network covering approximately 10.00 km.
- Speed and Delay Survey: This survey was also carried out along the influence area of the road network covering approximately 10.00 km in bi-directional covering both morning and evening peak hours.
- Classified Traffic Volume Counts: Traffic Volume Count has been carried out at junctions and mid blocks with 15 minute interval for duration of 12 hours (8:00 am to 8:00 pm).

- Origin Destination Survey: Here sampling technique was adopted covering only 10-15% of the whole traffic.
- Parking Survey: On-street parking survey was carried out with 30 minute interval time for duration of 12 hours (9:00 am to 9:00 pm).

Pedestrian Volume Count: Pedestrian volume count has been calculated in both directions viz., along and across for duration of 12 hours (8:00 am to 8:00 pm) with 15 minute interval time.

8.6.2 Road Network Inventory

Road network inventory survey helps to determine the carrying capacity and efficiency of the existing network and to extent to which they need to be improved in future. The inventory was undertaken covering the major influence roads to understand the road characteristics, levels of service offered connectivity and accessibility quotients across various sections. The data collected includes cross-sectional details, right-of-way, carriage way width, median width, predominant land use along the link, type of street lighting and surface conditions.

The survey was based on the developed link node diagram. Whereas nodes are represented by major intersections and important locations, road sections between two adjacent nodes indicate the links. The cross-sectional measurements were taken along 23 links and 19 nodes measuring a total length of about 10 km.

Right of way characteristics: It is emerged from the survey that the study corridor and its influence area exhibits varying Right-of-way (ROW) widths depending upon the function of the road section and nature of its use abuts it. About 60% has ROW between 20 to 30 meters and only about 6% has ROW in excess of 40 meters, as indicated in the table No. 8.11:

Table No. 8.11: Distribution of Road length by Right of Way

Right of way (in meters)	Road length (in km)	Percentage (%age)
<20	2.94	28.88
20-30	5.92	58.15
30-40	0.71	6.97
40-50	0.61	5.99
Total	**10.18**	**100.00**

(Source: RITES Survey, April 2006)

Table No. 8.12: Distribution of Road length by Carriageway Width

Right of way (in meters)	Road length (in km)	Percentage (%age)
Single Lane (<5.5m)	0	0.00
Intermediate Lane (5.5m-7.5m)	0.59	5.80
2-Lane (7.5m – 10.5 m)	0.81	7.96
4-Lane (10.5m - 14.0m)	3.37	33.10
6-Lane (14.0m – 21.0m)	4.74	46.56
>6 (>21.0 m)	0.67	6.58
Total	**10.18**	**100.00**

(Source: RITES Survey, April 2006)

The major part of the study area (about 47%) has carriage way width between 14m to 21m and only 7% of the study area has carriage way width more than 21m as presented in the table no.8.12. The median is available in 61% of the study area as shown in the Table No.8.13:

Table No. 8.13: Distribution of Road length by Availability of Median

Right of way (in meters)	Road length (in km)	Percentage (%age)
Present	6.23	61.20
Absent	3.95	38.80
Total	**10.18**	**100.00**

(Source: RITES Survey, April 2006)

It has been observed that about 60% of the study area is divided (physical barrier in terms of median, guard rails, plant cover etc) whereas 40% of the same are undivided, primarily being the internal roads. About 90% of the divided carriageway has four lanes of traffic stream with Mahavir Marg.

Road surface characteristics: Bitumen is the preferred choice of road paving in the entire study area section lengths and is maintained in good condition.

Abutting Land use Characteristics: The nature and intensity of abutting land use decides the usability and utility of the road. This is an important parameter in defining the various right of way elements. It has been observed that the study area exhibits a predominant mixed land use with intense commercial input (71%) of the same. (Refer Table No.8.14) Residential accounts for a quarter of the road length (29%).

Table No. 8.14: Distribution of Road length by abutting Land use

Abutting land use	Road length (in km)	Percentage (%age)
Residential	2.96	29.08
Commercial	7.22	70.92
Total	**10.18**	**100.00**

(Source: RITES Survey, April 2006)

8.6.3 Speed and Delay Survey

Speed and delay surveys were carried out on selected contiguous road inventory network. The surveys were administered through 'Floating Car Method', for private modes. They were conducted for bi-directional traffic movement streams during peak (morning and evening) and off-peak hours on a fair weather working day. The survey was based on the developed road network link node diagram.

The output provides link-wise journey and running speeds, travel time, duration and cause of delays at critical section length. The road network under survey comprised a total length of about 10.00 km.

Table No. 8.15: Peak Hour Journey and Running Speed along with delay

Sr. No.	Section Node		Length (in km)	Peak Hour Journey for Private Mode				
	From	To		Running Time (Sec)	Delay Time (Sec)	Total Time (Sec)	Journey Speed (km/hr)	Running Speed (km/hr)
1	1	2	0.407	38	0	38	38.56	38.56
2	1	16	0.396	42	12	54	26.43	34.00
3	2	3	0.524	37	78	115	16.40	50.98
4	3	4	0.735	59	0	59	44.85	44.85
5	3	17	0.495	52	0	52	34.00	34.00
6	4	5	0.695	74	0	74	34.00	34.00
7	4	18	0.395	38	8	46	30.91	37.42
8	5	6	0.595	56	63	119	18.01	38.31
9	6	7	0.276	30	48	78	12.74	33.12
10	6	19	0.258	28	0	28	33.17	33.17
11	7	8	0.291	23	47	70	14.93	45.18
12	8	9	0.491	53	0	53	33.35	33.35
13	8	11	0.562	60	18	78	26.10	34.00
14	9	10	0.215	17	35	52	14.88	45.53
15	10	11	0.580	48	28	76	27.47	43.50
16	11	12	0.227	18	33	51	15.96	44.87
17	12	13	0.225	22	94	116	6.98	36.82
18	13	14	0.461	49	110	159	10.45	34.00
19	13	19	0.441	45	15	60	26.46	35.28
20	14	15	0.266	28	58	86	11.11	34.00
21	14	17	0.584	60	8	68	30.92	35.04
22	14	18	0.510	54	0	54	34.00	34.00
23	15	16	0.553	60	69	129	15.43	33.18
Average Speed							**24.22**	**37.70**

(Source: RITES Survey, April 2006)

Table No. 8.16: Off - Peak Hour Journey and Running Speed along with delay

Sr. No.	Section Node		Length (in km)	Off - Peak Hour Journey for Private Mode				
	From	To		Running Time (Sec)	Delay Time (Sec)	Total Time (Sec)	Journey Speed (km/hr)	Running Speed (km/hr)
1	1	2	0.407	37	0	37	39.60	39.60
2	1	16	0.396	37	0	37	38.53	38.53
3	2	3	0.524	43	67	110	17.15	43.87
4	3	4	0.735	58	0	58	45.62	45.62
5	3	17	0.495	48	0	48	37.13	37.13
6	4	5	0.695	67	0	67	37.34	37.34
7	4	18	0.395	39	0	39	36.46	36.46
8	5	6	0.595	55	45	100	21.42	38.95
9	6	7	0.276	26	27	53	18.75	38.22
10	6	19	0.258	23	0	23	40.38	40.38
11	7	8	0.291	19	33	52	20.15	55.14
12	8	9	0.491	49	0	49	36.07	36.07
13	8	11	0.562	52	0	52	38.91	38.91
14	9	10	0.215	13	31	44	17.59	59.54
15	10	11	0.580	47	24	71	29.41	44.43
16	11	12	0.227	16	19	35	23.35	51.08
17	12	13	0.225	21	57	78	10.38	38.57
18	13	14	0.461	42	59	101	16.43	39.51
19	13	19	0.441	41	0	41	38.72	38.72
20	14	15	0.266	23	35	58	16.51	41.63
21	14	17	0.584	55	0	55	38.23	38.23
22	14	18	0.510	42	0	42	43.71	43.71
23	15	16	0.553	52	28	80	24.89	38.28
Average Speed							**29.86**	**41.74**

(Source: RITES Survey, April 2006)

The average journey speed on the network is 24.22 kmph during the peak hours (Refer Table No.8.15). It is observed that during peak period, the journey speed on Mahavir Marg from BMC Chowk is 38.5 kmph but at the Guru Nanak Mission Chowk it considerably reduces to about 16.0 kmph while afterwards Ambedkar Chowk up to HMV Chowk, the speed ranges from 8.5 – 16.0 kmph. While on Old G.T. Road the journey speed is about 7 to 34 kmph. The speeds during off-peak period are reasonably higher than the peak period speed as evident from Table No.8.16.

8.6.4 Classified Traffic Volume Surveys (Mid Blocks and Junctions)

Classified Traffic Volume Surveys at mid-blocks were carried out to quantify the volume and intensity of traffic moving across a location in both directions and at junctions (intersections) for the volume of turning movements and approach volumes at an intersection on the road network link. The surveys were carried out on a typical fair weather working day for a period of 12 hours (8:00 to 20:00) and selected in such a way that entire turning movement patterns in the study and influence area would be covered.

The output provides average daily traffic, hourly traffic volume variations and peak hour traffic flow / composition thereby assigning relative importance of junctions. A total of 7 junctions namely BMC Chowk, Guru Nanak Mission Chowk, Ambedkar Chowk, Football Chowk, Adarsh Nagar Chowk, Kapurthala Chowk and HMV Chowk were selected along the study corridor with the different survey locations

The vehicular counts were converted in to Passenger Car Units (PCUs). The adopted values as per Indian Road Congress (IRC) are presented in the Table No.8.17:

Table No. 8.17: Standard PCU values

Sr. No.	Vehicle Type	PCU value
1	Car / Jeep / Van	1.0
2	3-wheeler / Auto rickshaw	1.0
3	2-wheeler	0.5
4	Bus	3.0
5	Mini – bus	1.5
6	Truck	3.0
7	LCV	1.5
8	Tractor	4.5
9	Cycle	0.5
10	Cycle Rickshaw	2.0

Source: Indian Road Congress (IRC)

Majority of the roads surveyed by Mid – Block survey indicate average daily traffic volumes ranging from 21000 – 73000 vehicles thereby experiencing heavy loads (Refer Table No. 8.18). Shastri Market Road being a one – way outward movement from BMC Chowk has the lesser vehicle volumes at 4668 vehicles. At Guru Nanak Mission Chowk, Mahavir Marg towards Ambedkar Chowk experiences a highest of 73483 vehicles with peak hour accommodating up to 7383 vehicles (6038 PCUs) in its 27.5 m ROW and 23.2 m divided carriage way widths.

Peak hour traffic range from 9.0% to 12.1%, which is comparable to any urban metropolitan congested city conditions. However, keeping in mind the right–of–way and other street furniture elements, as explained in the road network inventory analysis and future growth of traffic, this factor can be considered as alarming.

Table No. 8.18: Intensity and Directional Distribution of Traffic at Mid – Blocks

Sr. No	Intersection	Location	Total Traffic		Morning peak				Evening peak				Directional Distribution			
			Veh.	PCU's	Veh.	% of Total Traffic	PCU's	% of Total Traffic	Veh.	% of Total Traffic	PCU's	% of Total Traffic	Peak direction (PCU's)	%	Off Peak Direction (PCU's)	%
1	BMC Chowk	GT Road (Bus Stand to BMC Chowk)	57573	50477	5171	8.98	4715	9.34	6540	11.36	5272	10.44	3061	58.06	2212	41.94
2		New Court Road	21629	15510	2399	11.09	1700	10.96	2108	9.75	1571	10.13	939	55.24	761	44.76
3		GT Road (BMC Chowk to Namdev Chowk)	38999	31821	4138	10.61	3284	10.32	3127	8.02	2605	8.19	1657	63.61	1627	36.39
4		Mahavir Marg	51013	41201	4469	8.76	3613	8.77	5234	10.26	4246	10.30	2352	65.10	1894	34.90
5		Vir Singh Marg	21761	16121	2657	12.21	1958	12.14	2043	9.39	1532	9.50	1069	54.61	889	45.39
6		Shastri Market (one way)	4668	3658	890	19.07	717	19.59	339	7.26	261	7.12	717	100.0	0	0.0
7	Ambedkar Chowk	Mahavir Marg (GNM Chowk to Ambedkar Chowk)	73483	60483	7032	9.57	5821	9.62	7383	10.05	6038	9.98	3297	56.64	2741	43.36
8		Mahavir Marg (Ambedkar Chowk to Football Chowk)	50686	42747	5199	10.26	4075	9.53	5197	10.25	4323	10.11	2364	58.01	1959	41.99
9		Nakodar Road (Ambedkar Chowk to Jyoti Chowk)	30022	24531	3085	10.28	2603	10.61	2976	9.91	2319	9.45	1354	58.40	1249	41.60
10		Nakodar Road (Ambedkar Chowk to Nakodar)	34611	30761	3543	10.24	3123	10.15	3554	10.27	3045	9.90	1679	53.76	1445	46.24

(Source: RITES Survey, April 2006)

As evident from the Table No 8.19, Mahavir Marg between BMC Chowk and Guru Nanak Mission Chowk has a sizeable mix of fast and slow modes. Fast traffic volume stands as 38671 (75.8%) indicating relative lower share of buses, goods vehicles and slow moving modes such as cycles and rickshaws.

Peak hour duration is quite varied in the study area as explained in Table No.8.19. This is because a multitude of activities start and end at specific times of an average typical working day schedule. Broadly, morning peak hour range from 8:30 am to 12:45 pm whereas evening peak ranges around 6:00 pm to 8:00 pm. These timings coincide with various activities such as opening and closing time of offices, courts and other business activities.

The composition of traffic at mid blocks is also indicated in table no.8.19. It has been observed that up to 28.3% of the total traffic component on the mid blocks is shared by slow nature, primarily cycles and cycle rickshaws. Nakodar Road (from Ambedkar Chowk to Jyoti Chowk) has a predominance of slow mode composition (up to 48%).

Mahavir Marg being an urban arterial primarily designed to carry heavy motorized traffic accommodates about a third of its volume (22%) in slow and non-motorized modes. This is one of the reasons for slowing down of traffic streams and prevailing congested conditions.

Table No. 8.19: Traffic Composition at Mid Blocks

Sr. No.	Location		Fast Moving Passenger Vehicles						Goods Vehicles			Slow Moving Vehicles			Grand Total (Nos.)	Grand Total (PCU's)
			Motorized			Bus		Total Fast	Truck	LCV	Total Goods	Cycles	Cycle Rick.	Total Slow		
			Car / jeep / van	2-wh	Auto	Bus	Mini Bus									
1	**GT Road (BMC Chowk to Namdev Chowk)**															
	12 hour Volume count	DIR 1: Jyoti Chowk to BMC Chowk	3517	7789	2626	24	99	**14055**	12	159	171	2308	2332	4640	**18866**	**15135**
		DIR 2: BMC Chowk to Jyoti Chowk	4061	8538	2250	144	128	**15121**	34	131	165	2023	2824	4847	**20133**	**16686**
		Both Directions	**7578**	**16327**	**4876**	**168**	**227**	**29176**	**46**	**290**	**336**	**4331**	**5156**	**9487**	**38999**	**31821**
		Composition	19.43	41.87	12.50	0.43	0.58	**74.81**	0.12	0.74	0.86	11.11	13.22	24.33	**100.00**	
	Morning Peak 9:30 – 10:30	Both Directions	584	1846	567	16	16	**3029**	7	21	28	528	553	1081	**4138**	**3284**
		Composition	14.11	44.61	13.70	0.39	0.39	**73.20**	0.17	0.51	0.68	12.76	13.36	26.12	**100.00**	
	Evening peak 17:30 – 18:30	Both Directions	707	1205	405	8	6	**2331**	3	22	25	338	433	771	**3127**	**2605**
		Composition	22.61	28.54	12.95	0.26	0.19	**74.54**	0.10	0.70	0.80	10.81	13.85	24.66	**100.00**	
2	**GT Road (Bus Stand**															
	12 Hour Volume Count	DIR 1: BSF Chowk to BMC Chowk	7063	8652	3962	152	292	**20121**	19	163	182	3299	4380	7679	**27982**	**24620**
		DIR 2: BMC Chowk to BSF Chowk	7917	8708	4403	73	132	**21233**	103	222	325	3860	4173	8033	**29591**	**25857**
		Both Directions	**14980**	**17360**	**8365**	**225**	**424**	**41354**	**122**	**385**	**507**	**7159**	**8553**	**15712**	**57573**	**50477**
		Composition	26.02	30.15	14.53	0.39	0.74	**71.83**	0.21	0.67	0.88	12.43	14.86	27.29	**100.00**	
	Morning Peak 11:45 – 12:45	Both Directions	1417	1523	738	16	36	**3730**	11	47	58	464	919	1383	**5171**	**4715**
		Composition	27.40	29.45	14.27	0.31	0.70	**72.13**	0.21	0.91	1.12	8.97	17.77	26.75	**100.00**	
	Evening Peak 18:00 – 19:00	Both Directions	1844	2495	634	6	13	**4992**	15	43	58	829	661	1490	**6540**	**5272**
		Composition	28.20	38.15	9.69	0.09	0.20	**76.33**	0.23	0.66	0.89	12.68	10.11	22.78	**100.00**	
3	**New Court Road (BMC Chowk)**															
	12 Hour Volume Count	DIR 1: Court to BMC Chowk	2297	5849	51	17	9	**8223**	0	41	41	1569	908	2477	**10741**	**7541**
		DIR 2: BMC Chowk to Court	2639	5077	47	12	26	**7801**	13	75	88	1967	1032	2999	**10888**	**7970**
		Both Directions	**4936**	**10926**	**98**	**29**	**35**	**16024**	**13**	**116**	**129**	**3536**	**1940**	**5476**	**21629**	**15510**
		Composition	22.82	50.52	0.45	0.13	0.16	**74.09**	0.06	0.54	0.60	16.35	8.97	25.32	**100.00**	
	Morning Peak 10:15 – 11:15	Both Directions	436	1371	22	2	1	**1832**	0	14	14	301	252	553	**2399**	**1700**
		Composition	18.17	57.15	0.92	0.08	0.04	**76.37**	0.00	0.58	0.58	12.55	10.50	23.05	**100.00**	
	Evening Peak	Both Directions	583	981	17	1	4	**1586**	3	13	16	314	192	506	**2108**	**1571**

	19:00 – 20:00	Composition	27.66	46.54	0.81	0.05	0.19	**75.24**	0.14	0.62	0.76	14.90	9.11	24.00	**100.00**	
4	**Mahavir Marg (BMC Chowk)**															
	12 Hour Volume Count	DIR 1: Guru Nanak Mission Chowk to BMC Chowk	7023	8877	2632	45	97	**18674**	63	255	318	3933	2191	6124	**25116**	**20150**
		DIR 2: BMC Chowk to Guru Nanak Mission Chowk	6651	9422	2915	87	270	**19345**	13	321	334	3605	2613	6218	**25897**	**21051**
		Both Directions	**13674**	**18299**	**5547**	**132**	**367**	**38019**	**76**	**576**	**652**	**7538**	**4804**	**12342**	**51013**	**41201**
		Composition	26.80	35.87	10.87	0.26	0.72	**74.53**	0.15	1.13	1.28	14.78	9.42	24.19	**100.00**	
	Morning Peak 11:15 – 12:15	Both Directions	1076	1734	539	7	26	**3382**	7	55	62	557	468	1025	**4469**	**3613**
		Composition	24.08	38.80	12.06	0.16	0.58	**75.68**	0.16	1.23	1.39	12.46	10.47	22.94	**100.00**	
	Evening Peak 19:00 – 20:00	Both Directions	1605	1714	636	13	32	**4000**	3	82	85	779	370	1149	**5234**	**4246**
		Composition	30.66	32.75	12.15	0.25	0.61	**76.42**	0.06	1.57	1.62	14.88	7.07	21.95	**100.00**	
5	**Vir Singh Marg (BMC Chowk)**															
	12 Hour Volume Count	DIR 1: Green Park to BMC Chowk	2591	5758	114	3	2	**8468**	6	111	117	1639	940	2579	**11164**	**8009**
		DIR 2: BMC Chowk to Green Park	2159	4800	157	9	11	**7136**	0	77	77	1834	1550	3384	**10597**	**8112**
		Both Directions	**4750**	**10558**	**271**	**12**	**13**	**15604**	**6**	**188**	**194**	**3473**	**2490**	**5963**	**21761**	**16121**
		Composition	21.83	48.52	1.25	0.06	0.06	**71.71**	0.03	0.86	0.89	15.96	11.44	27.40	**100.00**	
	Morning Peak 10:30 – 11:30	Both Directions	566	1361	33	0	1	**1961**	0	26	26	367	303	670	**2657**	**1958**
		Composition	21.30	51.22	1.24	0.00	0.04	**73.81**	0.00	0.98	0.98	13.81	11.40	25.22	**100.00**	
	Evening Peak 18:00 – 19:00	Both Directions	425	945	23	1	1	**1395**	0	20	20	365	263	628	**2043**	**1532**
		Composition	20.80	46.26	1.13	0.05	0.05	**68.28**	0.00	0.98	0.98	17.87	12.87	30.74	**100.00**	
6	**Shastri Market Road (BMC Chowk)**															
	12 Hour Volume Count	DIR 1: BMC Chowk to Shastri Market	946	1760	42	0	0	**2748**	0	40	40	1090	790	1880	**4668**	**3658**
		DIR 2: Shastri Market to BMC Chowk	0	0	0	0	0	**0**	0	0	0	0	0	0	**0**	**0**
		Both Directions	**946**	**1760**	**42**	**0**	**0**	**2748**	**0**	**40**	**40**	**1090**	**790**	**1880**	**4668**	**3658**
		Composition	20.27	37.70	0.90	0.00	0.00	**58.87**	0.00	0.86	0.86	23.35	16.92	40.27	**100.00**	
	Morning Peak 9:00 – 10:00	Both Directions	120	304	11	0	0	**435**	0	4	4	249	202	451	**890**	**717**
		Composition	13.48	34.16	1.24	0.00	0.00	**48.88**	0.00	0.45	0.45	27.98	22.70	50.67	**100.00**	
	Evening Peak 15:15 – 16:15	Both Directions	92	146	4	0	0	**242**	0	6	6	54	37	91	**339**	**261**
		Composition	27.14	43.07	1.18	0.00	0.00	**71.39**	0.00	1.77	1.77	15.93	10.91	26.84	**100.00**	
7	**Nakodar Road**															

	12 Hour Volume Count	DIR 1: Ambedkar Chowk to Nakodar	3411	5196	600	93	66	**9366**	273	640	913	3687	3177	6864	**17143**	**15342**
		DIR 2: Nakodar to Ambedkar Chowk	4272	4518	466	16	151	**9423**	105	143	248	4002	3795	7797	**17468**	**15419**
		Both Directions	**7683**	**9714**	**1066**	**109**	**217**	**18789**	**378**	**783**	**1161**	**7689**	**6972**	**14661**	**34611**	**30761**
		Composition	22.20	28.07	3.08	0.31	0.63	**54.29**	1.09	2.26	3.35	22.22	20.14	42.36	**100.00**	
	Morning Peak 10:15 – 11:15	Both Directions	788	897	98	13	11	**1807**	25	72	97	903	736	1639	**3543**	**3123**
		Composition	22.24	25.32	2.77	0.37	0.31	**51.00**	0.71	2.03	2.74	25.49	20.77	46.26	**100.00**	
	Evening Peak 18:00 – 19:00	Both Directions	720	985	99	9	19	**1832**	49	85	134	969	619	1588	**3554**	**3045**
		Composition	20.26	27.72	2.79	0.25	0.53	**51.55**	1.38	2.39	3.77	27.27	17.42	44.68	**100.00**	
8	**Nakodar Road**															
	12 Hour Volume Count	DIR 1: Jyoti Chowk to Ambedkar Chowk	1642	5247	349	7	26	**7271**	24	133	157	3600	3674	7274	**14702**	**12244**
		DIR 2: Ambedkar Chowk to Jyoti Chowk	1858	5771	414	12	16	**8071**	38	82	120	3853	3276	7129	**15320**	**12287**
		Both Directions	3500	11018	763	19	42	**15342**	62	215	277	7453	6950	14403	**30022**	**24531**
		Composition	11.66	36.70	2.54	0.06	0.14	**51.10**	0.21	0.72	0.92	24.83	23.15	47.97	**100.00**	
	Morning Peak 11:15 – 12:15	Both Directions	**365**	**1172**	**63**	**1**	**1**	**1602**	**5**	**24**	**29**	**647**	**807**	**1454**	**3085**	**2603**
		Composition	11.83	37.99	2.04	0.03	0.03	**51.93**	0.16	0.78	0.94	20.97	26.16	47.13	**100.00**	
	Evening Peak 18:15 – 19:15	Both Directions	326	1138	46	1	1	**1512**	3	13	16	827	621	1448	**2976**	**2319**
		Composition	10.95	38.24	1.55	0.03	0.03	**50.81**	0.10	0.44	0.54	27.79	20.87	48.66	**100.00**	
9	**Mahavir Marg**															
	12 Hour Volume Count	DIR 1: Guru Nanak Mission Chowk to Ambedkar Chowk	9074	13692	3380	362	289	**26797**	92	476	568	5577	4277	9854	**37219**	**30869**
		DIR 2: Ambedkar Chowk to Guru Nanak Mission Chowk	8840	14207	3028	345	187	**26607**	109	343	452	5229	3976	9205	**36264**	**29614**
		Both Directions	**17914**	**27899**	**6408**	**707**	**476**	**53404**	**201**	**819**	**1020**	**10806**	**8253**	**19059**	**73483**	**60483**
		Composition	24.38	37.97	8.72	0.96	0.65	**72.7**	0.27	1.11	1.39	14.71	11.23	25.94	**100.00**	
	Morning Peak 10:00 – 11:00	Both Directions	1871	2752	611	76	18	**5328**	7	59	66	850	788	1638	**7032**	**5821**
		Composition	26.61	39.14	8.69	1.08	0.26	**75.77**	0.10	0.84	0.94	12.09	11.21	23.29	**100.00**	
	Evening Peak 19:00 – 20:00	Both Directions	1885	2497	707	34	36	**5159**	24	88	112	1313	799	2112	**7383**	**6038**
		Composition	25.53	33.82	9.58	0.46	0.49	**69.88**	0.33	1.19	1.52	17.78	10.82	28.61	**100.00**	
10	**Mahavir Marg**															
	12 Hour	DIR 1: Football	6037	10599	3183	197	164	**20180**	188	464	652	2797	2374	5171	**26003**	**21494**

	Volume Count	Chowk to Ambedkar Chowk														
		DIR 2: Ambedkar Chowk to Football Chowk	5279	9871	3333	305	150	**18938**	225	791	1016	2315	2414	4729	**24683**	**21253**
		Both Directions	**11316**	**20470**	**6516**	**502**	**314**	**39118**	**413**	**1255**	**1668**	**5112**	**4788**	**9900**	**50686**	**42747**
		Composition	22.33	40.39	12.86	0.99	0.62	**77.18**	0.81	2.48	3.29	10.09	9.45	19.53	**100.00**	
	Morning Peak 8:30 – 9:30	Both Directions	953	1922	664	38	34	**3611**	42	115	157	1096	335	1431	**5199**	**4075**
		Composition	18.33	36.97	12.77	0.73	0.65	**69.46**	0.81	2.21	3.02	21.08	6.44	27.52	**100.00**	
	Evening Peak 19:00 – 20:00	Both Directions	1275	2028	709	45	19	**4076**	23	135	158	545	418	963	**5197**	**4323**
		Composition	24.53	39.02	13.64	0.87	0.37	**78.43**	0.44	2.60	3.04	10.49	8.04	18.53	**100.00**	

(Source: RITES Survey, April 2006)

Table No. 8.20: Total Approach Volumes at Intersections

Sr. No.	Location	Daily Approach Volume		Peak Hour Approach Volume		Peak Hour Factor
		Vehicles	PCUs	Vehicles	PCUs	
1	BMC Chowk	95553	75704	9589	7690	10.2
2	Guru Nanak Mission Chowk	120800	96241	12108	9480	9.9
3	Ambedkar Chowk	95392	80341	9545	7848	9.8
4	Football Chowk	77566	63750	8283	6769	10.6
5	Adarsh Nagar Chowk	66662	55893	7918	6451	11.5
6	Kapurthala Chowk	78477	69724	8916	8091	11.6
7	HMV Chowk	75000	65356	8100	6983	10.7
					Average Peak Hour Factor	**10.6**

(Source: RITES Survey, April 2006)

Analyzing approach volumes at junctions indicate that all of them account for traffic volumes exceeding 66000 vehicles and 55893 PCU's (Refer Table no. 8.20). Guru Nanak Mission Chowk bears the densest concentration of traffic with 120800 vehicles (96241 PCUs) passing during an average 12-hour day. This translates to about 9480 PCUs crossing the intersection during peak hours. Average peak hour factor hovers at about 10.9%, which indicate signs of fatigue during peak hours laying greater stress to the capacity augmentation of the intersections.

As evident from Table No. 8.21, peak hour duration indicates that morning bands are usually varied from 9:00 am to 10:30 am and evening peak duration timings also varied at 5:30 pm to 8:00 pm coinciding with the closing time of the offices and evening commercial activities.

The composition of traffic at intersections is also presented in the table No. 8.21. It has been observed that up to 29.6% of the total traffic component is shared by cycle and cycle rickshaws. This factor plays an important role in the functioning of the intersections whereby clearance times to signals are lengthy.

Table No. 8.21: Traffic Composition at Intersections

Sr. No.	Name of Intersection		Fast Moving Passenger Vehicles						Goods Vehicles			Slow Moving Vehicles			Grand Total (Nos.)	Grand Total (PCU's)
			Motorized			Bus		Total Fast	Truck	LCV	Total Goods	Cycles	Cycle Rick.	Total Slow		
			Car / jeep / van	2-wh	Auto	Bus	Mini Bus									
1	**Guru Nanak Mission Chowk**															
	12 hour Volume count	Total Inflow	30661	50606	6930	759	645	**89601**	229	1423	1652	17040	12507	29547	**120800**	**96240.5**
		Composition	25.38	41.89	5.74	0.63	0.53	**74.17**	0.19	1.18	1.37	14.11	10.35	24.46	**100.00**	
	Morning Peak 9:30 – 10:30	Both Directions	2657	5296	607	70	29	**8659**	14	100	114	1612	1108	2720	**11493**	**8826**
		Composition	23.12	46.08	5.28	0.61	0.25	**75.34**	0.12	0.87	0.99	14.03	9.64	23.67	**100.00**	
	Evening peak 17:30 – 18:30	Both Directions	2993	5206	486	62	48	**8795**	23	142	165	1864	1284	3148	**12108**	**9480**
		Composition	24.72	43.00	4.01	0.51	0.40	**72.64**	0.19	1.17	1.36	15.39	10.60	26.00	**100.00**	
2	**Ambedkar Chowk**															
	12 hour Volume count	Total Inflow	21025	34056	7378	582	630	**63671**	409	1216	1625	15976	14120	30096	**95392**	**80341**
		Composition	22.04	35.70	7.73	0.61	0.66	**66.75**	0.43	1.27	1.70	16.75	14.80	31.55	**100.00**	
	Morning Peak 9:45 – 10:45	Both Directions	1899	3098	659	47	40	**5743**	30	102	132	1607	1229	2836	**8711**	**7198**
		Composition	21.80	35.56	7.57	0.54	0.46	**65.93**	0.34	1.17	1.52	18.45	14.11	32.56	**100.00**	
	Evening peak 19:00 – 20:00	Both Directions	2171	3153	922	31	46	**6323**	47	131	178	1887	1157	3044	**9545**	**7848**
		Composition	22.74	33.03	9.66	0.32	0.48	**66.24**	0.49	1.37	1.86	19.77	12.12	31.89	**100.00**	
3	**Football Chowk**															
	12 hour Volume count	Total Inflow	14383	32751	7490	559	379	**55562**	471	1606	2077	10457	9470	19927	**77566**	**63570**
		Composition	18.54	42.22	9.66	0.72	0.49	**71.63**	0.61	2.07	2.68	13.48	12.21	25.69	**100.00**	
	Morning Peak 9:00 – 10:00	Both Directions	1119	3088	678	37	29	**4951**	65	133	198	1515	789	2304	**7453**	**5831**
		Composition	15.01	41.43	9.10	0.50	0.39	**66.43**	0.87	1.78	2.66	20.33	10.59	30.91	**100.00**	
	Evening peak 19:00 – 20:00	Both Directions	1716	3324	774	45	23	**5882**	29	171	200	1198	1003	2201	**8283**	**6769**
		Composition	20.72	40.13	9.34	0.54	0.28	**71.01**	0.35	2.06	2.41	14.46	12.11	26.57	**100.00**	
4	**Adarsh Nagar Chowk**															
	12 hour Volume count	Total Inflow	10976	25298	6350	502	305	**43431**	539	1745	2284	11701	9246	20947	**66662**	**55893**
		Composition	16.47	37.95	9.53	0.75	0.46	**65.15**	0.81	2.62	3.43	17.55	13.87	31.42	**100.00**	
	Morning Peak 9:00 – 10:00	Both Directions	918	2461	600	32	21	**4032**	56	148	204	1269	608	1877	**6113**	**4813**
		Composition	15.02	40.26	9.82	0.52	0.34	**65.96**	0.92	2.42	3.34	20.76	9.95	30.71	**100.00**	
	Evening peak 19:00 – 20:00	Both Directions	1228	3067	678	54	25	**5052**	45	154	199	1555	1112	2667	**7918**	**6451**
		Composition	15.51	38.73	8.56	0.68	0.32	**63.80**	0.57	1.94	2.51	19.64	14.04	33.68	**100.00**	
5	**Kapurthala Chowk**															
	12 hour Volume count	Total Inflow	14150	24753	6546	601	303	**46353**	1168	3084	4252	15544	12328	27872	**78477**	**69724**
		Composition	18.03	31.54	8.34	0.77	0.39	**59.07**	1.49	3.93	5.42	19.81	15.71	35.52	**100.00**	
	Morning Peak	Both Directions	1180	2573	633	41	16	**4443**	85	266	351	1535	1119	2654	**7448**	**6347**

	9:15 – 10:15	Composition	15.84	34.55	8.50	0.55	0.21	**59.65**	1.14	3.57	4.71	20.61	15.02	35.63	**100.00**	
	Evening peak	Both Directions	1394	2649	660	42	31	**4776**	122	376	498	1921	1766	3687	**8961**	**8091**
	19:00 – 20:00	Composition	15.56	29.56	7.37	0.47	0.35	**53.30**	1.36	4.20	5.56	21.44	19.71	41.14	**100.00**	
6	**HMV Chowk**															
	12 hour	Total Inflow	8554	25076	10144	94	271	**44139**	1347	3833	5180	14895	10795	25690	**75009**	**65355**
	Volume count	Composition	11.40	33.43	13.52	0.13	0.36	**58.84**	1.80	5.11	6.91	19.86	14.39	34.25	**100.00**	
	Morning Peak	Both Directions	593	2285	893	3	34	**3808**	80	271	351	2306	989	3295	**7454**	**5972**
	8:30 – 9:30	Composition	7.96	30.65	11.98	0.04	0.46	**51.09**	1.07	3.64	4.71	30.94	13.27	44.20	**100.00**	
	Evening peak	Both Directions	883	2469	1028	2	5	**4387**	152	481	633	1974	1106	3080	**8100**	**6983**
	19:00 – 20:00	Composition	10.90	30.48	12.69	0.02	0.06	**54.16**	1.88	5.94	7.81	24.37	13.65	38.02	**100.00**	

(Source: RITES Survey, April 2006)

8.6.5 Origin – Destination Surveys

Origin – Destination Surveys were carried out with the twin objective of establishing the traffic desire and movement profile / intent within the study area. For two-wheelers and cars, the administration of the survey involves stopping of vehicles on random sampling basis and information such as origin – destination of the trip, mode and frequency is collected. For buses and trucks, survey was conducted, through 'Vehicle Registration Method'. The survey was carried at each of seven junctions (From BMC Chowk to HMV Chowk) for the traffic towards the HMV Chowk direction on a typical fair weather working day for a period of 12 hours (8:00 to 20:00) in conjunction with traffic volume counts. The survey was carried out covering aggregate movement profile in different areas as listed below in Table No. 8.22.

Table No. 8.22: Origin – Destination Surveys

Sr. No.	Location	Matrix Code
1	Ranjeet Nagar, Khalsa College, Rama Mandi, BSF Chowk, Defence Colony side (from BSF Chowk to BMC Chowk)	1
2	Milk Bar Chowk, Model Town Side (From Green Park side)	10
3	Hansraj Stadium, Circuit House, Central Town Side (from Guru Nanak Mission Chowk)	3
4	Maqdoompura, Lajpat Nagar side (from Ambedkar Chowk)	4
5	New Model Town, Rameshwar Colony side (from Ambedkar Chowk)	9
6	SUS Nagar, Shakti Nagar, Vijay Nagar side (from Football Chowk)	5
7	Tej Mohan Nagar, Gujral Nagar, New Model House side (from Football Chowk)	8
8	Sports College, Adarsh Nagar side (from Kapurthala Chowk)	7
9	Harnam Das Pura, Kapurthala Chowk side (from Kapurthala Chowk)	6
10	HMV College, Hardev Nagar, Dayanand School, Gandhi Camp, Ram Nagar side (from HMV Chowk)	2

(Source: RITES Survey, April 2006)

About 10-15% of the total daily volume was included in the survey. The sample size achieved varied with location, direction and hour of day on account of vehicle arrivals and site characteristics. The total volume of passing vehicles for each vehicle type is divided by the sample size drawn in that category to arrive at the expansion factors.

The main purpose of the Origin – Destination Surveys were to estimate the nature and quantum of traffic stream that traverse through the Mahavir Marg from BMC Chowk to HMV Chowk without having its origin or destination in between the two end points. Such traffic would be termed as 'through' traffic and finally lead to estimate the facilities to decongest the study corridor.

It has been observed that peak hour 'through' traffic in both directions from BMC Chowk to Kapurthala and HMV Chowk is about 1070 PCUs along the Mahavir Marg on both directions, which is about 13% of total daily traffic. Rest 87% traffic is using Mahavir Marg to commute to different areas on both side of the entire stretch.

8.6.6 Parking Surveys

Parking Surveys were conducted through 'Patrol Method' for 'on – street' parking. The road stretches were identified after detailed site reconnaissance, which indicate higher incidence of parking.

The output aims to provide a fair assessment of parking demand in terms of direction, duration, accumulation; space hours occupied by each vehicle, turnover, index etc and thereby allow planning for new / augmenting / relocation of parking related facilities. The surveys were carried out on a typical fair weather working day for a period of 12 hours (9:00 to 21:00). About four survey locations were selected (Refer Table No 8.23)

Table No. 8.23: Parking Survey Locations

Sr. No.	Location	Typology	
		On-Street	Off-Street
1	Ambedkar Chowk to Guru Nanak Mission Chowk (Left side stretch)	On – street	-
2	Ambedkar Chowk to Guru Nanak Mission Chowk (Right side stretch)	On – street	-
3	Ambedkar Chowk to Football Chowk (Left side stretch)	On – Street	-
4	Ambedkar Chowk to Football Chowk (Right side stretch)	On – Street	-

(Source: RITES Survey, April 2006)

For parking analysis, the space occupied by various modes has been converted in terms of Equivalent Car Spaces (ECS). The adopted values as per Indian Road Congress (IRC) are presented in table no. 8.24.

Table No. 8.24: Standard ECS Values

Sr. No.	Vehicle type	ECS Value
1	Car / Jeep / Van / Auto	1.0
2	3-wheeler	1.0
3	2-wheeler	0.5

Source: Indian Road Congress (IRC)

Analyzing 'on-street' curb – side parking across linear stretches of Mahavir Marg, it is evident that during the peak accumulation, about 200 vehicles are scattered along both sides of Mahavir Marg between Guru Nanak Mission Chowk to Football Chowk (Refer Table No. 8.25)

Table No. 8.25: Linear Stretch Accumulations

Sr. No.	Location	Parking Load	Peak Accumulation	Peak Hour Factor
1	Ambedkar Chowk to Guru Nanak Mission Chowk (Left side stretch)	1408 (1020)	210 (138)	13.53 %
2	Ambedkar Chowk to Guru Nanak Mission Chowk (Right side stretch)	2028 (1462)	254 (186)	12.72%
3	Ambedkar Chowk to Football Chowk (Left side stretch)	1713 (1243)	192 (148)	11.91%
4	Ambedkar Chowk to Football Chowk (Right side stretch)	1906 (1426)	238 (172)	12.06%

Figures in brackets indicate ECS values.

(Source: RITES Survey, April 2006)

On an average about 80% of cars and 72% of two-wheeler owners park their vehicles on both sides of the stretch from Guru Nanak Mission Chowk to Football Chowk for short term duration. Relatively higher percentage of long term parking on the entire stretch shows the absence of any off – street parking lot. (Refer Table No. 8.26)

Table No. 8.26: Parking Duration Typology

Sr. No.	Duration (in hours)	Ambedkar Chowk to Guru Nanak Mission Chowk				Ambedkar Chowk to Football Chowk			
		Left side		Right side		Left side		Right side	
		Cars	2-wh.	Cars	2-wh.	Cars	2-wh.	Cars	2-wh.
1	0 to 2	46.9	53.1	52.5	39.1	44.9	49.2	48.0	40.0
2	2 to 4	32.1	16.3	27.9	25.8	38.3	33.1	26.0	26.4
3	4 to 6	7.4	14.3	9.0	15.9	8.4	8.5	14.6	17.3
4	6 to 8	3.7	9.2	4.1	7.9	5.6	6.2	7.3	7.3
5	>8	9.9	7.1	6.6	11.3	2.8	3.1	4.1	9.1
Short – term parking		79.0	69.4	80.3	64.9	83.2	82.3	74.0	66.4
Long – term parking		21.0	30.6	19.7	35.1	16.8	17.7	26.0	33.6

All figures are indicated in percentages
(Source: RITES Survey, April 2006)

8.6.7 Pedestrian Surveys

Pedestrian Surveys were conducted for both ‘across’ and ‘along’ movements. ‘Along’ movements were noted to understand the adequacy of footpath whereas ‘across’ movements were counted to measure the intensity of pedestrian / vehicular conflict. The sections were identified after assessing area wide site reconnaissance, which indicate higher ‘across’ and ‘along’ flow incidence of pedestrians.

The surveys were carried out on a typical fair weather working day for a period of 12 hours (8:00 to 20:00). About 13 ‘across’ and 20 ‘along’ (33 in total) survey locations were selected. Segregation of pedestrian and vehicular traffic is of utmost importance from the safety point of view. It also has major effect on the traffic carrying capacity. The output aims to provide a fair assessment of pedestrian demand in terms of direction, volume / intensity, temporal variation, conflict / interaction with vehicular traffic etc.

Daily and peak pedestrian volumes with peak hour factors are presented in Table No. 8.27 below. It can be observed that the total Peak Hour pedestrian traffic at the major intersections varies from 442 at Guru Nanak Mission Chowk (across location P10) to 3007 at BMC Chowk (across location P1). Aggregated peak hour factors indicate that ‘along’ and ‘across’ movements account for dense concentrations during peak hour intervals. Peak hour varies from junction to junction significantly from 8:00am to 9:00am at HMV Chowk to 12:30pm to 1:30pm at BMC Chowk during mornings and 4:30pm to 5:30pm at BMC Chowk to 6:15pm to 7:15pm at Kapurthala Chowk during evenings.

Table No.8.27: Pedestrian Volume on Mahavir Marg

Sr. No.	Location Code	Daily Pedestrian Volume (12 hours)		Peak Pedestrian Volume		Peak Hour Factor (in %age)	
		Along	Across	Along	Across	Along	Across
BMC Chowk							
1	P1	3007	-	445	-	14.80	-
2	P2	-	962	-	90	-	9.36
3	P3	2249	-	360	-	16.01	-
4	P4	-	1701	-	179	-	10.52
5	P5	2139	-	243	-	11.36	-
6	P6	1744	-	184	-	10.55	-
Guru Nanak Mission Chowk							
1	P7	990	-	128	-	12.93	-
2	P8	-	602	-	65	-	10.80
3	P9	452	-	44	-	9.73	-
4	P10	-	442	-	44	-	9.95
Ambedkar Chowk							
1	P11	2250	-	358	-	15.91	-
2	P12	-	1815	-	235	-	12.95
3	P13	1630	-	159	-	9.75	-
4	P14	-	1749	-	174	-	9.95
Football Chowk							
1	P15	771	-	80	-	10.38	-
2	P16	-	828	-	117	-	14.13
3	P17	799	-	99	-	12.39	-
4	P18	-	1025	-	158	-	15.41
5	P19	1464	-	170	-	-	-
6	P20	1308	-	157	-	12.00	-
7	P21	955	-	115	-	12.04	-
8	P22	1476	-	115	-	7.79	-
Kapurthala Chowk							
1	P23	746	-	101	-	13.54	-
2	P24	-	1287	-	117	-	9.09
3	P25	549	-	98	-	17.85	-
4	P26	-	1093	-	160	-	14.64
5	P27	1106	-	138	-	12.48	-
6	P28	1495	-	149	-	9.97	-
7	P29	1573	-	167	-	10.62	-
8	P30	513	-	46	-	8.97	-
HMV Chowk							
1	P31	-	545	-	51	-	9.36
2	P32	1505	-	152	-	10.10	-
3	P33	1290	-	136	-	10.54	-
					Average Peak Factor	**11.58**	**11.47**

(Source: RITES Survey, April 2006)

8.6.8 Intensity of Road Accidents

In order to assess the road safety in Jalandhar, it becomes important to study the road accidents in the city. The data given by the traffic police depicts that number of road accidents recorded in 2004 were 92 out of which 45 were fatal. The number of the accidents has risen abruptly from 92 in 2004 to 153 in 2008 due to increase in vehicular ownership in Jalandhar. The table number 8.28 depicts the data on number of accidents covering both fatal and non

fatal. The more number of fatal accidents invite lot of concern. Thus the tending needs to be curbed with the strict regulation and enforcement mechanism.

Table No. 8.28: Road Accidents year wise

Year	No. of Accidents	Fatal	Non Fatal
2004	92	45	78
2005	128	68	80
2006	124	78	76
2007	155	99	79
2008	153	96	158

(Source: Traffic Police, Jalandhar city)

8.7 STATUS OF RAILWAYS IN JALANDHAR

The railways also carry large volume of traffic as well as goods into Jalandhar city. Total number of trains (passenger and goods) passing through the city is 152 on daily basis which cater to the traffic on different routes such as: Jalandhar – Ludhiana, Jalandhar – Amritsar, Jalandhar – Pathankot, Jalandhar – Hoshiarpur, Jalandhar – Nakodar and Jalandhar – Kapurthala. The intensity of trains plying on New Delhi – Amritsar and Amritsar-Jammu route is maximum and account for 3/4th of total trains. These trains cater to 70% of total passenger traffic. Thus it is evident from the fact that railways are most reliable source for traversing from one point to another.

It is mandatory to note here that traffic catered by railways also comprises of daily commuters because railway is the economical, reliable and efficient mode of transportation.

In addition to 47520 passenger trains, 7300 goods trains passed through the city which help in smooth traversing of raw material and finished goods. The bulk Godown has been constructed at the Railway Station of Suranussi where goods are loaded and unloaded. The railway links of Amritsar – New Delhi and Jammu-New Delhi are very crucial towards development of Jalandhar. It is pertinent to mention here that Freight Corridor from Mumbai to Ludhiana is likely to be extended up to Amritsar passing through Jalandhar city. The tables giving details about the number of passenger trains and Goods trains passing through Jalandhar city are tabulated in tables 8.29 and 8.30.

Table No. 8.29: No. of passenger trains passing through Jalandhar

Year	Number of Trains
2007	45360
2008	47520

(Source: Office of the Station Supdtt. Northern Railway Region, Jalandhar)

Table No. 8.30: No of goods trains passing through Jalandhar City

Year	Number of Goods Trains
2007	9125
2008	7300

(Source: Office of the Station Supdtt. Northern Railway Region, Jalandhar)

8.8 PUBLIC TRANSPORT

Jalandhar city has the dominance of the public transportation system since it has the lead of having city bus transport amongst the state of Punjab. There is also the provision of auto rickshaws for the maneuverability of the people in the different parts of the city. Following table illustrates the number of auto rickshaws moving in the city.

Table No. 8.31: Number of Intermediate Public Transport

Sr. No.	Intermediate Public Transport	Number of vehicles
1	Auto – Rickshaws	Passenger = 7396 Goods = 5007
2	Cycle – Rickshaws	13750

(Source: District Transport Officer and Municipal Corporation Jalandhar)

The laying of the road infrastructure is being carried out by the private firm which is providing the Bus – Q- Shelter at different stoppages for the convenience of the people.

8.9 PARKING LOTS

Jalandhar city lacks in the parking lots. Only three lots are provided in the city at different locations namely near Narinder Cinema, Nehru Garden and Jyoti Chowk due to which people are forced to park their vehicles on the road itself. The on-street parking results in the reduction of the effective road width and as a result the various traffic problems creep in. The parking lots provided in the city are tabulated as follows:

The issue of the parking is very much critical in the city of Jalandhar. The parking shortage has been aggravated due to various factors such as:

Higher use of personalized vehicles

Rapid growth of Intermediate Public Transport

It is interesting to note that even the commercial spaces are planned but they lack in the parking spaces because parking requirements are worked out on the basis of ground coverage rather than on the total volume of the built space.

Due to absence of demarcation of the parking spaces, the vehicles are forcibly parked along the road berms. So far only three parking lots have been constructed by the Municipal Corporation, Jalandhar. However, these lots do not fulfill the requirements of the residents. Thus it is the need of the hour to develop more parking lots so as to eliminate the problem of parking. The private sector must be encouraged to develop parking lots in the congested areas of the city. The effective measures should be undertaken so as to alleviate the parking problems such as:

Vehicle ownership should only be allowed if the owner has the provision of parking

No basement should be allowed to be used for any other purpose except for parking

Wherever, there is the conversion of the land use, it should be subject to creation of appropriate level of parking as prescribed by the government

Parking would remain as one of the strong issue unless it is dealt strictly. Thus necessary attention should be paid towards formulating strong parking policy so that the problems of parking may be resolved as soon as possible.

8.10 MULTIPLICITY OF AGENCIES IN MANAGING URBAN TRANSPORT

The multiplicity of agencies has rather worsened the urban transport of the city since a single component is being managed by different agencies. For instance, the roads in Jalandhar city are developed and maintained by Municipal Corporation, Jalandhar Development Authority, State Public Works Department, National Highway Authority of India etc. Thus one can very well judge from the above fact that these roads can be maintained when there are so many agencies operating simultaneously just for roads only. The ground reality is altogether different since various agencies feel free to dig up the roads and then lay the roads either un-repaired or under-repaired and put the residents in to loads and loads of troubles.

Regarding the transport systems which are operating in the city, the story is again similar since the motorized vehicles are registered by the District Transport Officer while the non-motorized vehicles are registered by the Municipal Corporation, Jalandhar. On the other hand, bus transport is being run by the State Road Transport Department and Railway transport is running under the control of the Ministry of Railways while traffic is managed by the Traffic Police. Thus number of agencies is in operation without any coordination who are working by their own kind without giving any positive output.

The worst part of the existing scenario is that urban transport is considered as secondary responsibility by the above mentioned agencies. For instance, the primary responsibility of Municipal Corporation, Jalandhar is to provide basic amenities to the residents of city, police to maintain law and order, District Transport Officer to register the motorized vehicles, State Transport to run buses and Railways department to take care of the rail traffic and Development Authority to formulate plan for the future development of the city etc. but in the existing set up, the management of the urban transportation has not brought in to any lime light. Rather this aspect has been considered as a secondary aspect. It is interesting to note that management of the traffic is left with the Police who do not have any sort of expertise in this field. Jalandhar does not have any qualified Urban Transport Planner and Traffic Engineer who can guide and manage the urban transport.

Keeping in view the existing situation, it would be better to put in place an umbrella organization to look in to the entire mechanism of planning, development, operation and management of the urban transport in the city. The authority should be dedicated enough to work for the betterment of the city and should also be made responsible for planning, urban transport for the city as a whole. The authority should be fully authorized to coordinate the effort of all the agencies so as to develop state of art, safe and economic and convenient transport system in the Municipal Corporation of Jalandhar.

The responsibilities must be clearly allocated to each agency operating in the domain of the urban transport. For the effective management of the urban transport adequate man power and resources are the essential ingredients. Thus it can be concluded here that in order to minimize the traffic and reduce travel within the city the urban transport should be looked in an integrated manner and catered for in a totally dedicated and professional manner.

8.11 ISSUES OF TRAFFIC AND TRANSPORTATION

On the basis of the exhaustive coverage on the aspect titled "Traffic and Transportation" series of important issues have been identified regarding the planning and management of traffic and transportation in Jalandhar. These issues are listed as follows:

Absence of functional hierarchy of road network

Mixing of local and regional traffic

Location of Bus and Rail terminals in the core areas

Narrow roads in the core of the city with limited capacity resulting in the large scale congestion

Location of major traffic generators such as wholesale markets in the core of the city

Large scale intermixing of slow and fast moving traffic

Inadequate grade separators leading to number of traffic jams

Large scale encroachments of road leading to reduction in effective road width

Lack of parking space leading to on – street parking of the vehicles which adds to further congestion and delays

Limited provision of footpaths on the roads with most of the footpaths encroached by informal activities

Poor level of traffic awareness and civic sense among the road users and poor travel behavior

Multiplicity and lack of coordination among the agencies involved in the planning and regulation of traffic and transportation

Operation of large number of slow and medium speed intermediate public transport such as cycle rickshaws, auto rickshaws etc

Existing bypass has become merely an inner ring road thus leading in intermix of large amount of intercity traffic and traffic coming within the city

9.0 EXISTING INFRASTRUCTURE

9.1 WATER SUPPLY

Jalandhar has the distinction of having one of the oldest systems of water supply in the State of Punjab. It is now almost a century old. The system is completely based on ground water as source of drinking water. The water is then supplied through a system of gravitation. With the city getting power supply in 1920, the shallow tube wells were replaced by deep tube-wells and system of pumping/extracting the water was made through new electrical motors. Keeping in view the growth of population in the city, 320 tube-wells have been installed in order to meet the growing demand of water in the city.

9.1.1 Source of Water Supply

At present there are two main sources of surface water available to the city which includes Beas and Kali Bein River. Due to limitations in respect of quality and quantity, these sources cannot be used for water supply to the city. The availability of water and the quality of water for the purpose of water supply to the city has been detailed below:-

Beas River is situated on the western side approximately at a distance of 35 km from the city. However, the river remains dry during major part of the year, due to construction of dams on the upstream side, on other rivers in which water of Beas has been added. It is only during monsoon season that the river has sufficient amount of water flowing into it. Hence the river not being perennial cannot be used as a source of water supply to the city.

Kali Bein which originates from village Budho Pinder in Hoshiarpur district is actually converted to drain because the entire urban center lying on the bank of Kali Bein throws sewerage into it. Baba Seechewal has tried his best with the help of Punjab Government to clean it, although how some condition is better but it cannot be used as water source.

9.1.2 System of water supply and area coverage

Supply, operation and maintenance of water is one of the prime and basic service, provided by Municipal Corporation of Jalandhar However, the role of Municipal Corporation is limited to funding the entire cost of the project, making the system operational, maintain it besides collecting the revenue from the end users. The entire process of planning, designing, construction and laying the major net-work and construction of tube-wells & OHRs is handled

by the State level agency i.e. Punjab Water Supply and Sewerage Board (PWSSB). Board undertakes this work for and on behalf of the Municipal Corporation and after completing the system it is handed over to Municipal Corporation.

For water supply, the Corporation has divided the entire city area (110.40 sq. kms.) into two distinct parts i.e. 'Declared areas' and 'Un-declared areas'. Declared area comprises of 80% of the city area (88.40 sq.kms.) and houses 80% of the population (6.0 lac), the un-declared constitutes (20%) of the total area of the city (22.00 sq.kms) and houses 20% of population . As it stands today, supply of water by the Municipal Corporation is limited only to declared areas falling within the city limits whereas un-declared area is not served by the system. The coverage of the declared area is to the extent of 100% by the water supply system. However, the undeclared area which houses 15 lac populations remains outside the ambit of water supply by the Municipal Corporation. This area is totally dependant upon their own sources of water supply.

The area of the Municipal Corporation which is covered by the Water Supply System is 80% of the total Municipal Corporation limit and is tabulated as follows in table No.9.1

Table No.9.1: Area under Water Supply Coverage

Item	Area (in sq km)	Area under coverage (%age) approx.	Population under coverage (%age) approx
Total Municipal Area	110.43	80	85
Declared Area	88.43	100	100
Un-declared Area	22.00	Nil	Nil

(Source: Municipal Corporation, Jalandhar)

Dual system of water supply (direct and indirect) is followed in the declared area. In one system, the water is extracted from ground through tube-well and directly supplied into the main lines via pumping. This system does not involve any kind of storage of water, neither in sump well or in overhead reservoir. While the second system serves dual purpose. In this system tube-well has an additional facility to pump water and store it into overhead reservoir attached with it, or it can supply water directly to the water mains via pumping. The overhead reservoirs are useful for supplying water through gravity and for achieving required head. It can also be used as storage for meeting the requirements of fire safety by the Fire Brigade Department.

Right from the day of supplying water, the system is completely dependent on ground water as source of water supply (domestic as well as industrial) and the system of pumping the water was based on the Tube-wells. At present a net-work of 320 tube-wells spread over the city area are used by the Jalandhar Municipal Corporation to supply water. Both shallow (15 Nos.) and deep tube-wells (305 Nos.) are used for pumping the ground water. Deep tube-

wells extract water from a depth of 400ft. and above whereas shallow tube-wells extract water from depth of approximately 180ft. Total amount of water extracted by these tube-wells is to the tune of 320 mld. All the tube-wells are equipped with chlorinators wherein 0.2 ppm of bleaching powder is added for treatment for providing 100% chlorinated water. The detail of tube-wells and their location is given below: -

Table No. 9.2: Number of Tube Wells and amount of Water extracted

Item	Quantity (No.)	Remarks
Total no. of tube wells	**320**	**Depth varying between 180 to 460**
Deep Tube Wells	305	Depth 400 ft and above
Shallow Tube Wells	15	Depth 180 ft and above
Total amount of extracted ground water	320 MLD	

(Source: Municipal Corporation, Jalandhar)

Out of 320 tube-wells, 300 tube-wells are used to direct supply of water in the system without any intermediate storage. 20 tube-wells are connected with the dual system involving supply of water with or without intermediate stage. The amount of water supplied through the direct system is 320 mld whereas the quantum of water supplied through the dual system is 20 mld. There are 20 OHSR (each with a capacity of 1.0 ml) which have a storage capacity of 40 ml. In case of failure of electricity and resultant non-operation of the motors for pumping, the city faces hardship in terms of supply of water. The details of tube-wells under the different system and the amount of water pumped are detailed below in the Table 9.3.

Table No.9.3: Type of Network System

Network System	Number of Tube – Wells	Number of Water Tanks (Overhead)	Capacity (MLD)
System 1 – Direct Supply	300	-	300
System 2 – Dual Supply System (with or without intermediate storage)	20	20	20
Total	**320**	**20**	**320**

(Source: Municipal Corporation, Jalandhar)

9.1.3 Position of water supply connections

At present the number of water supply connections is 117090. Out of these 108714 are domestic and 8376 are commercial connections. A detailed analysis has been made with regard to number of connections registered in the domestic and commercial segments of the city. It has been observed that larger proportion of the connections fall under the category of domestic use. Whereas commercial water connections constitute only 8 % of the total water connections. Number of connections has been growing very fast. The increased population, increased number of dwelling units and commercial establishments has resulted into more water demand in Jalandhar city. Moreover, the affordability level of people has lead to increase in the number of connections during the last five years. Growth of water connections

has been higher in case of domestic category as compared to commercial use. The details of the water connections in both these categories are given in Table 9.4.

Table No. 9.4: Increasing Profile of Water Supply connections during last five years

Year	Water Supply – Number of Connections		
	Domestic	Commercial	Total
2002	81272	5237	86509
2003	85744	5568	91312
2004	94733	5601	100334
2005	95856	5753	101609
2006	97869	6003	103872
2007	101832	7362	109194
2008	108714	8376	117090

(Source: Municipal Corporation, Jalandhar)

9.1.4 Water supply and duration

The table indicates the area coverage and population receiving the water supply, amount of water supplied number of connections and per-capita supply of water within Municipal limits. The total water supply in Jalandhar city in the year 2006 on daily basis was of the order of 320 MLD. Based on the population of the city in Jalandhar, the amount of water supplied on per capita basis works out to be more than 220 lpcd. As per the norms prescribed, the amount of water to be supplied is 135 lpcd. Accordingly, the amount of water supplied is higher than the prescribed norms. The supply of water is intermittent and 3-times a day and the total duration work out to be 12 hours daily.

Table No. 9.5: Water Demand and Supply

Category	Area (in sq kms)	Amount of water supplied (in MLD)	Registered Connections	Population	Water Supply (lpcd)
Municipal Area	110.43	320	117090	752000	>220
Declared Area	88.43	320	117090	752000	>220

(Source: Municipal Corporation, Jalandhar)

9.1.5 Key issues:

Water contamination

Water supply system was first laid in the year 1920 and the sewerage facility was started in late 1950s. The streets of the old city are narrow and as such the water supply lines are running very near to the sewerage lines. With the passage of time the old city water supply lines especially the GI pipes have been corroded and have developed snags/cracks which attracts/sucks sewerage water leading to contamination. The reason of leaking of sewer is the eating away of the cement joints of the SW pipes used for provision of sullage sewer lines. In certain cases it has been seen that the water supply connections are passing through the sewerage manholes which are detected only after the reporting of the contamination complaints.

Multiplicity of Agencies

Because of multiplicity of development agencies including PUDA, Improvement Trust, PSIEC, Department of Industries, Marketing Board etc. operating in Jalandhar Corporation area, there has been lack of coordination and integrated planning in the provision of services and amenities. All these agencies have focused on their areas taken up for development without bothering about the city level infrastructure. In this scenario, there have been found to be considerable variation in the level of services provided in the city. It has also been observed that in the initial stages, the newly developed area seem to be much better served. But over a period of time the degradation of these services starts due to lack of maintenance and upkeep. Due to lack of integration and coordination in planning, development of the service network, the delivery of services continues to be badly affected. Accordingly, for ensuring appropriate quantity and quality of water supply in Jalandhar Corporation area, a Nodal Agency needs to be designated.

9.1.6 Un-Declared Areas - Water Supply System

Despite the fact, the city has sufficient supply of water but still approximately 20% of the area remains unserved by the water supply network. The so called un-declared area does not have any provision of water supply and the requirement of the residents is met by the water supplied by the bore-wells dug out by the individuals. The quality of water through this source is highly un-reliable due to contamination of first layer of ground water. Thus more than 1.5 lakh population of Jalandhar continue to suffer due to the absence of water supply network and absence of coverage by the water supply system.

Tapping additional sources: The entire water supply system of the Jalandhar Municipal Corporation is based on the ground water resource. With rapid growth of population and expansion of the city, the amount of water being consumed has increased substantially. This has lead to rapid depletion of the ground water table. Initially considerable proportion of the demand for water supply was being met by the hand pumps which were in operation practically in all houses. With the lowering of the water table most of these water pumps have become non-operational. Further due to contamination of the ground water due to industrial waste, water made available through hand-pumps has not been found to be fit for human consumption.

Considering the rapid growth of Jalandhar Corporation, it has become important that alternative sources of water supply should also be explored so as to reduce dependence on the ground water and to minimize the fast depletion of the water table. Appropriate mechanism of reducing the consumption of water needs to be explored including recycling of the waste

water by the industry. Mechanism of rain water harvesting should also be encouraged at the household/institutional level to reduce dependence on the ground water.

The other major issues in the present water supply are:-

- Inequality in water distribution
- Quality of water
- Absence of record regarding the old network(location, depth, size, quality)
- Low overhead storage capacity
- High mortality rate of shallow tube wells
- Large number of illegal connections.
- Poor maintenance of service network
- High degree of water loss due to leakages
- Wastage of water in slum areas due to stand posts.
- Un-metered water supply.
- Irrational water charges.
- Old service network requiring replacement.

9.2 SEWERAGE

For Jalandhar about 82% of the population of the town is served with the sewerage facilities through 682 km of the sewer line of the different sizes from 200 mm to 2440 mm. Presently there is partial system for treatment of sewage, as only one Sewerage Treatment Plant of 100 MLD capacity has been constructed. Untreated sewage is collected through a network of sewers from the contributory areas and is lifted at the terminal pumping stations and disposed off on land or is pumped in to the near by drains. Sewage in the drains flow by the gravity and ultimately joins the river Sutlej.

The detail of the existing pumping stations is as under:

Table No.9.6: Location of existing pumping stations

Sr. No.	Locations	Motors (HP)
1	Dhan Mohalla 1	40
		40
		20
		20
2	Dhan Mohalla 2	20
3	Gandhi Camp	20
		20
4	Partap Bagh	40
		40
5	Sabzi Mandi (Near Dolphin Hotel)	20
		20
6	Domoria Bridge	12.5
		10

7	Industrial Area	60
		60
8	Ram Nagar (Near Gazi Gulla Phatak)	20
		20
9	Preet Nagar	12.5
10	Guru Amar Dass Colony	20
11	Bhagat Singh Colony	20
12	Basti Bawa Khel	30
		40
13	Basti Mithu	20
14	Babu Jagjiwan Ram Chowk 120 Ft Road Basti Guzan	20
15	Payal Disposal	30
16	Makhdumpura Lion Club	30
		30
17	Babu Labh Singh Nagar	20
18	Kabir Vihar	20
19	Baba Bankhandi (Basti Sheikh)	20
		20
20	Defence Colony	25
21	Sunder Nagar	12.5
22	Reru Pind	12.5
23	Industrial Estate	12.5
24	Kishan Pura	60
		60
		60
		60

9.2.1 Existing Management; Operation and Maintenance System

At present operation and maintenance of water supply and sewerage system is being done by the Municipal Corporation, Jalandhar at its own level.

9.2.2 Existing tariff system

Existing tariff enforced in the Municipal Corporation was notified by the Punjab Government vide its notification No. 2/2/2003-3LGIV-6510 dated 2.5.2003. The rates were as below:

Table No.9.7: User charges for un-metered water connections (domestic)

Plot Size	Rate per connection per month (in Rs)				
	Financial Year				
	2003-04	2004-05	2005-06	2006-07	2007-08
Up to 5 Marla	50.00	55.00	60.00	70.00	100.00
Above 5 Marla and up to 10 Marla	75.00	80.00	90.00	100.00	105.00
Above 10 Marla but less than 1 Kanal	100.00	110.00	120.00	130.00	140.00
1 Kanal and above	Only metered connections				

Table No.9.8: User charges for metered water connections (domestic)

Financial Year	Rate (in Rs per kiloliter per month)
2003-04	2.00
2004-05	2.60
2005-06	3.20
2006-07	3.50
2007-08	3.80

Table No.9.9: User charges for sewer connections (Domestic)

Plot Size	Rate per connection per month (in Rupees)				
	Financial Year				
	2003-04	2004-05	2005-06	2006-07	2007-08
Up to 5 Marla	50.00	55.00	60.00	70.00	100.00
Above 5 Marla and up to 10 Marla	75.00	80.00	90.00	100.00	105.00
Above 10 Marla but less than 1 Kanal	100.00	110.00	120.00	130.00	140.00
1 Kanal and above	Equal to water charges				
For own sources of water supply	Equal to water charges of metered water supply				

9.2.3 Commercial and Industrial Connections

For institutional, commercial and industrial connections, only rates as metered connections shall be charged and sanctioned as per note under table no. 9.8 and rates will be double the water supply and sewerage rates as mentioned in the above table's no. 9.7 and 9.9.

9.2.4 Minimum level of Guarantee

Local Bodies will ensure quality of water and minimum duration of supply billing and collection be privatized in a phase manner. To ensure guarantee of standard of services, computerization of bills, preparation of web site showing hours of supply status of complaints etc be also introduced. Stand by source of power should be added in addition of the existing source.

9.2.5 Per Capita Sewage Flow Rate

Sewage contribution from the communities largely depends on the level of water supply provided to the communities. The quantity of water flowing into a sewer system is normally less than the quantity of water supplied to the community. Commercial, industrial and institutional establishments often have their own water supply arrangements and discharge the waste water in to municipal sewers.

Jalandhar water supply augmentation scheme is designed at the rate of 135+15% unaccounted = 155 lpcd. Water supplied to the community is assumed to be discharged in sewers @ of 80% as per CPHEEO Manual.

9.2.6 Ground water infiltration

As the sewers are laid underground and the joints made are not hundred percent water tight, infiltration of ground water through the joints cannot be ruled out. Besides, there is likelihood of entry of surface water through manholes or abandoned house connections and therefore, allowances for ground water infiltration into the sewer have been prescribed in units of l/ha/day, by CPHEEO Manual. The ground water infiltration has been taken at the rate of 5%.

9.2.7 Peak hour factors

Fluctuation in the rate of sewage flow from any sewerage zone varies with season, month, day and hour. Maximum or peak flow and minimum flow are the controlling factors in the designs of the sewers. The sewers should be so designed as to cope up with the peak flow and as well as to develop self cleansing velocity for minimum flow. To determine the relationship between average and maximum flow rate, a few empirical formulae exist but the result cannot be relied upon. Gauging of sewage flow rate of a similar town can only give realistic picture, which can be considered for adoption. But in absence of any such data, recommendations of CPHEEO manual relating to peaking factor i.e., ratio of maximum flow to average flow based on contributory population, have been adopted as given below:

Table No. 9.10: Peak Hour Factor

Contributory population	Peak Hour factor
Up to 20,000	3.0
20,000 to 50,000	2.5
50,000 to 7,50,000	2.25
Above 7,50,000	2.00

9.2.8 Self cleansing velocity

Self cleansing velocity depends upon the size of the particle to be transported. CPHEEO Manual recommends a velocity of 0.6 m/s for the liquids containing particles of size 0.09 mm and specific gravity of 2.65.

9.3 STORM WATER DRAINAGE

Following the analogy of sewerage network, the city has high degree of deficiency in the storm water network also. Considering the existing status, it has been found that creating an effective and efficient system of storm water drainage network has never been on the agenda of the Municipal Corporation. Despite the fact that rain water is very valuable source of water, city has been facing problem of flooding in certain parts of the city during the rainy season in the absence of an effective system of storm waster disposal.

At present only about 5% of the city area is covered under the storm water network that means, about 95% of the city area remains outside the purview of the network and the rain water accordingly causes havoc in the city. In the absence of storm water system, the rain water is largely discharged in to the sewer network. This results in heavy loading of the sewerage network, ultimately leading to the choking of the pipes, over flow of the sullage and back flow of the sewerage water. This calls for the urgency of having the separate storm water network to be put in place in the uncovered areas to dispose off the rain water.

9.3.1 Area covered

As already stated, city has a deficient network of storm water drainage which covers only 1/20th (5%) of the area falling under the domain of Municipal Corporation. Thus out of the total city area of 93.41 sq km approximately, 11.53 sq km has the storm water network whereas remaining 81.88 sq km of the city is still to be provided with this facility.

9.4 SOLID WASTE MANAGEMENT

Waste is unwanted material left over from the manufacturing process and refuse from places of animal and human habitation. Solid waste is a combination of unwanted and discarded materials from households, commercial and industrial operations besides street sweeping. Increase in urban population coupled with change in life style and economic prosperity has lead to generation of considerable solid waste. Solid waste has emerged as the major problem in urban areas with regard to its affective managements. Solid waste arising from human activity has emerged as one of the major environmental issue leading to extensive pollution and threat to human health. The problems of Solid Waste Management, both domestic and industrial have assumed alarming proportions, more so in the larger cities and Metropolises. Limited disposal facilities coupled with dumping of the solid waste in a haphazard manner in various parts of city has lead to not only creating environmental problems but also serious health hazards. The national Conservation Strategy and Policy Statement on Environment and Development has laid stress on adopting stringent measures for prevention and control of pollution due to indiscriminate disposal of solid waste on land and into water resources. Hence, immediate steps are required for proper management of urban solid waste.

Solid Waste Management is the prime responsibility of Jalandhar Municipal Corporation within the Corporation Area. Corporation discharges this duty through the infrastructure created for collection, storage, segregation, transportation, processing and disposal. The public Health department of the Corporation is vested

with the responsibility of day to day solid waste collection and disposal. The Corporation organizes the collection and transportation through of its own conservancy workers and a fleet of vehicles and dumpers-placers. Municipal Corporation collects solid waste from all the residential area within its municipal limits. Collection facility is provided in 100% area occupied by people

9.4.1 Type & Quantity of waste generated

There has been no formal study estimating the amount of solid waste generated in the Jalandhar Municipal Corporation. However, it is estimated that per capita waste generated per day is of the order of 500 grams. The amount of garbage generated on per capita basis is quite

on the higher side considering the pattern of garbage generation in other cities of the country which ranges between 300 to 450gms, as against 500gms generated in Jalandhar. Higher garbage generation can be attributed to the living style and the economic/industrial character of the city

With regard to the type of solid waste generated in the city, it has been found that there are three broad groups into which the waste generated by the city can be categorized. These include:

i) Municipal Solid Waste (MSW)

ii) Hospital Solid Waste (HSW)

iii) Industrial Solid Waste (ISW)

This categorization is based on the major activity pattern of the city. In addition to housing large population, city is also hub of small scale industries. It is also the nerve centre of providing health care in the State and accordingly houses large number of hospitals and health care institutions.

Looking at the classifications of waste generation, it has been found that 90% of the total waste generated has its origin in the residential and open areas. Commercial waste account for 5% of the total waste generated and industries also account for 5% of total solid waste. Accordingly, waste generated is heterogeneous in nature and has both toxic and non-toxic components. The details of source, type of facilities /activities generating the waste and the type of waste generated in the city is detailed below in Table No. 9.11:

Table No. 9.11: Sources and Type of MSW

S. No.	Sources	Typical facilities, activities & location	Type of MSW
1.	Residential & Open areas (90 %)	Single & multi family dwelling, streets, parks, bus stand.	Food waste, rubbish ashes, street waste.
2.	Commercial (5%) including street sweeping.	Offices, Institution, markets Hotels, restaurants, stores auto repair shop, medical facilities, streets etc.	Food waste, rubbish ashes, street waste occasionally hazardous waste.
3.	Industrial (5%)	Small/medium scale industry, Offices, canteen	Office waste, food waste packaging material.

(Source: Municipal Corporation, Jalandhar)

There has been no study undertaken for estimating the waste generated in the Jalandhar city. However, on the basis of data made available, Jalandhar has been found to generate waste which almost equal to the norms followed in other cities of the country. On an average the per capita waste generated is of the order of 500 grams on daily basis. Based on the average waste generated, total waste generated in Jalandhar is of the order of 350 tonnes per day. Out of this 90% is the contribution of the residential sector whereas the commercial area contributes 5% of the waste generated whereas the industrial waste has been found to be 5%. The quality of waste generated has been found to be heterogeneous comprising of both toxic and non-toxic

waste. Jalandhar Municipal Corporation covers 100% area of the Municipal Corporation so far as garbage collection is concerned.

9.4.2 Current practices of solid waste management:

Management of the solid waste within the Jalandhar Municipal Corporation area is the prime responsibility of the Municipal Corporation. In the Corporation Department of Health is responsible for collection and disposal of solid waste. The Health department is headed by Health Officers and supported by the field staff which assist in collection and disposal of the waste. The process of solid waste management can be broadly classified into following stages:-

1) Waste storage & segregation.
2) Primary and secondary collection
    a. Waste transportation
    b. Disposal of waste.

The solid waste is first collected from the points where it is generated and taken to the collection centers defined by the Municipal Corporation. This process is taken up both at the individual level or by the Municipal Corporation. After the garbage is dumped at the defined places it is transported by the Municipal Corporation to the dumping site which is located at village Wariana. The area of the sites is 14 Acres which is very small area for disposals of waste. The detail of primary collection of solid waste in respect of household, commercial, institutional, road network, industrial and bio-medical waste is detailed below:

9.4.3 Solid Waste collection-Household waste.

Presently, a two level system of waste collection is made applicable in the Jalandhar city. Waste is first collected from the point of generation known as primary collection which is then taken to 2nd level of collection created at the community level. Considering the large population, the largest proportion of solid waste is also generated at the household level. Considering the growing number of population, change in the life style and higher economic status attained, the quantum of waste generated has been growing very fast at the household level. This sector alone contributes 90% of the total waste generated in the city. The waste generated is largely non-toxic in nature with large component of organic and inorganic waste. There is no segregation of waste at the generation level with the result both the organic and inorganic waste get mixed up which poses considerable problem in effective disposal of the waste. In addition, it also causes enormous loss in terms of transportation and final disposal

The waste generated at individual premises is removed initially by the owner or the Municipal employees. This collected solid waste is then dumped at various collection points identified by the corporation, and other unauthorized open places by the use of Wheel barrows and cycle rickshaws. This collection points consists of various community bins (containers), designated open sites and portable bins. However the waste in many cases is not dumped directly into the community bins. It is dumped either outside the bin, into any open areas or just dumped on the road side. This shows the awareness level in terms of importance of solid waste management is very low.

Road side waste

The waste lying on the road sides is collected by the staff employed by the Corporation. The waste dumped outside the community bin (containers) and portable bins are also dumped inside the bin by the Safai Sewaks. The Safai Sewak has been given wheel barrows to lift the waste and transport it to the identified dump site

Road sweeping

Corporation has employed various Safai Sevaks to sweep the roads daily and collect the solid waste. Each Safai Sevak is given approximately 2km of road length for sweeping of municipal roads. They are also given cycle rickshaws to dump their collected waste to the designated site.

9.4.4 Bio Medical Solid Waste

Jalandhar has been considered to be major centre of the Health care of the State of Punjab. It houses large number of hospitals, nursing homes and health care institutions offering state of the art health care in the process large waste is generated by these institutions. The waste is generated by the hospitals mostly falls into the category of hazardous /infectious waste which poses danger to human life. The bio-medical waste requires specialized mechanism for its collection, transportation and disposal. Considering the gravity and the threat to the human life, a project based on BOO has been made operational in joint collaboration with a Hyderabad based firm. The firm has been entrusted with the job of collection, transportation and final disposal of the medical waste not only from Jalandhar but also from other parts of the State. The bio-medical waste is collected and segregate at the source in three separate bins of different colours namely; yellow, blue and white depending upon the toxicity of the waste.

9.4.5 Industrial Solid Waste

Jalandhar has different types of Industries i.e. Sports and Surgical, Leather Goods, Rubber Industries, Casting and Forging Units, so different type of Industrial Waste is generated. The industrial waste generated have been found to constitute 5% of the total waste generate in the

city. More than half of the industrial units fall in the category of Foundry and Electroplating units, which contribute the most toxic waste. In addition, tyre & tube, heat treatment, induction furnace, rolling mills, paper and board mills are the other units contributing to the industrial waste.

Industrial solid waste is not stored within the premises but is generally disposed off outside the premises, sometimes along the roads/open spaces. The industrial waste contains large number of chemicals, some of which are toxic. Most of the industries follow manual handling of the waste as a normal practice. There are indeed very few mechanical aids available for proper collection and transportation of industrial Solid Waste. The disposal of industrial waste in unscientific manner in the landfill poses a grave threat to water pollution due to lechtates by adding injurious constituents into soil.

9.4.6 Waste Collection at the Secondary Level:

This level comprises of bins and dumping sites to which the waste generated at the primary level is transported and dumped before transportation for final disposal. The secondary level collection points serve as an intermediate transfer point from household, roadside waste, commercial and institutional waste to disposal in the landfill sites. In order to effectively cover the entire city, total 135 bins have been provided. Out of which 60 are the closed bins and 75 are open bins.

For the purposes of effective solid waste management at the secondary level, the Jalandhar city has 135 sites/bins. The solid waste from the primary source is dumped either into the open sites or to the container sites which have moveable containers which can be lifted for final transportation to the dumping site.

9.4.7 Transportation of waste

The solid waste from 135 designated collection sites created at the secondary level is then transported to the dumping sites for final disposal by municipal corporation staff on regular basis. The waste collected at the open sites is then lifted with the help of JCB into tipper trucks or tractor trolleys for transportation to the disposal sites. The containers used for collection are directly lifted for transportation to the disposal site. Solid waste so collected in the community bins and at other places is presently being transported to the dumping site by using different type of vehicles which includes JCB machines, Truck Tippers, Dumpers, Tractor Trolley In all 74 vehicles are being used for transportation of solid waste. These vehicles work in shifts. In all these vehicles carry a total of 250 tonnes of solid waste which is sufficient to cater to the daily waste generated in the city which is of the order of 250 tonnes. About 50% of the total waste transported by the truck tippers whereas around 25% is carried

out by the dumpers. In addition, Municipal Corporation also has a Collector/Compactor machine transportation of solid waste from primary source to the dumping site at Wariyana. Details of fleet deployed for waste collection including the vehicles and trips undertaken by them is given in table No. 9.12:

Table No. 9.12: Detail of fleet deployed for waste collection (2006)

Type of Vehicles	Scheduled Vehicles	Available Vehicles	No. of Shifts	Total trips
JCB Machines	3	3	1	-
Truck Tippers	10	10	1	4
7.0 Co. Dumper Placers	9	9	1	9
Tractor trolley & Hauler tuggers	10	10	1	22
Refuse Collector/Compactors Machine	1	1	-	-
Loaders	5	5	1	10
Mini tippers	3	3	1	9
Road sweeping Machine	1	1	1	-
Three wheelers	32	32	1	96
Total	**74**	**74**	**4**	**150**

9.4.8 Disposal of solid waste

Jalandhar Municipal Corporation disposes the waste on site near Wariyana Village which is 14 Acres area and heaps of solid waste is lying there. This site is not sufficient for disposal of waste as the population is increasing and large quantity of solid waste is being generated.

The waste is scattered over the 14 acre site. In the absence of scientific disposal of the waste lot of valuable waste is lost due to absence of recycling. Municipal Corporation Jalandhar does not involve rag pickers in recovering the valuable recyclable waste. This result in loss of opportunity of creating employment for low income groups of the city besides reducing the quantum of solid waste dumped at the site besides loss of valuable waste.

Further, in the absence of defined boundaries, animals like pigs etc vegetate on the waste. In addition, due to unscientific disposal of the waste, lot of foul smell is generated due to the presence of organic waste polluting the environment in the process. For treatment of the solid waste there is one small treatment plant which mostly remains out of order due to technical problems.

9.4.9 Manpower deployed

The responsibility for the solid waste management within the urban limits of Jalandhar Municipal Corporation has been vested with the Health Department of the Corporation. The Department is headed by two Health Officers who are assisted by a work force of 3662 personnel which includes Chief Sanitary Officers, Sanitary Inspectors, Supervisors, and Safai

Sewaks besides Drivers etc. In all 2714 Safai Sewaks have been deployed which include the society workers also.

The work of management of solid waste is assigned to Health Officers who are not professionally trained to manage the work. Moreover, the supporting staff is not much aware of the current technological developments in the field which creates road blocks on scientific planning and disposal of the solid waste. There is no rational system of deployment of manpower which is usually done on an adhoc manner without any relationship of quantum of waste generate or population served. This reduces the efficiency of the manpower deployed in the system. Further there is no system of recording the public complaints regarding the solid waste. In the absence of the system, redressal of complaints has a low priority. Large scale absence of workers from their duty has also been observed. The details of manpower deployed in the solid waste management is detailed in Table No. 9.13

Table No. 9.13: **MSW-Existing Man Power Deployment**

S. No.	Name of the Official	Number
1.	Health Officers	1
2.	Chief Sanitary Officers	2 Vacant
3.	Sanitary Inspectors	5 = 3+2 deployed
4.	Sewadars	1
5.	Sanitary Supervisors	36
6.	Safai Sewaks (Full time)	1426 - 1052 working
7.	Safai Sewaks (Society sewaks)*	12
8.	Drivers and three wheeler drivers	11+19
	Total	**1513**

9.4.10 Key issues

Despite large number of manpower deployed for management of solid waste, heaps of stinking waste can be seen at number of places in the city. Removal of garbage is done arbitrarily by the staff without following any well laid down system. Cleaning of roads also has not been found to be satisfactory and the dumping of waste by the public has been found to be highly unsatisfactory. In the process, solid waste management has emerged as the major issue in the management of the city. The key issues involved in the solid waste management have been found to be :

Absence of scientific management of solid waste

Absence of public participation and lack of public awareness.

Untrained an unqualified manpower deployed.

Inefficiency in the management of vehicles used for transportation.

Irrational deployment of manpower.

Lack of data on the generation of the solid waste.

Poor management of dumping sites

Absence of segregation of waste at the primary level

Absence of recovery of valuable recyclable waste.

Absence of involvement of large institutional network creating large volume of solid waste including Marketing Board, Department of Industries, etc.

Mixing of industrial and toxic waste with the domestic waste.

Absence of scientific system of sanitary landfills

Absence of door to door collection of the solid waste.

Absence of appropriate mechanism for converting waste into wealth and for generating energy and fertilizers.

Absence for appropriate mechanism for reducing health hazards and environmental degradation.

Lack of dumping sites.

9.5 FIRE PREVENTION AND PROTECTION

There are numerous hazards caused due to breaking up of fire due to which it become mandatory to provide fire protection units in the city. Thus to safeguard the residents of the city from the hazardous effects of fire, it becomes the vital responsibility of the Municipal Corporation, Jalandhar to provide fire protection centers at distinct locations. In order to fulfill, the objective, there are three fire brigade stations which are well equipped with vehicles and staff in order to cope up if any emergency comes. The head quarter of fire protection center is located at opposite Central Jail, old GT Road and two sub fire stations are located at Partap Bagh Zone and Industrial Area Dada Colony Zone. Thus serving the core of the area which is much more congested but the areas which are being developed are sparsely populated areas which lack in fire protection.

On the other hand, the locations of proposed fire stations are as per follows:

On Nakodar Road

On Kapurthala Road

On Pathankot Road

On GT Road, Rama Mandi

On GT Road, Suranussi

Suchi Pind near Indian Oil Corporation

Basti on 120’ wide road

9.6 ENVIRONMENTAL STATUS

With Jalandhar becoming home to large number of industrial units and centre for trade & commerce, industry has not only been found to be the major growth driver of the city but also major polluter of the city environments. Impact of pollution has been witnessed in the city in the form of quality of air, quality of water (both surface and underground), noise pollution, degradation of the natural resources, low vegetation cover etc. These environmental problems will soon reach a critical stage, if no immediate action is taken to address them. The intensity of the pollution in terms of air, water and noise should be evaluated in order to clearly understand the level and causes of pollution so that appropriate strategies are put in place to tackle the problem of pollution.

9.6.1 Air Pollution:

Existence of large number of units including the polluting industries has adversely impacted the quality of air in the Jalandhar city. Emission generated by fuel burnt by industries has also contributed to the lowering of quality of the air. With a view to clearly assess and monitor the status & quality of ambient air in Jalandhar, data with regard to quantity of suspended particles, SO2 and NO2 present in the air is being collected and analyzed by the Punjab Pollution Control Board. The data is collected for the entire year i.e. from month of January to the month of December in 2007. For this purpose, the Board has set up four monitoring stations in different parts of the city. These stations have been placed at the most vulnerable parts of the city which include Guru Teg Bahadur Enclave (residential), near M.C. Tube well, (commercial), Focal Point Industrial Area and Region Office near Lal Rattan Cinema. These areas not only carry large volume of traffic but houses large number of industrial/residential/commercial units. The data collected for the month of January to December 2007 is tabulated in the following tables (Refer Table Nos. 9.14 to 9.17):

Table No.9.14: Ambient Air Quality in Jalandhar (2007)
Location: Guru Tegh Bahadur Enclave

Month	SPM	NOx	SO2
January	138	28	10
February	145	30	11
March	137	29	9
April	108	28	11
May	184	27	11
June	156	26	11
July	144	26	11
August	138	26	10
September	136	26	10
October	138	26	10
November	135	27	11
December	137	25	13

(Source: Punjab Pollution Control Board)

Table No.9.15: Ambient Air Quality in Jalandhar (2007)
Location: Near M.C. Tube Well (Commercial Area)

Month	SPM	NOx	SO2
January	161	30	11
February	162	32	13
March	153	32	14
April	166	32	12
May	210	32	13
June	155	30	11
July	165	32	13
August	169	31	12
September	157	33	13
October	130	29	12
November	168	29	12
December	170	30	13

(Source: Punjab Pollution Control Board)

Table No.9.16: Ambient Air Quality in Jalandhar (2007)
Location: Focal Point (Industrial Area)

Month	SPM	NOx	SO2
January	191	35	13
February	201	38	14
March	172	35	15
April	172	34	14
May	-	-	-
June	189	32	13
July	204	34	14
August	204	32	15
September	209	34	14
October	196	32	13
November	219	33	14
December	170	33	14

(Source: Punjab Pollution Control Board)

Table No.9.17: Ambient Air Quality in Jalandhar (2007)
Location: Regional Office near Lal Rattan Cinema (Commercial Area)

Month	SPM	NOx	SO2
January	152	26	10
February	146	28	10
March	141	28	10
April	166	29	11
May	167	28	10
June	134	26	10
July	130	27	10
August	142	26	10
September	149	28	11
October	136	27	10
November	146	27	10
December	144	26	11

(Source: Punjab Pollution Control Board)

Permissible Levels:

Residential and commercial area: SPM = 120 $\mu g/m^3$, SO_2 = 80 $\mu g/m^3$, NO_x = 80 $\mu g/m^3$

Industrial area: SPM = 200 $\mu g/m^3$, SO_2 = 120 $\mu g/m^3$, NO_x = 120 $\mu g/m^3$

Looking at the data given in the above tables, it has been seen that air contains large volume of suspended particles and the higher presence of such particles has been recorded at all

stations against the permissible limit of 120µg/m^3 at all the four stations indicating lower quality of air in Jalandhar. The higher level of SPMs has been found to exist throughout the year with lowest recorded during the period from month of May to August and highest during September to December. The presence of higher level of SPMs can be attributed to mixing of dust from open land, pollutants from Industrial Area and smoke from vehicular traffic. Out of the four stations, the best quality of air has been found to exist in the area surrounding Guru Teg Bahadur Enclave due to presence of well planned/developed residential colonies. Next in the order of quality of air has been found to be area around Regional Office near Narinder Cinema whereas the worst placed areas are the Focal Point (Industrial) and area near M.C. Tube well (Commercial) which houses large number of industrial units and large volume of traffic. However, the data in all the above tables indicates the higher presence of the SPMs, SO2 and NO2 over the months indicating the deteriorating quality of ambient air in Jalandhar.

Major contributors to the air pollution have been found to be:-

Vehicular exhaust due to the presence of large number of vehicles and higher use of personalized private vehicle

Absence of effective & efficient system of mass transportation.

Narrow road width (with average varying between 3.5 to 6.5 mts.), low capacity of the roads and high intensity of traffic.

Smoke emitted by the large scale use of kerosene/diesel based power generators

Presence of large number of intermediate public transport vehicles and use of kerosene as the fuel.

Smoke emitted by Industries.

Use of rice husk by the industry.

9.6.2 Water Pollution

Rapidly increasing urbanization and industrialization of Jalandhar has not only adversely affected the quality of ambient air in the city but also has affected the city's water resources. Black Bein, being the recipient of city's untreated domestic and toxic industrial waste, dumping of solid waste, dumping of ash from burnt rice husk, the quality of water in it has degraded considerably. The perennial flow of sewage into Black Bein, has converted it into an open sewer. The pollution of Black Bein has adversely affected the quality of surface water as well as ground water of its environs.

The water sample analysis report given in Table 9.18 for Pholriwal reveals the presence of considerable level of pollutants including solids, suspended/dissolved solids, metals etc. The

level of pollutants has been found at higher level. The table also shows the comparative values of different parameters before and after the treatment at STP Pholriwal. It has been observed that considerable reduction of pollutants has been made possible due to the treatment of sullage water. Not only change in color of water has been observed but also considerable reduction in the quantity of different metals present in the water has also been observed. Despite the fact that the sullage water has been treated but still presence of pollutants have been found to exist in the treated water indicating that more intensive treatment of sullage water needs to be undertaken. The hand pumps and shallow tube wells drawing water in the influence zone of Pholriwal have been found to be highly susceptible to ground water pollution as well as the toxic pollutants.

Table No. 9.18: Water Sample Analysis Report of Pholriwal STP on dated 30.09.2008

S. No.	Parameters	Inlet to STP Phulriwal	Outlet to STP Phulriwal
1.	Ph	6.7	6.8
2.	Colour Visual	Grayish	Pale and light blackish tinge
3.	COD (mg/l)	352	96
4.	BOD (mg/l) (3 days at 27 ^{o}C	245	39
5.	Total suspended solids (mg/l)	198	54
6.	Total Dissolved solids (mg/l)	654	650
7.	Total solids (mg/l)	9.6	1.8
8.	Volatile Solids (mg/l)	609	212
9.	Fixed Solids (mg/l)	440	570
10.	Total Chrome (mg/l)	N.D.	N.D.
11.	Hexa Chrome (mg/l)	N.D.	N.D.
12.	Nickel (mg/l)	N.D.	N.D.
13.	Iron (mg/l)	-	-
14.	Lead (mg/l)	N.D.	N.D.
15.	Zinc (mg/l)	0.16	N.D.
16.	Cadmium (mg/l)	N.D.	N.D.
17.	Ammonical Nitrogen (mg/l)	42	12

(Source: Punjab Pollution Control Board, Jalandhar)

9.6.2.1 Ground water pollution

The degradation of the quality of ground water caused due to pollution of Black Bein has also taken the toll of the ground water. The seepage of polluted water from the Bein and the industrial waste has led to the pollution of the ground water sources. Accordingly, the ground water quality in the city is also not good.

In comparison to deep water aquifer, shallow water is seriously affected. The city accordingly faces a severe water pollution problem. In the process, majority of the residents of Jalandhar city and that of adjoining villages are forced to consume contaminated vegetables and drink unsafe water, thus exposing themselves to the risk of water-borne diseases. Major issues emerging from the ground water pollution have been listed as follows:

a) Excessive pumping has lead to contamination of ground water. Persons residing in areas in close proximity to Black Bein passing through Jalandhar and adjoining villages have been found to be exposed to water borne diseases due to polluted ground water.
b) Considerable level of ground water pollution has been found to exist up to depth of 90 ft. along the 1/2 km. belt on either side of Black Bein. The quality of water has been found to be unsuitable for supporting aquatic life.
c) Hand pumps and shallow tube wells drawing water from first aquifer are found susceptible to ground water pollution in areas close to industrial units and Black Bein.
d) Not only the industrial areas but also the areas having mixed land use are being adversely affected due to the presence of toxic pollutants like cyanide and hexavalent chromium in excessive proportion in the ground water.
e) The pollution of the soil & ground water has also been caused by the dumping of the industrial wastes (effluents and solid waste) into the open ground leading to stagnation and the generation of the leachate.
f) The use of polluted ground water for agricultural purposes has also led to the degradation of the soil and presence of heavy metals into soil and vegetable crops grown in the area

9.6.3 Noise Pollution

Due to over crowding, large volume of slow moving mix traffic comprising pedestrians, market goers, concentration of two wheelers, three wheelers, cars, buses, trucks etc, the city is facing the problem of noise pollution. The noise has already reached a level, high enough to cause annoyance capable of creating temporary to permanent hearing impairment, particularly to those people who remain exposed to such noise level for longer time during the day. Street venders, shopkeepers doing business along both sides of road have been found to be most vulnerable to this hazard. The noise pollution is not limited to the traffic only but use of loud speakers by the religious institutions and during the marriage / festivals has also added to the quantum of pollution. The use of generators by the residential, commercial and industrial establishments has also added to the pollution level in the city.

A detailed noise level monitoring was carried out by the Punjab Pollution Control Board, Jalandhar recently during the Diwali days in different parts of the city covering commercial, residential and sensitive locations including hospitals, educational institutions etc. The monitoring was done for three consecutive days i.e. from Oct.27th to Oct.29th 2008 both during the day and the night. In all cases it was observed that the level of noise were higher than the permissible limits in all the areas. Noise level was found to be higher during the night as compared to the day. Noise level was found to be higher in case of commercial locations as

compared to residential and sensitive locations. The worst area suffering from the noise pollution has been found to be the sensitive locations including hospitals and college Hostels where during the night time the noise level was found to be more than double the permissible limit of 40 dBs. Details of noise level recorded during the Diwali days at various locations of the city have been given in Table No.9.19.

Thus it can be observed that city does suffer from the menace of noise pollution. It is, therefore, considered prudent and worth while to conduct noise level monitoring at several sites including different areas at different times during day and night so as to assess realistically the problem of noise pollution and plan for appropriate intervention to overcome the problem.

Table 9.19: Noise level monitoring during Diwali days (2008-09)

S.No.	Date	NOISE LEVEL											
		Commercial				Residential				Sensitive			
		Day (Permissible limit 65)		Night (Permissible limit 55)		Day (Permissible limit 55)		Night (Permissible limit 45)		Day (Permissible limit 50)		Night (Permissible limit 40)	
		dB (A) Leq	dB (C) Leq	dB (A) Leq	dB (C) Leq	dB (A) Leq	dB (C) Leq	dB (A) Leq	dB (C) Leq	dB (A) Leq	dB (C) Leq	dB (A) Leq	dB (C) Leq
1.	27.10.08	78	92	78	101	50	85	85	102	52	77	80	92
2.	28.10.08	68	89	70	92	74	89	90	115	62	86	89	101
3.	29.10.08	67	80	68	92	60	76	84	94	50	76	68	92

(Source: Punjab Pollution Control Board, Jalandhar)

Note:

- dB (A) Leq denotes the time weighted average of the level of sound in decibels on scale A which is relatable to human hearing.
- A ‘decibel’ is a unit in which noise is measure.
- ‘A’ in dB (A) Leq, denotes the frequency weighting in the measurement of noise and corresponds to frequency response characteristics of the human ear.
- ‘Leq: It is energy mean of the noise level, over a specified period.

9.7 POWER SUPPLY

The power requirement of the city is being covered by Punjab State Electricity Board. PSEB has 25 grid sub stations having power in the range of 33 kV to 220 kV. These grid sub stations are listed as follows along with their power and location:

Table No. 9.20: Detail of Existing Sub Stations

Sr. No.	Location	Power Supply (in kV)
1	Kartarpur	220
2	Sub Station, BBMB	220
3	Sub Station, Jamsher	220
4	Sub Station, Urban Estate Phase II	132
5	Sub Station, PMI, Jalandhar	132
6	Sub Station, Alawalpur	132

7	Phagwara	132
8	Science City	132
9	Children Park	66
10	Chitti	66
11	Kot Sadiq	66
12	Badshahpur	66
13	Barringa	66
14	Sub Station, Patara	66
15	Sub Station, Maksoodpur	66
16	Sub Staion, Radial	66
17	Sports and Surgical	66
18	Tanda Road	66
19	Sub Station, Focal Point	66
20	Sub Station, T.V. Center	66
21	Sub Station, Chuggitti	66
22	Sub Station, Daulatpur	66
23	Sub Station, Hoshiarpur Road, Phagwara	33
24	G.T. Road, Phagwara	33
25	Sub Station, Cheheru	33

(Source: Punjab State Electricity Board)

It is evident from the above table that there are series of sub stations in the different parts of Jalandhar. But still there is the requirement of new sub stations which are listed as follows:

Table No. 9.21: Proposed Grid Sub Stations

Sr. No.	Name of Grid Station	Power Supply (in kV)
1	Jandu Singha	66
2	Paragpur	66
3	Sangal Sohal	66
4	Shah Pur	66
5	On 120’ road near Babreek Chowk	66
6	Extension of Kartarpur Sub Station	220
7	Extension of Urban Estate Phase II	132
8	Kahanpur	132
9	Extension of Children Park	132
10	Extension of Science City	132
11	Patel Chowk	66
12	Chara Mandi	66
13	Naugajja	66
14	Extension of Chitti	66
15	Extension of Chuggitti	66

(Source: Punjab State Electricity Board)

9.8 EDUCATION

Educational Facilities certainly impact the quality of manpower available in the urban areas. In addition, these facilities have been found to leverage the economic growth development and employment. Jalandhar, in this context, has been found to have large number of educational institutes. These institutes cater to the educational requirement of not only the Jalandhar city but also of the region and the state. Accordingly, Jalandhar has emerged as the educational hub of the state of Punjab. It houses large number of institutions both at the lower and higher level of education besides institutions catering to the need of higher education in the field of medicine, engineering, agriculture, law education etc. Out of 7 universities in the

state of Punjab, Jalandhar LPA has the distinction to have two universities known as Punjab Technical University and Lovely Professional University which is playing pioneering role in ushering the technical workforce.

Besides there is a private university named "Lovely Professional University "which is imparting education in every field including Engineering, Science and Technology, Pharmacy, Law, Business Management etc. Jalandhar also houses six engineering institutions i.e. DAV Institute & Engineering & Technology, Dr. B.R. Ambedkar National Institute of Technology, Regional Campus of G.N.D.U., C.T. Engineering College and Baba Bhag Singh Engineering College which are serving with distinction to provide technical education in the field of various branches of engineering. Besides this a Medical Institute in the name of Punjab Institute of Medical Sciences is also coming up in the city. There are 3 B.Ed Colleges and two law colleges in the city.

From the number, the educational institutes look sufficient but a number of school level institutes especially Primary and Secondary schools suffer from deficient number of classrooms, poor building condition, lack of playgrounds / open spaces, laboratories, etc. The situation is more critical in schools located in the old parts of the city, unplanned and congested areas.

Worst sufferers in the field of education have been found to be large population inhibiting the slum areas. Out of 97 slums identified in the city, only 38% population of slums has been found to have primary educational facility. In the absence of the educational institutions the children from 54 slums are forced to travel large distance to access the education. This leads to lower level of literacy prevailing in slum areas due to large number of dropouts. This would call for providing appropriate level of educational institutions in these areas so that slum dwellers could benefit and become educated more productive over a period of time.

In view of this it will be important that educational institutions operating in residential and commercial areas are shifted to appropriate sites earmarked for educational purposes. In addition educational institutions having less areas or absence of play areas etc. are provided with more land in order to meet the basic needs of the students. This would require that appropriate sites for these institutions are earmarked in the various development schemes and sites already available in the sanctioned urban estates and approved colonies, which are not developed so far, should be allocated to such institutions for construction and making available basic infrastructure to the students. The new areas to be developed should have

appropriate number of institutions imparting education at various levels so that the position of Jalandhar as the educational hub of the state is not marginalized. The educational institutes present in the Local Planning Area, Jalandhar are of the order of:

University: 2 in number namely Punjab Technical University and Lovely Professional University.

Engineering College: 6 in number

College: 3 B.Ed Colleges and 2 Law Colleges

Senior Secondary School: 102 in number

Primary School: 354 in number

9.9 HEALTHCARE

Following the pattern of educational institutions, Jalandhar is also the hub of medical facilities after Ludhiana and Mohali. Due to its strategic location, Jalandhar has large number of healthcare related facilities which not only serve the city population but also that of region and in many aspects. Total number of healthcare units existing at various levels has been found to be 396 out of which 23 are Dispensaries, 2 Primary Health Centres, 136 Nursing Homes and 235 General Hospitals. Among the hospitals majority of units have beds capacity of 200 or below. However no hospital has been found to be in the category of plus 500 beds. 1 hospital has beds more than 200 in number i.e Civil Hospital; others have less than 200 bed capacity. These hospitals often state of the art healthcare and have numerous experts. In addition, there are number of super specialty institutions imparting healthcare in the field of cardiology, orthopedics etc. There are 20 Ayurvedic units working in this branch of medicine. However, majority of Ayurvedic units are operating at lower level and there is no hospital in this category. Considering the large number of health care units existing and operating in the city, Jalandhar has the distinction of having largest number of medical practioners in the state which are also operating at the individual level at the local level. Healthcare is also provided through number of nursing homes which are spread over the entire city.

In addition to providing healthcare to the human beings, Jalandhar also provides an efficient system of healthcare to pets and animals. To cater to this segment there are 58 units operating in Jalandhar out of which 27 are veterinary dispensaries and 31 veterinary hospitals. Due to existence of large number of milk dairies in and around the city, their healthcare is being taken up by these units.

Despite the fact, that Jalandhar is the hub of healthcare in the state and has large number of healthcare units and the doctors in the states but large segment of the city population still remains unserved so far as healthcare is concerned. Poor people, majority of which are living in slums areas do not have access to the basic healthcare facilities. Due to lower number of Government healthcare units, existing in Jalandhar, healthcare becomes unaffordable for majority of the poor due to high charges of the private hospitals. Accordingly majority of slum dwellers are dependent upon unqualified medical practioners in care of any emergency.

Considering the existence of large number of reputed healthcare institutions in the city Jalandhar can be developed to be the hub for medical tourism in the state. Further with fairly large number of Ayurvedic institutions operating in the city it can attract large number of tourists for providing ayurvedic system of treatment. This aspects needs to be critically looked into and used for leveraging the economy and employment in the city.

The World Health Organization (WHO) has defined the norms of 5 beds per thousand populations to be provided in order to take care of healthcare needs of the city. At the current level Jalandhar required around 8500 beds for catering to the needs of the Jalandhar. But, considering the fact that city caters to the healthcare needs of the region and the state, the requirement of beds appears to be in the range of 9000-10000. The number of beds available at Jalandhar are inadequate to meet the current level needs and accordingly there is lot of rush in various dispensaries and hospitals, particularly those operated by the state government and by the charitable institutions. More number of such institutions is required to be created to meet the current level demand as well as further healthcare needs of the city. Even in case of number of existing healthcare institutions, there has been found to be qualitative deficiency existing in the hospital related infrastructures due to which patients seeking treatment continue to suffer. In order to provide appropriate level of healthcare in the city, it will be important that large number of sites is carved out in the new areas which are under land and development. All available healthcare related sites should be put to optimum use by constructing dispensaries/hospitals so as to cater to the needs of the population. Spatial distribution of the healthcare units with a proper hierarchy would be critical to serve the entire population. The existing number of sub health centres, primary level health centres, allopathic and ayurvedic hospitals besides the veterinary dispensaries / hospitals operating in the city along with their bed capacity is given below.

Table No. 9.22: Medical Facilities

S. No.	Name of the Facility	Existing Number
1	Hospitals a) Up to 200 Beds b) 201 to 500 Beds c) Above 500 Beds	 3 1 -
2	Ayurvedic Dispensary	20
3	Ayurvedic Hospitals	Nil
4	Veterinary Dispensary	27
5	Veterinary Hospital	31

(Source: CMO, Jalandhar)

9.10 SPORTS AND RECREATION

Recreational facilities constitute an important element of physical and social development of an individual and for that reason, their provision and balanced spatial distribution at the local, sub-city and city level assumes importance. Accordingly, it would be important that city is divided into compact and sustainable communities and recreational facilities of appropriate order are made available to these communities to save the population residing therein. Recreational facilities have been found to exist in the shape of parks and open spaces cinema, multiplexes, stadiums, museums, sports related activities, clubs, library and amusement parks etc. Recreational facilities have also been divided into active and passive recreational facilities; provision of both these facilities has to make in order to cater to the essential needs of the individuals and communities.

Jalandhar has number of facilities as enumerated in the table 9.23 which cater to the recreational needs of the people living in the city. Maximum number of recreational facilities has been found to be in shape of parks created at various levels. There are two organized parks and other small and large sized open spaces provided in the Town Planning and Development Schemes and Urban Estates and Colonies developed under PAPR Act. 1995. Most of these parks form integral part of the planned colonies which have been developed by the Improvement Trust, Department of Housing and Urban Development, Punjab Urban Planning and Development Authority, Municipal Corporation, House fed etc. Accordingly these parks are concentrated largely in the Urban Estate Phase-I, II, Model Town, Adarsh Nagar, Mota Singh Nagar, Master Tara Singh Nagar, Guru Teg Bahadur Nagar etc. These areas cover only limited part of the total city and as such we find high degree of concentration of the parks in few areas which have been developed by parastatal agencies. Private colonies which have been developed by colonizers and approved by the state government also have provision related to parks etc. which are comparatively lower in size, number and areas. Since major portion of Jalandhar has been developed without any planning input and planned intervention,

therefore most of this city area does not have facilities of open spaces. Walled city has acute shortage of open space due to high degree of congestion and buildings in the areas.

Most of the residents living in walled city do not have much access to the open spaces/parks and are accordingly required to travel longer distance to have access to such areas. There is only one open space namely Shahid Bhagat Singh Park within the core area of the city.

Table No. 9.23: Recreational Facilities

S. No.	Name of the Facility	Existing Number
1	Organized Parks	2
2	Cinemas	5
3	Multiplex	1
4	Stadium	2
5	Museum	2
6	Swimming Pool	5
7	Clubs	4
8	Library	2
9	Amusement Park	1
10	Banquet Halls	25

(Source: Municipal Corporation, Jalandhar)

In addition to the parks, there are 5 cinemas existing in the city besides 1 multiplex catering to the recreational needs of the city. With the number of multiplexes coming up in the city, number of cinemas is likely to go up considerably. Considering the inter options of entertainment offered by multiplexes large number of existing cinemas are in process of conversion into multiplexes or malls. Most to the new multiplexes are coming up on the outskirts / peri-urban areas. The major thrust of multiplexes is along old G.T. Road and Jalandhar-Phagwara-Delhi G.T. Road. The old Cinemas i.e. Cine Pal and Jyoti Cinema have converted into Multiplex / Malls. The distribution of cinemas has also been found to be irrational with concentration in few pockets and absence in others. This factor needs to be critically looked into. Most of the cinemas operating with in the core areas of the city have emerged as traffic nodes and are creating numerous problems in the area due to absence of adequate parking spaces. The cinemas need to be rationally distributed with the city with adequate parking facilities.

In addition Jalandhar has 4 clubs including the Gymkhana Club, besides 1 amusement park, 2 libraries, 5 swimming pools, and 2 sports stadiums. Sports stadiums are frequently used to host local / state level sports competitions. However, looking at the fast population growth and rapid physical expansion of the city, it is important that adequate level of recreational facilities are created in the city and distributed to cover the entire population of the city. It will be essential to create a well-defined hierarchy of these amenities which should be followed as an integral part of planning and development process. Existing encroachments in the open

spaces needs to be removed with areas restricted back for the use of community. Available open spaces need to be rationally planned and developed in order to make there optimum use. More libraries need to be added to the city for promoting the habit of reading among the residents and the children. Slum areas should be the focus of provision of open spaces and other recreational activities in order to improve the quality of life and to improve the quality of human population living therein. Promoting planned development would be critical to provide adequate sites for development of recreational facilities. Corporate houses, NGO's, CBO's and Voluntary Organizations should be actively involved in the development of recreational facilities in Jalandhar City would require a well defined road map to provide these facilities in various segments of the city.

In addition to the open spaces, city would require the creation of sports facilities at the neighborhood level and at the city level with the aim of development of sports and play areas for all age groups at appropriate levels. To achieve this objective, sports facilities at various levels of the city – including housing clusters, neighborhood, district and city level on defined norms should be created. In addition, the existing sports infrastructure should be upgraded and efficiently re planned to improve the level of facilities. New play field areas should be preferably provided / developed in the vicinity of educational institutions and landscaped areas. In order to facilitate the provision of sports related facilities available open spaces and vacant Government / Panchayat Lands within the existing education or other institutions should be considered as the best options. The sports facilities should be provided integral part of intuitional development for making their optimum use. In fact looking at the location of the Jalandhar in the state and its vast potential city should be developed as the nodal centre for sports activities by creating national and international level sports stadiums and sports infrastructure. The N.R.I. Sabha can contribute in this field also. In addition considering the present trends in the area of recreation, development of gyms, spas, bowling alleys etc. at the neighborhood level should also be taken up on priority. Since these activities are mostly established as commercial ventures, provision of land / space for these could be considered as integral part of commercial development. (Apart from knowing the number of education, healthcare and recreational facilities it is necessary to know their capacities such as number of students, number of beds and area. This should then enable assessment of adequacy of such facilities)

9.11 POST AND TELEGRAPH

Into the rapid advancement in the technology and policy of liberalization adopted, communication has emerged as an important medium of communication. Despite rapid progress made in different modes of communications, post and telegraph still remains the most popular option of communication for vast majority of population. The provision and management of post and telegraph facility falls under the domain of the cost of index through the department of post and telegraph. There are in all 116 post offices operational in Jalandhar out of which 101 are branch level and 1 head post office. There are also telegraph offices. Number of such offices are reducing due to availability of better option of communication with are not only faster but also cheaper. But still, these facilities serve considerable proportion of population both at the city level and national level. The existing distribution of post offices also needs to be rationalized in order to serve the community in a better manner. Accordingly their provision should be made as per defined norms in order to cater to the needs of vast majority of city population. Details of the post offices available within Jalandhar are provided in the table 9.24, given below.

Table No. 9.24: Post Offices

S. No.	Name of the Facility	Existing Number
1	Branch Post Office	101
2	Sub Post Office	12
3	Head Post Office	1
4	General Post Office	2

With the introduction of the privatization in the telecommunication sector, large number of players has emerged in this areas leading to faster growth and cut throat competition. Accordingly demand for providing telephone exchanges has gone up considerably. Since the private players have got major chunk of the segment, so most of the demand for space will be met in the private sector, but considering the existence pattern, parastatal agencies still continue to be major player in the segment of telephones. With the increasing population and availability of enormous network, government sector would be required to expand its operational mechanism to meet the future demands in the urban sector. Accordingly number of telephone exchanges would require to be created within the city besides upgrading the facilities and infrastructure in the existing exchanges to cater the existing needs and the future requirements of population.

9.12 EXISTING LAND USE DISTRIBUTION – LOCAL PLANNING AREA, JALANDHAR

The existing land use distribution determines the nature of development of a settlement and its economic status is also reflected through the type of its physical development. The study of existing land use distribution helps in fixing the priorities and for evolving a strategy for the future development of the area. The existing land use scenario guides a planner to allocate land for different land uses viz., residential, industrial, commercial, public / semi public etc rationally and optimally so as to achieve the high level of efficiency of land which is limited. The existing land use plan for Local Planning Area, Jalandhar has been prepared vide drawing number DTP (J) 3/2009 dated 17-06-2009. The following table shows the existing allocation of land under different land uses in Local Planning Area, Jalandhar:

Table No 9.25: Existing land use distribution of LPA, Jalandhar

Sr. No.	Land use	Area (in ha)	%age
1	Residential	9684.50	12.49
2	Commercial	721.10	0.93
3	Industrial	3465.95	4.47
4	Recreational	155.08	0.20
5	Traffic and Transportation	4497.20	5.80
6	Utilities	139.57	0.18
7	Governmental	2799.12	3.61
8	Public and semi public	1729.09	2.23
9	Agriculture and water bodies	54346.39	70.09
	Total	**77538.00**	**100.00**

The distribution of land under residential use in Local Planning Area, Jalandhar has been found to be about 12.49%, out of which the major share i.e., about 9% is of five urban settlements namely Jalandhar, Phagwara, Kartarpur, Adampur and Alawalpur. The existing villages in Local Planning Area take up about 3.49% only. The concentration of population is mainly in Jalandhar and Phagwara cities which signify a bigger need for more built up areas for residential use to sustain the growing employment opportunities in the field of trade and commerce in these settlements and to provide adequate housing for about 25 lakh persons of LPA by 2031.

The commercial activity is also mainly concentrated in above said urban settlements and rural areas falling within LPA are devoid of high level of commercial activity. The rural population has to depend upon nearby urban areas to meet their day-today shopping needs. Although Kartarpur town specializes in furniture marketing even then for the rest of commercial business, it has to depend upon nearby Jalandhar city. Hence a balance has to be created in this regard so as to minimize the dependence on urban settlements for this purpose.

The industrial activity is mainly concentrated in Jalandhar and Phagwara. The furniture industry at Kartarpur is having significant role in the economic well being of this town but the rest of the areas in LPA have very low proportion of land under industries.

The road circulation comprises National Highways, State Highways and railway lines passing through this area and a good road network of local roads. But the missing road hierarchy, encroachment along roads, road condition etc especially in urban areas is resulting in chaotic traffic condition. Hence concrete measures are required to improve the traffic and transportation system by way of provision of new roads, construction of flyovers / ROB's, subways etc.

The public facilities and utilities are also concentrated in urban settlements and the rural areas are devoid of these facilities which need to be taken care off in the Master Plan.

PART IV

VISION 2031

10.0 VISUALIZING THE FUTURE

10.1 POPULATION AND WORKFORCE PROJECTIONS 2031

The population is the basic human factor for which planning is done. The future development of the town mostly depends on trade expansion, development of industries, and expansion of civic infrastructure etc. and also migration of population that seeks livelihood in cities. It is difficult to anticipate how these elements will unfold in future and influence growth of population. However a broad idea of magnitude of future population is necessary for the formulation of Master Plan. There are essentially two approaches available for this purpose. First method of population projection is based on the extrapolation of the past trends assuming that the trend will continue in the future. The second method is ratio method is based on the principle of "from whole to the part". This involves use of projections available for the larger area such as state and then derive the forecast for the city by assuming that either a constant or modified share of the city in the larger area.

The following data show the present population of Local Planning Area of Jalandhar:

A) Local Planning Area: The decadal population of the urban and rural areas of Local planning Area has been tabulated so as to determine the growth rate of population.

Table No.10.1: Population falling within Local Planning Area Jalandhar

Area	1981	1991	2001
M.C. Jalandhar including Cantonment Board	441552	541050	754608
Phagwara, Municipal Council	72499	88316	102253
Kartarpur, Municipal Council	17878	21093	25157
Adampur, Municipal Council	10960	15331	16707
Alawalpur, Municipal Council	5851	6468	7172
Sub total - Urban	**548740**	**672258**	**905897**
Villages of District Jalandhar (229)	217529	251927	291172
Villages of District Kapurthala (37)	40097	46451	55958
Villages of District Shaheed Bhagat Singh Nagar (2)	5160	6389	7565
Sub total – Rural	**262786**	**304767**	**354695**
Total	**811526**	**977025**	**1260592**

(Source: District census 1981, 1991, 2001)

Table No.10.2: Growth rate of Local Planning Area, Jalandhar

Year	Rural		Urban		Total	
	Population	Growth rate	Population	Growth rate	Population	Growth rate
1981	262786	-	548740	-	811526	-
1991	304767	15.98	672258	22.51	977025	20.39
2001	354695	16.38	905897	34.75	1260592	29.02

(Source: District census 1981, 1991, 2001)

10.1.1 Projected population of Local Planning Area (LPA), Jalandhar up to 2031:

Population projection based on the ratio method: In this method, the percentage of the urban population in LPA, Jalandhar is derived from the total urban population of Punjab in the year 2001 which comes out as 10.95%. This figure of 10.95% has been used constantly for deriving the urban population for the years 2011, 2021 and 2031. Similarly for projecting the rural population of LPA, the percentage share of LPA's rural population has been derived from the total rural population of Punjab in the year 2001 which comes out to be 2.20% and the same has been used constantly for projecting rural population for the years 2011, 2021 and 2031 (Refer Annexure IV). The following table shows the projected population by this method and population growth:

Table No. 10.3: Projected Population Growth of LPA, Jalandhar

Year	Urban		Rural		Total (in 000 persons)
	Population (in 000 persons)	Growth rate	Population (in 000 persons)	Growth rate	
2011	1170	29.30	374	5.40	1544
2021	1444	23.44	377	0.80	1821
2031	2249	55.75	285	-24.40	2534

Population projection on trend basis

The population for the Local Planning Area Jalandhar has been projected at the assumed decadal growth rate of 30%. This is based on the previous growth trends found during the last two decades viz, 1981-1991, 1991-2001. The future rate of growth for Local Planning Area, Jalandhar has been projected on the basis of certain assumptions given next to Table No. 10.6. The population of the Local Planning Area of Jalandhar has been projected up to 2031 and is tabulated as follows:

Table No.10.4: Projected population of Local Planning Area Jalandhar

Existing Population (2001)	Projected Population (2011)	Projected Population (2021)	Projected Population (2031)
1260592	1638770	2130401	2769521

Thus the population projections worked out by above methods can be summarized in the Population Range for the years as follows:

2011 14-16 lakh persons approximately

2021 16-22 lakh persons approximately

2031 22-27 lakh persons approximately

B) Population of Urban Settlements including Peri Urban Areas:

The population of the urban settlements and their respective peri urban areas viz., the villages abutting the limits of Municipal Corporation / Municipal Councils has been tabulated in the

following manner in order to have more realistic population projections for the urban settlements and their surrounding villages which are likely to be urbanized in the plan period:

Table No.10.5: Population of urban settlements and their Peri Urban Areas (i.e. villages abutting Municipal Corporation / Municipal Councils)

Urban Settlement	Population of urban settlement			Population of peri urban area			Total population			Growth rate			Urban fringe villages
	1981	1991	2001	1981	1991	2001	1981	1991	2001	1981	1991	2001	
Jalandhar	441552	541050	754608	56359	69257	86543	**497911**	**610307**	**841151**	-	22.57	37.82	54
Phagwara	72499	88316	102253	22245	26825	32328	**94744**	**115141**	**134581**	-	21.52	16.88	10
Adampur	10960	15331	16707	4254	4445	5148	**15214**	**19776**	**21855**	-	29.98	10.51	5
Kartarpur	17878	21093	25157	2003	2629	2687	**19881**	**23722**	**27844**	-	19.32	17.38	3
Alawalpur	5851	6468	7172	-	-	-	**5851**	**6468**	**7172**	-	10.54	10.88	0

(Source: District census 1981, 1991, 2001)

Population projections for urban settlements and their peri urban areas

Population of Jalandhar in 2001 = 841151 persons

As per census 2001, the population of Jalandhar city and its peri urban area has been calculated as 8,41,151persons and for calculating the future requirements of housing and other social and physical infrastructure etc for the Master Plan, this total population has been taken into account. The decadal growth rate has been assumed as 30% for 2001-2011 and 35% for 2011-2021 and 2021-2031. The logic for assuming different rates of growth of projected population for different urban settlements and their peri urban areas falling under LPA, Jalandhar has been described in the paragraphs given next to Table No. 10.6. The proposed decade wise population is tabulated as follows:

Table No.10.6: Population projections for urban settlements and their peri urban areas

S. No.	Urban Settlement	Projection rate (in %age)	Projected Population		
			2011	2021	2031
1	Jalandhar	30, 35	1093496	1476220	1992897
2	Phagwara	20	161497	193796	232555
3	Kartarpur	20	33413	40096	48115
4	Adampur	10	24041	26445	29090
5	Alawalpur	10	7889	8678	9546
	Total		**1320336**	**1745235**	**2312203**

Projected Population Range for the years is as follows:

2011 10-15 lakh persons approximately

2021 15-18 lakh persons approximately

2031 20-25 lakh persons approximately

There are certain forces that may affect the population of Local Planning Area, Jalandhar. Some of these may accelerate the growth whereas others may decelerate the population growth. Some of these factors are listed as below:

1. The abrupt increase from 22.57% of population growth of Jalandhar city and urban fringe to 37.82% between 1991-2001 is due to two reasons: Firstly, the extension of Municipal Corporation limit in the years 1993 and 1999 and secondly due to disturbed law and order situation in Punjab till 1995 due to militancy which caused the migration from rural areas to urban areas which were considered safe from security point of view. It is assumed that this rate of growth is not likely to continue due to stable conditions in Punjab. Hence normal growth rate for next decade for Jalandhar city has been assumed at 30%.
2. The world wide economic melt down is expected to affect the economic and physical development of the area in the present decade of 2001-2011.
3. This growth rate is also based on the assumption that no new development policy especially for Jalandhar has been formulated by the government so far.
4. The Ludhiana Metropolitan city which is a major counter magnet city of Jalandhar is just at the distance of about 60 km, which is a major attraction centre for in-migration of population.
5. The present industrial policy of the state does not mention any special incentive for Jalandhar rather it gives certain incentives for industrial development in backward / border areas.
6. The projected growth rate of 35% decadal increase between 2011-2021 and 2021-2031 is based on the assumption that Jalandhar city will attain the status of a metropolis in the year 2011 and the level of social and economic infrastructure will be of higher level with large catchment's area which will help in attracting more people to this city.
7. The Freight Corridor from Mumbai to Ludhiana is expected to be extended up to Amritsar through Jalandhar which is likely to enhance economic and physical development of Local Planning Area Jalandhar.
8. The projected growth rate for Phagwara has been assumed as 20% which is slightly more than the previous decadal growth rate of the city. It is based on the assumption that near proximity of Jalandhar is likely not to allow the abrupt growth of this town and secondly the urban and industrial policy of government does not have any special incentive / programme for the development of Phagwara city.
9. Phagwara is assumed not to grow abruptly because of the factors as mentioned at para 8 above.
10. The projected growth rate of 20% for Kartarpur town is based on the assumption that due to its near proximity to Jalandhar city, it is likely to be inhabited by population of working

class which may not be able to pay higher land prices of Jalandhar city and secondly the town is a historical furniture market of the state. Hence it has good employment potential.

11. Adampur and Alawalpur are small market towns with low level of social and economic infrastructure which are assumed not to grow rapidly in the near future and secondly both of these settlements are not located on major corridors of the state. Hence a constant projected growth rate of 10% has been assumed for both of these settlements.

10.1.2 Workforce

Existing workforce

The workforce of three decades viz., from 1981 to 2001 of Local Planning Area, Jalandhar has been tabulated as follows:

Table No. 10.7: Existing workforce of Local Planning Area, Jalandhar

Sr. No.	Year	Workforce	Growth Rate
1	1981	1,86,883	-
2	1991	2,05,434	9.92%
3	2001	2,71,992	32.39%

(Source: District Census Handbook 1981, 1991, 2001)

A cursory look at Table No. 10.7 shows the percentage growth of workforce during 1991-2001 is 32.39%, which is almost 3.5 times than the growth rate of workforce during 1981-1991. This is because of the fact that during the first half of 1991-2001, the law and order situation in Punjab and particularly in rural areas and small towns remained disturbed due to terrorism and a number of persons from rural areas and small towns migrated to large cities like Jalandhar in search of safe living and employment. Secondly a number of educational centers like Regional Campus of Guru Nanak Dev University, Punjab Technical University, Pushpa Gujral Science City and number of technical institutes, hospitals like Satyam, Sanjivani, BBC Heart Care, Bhutani etc, Industrial units and trading centers of higher level have come up in Jalandhar city. Thirdly, the Municipal Corporation limits of Jalandhar were extended in years 1993 and 1999 covering more workforces in its envelope. The category wise distribution of workforce for the year 2001 is as follows:

Table No.10.8: Workforce for 2001 (Category wise)

Sr. No.	Category	Work force	Share % to total pop of LPA
1	Agriculture, hunting and Forestry	6177	0.49
2	Fishing	3151	0.25
3	Mining and Quarrying	252	0.02
4	Manufacturing	21808	1.73
5	Electricity, gas and water supply	105259	8.35
6	Construction	4160	0.33
7	Wholesale and retail trade	33280	2.64
8	Hotels and restaurants	95049	7.54

9	Transport, storage and communication	5421	0.43
10	Financial intermediation	32649	2.59
11	Real estate, renting and business activities	36305	2.88
12	Public administration and defence, compulsory social security, Education, Health and social work, Other community, social and personal service activities, Private households with employed persons, Extra territorial organizations and bodies	99209	7.87

Workforce projections

The Projected workforce for LPA, Jalandhar has been tabulated as follows:

Table No.10.9: Projected workforce for Local Planning Area

Sr. No.	Category	Projected Workforce		
		2011	**2021**	**2031**
1	Agriculture, hunting and Forestry	7566	8923	12417
2	Fishing	3860	4553	6335
3	Mining and Quarrying	309	364	507
4	Manufacturing	26711	31503	43838
5	Electricity, gas and water supply	128924	152054	211589
6	Construction	5095	6009	8362
7	Wholesale and retail trade	40762	48074	66898
8	Hotels and restaurants	116418	137303	191064
9	Transport, storage and communication	6639	7830	10896
10	Financial intermediation	39990	47164	65631
11	Real estate, renting and business activities	44467	52445	72979
12	Public administration and Defence, compulsory social security, Education, Health and social work, Other community, social and personal service activities, Private households with employed persons, Extra territorial organizations and bodies	121513	143313	199426
	Total workforce	**542254**	**639535**	**889942**

It is evident from the above table that the workforce based on the different categories has been projected keeping in view the percent share to total population of LPA, Jalandhar.

Table No. 10.10: Projected workforce of Local Planning Area, Jalandhar

Sr. No.	Year	Workforce	% share to total population of Local Planning Area
1	2011	542254	35.1
2	2021	639535	35.1
3	2031	889942	35.1

The workforce projections have been calculated assuming percent share of workers to total population of Local Planning Area as 35%. This growth rate is marginally above the previous trend of growth of workforce during 1991-2001 and has been assumed keeping in mind the future economic and physical growth of the city. This growth is also based on the following presumptions:

1. As the size of the city will grow, higher level of economic, physical and social infrastructure with more employment opportunities would be set up.
2. The urban development policy of the state government will encourage more Mega Projects in the field of Industries, Trade and Housing hence more employment avenues.
3. The age wise composition of population as per the book '21st Century India – Population, Economy, Human Development and the Environment' by Archana Masih published in February 2004 suggests 35% of population below 15 years of age. This composition indicates that more number of workers would be available in the future years.
4. This rate of growth has been presumed keeping in view the share of work force in total population at Punjab level which is 37.5% as per 2001 census.
5. Workforce composition as found in Municipal Corporation area, Jalandhar in 2001 has been assumed for projecting workforce for entire LPA 2031 because the population projections indicate that the growth rate of rural population will decrease and it will be negative in the year 2031 whereas the urban population growth rate will increase almost to double by that period. Hence the workforce composition trend of Municipal Corporation area is assumed to continue.

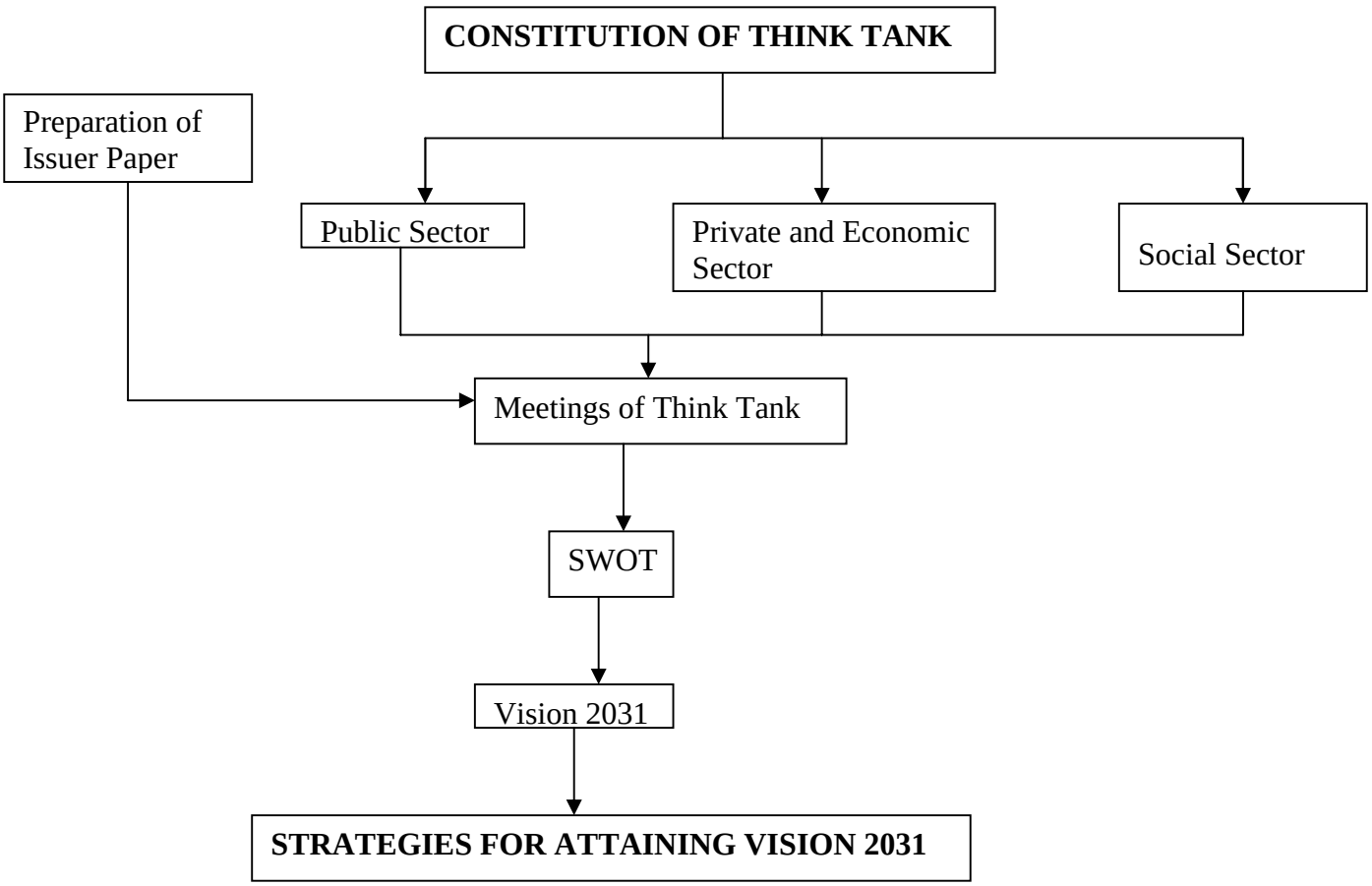
11.0 VISION LPA 2031

11.1 THE STRENGTH, WEAKNESS, OPPORTUNITIES, THREATS (SWOT) ANALYSIS OF LPA

For the Master Plan, it is necessary to develop a long term (2031) vision for the city that takes in to account the present strengths, opportunities, weaknesses and threats (SWOT) emanating in the region. For visualizing future city – Jalandhar the government vide letter no. 7463-72 dated 1-12-2008 has ordered the formulation of a committee **"Think Tank"** under the chairmanship of Worthy Deputy Commissioner, Jalandhar. The basic objective of formulating

this committee is to discuss SWOT for the Master Plan, Jalandhar and ensure the stakeholder participation so that the Master Plan so prepared is technically sound, takes care of the requirements of all sections of the society and is readily acceptable to the public.

As directed by the Govt., the "**Think Tank**" has been constituted in such a way that almost all sections of the society viz., public sector, private economic sector and social sector had been given due representation (Annexure III). The "**Think Tank"** comprised 31 members from these three groups. Two meetings under the chairmanship of Deputy Commissioner, Jalandhar have been held on 30 January 2009, 13 February 2009 and the SWOT, Vision 2031 and the strategy has been finalized through intensive deliberations.



SWOT:

The present strengths, the opportunities likely to be presented by the surrounding region, the present weaknesses of Jalandhar city and the threats emanating in the region have been deliberated in the meetings. The following Strengths, Weaknesses, Opportunities and Threats for Local Planning Area Jalandhar have emerged:-

Strengths and opportunities:

The strengths and opportunities are the factors which allow positive change or present development options or alternatives. The following are the strengths and opportunities in the context of vision and strategies for Local Planning Area, Jalandhar.

I. Location: Centrally located city of Punjab state with reasonably good regional linkage.

II. Accessibility: Well connected to surrounding region through NH–1, NH–1A, NH–70 and NH–71 and Jammu - Amritsar – Delhi, Jalandhar – Nakodar, Jalandhar – Hoshiarpur Railway line.

III. Regional level educational infrastructure – Punjab Technical University, Lovely Professional University, Pushpa Gujral Science City, Dr. B.R. Ambedkar National Institute of Technology and four Engineering Colleges – sufficient catalyst to propel the economy.

IV. Strong NRI base – a potential for Foreign Direct Investment.

V. Industrial hub – Internationally known industries manufacturing sports goods, leather goods, Surgical Instruments, Casting, Forging, Rubber and Pipe Fittings

VI. Employment potential – Good employment generation due to industries, trade and commerce.

VII. Regional level commercial centre – Sheikhan Bazaar, Rainak Bazaar etc.

VIII. Health Infrastructure – Asia’s highest per capita health facility available.

IX. Religious pilgrimage – Baba Sodal, Devi Talab Mandir etc.

X. A vast catchment area – No competing urban settlements within radius of 60 km.

XI. The availability of vast tracts of fertile agricultural land in and around LPA shall make land available for the expansion of urban settlements and is a potential source for the development of economic and physical infrastructure of the city.

XII. Proposed expressway from Mohali – Phagwara and proposed up gradation of NH-1 from four-lane to six-lane up to Jalandhar and NH-1A from two-lanes to four-lanes will bring about speedy development to the region.

XIII. Economic Fright Corridor to be extended from Mumbai to Amritsar will also provide an opportunity for economic development of the region.

XIV. New infrastructure investments in future – Punjab Institute of Medical Science, Development of Burlton Park by British architects etc.

XV. Proposed Development and Business opportunities: There is a stream of new proposals in commercial sector emerging in various parts of Jalandhar city. It is envisaged that with the up gradation of NH-1 and NH-1A, it will certainly boost the local economy with more business inflow in both the manufacturing and logistics sectors. More foreign investments are expected to flow in the region due to its worldwide Punjabi NRI network. Already number of modern commercial centres such as Sarb Multiplex on Byapss Road, ANSAL Plaza on NH-1, Jyoti Mall at Jyoti Chowk Nakodar Road etc are an opportunity to up grade the commercial environment and to decentralize commercial activity existing in the old congested bazaars.

XVI. Demography: The literacy rate of LPA is 71.36% which is higher in comparison to the literacy rate of Punjab which is 70%. About 45% of total population is in the age group of 15-39 years which offers a valuable skillful manpower resource for economic development of the region.

Weaknesses and Threats:

I. Urban growth and land management: About 80% urban development is unplanned and haphazard. There are 97 slums with 26% population and squatters exist in several parts of the town. These represent health risks and are a hindrance to the planned development of city.

II. Road network limitations: As the LPA, Jalandhar is landlocked, connectivity to other cities and countries is only possible by way of road and rails. The local road network is far from ideal. The Air travel facility is only available at Amritsar and Mohali at a distance of about 100 km and 150 km respectively.

III. Competing development in the vicinity: Jalandhar being the most urbanized town within LPA has the highest potential to be the commercial hub. But the neighboring city of Ludhiana which is only at a distance of about 60 km is also a major commercial and industrial center and is a major counter magnet of Jalandhar.

IV. Concentration of commercial activities in congested area of the old part of city with narrow lanes, no parking spaces etc are creating major traffic and environmental problems.

V. Only 80%served by the water supply and sewerage networks in the city whereas the rest of 20% population is still devoid of these facilities.

VI. Traffic hazardous – choked road intersections, mixed and through traffic, inadequate road circulation, encroachment of roads, inadequate parking spaces, lack of flyovers, ROB's /

underpasses etc with limited recreational / open spaces renders the city unfit for comfortable living.

VII. Inadequate storm water drainage – no system for rain water harvesting and no system available for scientific disposal of solid waste – a potential threat to living environment.

VIII. No new investment especially in the field of industries is another threat for further expansion of city rather new investment planned in SEZ at Kapurthala will attract potential investors from the region and would pose a direct competition to Jalandhar.

IX. Exorbitant urban land prices. Poor cannot afford good housing accommodation, which causes proliferation of slums and squatters. It also hinders the pace of development of the city, as people like to settle in the nearby small towns of Phagwara, Kartarpur etc where land prices are lower as compared to Jalandhar city.

X. Height restriction due to proximity to Air Force Station and Defense areas, north eastern part of LPA, Jalandhar borders Air Force Station Adampur. Hence it is affected by the aviation height restrictions of Airport. Developments in Adampur, in the vicinity of Air Force Station will have height restrictions and noise pollution. Besides this an Ammunition depot at Suranussi also prohibits any construction activity within a radius of 914 meters from the crest of outer parapet of the depot site. These restrictions are enforced as per the provisions of Section 3 and 7 of the Works of Defence Act 1903.

11.2 VISION 2031

Based on the outcome of discussions held with the members of the "Think Tank" comprising various intellectuals, non-government organizations, community based organizations, professionals and officials of the urban local body and other departments, Senior officers from Town and Country Planning Department through the guidance of Advisor Department of Town and Country Planning and detailed study & analysis made of the existing and historical growth and development mechanism, it has been observed that Jalandhar as a Corporation City has enormous potential for rapid economic, physical growth and industrial development provided required level of support systems, quality infrastructure, user friendly policy options. State of the art developmental and institutional mechanisms are put in place. In order to make Jalandhar grow and emerge as one of the most important, humane dynamic, productive, sustainable, eco-friendly pollution free and vibrant urban centre of the state of Punjab, the future of the city is envisioned as under:-

The Vision Jalandhar 2031 is proposed to be

To make LPA Jalandhar an economically vibrant city with quality infrastructure and housing for all its citizens in environmentally sustainable manner achieved through effective partnership between the public, private and community sector.

Various components of the vision and strategies to attain them particularly in the context of Master Plan are outlined below:

11.3 STRATEGIES

Strategies developed for various planning elements of the VISION 2031 are tabulated as below:

Table No. 11.1: Strategies for Vision 2031

VISION 2031	Strategies
To develop Jalandhar city as financial capital, commercially and industrially vibrant eco-friendly city of state of Punjab providing assured employment and quality living to all its existing and future residents.	Through better urban governance. Allocation of sufficient land for industrial and commercial activity to provide a comprehensive range of retail and wholesale commercial services and provision for light and service industries such as IT Parks, Knowledge City etc. To ensure minimal environmental impact on the residents. Clustering concept to be adopted. Polluting industries to be kept away from the residential areas. Higher order of economic productivity, operational efficiency. Rationalized land use pattern. Reduced vehicular and industrial pollution through introduction of CNG based transport, by increasing green cover, ban on pressure horns and by planning non-polluted and eco-friendly economic activities, introducing mass public transport system, keeping industrial locations properly segregated through the concept of buffer zones from non-industrial areas and by allocating land for polluting industry away from the living areas. Assured safety of residents and commuters.
To provide variety and range of housing types for working and living communities within LPA, Jalandhar.	Promoting the concept of PPP, provision of adequate good quality housing by promoting planned development through effective city planning to provide safe, clean environment with adequate level of

	amenities. Making urban development policy liberal, incentive oriented and user friendly. Promoting social (low cost) housing for Economically Weaker Sections for the eradication of slum dwellings.
To plan LPA as an integrated and single unit with strong forward as well as backward linkages.	Plan should relate and respect the surrounding region. Attempt to plan in totality and must confirm to the surroundings of Local Planning Area, Jalandhar.
To provide efficient Transportation System	To create new road network and to improve the existing network. To promote operational efficiency of traffic by introducing a Ring Road, an Air link, Elevated Roads, Flyovers, ROB's, Underpasses, Subways, New sector roads, bus and truck terminus, provision of pedestrian paths, segregated lanes for slow moving traffic, minimizing use of private transport and to promote public transport.
To provide state of the art, infrastructure like education, health, religious, recreational etc.	Social infrastructure shall be made available in the following manner: ▪ Through utilization of vacant govt. /M.C./Panchayat/Wakf Board lands etc. ▪ By encouraging planned development as provided in PAPR Act, 1995, Town Development Schemes, Development Schemes of Improvement Trust. ▪ By introducing Land Pooling Policy, transfer of Development Rights concept may also be developed. ▪ Acquisition of land through Land Acquisition Act, 1894 may also be carried out for the provision of projects which are of State / national importance.
To provide utilities that will satisfy the needs of the residents of Local Planning Area.	To ensure 100% coverage of the city in terms of Water Supply, Sewerage System etc. To minimize the ground water consumption by promoting water conservation.

	To promote rain water harvesting and recycling of water. To promote eco-friendly decentralized treatment system. To minimize sewerage generation through water saving appliances. To promote recycling of sewage.
To safeguard and enhance the premium land value along the major highways and high visibility locations.	Through introducing special development controls along major roads. By providing premium land use zones.
Decongestion of core areas.	Development of modern retail, hotel and commercial facilities such as retail malls, entertainment and shopping in peri urban areas and along the major transport routes. TDR policy may be framed and made applicable for this purpose.
To streamline the energy of young population.	Special emphasis should be made to create a conducive environment for sports through a range of Stadiums, Sports Complexes, Country Clubs, Golf Courses, parks etc.
To promote Rain Water Harvesting.	Optimal use of rain water for irrigating the parks and roadside plantation in new colonies / development To promote protection of natural water bodies for collection of rain water. To promote optimum use of storm water as an alternative source of water supply. Make Rain Water harvesting systems compulsory for each parcel of land and the water so stored may be used for car washing, kitchen gardens, construction works etc. Major parks / open spaces to be made available for providing rain water harvesting systems so that the storm water of road network etc may be used for recharging of underground water.
To promote an eco-friendly Solid Waste Management system	Minimize the generation of solid waste by using re-usable items. Promote recycling of solid waste. Installation of Solid Waste Processing Plants to reduce the waste for disposal and at the same time for generating energy from the solid waste. Small processing plants at the

	Neighborhood level may be preferred.
To introduce the concept of Mixed Land use for the localities which through the history of growth of town had remained under mixed use and the nature of use is such which does not include obnoxious, hazardous or highly polluting activities and from where it is difficult to shift the mixed use to other areas specified for that particular land use.	Co-existence of houses and shops and houses with industries to be allowed subject to certain Development Controls that should ensure the protection of living environment of mixed land use zones.

11.4 STRATEGIES TO OBTAIN LAND FOR PUBLIC PURPOSES

The possible alternatives for obtaining land for public purposes such as roads, educational, health, parks, water supply, sewerage, social and religious institutes, old age homes, community centers etc with their limitations are listed as below:

Alternative	**Land Acquisition through 1894 Act**	**TDR**	**Development of land through PAPR Act 1995, TDS under PRTPD Act 2006 and Development Schemes under PTI Act, 1922**	**Land Pooling**	**Govt / Panchayat / Waqf Board lands**
Plan Proposal	Land designated for public purposes	Land designated for public purposes	Land designated for public purposes	Land designated for public purposes	Land designated for public purposes
Regulation	No separate regulatory provision necessary	Regulation about use of TDR on receiving plots is necessary	Certain proportion (about 40%) of land is dedicated for public purposes.	This requires a separate legal process to be followed of reconstitution of plots along with evaluation of compensation and betterment as provided in Chapter XII of the 1995 Act.	No separate regulatory provision necessary
Means of securing land	Compulsory acquisition by paying monetary compensation	Monetary compensation substituted by Transfer of Development Rights (TDR)	Availability of land through layout plan provisions		Land can be made available through transfer of ownership from one department to another. No monetary compensation is involved.
Limitations	Lack of finances for compensation Landowners' resistance Iniquitous distribution of costs and	Landowners' acceptance depends upon market for TDRs But where real estate prices are high	This is the method currently relied upon where minimum area for colony is set at 10 – 75 acres, as in case of PAPRA. This is to be market driven and present response is said to be not so encouraging.	Comprehensive Land Pooling Policy is required to be framed. Difficulty in pooling of land of large number	Locational disadvantages in certain cases. Minimum area requirement may not be

	benefits. Cost borne by those who lose land and benefits enjoyed by surrounding landowners	particularly where land price is several times the construction cost, chances of success are high. Could also be used for heritage conservation. New concept difficult to be implemented.		of owners. Time consuming and complicated process Equitable distribution of costs and benefits to different share holders. New concept difficult to be implemented.	fulfilled Source of revenue for Panchayat Bodies / Waqf Board gets depleted.

No single alternative may be applied on the entire area of the LPA. Different alternatives have to be used depending upon the nature, size, location and necessity of the project. In case of projects linked with defence / security needs of the country or the projects where large chunks of land are required for the timely implementation of the project only the method of land acquisition through the 1894 Act has to be used. The land required for new Master Plan roads or for widening of existing roads may be obtained largely by allowing the development rights of road land being allowed to be used on the remainder of the land. The second option could be to get the land through land pooling scheme. The area for other roads which are not shown in the Master Plan but are to be shown later in Zonal Plans could be similarly obtained. For other public purposes like parks, community centres, schools, dispensaries, play grounds etc the land may be obtained through colonization under PAPRA 1995 or through the development of Town Development Schemes under the Punjab Regional and Town Planning and Development (Amendment) Act 2006. The government / Panchayat lands may be another option for the development of such public uses. However, there are certain public purposes like police stations, fire stations etc that must be at specific locations and are to be developed in a time bound manner. These need specific designation in the sector (zonal) plan. Such lands may be obtained without monetary compensation and for this, it would be necessary to create market for TDR, certain parts in the sector plan like commercial centres and pockets reserved for group housing may be allowed to exceed base FAR by buying Development Rights from elsewhere in the same sector.

PART V: THE MASTER PLAN

12.0 OBJECTIVES AND CITY STRUCTURE EVALUATION

12.1 MASTER PLANNING OBJECTIVES

Considering the role, impact, growth and contribution made by the city of Jalandhar to the economy, employment and productivity of the State of Punjab, the future growth and development strategies of Jalandhar city needs to be viewed in the larger canvas of regional context. Therefore, the task of preparation of Master Plan, Jalandhar with the perspective year 2031 has been undertaken with the following objectives:

1. **Optimal City Structure**

   To promote the balanced development and a multi – nucleated structure through planned dispersal of commercial and employment – generating activities.

   To decongest the core areas.

   To introduce the concept of mixed land use for the localities which through the history of growth of town had remained under mixed use and the nature of use is such which does not include obnoxious, hazardous or highly polluting activities and from where it is difficult to shift the mixed use to other areas specified for that particular land use.

   To plan LPA as an integral and single unit with strong forward as well as backward linkages.

2. **Quality of Life**

   To provide better quality of life by minimizing haphazard, unplanned and sub – standard growth and development within LPA and to promote planned growth in order to maintain healthy living environment.

3. **Traffic and Transportation**

   To effectively plan the traffic and transportation within LPA and to minimize inter / intra city travel by creating self – contained neighborhoods.

   To ensure safety, mobility, efficiency of inter and intra city traffic and to improve road network of LPA.

   To create an efficient and cost effective road based rapid mass transit system to meet the existing and future travel needs of the city and to improve the capacity of the existing road network through re – designed, improved road geometry and removal of encroachments.

4. Infrastructure

To provide state of the art, infrastructure like education, health, religious, recreational etc and to rationalize the distribution of physical and social infrastructure in order to ensure appropriate quality of life to all residents of the city.

To provide utilities that will satisfy the needs of the residents of LPA.

5. Good Governance

To optimize the use of available land resource through well defined development norms.

To safeguard and enhance the premium land value along the major highways and high visibility locations.

To provide adequate opportunities for creating affordable shelter for all segments of society through mechanism of Public Private Partnership.

6. Sustainable Development

To put in place a healthy and sustainable working, leisure and living relationship for making Jalandhar as the most energy efficient city.

To promote rain water harvesting.

To promote an eco – friendly solid waste management system

12.2 EVALUATION OF ALTERNATIVE CITY STRUCTURES

12.2.1 Existing City Structure

In order to know the relationship between living and work areas and to know their connectivity with each other, a plan has been prepared which shows the major living areas and work places of the city and their connectivity with each other through road and railway network. A careful study of the map brings out the following:

1. The core of the city is a mixed land use area where houses co-exist with commercial establishments. This area comprises the old traditional bazaars such as Rainak Bazaar, Sheikhan Bazaar, Mai Hiran Gate, Meena Bazaar, Gur Mandi, Bansa wala Bazaar etc where the ground floor of the house is used as a shop and the upper floors are used for residential purposes. These are narrow and congested bazaars with inadequate provision of parking, loading and unloading spaces etc required for commercial activity.
2. The living areas which mainly comprise approved residential areas like development schemes of Improvement Trust, Town Planning schemes of Municipal Corporation and Urban Estates developed by the then Urban Estate's Department and unplanned residential (living) areas located in the southern part of the city mainly between Jalandhar – Ludhiana

Road (NH-1) and Jalandhar – Kapurthala Road. Besides this, a few living areas are also located in the northern part of the city along Jalandhar – Hoshiarpur Road. The living areas are depicted in yellow colour.

3. The major work areas (like Industrial activity) are located in the north of the city. These areas are primarily concentrated along the Bypass Road, Jalandhar – Pathankot Road, Old Hoshiarpur Road. A major work area is also located along Jalandhar – Kapurthala Road where sports and surgical complex and leather complex exist.
4. Besides this, Government offices and Defence areas are also highlighted on the map as work areas.
5. It has been observed from the map that although these areas have good road connectivity at individual level but they do not have direct connectivity with each other. Whatever the connectivity is available that is of the limited level e.g., the main living areas are concentrated in the southern part of the city whereas the majority of the work areas are concentrated in the north. It generates a number of trips from living to work areas and vice-a-versa resulting in more traffic on the city roads and more wastage of time, energy and money. The industrial area of Jalandhar – Kapurthala road does not have direct connectivity with Transport Nagar, Railway Station and Industrial Focal Point etc situated in the northern parts of the city which again results in increase of traffic movements on congested city roads.
6. It has also been observed on the ground that the new commercial areas / multiplexes, hotels, show rooms, motor car agencies etc are coming up along the major transport routes like Jalandhar – Ludhiana Road i.e., the commercial activity which has primarily remained concentrated in the core of the city is now showing the signs of deconcentration which will help in easing out the traffic problems of the inner city.

12.2.2 Alternative City Structures

Based on the structure of Jalandhar city and growth trends identified in Local Planning Area, Jalandhar and keeping in mind the expected doubling of urban population in 2031, the following pattern of development have been identified for LPA Jalandhar:

1. **Compact development of the city with intensification of core area and development of vacant lands in municipal limits**. The compact city development concept has the following merits and demerits:

Merits:

Efficient / optimal use of land and infrastructure.

The cost of providing overall infrastructure services and the per capita provision and maintenance of infrastructure for compact development can be advantageous.

The higher the density, the smaller is the built up and the shorter trip lengths with less travel time and cost.

The scientific studies indicate that dense and high rise cities consume less energy.

There is less loss in the transmission of power and water and there is energy saving in terms of transport, water, power and street lights.

Dense and high rise development may provide for more open spaces.

Higher density gives a range of environmental benefits and reduces the pressure on land which is a limited source.

The pressure of increased land values, urban accessibility, expanding population, globalization of trade and commerce etc make high densities with tall buildings inevitable.

Demerits:

The core area of Jalandhar city is mostly unplanned and development is haphazard with narrow bazaars, mixed land use, with inadequate parking, open spaces etc. The intensification of core area will further aggravate the traffic congestion and related problems in this area.

The building condition in the core of the city is such that it cannot bear the load of high density development. For intensification of core area, the redevelopment of area is required which is not psychologically and economically viable proposition.

The land value in the core areas is very high. More pressure on this area will further shoot up the land values and the urban property may become out of reach for most of the people resulting in the development of slums.

Jalandhar city falls in the seismic zone 4, i.e., highly prone to earthquake. The densification of core area of city with high rise buildings may prove fatal in case of earthquake.

Densification of core area means a concrete of high rise buildings away from the natural environment. Moreover Punjabis are not socially inhabited to live in multi storied apartments / high rise buildings.

The concentration of population in a smaller area will overload the physical infrastructure of the core area which is already inadequate for the existing urban population.

2. Intensive growth along transport radials:

The second alternative for the planning and development of Local Planning Area, Jalandhar is to develop the areas along major transport routes. The major transport routes are:

NH – 1 (Jalandhar – Amritsar road)

NH – 1 (Jalandhar – Ludhiana road)

NH – 1A (Jalandhar – Pathankot road)

NH – 70 (Jalandhar – Hoshiarpur road)

NH – 71 (Jalandhar – Nakodar road)

Jalandhar – Kapurthala road

This pattern of development has the following merits and demerits:

Merits:

It will help in decentralization of the core area which is already over – burdened due to concentration of economic activities.

Development along the major transport routes shall have good accessibility.

Due to availability of vast chunks of land along these transport routes the land values are comparatively cheaper.

Planned development is possible on the virgin lands in the form of good road network, parking, greenery, social infrastructure, utilities, housing, offices, trade and commerce, work centers, industrial and recreational etc.

Jalandhar city falls in seismic zone 4 thus the low density development should be followed so as to minimize the risk of hazard.

The premium land value along the major transport routes and high visibility locations can be safeguarded and enhanced.

Proximity to natural environment is better.

Living and work area relationship can be better achieved through this concept.

Demerits:

Overloading of major transport routes.

Less efficient use of land and infrastructure.

Leap – frogged development results in wastage of prime agricultural land which is already scarce in this zone of Punjab state.

The cost of providing overall infrastructure, services and the cost of their maintenance will increase.

Risk of land speculation.

The urban sprawl will have negative economic, social and environmental impacts.

The low density development along the major transport routes with ribbon development shall have longer trip lengths associated with more travel time and costs.

Longer the transmission lines of power and water supply, more are the transmission losses.

3. Development of ring towns located along major transport routes:

The third alternative for the planning and development of Local Planning Area Jalandhar is the development of ring towns situated on major transport routes like Phagwara, Kartarpur, Adampur and Alawalpur towns. (Although Kapurthala town is also a ring town of Jalandhar but being outside Local Planning Area, it is being kept outside the scope of Master Plan, Jalandhar.) This pattern of development has the following merits and demerits:

Merits:

This pattern of development will help in the decentralization of Jalandhar city.

The development of ring towns located along the major transport routes will lead to the balanced development of Local Planning Area Region.

Land values in the satellite towns are comparatively lower and within the reach of general public.

Vast tracts of virgin land are available in these towns and thus planned development with higher level of physical and social infrastructure could be planned.

These towns may be developed as Dormitory Towns with healthy living environment for the public.

Low density development in the ring towns suitable to the habits of local people may have low risk from earthquake disasters and other natural calamities.

Ring towns being located on major transport routes shall have good connectivity with main urban settlement of Jalandhar and rest of the state.

Distribution of population in to different five urban settlements shall have less burden on the existing social and physical infrastructure.

The compact development of the ring towns shall ensure efficient use of land and infrastructure. The cost of providing infrastructure and services within the settlement shall be less, transmission losses of power and water supply etc and intra city trip lengths shall be less.

Demerits:

Overloading of major transport routes.

Risk of land speculation.

Longer inter city trip lengths associated with more travel time and costs.

More cost is required in providing adequate infrastructure in different locations.

Low density development will result in less efficient use of land and infrastructure.

More administrative costs.

Difficult to generate sufficient employment potential for each settlement shall make the ring towns dependent on main city further resulting in to overloading of services and infrastructure of the main city particularly during day time.

From current trends of development observed in the area, recent Real Estate projects approved by the authorities, price variations, accessibility corridors and availability of land resources, it may be concluded that no single alternative can be adopted for LPA, Jalandhar. Hence combinations of all the three alternatives need to be applied for better planning and development of the area. The adopted conceptual plan has been attached herewith.

13.0 PROPOSALS

13.1 PROPOSED LAND USE DISTRIBUTION – LOCAL PLANNING AREA JALANDHAR

The draft for Master Plan of Local Planning Area Jalandhar 2009-2031 bearing drawing number 4/2009 dated 10-07-09 was prepared and published on 10-12-2009 for public objections under Section 70(3) of the Punjab Regional and Town Planning and Developmnet (Amendment) Act 2006. The publication invited 300 public objections which were considered in a meeting of Punjab Regional and Town Planning and Development Board held on 16-04-2010 headed by Honourable Chief Minister Punjab. After considering the objections the Board decided to re-frame the Master Plan proposals for re-publication owing to major changes in the earlier published draft Master Plan.

The Master Plan of Local Planning Area Jalandhar 2009-2031 bearing drawing number 9/2010 dated 19-04-10 was prepared and republished on 10-05-2010 for public objections and 52 objections were received. Each objection was considered by the board in its meeting held on 29.07.2010 and after careful consideration of the objections, the master plan, Jalandhar was approved with minor changes.

On the basis of study of existing land use distribution under different land uses the need has been felt to allocate the scarce land optimally under different uses. The proposed land use plan for Local Planning Area Jalandhar has been revised bearing drawing number DTP (J) 09 / 2010 dated 19-04-2010/ Rev. on 02.08.10. The following table reflects the distribution of land under different land uses. This land use has been guided through UDPFI Guidelines and the local conditions of the area.

Table No.13.1: Proposed Land use distribution of LPA, Jalandhar

Sr. No.	Land use	Area (in ha)	%age to urbanizable area	%age to LPA
1	Residential	23988.12	43.0	30.94
2	Commercial	2231.45	4.0	2.88
3	Mixed land use	557.86	1.0	0.72
4	Industrial	7810.08	14.0	10.07
5	Recreational	3347.18	6.0	4.32
6	Traffic and Transportation	8925.81	16.0	11.51
7	Utilities	1673.59	3.0	2.16
8	Governmental	2789.31	5.0	3.59
9	Public / semi public	4462.90	8.0	5.76
	Total urbanizable area (excluding No Construction Zone)	**55786.30**	**100.00**	
10	Agriculture and water bodies	21751.70		28.05
	Grand total	**77538.00**		**100.00**

The proposed land use quantum has been adequately allocated for each of the specific uses to sustain the needs of LPA till year 2031. The other concerned aspects of different land uses have been elaborated in the following sections / sub sections.

13.2 JALANDHAR URBAN AREA-2031

To accommodate the projected population of 25 lakh by the year 2031 in Local Planning Area, Jalandhar, a four-pronged strategy is adopted:

Intensification of central core

Intensive growth along transport radials

Development of ring towns

Extension of peri urban area

13.2.1 Urban Extensions

Urban extension could be in areas already under developmental pressure for utilization for various urban activities and areas along major transport corridors and fringes of already urbanized areas. It is envisioned that rural areas would be absorbed as urban extension from time to time considering the need of balanced city development. The immediate urban extension could be in the proposed urbanizable zone of Master Plan Jalandhar 2031.

13.2.2 Redevelopment of Existing Core Urban Area

The scope for development of urban extensions on a large scale is suggested to be restricted to save the fertile / precious agricultural land in Jalandhar. Therefore, the option of redevelopment of core area through a process of reorganization and utilization of the land already developed should be a major element of overall city development plan.

A redevelopment strategy for accommodating more population in a planned manner is suggested to be taken up on priority in all use zones for efficient and optimum utilization of

the existing urban land, both in planned and unplanned areas. This would have to be supported with provision of adequate infrastructure viz. water supply, sewerage, road network, open spaces and the essential social infrastructure.

To encourage the growth impulse for regeneration in the target redevelopment areas, the possible incentives and modalities should include:

Grant of planning permission to reorganize /pool properties for planning purpose

Provision of social infrastructure through Transferable Development Rights or Accommodation Reservation (i.e. allowing construction of community facilities without including area in FAR)

Reduced space standards for unplanned areas may be adopted.

Higher FAR for specified redevelopment areas.

Application of flexible concept of mix-use zones in inner zone areas.

13.2.3 Redevelopment Strategy

The target areas for redevelopment will have to be identified on the basis of their need for up-gradation and potential for development. Redevelopment schemes will be prepared by the respective local body/land owners/residents. The concerned local body should promote private land owners to take up pooling and redevelopment with minimum area specifications / requirements.

Mixed use areas

These areas are characterized by a mix of different land uses and have similarities in compact built form, narrow circulation space and low-rise high-density developments, mainly accommodating residential, commercial (both retail or wholesale) and industrial uses. Therefore, it is important that the areas, which are already established with identified uses, continue to play an active economic role. The authority may further designate certain other areas as ‘mixed use areas’

The strategy is to provide suitable framework for allowing mix-use activities appropriate to the character of the areas as per the individual schemes having greater flexibility in terms of permitting variety of uses namely, commercial use (shops, offices, banks etc.) outlets for specialized services etc.

Unplanned areas

Villages

The villages in Jalandhar have undergone significant physical and functional transformation based on their specific location. Villages are characterized by a mix of different land uses and

have similarities in compact built form, narrow circulation space and low-rise high-density developments. These mainly accommodate residential, commercial and industrial use and function as a mix use area. It is important that these areas, which are already established with identified uses, continue to play an active economic role.

For provision of social and educational facilities, reduced space standards may be adopted. The facilities like community hall, dispensary etc. may be grouped together depending on the availability of land.

Guidelines for Redevelopment Schemes:

The basic objective of redevelopment is to upgrade the area by implementing specific schemes on the basis of existing physical and socio-economic conditions in the following way:

Areas for redevelopment and renewal should be identified on the basis of physical features such as rail, roads, drains, high tension lines and controlled zones of Monuments/Heritage areas, etc.

The residents/cooperative societies/private developers should get the layout and services plan prepared in consultation with the concerned authority for approval.

Amalgamation and reconstitution of the plots for planning purpose will be permitted.

The standard of housing density, minimum width of roads and community facilities can be relaxed, wherever justified, by planning considerations (e.g. Pedestrianization of the area).

The Public and Semi-public uses and services like hospitals, dispensaries, colleges, schools, police stations, fire stations, post offices, local government offices, parking etc. shall be retained in their present locations as far as possible and if not, relocated as part of the redevelopment scheme. Alternative sites shall be indicated in the Redevelopment Schemes/Zonal Development Plans. Any change or addition therefore shall be in accordance with the overall policy frame work to be prescribed by the authority concerned.

Reduced space standards may be adopted for community facilities/social infrastructure for such area. The land required for any public purpose may be acquired with the consent of the owner through issue of Development Rights Certificate in lieu of payment towards cost of land as per the prescribed regulations. The concept of Accommodation Reservation i.e. allowing construction of community facilities without counting in FAR may also be utilized.

The circulation pattern should include segregation of pedestrian and vehicular traffic, entry control, access of emergency vehicles to every block, provision of adequate parking etc.

Urban Design and Heritage of the area to be conserved as per the guidelines.

The land use shall be governed by the Master Plan/Zonal Development Plan. The non-residential use will be permitted as per the provisions of the Mixed Use Regulations or any special area regulations.

13.3 RESIDENTIAL (HOUSING)

As per census 2001, Municipal Corporation, Jalandhar has 184226 census houses under the category of residential houses which accounts for 64.7% of housing stock. The households are accommodated in a variety of housing types including different categories of planned built housing, squatter settlements, unauthorized colonies, traditional areas and villages. The component of housing through non-institutional sources, viz., unauthorized colonies etc is quite significant. This trend has continued in current decade and has to be kept in view while determining the options and strategies for housing.

Based on the projected population of 25 lakh by 2031 for Local Planning Area, Jalandhar, the additional demand for housing has been estimated as below keeping in view the other urban and a number of rural settlements which falls within it.

13.3.1 Requirement of Housing up to 2031

Table No. 13.2: Number of Households and Houses in plan period in LPA

Year	Population			No. of Households			No. of Houses		
	Rural	Urban	**Total**	Rural	Urban	**Total**	Rural	Urban	**Total**
2001	354695	905897	**1260592**	65687	173559	**239246**	176041	160323	**336364**
2011	374000	1170000	**1544000**	74800	234000	**308800**	74800	234000	**308800**
2021	377000	1444000	**1821000**	83778	320889	**404667**	83778	320889	**404667**
2031	285000	2249000	**2534000**	71250	562250	**633500**	106875	843375	**950250**

The above said calculation has been achieved on the basis of following assumptions:

The number of houses in 2001 is 336364 while number of households is 239246 which is about 1.5 times the number of households. This is because of the reason that a large number of households particularly from rural areas has migrated to foreign countries like UK, USA and Canada etc. But by 2011 the out – migration is expected to slow down due to economic melt down. Hence the ratio of Houses to households is assumed as 1:1 in 2001 which will remain constant by 2021 and increase to 1:1.5 by 2031.

The number of households in the above table has been calculated on the basis of following assumed family size:

Year	Family Size
2011	5
2021	4.5
2031	4

This assumed family size is based on the following assumptions:

- The family size in India has already reduced from 5.5 in 1991 to 5 in 2001.
- With the spread of literacy and development of health infrastructure, it is expected to reduce further to 4.5 up to 2021 and 4 up to 2031.
- Increase in urban population in the future will result in small family size

Housing to be provided in 2011 is:

Table No. 13.3: Housing requirement in 2011

Year	Rural (dilapidated units of 2001 + new housing requirement in 2011)	Urban (dilapidated units of 2001 + new housing requirement in 2011)	Total
2011	(6344 + 74800) **81144**	(4810 + 234000) **238810**	**319954**

Due to economic meltdown, out migration to foreign countries is expected to decreases in the future.

Jalandhar city is likely to acquire the metropolitan status in the year 2011 and more economic activity is likely to be generated inviting more people to LPA. Hence number of house holds is expected to increase at a higher pace to the number of houses and the ratio between households and houses is expected to increase from 1:0.67 in 2001 to 1:1.5 by 2031.

Land is limited and a scare resource, the higher cost of land shall force more households are expected to live in one house.

Joint families are disintegrating and demand for nucleus housing is on the rise.

Table No. 13.4: Housing requirement for different income groups up to 2031(decade wise)

Year	Area	EWS		LIG		MIG		HIG		Total
		%	No.	%	No.	%	No.	%	No.	
2011	Rural	20	14960	30	22440	25	18700	25	18700	**308800**
	Urban	26	60840	30	70200	22	51480	22	51480	
	Total		**75800**		**92640**		**70180**		**70180**	
2021	Rural	18	15080	25	20945	30	25133	27	22620	**404667**
	Urban	20	64178	25	80222	28	89849	27	86640	
	Total		**79258**		**101167**		**114982**		**109260**	
2031	Rural	15	16031	20	21375	35	37406	30	32063	**950250**
	Urban	15	126506	20	168675	32	269880	33	278314	
	Total		**142537**		**190050**		**307286**		**310377**	

The requirement of housing for different income groups for rural and urban areas has been worked out by keeping the same percentages of all income groups as in year 2001 and it excludes dilapidated units of 2001 which need re-erection / renovation.

The calculation has been presumed on the basis that Indian economy is expected to grow at the rate of 9-11% and per capita income is likely to grow by 7%.

Table No. 13.5: Type of development – Net Residential Area

Year	EWS				LIG				MIG				HIG			
	Plotted		Flatted		Plotted		Flatted		Plotted		Flatted		Plotted		Flatted	
	%	Area	%	Area (in acres)	%	Area (in acres)	%	Area (in acres)	%	Area (in acres)	%	Area (in acres)	%	Area (in acres)	%	Area (in acres)
2011R	100	147.86	0	0	100	693.11	0	0	100	1155.18	0	0	100	2310.35	0	0
2011U	0	0	100	304.20	50	1084.14	50	292.50	75	2385.10	25	160.88	80	5088.21	20	171.60
2011T		**147.86**		**304.20**		**1777.25**		**292.50**		**3540.28**		**160.88**		**7398.56**		**171.60**
2021R	100	149.05	0	0	100	646.93	0	0	100	1552.57	0	0	100	2794.66	0	0
2021U	0	0	100	320.89	30	743.36	70	467.96	40	2220.16	60	673.86	60	6422.54	40	577.60
2021T		**149.05**		**320.89**		**1390.29**		**467.96**		**3772.73**		**673.86**		**9217.20**		**577.60**
2031R	100	158.44	0	0	100	660.21	0	0	100	2310.72	0	0	100	3961.33	0	0
2031U	0	0	100	632.53	20	1041.98	80	1124.50	30	5001.48	70	2361.45	50	17192.61	50	2319.28
2031T		**158.44**		**632.53**		**1702.19**		**1124.50**		**7312.40**		**2361.45**		**21153.94**		**2319.28**

The accommodation for different income groups (except rural EWS) shall be plotted as well as flatted.

Plotted development for EWS has been proposed in rural areas keeping in view the socio-economic habits of this group whereas in urban areas flatted development is envisaged for this group due to scarcity and higher cost of urban land.

The plotted development has been provided at the reducing rate in urban areas keeping in view the scarcity of land and thus promoting the vertical development.

The variation in the percentage share of Middle Income Group in rural areas is high as this group known as semi medium and medium land holders has major share (52%) in the composition of farmers categorized on the size of land holdings.

The assumed flat area and plot area for different categories of people is as follows:

EWS: Plot area – 40 sq m ; Flat area – 30-40 sq m; Flat density – 200 Dwelling units per acre

LIG: Plot area – 125 sq m; Flat area – 40-50 sq m; Flat density – 120 Dwelling units per acre

MIG: Plot area – 250 sq m; Flat area – 85-95 sq m; Flat density – 80 Dwelling units per acre

HIG: Plot area – 500 sq m; Flat area – 150-170 sq m; Flat density – 60 Dwelling units per acre

Table No. 13.6: Gross Residential Area Requirement

Year	Net residential area (in acres)	Gross residential area	
		Area in acres	Area in hectares
2011	13793.13	34482.83	13793.13
2021	16569.58	41423.95	16569.58
2031	**36764.73**	**91911.83**	**36764.73**

The gross residential area has been calculated by adding 60% more area to net residential area for provision of physical and social infrastructure like roads, parks, health, educational and utilities etc.

In addition, it is worth mentioning that housing has a strong spatial relationship with socio-economic factors. With the increasing income level, the lifestyle and living habits are changing. For example; joint families are disintegrating and demand for nucleus housing is on rise and if one person owns a house in old part of the city, with economic affordability he desire to build another one in outer areas with good environment. Thus, housing demands cannot merely be assessed with projected population but such factors (as aforesaid) are also needed to be taken into account while assessing demand for housing.

Keeping in view the socio-economic composition of the population, it is estimated that lion's share of the housing requirement would be for the urban poor and the economically weaker sections. Based on past experience, it is necessary to distinguish between the urban poor comprising the inhabitants of squatter settlements and pavement dwellers, etc. The role of the government would be less as a provider but more as a facilitator. The housing for the urban poor is to be broadly created in old and new urban areas through up-gradation of old / traditional areas, employers and industrial housing, group housing and also as infills regularized colonies.

13.3.2 Housing Strategy

The housing strategy should include:

Up-gradation and re-densification through redevelopment of existing housing areas.

The future requirement of shelter provision should be dominated by small dwelling units.

In view of the limited availability of land, land prices and increased requirement of housing plotted residential development should be discouraged and flatted development encouraged.

Involving the private sector / cooperative sector to a significant extent, public agencies and cooperative societies etc.

These norms and controls should be reviewed periodically by Local body / JDA and suitably modified / updated to meet the requirements of the citizens from time to time.

To make the construction activity more cost-effective, energy efficient and environment friendly, the choice of alternative building materials and techniques have to be reoriented and promoted for construction activity.

Cost effective materials and techniques are to be explored for new housing areas.

New housing areas

To meet the future housing need of the population, the following areas should be developed as residential zones with adequate physical and social infrastructure.

Inner City Areas (Traditional Zone):

- The congested areas of the inner city have a predominant residential component. These localities namely New Railway Road, Mandi Fanton Gunj, Milap Road, Phagwara Gate, Rasta Mohalla, Bhagat Singh Chowk, Khingran Gate, Adda Hoshiarpur, Old Railway Road, Mai Hiran Gate, Balmiki Gate, Charanjit pura, Chandan Nagar, Patel Chowk, Bhairon Bazaar, Quilla Mohalla, Lal Bazaar, Sheikhan Bazaar, Paprian Bazaar, Attari Bazaar, Peer Bodla Bazaar, Saidan Gate, Rainak Bazaar, Naya Bazaar, Pucca Bagh, Khothian Mohalla, Chowk Sudan, Phulan wala Chowk, Imam Nassir, Brandrath Road, Malka Chowk, Jaura Gate, Basti Adda, Old Sabzi Mandi, Naurian Bazaar, Ali Mohalla, Harnamdasspura, Gopal Nagar, Gazi Gullah etc have a role to play as provider of housing stock. All these areas should be redeveloped ensuring modern services and amenities for a healthy residential environment and in the process, eliminating risk prone structures and activities. The owners can jointly redevelop the areas based on the prescribed guidelines.
- These areas are fast changing their residential character to non-residential use, but still have a considerable proportion of residential component. The basic objective of redevelopment in traditional areas is to bring about in situ improvements which help in improving architectural character of the area, i.e., design and layout, as well as revitalizing trade and commerce in the area.
- The redevelopment plans should ensure that the permissibility of mixed use zoning at property or within the premise level is compatible to the predominant residential areas.

Unauthorized/regulated unauthorized colonies:

Large number of unauthorized colonies in Jalandhar is posing serious problems in the city as major proportion of the population is living in these colonies. More such colonies are to be identified by M.C. Jalandhar and JDA. The Govt. should formulate a comprehensive policy to regularize the unauthorized colonies existing till date. Further appropriate framework should be created so that no unauthorized colony is allowed to come up in future. It needs to be ensured that for improvement of physical and social infrastructure, the minimum necessary / feasible level of services and community facilities are provided.

New urban extensions:

Besides re-densification of core area and regularization of unauthorized colonies with the provision of adequate civic infrastructure the following new areas are proposed to be developed as residential zones. **Besides this, the area along both sides of the proposed ring road from G.T. Road (Phagwara side) near Chitti Bein up to Nakodar road (near village Lohar) up to the depth of 750mtr may be developed on the pattern on Aero city, Mohali as decided by Punjab Regional and Town Planning & Development Board in its meeting held on 29-7-2010.** The new areas are proposed to be developed on the Neighborhood basis. Every neighborhood shall be a self-contained unit with the provision of educational, health, kentertainment, shopping facilities etc for day-to-day needs. The higher level of additional facilities is to be provided at district and zonal / sub city levels.

13.3.3 Housing for Urban Poor

The category of urban poor for purpose of the Plan would mainly comprise the houseless population, inhabitants of squatter settlements and informal service providers. Such services could include domestic help, hawkers and vendors, low paid workers in the industrial, commercial and trade/business sectors, etc.

New housing for such category should be largely in the form of built up units, which should be developed through public and private agencies and cooperative societies. As this category constitutes bulk of the housing stock that has to be created at an affordable price to the lowest income bracket as housing for Economically Weaker Sections (EWS), this is often achieved by the system of cross-subsidization.

For this purpose, adequate land should be earmarked for EWS housing. The private as well as Govt. agencies at the time of developing group housing should ensure that minimum 10% of the built up dwelling units and 10% of the total plotted area of the scheme under residential use ,as the case may be, is earmarked for housing of Community-Service Personnel/EWS or lower income group. In old built up areas, this may be achieved through redevelopment schemes or industrial workers housing etc. In urban areas, the acquisition and development cost of the land for EWS housing should be borne by rest of the project.

The pattern of EWS housing should be such as to ensure optimal utilization of land in a sustainable manner. For that purpose, multi- storied housing will be the preferred option. Apart from mandatory provision for EWS housing in all group housing projects/schemes, the primary responsibility for creating adequate stock of housing for urban poor shall have to be discharged by public agencies. The vacant government / local body / Panchayat lands may also be used for this purpose.

13.3.4 Night Shelter

The provision of night shelters is envisioned to cater to the shelter-less population which are proposed to be provided near the city nodes such as Railway Terminals, Bus Terminals, Wholesale /Retail market, Freight Complexes etc. as per requirements and should be identified keeping in view major work centers. Special provisions should be made for the homeless, destitude women and children including the disabled, orphans and old. In addition, multi-purpose use of the existing facility buildings may be allowed for night shelter purpose. Provision should also be made for converting existing buildings, wherever available, with suitable modifications into night shelters.

In order to make the provision of this facility financially sustainable for the local body, innovative concepts such as integrated complex with commercial space on the ground floor and night shelter on the first floor should be explored. Two night shelters would be provided in the city at distinct locations. One night shelter to be provided in the vicinity of the Railway Station while the other to be provided in the close proximity of the Industrial Area for the convenience of the shelter- less people and industrial workers respectively.

13.3.5 Development Controls for Residential Use Zone

The residential use zone has been further divided into three sub zones:

i) RD1- High Density Zone (above 201 persons / acre)

ii) RD2 – Medium Density Zone (151 – 200 persons / acre)

iii) RD 3 -Low Density Zone (up to 150 persons / acre)

To encourage flatted residential development and to preserve the valuable agricultural land, residential density @ 60 dwelling units per acre shall be permissible for stand alone group housing projects, irrespective of the density of zone.

The subdivision of residential use zone into use premises and subsequent approval of layout plans shall be governed by following norms:

The residential area can have both the plotted and group housing. In case of group and plotted development, minimum plot size, ground coverage, FAR, Height, Parking standards and other norms shall be as per building bye laws of the concerned local body / JDA and Govt. instructions issued from time to time if any. The provision of requisite social infrastructure shall be governed by the norms prescribed by concerned municipal body / JDA and as per instructions issued by the State Govt. from time to time. However, the following will be taken into consideration:

Rainwater harvesting shall be an integral part of the storm water drainage plan at the time of sanction of layout plan for all the plots.

The natural drainage pattern is not to be disturbed.

Dual pipe system of recycled water is recommended in new areas and redevelopment schemes.

Electric sub stations shall be provided as per requirement.

Pole mounted electric transformers for augmenting electric supply in already developed areas are recommended.

Non- conventional sources i.e. solar energy etc is recommended for public areas in all the establishments.

Provisions for decentralized sewerage treatment plant and segregated waste disposal arrangement should ensure that no untreated effluent is allowed to exit/ spill out of the scheme area.

Suitable landscape plans for the neighborhood shall be prepared, for the landscape development of the parks and roadside plantation etc

Suggestive norms/lower norms could be adopted in specially identified built up areas etc.

13.3.6 Building Controls

Residential plot- plotted housing and Group Housing

Maximum ground coverage, FAR, set backs, height and number of dwelling units for different size of residential plots shall be as follows:

Within M.C. Limits: For sites falling within municipal limits area requirement, planning norms, ground coverage, set backs, height and FAR etc. shall be applicable as per norms and building bye-laws of the local/municipal body concerned.

Outside MC limits: For sites falling outside municipal limits area requirement, planning norms, ground coverage, set backs, height and FAR etc shall be applicable as per norms and building bye-laws of JDA and instructions / guidelines issued by the State Govt. from time to time.

Note: The development controls for residential clusters / group housing have been detailed in Section 14 titled “Special and Detailed Controls”.

Land use zoning regulations:

Uses permissible in residential zone are given in the Part 14.2.5 titled “Use provisions in land use zones”.

13.4 MIXED LAND USE ZONES

The co-existence of residential with commercial and residential with industrial activities is a common character of our cities. This character is more prevalent in inner zone of the city. This character of land use generally called “Mixed Land use” has developed over a period of time

necessitated by the socio-economic habits of the people. This juxtaposed character of land uses have compact built form, narrow street circulation and low rise-high density development accommodating a mixture of land uses in a single building. The economic role played by these areas cannot be ignored. Hence an attempt is made in the present Master Plan to make these areas continue to play an active economic role and the strategy is to provide suitable framework for allowing mixed use activities appropriate to the character of the areas with greater flexibility in terms of permitting a variety of uses like commercial (retail shops), household and green category industry or outlets for specialized services etc along with residential use.

The following mixed land use pockets are proposed for Master Plan Jalandhar:

13.4.1 Mixed Land use Pockets

The localities (Pockets) with Mixed Land use character have been further divided into two distinct categories i.e. commercial mix and industrial mix. Areas where houses and commercial activity along with some other uses (except red category industry) exist side by side is called commercial mix and the areas where houses (except red category industry) co-exist with industrial and commercial activity has been defined as industrial mix.

Commercial mix areas: The area bounded by roads namely Old GT Road from Patel Chowk to PNB Chowk, Circular Road from PNB Chowk to Bhagat Singh Chowk, Bhagat Singh Chowk to Adda Hoshiarpur, Adda Hoshiarpur to Patel Chowk and Patel Chowk to PNB Chowk has been earmarked as commercial mix zone keeping in view the mixed character of the area where commercial activity co-exist with residential houses right from the origin of the town. This area mainly comprises Mohallas namely: New Railway Road, Milap Road, Phagwara Gate, Rasta Mohalla, Bhagat Singh Chowk, Khingran Gate, Adda Hoshiarpur, Mai Hiran Gate, Balmiki Gate, Charanjit pura, Patel Chowk, Bhairon Bazaar, Quilla Mohalla, Lal Bazaar, Sheikhan Bazaar, Paprian Bazaar, Attari Bazaar, Peer Bodla Bazaar, Saidan Gate, Rainak Bazaar, Naya Bazaar, Pucca Bagh, Khothian Mohalla, Chowk Sudan, Phulan wala Chowk, Imam Nassir, Brandrath Road, Malka Chowk, Jaura Gate, Basti Adda, Old Sabzi Mandi, Naurian Bazaar, Ali Mohalla etc.

Industrial mix areas: Taking into account the existing industrial mix character of the area / localities, following areas are proposed as industrial mix areas:

1. The area in between Mehtan Bypass and GT Road falling in revenue estate of villages namely Khangura, Mehtan, Chak Hakim etc.

2. The area between Phagwara – Ludhiana Road and Railway Line falling in revenue estate of villages namely Dhak Chachoki & Chachoki, Nangal etc.
3. The area between Phagwara – Ludhiana Road and Railway Line falling in revenue estate of villages namely Saprore etc.

Commercial Mix along Road Fronts: A strip of 300 metres width has been earmarked as commercial mix along road fronts of Jalandhar – Nakodar Road and Jalandhar – Pathankot Road on both sides as shown on Proposed Land use Plan of Local Planning Area Jalandhar.

13.4.2 Governing Principles for Mixed Land Use

The principles governing the mixed land use in residential area shall be:-

Mixed use means the provision for non-residential activity in residential premises.

The proposal aims to balance the socio-economic need for such activity and minimize the environmental impact of the said activity on residential areas.

Mixed use allows access to commercial activity and industrial activity (as permitted by Punjab Pollution Control Board in non industrial zone (except approved residential areas) in the proximity of the residences and reduces the need for commuting across zones in the city i.e. walk to work principle. However, at the same time, it needs to be regulated in order to manage and to mitigate the associated adverse impact related to congestion, increased traffic and increased pressure on civic amenities.

Mixed use shall not be permitted in approved Town Planning Schemes, residential development schemes developed by Improvement Trust Jalandhar, residential Urban Estates set up by Punjab Urban Planning and Development Authority (now JDA), Government housing, Institutional / staff houses of public and private agencies and buildings and residential colonies developed by private developers after due approval of competent authority. However, the streets / roads declared as commercial by Department of Local body before the final approval of this Master Plan may continue to be treated as commercial streets irrespective of the fact that whether they form a part of Town Planning / Develpoment Scheme etc.

The mixed use shall not be permissible in the streets / roads having width less than 10 meters. However the existing mixed use in the streets having width less than 10 meters may continue (excluding obnoxious, hazardous, inflammable, non compatible and polluting substance or process) without any further extension / expansion. These streets should be declared as pedestrian mixed use streets and should not be open to motorized

transport. However, this need to be debated and the inhabitants of the area are provided with workable alternatives of mobility. The Municipal Corporation may evolve a package after consensus on the issue.

Note:

However, the commercial activity existing in commercial mix use streets / localities at the time of final approval of this Master Plan may continue to exist without any further extension / expansion. But in case of approval of new commercial activity / any addition to the existing commercial activity, the condition of minimum width of 10 metres shall apply.

13.4.3 Mixed Use in Residential Areas- Need for differentiated approach:

The need for differentiated approach to mixed use policy arises due to the fact that Jalandhar being a centre of economic and industrial activity has a large diversity in the typology of residential areas. Apart from the planned residential colonies built by Jalandhar Improvement Trust, PUDA (now JDA) and many private developers, there are unauthorized unplanned residential areas within and outside the urban limits of the city. There are also regularized unauthorized colonies, unauthorized colonies as well as slums and juggi jhompris, cluster in various parts of Jalandhar.

Moreover, the extent of non residential activity, as being necessary or desirable by the residents themselves, varies from area to area based on the socio economic status of the residents as well as the past pattern of development in the area. While certain colonies may need non residential activity as an integral part of their livelihood, some others may wish to preserve the residential character of their colonies and neighborhood.

13.4.4 Identification of mixed use in existing urban and urbanizable areas in future:

The identification of mixed use areas / streets in both the urbanized as well as urbanizable areas of Jalandhar in future would be as follows:

In already urbanized areas / urban areas, mixed use (except industrial use) shall be permissible in the following areas:

i) On all streets / roads already declared commercial by the department of Local Government Punjab subject to the decision of case / cases pending in Honorable Court if any.

ii) Streets / areas where commercial use was allowed in the previous Master Plan of Jalandhar shall continue to the extent as permissible in the previous Master Plan, Jalandhar.

Future identification and notification of mixed use streets / areas falling in (i) and ii) above shall be based on the criteria and procedure prescribed below and given vide publicity by the concerned local body / authority / any other Competent Authority.

13.4.5 Mixed use Areas / streets in Urbanizable areas in future

The mixed land use in future shall be permissible in the following areas:

Roads and localities earmarked in the Master Plan as mixed use streets and areas where abutting road shall have ROW 18 meters or above.

The layout plan in newly developed urban extension shall earmark such stretches / plots and notify them under the mixed use category at the time of grant of permission for layout plan, provided provision of adequate parking as per norms specified is provided . However in such cases 50% of such area shall be counted towards the commercial area subject to the overall limit of commercial component permitted.

The notification / declaration of mixed use areas / streets by the government would necessitate compliance to the following terms and conditions:

The layout plan / scheme for such areas / streets shall be subject to the prior approval of the local body / JDA.

The layout plan / scheme for such areas / streets should indicate adequate provision for circulation, parking, open spaces and other planning norms.

Common parking areas shall be provided as per norms considering the additional load of traffic and parking consequent upon declaration of area/street as mixed use.

The plot owners / allottee on these areas / streets will have to pay land use conversion and other fees/ charges at the rates fixed by the government for that particular category of land use at the time of approval of their building plans from the local body / JDA or any other concerned agency.

Any other condition that may be prescribed by the government from time to time.

Permission for mixed use can be cancelled or revoked by the concerned local body / Government in case of violation of any of the conditions under which such mixed use was permitted or considering the larger interest of the locality / community / city.

13.4.6 General Terms and Conditions Governing Mixed Use in Individual Plots

Mixed land use shall be permitted subject to the following terms and conditions:

No encroachment shall be permitted on the streets or public land.

Development controls/norms as applicable for the particular residential use will continue to be applicable, even if the plot / dwelling unit is put to mixed use.

Where service road is available or provided by the concerned authority then mixed use premises should have approach from such service road and not directly from the main road.

The parking as per prescribed norms by the State Govt / concerned development authority from time to time shall be provided within the premises. The existing norms are as under:

Commercial -	2 ECS / 100 square meters covered area
Industrial -	1 ECS / 100 square meters or fraction thereof
Institutional -	2 ECS / 100 square meters

However, in case the project is approved by Municipal Corporation / Local Body than the parking norms as prescribed by the local body shall be applicable provided that the land use proposals of the Master Plan are adhered to.

If no parking space is available, land / plot on the said street, parking should be made available by the applicant or trader association either by acquiring additional area for construction or by creating multilevel parking. Development of such parking facilities shall be done by either the applicant solely or traders association of that area or by the local body subject to the payment of the cost by the beneficiaries.

No industry other than those permitted by Punjab Pollution Control Board shall be allowed in the industrial mix areas.

The existing obnoxious, hazardous, inflammable, non-compatible and polluting industries shall have to move out to the designated industrial zone within a period of ten years from the publication of notification of the Master Plan.

However, in case of voluntary shifting of this industry before the specified period, to designated industrial zones, the owner shall be eligible to put his/her plot, so vacated, to any other compatible use (including commercial use) subject to the provision of building bye laws and Master Plan conditions applicable for that particular land use in that particular area by paying conversion charged as fixed by the Local Body / government from time to time besides providing incentive as may be decided by the government.

The conversion of land use shall be subject to the payment of defined charges.

13.4.7 Mixed use premises and payment of charges

In case of residential premises already under mixed use or intended to be put to mixed use in industrial mix and commercial mix areas earmarked in the Master Plan Jalandhar, the owner / allottee of the dwelling unit/plot shall be liable to pay such fee and charges on the rate to be fixed by the State Government.

No modification to the building for using residential premises for non residential activities under mixed use zone shall be permitted unless owners/ allottee has obtained sanction of revised building plans and has paid necessary fee and charges.

13.5 TRANSPORTATION

The rapid economic growth is likely to swell the size of the towns and cities. It is projected that the urban population of Local Planning Area Jalandhar is likely to grow from the present about 9 lacs to over 25 by 2031 i.e., 137%. Therefore, the urban settlements in LPA Jalandhar must not only meet the mobility needs of current population but must also provide for the needs of their hinterlands (surrounding areas).

In order to support the required level of economic and physical development the urban areas particularly large cities like Jalandhar have to provide for the easy and efficient flow of goods and people to overcome the following problems:

Limited road space and explosive growth in the number of vehicles, resulting in traffic jams and loss of man hours.

The cost of travel for common man / poor has increased considerably due to increase in travel distance. It has discouraged the use of Non Motorized Vehicles.

Travel in the city has become more risky as the accident rates have almost doubled. Most of those injured are cyclists, pedestrians and pavement dwellers.

Increase in the use of personalized vehicles has led to increased air pollution.

13.5.1 Key concerns:

The traffic congestion in Jalandhar has continued to increase unabated especially during last more than two decades. The main reasons for this are:

Phenomenal growth of vehicles in Jalandhar.

Problem of mobility and parking within central city areas.

Mixed land use streets

Unauthorized colonies

Limited addition in the roads space by way of new roads, widening of existing roads and other improvements, for example, grade separators, elevated roads etc.

The traffic and transportation plan proposed in Master Plan Jalandhar aims to:

To ensure safe and economic commuting between place of origin and destinations.

Convenient and quick access to all areas by all the sections of society.

Reduction of pollution and congestion.

Energy efficiency and conservation.

Safety for all transport users.

Significant increase in efficient rapid public transport systems.

Pedestrianization and properly planned use of non-motorized transport system in specific areas.

13.5.2 <u>Strategy:</u> The following strategy has been proposed to achieve the above said aims/objectives:

A) Provision of Flyovers / ROB's:

Flyover / ROB No.	**Location**
	EXISTING
1	Reru Chowk
2	Lamba Pind Chowk
3	Near Ladhewali Chowk
4	On Amritsar – New Delhi Railway Line near PAP Chowk
5	Rama Mandi Chowk on Hoshiarpur Road
6	Chitti Bein, Khajurla
7	Chaheru Bridge (on Amritsar – New Delhi Railway Line)
8	Mehtan Bypass
9	Phagwara – Nakodar Road
10	Phagwara – Nawanshahr Railway Line
	UNDER CONSTRUCTION
1	Maqsudan Chowk
2	DAV College
3	Damoria Pull
4	Suchi Pind (on Jalandhar – Pathankot Railway line)
5	Near Bus Stand (On Jalandhar – Nakodar Railway line)

Priority of proposed ROB / Flyovers:

Though there is an urgent need of Rail Over Bridges / Flyovers to facilitate the movement of passengers and goods transportation yet their priority of construction is also required to be fixed because of limited resources and their requisite judicious use. Accordingly, keeping in view the volume of rail / road traffic, frequency and intensity, smooth flow of inter city traffic, traffic congestion in central areas of the city, priority has been evolved. Based on aforesaid factors basically three preferences have been envisaged i.e., large **volume of through traffic, inner city congestion and traffic bottlenecks and future problem potential areas in outer growth of the city.** Thus preference has been given in proposal of Rail Over Bridges on GT Road to ensure smooth flows of inner city traffic and to avoid mixing of inter and intra city traffic in the city area. Therefore, Flyover at Rama Mandi Chowk, PAP Chowk and Chougitti Chowk has been proposed in order of preference from priority number 1 to 3.

Secondly the problems of congestion and bottlenecks for intra city traffic have been considered and next priority has been given to area between inner city and outer growth. The following Rail Over Bridges / Flyover Bridges have also been proposed under this preference. These include:

1. Flyover Bridge at BMC Chowk
2. Flyover Bridge at Guru Nanak Mission Chowk and Ambedkar Chowk
3. Flyover Bridge at Football Chowk, Kapurthala Chowk and HMV Chowk
4. Flyover Bridge at Ravidass Chowk
5. Flyover Bridge at Doaba Chowk
6. Rail Over Bridge / underpass at Garha Road near Defence Colony on Jalandhar – Nakodar Railway Crossing
7. Rail Over Bridge on Bidhipur Crossing
8. Flyover Bridge at BSF Chowk
9. Rail Over Bridge on Jalandhar – Kapurthala Road near Wadala village on Jalandhar – Kapurthala Railway Crossing
10. Flyover Bridge at Kartarpur – Kapurthala Road junction on NH-1 at Kartarpur
11. Flyover Bridge at cross junction of Phagwara – Nawanshahr Road near village Mehli at Phagwara

Third priority includes the Rail Over Bridges / Flyover Bridges proposed to be provided on the Master Plan roads and the proposed Ring Road where it crosses the major radial roads of Jalandhar city. The list of Rail Over Bridges / Flyover Bridges in order of priority is listed as follows:

1. Flyover Bridge at proposed Ring Road on Jalandhar – Ludhiana Road
2. Rail Over Bridge on proposed Ring Road on Jalandhar – Hoshiarpur Railway Line
3. Flyover bridge at proposed Ring Road on Jalandhar – Hoshiarpur Road
4. Rail Over Bridge on proposed Ring Road on Jalandhar – Pathankot Railway line
5. Flyover Bridge at proposed Ring Road on Jalandhar – Pathankot Road
6. Flyover Bridge at proposed Ring Road on Jalandhar – Amritsar Road
7. Rail Over Bridge on proposed Ring Road on Jalandhar – Amritsar Railway Line
8. Rail Over Bridge on proposed Ring Road on Jalandhar – Kapurthala Railway line
9. Flyover Bridge at proposed Ring Road on Jalandhar – Kapurthala Road
10. Flyover Bridge at proposed Ring Road on Jalandhar – Nakodar Road
11. Rail Over Bridge on proposed Ring Road on Jalandhar – Nakodar Railway line
12. Common rail over bridge on NH – 1 and Amritsar – New Delhi Railway Line near Bath Castle Marriage Palace (Ludhiana side)
13. Flyover Bridge on cross junction of Phagwara – Hoshiarpur Road and Phagwara Bypass road

Thus all the proposed flyover bridges / Rail Over Bridges are tabulated in the following table:

Table No. 13.7: Proposed Flyover Bridges / Rail Over Bridges

Sr. No.	Priority	Flyover / ROB
1	Priority I	Flyover at Rama Mandi Chowk
2		Flyover at PAP Chowk
3		Flyover at Chougitti Chowk
4	Priority II	Flyover at BMC Chowk
5		Flyover at Guru Nanak Mission Chowk and Ambedkar Chowk
6		Flyover at Football Chowk, Kapurthala Chowk and HMV Chowk
7		Flyover at Ravidass Chowk
8		Flyover at Doaba Chowk
9		ROB / underpass at Garha Road near Defence Colony on Jalandhar – Nakodar Railway Crossing
10		ROB on Bidhipur Crossing
11		Flyover at BSF Chowk
12		ROB on Jalandhar – Kapurthala Road near Wadala village on Jalandhar – Kapurthala Railway Crossing
13		Flyover at Kartarpur – Kapurthala Road junction on NH-1 at Kartarpur
14		Flyover at cross junction of Phagwara – Nawanshahr Road near village Mehli at Phagwara
15	Priority III	Flyover at proposed Ring Road on Jalandhar – Ludhiana Road
16		ROB on proposed Ring Road on Jalandhar – Hoshiarpur Railway Line
17		Flyover at proposed Ring Road on Jalandhar – Hoshiarpur Road
18		ROB on proposed Ring Road on Jalandhar – Pathankot Railway line
19		Flyover at proposed Ring Road on Jalandhar – Pathankot Road
20		Flyover at proposed Ring Road on Jalandhar – Amritsar Road
21		ROB on proposed Ring Road on Jalandhar – Amritsar Railway Line
22		ROB on proposed Ring Road on Jalandhar – Kapurthala Railway line
23		Flyover at proposed Ring Road on Jalandhar – Kapurthala Road
24		Flyover at proposed Ring Road on Jalandhar – Nakodar Road
25		ROB on proposed Ring Road on Jalandhar – Nakodar Railway line
26		Common ROB on NH – 1 and Amritsar – New Delhi Railway line near Bath Castle Marriage Palace (Ludhiana side)
27		Flyover Bridge on cross junction of Phagwara – Hoshiarpur Road and Phagwara Bypass Road

B) Provision of underpasses:

Underpass No.	Location
	EXISTING
1	Ekehari Pulley
2	PAP Bypass
	PROPOSALS
1	Ram Nagar, Sodal Road crossing on Amritsar Railway line crossing, Jalandhar
2	Adda Tanda crossing on Amritsar Railway line crossing, Jalandhar
3	Adda Hoshiarpur crossing on Amritsar Railway line crossing, Jalandhar
4	Underpass on Amritsar – New Delhi Railway line at level crossing at Village Dhanowali link road (near Delhi Public School)
5	Underpass on Amritsar – New Delhi Railway line at level crossing of Paragpur – Salempur Masandan link road
6	Underpass on Amritsar – New Delhi Railway line near level crossing of village Chaheru link road
7	Under pass on NH – 1 and Amritsar – New Delhi Railway line opposite Lovely Professional University
8	Underpass on Amritsar – New Delhi Railway line at level crossing of village

	Hardaspur link road (Ludhiana side)
9	Santokhpura Crossing on Ambala railway line, Phagwara
10	Khera Road crossing on Ambala railway crossing, Phagwara
11	Mouli Road crossing on Ambala railway line, Phagwara
12	Khotran Road crossing on Nawanshahr Railway line, Phagwara

Priority of proposed under passes

In addition to the proposed Flyover Bridges / Rail Over Bridges about twelve under passes have also been proposed keeping in mind available road width and volume of intra city traffic. The provision of these would be economical considering the limited resources and their requisite judicious use. The underpasses are preferred to over bridges because they are cheaper to construct, have better ambience and merge well with the surroundings and face less resistance of nearby stakeholders and thus faster to get executed.

Priority to build these under passes has also been evolved as below:

1. Ram Nagar, Sodal Road on Amritsar Railway line crossing, Jalandhar
2. Adda Tanda crossing on Amritsar Railway line crossing, Jalandhar
3. Adda Hoshiarpur crossing on Amritsar Railway line crossing, Jalandhar
4. Underpass on Amritsar – New Delhi Railway line at level crossing of Dhanowali link road near Delhi Public School.
5. Underpass on Amritsar – New Delhi Railway line at level crossing of Paragpur – Salempur Masandan link road
6. Underpass on Amritsar – New Delhi Railway line near level crossing of village Chaheru link road.
7. Underpass on NH – 1 and Amritsar – New Delhi Railway line opposite Lovely Professional University
8. Underpass on Amritsar – New Delhi railway line at level crossing of village Hardaspur link road (Ludhiana side)
9. Santokhpura crossing on Ambala railway line crossing, Phagwara
10. Khera Road crossing on Ambala railway line crossing, Phagwara
11. Mouli Road crossing on Ambala railway line crossing, Phagwara
12. Khotran Road crossing on Nawanshahr Railway line, Phagwara

C) Provision of subways and footpaths:

For safety and to ensure unobstructed pedestrian movement, especially near educational institutions and work centers on busy traffic roads, the following sub ways and footpaths are proposed in addition to the roads proposed by Municipal Corporation for improvement:

Sub way No.	**Location**
	PROPOSALS
1	On Bypass road near Focal Point
2	On Bypass road near Transport Nagar

3	On Pathankot road near KMV College
4	On old GT road near HMV College

Note:

Footpaths to be provided on all proposed Master Plan roads having 60' and above ROW.

Municipal Corporation and JDA shall identify conflicting junctions for the provision of traffic signals and road markings.

Elevated Road proposed

In order to ensure smooth and unobstructed flow of especially through traffic and to avoid the inter mixing of local and through traffic on GT Road (NH1) at Phagwara, an elevated road from Dosanjh village Road junction up to Civil Hospital Road junction has been proposed to be constructed.

Ring Road proposed

In order to ensure unobstructed flow of regional traffic and to avoid the inter mingling of local and regional traffic, a ring road around Jalandhar city approximately 75 kilometers in length with Right of Way of 200' and above has been proposed keeping in view the following considerations:

- Physical features like roads and canals etc wherever possible have been followed for easy demarcation of road alignment.
- An attempt has been made to avoid clusters of existing development from falling in the proposed road alignment.
- The location of major landmarks / work areas like Punjab Technical University, Pushpa Gujral Science City, Lovely Professional University, the towns of Phagwara, Alawalpur and Kartarpur and major industrial and residential zones of the Master Plan have also been kept in mind.
- The alignment of the proposed Ring Road has been kept sufficiently apart from the major urban settlement of Jalandhar so as to avoid the intermingling of local traffic with the regional traffic.
- To ensure free flow of traffic on this road a number of ROB's / Flyovers have been proposed (Refer Table No. 13.7) on major road and railway crossings.

Future requirement of terminals:

Transit Bus stands: The following four transit bus stands are proposed to be provided to discourage the regional bus traffic from entering the city in future. The existing Bus Stand of Jalandhar city is proposed to be converted in to local bus stand in a phased manner by 2031.

- To be provided on GT Road (NH-1) Ludhiana side some where near cross junction of proposed Ring Road and GT Road.

- To be provided on GT Road (NH-1) Amritsar side some where near cross junction of proposed Ring Road and GT Road.
- To be provided on Pathankot Road (NH-1A) some where near the cross junction of proposed Ring Road and existing Pathankot Road.
- To be provided on Nakodar Road (NH-71) some where near cross junction of proposed Ring Road and Nakodar Road.

Airport: Jalandhar, being the NRI hub of the state there is a huge proportion of population which traverses over seas. Thus keeping in view this high rate of movement of NRI's the existing Adampur Air Force Station may also be used for providing civil flights.

13.5.3 <u>Mass Public Transport System</u>: Presently about 95% of population commute by their private vehicles due to which the city roads mostly remain choked during the day and result in high emission level thus having adverse impact on the environment. To check this high concentration of private vehicles on roads and to improve quality of environment, there is dire need to have efficient public transport system in Local Planning Area. As a trial, Municipal Corporation Jalandhar has introduced City Bus Service on four routs which have been tabulated as follows:

Table No. 13.8: City Bus Routes and Length

Sr. No.	Bus Stops	Total Length (in km)	No. of Buses
1	Maqsudan – Mahavir Marg – Bus Stand – Rama Mandi	11	4
2	Rama Mandi – Bus Stand – Mahavir Marg – Basti Bawa Khel – Jalandhar Kunj	12.4	4
3	Bus Stand – Manbro Chowk – Wadala Chowk (Nakodar Road)	5.5	4
4	Railway Station – GPO- Bus Stand – Rama Mandi	7.3	4

(Source: Municipal Corporation, Jalandhar)

But the city bus service covers just about 5% of population which is negligible. Thus City Bus Service needs to be augmented in near future in consultation with transport planner so as to identify more routes for plying Bus Service in order to make it effective and result oriented.

Master Plan envisages the following transportation system for Local Planning Area Jalandhar for the convenience of the people:

A. Introduction of BRTS: The Bus Rapid Transit System (BRTS) shall include the following features:

a) The main feature of a BRT System is having dedicated bus lanes which operate separate from all other traffic modes. This allows buses to operate at a very high level of reliability. MC / JDA in coordination with each other should engage the experts to prepare comprehensive traffic operation plan for LPA Jalandhar for the introduction of BRTS. For

the time being, the following roads in Local Planning Area are proposed to be used for providing separate lanes for running BRTS:

- Jalandhar – Amritsar Road
- Jalandhar – Ludhiana Road
- Jalandhar – Pathankot Road
- Jalandhar – Hoshiarpur Road
- Jalandhar – Nakodar Road
- Jalandhar – Kapurthala Road
- Jalandhar Bypass Road
- Mahavir Marg

b) Low cost infrastructure elements that can increase the speed and reliability of Bus service like Bus Turnouts, Bus Boarding Islands etc should be identified along these routes.

c) Bus Rapid Transit System provides better service than other modes because it serves a diverse market (all income groups) by moving people from their current location to their destination with high frequency and reliability.

d) Recent technological developments such as bi-articulated buses and guided buses have benefited the set up of BRT Systems. The main developments are:

- Improved riding quality
- Increased capacity
- Reduced operating costs

e) Acceptance of BRTS shall be helpful to lower the gaseous and noise emissions on city roads by lowering the trips by private vehicles.

B. Introduction of Rail Bus Service: Keeping in view the city structure and high cost of construction, the Metro Rail Transit System is not found feasible as yet for Local Planning Area, Jalandhar. But Rail Bus Service can be one of the best suited alternatives to be introduced in addition to BRTS in Jalandhar. Jalandhar has criss-crossing of a number of railway lines like Jalandhar – Amritsar, Jalandhar – Ludhiana, Jalandhar – Pathankot, Jalandhar – Hoshiarpur, Jalandhar – Nakodar and Jalandhar – Kapurthala. Out of these, three railway lines like Jalandhar – Amritsar, Jalandhar – Ludhiana and Jalandhar – Pathankot are quite busy railway routes but the rest of the three railway routes like Jalandhar – Hoshiarpur, Jalandhar – Nakodar and Jalandhar – Kapurthala have very low rail traffic resulting in under-utilization of existing railway infrastructure. Thus keeping this fact in view this Master Plan envisages running single / double unit Rail Bus Service in addition to existing regular trains. The halt stations for Rail Bus Serice should be

constructed by concerned development authorities in consultation with railway authorities. The introduction of Rail Bus Service shall have the following merits:

a) It will result in optimum utilization of existing rail infrastructure.
b) It is not a costly affair as no new rail tracks need to be laid down.
c) No acquisition of land is involved in this case.
d) All these railway tracks pas through highly developed areas of the city thus would cater to a large section of population.
e) It will provide cheaper mode of travel and thus result in reducing the number of private vehicles on city roads.

13.5.4 Proposed Road improvement plan

The following roads have been identified by the Municipal Corporation, Jalandhar for improvement in order to segregate the mixed traffic and to promote non motorized vehicles without any obstruction from the motorized vehicles. The same have been incorporated in Master Plan proposals.

Mass transport to be encouraged.

Provision of ample parking lots for the convenience of the residents and to check the on street parking.

Provision of footpaths for the safety of the pedestrians

To lay the services underground so as to improve the aesthetics of the city.

To redesign the intersections of the roads so as to check the accident prone junctions.

Table No. 13.9: Major roads under taken by M.C., Jalandhar for improvement

Sr. No.	Name of the Road	From	To	Length of Section Approximately (in Mts.)
1	**2**	**3**	**4**	**5**
1.	G.T. Road	a) PAP	PNB Chowk	4500.00
		b) PNB Chowk	Jail	1340.00
		c) Jail	Bidhipur Railway Crossing	8500.00
Total				**14340.00**
2.	Bhagwan Mahavir Marg	BMC Chowk	HMV Chowk	4000.00
3.	Gazi Gula Road	a) HMV Chowk	Gazi Gula Road	750.00
		b) Gazi Gula Road	Chandan Nagar Phatak	700.00
		c) Chandan Nagar Phatak	Sodal Chowk	350.00
Total				**1800.00**
4.	Nakodar Road	a) Bhagwan Valmiki Chowk	Wadala Chowk	4000.00
		b) Wadala Chowk	TV Tower	725.00
		c) TV Tower	MC Limit	520.00
Total				**5245.00**
5.	Bye Pass from Nakodar Road to Kapurthala Road	Ravi Dass Chowk	Kapurthala Road Via 120' wide Road	5550.00
6.	Kapurthala Road	a) Patel Chowk GT Road	Kapurthala Chowk	1200.00
		b) Kapurthala Chowk	MC Limit	3500.00

Total				**4700.00**
7.	Tanda Road	Circular Road	Pathankot Chowk	2500.00
8.	Hoshiarpur Road	Circular Road	Lamba Pind Chowk	2500.00
9.	Model Town Road	Namdev Chowk	Skylark Chowk to Model Town Market (Circle including)	2500.00
10.	Nehru Garden Road	GPO	Railway Station	1460.00
11.	Bhagwan Parshu Ram Marg	Bus Stand	Nakodar Road	2200.00
12.	Ladowali Road	a) Elaska Chowk	Partap Bagh	1870.00
		b) Elaska Chowk	Nehru Garden	380.00
Total				**2250.00**
13.	Bastiat Road	a) Football Chowk	Basti Guzan	800.00
		b) Basti Guzan	Babu Jagjivan Ram Chowk	1500.00
Total				**2300.00**
14.	Basant Vihar	Mall Road	Urban Estate	1310.00
15.	Mall Road Model Town	Cool Road	Manbro Guru Teg Bahadur Nagar	1830.00
16.	Circular Road	a) Patel Chowk	Adda Hoshiarpur Chowk	1250.00
		b)Adda Hoshiarpur Chowk	Milap Chowk via Bhagat Singh Chowk	981.00
		c) Milap Chowk	Nehru Garden	220.00
Total				**2451.00**
17.	Old Railway Road	a) Adda Hoshiarpur Chowk	Railway Road Junction	858.00
		b) New Railway Road Junction	Railway Station	160.00
Total				**1018.00**
18.	New Railway Road	Bhagat Singh Chowk	Old Railway Road	550.00
19.	Cool Road	BMC Chowk	Urban Estate	2380.00
20.	Police Line Road	a) Milap Chowk	Shastri Chowk	300.00
		b) Shastri Chowk	Sadar Thana Railway Crossing	2000.00
Total				**2300.00**
21.	Gulab Devi Hospital Road	Bhagwan Mahavir Marg	Distributory	1500.00
22.	Branch Tanda Road	Domoria Pull	Max Chowk	1250.00
23.	Preet Nagar Sodal Road	Max Chowk	Sodal Chowk	1000.00
24.	Rainbow Road Model Town	Model Town Market	G.T.B Nagar	2000.00
25.	Chogittee Road	Railway Crossing	Bye Pass	700.00
Total				**69.63 KM**

(Source: Municipal Corporation, Jalandhar)

13.5.5 Parking Lots

The issue of the parking is very critical, thus to overcome this problem Municipal Corporation Jalandhar, has constructed three parking lots in the city at distinct locations namely near Narinder Cinema, Jyoti Chowk and Nehru Garden. Although these parking lots are being used by the public but still a number of areas remain un-served. Hence to overcome this problem, the following parking lots have been proposed at different locations in the city:

Model Town Area: Park opposite Goal Market may be used for under ground parking. The ground level shall remain as the park.

Near Jyoti Chowk: A part of OUVGL site of old DC and SSP office on Old GT Road is proposed to be developed for multistoried parking lot.

Near District Administrative Complex: A part of government land in district administrative complex towards Ladowali Road is to be developed as a multi storied parking lot.

Near Milap Chowk: A part of OUVGL site of Police Station No. 3 is proposed to be used for multistoried parking.

On Kapurthala Road opposite Gandhi Vanita Ashram: A part of OUVGL site of Canal Colony is proposed to be used for the construction of multi storied parking lot.

Central Jail site: A part of the old jail (when shifted to new site) is proposed for multi storied parking lot.

Fish Market, Basti Adda, Old GT Road: Under ground parking lot is proposed at the site of Fish Market. The ground area may be used for multi storied commercial complex.

Guru Amardass Chowk, New Jawahar Nagar: Vacant land of Irrigation department / Municipal Corporation Jalandhar may be used for constructing parking lot at Guru Amardass Chowk.

Adarsh Nagar on Bhagwan Mahavir Marg: Under ground parking is proposed to be constructed on Municipal Corporation land opposite Adarsh Nagar Market.

13.5.6 <u>Pedestrian Pathways</u>: The following roads have been identified to provide footpaths along with service lanes within Municipal Corporation limits in addition to 25 roads identified by Municipal Corporation, Jalandhar:

Jalandhar – Amritsar Road

Jalandhar – Ludhiana Road

Jalandhar – Pathankot Road

Jalandhar – Hoshiarpur Road

Jalandhar – Nakodar Road

Jalandhar – Kapurthala Road

13.5.7 <u>Cycle Tracks / Rickshaw Tracks</u>: Cycle Tracks / Rickshaw Tracks have been proposed in addition to 25 roads identified by Municipal Corporation, Jalandhar:

Jalandhar – Amritsar Road

Jalandhar – Ludhiana Road

Jalandhar – Pathankot Road

Jalandhar – Hoshiarpur Road

Jalandhar – Nakodar Road

Jalandhar – Kapurthala Road

13.5.8 Ban on movement of commercial vehicles during day time: On the following roads the movement of commercial vehicles is proposed to be banned during daytime so as to reduce the traffic congestion in narrow Bazaars located in inner / core area of the city: Rainak Bazaar, Bazaar Sheikhan, Peer Bodlan Bazaar, Chowk Sudan, Gur Mandi, Imam Nassir, Jauran Gate, Saidan Gate, Bhairon Bazaar, Attari Bazaar, Punj Peer Chowk, Mai Hiran Gate, Balmiki Gate, Charanjeetpura

13.5.9 One-way Traffic: The following roads have been identified for one-way traffic movement:

Bhagat Singh Chowk to Milap Chowk via Phagwara Gate

Milap Chowk to Saidan Gate

Brandrath Road via Sheikhan Bazaar

Central Jail Chowk to Patel Chowk

BMC Chowk – Sanjay Gandhi Market to Kamal Palace

Model Town Road opposite Nikku Park

Adda Hoshiarpur to Patel Chowk Road

13.5.10 Parking lots / Halt Stations for heavy commercial vehicles on urban fringes: In order to avoid the entry of heavy commercial vehicles in to city areas, the following points are proposed to be developed as Parking / Halt Stations for these vehicles with the facility of loading and unloading platforms from where light commercial vehicles can collect the materials for further delivery in the city. The proposed location of these parking lots / Halt Stations is as follows:

Near Chitti Bein on GT Road (NH-1) Ludhiana side

On Pathankot Road near cross junction of proposed Ring Road and Pathankot Road

On Nakodar Road near cross junction of proposed Ring Road and Nakodar Road

13.5.11 Proposed Road Widening: The following existing Regional roads have been proposed to be widened for the easy movement of traffic:

Jalandhar – Pathankot Road (R-1)

Jalandhar – Hoshiarpur Road (R-2)

Jalandhar – Nakodar Road (R-2)

Jalandhar – Kapurthala Road (R-2)

Proposed Road hierarchy :

1. R – 1: 200’ and above
2. R – 2: 150’
3. R – 3: 100’
4. R – 4: 80’

5. R – 5: 60’
6. R – 6: 40’

Note:

The existing link roads which are not becoming the part of road hierarchy of R-1 to R-3 shall be widened to minimum 80’.

The proposed road widening as shown on the plan shall be equally wide on both sides of the existing road except where habitation / settlement come in alignment. In that case, widening shall be on the other side of habitation / settlement.

The road widening wherever proposed along the canal / drain / railway line shall be on that side of the drain as shown on the plans.

Similarly other infrastructural projects to improve connectivity of Local Planning Area by the Union or State Governments or their instrumentalities shall be incorporated as such.

The proposed Truck / Bus Stands / Freight Satiation etc along different roads shall be shown in the sector / zonal plans to be prepared subsequently.

The location of above mentioned Flyovers/ ROB’s, underpasses, subways have been shown on the Traffic and Transportation Plan drawing No DTP (J) 5 / 2009 dated 15.07.2009.

It is proposed that every house irrespective of size will have mandatory parking provision for at least two cars within the plot area in order to avoid on-street parking.

13.6 INDUSTRY

Jalandhar city is famous for Sports Goods, Tanning, Hand Tools, Surgical equipments and Casting industries which provide a strong economic base to the city. Industrial sector is an employment intensive sector which provides employment to about 35.1% of the population. But the existing and continuous growth of industries in non-designated areas and lack of planned industrial estates for industry are the major issues of concern. The continued existence and further proliferation of industries in contravention of Master Plan provisions have given birth to the pollution and negative environmental impact of industries. Keeping this industrial scenario in view, the following broad parameters are proposed to be required for the industrial sector.

13.6.1 Strategy

New areas are proposed to be added as industrial zones where more industrial units especially of small scale sector would be accommodated.

In these new proposed industrial zones, efforts should be made to provide planned industrial estates with private public partnership especially for tiny/ small scale industrial units so as to minimize the presence of these industrial units in residential areas of the Master Plan.

Modernization and technological up-gradation of existing industries is required to be encouraged for competing at the national / international level.

Promote high tech and low volume- high value added industries which are less labour intensive.

Provide suitable incentives and disincentives and other measures, for shifting and relocation of industrial units not conforming to the land use norms.

Review, and possibly widen, the scope of permissibility of household industrial units subject to adherence to pollution control norms and environment considerations, fire safety regulations and other relevant factors; particularly the aspects of infrastructure services.

13.6.2 Classification of industries

The following classification of industries has been envisaged for Local Planning Area, Jalandhar:

a) **General Industry:** General Industry shall include all categories of industries (small scale, Medium / large scale) except highly obnoxious, hazardous, inflammable, non compatible and polluting industries as defined by Punjab Pollution Control Board.

Taking in to account the existing trend of industrial development in Local Planning Area Jalandhar, availability of road and rail network and availability of industrial infrastructure, following areas is proposed for the development of General Industries. No special industry shall be permissible in General Industry Zone.

1) The area bounded by Amritsar – Jalandhar Railway Line, Pathankot Road and existing Bypass in and around the existing approved Industrial Area.
2) The areas falling between Jalandhar Distributory and Jalandhar – Pathankot Road, between Jalandhar – Pathnakot Road and Jalandhar – Hoshiarpur Road mainly comprising villages namely Gadaipur, Bulandpur, Reru, Nangal Salempur, Sheikhe Pind, Kotla, Nurpur, Mubarkpur, Kabulpur, Raowali, Raipur Rasulpur, Bal, Dhogri, Jandu Singhan, Alawalpur etc.
3) The areas bounded by Amritsar – Jalandhar Bypass Road and Jalandhar – Hoshiarpur Railway Line.
4) Areas on Jalandhar – Kapurthala Road falling in the revenue estates of villages Kutlupur, Basti Peer Daad, Basti Bawa Khel, Sange Sohal, Gazipur, Chamiara, Basti Ibrahim Khan etc.
5) Areas on Amritsar – Jalandhar GT Road and railway line falling in the revenue estates of villages Sura, Sarai Khas etc.
6) Areas on Jalandhar – Nakodar Road falling in the revenue estates of villages Lohar, Lallian Khurd etc.

7) Areas on Jalandhar – Phagwara GT Road and railway line falling in the revenue estates of villages namely Mehat, Chak Hakim, Dhak Narangshahpur, Narangshahpur etc.
8) Area along right side of Phagwara – Hoshiarpur Road falling in the revenue estates of villages namely Khurampur, Dhak Bhula Rai, Bhula Rai etc.
9) Area along Phagwara – Ludhiana GT Road falling in the revenue estates of villages namely Nangal, Mouli etc.

b) **Special Industry:** Special Industries include industries that are highly obnoxious, hazardous, inflammable, non compatible polluting industries as defined by Punjab Pollution Control Board. However, the General Industry as defined above is permissible in this zone.

Keeping in mind, the quantum of pollution to be generated by special Industries, sufficient area has been designated for special industries in Local Planning Area, Jalandhar comprising villages Dhogri, Sikandarpur, Jandu Singhan, Sarmastpur etc. Such allocation of land for this use will guide effective land use planning and help industrialists to select suitable industrial premises for their businesses. The location of industries is advantageous from air pollution angle and availability of cheaper land.

c) **Industry – Logistic:** With the amount of manufacturing trades which are going on presently in the industrial lands of Jalandhar, it has been observed that there is lack of storage and services of manufactured products in Jalandhar. The exports for Casting, Hand Tools, Sports and Surgical equipments would require ample amount of storage before the products can be exported out of region. A Logistics Park of about 150 acres is proposed, which can be strategically located in South-Eastern direction of Jalandhar along National Highway 1 comprising the revenue estates of villages such as Chaheru, Saprore etc. The site for Logistic Park is proposed in such a way that it has an access from Jalandhar – Phagwara road as well as railway line. By designating a Logistic Park, storage services can be provided for the export of manufactured products. The Logistics Park can be developed as a fast turnover storage and distribution centre. An integrated facility could serve as a business hub for logistics, insurance and distribution purpose.

13.6.3 Incentives for shifting of existing industries:

If the red – category industries existing within the industrial mixed land use zone, which are in operation as on date of Master Plan notification, shift outside this zone to any of the designated industrial zone within the state of Punjab and generate at least the same number of jobs at the new location, will enjoy the following benefits:

1) No CLU, EDC or Licence Fee on the present site if used for plotted residential purposes provided the industry shifts within three years of the notification of the Master Plan. If used for any permissible land use other than plotted residential, the difference between CLU, EDC and Licence Fee of the new land use and plotted residential has to be paid. In case that particular land is put to a land use for which CLU, EDC or Licence Fee is less than the plotted residential, the difference between these fees / charges for the plotted residential and proposed land use shall not be payable by the Government / Urban Development Authority.
2) If the industry shifts in the subsequent two years of the above mentioned period of three years, it will enjoy 50% discount on CLU, EDC and Licence Fee on the present site if used for plotted residential purposes. If used for any permissible land use other than plotted residential, the difference between the CLU, EDC and Licence Fee of the new land use and that of 50% of plotted residential has to be paid. In case that particular land is put to land use for which CLU, EDC or Licence Fee is less than the plotted residential, the difference between these fees / charges for the plotted residential and proposed land use shall not be payable by the Government / Urban development Authority.
3) No CLU, EDC or Licence fee on the new industrial site if the industry shifts within five years of the notification of the Master Plan.
4) After shifting to the new location, the type of such industry may change.

The prescribed distance for residential development in the industrial mixed land use zone from existing red industries shall be as prescribed by the Department of Environment, Government of Punjab or Punjab Pollution Control Board.

Note:

i. No industry in the Master Plan shall be permitted on a road having less than 40'-0" ROW. In case, the existing road is less than 40'-0" width, then it shall be widened to 40'-0" by taking equal strip of land from both sides of the road.
ii. A minimum buffer of 15 meters of broad leaf trees shall be provided for segregating industrial zone from the residential zone. The provision of buffer strip shall be made by the owner of Land use which comes later.
iii. The standards prescribed by Punjab Pollution Control Board from time to time would have to be met by all industrial units in addition to other specific conditions in terms of plot size, ground coverage, F.A.R., height, parking norms etc.

iv. No special industry shall be permitted to be setup in general industry zone. However, general Industries may be permitted in the special industry zone.

v. The existing industrial units falling under red category (as classified by Punjab Pollution Control Board) located in non – designated industrial areas need to relocate to designated areas themselves within period of 10 years from date of publication of this Master Plan.

Exceptions

i. The area of Prem Nagar locality situated between Old Hoshiarpur Road and GT Road bypass abutting Lamba Pind Chowk comprising street number 1 to 5 although shown as General Industry (Small scale) in the Master Plan is not permissible for establishment of new industries. However, the existing industries established before the final notification of this Master Plan in this locality may continue to operate with further scope of expansion within the existing premises only.

ii. No new red category industry (as classified by Punjab Pollution Control Board) shall be permitted in the areas namely Basti Nau, Basti Mithu, Basti Gujan, Basti Sheikh, Basti Danishmandan, Model House, Gulab Devi industrial complex at Babu labh singh Nagar, Industries located on right side of road from Kishanpura chowk to Lamba pind chowk, Guru Teg bahadur Nagar, Phagwara which are retained as industrial zone in Master Plan falling in the congested part of the city. However, the red category industries existing at the time of final approval of the Master Plan in these areas may continue to operate with further scope of expansion within the existing premises only.

The industries located to the left side of the road from Kishanpura chowk to the Lamba pind chowk are allowed to continue with the condition that no new industry shall be allowed to set up in this area and no further expansion/ extension of the existing industries shall be permissible, being located in the predominantly residential area.

iii. Jalandhar city is internationally known for its sports goods manufacturing units.The sports goods units majority of which are either tiny or micro level units are existing in old parts of the city since partition which has contributed a lot to the ecomic and social development of the city.This industry is already facing global competition and the present economic melt down has further effected these units adversely.In this back ground the shifting of these units which are purely of green category in nature may not be in public interest. Hence sports goods manufacturing units which are purely of green category in nature existing at the time of approval of the master plan in Football chowk to Basti Guzan & up to Basti sheikh Adda and on Jallowal road areas may continue to operate with the conditions :

a. That no industry shall change the nature of production from the present one i. e. No unit shall shift from green category sport goods production to any other production which falls under orange or red category as defined by Punjab Pollutiion Control Board.
b. No new industry shall be permissible in these areas.
c. No expansion/extension of the existing units shal be permissible.
d. The red category units of sports/ non-sports category on Jallowal road shall only be permissible if shifted to green category without further expansion/ extension.

13.7 TRADE AND COMMERCE

Trade and Commerce is an important land use component of a Master Plan which reflects the economy and image of the city. Higher the level of shopping and commercial activity, stronger is the economy resulting in more employment and infrastructure. As per data collected from Municipal Corporation, Jalandhar there are about 25738 retail enterprises in Jalandhar with an employment of 1.25 lakh engaged in carrying out trade, commerce and providing allied services. It is expected that the number of enterprises in retail trade are likely to increase and the corresponding employment is also likely to be increased. In addition to these, large number of enterprises in other sectors such as restaurants and hotels, finance and insurance, real estate and business operated from commercial centres will generate additional employment and promote economy of the city. This indicates the predominance of retail and allied service activities in the economic structure of the city.

The major changes in the economic structure are due to liberalization of the economy, entry of multinational companies in the consumer sector, improved telecommunication system, increased per capita income and the purchasing power of the people.

13.7.1 PRE 2000/Master Plan Jalandhar – 2000 – 2021 Commercial Areas

Areas and streets/stretches earlier proposed as commercia1 areas / streets in Master Plan Jalandhar -2000 – 21 shall continue to operate at least to the extent as permissible in MPJ-2000-21.

13.7.2 Hierarchy of Commercial Areas

With a view to provide appropriate level of commercial areas to cover the entire city to meet day today needs and special requirements a three – tier system of Commercial Areas is envisaged to accommodate required shopping, commercial office and other service activities like cinema, hotel and restaurant and various community services and facilities in an integrated manner.

In addition, some components of commercial use are also proposed to be provided under mixed use, non-hierarchical commercial centres, and informal sector in the selected areas along the road corridors.

Table No.13.10: Three – tier system of commercial areas

Tier	I	II	III
Population		About 5 lakh	About 1 Lakh
	Central Business District	District / Community Center	Local Shopping / Convenience Shopping Centre
Area (Ha)	-	4.00 - 40.00	0.1- 0.3
Activities Permitted	• Retail Shopping • Stockists and dealers of medicines and drugs • Commercial and Offices of local bodies • PSUs • Cinema • Multiplex • Hotels • Restaurants • Banquet Halls • Socio-Cultural activities / Recreational Club • Service Apptts, Coaching Centres/ Training Institutes • Police Post • Fire Post • Tel. Exchange • Post & Telegraph Office • Petrol Pump / CNG Station • Bus Terminal • Informal Trade.	• Retail Shopping • Stockists and dealers of medicines and drugs • Commercial and Offices of local bodies • PSUs • Cinema • Multiplex • Hotels • Restaurants • Banquet Halls • Guest House • Nursing Home • Dispensary • Clinical Laboratory • Clinic and Poly Clinic • Socio-Cultural activities / Recreational club • Service Apptts • Coaching Centres / Training Institutes • Police Post • Fire Post • Telephone Exchange • Post & Telegraph Office • Petrol Pump / CNG Station • Bus Terminal • Repair / Services • Bank • ATM • Informal Trade • Multilevel parking	• Retail Shopping • Stockists and dealers of medicines and drugs • Commercial Offices • Clinical Laboratory • Clinic & Poly Clinic • Repair / Services • Bank • ATM • Guest House • Informal Trade • Coaching Centres / Training Institutes • Restaurant.

Note: The sites for commercial activity shall form part of sector planning.

Besides the above, retail shopping of desired level shall also be provided in all work centres and transportation nodes.

Utilities, Public Conveniences shall be provided as per requirement.

Service & Repair and informal activities should be provided as Service markets and Informal bazaar.

The mandatory requirement of parking as per prescribed standards would be met through multi level parking as far as possible in these centres.

The activities allowed in higher level hierarchy centres shall be permissible in lower level hierarchy centres.

Central Business District

The existing CBD is Rainak Bazaar and its extension commercial areas in old City. Considering the rapid increase in population and future growth of the city another

metropolitan city centre is required to be developed in the new areas to cater to the needs of the city and to minimize congestion in the core areas. The site should preferably be ideally located but away from main inter city roads to avoid traffic congestion. A large vacant land is another pre-requisite. It should obviously be towards residential expansion than industrial. Keeping these factors in mind a site at village Paragpur / Kot Kalan on Jalandhar – Ludhiana GT Road could be the best available and ideal site for the new Central Business District.

Rainak Bazaar (old city) and extensions

The commercial areas in old city like Rainak Bazaar and extensions should be treated as special areas for the purpose of development since this area cannot be developed on the basis of normal regulations. These traditional areas need to be treated carefully and sensitively in view of their high density and multiple uses. The aim is to revitalize the glory of old city and its economic potential.

District / Community Centre

The District / Community Centers are meant to serve as an apex multi- nodal activity centre of the city, which should be conceived as major shopping centres, while serving the community with a reasonable variety of other services and facilities and also as centres of socio- cultural activity where the community can meet. The following commercial centres are proposed to be dealt as district / community centres. These include:

Commercial Pocket of Urban Estate Phase II, along Jalandhar – Nakodar Railway line

Model Town Market

Lajpat Nagar

Adarash Nagar

New Jawahar Nagar

PPR Mall on 120’ wide Road

EMAAR MGF market on Nakodar Road (under construction)

Old DC and SSP office (OUVGL site, yet to come up)

Gandhi Vanita Ashram on Jalandhar – Kapurthala Road (OUVGL site, yet to come up)

13.7.3 Non- hierarchical commercial centres

Beside above district centres, the following non – hierarchical centres developed / developing on road fronts are also providing services at the city level, would also need to be strengthened by providing appropriate facilities including parking lots, loading and unloading infrastructure etc.

- Old GT Road
- Kapurthala Road
- Link Road
- Gol Market, Mithapur Road
- Sanjay Gandhi Market
- Shastri Market
- Ladowali Road
- GT Road, Amritsar side
- Nakodar Road
- 120’ wide road
- Guru Tegh Bahadur Nagar Road
- Hoshiarpur Road
- Old Court’s Road
- Railway Road
- GT Road, Ludhiana side

13.7.4 Local Shopping / Convenience Shopping Centres

Local shopping / convenience shopping centres are proposed to serve the commercial needs of local population. The local shopping / convenience centres listed below should be conceived as shopping centres catering to the needs of the population at community level:

Urban Estate Phase I (Developed)

Green Park (Developed)

Defence Colony (Developed)

Mota Singh Nagar (Developed)

JP Nagar (Developed)

Guru Tegh Bahadur Nagar (Developed)

Chotti Baradari (Coming up)

Guru Gobind Singh Avenue (Coming up)

Guru Amardass Colony (Coming up)

Surya Enclave (Yet to come up)

Shaurya Enclave (Yet to come up)

In addition to community centres, Local shopping centres and convenient shopping centres are proposed to be provided to serve the day today needs of community at sector & sub-sector level.

13.7.5 Commercial centres in urban extensions

In Urban Extension, District centres and community centres could be developed wherever possible, along major transport routes. Such corridors will have non residential uses like commercial, recreational, public and semi public, utilities, service and repair etc. The sites for this purpose shall also be specified in sector zoning plans.

13.7.6 Local level commercial areas

In case of urban extensions it is proposed to provide Local Shopping Centre at neighborhood level to ensure their location within walk-able distance.

13.7.7 Informal sector

Large sections of unemployed and underemployed population in rural areas and small towns look forward to the cities like Jalandhar for employment and enter the city to move up economy ladder. This brings forth a multitude of small enterprise and petty trading activities in the informal sector. Thus a city like Jalandhar has organized sector and equally large informal sector. This sector with highly reduced needs of floor space and investment is important as a source of employment and services in the economic fabric of the city.

A survey on unorganized trading activity in Jalandhar estimated total number of unorganized trading enterprise as 5226. The contribution of this sector, which is measured in terms of Gross Value added to the economy of Jalandhar, is tremendous.

The informal sector units locate themselves strategically near work centres, commercial areas, outside the boundaries of schools, colleges, hospitals and transport nodes and near large housing clusters. A very high %age of this activity has been observed in the old city and old commercial areas. A large number of units are mobile in nature.

13.7.8 Policy for existing areas

With a view to make informal sector, an integral part of the planning process and keeping in view the National Policy on Urban Street vendors, the following provisions are proposed to be made for the informal sector:

The location / concentration of present stationary informal units should be considered on case to case basis and steps for relocation/improvement shall be taken. It should be ensured that such activities do not spill over on the road network in the right of way. The Govt / concerned local agency would coordinate to achieve the objective.

The areas of informal sector shall have suitable public conveniences and arrangement of solid waste disposal arrangements.

Formulation of guidelines for schemes would include ‘Hawking’ and ‘No Hawking’ zones. Specific areas would be earmarked for stationary and mobile street vendors by the concerned local authority.

The local authorities should take up new design of stalls, push-carts and mobile vans of various sizes and with cleaning facilities, giving due consideration to urban design requirement of specific area, where informal shopping is being permitted.

No informal unit should be permitted along/near the intersection in order to avoid traffic congestion and accidents.

13.7.9 Organized informal sector places

There are large numbers of informal sector units operating which are scattered all over the city. They occupy critical areas causing congestion and unhygienic conditions. There is a need to provide for organized informal eating places along with casual shopping, etc to be located strategically in the city. The implementing agency should identify locations as per requirement for such activities.

13.7.10 Informal bazaar

In new urban areas, informal bazaars would form part of the planned commercial areas at two levels. These could be implemented in the initial planning stages along with development of residential areas.

13.7.11 Apni Mandi (Weekly Markets)

Apni Mandi i.e. weekly markets selling fresh vegetables, fruits and other daily use items are becoming very popular among people from all walks of life. These markets are held in various areas. In the absence of defined space they are located in an adhoc manner causing lot of inconvenience to the users and the traffic. Accordingly well defined spaces need to be provided to cater to this activity. Further, parking and open spaces within the commercial centres should be so planned that these weekly markets can operate on these areas. The specific locations and days/time of operation of such markets should be specified and regulated by the concerned local body in collaboration with other concerned agencies.

13.7.12 Planning norms for informal trade

As already stated informal sector is proposed to be made an integral part of planning process. Accordingly the informal sector trade would be incorporated in the planned development in various use zones. The provision of informal sector trade units should be ensured at the time of sanction of building plans/layout plans as per the norms given in the table no 13.11.

Table No.13.11 Planning Norms

S. No.	Use zones/use premises	No. of informal shops/units
1	Retail trade: Central Business District	3 to 4 units per 10 formal shops (to be provided in informal bazaar/service market components)
2	Government and commercial offices	5 to 6 units per 1000 employees
3	Wholesale trade and freight complexes	3 to 4 units per 10 formal shops
4	Hospital	3 to 4 units per 100 beds
5	Bus terminal	1 unit for 2 bus bay
6	Schools Primary Secondary/ Senior secondary / integrated	3 to 4 units 5 to 6 units
7	Parks District parks Neighbourhood parks	 8 to 10 units at each major entry 2 to 3 units
8	Residential	5 unit/1000 population
9	Industrial	5 to 6 units per 1000 employees

13.7.13 Development controls –Commercial Centres

The ground coverage, F.A.R., height, parking standard and other controls for commercial activities shall be as per the building byelaws of the concerned Local Body / JDA or any other agency and as per Government instructions issued from time to time.

13.7.14 Wholesale trade

Around 80% of the total establishments dealing in the wholesale trade (except bulky material like timber, iron and steel, marble, grain and fruit etc) of Jalandhar city are located in old city (inner zone). All wholesale markets dealing with hazardous materials are proposed to be developed in decentralized manner and shifted to suitable areas outside the old city. All unauthorized projections and encroachments on roads should be removed to facilitate easy movement of traffic. Further extension of the wholesale activity in the old city should be totally stopped by giving following incentives and disincentives.

a) Incentives

The liasioning offices of the traders/ agents to continue in the present location.

Development of new well planned and well serviced markets for wholesale trade and ware housing.

Incentives such as reduced taxes to be provided to enable the existing business / trader to shift to the new markets.

Providing shops at affordable price on priority to the existing traders shifting to the new markets.

Incentives in terms of reduced conversion, External Development Charges and Licence Fees can be considered.

Incentive through Transfer of Development Right scheme may also be made available to the persons shifting their wholesale trade from old areas.

b) Disincentives

Restriction on the entry of heavy goods vehicles in the old city during the peak hours / day time

Discouraging / disallowing storage of hazardous/inflammable commodities like paper, plastic / PVC, chemicals, petroleum and its products.

Restricting storage / ware housing of bulky commodities like food grains, fruits and vegetables, dairy, poultry / fish products, iron and steel, and building materials in old city.

Non renewal of trade licenses for wholesale trade especially operating in the narrow lanes of less than 6 meter width.

13.7.15 Proposed Retail / Whole sale markets

It is proposed to develop new Retail/whole sale markets as future markets to cater to the existing need and to meet the demand of growing population of Jalandhar only, near the rail and road entry points. These markets would be linked with the proposed retail / whole sale markets with in integrated freight complexes where the whole sale business could operate more efficiently in a better environment. The breakup of land requirement for different commodities at various locations would be decided at the time of preparation of schemes for the complex by the implementing agency.

The new retail / whole sale markets shall provide facilities for:

Intra urban freight movement and inter change of mode.

Ware housing and storage facilities.

Servicing, lodging and boarding, idle parking and other required facilities.

Some of the existing planned whole sale markets, ware housing and transport centres are listed below:

Table No. 13.12: Location of planned wholesale markets

Location	Commodity / Activity
Shastri Market near GPO	Cloth
Transport Nagar	Transport / Ware Housing
Maqsudan	Fruit and vegetable
Mahavir Chowk	Food grains
Container Freight Station	Suranussi

In addition to above, the following Retail / Whole sale markets are proposed to be developed:

GT Road (NH-1), Ludhiana side

GT Road (NH-1), Amritsar side

Pathankot Road

Nakodar Road

Hoshiarpur Road

Kapurthala Road

The different commodities to be provided at various locations would be decided at the time of preparation of schemes by implementing agency. These markets shall have adequate parking; repair and service facilities for which land should be identified while preparing sector / zonal plan but the establishment of such markets will not be permissible in ribbon development along roads to avoid traffic congestion.

13.7.16 Development controls for Retail / Wholesale trade

The site specifications, ground coverage, F.A.R., height, parking and other controls for Retail / Whole sale markets shall be as per provisions in the building bye laws of the local body or any other implementing agency and as per govt. instructions / guidelines issued from time to time for the specific activity.

13.8 ENVIRONMENT

Urbanization has major environmental impacts over ecosystem of an area. Resources such as ground Cover, Forests, Water and Energy etc are depleted to give way to the developments. Hence a balance is required to be maintained between urbanization and environmental health of the settlement. Master Plan Jalandhar aims to create sustainable physical and social environment for improving the quality of life.

Creation of a sustainable physical and social environment for improving quality of life is one of the major objectives of the plan. The unplanned and haphazard urbanization in Jalandhar is putting enormous pressures on the physical environment with increasing adverse impact in terms of pollution.

The city's environment essentially is seen in terms of two components of urban management- the environment habitat, and service management. The former pertains to the natural features and resources including: the elements of air, noise, water (water bodies- Rivers, lakes, drains and ponds and ground water) and land with reference to open spaces, green areas and other surface and sub- surface conditions. The latter is related to the built environment and includes the environmental infrastructure- water supply, sewerage, solid waste disposal, and the transportation network.

In the above stated background the following three fold approach and strategy will need to be adopted:

Management of natural resources and the related environment infrastructure and services in a manner that would lead to optimization of use of natural resources, and reduction/ abatement of pollution.

Conservation and development of the natural features with the view to enhancing their environmental value ; and

Development and preservation of open spaces, green lands and landscape / recreational areas.

A clear approach towards management of solid waste, hazardous waste, bio medical waste and industrial waste should be adopted. The approach should take into account the need for

adopting the Clean Development Mechanism (CDM) and the awareness of the carbon credits that can be earned and en-cashed through a planned and organized mechanism, to be developed for this purpose.

13.8.1 Natural Resources

Natural resources conservation includes management of water (surface and ground), air and noise.

13.8.2 Water (Surface and Ground)

a) The surface water resources in Jalandhar are basically comprised of the Chitti Bein, drains, canals and ponds. The ground water in Jalandhar occurs at depths varying from 10 – 20 metres below the ground level and in the alluvial terrain.

Some of the striking features about surface water of Jalandhar are as follows:

- **i)** The water in the Chitti Bein and Black Bein is highly polluted.
- **ii)** The supply of water for human use is too much in absolute terms, but is characterized by iniquitous distribution in per capita terms in different areas and significant wastage is there.
- **iii)** Assuming that 80% of the water is converted into waste water, the capacity to treat waste water is grossly deficient. Various options for the re-use of treated waste water must be explored and implemented.
- **iv)** The actual quantity of waste water treated is very less on account of only one STP working so far at village Pholriwal.
- **v)** The planned re-use of treated waste water management is missing.
- **vi)** A large number of the traditional water bodies in the form of ponds and drains etc have been encroached upon or have other wise become defunct.
- **vii)** The standards for STP / CETP developed by Central Pollution Control Board / Punjab Pollution Control Board should be adhered to.
- **viii)** The public participation and education programmes must be encouraged so that the sensitivity of the water resource is understood by the consumers, students and RWAs.
- **ix)** Rain water harvesting should be promoted to save the depleting level of underground water.

b) Ground water is the only source of water supply in Jalandhar city and its surroundings. Rapid urbanization leading to reduction in recharge of aquifers, increasing demand in the agriculture, industrial and domestic sectors exerts stress on ground water resources in summers. Deficient rain fall have been mainly responsible for decline in ground water levels. The recharge of ground water gets limited due to decreased availability of permeable surfaces owing to urbanization and the runoff getting diverted into the sewers that convey the water into Chitti Bein which is ultimately carried to river Sutlej.

The following steps should be taken for the conservation of ground water:

i) The existing water basins should be made self sustainable in water management by integrating water – sewerage – drainage system.

ii) New projects and up gradation of present infrastructure should be taken up in addition to promotion of water conservation through an integrated and a community driven model.

iii) To stop the wastage of ground water, the supply of tap water should be intermittent restricted to limited hours twice a day.

iv) Development of parks and green corridors along the Nallahs should be taken up for conservation of ground water and water bodies. To recharge the ground water, conservation of water bodies and rain water shall be essential.

v) To increase sub surface soil water through seepage of rain water, porous paving tiles should be used in the pavements and soft parking areas. All the new bridges / flyovers must have the provision of rain water harvesting.

13.8.3 Air

The air quality in the city, in terms of pollution levels is a matter of concern, and has been responsible for a number of respiratory diseases, heart ailments, eye irritation etc. The three main sources of air pollution in Jalandhar are vehicular emission, industrial emissions and from other sources such as diesel generator sets and domestic cooking and burning of bio mass, etc.

Apart from the issue of pollution on account of industries, the major area of planning and intervention would relate to transport planning. With the phenomenal growth in the number of vehicles, (almost 3 times in the last decade in absolute terms), the oil based emission in the air has increased beyond permissible limits. The most significant aspect in the context of congestion and pollution, relates to the growth in personalized transport as compare to the availability of public transport. It has been estimated that public transport which is running on only four routes in the city only cater to around 3 – 5 % of the total transport load while private / personal vehicles cater to around 95% of the travel demand. Such a huge share of private vehicles in Jalandhar obviously creates tremendous pressure on road space, parking and creates pollution directly and through congestion.

Public transportation planning must, therefore, drive the future policy. So far public transport is largely seen as the transport mode for the poorer sections of the community, who can not afford to own / use personal transport. An important element of policy should now also have to aim to make public transport a mode for personal vehicle owners and 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 to vehicle use, etc the quality of public transport particularly buses would need to be

significantly up graded, inter – alia, keeping the element of clean transport in view. To discourage private vehicles air conditioned local bus service, especially in summers should be introduced on reasonable tariff rates as is introduced by Punjab Government on regional routes.

Another issue which has been raised in context of vehicular congestion and pollution relates to the policy of mixed land use, which will also have to be carefully considered.

The other elements which would need carefully thought out policy measures relates to the operation of existing industries, both in terms of pollution control in designated industrial areas, and relocation of non- conforming industries.

To control ambient air quality of Jalandhar, it may be made mandatory that all commercial vehicles (like trucks local buses, taxis / auto rickshaws and tempos etc) are **converted into CNG.** But before that CNG needs to be made available in Local Planning Area, Jalandhar.

13.8.4 Noise

Noise is emerging as a major pollutant and irritant as well as a constant source of disturbance and health hazards. Against a permissible level of 50-60 dB (A), the sound level in Indian cities often exceeds 80 dB (A). Faulty and leaking silencers, over use of pressure horns and vehicles plying on roads accentuate noise level, besides the noise from commercial and industrial activities, unabated use of sound amplifiers, generator sets and fire- crackers etc also causes noise pollution.

The Noise Pollution (Regulation & Control) Rules 2000 specify the noise levels in the industrial area, commercial area, residential area and silence zone. It also specifies banning of all noise creating activities between 10 PM to 6 AM, which may be adhered to by the concerned agencies.

By proper land use planning, a buffer can be created between location of public, semi-public and commercial activities along major transport routes and residential zones. Green buffer of thin leaved trees, land formations, mounds embankment, etc along major roads could also provide effective barriers to transmission of noise. The characteristics of trees to be planted are given in Annexure V. It is also necessary to improve monitoring and implementation of the Noise Pollution, (Level) Rules 2000 and, to notify certain areas as ‘No Horn Zones'. The design and surface material of roads and pavements should also ensure reduction of noise. The concerned authorities’ viz., District Administration and Municipal Committees / Corporation in consultation with Punjab Pollution Control Board and Traffic Police should prepare area wise traffic calming schemes and a Noise Monitoring and Control Plan (NMCP).

Working in night shifts for household industries or non-conforming industries in the residential areas should be prohibited. Pressure horns on vehicles should be strictly prohibited. Environmentally stressed zones in Jalandhar should be identified and local area environment management plans should be prepared for such areas, together with regular monitoring.

13.8.5 Natural Features

The major natural features of Jalandhar are the Chitti Bein and Black Bein locally popular as Kala Sanghian Drain. Both of these are in a state of considerable degradation and it is of vital importance to conserve and rejuvenate these eco systems. The major source of pollution in Black Bein is discharge of treated as well as untreated sewage water.

13.8.6 Measures for rejuvenation of Black Bein

The following measures are suggested to be taken to rejuvenate Black Bein:

Banning of discharge of untreated sewage into Black Bein.

Demarcation of entire length of Black Bein in order to check encroachment if any.

Desilting of Black Bein should be carried out periodically.

The entire length of Bein especially with in the city limits should be paved and channelized.

Greening with plantation of evergreen trees of Black Bein within the Local Planning Area with a buffer strip of 30 m width should be taken up immediately.

The solid waste dumped into Black Bein should be removed and shifted to designated land fill sites of Municipal Corporation.

All the Leather Tanneries, electroplating and casting units in and around Black Bein should be directed to set up treatment plants individually or collectively to achieve zero liquid discharge.

The work of segregation, collection and transportation of solid waste should be taken up immediately and land be identified for setting up power plant to generate electricity from the solid waste.

Besides the aforesaid the following measures can also be considered for further rejuvenation of Black Bein.

Fresh water from Upper Bist Doab Canal should be released into Black Bein to keep the water clean and flowing.

Public awareness campaign should be carried out and the public should be awakened not to spoil the natural source by throwing domestic and industrial waste into Black Bein. NGO's should be involved for public participation in the project.

13.8.7 Flood Control Measures for Eastern / Chitti Bein

Eastern or Chitti Bein, a seasonal rivulet passes through the south eastern side of Local Planning Area, Jalandhar. The Bein is formed by a couple of drainage channels bringing rain water from areas of Hoshiarpur district. It remains operative during rainy season spread from

July to November every year. The High Flood Level of Chitti Bein at Railway Bridge Chaheru is generally 12'. The rain water in the Bein spreads on both sides up to a distance of about 200 metres. The water depth remains about 2' which causes partial damage to the crops in the fields. Keeping in mind the repeatedly spread of rain water of Chitti Bein in to adjoining areas, the Master Plan Jalandhar envisages the following measures for the control of floods:

1) Concrete Bandh on both sides of the Bein should be erected wherever necessary to save the surrounding areas from floods. The concrete bandh is more durable and the area covered by the concrete bandh is less than katcha bandh.

2) The course of Chitti Bein which generally varies between 40' – 60' width should be widened to atleast 80'-100' wide.

3) No construction activity should be allowed on both sides of the Bein up to a distance of atleast 200 metres untill concrete bandh is constructed. However, after the construction of concrete bandh along Chitti Bein the area earmarked as "No Construction Zone" may be used for any other compatible activity with the adjoining land use zone except 30 metre buffer zone from the bank of Chitti Bein.

4) As an immediate measure, the breaches in the Katcha Bandh along Chitti Bein should be plugged.

5) In order to drain out, the flood waters accumulated around village Chaheru, a pucca drainage channel along Amritsar – New Delhi railway line may be constructed up to Chitti Bein.

13.8.8 Disaster Management

Disaster Management is one of the important aspects in today's context. The region of Jalandhar falls in seismic zone 4. In order to safeguard the Local Planning Area Jalandhar following measures have been suggested:

1. Disaster Management Plan for the area should be immediately prepared.
2. All building plan approval should be permitted where structural designs have been submitted with the building applications.
3. The concerned local body should carry out surveys to identify the vulnerable buildings / areas in the cities especially the core area of the cities.
4. Special training programs for preparing earthquake resistant designs should be conducted for engineers / architects etc.
5. The concerned local body responsible for sanctioning of building plans should have technically well trained staff to scrutinize the building plans.
6. The implementation of approved building design should be ensured at site through site inspections at three stages of construction activity i.e., when the building is at plinth level, door level and roof level.

7. Public awareness campaign through electronic / print media and through seminars / workshops should also be taken up by the local body.

13.8.9 Upper Bist Doab Canal

Upper Bist Doab Canal, a distributory of Sutlej River flows through the western part of the Jalandhar city. The canal has a sizeable discharge of water. Due to irregular flow water is not being sourced for supply to the city for the time being. This canal supplies water mainly for irrigation only. For the last few years dumping of cow dung, domestic / medical waste into and along Upper Bist Doab Canal is taking place which not only spoils the beauty of water body but also pollutes the water.

Keeping in view the degradation taking place of the canal, the following measures should be adopted to save the canal deterioration:

- The work to de-silt the canal should be taken up immediately.
- Municipal Corporation should provide dustbins on selective points along UBDC.
- Enforcement machinery of the irrigation department and the district police should be geared up for preventing the public from throwing rubbish into or along the canal. Regular patrolling along the canal especially during night shall be very effective.
- The open areas along the UBDC banks should be so landscaped that people start spending their leisure time on these areas.
- The residents of colonies along Upper Bist Doab Canal should be discouraged through public awareness campaign against throwing garbage into the canal. A strict action should be taken against the defaulters.
- Brick lining of both sides of the canal should be taken up to stop silting and breaches of embankment.
- For safety of the public and to improve the beauty of the area the existing bridges / culverts on this canal be improved by constricting parapet walls, putting night reflectors and street lights etc.
- Roads should be constructed on both embankments of the canal to avoid encroachments and to improve the road circulation of the area.

13.8.10 Green / Recreational areas

The area under green / recreational use shall be in the form of city parks, community parks, neighbourhood parks / tot- lots in residential use zones. In addition to this plantation along road sides, plantation in National Institute of Technology, Lovely Professional University,

Punjab Technical University campuses and other educational intuitions and defence installations etc are also included in this category.

13.9 PHYSICAL INFRASTRUCTURE

The continuous and haphazard urban growth has put severe pressure on basic physical infrastructure viz., water supply, sewerage, power, drainage and solid waste management. As a result these facilities are deficient and over burdened. An advanced action and arrangement is necessary for the adequate provision of these facilities. For each component a broad augmentation plan is required to cater to the projected requirement. The local bodies in coordination with other concerned authorities, NGO's and community groups should prepare a detailed and integrated plan for institutional capacity building.

Master Plan Jalandhar envisages an integrated approach for the provision and up gradation of physical infrastructure components i.e., water, sewerage - drainage for recycling, harvesting, optimal use of water, power generation etc. Master Plan aims to encourage innovative techniques and use of alternative technologies like solar energy, recycling of solid waste etc. Augmentation of sewerage network, water supply and drainage is required on priority.

13.9.1 Water requirement for 2031

Jalandhar depends on ground water for supply of drinking water to its residents. Jalandhar presently has an average water availability of 155 lpcd and the distribution of the same is uniform. At present about 80% of the population is covered. For this purpose 320 tube wells have been installed. The supply of water is intermittent total for 12 hours during the day. As per Master Plan the projected population in 2031 is expected to be 25 lac persons. The number of more tube wells required shall be about 187 calculated @ 5000 persons / tube wells. The requirement for Physical Infrastructure for Local Planning Area Jalandhar – 2031 is tabulated as follows:

Table No.13.13: Requirement for Physical Infrastructure in LPA, Jalandhar

Sr. No.	Year	Population	Water Supply requirement (in mlpd)	Sewerage Requirement (in mlpd)
1	2011	1544000	208.44	166.75
2	2021	1821000	245.84	196.67
3	2031	2534000	342.09	273.67

To improve the water supply in accordance with the projected requirement upto the year 2031, the following measures should be adopted:

- The conservation of water is must. To stop wastage of water the supply of water should be meterized.

- The treatment of the waste water should be started and treated waste water be recycled for gardening, car washing etc with separate lines.
- Ground water extraction is to be controlled through rain water harvesting, conservation of water bodies and controlling ground water extraction.
- It is vital to identify the potential surface water sources to strike a balance for utilization between them and ground water extraction.
- Keeping in view the declining levels of ground water in the area it is suggested that surface water available in Upper Bist Doab Canal running through the city should be made available for human consumption in future. It is estimated that out of the total water supplied about 60% of the tap water is wasted due to negligence of the public and only about 40% water is actually being used
- Water supply in new areas should incorporate separate lines- one for washing, water coolers and garden taps etc and the second for supplying potable water. All non- residential buildings having a discharge of over 10,000 litres a day should incorporate a wastewater recycling.
- There is no waste water recycling plant in Local Planning Area, Jalandhar. The concerned authorities should formulate a policy for installing waste water re-cycling plants and recycled water should be used for non - drinking purposes.
- At the time of preparation of zonal development plans, water bodies, large depressions and other ground water recharging areas should be identified and protected from unintentional filling and encroachments.

13.9.2 Sewerage

Sewerage is the core element of physical infrastructure that determines the environmental status of any city and requires proper planning, development and management. Development of appropriate sewerage system with efficient sewage treatment is vital to facilitate balanced and harmonized development. Augmentation of existing inadequate systems/ treatment facilities as well as adoption of new technologies of waste treatment demands special efforts. About 82% of the population with in Municipal Corporation Limits is covered under organized sewerage system. Rest of the 18% population does not have proper access to sanitation facilities. The sewage treatment facility is new and inadequate. The increasing pollution in Black Bein and Chitti Bein is a major indicator of lack of sewerage treatment facilities.

By the year 2031 entire Jalandhar should be served by regular sewerage system. It should be developed in a phased manner. The areas where immediate regular sewerage system is not available, low cost sanitation by individual families could be adopted as a short term provision. These should be planned in such a way that in the long term regular sewerage could

be provided. To improve the sewerage and sanitation, the surface drainage and sewerage systems would have to be developed in an integrated manner.

Detailed Project Report for Sewerage Network and Sewerage Treatment Plants prepared for Jalandhar city under UIDSSMT for Punjab Water Supply and Sewerage Board by WAPCOS Ltd, Gurgaon proposes Sewerage Treatment Plants as below:

Table No. 13.14: Sewerage Augmentation Plan

Zone	Proposed Location	Capacity (in MLD)	Area (in acres)	Remarks
I	Village Pholriwal	100	80	The STP at Pholriwal exists and is in operation.
II	On Kapurthala Road	25	2.5	
III	ON Hoshiarpur Road near Jalandhar - Hoshiarpur Railway Line near village Bolina	25	2.5	
IV	GT Road NH-1, Ludhiana side near village Paragpur	10	1.0	

In addition to the locations proposed by WAPCOS Master Plan, Jalandhar envisages as following:

- Recycling plan for waste water, Common Effluent Treatment Plants with supportive distributive infrastructure i.e., conveyance system to be laid to carry treated water from Sewerage Treatment Plants to the areas for alternative uses.
- Decentralized Sewerage Treatment Plants with smaller capacities to be provided at the community / sub city level.
- Possibility of extracting energy / gas as fuel from sewerage shall be explored.
- De-silting of existing sewers at regular intervals should be ensured by the concerned agencies and there should be separate sewer lines for sullage and storm water.

13.9.3 Storm water sewer

Storm water sewer is an essential component of sewerage system. Although about 82% of Jalandhar city is covered by sewerage system but the area covered by storm water sewer is just about 5%. In other words Jalandhar is devoid of storm water sewer facility. During rains domestic storm water is diverted to sewerage lines which are not meant to handle storm water and as a result the sewer lines get choked. Due to absence of storm water sewer the roads and streets become water channels and remain flooded for hours causing inconvenience to public.

The following steps are suggested to tackle the problem of storm water sewer:

- The concerned authority should prepare a project to provide storm water facility to the entire area especially urban settlements. The project may be taken up in phases keeping in priority areas in phase I.
- Rain water Harvesting should be promoted and made compulsory for each plot holder so as to reduce the runoff of storm water.

- Storm water drainage should be integral part of road development plans / flyovers for rain water management.
- Regular de-silting of existing storm water sewer lines should be taken up.

13.9.4 Solid Waste Management

The problem of solid waste management in Jalandhar is assuming serious proportions due to increasing population, urbanization, changing life styles and consumption patterns. Because of limited disposal facilities the solid waste are dumped in haphazard manner in various parts of the city causing thereby not only environmental problem but also serious health hazards. The National Conservation Strategy and policy statement on Environment and Development has laid stress on adopting stringent measures for prevention and control of pollution due to indiscriminate disposal of solid waste on land and into water.

13.9.5 Quantity of solid waste

The city daily generates about 350 Tonnes per day of garbage. Per capita waste generated per day is 500 grams. On the other hand, the other urban settlements within LPA generate about 24.4 Tonnes per day of garbage. The Municipal Corporation provides garbage collection facility in 100% area within Municipal limits.

Various types of solid wastes generated at Jalandhar can be categorized in three groups:

- Municipal Solid Waste (MSW)
- Hospital Solid Waste (HSW)
- Industrial Solid Waste (ISW)

Table No.13.15: Sources and Type of MSW

S. No.	Sources	Typical facilities, activities & location	Type of MSW
1.	Residential and Open areas (58.10%)	Single & multi family dwelling, streets, parks, bus stand	Food waste, rubbish ashes, street waste
2.	Commercial (26.65%) including street sweeping	Offices, Institutions, markets Hotel's, restaurants, stores auto repair shop, Medical facilities, streets etc.	Food waste, rubbish ashes, street waste occasionally hazardous waste
3.	Industrial (15.25%)	Small/medium scale industry, Offices, Canteen	Office waste, food waste packaging material

13.9.6 Quantum of projected Municipal Solid Waste

The projected average garbage generation of Jalandhar up to the year 2031 is estimated @ 0.500 kg per capita per day and the total quantum of the solid waste is expected around 1207.5 tonnes per day. For effective solid waste management its segregation at the community and

neighborhood level is imperative. The waste should be segregated and collected in separate chambers. For this the public awareness campaign should be launched and help of rag pickers, Residents Welfare Associations (RWA) and NGO's should be taken.

13.9.7 Solid waste management system

- **Collection system**

Household waste:

Presently the waste generated at individual premises is removed initially by the owner or his employee. This collected solid waste is then dumped at various collection points identified by the corporation, and other unauthorized open places. Collection points consists of various community bins (containers), designated open sites and portable bins. However in many cases the waste is not dumped directly into the community bins. It is dumped either outside the bin, into any open areas or just dumped on the road side.

Roadside waste:

The waste lying on the road sides is collected by the staff employed by the Corporation. The waste dumped outside the community bin (containers) and portable bins are also dumped inside the bin by the Safai sewaks. The safai sewak has been given wheel barrows to lift the waste and transport it to the identified dump site.

Road sweeping:

Corporation has employed various safai sevaks to sweep the roads daily and collect the solid waste. Each safai sevak is given approximately 2 kilometre of road length for sweeping of municipal roads. They are also given cycle rickshaws to dump their collected waste to the designated site.

13.9.8 Community Bins / Collection and Disposal points:

The collection points serve as an intermediate transfer point from household and road side waste to landfill site. Presently the community bins in use for collection and storage of Municipal Solid Waste (MSW) at Jalandhar are two broad categories as follows:

Community bins

1. Portable bins (i.e. containers)
2. Designated open dumping sites

Transportation:

The solid waste from various designated collection site is transported to the dumping site by municipal corporation staff regularly. Solid Waste collected in the community bins and at other places is presently transported to the dumping site by using different type of vehicles.

The containers are lifted with the help of dumper placer and transported to the final disposal site (landfill).

Disposal:

The solid waste is transported to designated landfill site / dump sites identified by the corporation.

Table No.13.16: Waste Dump Sites

Sr. No.	Urban Settlements	Solid waste generation per day	Type of solid waste	Existing Disposal Site	Proposed Disposal Site
1	Jalandhar	350 Tonnes per day	Municipal Solid Waste	Suchi Pind (2 acres) Village Wariana (14 acres)	25 acres at village Jamsher
2	Kartarpur	4 Tonnes per day	Municipal Solid Waste	GT Road (4 Kanal) Near Residential Area (1 acre) Bholath Road (1 acre)	-
3	Adampur	2 Tonnes per day	Municipal Solid Waste	4 acre common facility at Sham Churassi	-
4	Alawalpur	1.4 Tonnes per day	Municipal Solid Waste	4 acre common facility at Sham Churassi	-
5	Phagwara	17 Tonnes per day	Municipal Solid Waste	At village Hargobindpur (5 acre)	-

The landfill site is lined and land filling is being done in unscientific manner. The waste is directly dumped (without segregation) into the site and a JCB is employed to spread the waste. However, proper compaction is not done to actually compress the waste into the site and other machinery including Road Rollers is required. A small capacity solid waste treatment is installed by a private company at Wariana dumping site but this plant is hardly able to treat just about 30% of the total solid waste. Hence more such plants are required to be installed at different locations in the Local Planning Area, Jalandhar. The constituents of Municipal Solid Waste are broadly of three types:

1. Bio degradable
2. Non- Bio degradable
3. Re- cycleable

- For bio degradable and recyclable waste, which should be segregated at source, decentralized treatment may be adopted while for non- bio degradable, centralized treatment may be followed.
- The other type of specialized waste includes bio medical waste; hazardous waste form industries; construction debries and fly ash; meat processing centre etc.
- Disposal of bio medical waste is to be as per bio medical waste rules and hazardous waste requires special handling according to the hazardous waste handling rules.
- Proper dumping, re cycling and re use of construction debris and fly ash have to be linked. Meat processing centre waste is to be re cycle for chicken feed etc.

- Considering the nature of solid waste and the economic aspect of its disposal.
- Major part of solid waste especially non bio degradable has to be disposed off in sanitary land fills.
- Re cycling should be preferred than disposing of the waste in sanitary landfill site when ever possible.
- A segregation of solid waste should start at the point of generation of the waste. It should be collected into separate bags of green and black colour. The involvement of RWAs and rag pickers association will reduce the quantum of waste drastically. And it will also result in the reduction of area required for land fill sites.
- More viable alternatives to land fills are vermiculture, fossilization, composting etc. Waste Minimization Circles (WMCs) should be constituted and made effective. Implementation and monitoring & bio medical waste (handling and management) Rules, 1998, for hospitals, nursing homes, and clinics should be taken up. The filled up sites may be re used for plantation or as recreation area. The new sites for sanitary land fill and composed plants are to be finalized by the Municipal Corporation Jalandhar. For this purpose the less fertile Government / Panchayat lands in villages adjoining Jalandhar city and other urban settlements of LPA may be considered keeping in view the parameters guiding the location of sanitary land fill sites.

13.9.9 Power

Power sector hold the key to economic development but due to increasing population, urbanization, rapid industrialization and changing life styles, the consumption of power has increased manifold than the supply. Although the Govt. is making all out efforts to cope with this situation but still the supply side is not improving. The shortage of power is definitely going to affect the GDP of not only of the city but also of the state. Since the addition of electric power generating sources takes long time, the conservation of electricity is the only way. The present master plan envisages the following steps for conservation of electric power:-

1) The concept of energy efficiency should begin with the idea of zero fossil energy development and renewable sources of energy should be encouraged.
2) Loan management techniques and energy accounting should be adopted. Schemes to minimize power thefts/ losses by, improved metering arrangements should be enforced.
3) Non-convention energy sources like generating power from sewerage and solar energy etc. should be used for street lighting, lighting at public places, open areas and traffic signals etc.
4) As per Asian Development Bank's report (1997) potential in saving due to better overall efficiency in domestic sector is about 20% by adopting following measures:-

- Replacement of low efficiency incandescent lamp with high efficiency fluorescent tubes (CFLs) without compromising with the lumens output.
- Similarly for refrigerators, which account for 30% of total electricity consumed, measures like increased thickness of foam insulation, use of high coefficient compressors, increased evaporator surfaces, use of tighter door seals and through technical improvements, can reduce consumption from 540 KW / year to 300 KW / year (for a 165 little refrigerator).
- Incandescent bulbs, neon tubes and fluorescent lamps are giving way to light- emitting microchips that work longer, use less power and allow the use of light in new ways. This eventually results in huge savings in terms of energy and maintenance costs.

The proposed grid stations as suggested by PSEB and being incorporated in Master Plan Jalandhar are as below:

Table No.13.17: Proposed location of Grid Stations

Sr. No.	Name of proposed Grid Station	Power Supply (in kV)
1	Jandu Singha	66
2	Paragpur	66
3	Sangal Sohal	66
4	Shah Pur	66
5	On 120' road near Babreek Chowk	66
6	Extension of Kartarpur Sub station	220
7	Extension of Urban Estate Phase II	132
8	Kahanpur	132
9	Extension of Children Park	132
10	Extension of Science City	132
11	Patel Chowk	66
12	Chara Mandi	66
13	Naugajja	66
14	Extension of Chitti	66
15	Extension of Chuggitti	66

(Source: Punjab State Electricity Board)

Note: The provision for utilities, amenities and services shall be made in Zonal Plans to be prepared subsequently.

13.10 SOCIAL INFRASTRUCTURE

The requirements for social infrastructure for Local Planning Area, Jalandhar has been worked out on the basis of existing scenario of each component and the projected demand by 2031 using UDPFI Guidelines. These uses are not being shown in the Master Plan but will be earmarked later on in the Sector (Zonal) Plans:

13.10.1 REQUIREMENTS FOR SOCIAL INFRASTRUCTURE FOR LPA JALANDHAR - 2031

Sr. No.	Aspect	Norms and Standards	Existing No.	Deficiency (if any)	Requirement (Number and area in hectares)						Total area (i hectare
					2011		2021		2031		
					No.	Area	No.	Area	No.	Area	
1	Primary School	**Population: 5,000** Number of students: 500 Area per school: 0.4 ha Covered area: 0.20 ha Minimum play field area: 0.20 ha	354	-	309	-	364	4.00	507	57.20	**61.20**
2	Senior Secondary School	**Population: 7,500** Number of students: 1,000 Area per school: 1.60 ha Covered area: 0.60 ha Minimum play field area: 1.00 ha	102	66	206	166.40	243	59.20	338	152.00	**377.60**
3	College	**Population: 1,25,000** Number of students**:** 1000-1500 students Area per college: 4.00 ha Covered area: 1.80 ha Play field area: 1.80 ha Residential / hostel area: 0.40 ha	19	-	12	-	15	-	20	4.00	**4.00**
4	University	New University Area: 60.00 ha	2	-	No additional requirement for the university						**-**
5	Technical Education Centre	**Population: 10,00,000** Area per centre: 4.00 ha Area per technical centre: 2.10 ha Area per ITI: 1.40 ha Area per coaching centre: 0.30 ha	11	-	2	-	2	-	3	-	**-**
6	New Engineering College	**Population: 5,00,000 (DMP)** Number of students: 300 Area a) Old city: (over 650 ppha): 1.00 ha Outer areas (less than 650 ppha): 2.50 ha	1	2	3	5.00	4	2.50	5	2.50	**10.00**
7	Medical / Pharmacy College	**Population: 10,00,000 (DMP)** Area: 5 acres (Rural) Area: 2.5 acres (Distt. Headquarter Corporation Limit)	0	1	2	6.00	2	-	3	1.00	**7.00**
8	Dispensary	**Population: 15,000** Area: 0.08 to 0.12 ha	23	61	103	9.60	121	2.16	169	5.76	**17.52**
9	Primary Health Center	**Population: 25000** Area: 0.25 – 0.50 ha	2	49	62	30.00	73	5.50	101	14.00	**49.50**
10	Nursing Home	**Population: 45,000-1,00,000** Capacity: 25 to 30 beds Area: 0.20 to 0.30 ha	136	-	15	-	18	-	25	-	**-**
11	General Hospital	**Population: 2,50,000** Capacity: 500 beds Area for hospital: 4.00 ha Area for resi accommodation: 2.00 ha Total area: 6.00 ha	235	-	6	-	7	-	10	-	**-**
12	Veterinary Hospital	**Population: 5,00,000** Area: 2,000 sq m (0.2 ha)	31	-	3	-	4	-	5	-	**-**
13	Community Hall and Library	**Population: 15,000** Area: 2,000 sq m (0.2 ha)	2	82	103	20.20	121	3.60	169	9.60	**33.40**

14	Club	**Population: 1,00,000** Area: 10,000 sq m (1.0 ha)	4	9	15	11.00	18	3.00	25	7.00	**21.00**
15	Amusement Park	**Area: up to 10 ha**	1	-	-	-	1	10.00	-	-	**10.00**
16	City level park	**Population: 5,00,000** Area: 10 acres (4.0 ha)	2	1	3	4.00	4	4.00	5	4.00	**12.00**
17	Neighborhood level park	**Population: 10,000** Area: 10,000 sq m (1.0 ha)	87.00 ha	36.00 ha		191.00		-		63.00	**254.00**
18	Golf Course	**Population: 10,00,000** Area: 10-30 ha	1	-	2	30.00	2	-	3	30.00	**60.00**
19	Sports Centre / Stadium	**Population: 5,00,000** Area: 3-10 ha	2	1	3	10.00	4	10.00	5	10.00	**30.00**
20	Post and Telegraph Office	**Population: 10,000** Area: 0.1 ha	116	10	154	3.80	182	2.80	253	7.10	**13.70**
21	Religious Building	**Population: 15,000** Area: 0.1 ha	733	-	103	-	121	-	169	-	**-**
22	Old Age Home	**Population: 5,00, 000** Area: 1,000 sq m (0.1 ha)	4	-	3	-	4	-	5	0.10	**0.10**
23	Orphanage / Children Centre	**Population: 5,00,000** Area: 1,000 sq m (0.1ha)	2	1	3	0.10	4	0.10	5	0.10	**0.30**
24	Multipurpose Ground (Exhibition cum Fair Ground)	**Population: 1,00,000** Area: 20,000 sq m (2.0 ha)	-	13	15	56.00	18	6.00	25	14.00	**76.00**
25	Burial / Cremation Centre	**Population: 10,00,000** Area: 10,000 sq m (1.0 ha)	531	-	2	-	2	-	3	-	**-**
26	Electric Sub Station	**Population: 50,000** Area: 0.4 ha	25	-	31	2.40	36	2.00	51	6.00	**10.40**
27	Police Post	**Population: 40,000- 50,000** Area: 0.16 ha (area inclusive of essential residential accommodation)	15	10	31	2.56	36	0.80	51	2.40	**5.76**
28	Police Station / Police Division	**Population: 90,000** Area: 1.5 ha Area inclusive of essential residential accommodation 0.05 ha additional to be provided for civil Defence and home guards	14	-	17	4.50	20	4.50	28	12.00	**21.00**
29	Police Line	**Population: 20,00,000** Area: 4.00 to 6.00 ha	1	-	1	-	1	-	1	-	**-**
30	District Jail	**Population: 10,00,000** Area: 10.00 ha	1	-	2	10.00	2	-	3	10.00	**20.00**
31	Fire Station	**1 fire station or sub-fire station within 1 to 3 km to be provided for 2 lakh population** Area for fire station with essential residential accommodation: 1.00 ha Area for sub-fire station with essential residential accommodation: 0.60 ha	3	3	8	8.00	9	1.60	13	6.40	**16.00**

Note:

The space standards given above are minimum. Extra space if available may be used for providing social infrastructure.

However, in case the govt. Panchayat land is used for provision of social infrastructure, up to 10-15% variation in minimum space norms may be allowed as per site conditions.

The above given requirements have been calculated on the basis of existing population in 2001 (1260592) and projected population for 2011 (1544000), 2021 (1821000) and 2031 (2534000)

13.11 ZONAL PLAN

The entire Local Planning Area has been sub - divided into 73 zones (except areas within Municipal Corporation and Municipal Council limits) so that for each zone, a zonal plan could be prepared which will act as a link between the proposals of Master Plan and the Layout Plan. These zones are numbered as Zone '1' to Zone '73' as illustrated in the drawing number DTP (J) 06/2009 dated 27-07-2009. The zones have been delineated keeping in view, the physical features like Roads, Railways and Canals etc. Besides this, the proposed road network in the Master Plan also forms basis of delineation of zones in some cases. An attempt has been made to keep the zone size compact and regular for better planning and development of each zone.

14.0 SPECIAL AND DETAILED CONTROLS

14.1 SECTION – I: ZONING REGULATIONS

The zoning regulations proposed under this Master Plan are primarily concerned with the control of land use. The proposed land use plan includes following land use zones:

- Residential
- Commercial
- Mixed land use
- Industrial
- Recreational
- Agriculture and water bodies

In addition specific designated uses have been shown in respect of proposed traffic and transportation, utilities, governmental and public and semi public facilities.

As explained earlier since sub – division of land, design and construction of buildings is being controlled through well established building byelaws / regulations by the concerned authorities. The zoning regulations under the Master Plan are seen as the guiding parameters for these agencies to ensure that the development permitted by them is in conformity with the Master Plan.

14.1.1 Use and development of land to be in conformity with Master Plan:

As provided under Section 79 of the Punjab Regional and Town Planning and Development (Amendment) Act 2006, after coming into operation of this Master Plan, no person shall use or permit to be used any land or carry out any development in any area otherwise than in conformity with this Master Plan.

Provided that the competent authority may allow the continuance of any use of any land, for a period not exceeding ten years. Upon such terms and conditions as may be provided by regulations made in this behalf, for the purpose and to the extent, for and to which it was being used on the date on which this Master Plan came into operation.

Chief Town Planner, Punjab being the planning agency designated under Section 57 of the Punjab Regional and Town Planning and Development (Amendment) Act, 2006 for the Local Planning Area declared under Section 56 of the said Act, following the requirement under clause (d) of sub section 1 of Section 70 of the Punjab Regional and Town Planning and Development (Amendment) Act, 2006 hereby makes following Zoning Regulations as a part of the Master Plan prepared for the Local Planning Area.

14.1.2 Short Title, Scope, Extent & Commencement

1. Title

These regulations shall be called the Zoning Regulations for Local Planning Area Jalandhar (herein after referred to as "these regulations").

2. Scope of the regulations

The scope of these regulations is limited to defining permissible land uses in various land use zones depicted in the proposed land use plan forming part of the Master Plan. Other aspects of development such as sub - division and layout of land or intensity of development measured through FAR, ground coverage, parking requirements, building design and construction etc will be governed by other Acts and regulations promulgated by Government from time to time. Competent Authorities under such regulations shall ensure that the developments permitted by them are in conformity with these regulations.

3. Jurisdiction

These regulations shall apply to all "development" in the Local Planning Area Jalandhar declared under Section 56 of the Punjab Regional and Town Planning and Development (Amendment) Act, 2006 vide Notification No. 12/9/2007-4HG1/5541 dated 18.07.07 and amended vide Notification No. 12/9/2007-4HGI/2026 dated 16.07.09 and amended vide Notification No 12/9/2007-4 Hg-I/2365 dated 26.08.09.

4. **Date of coming in to force**

These regulations shall come into force on the day on which the designated Planning Agency publishes the final Master Plan along with these regulations in the Official Gazette after obtaining the approval of the State Government under sub section (5) of Section 70 of the Punjab Regional and Town Planning and Development (Amendment) Act, 2006. Till such approval, the Authorities considering the application for permission for development shall give due regard to the draft proposals including these regulations.

14.1.3 Definitions

For the purpose of these zoning regulations, the following definitions, unless the context otherwise requires, shall apply:

a) **"Act"** means the Punjab Regional and Town Planning and Development (Amendment) Act, 2006 (Punjab Act No.11 of 1995).

b) **"Government"** means the Government of the State of Punjab.

c) **"Chief Town Planner"** means the Chief Town Planner of the Department of Town & Country Planning, Punjab or any other officer to whom his powers are delegated.

d) **"Planning Agency"** means the Chief Town Planner, Punjab designated as such under Section 57 of the Punjab Regional and Town Planning and Development (Amendment) Act, 2006 for Local Planning Area Jalandhar.

e) **"Existing Land use Plan"** means the plan showing the different land use existing at the time of preparation of the Existing Land Use Plan of Local Planning Area, Jalandhar and as indicated on Drawing No. DTP (J) 03/2009 dated 17.06.09.

f) **Local Planning Area"** means the Local Planning Area declared under section 56(1) of the Punjab Regional and Town Planning and Development (Amendment) Act 2006 vide notification No12/9/2007-4HG1/5541 dated 18.7.07 and as amended vide Notification No. 12/9/2007-4HGI/2026 dated 16.07.09 and Notification No12/9/2007-4 Hg-I/2365 dated 26.08.09 published in the Punjab Govt. Gazette.

g) **"Non-Conforming Building or Use"** means use in respect of any land or building in the Local Planning Area, the existing use of which land or building is contrary to the prescribed land use in the Master Plan.

h) **"Proposed Land use Plan"** means the plan showing the proposed / admissible uses for different areas and land use zones covered in the Local Planning Area, Jalandhar and as indicated on Drawing No. DTP (J) 09/2010 dated19.04.2010/Rev.02-08-2010.

i) **"Sector Plan" (Zonal Plan)** means the detailed plan of a sector as delineated in the Master Plan and approved by the Chief Town Planner, Punjab showing all or any of the following:-

- Major road network, location of main utilities sites, green belts/buffers, water bodies or other restrictions imposed on the development.
- Area temporarily or permanently prohibited for the building operation.
- Permissible land uses
- Any other detail provided in the layout plan.

j) **"Zoning Plan"** means the plan of an area or part thereof or supplementary layout plan approved by the Chief Town Planner, Punjab and maintained in the office of Competent Authority showing the permitted use of land and such other restrictions on the development of land as may be prescribed in the zoning regulations for any part or whole of the area such as sub-division of plots, open spaces, streets, position of protected trees and other features in respect of each plot, permitted land use, building lands, height, coverage and restrictions with regard to the use and development of each plot in addition to such other conditions as laid down in these regulations hereafter.

k) **"Mixed land use"** means the multiple use of land (except orange & red category industry) is allowed to co-exist subject to fulfillment of environmental safeguards.

l) **"Knowledge Park**": Such parks in residential land use zones can have only such activities which are absolutely non - polluting, non hazardous environment friendly, free from noise & vibrations,

having no polluting effect on air and water and causing no public nuisance whatsoever. Uses in such parks will be determined by Chief Town Planner, Punjab.

m) "Logistic Park" is an integrated facility to serve as a business hub for storage, insurance and distribution purposes for the trading of manufactured products.

n) "Farm House" means a building allowed on a holding of agricultural land for residential and agricultural activity of the land holder.

o) "Atta Chakki" is categorized as service industry where:

Grinding of only food grains is carried out through the process of crushing under the load and rotational movement of two plates or blocks.

The maximum electric load does not exceed 20 kW.

The Atta Chakki shall be used for grinding food grains supplied by the consumers only and no sale / purchase of food grains / flour shall be carried out by the Atta Chakki owner at commercial level.

The Atta Chakki shall only be permitted on roads having minimum 12 m ROW.

p) "House Hold Industry" means house hold occupation / industry conducted only by family members / persons residing in the dwelling with or without power and not contrary to the provisions of the Water Pollution (Prevention and Control) Act 1974, Air Pollution (Prevention and Control) Act 1981 and Environment (Protection) Act 1986.

q) "General Industry" shall include all categories of industries (small scale, Medium / large scale) except highly obnoxious, hazardous, inflammable, non compatible and polluting industries as defined by Punjab Pollution Control Board

r) "Special industry" shall include industries that are highly obnoxious, hazardous, inflammable, non compatible polluting industries as defined by Punjab Pollution Control Board from time to time.

s) "Public and semi public activities" means governmental / semi governmental offices, educational / cultural, religious and medical / health institutions, community centres etc excluding privately run establishments.

Terms and phrases used, but not defined in these regulations, shall have the same meaning as assigned to them in Act.

14.1.4 Land use zones

The proposed land use plan incorporated in the Master Plan of LPA depicts the following land use zones:

a. Residential
b. Commercial
c. Mixed land use
d. Industrial

e. Recreational

f. Agricultural and water bodies

14.1.5 Land use classes

For the purposes of these regulations various land uses are grouped into following land use classes:

Sr. No.	Land use Class	Use Class Code
1	Housing	A
2	Trade and Commerce	B
3	Manufacturing	C
4	Transport, Storage and Warehousing	D
5	Offices	E
6	Education, Training and Research Institutes	F
7	Healthcare facilities	G
8	Recreation, Entertainment	H
9	Public utilities and services	I
10	Agriculture, forestry and fishing	J

14.1.6 Use provisions in land use zones

Following table describe the land use classes and their further sub – classes permitted in various land use zones. The shaded cells in the table indicate that the use is generally permissible. A number in the cell indicates the conditions listed at the end of the table subject to which the use is permissible.

LAND USE ZONES AND PERMISSIBLE LAND USES							
Use class		**Land use zones**					
Sub code	**Description**	**Residential**	**Commercial**	**Mixed land use**	**Industrial**	**Recreational**	**Rural andAgricultural**
A	**Housing**						
A-1	Residential houses in the form of plotted development, group housing, farm houses for customary residence including household industry, EWS Housing				1		2
A-2	Old age homes, Orphanages, Hostels for students, working women etc.						
A-3	Service apartments, Hotels including Star Hotels, Motels, Guest Houses, Dharamshalas, Lodging Houses				3		
A-4	Jails, asylums, reformatories and the like						
A-5	Residences for watch and ward staff, residences for industrial workers/ management						
A-6	Housing not classified above						
B	**Trade and Commerce**						
B-1	Retail trade including markets for fruits and vegetables, meat and fish; super markets						
B-2	Department stores, Malls including super market, retail trade, restaurants and multiplexes						
B-3	Personal and community services like laundry, hair dressing, beauty parlors, tailoring, coaching classes, cyber cafes, Atta Chakki, Repair of Household Appliances, Bank Branches, ATM						
B-4	Wholesale trade with storage of commodities	4					4
B-5	Filling Station **						
B-6	Kerosene Storage/Gas Godown						

LAND USE ZONES AND PERMISSIBLE LAND USES							
Use class		**Land use zones**					
Sub code	**Description**	**Residential**	**Commercial**	**Mixed land use**	**Industrial**	**Recreational**	**Rural andAgricultural**
B-7	Gas Distribution (without storage of cylinders)						
B-8	Trade Fares, Exhibition and Conventional centers						
B-9	Showroom of Mills/ Factory Retail Outlets						
B-10	Trade not classified above						
C	**Manufacturing (NIC Section C)** *						
C-1	Manufacture of food products (NIC Division 10)	11		10			
C-2	Manufacture of beverages (NIC Division 11)						
C-3	Manufacture of textiles (NIC Division 13)						
C-4	Manufacture of wearing apparel (NIC Division 14)			10			
C-5	Manufacture of leather and related products (NIC Division 15)						
C-6	Manufacture of wood and products of wood and cork, except furniture; (NIC Division 16)			10			
C-7	Manufacture of paper and paper products (NIC Division 17)						
C-8	Printing and reproduction of recorded media (NIC Division 18)						
C-9	Manufacture of coke and refined petroleum products (NIC Division 19)						
C-10	Manufacture of chemicals and chemical products (NIC Division 20)						
C-11	Manufacture of pharmaceuticals, medicinal chemical and botanical products (NIC Division 21)						
C-12	Manufacture of rubber and plastics products (NIC Division 22)						
C-13	Manufacture of other non-metallic mineral products (NIC Division 23)						5
C-14	Manufacture of basic metals (NIC Division 24)						
C-15	Manufacture of fabricated metal products, except machinery and equipment (NIC Division 25)						
C-16	Manufacture of computer, electronic and optical products (NIC Division 26)						
C-17	Manufacture of electrical equipment (NIC Division 27)						
C-18	Manufacture of machinery and equipment n.e.c.(NIC Division 28)						
C-19	Manufacture of motor vehicles, trailers and semi-trailers (NIC Division 29)						
C-20	Manufacture of other transport equipment (NIC Division 30)						
C-21	Manufacture of furniture (NIC Division 31) (except saw mill)						
C-22	Other manufacturing (NIC 32)						
C-23	Repair of machinery and equipment (NIC Division 33)						
C-24	Milk Chilling(independent plot), Pastuerization plant, Cold Storage	12		13			
C-25	Rice Shellers, Processing of Farm Products, Brick Kilns, Lime/ Charcoal Kilns						
C-26	Cottage Industry, Repair of Household Articles, Cycles and scooters						
C-27	I.T. Parks, Knowledge Park						
C-28	Cement, Sand and Concrete Mixing Plant(Batching plant), Bitumen, Sand, Concrete Mixing Plant(Hot Mix Plant)						
C-29	Manufacturing and Storage of Fire Works	7		13			
D	**Transport Storage and Warehousing**						
D-1	Warehousing and storage activities for transportation (NIC Division 52) and Loading & unloading yard						6
D-2	Rail and Air Freight Terminals						
D-3	Truck Terminals						
D-4	Bus Terminals, Auto-Rickshaw/ Taxi Stand						

LAND USE ZONES AND PERMISSIBLE LAND USES							
Use class		**Land use zones**					
Sub code	**Description**	**Residential**	**Commercial**	**Mixed land use**	**Industrial**	**Recreational**	**Rural andAgricultural**
D-5	Warehousing, Logistic Park, Storage & Godowns, Freight complex, Container Yards						
E	**Offices**						
E-1	Publishing of books, periodicals and other publishing activities (NIC Group 581) Software publishing (NIC Group 582)			10			
E-2	Motion picture, video and television programme production, sound recording and music publishing activities (NIC Division 59)						
E-3	Broadcasting and programming activities (NIC Division 60)						
E-4	Telecommunications (NIC Group 61), Govt/ Semi-Govt / Private Business offices						
E-5	Computer programming, consultancy and related activities (NIC Division 62)						
E-6	Information service activities (NIC Division 63)						
E-7	Finance, Banking and insurance (NIC Section K)						
E-8	Real estate activities (NIC Section L)						
E-9	Professional, scientific and technical activities (NIC Section M)						
E-10	Administrative and support services (NIC Section N)						
E-11	Public administration and defence; compulsory social security (NIC Section O)						
E-12	Professional Services like Lawyers, Accountants, Architects, Charted engineers						
F	**Educational, Training and Research Institutes**						
F-1	Pre-Primary Schools, Play schools Kinder Garten						
F-2	Primary Schools,						
F-3	Secondary Schools, Colleges, Vocational Training Institutes,						
F-4	Research and Training Centres, Universities, Centres of Advanced Education and training like IIM or IIT, Medical Institute						
F-5	Educational, Training and Research Institutes not classified above						
G	**Health care facilities**						
G-1	Medical and Dental Clinics and Dispensaries	8					
G-2	Hospitals (NIC Group 861) and Health Center	8					8
G-3	Nursing care facilities (NIC Group 871)	8					
G-4	Residential care activities for mental retardation, mental health and substance abuse (NIC Group 872)						
G-5	Residential care activities for the elderly and disabled (NIC Group 873)						
G-6	Veterinary services						
G-7	Health care facilities not classified above.						
H	**Arts, entertainment, recreation, cultural and religious activities**						
H-1	Arts, entertainment and recreation (NIC Section R) and Multimedia						
H-2	Libraries, archives, museums and other cultural activities (NIC Division 91)						
H-3	Gambling and betting activities (NIC Division 92)e.g.Race Course						
H-4	Sports activities and amusement and recreation activities (NIC Division 93) tot-lots, playgrounds, stadia, golf courses etc.						
H-5	Places of worship						
H-6	Marriage Palaces						
H-7	Arts, entertainment and recreation activities not classified above						
I	**Public Utilities and Services**						
I-1	Electricity, gas, steam and air conditioning supply (NIC Section D)						
I-2	Water collection, treatment and supply (NIC Division 36)						
I-3	Sewerage (NIC Division 37)						

LAND USE ZONES AND PERMISSIBLE LAND USES							
Use class		**Land use zones**					
Sub code	**Description**	**Residential**	**Commercial**	**Mixed land use**	**Industrial**	**Recreational**	**Rural andAgricultural**
I-4	Waste collection, treatment and disposal activities; materials recovery (NIC Division 38) and Carcass Disposal Site	7					
I-5	Postal and courier activities (NIC Division 53)						
I-6	Police station						
I-7	Fire Station						
I-8	Public utilities and Services not classified above						
I-9	Cemeteries, Graveyards, Cremation grounds						
I-10	Telecommunication Towers / Antenna						
J	**Agriculture, forestry and fishing (NIC Section A)**						
J-1	Crop and animal production, hunting and related service activities (NIC Division 01)	14					
J-2	Land Conservation and Preservation measures such as Storage, Check Dams and other water harvesting measures						
J-3	Fishing and aquaculture (NIC Division 03)						
J-4	Quarrying of stone, sand and clay (NIC Group 081)						
J-5	Plant Nursery and Greenhouses related to Nursery, Floriculture						
Notes:							
NIC	National Industrial Classification (All Economic Activities) 2008, Central Statistical Organization, Ministry of Statistics and Programme Implementation, Government of India, www.mospi.nic.in						
A	Shaded areas indicate that the use class is permissible in the zone						
B	Shaded area with number / notation indicates the conditions attached						
	EWS Housing only						1
	Only farm houses permissible						2
	Guest Houses and Star hotels only						3
	Wholesale trade in agricultural commodities only provided it is minimum 200 m away from village abadies / residential areas						4
	Only Manufacture of bricks, earthen pots, country tiles etc.						5
	Warehousing for agricultural commodities only.						6
	Permissible till time the residential or any other activity compatible to residential zone occurs within a radius of 500 metres from the site, after which NOC / permission issued to the applicant shall cease to exist and the activity shall relocate itself to another suitable site / zone.						7
	Subject to fulfillment of conditions of Pb. Govt. Notification No. 17/17/5-Hg2/311 dated 11.01.08 and instructions issued from time to time						8
	Only Knowledge Parks as defined at Sr. No. l						9
	Only Green Industries						10
	Only bakery						11
	Only in low density zone with the condition that it is located minimum 100 mtr away from the lal lakir/ phirni or a village abadi. In case, a cold store is to be set up within a distance of 100 mtr from already approved residential area (other than being a village abadi) or an approved residential colony is to be set within 100 mtr of an exsting cold store, then the owner of land use which comes later shall be bound to provide a minimum of 15mtr wide green buffer of broad leaves trees to the site in which approved residential area or cold store is located.						12
	Only in industrial mix						13
	Except animal production.						14
* All types of industries permitted in the designated land use zone are subject to the fulfillment of requirements of different departments							
** The siting of petrol pumps shall be subject to instruction / guidelines of IRC/ MORTH/TCPO/Punjab govt. issued from time to time.							
C	Minimum area required for Educational and Health care facilities shall be as prescribed by government or the accrediting authorities from time to time						
	All developments will be subject to Environmental Clearance wherever required.						
	Minimum width of the access road for all public places and involving “Assembly” occupancy shall be 18 m.						

The activities / uses not mentioned in the above table but found compatible for a particular land use zone shall also be permissible with permission of the competent authority.

14.1.7 Designated uses

Following uses have been specifically designated in the proposed land use plan:

- Traffic and Transportation

- Utilities
- Governmental
- Public and semi public facilities

14.1.8 Use provisions in designated areas

Following uses are permissible in the designated areas mentioned above:

i) **Traffic and Transportation: Permissible uses**

Rail yards, Railway Station and sidings, Transport Nagar (including Post and Telegraph Offices and Telephone Exchange, Dhabas, Labor Yards, Areas for loading and unloading, Stores, Depots and Offices of goods booking agencies, Petrol Filling Station and Service Garages, Parking Spaces, public utilities and buildings), Bus Terminus and Depot, Bus Stop Shelter, Taxi / Tonga / Rickshaw / Scooter Stands, Parking Spaces.

ii) **Utilities: Permissible uses**

Water Supply, Drainage, Storm Water, Waste Processing and disposal, Electricity, Communication Systems and related installations etc.

iii) **Public and semi Public Activities: Permissible uses**

Governmental and semi Governmental offices, Governmental Administrative Centres, Secretariat, Educational – Cultural and Religious Institutions including Theatres, Auditoriums etc, Medical Health Institutions, Community Centres, Club, Orphanage, Old Age Home, Bank, Police Station etc.

iv) **Other Special Areas: Permissible uses**

All the uses related to Defense Services and any other use as decided by the Ministry of Defense shall be permissible.

v) **Prohibited Areas:**

The following areas have been identified in Local Planning Area Jalandhar around which building activity has been prohibited as per notifications of the Central Government issued from time to time:

- 223 ABOD at Suranussi: An area up to 457 metres (500 yards) from the crest of the outer perimeter of the works of Defense has been proposed as No Construction Zone around 223 ABOD as per the Notification No. SRO 226 dated 7th November 2001.
- 23 Field Ammunition Depot at villages Sura, Lidhran, Hirapur and Nandanpur: An area lying within the distance of 1200 yards from the outer perimeter of the Works of Defense has been proposed as No Construction Zone around 23 Field Ammunition Depot as per the Notification No. SRO 122 dated 29th August 2003.
- Ammunition Depot, Mand: All the land comprised in the area lying within the distance of 1200 yards from the outer parapet of the Works of Defense has been proposed as No Construction Zone around Ammunition Depot Mand at villages Mand, Basti Ibrahim Khan and Gajipur as per Notification No. SRO 7 dated 30th November 2003.

- Air Force Station, Adampur: As per Notification No. SRO 12 dated 14th February 2007, no construction or structure shall be constructed, created or erected or no tree shall be planted or any land within the limits of 100 metres from the crest of the outer parapet except that the limit will extend up to 900 metres from and in line with the boundary of the bomb dump at Indian Air Force Station.
- Defense establishment Jandhu Singhan: All the land comprised in the area lying within the distance of 50 metres from the outer boundary wall around the Defence establishment of the works of Defence has been proposed as No Construction Zone around Jandhu Singhan on Jalandhar – Hoshiarpur Road as per the Notification No. SRO 20 dated 14th March 2007.

However, in case Army authorities issue prior permission to any building / premises which falls under the No Construction Zone of the Master Plan, the department of Housing and Urban Development shall have no objection to that building / premises provided the land use should be compatible to the existing adjoining activities / land uses.

vi) **Forest Areas: Permissible uses**

This area indicates all Reserved Forests as notified by the Forest Department. No activity other than Forest is permitted in this area unless expressly allowed by the Forest Department.

14.1.9 Special Conditions

- The siting of Petrol Pump / Filling Station shall be subject to instructions/guidelines of IRC/MORTH/TCPO /Punjab Govt. issued from time to time.
- Minimum width of access road for warehousing uses shall be 80 feet.
- All public and semi public uses in residential zone shall be located on independent plots with minimum access of 18 metres.

14.1.10 Residential Densities

Residential zone is divided in to three sub – zones viz., High Density Zone, Medium Density Zone and Low Density Zone and are shown on the Proposed Land Use Plan Drg. No. DTP (J) 09/2010 dated 19.04.2010/Rev. 02-08-2010. The maximum permissible density in these zones shall be as shown in table below:

Table No.14.4: Proposed Residential Density

Sr. No.	Zone	Density
1	High Density Zone (RD1)	Above 201 persons per acre
2	Medium Density Zone (RD2)	151-200 persons per acre
3	Low Density Zone (RD3)	Up to 150 persons per acre

To encourage flatted residential development and to preserve the valuable agricultural land, residential density @ 60 dwelling units per acre shall be permissible for stand alone group housing projects, irrespective of the density of zone.

14.1.11 Implementation of these regulations

- All authorities competent to grant permission for layout or sub – division of land or construction of building or development of land in any other form shall ensure that the permitted development is in compliance with these regulations.
- Land owners desirous of developing their land can obtain, by applying to the designated authority in writing and giving details of their land along with necessary maps, a list of permissible uses.
- The land owners proposing development of certain uses on their land shall obtain a certificate of "Compliance with Master Plan" from a designated authority.

14.2 SECTION – II: DEVELOPMENT CONTROL REGULATIONS

The purpose of the Development Control Regulations (DCR) is to assist developers and end – users within the Local Planning Area to strive for a quality and environment – friendly development.

These Development Control Regulations are applicable to new and future developments and developers shall have to abide by the zoning and planning intentions of the Master Plan. ***However, development proposals / projects that have been granted approval (including CLU) by the Competent Authority before coming these into operation will continue to be honoured subject to the terms and conditions of approval and shall not be affected by these controls.***

14.2.1 Residential

a) Minimum plot size

Category	High Potential Zone (I & II)	Medium Potential Zone (I & II)	Low Potential Zone (I & II)	Low Potential Zone III
Residential Plotted	75 acres 25 acres*	50 acres 25 acres*	10 acres	10 acres
Group Housing a) General b) EWS	5 acres independent 2.5 acres	5 acres independent 2.5 acres	5 acres independent 2.5 acres	5 acres independent 2.5 acres
* The minimum area of 25 acres for residential colony is subject to the following conditions: a) where zonal / sector plan has been approved by the government. b) that such chunk of land is compact and contiguous of regular shape, having proper connectivity to (existing and proposed) civic amenities.				

Note:

1. In case of left out pocket, i.e., where on all sides the construction has already taken place that left out area without any minimum stipulation can be developed as a residential colony.
2. In category Low III within Municipal Limits any area of land can be developed as a colony.

Parking requirements for plotted developments are shown in following table**:**

Plot size	Parking requirements
85 sq m and less (100 sq yd and less)	2 scooter parking spaces
86 – 168 sq m (101 – 200 sq yd)	1.5 car parking spaces within plot area
169 – 425 sq m (201 – 500 sq yd)	2 car parking spaces within plot area
425 sq m and more (500 sq yd and more)	3 car parking spaces within plot area

Note:

1. Deviation of up to 10% of this control is allowed, if it is arising from site conditions / constraints.
2. The minimum width of roads within residential areas shall not be less than 12 m, if the existing road is less than 12 m, the proportionate land on both sides shall be safeguarded for widening to comply with the minimum requirement. The height of buildings on these roads shall not exceed ground plus two (G+2) storeys.
3. Size of the front gate on boundary wall and construction of front boundary wall is optional to meet the parking requirements.

14.2.2 Group Housing

1	Minimum Plot size	
	• Within MC limits	4000 square meters
	• Outside MC limits	
	a) For General Category	5 acres
	b) For EWS	2.5 acres
2	Minimum Road width	For group housing stand alone projects, minimum width of approach road is 60’ but the promoter is required to leave space from his own land for widening it to 80’ and the space so left shall be public space. In the planned colony, group housing shall not be permissible on a road less than 60’ wide.
3	Minimum Frontage	20 meters
4	Permissible FAR	1:1.75
5	Permissible Height	There shall be no restrictions on the height of building subject to clearance from Air Force Authority and fulfillment of other rules such as set backs, distance between building etc. However, structural safety and fire safety requirements as per N.B.C. shall be compulsory.
6	Parking provisions	For group housing developments, the requisite parking provision is 1.5 ECS per 100 sq m of covered area. The maximum provision allowable for group housing projects is 3 ECS per dwelling unit.

Note:

1. Construction of residential houses sold by promoters on floor basis shall also be considered as Group / Flatted housing developments and parking requirements shall be as per the norms applicable to the group housing.

14.2.3 Farm House

Minimum area	2.5 acres
FAR	0.04
Ground Coverage	0.2%
Number of storeys	2
Height	Single Storey 18’-0” Double Storey 28’-0”
Hard Surface	10%

Note:

1. Farm House shall only be allowed to upkeep the farm operations and it shall not be used for independent residential or any other purpose.

14.2.4 Commercial

Commercial uses in residential zones located within the municipal limits shall be allowable along 80 feet wide roads with minimum 20 m frontage. The area requirements for such commercial developments shall be as per the Municipal's rules and regulations.

For stand alone commercial complexes with height greater than three storeys within as well as outside the Municipal limits, the additional criteria listed in following table shall apply.

Additional criteria for stand – alone commercial complexes (more than three storeys)

Item	Permissible Norms / Standards
Minimum Plot size	1000 sq m
Minimum frontage	20 m
FAR	1:1.75
Maximum Ground coverage	40%
Parking	For projects with no multiplexes, the minimum parking shall be 2 ECS per 100 sq m of covered area (including circulation area)
	For projects with multiplexes/cinemas/theatres, the minimum parking shall be: b) 3 ECS per 100 sq m of covered area, in respect of the covered area of the multiplex component + 30% of the total covered area of that component and c) 2 ECS per 100 sq m of covered area, in respect of balance commercial component and circulation area
	Parking norms within the municipal limits shall be the same as that notified by the Department of Local Government.
	Total parking requirement shall be provided in the compulsory front set back and within the development site boundary or in the basement.
Landscaping	If the site area is one acre or above, minimum 15% of the total area is to be reserved for landscaping purposes
For movement of fire tender	The minimum setback distance is to comply with the existing norms and standards.

Note:

The ECS are counted as below:

- 23 square meters for open parking
- 28 square meters for parking under stilts on ground floor
- 32 square meters for parking in the basement.

At local level

There will be provisions for small scale, double storey commercial facilities at the local level within as well as outside the Municipal limits, subject to the condition that abutting road shall have a minimum width of 18 m with minimum 6 m front setback from road for parking purposes.

These commercial facilities are intended to serve the needs of local residents only and will not be shown separately on the Draft Master Plan. Instead, they are subsumed under the predominant residential land use.

*A*ll properties within and outside Municipal Limits that abut **National Highways/State Highway, other intercity roads and proposed ring road – R1 (width 200' and above)** shall be through service lanes and shall have no construction zone as below:

Sr. No.	Category of Road	Right of way of the road (in Mts.)		No construction zone on both sides of the R.O.W.
		Within M.C.	Outside M.C. Limits	
I	**NATIONAL HIGHWAY**			
	Jalandhar-Ludhiana Section (NH-1)	55-60	55-60	5
	Jalandhar-Amritsar section (NH-1)	55-60	55-60	5
	Jalandhar-Pathankot Road (NH-1A)	25-30	45	5
	Jalandhar-Hoshiarpur Road (NH-70)	25-30	45	5
	Jalandhar-Nakodar Road (NH-71)	30-35	45	5
II	**STATE HIGHWAY**			
	Phagwara-Nawanshahr Road	25-30	45	5
III	**OTHER INTERCITY ROADS**			
	Jalandhar-Kapurthala Road	25-30	45	5
	Phagwara-Hoshiarpur Road	18-20	45	5
	Phagwara-Nakodar Road	18-20	30	5

14.2.5 Institutional Buildings

The development controls for institutional buildings are tabulated as follows:

Item	Permissible Norms / Standards
Plot size	Area and size shall be as per the affiliation authority norms.
Frontage	200 feet
FAR	1:1
Ground Coverage	40%
Road width	The minimum road in front of institutional developments should be 18 m. The only exceptions are nursery and primary schools.
Parking provisions	For institutional developments, the requisite parking provision is 1 ECS per 100 sq m of covered area

Note:

1. Other building regulations shall be governed by the zoning plan approved by the competent authority.

14.2.6 Sports and Recreational use

The proposed development parameters for this zone are listed as follows:

Item	Sports activities	Recreational activities
Minimum size	As per the specification of the concerned authority	As per the specification of the concerned authority
Maximum FAR	1:0.02	1:0.05
Maximum Ground Coverage	1%	3%
Maximum number of storeys	2	2
Maximum height	28 feet	28 feet
Maximum hard surface area	5%	10%

Examples of sports and recreational facilities that can be allowed within this zone include:

- Sports Stadium
- Golf Course
- Open Air Theatre
- Indoor Stadium
- Lifestyle Sports Hub
- Theme Park
- Swimming Complex
- Amusement Park
- Other leisure and recreational spaces

Ancillary commercial uses (for instance Banking and Finance Outlets) may be allowed within this zone to cater to the needs of future users. However, this shall be limited to a maximum of 5% of the total Ground Floor Area. Pure commercial uses such as shopping malls, cinema halls, multiplexes and the like are not allowed in this zone.

14.2.7 Industrial

Site coverage	
For the first 2420 sq yds	50% of the site
For the next 2420 sq yds	33% of the site
In excess of 4840 sq yds	25% of the site
FAR	1:1.0
Parking	1 ECS / 100 sq m of covered area
Road width	The minimum road width for industrial unit shall be 12 m.
Height	There shall be no restrictions on height of building subject to clearance from Air Force Authority and fulfillment of other rules such as set backs, distance between building etc. However, structural safety and fire safety requirements as per N.B.C. shall be compulsory.

Note:

1. The minimum road width for each land use shall be as specified in the Master Plan or by the Government policy / guidelines issued from time to time. However, in case the existing road width is less than the minimum specified width in the Master Plan / Government policy then the proportionate land on both sides shall be safeguarded for widening to comply with the minimum requirement. In case, where habitation / settlement comes in alignment, in that case widening shall be on other side of habitation / settlement.
2. In case the site of any project is situated within Municipal limits and the project is submitted to Municipal Corporation / Local Body for approval then the building byelaws of the concerned local body shall be applicable provided the land use is in conformity to Master Plan.
3. Residential component in the industrial plot / premises shall not exceed 5% of the area of the site and shall be within the maximum permissible covered area.
4. Industrial / IT Park shall have minimum 10 acres area. In IT Park, IT component shall have FAR 2. In industrial park, for an industry component FAR shall be 1 and other components shall have FAR as mentioned under different uses in the Master Plan.

14.2.8 Environmental considerations

1. All the textile / dying and electroplating units shall set up treatment plants individually or collectively to achieve zero liquid discharge.
2. Minimum buffer of 15 meters green belt of broad leaf trees should be provided around the boundary of village abadies falling in industrial zone of Master Plan. A buffer strip of 15 meters of broad leaf trees shall also be provided between residential areas and red category industries falling in industrial zone of Master Plan, boundaries of which are located within 100 m from the boundary of such areas. It is clarified that 15 meter buffer shall be provided by the owner of the project who comes later.
3. All residential colonies, commercial establishments like shopping malls, multiplexes etc shall maintain a minimum distance of 250 meters from the hazardous (maximum accident hazardous) industries notified by the competent authority. The distance should be measured from source of pollution / hazard in the industrial premises to the building lines as per zoning plan of the colony / complex. However for specified type of industry like Rice Sheller / sella plants, stone crushers, hot mix plants, brick kilns etc standards prescribed by PPCB or any other agency shall apply.

14.2.9 Other development controls and guidelines required

1. Expansion of village Abadies: Contiguous expansion of village abadies in non residential zones of Master Plan is permissible up to the extent shown in the Master Plan. However, for the village abadies falling in residential zone of Master Plan no such limit has been earmarked as the area around them is already earmarked as residential.
2. The contigous expansion of village abadies falling under agricultural zone of Local Planning Area is also permissible to accommodate the natural growth of village abadies.
3. Regulation for village abadi: Special building regulation shall be prepared for the development and regulation of an area falling within the Lal Dora or phirni of the villages falling in the Local Planning Area.
4. The existing High Tension lines shall be shifted along the road but outside the Right of way to ensure unhindered ROW for traffic and other services for all times.
5. Minimum 10 meters wide green strips on each side of minor drain shall be maintained and other major water bodies shall have minimum 30 meters green strips on each side. Realignment of water bodies shall be permissible wherever feasible, subject to the certification by the Drainage / Engineering Department to ensure free flow of storm

water. After any such realignment, the river mouth, the river bed and the green strip on either side shall be maintained at least to the minimum prescribed level. In these green strips, golf course, sports and recreational activities shall be permissible but no construction would be allowed. The supporting facilities for these activities shall be constructed outside the green strips.

14.3 Section III: Exceptions

1. Notwithstanding the above, the uses specifically provided in the Sector Zoning Plans shall be permissible or as may be allowed by the Chief Town Planner, Punjab.
2. Uses determined by the Chief Town Planner, Punjab as compatible with uses permissible shall be allowed in respective zones.
3. Use of land covered under Optimum Utilization of Vacant Government Land (OUVGL) Scheme or any other project of the State / Central Government shall be determined by the Government at any appropriate time not withstanding the provisions of this Master Plan.
4. Development / projects approved prior to coming in to force of these regulations shall be deemed to be in compliance with these Regulations.
5. In the event of conflict in interpretation of data within the study area, the information in the GIS format will be deemed as the accurate version and will prevail.
6. In case the area of a project falls partially under no construction zone along a water body, relaxation of maximum upto 5% on the total area of the project shall be allowed towards calculation of saleable area in lieu of the area falling under the no construction zone. In case, the area falling under no construction zone is less than 5% of the total area of the project then the relaxation shall be proportionately less.
7. The buildings / premises for which the existing (present) land use has been retained as such in the Master Plan may continue to operate without time limit. However, in case the present use of the buildings / premises is discontinued (partially or wholly) these buildings / premises or part thereof may be put to any compatible use (except industry) with the surrounding use zone in the Master Plan provided it fulfills the other development regulations / controls as laid down in the Master Plan or as prescribed by the Govt. / Local Body from time to time.

Note : The Development controls/Guidelines/Norms & Standards revised from time to time by the Government shall have overriding effect on the Development controls mentioned in the master plan.

Annexure I

LIST OF VILLAGES AND TOWNS FALLING IN LOCAL PLANNING AREA JALANDHAR

Sr. No.	Name	Hdst. No.	District	Area (in hectares)	Population
1	Jalandhar City	-	Jalandhar	9341	714077
2	Jalandhar Cantt.	-	Jalandhar	1562	40531
3	Sarmastpur	149	Jalandhar	174	1321
4	Ball	150	Jalandhar	321	2132
5	Mokhe	153	Jalandhar	172	717
6	Ispur	154	Jalandhar	94	458
7	Lohian	155	Jalandhar	66	71
8	Randhawa Masanda	156	Jalandhar	296	3378
9	Bansian	157	Jalandhar	138	12
10	Bulandpur	162	Jalandhar	194	2874
11	Raipur Rasulpur	163	Jalandhar	580	4824
12	Dhogri	164	Jalandhar	1091	3908
13	Jandhu Singha	165	Jalandhar	685	5579
14	Jauhl	201	Jalandhar	139	1601
15	Kangniwal	202	Jalandhar	253	1919
16	Chander Sain	203	Jalandhar	55	469
17	Kabulpur	204	Jalandhar	156	1466
18	Raowali	205	Jalandhar	106	1706
19	Nangal Salempur	208	Jalandhar	108	614
20	Nangal Jamalpur	209	Jalandhar	39	319
21	Mubarakpur	210	Jalandhar	96	994
22	Sheikhe Pind	211	Jalandhar	86	436
23	Sherpur	212	Jalandhar	58	989
24	Dhada	216	Jalandhar	210	1619
25	Hazara	217	Jalandhar	133	1317
26	Lidhran	318	Jalandhar	254	3228
27	Fazilpur	319	Jalandhar	111	93
28	Nussi	320	Jalandhar	424	2201
29	RamSingh pur	321	Jalandhar	74	467
30	Mari Harnia	322	Jalandhar	69	73
31	Bidhipur Urf (Gopal pur)	323	Jalandhar	108	1446
32	Sarai Khas	326	Jalandhar	638	7055
33	Kahlwan	327	Jalandhar	439	2130
34	Jalla Singh	328	Jalandhar	314	726
35	Chak Ram Singhpur	329	Jalandhar	59	47
36	Bhatiju Randhawa	330	Jalandhar	222	1217
37	Kala Bahian	331	Jalandhar	265	1403
38	ParasRam pur	184	Jalandhar	200	1747
39	Talhan	185	Jalandhar	369	2946
40	Semi	186	Jalandhar	244	605
41	Damodarpur	187	Jalandhar	93	8
42	Bhojewal	192	Jalandhar	138	1227
43	Mazaffarpur	193	Jalandhar	90	882
44	Kanuni	194	Jalandhar	127	8
45	Patara	196	Jalandhar	195	2450
46	Chandpur	195	Jalandhar	119	367
47	Jaitowali	199	Jalandhar	353	2050
48	Bolina	200	Jalandhar	241	1987
49	Kot Kalan	226	Jalandhar	186	1513
50	Kot Khurd	227	Jalandhar	193	815
51	Kukar Pind	228	Jalandhar	512	2800
52	Nangal KararKhan	229	Jalandhar	121	1407

53	Rehmanpur	230	Jalandhar	81	684
54	Sufipind	231	Jalandhar	180	5549
55	Aladinpur	232	Jalandhar	20	651
56	Kasampur	233	Jalandhar	13	334
57	Alipur	234	Jalandhar	71	597
58	Bambianwali	235	Jalandhar	373	2077
59	Khusropur	246	Jalandhar	61	1908
60	Sansarpur	247	Jalandhar	134	4060
61	Jandiali	242	Jalandhar	161	801
62	Diwali	243	Jalandhar	308	1242
63	Saprai	244	Jalandhar	439	2599
64	Jamsher	245	Jalandhar	1130	8426
65	Dhin	248	Jalandhar	176	4641
66	Subhana	249	Jalandhar	57	1170
67	HaloTali	250	Jalandhar	11	7
68	Pholriwala	252	Jalandhar	648	3321
69	Chetewan	253	Jalandhar	96	893
70	Gokalpur	265	Jalandhar	70	85
71	Lambri	266	Jalandhar	174	601
72	Lambra	267	Jalandhar	120	1489
73	Chak Mochipur	268	Jalandhar	21	13
74	Hussainpur	269	Jalandhar	119	468
75	Kallianpur	270	Jalandhar	219	2070
76	Bashesherpur	271	Jalandhar	103	1181
77	Kurali	272	Jalandhar	111	897
78	Abadan	273	Jalandhar	77	308
79	Rasulpur Khurd	274	Jalandhar	51	257
80	Chak Bashesherpur	275	Jalandhar	46	109
81	Samipur	276	Jalandhar	214	1618
82	Chogawan	277	Jalandhar	263	1080
83	Dhaliwal	278	Jalandhar	164	1754
84	Wadala	281	Jalandhar	332	2268
85	Gaddowal	282	Jalandhar	84	737
86	Trar	283	Jalandhar	76	707
87	Bajra	284	Jalandhar	95	687
88	Chak Hussainpur	285	Jalandhar	11	67
89	Hassainpur	286	Jalandhar	55	792
90	Tajpur	287	Jalandhar	96	1988
91	Bhagwanpur	288	Jalandhar	155	1649
92	Nangalpurdil	289	Jalandhar	142	227
93	Phulpur	290	Jalandhar	171	1128
94	Dhanal	291	Jalandhar	227	1482
95	Kandianwali	292	Jalandhar	287	1906
96	Usmanpur	293	Jalandhar	99	375
97	Alipur	294	Jalandhar	153	1146
98	Khambra	295	Jalandhar	288	4036
99	Badshahpur	296	Jalandhar	89	445
100	Jagan	297	Jalandhar	62	114
101	Malko	298	Jalandhar	87	873
102	Sehjhangi	408	Jalandhar	184	527
103	Sadachak	409	Jalandhar	148	82
104	Pawar	421	Jalandhar	204	437
105	Kotla	432	Jalandhar	62	270
106	Gakhal	279	Jalandhar	186	1811
107	Nahal	280	Jalandhar	68	1332
108	Sange Sohal	314	Jalandhar	175	1458
109	Wariana	315	Jalandhar	123	2483
110	Nandanpur	316	Jalandhar	343	1521

111	Sura	325	Jalandhar	626	272
112	Nangal Manohar	393	Jalandhar	197	279
113	Haller	394	Jalandhar	240	1263
114	Talwara	395	Jalandhar	185	229
115	Khaira Majha	396	Jalandhar	222	1219
116	Firoz	397	Jalandhar	148	705
117	Chak Hamza	398	Jalandhar	62	44
118	Hirapur	399	Jalandhar	109	1447
119	Mirpur	400	Jalandhar	117	856
120	Mand	401	Jalandhar	235	1336
121	Basti Ibrahim Khan	402	Jalandhar	132	580
122	Gazipur	403	Jalandhar	219	772
123	Chamiara	404	Jalandhar	232	906
124	Kutlupur	405	Jalandhar	127	434
125	Safipur	406	Jalandhar	237	988
126	Zinokot	407	Jalandhar	31	45
127	Athaula	413	Jalandhar	363	2318
128	Adagil	414	Jalandhar	62	30
129	Desal pur	415	Jalandhar	109	673
130	Bagota	416	Jalandhar	136	74
131	Naranwa	417	Jalandhar	206	117
132	Kohala	418	Jalandhar	430	1381
133	Ali Chak	419	Jalandhar	133	919
134	Siawal	411	Jalandhar	224	58
135	Gill	410	Jalandhar	328	1287
136	Gobindpur	422	Jalandhar	158	631
137	Nijran	423	Jalandhar	308	1652
138	Lalian Kalan	424	Jalandhar	392	1398
139	Rampur Lalian	425	Jalandhar	231	739
140	Lalian Khurd	426	Jalandhar	204	1725
141	Chitti	427	Jalandhar	700	3464
142	Chak Rampur Lalian	428	Jalandhar	34	22
143	Singha	429	Jalandhar	526	1386
144	Gona Chak	420	Jalandhar	95	298
145	Saham	142	Jalandhar	328	868
146	Awan Chaharmi	141	Jalandhar	242	1630
147	Kang Sahbu	140	Jalandhar	529	2617
148	Mudh	139	Jalandhar	563	2175
149	Khun khun	262	Jalandhar	287	691
150	Miranpur	261	Jalandhar	246	338
151	Partap Pura	263	Jalandhar	371	2434
152	Hamiri Khera	260	Jalandhar	69	635
153	Fatehpur	259	Jalandhar	149	302
154	Shahpur	258	Jalandhar	87	310
155	Udhopur	257	Jalandhar	251	607
156	Barsal	256	Jalandhar	138	700
157	Jugral	255	Jalandhar	346	1092
158	Chananpur	254	Jalandhar	220	700
159	Luhar	264	Jalandhar	245	1503
160	Chachowal	241	Jalandhar	326	662
161	Raipur	240	Jalandhar	345	1702
162	Chak Daulatpur	239	Jalandhar	142	5
163	Salarpur	238	Jalandhar	460	1543
164	Daulatpur	237	Jalandhar	121	646
165	Hardopharala	236	Jalandhar	322	1600
166	Fateh Jalal	392	Jalandhar	586	1285
167	Khusropur	379	Jalandhar	254	1296
168	Dittu Nangal	378	Jalandhar	57	223

169	Kishangarh	116	Jalandhar	137	931
170	Manan	151	Jalandhar	192	1119
171	Naugaja	152	Jalandhar	428	2125
172	Maur	332	Jalandhar	87	31
173	Mand Maur Rahimpur	333	Jalandhar	97	498
174	Bhathe	334	Jalandhar	153	507
175	Kartarpur Rural	370	Jalandhar	2694	841
176	Kartarpur	M.C.	Jalandhar	595	25157
177	Ambgarh	343	Jalandhar	189	442
178	Passan	342	Jalandhar	175	410
179	Musapur	341	Jalandhar	99	62
180	Wariah	335	Jalandhar	63	62
181	Faridpur	336	Jalandhar	115	661
182	Dugri	337	Jalandhar	330	657
183	Daffarwal	338	Jalandhar	163	89
184	Dasupur	339	Jalandhar	80	159
185	Rahimpur	340	Jalandhar	365	1888
186	Rasulpur Brahmna	114	Jalandhar	195	645
187	Nawanpind	113	Jalandhar	55	22
188	Karari	112	Jalandhar	206	1569
189	Sangowal	115	Jalandhar	265	1663
190	Gopalpur	111	Jalandhar	100	615
191	Rani Bhatti	108	Jalandhar	140	571
192	Sital pur	109	Jalandhar	150	582
193	Nizamudin pur	110	Jalandhar	132	747
194	Budhiana	197	Jalandhar	405	1566
195	Nauli	180	Jalandhar	392	1072
196	Nangal Fatehkhan	181	Jalandhar	231	886
197	Sarnana	182	Jalandhar	431	489
198	Kotli Than Singh	183	Jalandhar	417	2720
199	Naurangpur	170	Jalandhar	331	766
200	Khichi Pur	169	Jalandhar	307	836
201	Talwandi Araian	168	Jalandhar	271	666
202	Chuharwali	167	Jalandhar	448	2679
203	Madar	166	Jalandhar	303	1861
204	Daulatpur	148	Jalandhar	272	1100
205	Sikander pur	147	Jalandhar	263	1326
206	Shahpur	146	Jalandhar	164	96
207	Lesariwala	145	Jalandhar	394	1972
208	Udesian	144	Jalandhar	154	1306
209	Chhatowali	143	Jalandhar	130	329
210	Arjanwal	141	Jalandhar	242	1630
211	Mohammadpur	140	Jalandhar	159	804
212	Alawalpur	M.C.	Jalandhar	100	7172
213	Muradpur	138	Jalandhar	90	301
214	Jagrawan	137	Jalandhar	242	479
215	Jaganpur	136	Jalandhar	120	181
216	Golpind	135	Jalandhar	100	159
217	Talwara	134	Jalandhar	77	497
218	Sagran	56	Jalandhar	91	582
219	Kariana	55	Jalandhar	412	1383
220	Khurdpur	54	Jalandhar	234	2568
221	Fatehpur	53	Jalandhar	58	545
222	Chomon	58	Jalandhar	639	7324
223	Adampur	M.C.	Jalandhar	873	16620
224	Haripur	63	Jalandhar	1036	3192
225	Beas Pind	117	Jalandhar	84	3908
226	Kotli Sheikhan	118	Jalandhar	123	241

227	Kala Bakra	119	Jalandhar	455	2902
228	Kishanpur	120	Jalandhar	232	774
229	Dolike Sunderpur	128	Jalandhar	361	1799
230	Duhra	129	Jalandhar	199	1533
231	Kapur Pind	198	Jalandhar	476	2350
232	Puran Pur	190	Jalandhar	165	1020
233	Daryapur	412	Jalandhar	71	12
234	Virk	242	Jalandhar	670	5195
235	Budo Punder	199	Kapurthala	361	155
236	Ibban	202	Kapurthala	286	1522
237	Dhapai	192	Kapurthala	220	1222
238	Rasulpur Brahmna	200	Kapurthala	155	128
239	Khojewali	198	Kapurthala	136	1209
240	Gokalpur	197	Kapurthala	88	16
241	Wadala Khurd	201	Kapurthala	370	692
242	Wadala Kalan	193	Kapurthala	311	1266
243	Khajurla	82	Kapurthala	478	1644
244	Chaheru	83	Kapurthala	568	2603
245	Hardaspur	85	Kapurthala	224	1773
246	Sapror	86	Kapurthala	332	1209
247	Mehat	89	Kapurthala	282	2765
248	Narang Shahpur	90	Kapurthala	240	1627
249	Khangura	76	Kapurthala	151	895
250	Palahi Dhak Palahi	60 61	Kapurthala	527	2724
251	Khurampur Dhak Khurampur	63 64	Kapurthala	197	978
252	Bhula Rai Dhak Bhula Rai	65 66	Kapurthala	461	4026
253	Phagwara	M.C.	Kapurthala	1600	102253
254	Phagwara Sharki	73	Kapurthala	790	2065
255	Hajipur	62	Kapurthala	170	97
256	Chachoki Dhak Chachoki	103 104	Kapurthala	231	5517
257	Maheru	84	Kapurthala	512	1735
258	Chak Hakim	75	Kapurthala	161	1508
259	Ahmedpur	205	Kapurthala	247	795
260	Alodi	203	Kapurthala	81	1000
261	Kotli	204	Kapurthala	85	70
262	Dhak Narangshahpur	91	Kapurthala	32	362
263	Gandwan	92	Kapurthala	208	1385
264	Naranpur	93	Kapurthala	92	466
265	Atholi	94	Kapurthala	244	1331
266	Kot Puran Singh Wala	97	Kapurthala	55	123
267	Thakar ki	99	Kapurthala	115	783
268	Sadarpur	103	Kapurthala	53	0
269	Khera	101	Kapurthala	129	2241
270	Nangal	102	Kapurthala	184	2497
271	Mauli	105	Kapurthala	393	2973
272	Nangal Mazha	88	Kapurthala	258	2070
273	Khothran	1	SBS Nagar	342	4338
274	Mehli	3	SBS Nagar	276	3227
	Total			**77538**	**1260592**

Annexure II

SLUM LOCALITIES IN JALANDHAR CITY

Sr. No.	Name	Sr. No.	Name
1	Ashok Vihar	42	New Colony
2	Gurbachan Nagar	43	Part of Fauji Gali
3	Masha Colony	44	Chougitty
4	Vill. Salempur Musalmana	45	Ekta Nagar
5	Vill Chak Jindan	46	Ajit Nagar
6	Maqsudan	47	Santoshi Nagar
7	Moti Nagar	48	Amrik Nagar
8	Mohalla Kulian	49	Daulatpura
9	Gandhi Camp	50	Bhim Nagar
10	Raj Nagar	51	Qazi Mandi
11	Sanjay Gandhi Nagar	52	Paschim Vihar
12	Street backside Cremation Ground	53	Banda Bahadur Nagar
13	Kabir Nagar	54	Sangat Singh Nagar
14	Arya Nagar	55	Rasila Nagar
15	Street backside Gandhi Camp School	56	Amarjit Nagar
16	Satnam Nagar backside Gandhi Camp	57	New Colony
17	Gopal Nagar	58	Jallowali
18	New Santokhpura	59	Tilak Nagar
19	Nivi Abadi Santokhpura	60	Vill. Khurla
20	Part of Santokhpura	61	Vill. Kingra
21	New Aman Nagar	62	New Dashmesh Nagar
22	Kalgidhar Colony	63	Baba Bakhtawar Singh Colony
23	New Gobindpura	64	Sucha Singh Nagar
24	Kishanpura	65	Buta Pind
25	Baldev Nagar	66	Abadpura
26	Lamba Pind	67	Niva Avtar Nagar
27	Arjun Nagar	68	Avtar Nagar
28	Vivek Nagar	69	New Colony, Avtar Nagar
29	Niva Baldev Nagar	70	Rajput Nagar
30	Chak Hussaina	71	Mangu Basti
31	Vill. Reru	72	Sant Nagar
32	Saipur Wada	73	Basti Danishmanda
33	Parsuram Nagar	74	Street behind Pritam Palace
34	Mohalla Lathimar	75	New Colony near Dargah Janak Nagar
35	Mohalla Tobri	76	Defence Colony Phase I
36	Kot Baba Deep Singh	77	Vill. Sabowal
37	Mohalla Shah Sikander	78	Colony in Vill. Garha
38	Baba Sindh Mohalla	79	Vill. Garha
39	Shaheed babu Labh Singh Nagar	80	Part of Baba Budhaji Nagar
40	Basti Peerdad	81	Ravidass Colony
41	Basti Mithu	82	Dhanowali
83	Rama Mandi	91	Suchi Pind
84	Backside Rama Mandi	92	Ambedkar Nagar
85	Kaki Pind	93	Tulsa Singh Nagar
86	Balmik Colony	94	Darshan Colony
87	Vill. Chohkan	95	Gurdeep Nagar
88	Mohalla Mistrian	96	Indira Colony
89	Kot Ram Dass	97	Balmiki Nagar
90	Mann Nagar		

Annexure III

OFFICE OF THE DEPUTY COMMISSIONER, JALANDHAR

A committee namely "Think Tank" comprising the following officers from Public Sector and enlightened citizens from Private Economic Sector and Social Sector is hereby constituted for the preparation of Master Plan, Jalandhar. The Think Tank will share the vision and help in developing a strategy to arrive at the Vision – 2031 for Jalandhar city.

Sr. No.	Designation	Name	Contact number	
		PUBLIC SECTOR		
1	Deputy Commissioner, Jalandhar			Chairman
2	Chief Administrator, JDA		98552-60099	Member
3	Mayor / Commissioner, MC		98141-97145 0181-2227015	Member
4	Chairman, Improvement Trust			Member
5	Chief Engineer, Punjab State Electricity Board		98725-16002	Member
6	Superintending Engineer, Water Supply and Sewerage Board		99151-93181	Member
7	Superintending Engineer, PWD (B & R)			Member
8	Superintending Engineer, Public Health		0181-2271495	Member
9	Superintending Engineer, Pollution Control Board			Member
10	SP, Jalandhar (Traffic Police)		98140-61235 0181-2240431 0181-2240432	Member
11	District Transport Officer		98728-50011 0181-2224278	Member
12	District Town Planner		92166-10036	Member Secretary
		PRIVATE ECONOMIC SECTOR		
13	Industrialist	1. Mr. Narinder Sehgal, Kapson Industries 2. Mr. Arvind Abrol, Archies 3. Mr. Charanjit Singh Maingi, H.B. Metals 4. Mrs. Kamna Raj Aggarwal, A.P.J. Group 5. Mr. Satish Chander Wasan	98140-88336 98140-22205 98140-68341 98728-80203 0181-2650101	Member
14	Real Estate Developer	Mr. S. P. Arora	98140-62256	Member
15	Financer	Mr. Alok Sondhi, P.K.F.	98760-12340	Member
16	Architect	1. Mrs. Shonali Kalsi 2. Mr. Arvind Suri	98729-00620 98140-09460	Member
17	Civil Engineer	1. Prof. A.P. Singh, Head C.E., NIT 2. Prof. Sanjeev Navel, Head C.E., DAV	99158-49178 99140-14848	Member
18	Media	Mr. Jasdeep Malhotra	94170-33331	Member
		SOCIAL SECTOR		
19	President – Resident Welfare Association	1. Mr. Krishan Lal Dhall, Sarasvati Vihar 2. Mr. Sital Singh Sangha, UE Ph – I	0181-2470222 98725-83355	Member
20	Non Governmental Organization	1. Prof. Lakhbir Singh, Pehal 2. Prof. Anup Vats, Citizens Welfare Society 3. Mr. Ajay Palta, Sahara Youth Org.	98148-66230 98148-14822 98729-00042	Member
21	Art and Cultural Society	Dr. Sucharita Sharma, Principal, A.P.J. College	98146-25556	Member
22	Historical Society	1. Dr. Satish Kapoor, Ex-Principal, Khalsa College, Jalandhar 2. Dr. Ashwani Sharma, D.A.V. College, Jalandhar	98766-04483 (PP) 98148-14946	Member
23	Educationist	Mr. Harinder Sahni	98761-36080	Member

Annexure IV

LPA POPULATION FORECAST

Existing population – Jalandhar LPA Urban

Settlement	Population (in '000 persons)
Jalandhar MC and Cantonment Board	754
Kartarpur Municipal Council	25
Adampur Municipal Council	17
Alawalpur Municipal Council	7
Phagwara Municipal Council	102
Total Jalandhar LPA Urban population	**905**

Year	2001	2006	2011	2016	2021	2026	2031
Punjab urban Population ('000)	8263	9439	10681	11940	13185	16456	
Share in Pb urban	10.95%	10.95%	10.95%	10.95%	10.95%	10.95%	10.95%
Population LPA Urban	905	1034	1170	1308	1444	1802	2249
Growth rate decadal			29.3%		23.4%		
CAGR		2.85%	2.63%	2.36%	2.08%	4.96%	4.96%
Punjab rural population ('000)	16096	16620	16997	17172	17138	14889	
Share in Pb Rural	2.20%	2.20%	2.20%	2.20%	2.20%	2.20%	2.20%
Population LPA Rural	355	366	374	378	377	328	285
Growth Rate Decadal			5.4%		0.8%		
CAGR		0.62%	0.44%	0.21%	-0.05%	-2.60%	-2.60%
Jal LPA Total Pop	1260	1400	1544	1686	1821	2130	2534
Growth rate Decadal			22.54%		17.94%		
CAGR		2.22%	2.06%	1.84%	1.60%	3.39%	3.79%

Annexure V

LIST OF TREES RECOMMENDED FOR PLANTATION ON THE MAIN ROADS WITHIN URBAN LIMITS / MASTER PLAN AREAS

Sr. No.	Name of Tree (Botanical / Common)	Description
1	Alstonia Scholaris (Chhatim)	□ Tall tree with columnar shape, evergreen, very ornamental. □ Bears greenish-white flowers in October – December.
2	Barringtonia Acuitangula (Smudhar Phal)	□ Medium tree with spreading habits, deciduous from April to May. □ Ornamental foliage and flowers in pendulous branches. Bears crimson flowers in April and September.
3	Bauhinia Blackiana (Kachnar)	□ Small tree, evergreen with columnar form, highly attractive and ornamental. □ Propagated by layers and cuttings. □ Flowers deep pink from January to April and from September to November.
4	Bauhinia Purpurea (Kachnar)	□ Medium tree with columnar form, evergreen □ Bears purple coloured flowers in November.
5	Bauhinia Variegata (Kachnar)	□ Medium tree with columnar form. □ Sheds leaves in January, February, profusely flowering tree, highly beautiful when in bloom. □ Bears pink, white and purple coloured flowers in February, March and April.
6	Cassia Fistula (Amaltas)	□ Tall columnar shaped tree, leafless in April – May, very hardy tree, looks very ornamental when in bloom. □ Bright yellow flowers in April – May.
7	Cassia Grandis (Pink Mohur)	□ Medium in height with spreading habit. □ Highly ornamental tree. □ Bears deep carmine flowers in November and December.
8	Cassia Javanica (Java – ki – Rani)	□ Medium in height, leafless in April – May. □ It is the most beautiful flowering tree. □ Bears clusters of pink flowers in May – June.
9	Cassia Marginata (Pink Mohur)	□ Medium in height, spreading and graceful tree. □ Bears deep pink flowers in May and June.
10	Cedrela Tuna (Tun)	□ Tall columnar shaped tree, leafless in December – January. □ Fairly fast growing and hardy tree with creamy white flowers in March – April.
11	Chakassia Tabularis	□ Tall spreading tree, evergreen and hardy. □ Excellent for shade. □ Flowers are greenish, white in April – May.
12	Chorisia Speciosa (Mexican Silk Cotton Tree)	□ Medium in height, pyramidal in shape, leafless from October to January, fast growing and bottle shaped green trunk. □ Flowers are of pink and yellow colour in October – November.
13	Delonix Regia (Gulmohar)	□ Tall tree with spreading crown, leafless from January – March. □ Fast growing, very ornamental creates mass effect with orange red flowers from April to June.
14	Ficus Religiosa (Pipal)	□ Tall columnar shaped tree, leafless in February – March, very hardy and fast growing flowers pale green in April.
15	Ficus Infectoria (Pilkhan)	□ Tall spreading, fast growing and hardy tree, leafless in March, good for shade, need protection from cattle, green yellow flowers in November and December.
16	Hetrophragma Roxburghii (Marour Phaly)	□ Tall columnar tree, evergreen, flowers are of pale, yellow brown colour in March.
17	Jacranda Mimosaefolia (Jakaranada or Neely Gulmohar)	□ Medium in height, leafless when in bloom, good for parks and houses, fern like bipinnate leaves. □ Bears flowers of violet-blue colour in April – May.
18	Kigelia Pinnata (Jhar	□ Tall and spreading tree, evergreen hardy.

	Phanoos)	□ Fast growing flowers are of crimson, yellow and brown colour in April – May.
19	Lagerstroemia Frosreginae (Queen's Flower)	□ Medium sized tree, columnar shape, very pretty, leafless in winter (December – February). Purple and pinkish blooms in April – May and July – August.
20	Lagerstroemia Thorelli (Pride of India)	□ Medium in height, columnar in shape, beautiful tree, leafless from December – February, flowers of mauve colour from June to December.
21	Lagerstroemia Rosea	□ Medium in height, columnar tree, very pretty. Leafless in winter (December – February) with deep pink flowers from April to September.
22	Pongamia Glabra (Karanj)	□ Tall spreading and fast growing tree, leafless in March. □ Bears mauve colour coloured flowers in April – May.
23	Pterospermum acerifolium (Kanak Champa)	□ Tall columnar tree, ever green, handsome, bear's sweet scented flowers of creamy white colour in March – April.
24	Putranjaniva Roxburghii (Jiva Pota)	□ Medium in height, pyramidal shaped, ever green, handsome and very graceful tree, good for shade and beautiful form. □ Flowers are of pale yellowish colour in March – April.
25	Saraca Indica (Sita Ashok)	□ Height medium, spreading tree, evergreen, very hardy, foliage glossy and ornamental. □ Highly flow growing takes 30 years to become a good tree. □ Bears highly attractive scarlet coloured flowers in large compact clusters in February and March.
26	Schleichera Frijuga (Kusum)	□ Tall columnar shaped tree, evergreen, good for shade, leaves become red in March and April and again in July and September. □ Flowers are of green colour in February and March.
27	Sweitnia (Mahogany)	□ Evergreen, shady, attractive foliage, very hardy, tall tree with columnar shape, blooms in April and tree is slowing growing and very good for avenues.
28	Tabeuia Rosea	□ Small in height, columnar in shape, deciduous from December to February, scanty foliage and flower colour is purple – pink in February to March.
29	Terminalia Arjuna (Arjan)	□ Tall, columnar shaped tree sheds leaves in March. □ Very hardy tree, flowers of pale – yellowish white colour appear in September to October.
30	Terminalia Chebula (Bahera)	□ Tall, columnar shaped tree, leafless in March, pale – yellow flowers all the year round.

Annexure VI

COMPARATIVE STATEMENT OF NORMS AND STANDARDS SUGGESTED BY MASTER PLAN ZONING REGULATIONS / PUNJAB GOVT. POLICIES, UDPFI GUIDELINES AND DELHI MASTER PLAN

Aspect	As per zoning regulations and sub division clauses for Master Plans in Punjab / Govt. Policies	UDPFI Guidelines	Delhi Master Plan
Primary School	**Population: 3,000-4,000** Number of students: 600 Area a) Old city (over 650 ppha): 0.2 ha b) Outer areas (less than 650 ppha): 0.5 ha	**Population: 5,000** Number of students: 500 Area per school: 0.4 ha Covered area: 0.20 ha Minimum play field area: 0.20 ha	**Population: 10,000** Area: 2000-4000 sq m
Senior Secondary School	**Population: 12,000 to 20,000** Number of students: 1000 Area a) Old city (over 650 ppha): 1.00 ha b) Outer areas (less than 650 ppha): 2.5 ha	**Population: 7,500** Number of students: 1,000 Area per school: 1.60 ha Covered area: 0.60 ha Minimum play field area: 1.00 ha	**Population: 10,000** Area: 6000-8000 sq m
College	**Population: 30,000** Number of students: 800 Area a) Old city (over 650 ppha): 2.50 ha b) Outer areas (less than 650 ppha): 5.00 ha	**Population: 1,25,000** Number of students**:** 1000-1500 students Area per college: 4.00 ha Covered area: 1.80 ha Play field area: 1.80 ha Residential / hostel area: 0.40 ha	**Population: 5,00,000** Area: As per UGC Norms
University	N.A.	New University Area: 60.00 ha	**4 sites in urban extension to be provided at city level** Area: Up to 20.00 ha
Technical Education Centre	N.A.	**Population: 10,00,000** Area per centre: 4.00 ha Area per technical centre: 2.10 ha Area per ITI: 1.40 ha Area per coaching centre: 0.30 ha	**Population: 5,00,000** Area: 4000 sq m
New Engineering College	Number of students: 300 Area b) Old city: (over 650 ppha): 1.00 ha c) Outer areas (less than 650 ppha): 2.50 ha	**2 numbers to be provided in urban extension** Number of students: 1500-1700 Area per college: 60.00 ha	**Population: 5,00,000** Area: As per AICTE norms
Medical / Pharmacy College	Area: 5 acres (Rural) Area: 2.5 acres (Distt. Headquarter Corporation Limit)	2 site of 15 ha each in urban extension including space for specialized general hospital.	**Population: 10,00,000** Area: As per Medical Council of India / Regulatory Body
Dispensary	**Population: 5,000** Area: 0.1 ha	**Population: 15,000** Area: 0.08 to 0.12 ha	**Population: 10,000** Area: 800-1200 sq m
Primary Health Center			
Nursing Home	N.A.	**Population: 45,000-1,00,000** Capacity: 25 to 30 beds Area: 0.20 to 0.30 ha	**Population: 50,000** Area: 1000-2000 sq m
General Hospital	**Population: 50,000** Area: 2.5 ha	**Population: 2,50,000** Capacity: 500 beds Area for hospital: 4.00 ha Area for resi accommodation: 2.00 ha Total area: 6.00 ha	**Population: 5,00,000** Capacity: 501 beds and above Area: 25,000-45,000 sq m
Veterinary Hospital	N.A.	N.A.	**Population: 5,00,000** Area: 2,000 sq m
Community Hall and Library	N.A.	**Population: 15,000** Area: 2,000 sq m	N.A.

Club	N.A.	**Population: 1,00,000** Area: 10,000 sq m	**Population: 5,00,000** Area: 5000 sq m
Amusement Park	N.A	N.A	**Up to 10 ha**
City level park	N.A	N.A	**Population: 5,00,000** Area: 10 acres
Neighborhood level park	N.A	N.A	**Population: 10,000** Area: 10,000 sq m
Golf Course	N.A	N.A	**Population: 10,00,000** Area: 10-30 ha
Sports Centre / Stadium	N.A	N.A	**Population: 5,00,000** Area: 3-10ha
Post and Telegraph Office	**Population: 10,000** Area: 0.1 ha	N.A.	**Population: 10,00,000** Area: 2,500 sq m
Religious Building	**Population: 15,000** Area: 0.1 ha	N.A.	**Population: 10,00,000** Area: 40,000 sq m
Old Age Home	N.A.	N.A.	**Population: 5,00, 000** Area: 1,000 sq m
Orphanage / Children Centre	N.A.	N.A.	**Population: 5,00,000** Area: 1,000 sq m
Multipurpose Ground (Exhibition cum Fair Ground)	N.A.	N.A.	**Population: 1,00,000** Area: 20,000 sq m
Burial / Cremation Centre	N.A.	N.A.	**Population: 10,00,000** Area: 10,000 sq m
Electric Sub Station	**Population: 50,000** Area: 0.4 ha	N.A.	**Population: 5,00,000** Area: 29,600 sq m
Police Post	N.A.	**Population: 40,000- 50,000** Area: 0.16 ha (area inclusive of essential residential accommodation)	**Population: 1,00,000** Area: 1000 sq m
Police Station / Police Division	**Population: 50,000** Area: 0.8 ha	**Population: 90,000** Area: 1.5 ha Area inclusive of essential residential accommodation 0.05 ha additional to be provided for civil Defence and home guards	**Population: 2,50,000** Area: 10,000 sq m
Police Line	N.A.	**Population: 20,00,000** Area: 4.00 to 6.00 ha	**1 for each administrative zone to be provided at city level** Area: 2.0 ha
District Jail	N.A.	**Population: 10,00,000** Area: 10.00 ha	**Population: 25,00,000** Area: 5.0 ha
Fire Station	N.A.	**1 fire station or sub-fire station within 1 to 3 km to be provided for 2 lakh population** Area for fire station with essential residential accommodation: 1.00 ha Area for sub-fire station with essential residential accommodation: 0.60 ha	**3 Fire Stations for 5,00,000 population within radius of 5 to 7 km** Area: 10,000 sq m

From the comparative table of norms and space standards as given above, the norms suggested by UDPFI Guidelines have been found more suitable for the preparation of Master Plan Jalandhar because of the following reasons:

The norms and standards suggested by UDPFI Guidelines are more detailed and cover almost each physical and social infrastructure as compared to Master Plan Zoning Regulations / Govt. policies.

Norms and standards suggested by UDPFI Guidelines are more realistic and suit to local conditions such as prevailing development controls, availability of land, land prices etc.

UDPFI Guidelines suggest different norms and standards for different category of towns like small and medium towns, large cities and hill areas which is not available in other guidelines.

The Norms and standards of Master Plan Zoning Regulations are not detailed and do not cover the whole range of activities, hence are not being adopted.

Norms and standards suggested by Delhi Master Plan have not been found suitable for Local Planning Area Jalandhar because these norms are of higher level, formed especially for Mega city like Delhi, where development controls are very tight, population is more than 1.25 crores and the land is scarce and costly.

Note:

i. The norms and space standards as suggested by Punjab Govt policies from time to time shall have the over riding effect on the norms and standards of UDPFI Guidelines adopted for the preparation of Master Plan, Jalandhar.

ii. For the aspects which are not covered under UDPFI Guidelines, the norms and standards as suggested by Master Plan Zoning Regulations in Punjab shall be adopted and where these zoning regulations are also silent, only in that case, the norms and standards suggested by Delhi Master Plan shall be followed.

iii. For core areas of Jalandhar and Phagwara the norms and standards as suggested by Delhi Master Plan shall be adopted.

NORMS AND STANDARDS FOR TRAFFIC AND TRANSPORTATION

The norms and standards for Traffic and Transportation as suggested by UDPFI Guidelines are listed as follows:

Road Hierarchy

R1: 200’ and above

R2: 150’

R3: 100’

Footpath

The width of footpaths is listed as below:

Minimum width	1.5 m
Adjoining shopping frontage	At least 3.5 m
Longer shopping frontage	Minimum 4.5 m

Width should be increased by 1m in business / shopping areas

Cycle Track

The minimum width of cycle tracks should be 2m. Each additional lane, where required, should be one meter. The capacity of cycle tracks recommended is as below:

Width of Cycle Track	Width in meters	Capacity (Cycles / hr)	
		One way	Two way
Two lanes	3	250-600	50-250
Three lanes	4	>600	250-600
Four lanes	5		>600

Passenger Car Units (PCU)

Recommended PCU factors for various types of vehicles on urban roads:

Sr. No.	Vehicles	Equivalent PCU Factors Percentage composition of vehicle type in stream of traffic	
		10%	10%
Fast Vehicles			
1	Two wheeler motor cycle or scooter	0.5	0.75
2	Passenger Car, pick up van	1.0	1.0
3	Auto rickshaw	1.2	2.0
4	Light commercial vehicle	1.4	2.0
5	Truck or bus	2.2	3.7
6	Agricultural Tractor Trailor	4.0	5.0
Slow Vehicles			
7	Cycle	0.4	0.5
8	Cycle rickshaw	1.5	2.0
9	Tonga (Horse drawn vehicle)	1.5	2.0
10	Hand - Craft	2.0	3.0

(Source: IRC Code: 106-1990)

Design Service Volume

The design service volumes for different categories of urban roads are shown in the table given below:

Recommended Design Service Volumes (PCU's per hour)

Sr. No.	Type of Carriageway	Total Design Service Volume for different road categories		
		Arterial	Sub – arterial	Collector
1	2-lane (one way)	2400	1900	1400
2	2-lane (two way)	1500	1200	900
3	3-lane (one way)	3600	2900	2200
4	4-lane undivided (two way)	3000	2400	1800
5	4-lane divided (two way)	3600	2900	-
6	6-lane undivided (two way)	4800	3800	-
7	6-lane divided (two way)	5400	4300	-
8	8-lane divided (two way)	7200	-	-

Parking

Group Housing	2 ECS per 100 square meters covered area on all floors subject to maximum 3 ECS per dwelling unit
Commercial	2 ECS per 100 square meters covered area
Institutional/Hotel/Hospital/Multi-media center	1 ECS per 100 square meters of the covered area if the project is covered under notification no. 17/171/5-Hg2/311 dated 11-01-08, otherwise the parking norms meant for commercial uses i.e., 3 ECS / 100 square meters covered area shall apply.

Note:

The E.C.S. shall be counted as below:

23 square meters per open parking

28 square meters for parking under stilts on ground floor

32 square meters for parking in the basement

Bus Stand

Area: 20-25 acres

Truck Terminal

Area: 80-100 acres

1.1 Summary

Master Plan Jalandhar 2009-2031 is to be notified under section 70(5) of the "Punjab Regional and Town Planning and Development (Amendment) Act, 2006. There is a need to regulate and guide the development of the area. Hence the entire Local Planning Area, Jalandhar has been sub-divided in to different zones so that for each zone, a zonal plan could be prepared which will act as a link between the proposals of Master Plan and the Layout Plan.

1.2 Parameters defined by the Master Plan for delineation of zone boundaries

As mentioned above, the entire Local Planning Area has been divided into 73 zones (except areas within Municipal Corporation and Municipal Council limits) and numbered as Zone '1' to Zone '73'. These zones have been delineated, keeping in view, the physical features like Roads, Railways and Canals etc. Besides this, the proposed road network in the Master Plan also forms basis of delineation of zones in some cases. An attempt has been made to keep the zone size compact and regular for better planning and development of each zone.

1.3 Location

Zone 8 & 29: Zones 8 & 29 are situated in the eastern part of Jalandhar city. Zone 8 is enclosed by the boundary of Local Planning Area on northern side, 100' wide proposed road of Master Plan on western side, Chitti Bein on eastern side and by Amritsar – Ludhiana Road (NH – 1) on southern side and zone 29 is bounded by Chitti Bein on western side, local planning area boundary on northern side, proposed 100' wide Master Plan road on eastern side and Amritsar – Ludhiana road (NH – 1) on southern side. Zone 8 is about about 8 km away from Bus Stand and about 9 km away from main Railway Station wheras Zone 29 is about 13 km from bus stand and 12 km from railway station in the same direction. Amritsar – Ludhiana Road (NH – 1) connect these zones with Jalandhar city and other cities of the region. Amritsar – Ludhiana railway line also passes through these zones with railway station at Chaheru. Zone 8 comprises the revenue areas of villages Khajurla (HB No. 82), Semi (HB No. 186) and parts of Chaheru (HB No. 83), Talhan (HB No. 185), Damodarpur (HB No. 187), Salempur Masandan (HB No. 188), Kot Kalan (HB No. 226) and Zone 29 includes Chaheru (HB No. 83), Sapror (HB No. 86) and Nangal Majha (HB No. 88) and parts of village Mehat (HB No. 89). The clubbed area of these zones is 3500 acres approximately.

Zone 22: Zone 22 is situated in the Northern part of Jalandhar city. This zone abuts on the western side of Jalandhar – Pathankot road. It is bounded by Pathankot Road on eastern side, proposed 100' wide road on western side, proposed ring road on northern side and Khera

Minor and proposed 150' wide road on southern side. This zone is about 11 km away from Bus Stand and about 9 km away from main Railway Station. Jalandhar – Pathankot road (NH-1A) connects it with the city. It includes the revenue areas of villages Kala Bahian (HB No. 331), Mokhe (HB No. 153), Manan (HB No. 151) and Ball (HB No. 150) and parts of Naugaja (HB No. 152), Kishangarh (HB No. 116), Daulatpur (HB No. 148), Sarmastpur (HB No. 149) and Raipur Rasulpur (HB No. 163). The total area of this zone is 2412 acres approximately.

Zone 23: Zone 23 is situated in the North - Eastern part of Jalandhar city. This zone abuts on the eastern side of Jalandhar – Pathankot road. It is bounded by Pathankot Road on western side, Adampur distributory on eastern side, proposed ring road on northern side and Suchi Pind Minor, Dhogri Road and proposed 100' wide road on southern side. This zone is about 9 km away from Bus Stand and about 8 km away from main Railway Station. Jalandhar – Pathankot road (NH-1A) connects it with the city. It includes the revenue areas of villages Sarmastpur (HB No. 149), Dhogri (HB No. 164), Sikandarpur (HB No. 147) and parts of Daulatpur (HB No. 148), Lesariwala (HB No. 145), Ball (HB No. 150), Alawalpur (HB No. 139) and Raipur Rasulpur (HB No.163). The area of this zone is 3335 acres.

Zone 24: Zone 24 is situated in the North - Eastern part of Jalandhar city. This zone abuts on the eastern side of Adampur distributory. It is bounded by Adampur distributory on western side, proposed ring road on eastern and northern side and by proposed Sector road (existing Kapur Pind link road) on southern side. This zone is about 9 km away from Bus Stand and about 8 km away from main Railway Station. Jalandhar – Hoshiarpur road (NH-70) is the main road of this zone which connects it with the city. It includes the revenue areas of villages Madar (HB No. 166), Jandhu Singhan (HB No.165) and parts of Sikandarpur (HB No. 147), Kapur Pind (HB No. 198), Lesariwala (HB No. 145), Dhogri (HB No. 164) and Chuharwali (HB No. 167). The total area of this zone is 2450 acres approximately.

Zone 30: Zones 30 is situated to the south - eastern part of Jalandhar city. It is enclosed by Amritsar – Ludhiana road (NH – 1) on northern side, proposed ring Road on western side, proposed sector road of Master Plan on eastern and southern sides. This zone is about 12 km away from Bus Stand and about 13 km away from main Railway Station. Amritsar – Ludhiana Road (NH – 1) is the main road link available to this zone. This zone includes the revenue area of village Maheru (HB No. 84) and parts of village Khajurla (HB No. 82), Kot Khurd (HB No. 227), Kukar Pind (HB No. 228), Hardho Pharala (HB No. 236) and Chaheru (HB No. 83). The area of this zone is 1770 acres approximately.

Zone 53: Zone 53 is situated in the Northern part of Jalandhar city. It is bounded by proposed Ring Road on northern side. The eastern, western and southern side of this zone is bounded by 100' wide proposed road of Master Plan. This zone is about 12 km away from Bus Stand and about 10 km away from main Railway Station. The proposed ring road (existing Kartarpur – Alawalpur Road) connects it to Jalandhar – Pathankot road which further connects it to Jalandhar city. This zone includes the revenue areas of villages Mand Maur Rahimpur (HB No. 333), Maur (HB No. 332) and Naugaja (HB No. 152) and parts of Bhathe (HB No. 334), Kala Bahian (HB No. 331), Mokhe (HB No. 153), Dugri (HB No. 337), Faridpur (HB No. 336) and Wariah (HB No. 335). The total area of this zone is 1632 acres.

Existing land use distribution:

The existing land use distribution of zones 8 & 29, 22, 23, 24, 30 and 53 is tabulated as follows:

Table no. 1 Existing land use distribution

Sr. No.	Landuse	Zone 8 & 29		Zone 22		Zone 23		Zone 24		Zone 30		Zone 53	
		Area (in acres)	Area (in %age)	Area (in acres)	Area (in %age)	Area (in acres)	Area (in %age)	Area (in acres)	Area (in %age)	Area (in acres)	Area (in %age)	Area (in acres)	Ar (i %a
1	Residential	221.00	6.31	130.00	5.39	143.00	4.29	137.65	5.62	50.00	2.82	80.00	4.9
2	Commercial	14.00	0.40	3.91	0.16	1.50	0.04	1.56	0.06	0.10	0.01	0.00	0.(
3	Industrial	0.00	0.00	7.66	0.32	3.00	0.09	5.79	0.24	0.00	0.00	12.50	0.7
4	Traffic and Transportation	158.16	4.52	42.36	1.76	95.70	2.87	48.00	1.96	31.00	1.75	22.80	1.4
5	Public & Semi public	149.47	4.27	4.22	0.17	2.00	0.06	7.89	0.32	17.40	0.98	1.00	0.(
6	Agriculture and water bodies	2957.37	84.50	2223.85	92.20	3089.80	92.65	2249.11	91.80	1671.50	94.44	1515.70	92.
	Total	**3500.00**	**100.00**	**2412.00**	**100.00**	**3335.00**	**100.00**	**2450.00**	**100.00**	**1770.00**	**100**	**1632.00**	**100**

The existing pattern of development in these zones is sparse residential and mainly constitutes the village abadies and unplanned and haphazard development. The present predominant land use is agriculture which covers more than 90% of the total area in all zones. The trend of development establishes the future residential character of these areas.

1.4 Present Population

The present population of these zones has been tabulated as follows which includes the population of village abadies of villages Khajurla (HB No. 82), Semi (HB No. 186), Chaheru (HB No. 83), Sapror (HB No. 86), Nangal Majha (HB No. 88) for zones 8 & 29; Kala Bahian (HB No. 331), Mokhe (HB No. 153), Manan (HB No. 151), Ball (HB No. 150) for zone 22; Sarmastpur (HB No. 149), Dhogri (HB No. 164), Sikandarpur (HB No, 147) for zone 23; Madar (HB No. 166), Jandhu Singhan (HB No. 165) for zone 24; Mand Maur Rahimpur (HB No. 333), Maur (HB No. 332), Naugaja (HB No. 152) for zone 53 and Maheru (HB No. 84) for zone 30 and other existing colonies in the respective zones.

Table no. 2: Present Population

Sr. No.	Parameter	Zone 8 & 29	Zone 22	Zone 23	Zone 24	Zone 30	Zone 53
1	Present Population	8131	5371	6555	7440	1735	2654
2	Present Gross Population Density	2 persons per acre	2 persons per acre	2 persons per acre	3 persons per acre	1 person per acre	2 persons per acre

1.5 Existing Infrastructure

These zones fall outside the Municipal Corporation limits of Jalandhar city and consequently lack facilities such as Municipal water supply, sewerage system and storm water drainage system etc. Village ponds are the main source for disposal of domestic sewage in these zones.

The existing social and physical infrastructure (although limited components) available in these zones have been found sufficient for the present population according to the prescribed norms and standards of the Master Plan. The following table shows the only infrastructure available in these zones:

Table no. 3: Existing Infrastructure

Infrastructure	Standard (Population/Unit)	Existing Number					
		Zone 8 & 29	Zone 22	Zone 23	Zone 24	Zone 30	Zone 53
Primary School	5000	8	5	3	4	2	2
High School	7500	3	1	1	1	-	1
Dispensary	15000	3	1	3	2	1	-
Post and telegraph office	10000	2	-	1	2	1	-
Religious building	15000	5	4	3	3	1	3
Police Post	40000-50000	1	-	-	1	-	-

The main roads available in these zones are listed as below:

Zone 8 & 29: Amritsar – Ludhiana Road (NH – 1)

Zone 22: Jalandhar – Pathankot Road (NH-1A) and Kartarpur – Alawalpur road

Zone 23: Jalandhar – Pathankot Road (NH-1A) and Jalandhar – Alawalpur road (66’ wide road)

Zone 24: Jalandhar – Hoshiarpur Road (NH-70)

Zone 30: Amritsar – Ludhiana Road (NH – 1)

Zone 53: Kartarpur – Alawalpur Road

Note:

- Although railway line passes through zone 23 and 24 but does not serve the traffic requirements of the people.
- Amritsar – New Delhi Railway line passes through Zone 8 & 29 with Railway Station at village Chaheru.

Besides these main roads the other roads available in these zones are village link roads which are mainly 22’ wide with single pucca carriage way. The kutcha rastas in this zone are zig –

zag with varying width of 11' – 16'. Proper road hierarchy is missing in these areas as 22' wide village link roads directly join the main road.

These zones are well served by bus facility & other means of transportation are the private vehicles like cars, auto rickshaws, tempos etc. The internal link roads are not suitable for public transport as these are not equipped with supporting infrastructure like bus queue shelters, bus lay byes etc. These zones fall in the peri urban area of the city, hence has a good potential for development in the near future.

2.1 Projected Population Range

The population for these zones has been projected up to 2031 on the basis of proposed residential densities in Master Plan. The future population has been projected as follows:

Table no. 4: Population Projections

Sr. No.	Component	Zone 8 & 29	Zone 22	Zone 23	Zone 24	Zone 30	Zone 53
1	Residential Density	RD2 / RD3	RD3	RD3	RD2 / RD3	RD2 / RD3	RD3
2	Proposed Density (ppa)	Up to 100 ppa partially 101-150ppa	Up to 100 ppa	Up to 100 ppa	Up to 100 ppa partially 101-150ppa	Up to 100 ppa partially 101-150ppa	Up to 100 ppa
3	Area of Zone	3500 acres	2412 acres	3335 acres	2450 acres	1770 acres	1632 acres
4	Projected Population Range	2.80 lakh – 3.50 lakh	1.90 lakh – 2.40 lakh	2.50 lakh – 3.30 lakh	2.00 lakh – 2.50 lakh	1.42 lakh – 1.77 lakh	1.30 lakh – 1.60 lakh

Note:

- For the projected population of this zone, the population range has been calculated assuming minimum 80 persons and maximum 100 persons per acre density.
- Zone 24 has been proposed to be developed as low density zone mainly but about $1/5^{th}$ of this zone falls in the proposed medium density zone of Master Plan. Hence with 2450 acres of area the population of this zone works out to be 2.00 lakh -2.50 lakh persons approximately by 2031.

2.2 Proposed Land Use

In the proposed land use plan of Jalandhar Master Plan, the future land use of these zones has been envisaged as residential with low residential density development. This land use has been envisaged on the basis of existing trends of development found in these areas and to accommodate the future population of Master Plan period. The detail of proposed land use pattern in these zones is as below:

Table no: 5: Proposed land use zone no. 8 & 29, 22, 23, 24, 30 and 53

Sr. No.	Landuse	Zone 8 & 29		Zone 22		Zone 23		Zone 24		Zone 30		Zone 53	
		Area (in acres)	Area (in %age)	Area (in acres)	Area (in %age)	Area (in acres)	Area (in %age)	Area (in acres)	Area (in %age)	Area (in acres)	Area (in %age)	Area (in acres)	Area (in %age
1	Residential	2831.01	80.89	1712.79	71.01	433.55	13.00	1384.00	56.49	1294.17	73.12	1500.93	91.97
2	Commercial	-	-	-	-	-	-	-	-	-	-	-	-
3	Industrial	150.00	4.29	482.40	20.00	2575.29	77.22	865.83	35.34	-	-	-	-
4	Recreational	-	-	-	-	-	-	-	-	-	-	-	-
5	Traffic and Transportation	257.92	7.37	192.46	7.98	300.15	9.00	171.50	7.00	125.00	7.06	127.57	7.82
6	Utilities	5.00	0.14	2.50	0.10	2.67	0.08	2.45	0.10	2.50	0.14	0.00	0.00
7	Water bodies	29.46	0.84	21.85	0.91	23.34	0.70	26.22	1.07	46.18	2.61	3.50	0.21
8	No Construction Zone	226.61	6.47	0.00	0.00	0.00	0.00	0.00	0.00	302.15	17.07	0.00	0.00
	Total	**3500.00**	**100.00**	**2412.00**	**100.00**	**3335.00**	**100.00**	**2450.00**	**100.00**	**1770.00**	**100.00**	**1632.00**	**100.0**

Note:

In every zone, the area for public and semi public purposes shall be provided as per Norms and Standards of Master Plan at appropriate location at the time of development of the area in respective zone.

It is further explained that:

- Area shown under Traffic and Transportation (road circulation only) is of Sector roads / main internal roads but does not include collector roads / streets etc.
- Although residential land use in the table given above seems to be on higher side, but it would include local road circulation, commercial component and recreational areas including parks and open spaces etc to be provided under the provisions of the Punjab Apartment and Property Regulation Act, 1995 (PAPRA, 1995).

2.3 Planning concept

The Zonal Plans of these zones has been prepared keeping in mind the governing principles of town planning viz, maintaining hierarchy of roads, widening of existing road network and provision of other social and physical infrastructure to make the zones self sufficient to meet the day to day requirements of its population so as to reduce trip generation on the already over crowded city roads and to relieve the pressure on traditional bazaars of the city. The roads shall have standard cross section as attached herewith at annexure I and the kind of trees to be planted shall be selected from the list attached at annexure II as per the suitability of the site conditions.

In order to ensure free flow of traffic on proposed Ring Road flyovers / ROB's have been proposed. In zone 8 & 29 a common Rail Over Bridge has been proposed on NH – 1 and Amritsar – New Delhi Railway Line, near Bath Castle, a flyover bridge has been proposed on Jalandhar – Ludhiana Road (where proposed ring road makes cross junction with Ludhiana road) and a common underpass on NH 1 and Amritsar – New Delhi railway line opposite Lovely Professional University. In zone 22 a flyover has been proposed on Pathankot Road (where proposed ring road makes cross junction with Pathankot Road). In zone 23 a flyover has been proposed on Pathankot Road (where proposed ring road makes cross junction with Pathankot Road) and a

ROB on Jalandhar - Pathankot Railway line also has been proposed. In zone 24 a flyover on Hoshiarpur Road (where proposed ring road makes cross junction with Hoshiarpur Road) and a ROB on Jalandhar – Hoshiarpur Railway line also has been proposed for smooth flow of traffic on these roads.

An attempt has been made to carve out each block of 100-150 acres approximately so that 4 to 6 schemes of 25 acres each can be accommodated in each block with appropriate circulation.

A number of sites comprising about 170 acres of land in zone 8 & 29, 105 acres of land in zone 22, 167 acres of land in zone 23, 120 acres of land in zone 24, 80 acres of land in zone 30 and 95 acres of land in zone 53 have been earmarked and rationally distributed in all the zones for public and semi public utilities where provision of educational, health, religious and other social / physical infrastructure etc can be allowed. Care has been taken to locate these sites on minimum 60' / 80' wide roads and above so as to cater conveniently to the future traffic requirements of these pockets. Besides this, panchayat lands in these zones (if any) are proposed to be used for public / semi public utilities or for creating any other physical feature / social infrastructure. However, the other infrastructure like communication tower, petrol pumps etc shall be provided as per the siting norms. Utilities shall be laid as per the design requirements of the concerned department. The remaining area of these zones shall be developed according to the provisions of PAPRA, 1995. The detail of proposals are as per Zonal Plan Drawing Numbers DTP (J) 13 / 2010 dated 20-04-2010, DTP (J) 12/2010 dated 20/04/2010, DTP (J) 10/2010 dated 19/04/2010 DTP (J) 11 / 2010 dated 19-04-2010 and DTP (J) 14/2010 dated 20/04/2010 attached overleaf.

2.3.1 Planning constraints for zones 8, 29 and 30:

Chitti Bein, a seasonal rivulet formed by a couple of drainage channels bringing rain water from areas of Hoshiarpur district which remains operative during rainy season spread from July to November flows through the zones 8, 29 and 30. The rain water in the Bein usually spreads on both sides up to a distance of about 200 metres. Thus proposing any land use in its close vicinity is more prone to floods. Hence the development is prohibited on both sides up to distance of 200 metres.

Note:

The sites on which various projects have already been approved or where change of land use has already been permitted by competent authority / government, such sites shall be deemed to be adjusted as sanctioned / permitted in the Master Plan.

3.1 Zoning Regulations and Development Controls

The zoning regulations and development controls as mentioned in the Master Plan Jalandhar shall be applicable to these zones.