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1. EXECUTIVE SUMMARY

1.0. Introduction

Patiala with its population of 3.03 lakhs is the fourth largest city of Punjab. On account of substantial administrative, institutional and commercial development that has already taken place, its growth impulses have led to growth outside the limits of Municipal Corporation of Patiala. Recognising the need for regulating the development of the entire influence area of Patiala City, Government of Punjab declared the Local Planning Area Patiala (LPA Patiala) in January 2008. The Government also designated the Chief Town Planner, Punjab as the Planning Agency to prepare the Master Plan of LPA Patiala. The LPA Patiala comprises of 155 villages, out of which 10 villages (few of them part villages) have been merged in Municipal Corporation area of Patiala and one village (part of it) consisting of Municipal Council of Sanaur. The total area of Patiala Municipal Corporation is 50.11 sq.km. According to Census 2001, the total population of LPA Patiala was 485497 persons out of which 341819 was urban.

1.1. Regional Setting

LPA Patiala is located in South – Eastern part of Punjab. It is well connected by roads and is located at a distance of about 75 km towards southwest from Chandigarh. It lies 25 km away from the Grand Trunk Road (i.e. National Highway No.1) and is about 250 km from Delhi. It is well connected with important urban centers of Punjab by the network of national highway, state highways and district roads. The city is linked with railway network as Rajpura branch railway line passes through the city. It extends from 30°-12' N to 30°-27' N Latitude and 76°-11' E to 76°-32' E Longitude.

1.2. Historical Background

Though historians have tried to trace the origin of Patiala (as far as the name is concerned) to Rig Vedic literature yet the town as it stands today was founded by Baba Ala Singh with the construction of the Qila Mubarak in the year 1763. One gets the impression as if the city was designed and developed according to a plan akin to that of temple architecture. In the heart of the city was the seat of the king similar to the house of the deity and the residential areas of communities developed around it status-wise. The area covered now by the ruins of Pattan-wala, it is popularly believed that the word Patiala comes either from **Pattan-wala**, or from a combination of the word '**Pati**' which means '**territory**' and '**Ala**' from founder **Baba Ala Singh**. Maharaja Narendra Singh

(1845-1862) fortified the city of Patiala by constructing ramparts and ten gates around the city. Educationally, Patiala was in the forefront, it was the first town in this part of the country between Delhi and Lahore to have Degree College the Mohindra College in 1870. It was Maharaja Bhupinder Singh (1900-1930) who gave the Patiala state a prominent place on the political map of India and in the field of international sports. Most of the buildings with splendid architectural designs were constructed during his reign.

1.3. Legal Framework

"The Punjab Regional and Town Planning and Development (Amendment) Act, 2006" provides the legal framework for preparation of Master Plan. The four stage process involves declaration of L.P.A, designation of Planning Agency, preparation of present land use map and preparation and approval of Master Plan. The contents of the Master Plan as laid down by the Act are;

- a) Broad indication of the manner in which the land in the area should be used.
- b) Allocation of areas or zones of land for use for different purposes.
- c) Indication, definition and provision of the existing and proposed highways, roads, major streets and other lines of communication.
- cc) Indication of 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) 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 and structures.

The Act also provides for "Control of Development and Use of Land in Area where Master Plan is in Operation"

1.4. Population growth

The population of LPA Patiala as per 2001 census is 485497 persons which has grown at a growth rate of about 19% during 1991-2001. The details are summarized in table below:-

	POPULATION			GROWTH RATE IN %	
	1981	1991	2001	1981-91	1991-2001
LPA PATIALA					
TOTAL	330219	408379	485497	23.67	19
URBAN*	219888	270196	341819	22.88	26.51
RURAL	110331	138183	143678	25.24	3.98

*Patiala Urban = Patiala UA + Sanaur Mcl.

The average population density of Patiala City is 82 persons / ha. However, ward wise densities vary considerably. The highest and the lowest density varies between 420 persons per hectare and 9 persons per hectare respectively. The low average population density is due to big institutional areas, abundance of govt. and semi govt. offices and housing on large areal extent.

Out of a total increase of 70178 persons in the population of Patiala city during 1991-2001, 26966 was due to migration from states other than Punjab.

1.5. Employment

The work force participation rate of LPA Patiala as per 2001 census is 33.98% and that of Patiala City is 31.80%. The main sectors providing employment in Patiala City are Public administration and other services etc. (37.70%), Wholesale and Retail Trade (20.83%), Manufacturing (11.55%), Finance, real estate and business activities (7.58%).

1.6. Housing

According to Census 2001, 95% of the census houses are of permanent nature, 4 % are semi-permanent and only 1% non-serviceable temporary houses. In terms of availability of rooms only 17.19% of the households live in one-room dwelling units. As regards access to services 76% have tap water, 62% have water closets and 14% have pit latrines.

1.7. Present Land Use

Preparation of present land use map was undertaken with the help of Punjab Remote Sensing Centre (PRSC), Ludhiana. For the core built up area, Quick Bird data of 0.6m resolution was used where as for the outer areas Cartosat I data of 2.5 m resolution was used. The maps based on satellite imageries were updated by undertaking field surveys. Out of total area of LPA, maximum proportion is occupied by agriculture (80.16%) followed by residential use(9.97%),and transportation(2.48%).

1.8. Present Transport Network

The regional road network of Patiala comprises of one National Highway viz. NH 64 and two State Highways viz. S.H-8, and S.H-10. Although the right of way (ROW) of National Highway outside the municipal area varies between 37.8 m to 38.41 m and the effective carriageway varies between 7.31m to 17.75 (divided partly). In case of State Highways the right of way (ROW) outside the municipal area is 33 m and 25 m respectively and their effective carriageway is 10m each (undivided). Within the city

limits some roads have wider and have divided carriageways.. Patiala is not very fortunate in terms of rail network as it has a single railway line i.e. branch line of Rajpura railway line. But the single railway line leads to fragmentation of land mass necessitating number of railway crossings (ten) to provide accessibility across various parts of the city.

1.9. Physical Infrastructure

Ground water is the only source of water supply in the city. Quality of ground water is not satisfactory. The total supply is 81.41 mld, out of which 11.36 mld is supplied through storage tanks and 70.05 mld is through direct system. For 2001 population it works out to be more than 210 lpcd. (litres percapita per day) which is higher than the norm of 135 lpcd. 90% of the population of the city is served with water supply by intermittent system and 10% of the population is totally uncovered under this system. The water supply pattern of the villages falling in the LPA reflect that 100% of population of the LPA is covered under rural water supply scheme.

As regards sewerage, 88% of the population of Patiala has access to underground sewerage. However sewerage collected is pumped without treatment in the natural drains through pumping station. Major institutes / Urban Estates have their independent sewerage system. Some of them have their own Sewage Treatment Plants (STPs).

The low lying areas of the city are flood prone during monsoon due to absence of planned storm water drainage. It is a common practice to discharge the storm water into the sewerage system which is environmentally undesirable.

Though collection and transportation of solid waste is managed by the Municipal Corporation, disposal is not in the form of sanitary land fill as required by the Municipal Solid Waste Rules of the Ministry of Environment and Forest.

1.10. Traffic

Recent surveys of traffic indicate that most of the road network is not congested. Only three roads namely one from Fountain chowk to Leela Bhawan, second from Thapar University to Gurudwara Dukhniwaran Sahib and third from Fountain chowk to Mohindra college (Lower Mall) have Volume/Cpacity (V/C) ratio well in excess of 1. There is acute shortage of parking particularly in the traditional bazaars, planned commercial areas and in private institutions which results in parking spill over on important roads thus causing congestion of traffic. There is no organised parking space for taxis and auto, rickshaws.

Although truck terminal of 40 acres has been planned on Patiala – Rajpura road, numerous booking agencies are running within the city. More area for the expansion of truck stand is required. There is a urgent requirement of Railway overbridge on Sirhind bye-pass.

1.11. Social Infrastructure

L.P.A Patiala has a large number of institutions imparting education at school, college and university level (arts, commerce, science, sports education, engineering and medical education both at graduation and post graduation level). It has emerged on the National Sports scene with the establishment of National Institute of Sports in 1961. L.P.A Patiala is at a forefront in providing health care facilities which serves not only Patiala but also its neighbouring towns/cities. LPA Patiala has 27 hospitals which includes 2 famous hospitals i.e. Rajindra Hospital and Mata Kaushalya Hospital. Patiala city also has one of the famous T.B Hospital of the region alongwith charitable hospital named Maharaja Aggarsain Hospital. Besides this, LPA Patiala has two Dental Institutes cum Hospitals and is well known for Ayurvedic system of health treatment as it has two Govt. Ayurvedic Hospitals. In addition to neighborhood and small parks in the city, there are three city level parks in the city namely Baradari Garden, Environmental Park and Rose Garden. There are two golf courses and two museums in the city. Patiala city has 23 sub post offices and one head post office. Sanaur also has one sub post office. L.P.A Patiala has 4 Govt. Telephone exchanges; 3 in Patiala city and 1 in Sanaur. Patiala has 5 police stations and 3 Police Posts at various locations in the city. In addition to these police facilities in Patiala city, there is a police line also.

1.12. Environment

In terms of air quality, though the ambient concentration of SO₂ and NO₂ is well within the norms yet, SPM levels far exceed the norms which may be attributed to the vehicular emissions and general road dust as per information provided by Punjab Pollution Control Board, Patiala.

1.13. Population and Employment forecast

The population of LPA Patiala is estimated to grow to 9.65 lacs out of which the population of Patiala City along with outgrowth and Sanaur M.Cl is estimated to be 8.50 lacs by 2031. The projected employment in 2031 is estimated to be 3.06 lacs out of which major share will be that of Public administration and other services (101479), Wholesale

and Retail Trade (60838), Manufacturing (37464), Finance and Business Services (20832) and Transport, Storage and Warehousing (16223).

1.14. Infrastructure Demand

The infrastructure requirements for the projected population by 2031 would be as follows:

- a) Water supply : 118.5 mld
- b) Wastewater : 94.8 mld
- c) Solid waste : 438 mt per day
- d) Power : 351 MW

1.15. Heritage Conservation

28 important heritage/protected buildings and active green area of Baradari have been listed out of which 12 buildings have been declared as protected monuments under 'The Punjab Ancient & Historical Monuments and Archaeological Sites & Remains Act, 1964'.

1.16. Vision 2031

A specially constituted Think Tank comprising official and non-official representatives from all walks of life articulated the Vision 2031 for Patiala in following terms:

"To maintain Patiala as the centre of excellence of educational and sports activities at the state, national and international level and to strengthen its role as the destination of heritage and cultural tourism of Northern India by augmenting regional connectivity and enhanced quality of life through improved physical and social infrastructure in an environmentally sustainable manner".

The strategies to attain this vision would require spatial and land use planning, infrastructure planning and financing enabling private investment in economic growth, ensuring environmentally sustainable development etc. The role of master Plan in this regard would be that of facilitating a spatial and Land use planning framework conducive to attaining the vision.

Visualising the future structure of the city involves delicate trade-offs. If urban development is freely permitted anywhere, it might lead to sprawl that is difficult to serve in terms of infrastructure services and may cause loss of fertile agricultural land. On the other hand, if the future structure is visualized as compact city that is easier to service, it might increase the land price where development is permissible and might cause unauthorized development where it is not. The extent of urbanization visualized is therefore not narrowly linked to land required for accommodating the population and

economic activities by 2031. The extent of urbanization is based on the land requirement for various activities, transport network that would be desirable and the areas that would acquire development potential on account of such transport network.

1.17. Proposed Land Use and Road Network

In the light of the above approach, land use and road network plan has been proposed as a part of the Master Plan. The land in LPA has been zoned for Residential, Commercial, Wholesale and Warehousing, Industrial and Rural and Agricultural purposes. However, specific designation for public purposes like schools, hospitals, playground etc have not been earmarked. The arterial road network has been proposed. The proposed land use plan is shown in Drg no. DTP (P) 3486/09 Dated: 24.6.09.

- The listed heritage buildings which have variety of architectural styles build by successive rulers of Patiala State, extensive landscape dotted with rare fruit trees, botanical and rock garden etc and meandering avenues in Baradari garden has immense heritage value that needs to be conserved and preserved which has been the vital outcome the of deliberations of SWOT analysis by Think Tank Members.

It is proposed to follow up the Master Plan preparation by more detailed zonal or sector plans. These planning sectors numbering eleven are shown on drg no. 3494/09 Dated: 19.8.09.

The arterial road network proposed comprises of four categories roads viz. R1 (200') R2 (150'), R3 (100') and R4 (80'). This is separately shown on drg no. DTP (P) 3487/09 dated: 24.6.09. The road network comprises of ring and radials. The main radials are: Patiala – Sirhind , Patiala – Rajpura, Patiala – Bhunerheri, Patiala – Cheeka, Patiala – Dakala, Patiala – Main, Patiala – Samana and Patiala – Sangrur. The Ring road as shown on the map interlinks the radial roads.

1.18. Zoning Regulations

"The Punjab Regional and Town Planning & Development (Amendment) Act,2006" provides for the "Control of Development and Use of Land in Area where Master plan is in Operation". However, control of development through parameters like sub-division of land, ground coverage, FAR, parking, building design and construction has been covered through various controls which are elaborated before Zoning Regulations. The zoning regulations included in the Master Plan are confined to use of land. For this purpose a two-dimensional framework has been used. Land use zones as shown in the Proposed Land Use Plan is one dimension and more detailed use classes patterned after the

National Industrial Classification is the second dimension supplemented with the landuse provisions as provided in various notifications issued by Punjab Government from time to time. A matrix shows the zones in which each use class is permissible. In addition regulation regarding maximum permissible densities and heritage conservation are also proposed.

2. INTRODUCTION

2.1. Initiation

To develop Patiala city and its surroundings in an orderly manner and to prepare its Master Plan under "The Punjab Regional and Town Planning and Development Act 1995", Local Planning Area Patiala (L.P.A.) was declared under section 56(1) of "The Punjab Regional and Town Planning and Development (Amendment) Act, 2006" vide notification number 12/74/06-4-HGI/38 dated 2.1.2008. (Annexure II) The L.P.A Patiala comprises of 155 villages which spreads over an area of 49033 hectares. But as per calculation of areas by P.R.S.C Ludhiana, the total area of L.P.A Patiala works out to 49696 hectares. However, the total number of settlements remains the same. Out of 155 villages, 10 villages (few of them part villages) have been merged in Municipal Corporation area of Patiala and one revenue estate consisting of Municipal Council of Sanaur. Patiala Urban Agglomeration has a population of 323,884 persons and Sanaur Municipal Council has a population of 17,935 persons as per 2001 census. The jurisdiction of L.P.A. extends upto village Amampura and village Nandpur Kesho in the north, village Gaunspura in the east, village Akaut and village Hiragarh in the South and village Rakhra in the west. The physical extent and boundaries of L.P.A. are shown in Fig 2 and list of all rural settlements covered under the jurisdiction of. L.P.A Patiala is given in Annexure-I. Accordingly Chief Town Planner, Punjab has been designated as the Planning Agency for L.P.A Patiala vide notification no 12/74/06-4HGI/44 dated 2.1.2008 (Annexure - III).

2.2. Regional Setting of L.P.A Patiala in Punjab

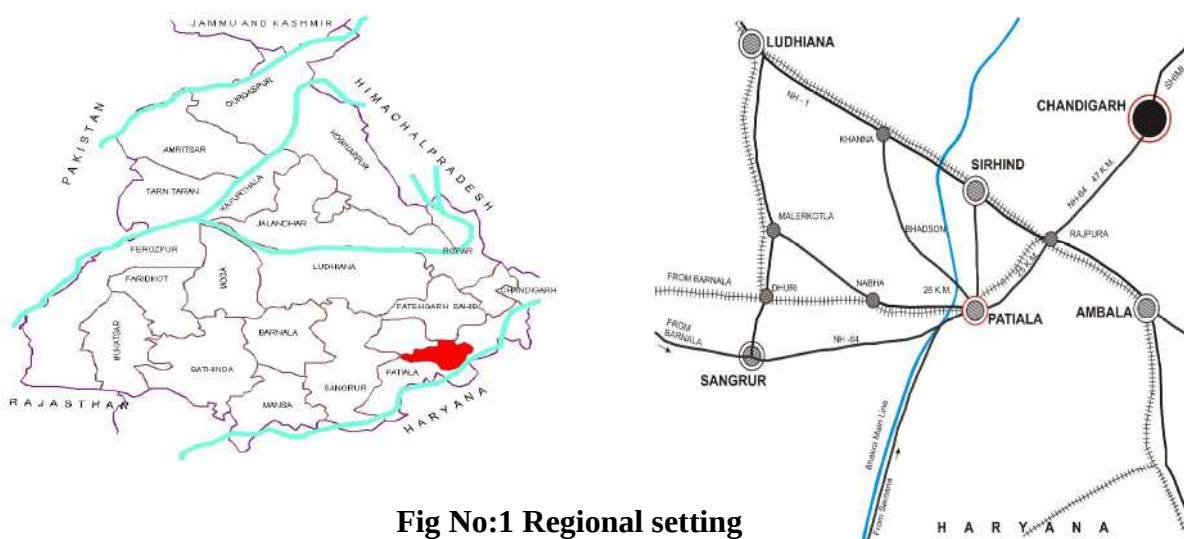


Fig No:1 Regional setting

Patiala, the district headquarter is an important city located in Malwa region of South Eastern part of Punjab. The city is well connected by roads and is located at a distance of about 75 km towards southwest from Chandigarh. It lies 25 km away from the Grand Trunk Road (i.e. National Highway No.1) and is about 250 km from Delhi.

It is well connected with important urban centers of Punjab namely Rajpura, Sirhind, Nabha, Sangrur, Ludhiana and some important urban centers of Haryana by the network of Highways and District roads. Besides National Highway No. 64, two State Highways no. 8 and 10 along with other major roads converge at Patiala. The city is linked with railway network as Rajpura branch railway line passes through the city. The city is also connected by air as it has a Civil Aviation Club.

2.3. Patiala City as a Counter Magnet of National Capital Region

In order to reduce the pressure on Delhi, five counter magnet towns namely Bareilly, Hissar, Patiala, Gwalior and Kota were considered outside National Capital Region (NCR). The concept of Patiala city as counter magnet envisages two distinctive and mutually complementary roles in the context of NCR:-

- i) To maintain the development autonomy and functional identity as a "Regional-Growth centre" by exalating the accelerated development.
- ii) To infuse the functional specification of priority as a "Regional growth centre" so as to achieve the balanced pattern of urbanization.

Therefore, the Patiala city Counter Magnet has been given a priority status for the purpose of institutional funds for various development programmes like development of industrial land, infrastructure and housing. Due to locational disadvantages of the city i.e. absence of direct railway link with Delhi the whole traffic has to depend upon road transport. Moreover as the city lies just off the excellent National Highway No.1 the city could not develop at the pace as envisaged by the NCR PB as a counter magnet. But still Integrated Township, a joint venture of Patiala Development Authority (PDA) and OMAXE , laying of sewerage network, covering of Ganda Nallah, setting up of Main Pumping Station (MPS) on Main road etc. have been undertaken under NCR funds.

2.4. Physiography

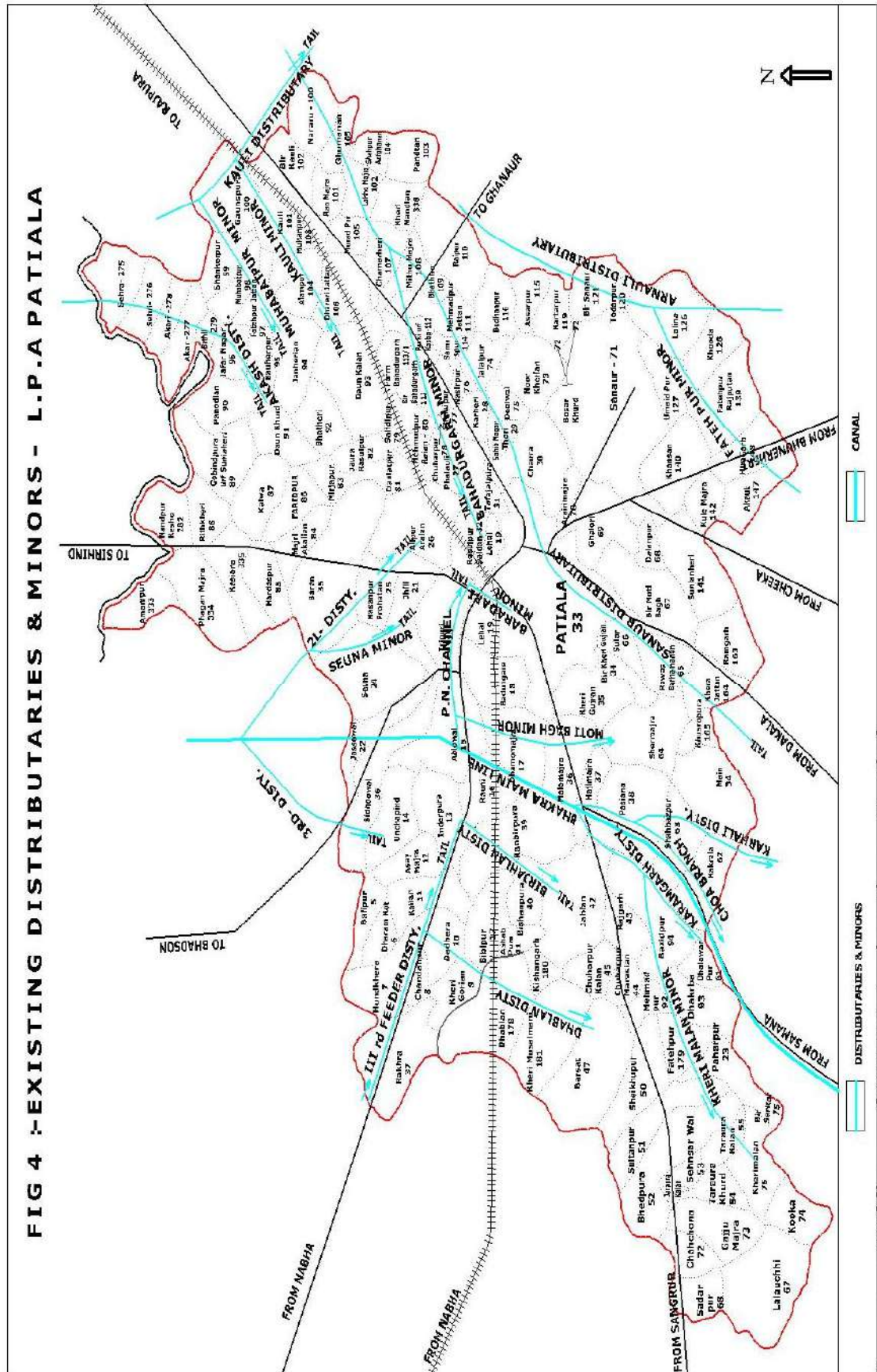
The L.P.A Patiala covers northern and central part of Patiala District and is a part of the great plains of North India. It has a mean elevation of about 256m and gently slopes from North - East towards South - West. Out of the three physiographic regions of Patiala

district namely, the Upland Plain, the Choe-Infested Foothill Plain, the floodplain of the Ghaggar River, the L.P.A Patiala lies in the Upland Plain. The Upland Plain is higher in elevation than the floodplain but is lower than the Choe infested plain. The Upland Plains are further divided into the Eastern Upland Plain and The Western Upland Plain. Major part of L.P.A.Patiala falls in the region of the Eastern Upland Plains. The terrain is flat and featureless. Being alluvial in origin, its soils are well drained and are very fertile. A favourable sub soil water condition has led to the development of tubewell irrigation.

2.5. Drainage system of L.P.A

The drainage system of L.P.A Patiala consists of natural as well as man made drainage system. The drainage pattern of L.P.A Patiala as shown in the Fig 3 indicates a very distinctive pattern of nine drains passing through it namely Patiala Nadi, Kalwa Suniarheri drain, Nim Sahib drain, Bahadurgarh drain, Chotti Nadi, Jacob drain, Model Town drain, Tafazalpura drain and Jhambowali Choe.

- **Patiala Nadi:** This seasonal river originates from the Shivalik foot hills and there after traversing some distance, it enters L.P.A. There is no design section of Patiala Ki Rao and this creek runs within private land. This creek is called Patiala nadi from the down stream at village Faridpur. It enters L.P.A from village Nandpur Kesho and exits near village Khusropur. A defence bundh 15.40 km long has been constructed on the left side of Patiala Nadi to save the city from the havoc of floods.
- **Kalwa Suniarheri Drain:** It has a total length of 4.36 km. This drain after passing through village Suniarheri, Daun Khurd drains off the rain water in Patiala Nadi.
- **Nim Sahib Drain:** It is also known as creek of Patiala Nadi and has a total length of 4.11 km. The rain water of village Badoli, Gaunspura, Kauli, Alampur, Bhatheri, Jaura Rasulpur gets drained into Nim Sahib drain which ultimately outfalls into Patiala Nadi.
- **Bahadurgarh Drain:** Bahadurgarh drain originates from Bahadurgarh and outfalls in Bari Nadi. It drains the rain water of Urban Estate Phase-II and Bahadurgarh in Patiala Nadi. It is 5.18 km long.
- **Chotti Nadi:** It starts near Patiala - Sirhind Road and outfalls in Patiala Nadi near Patiala - Dakala Road.
- **Jacob Drain:** It is 14.82 km long and originates from 'Thandi Khuhi' near Mohindra College and lastly outfalls into Patiala Nadi near village Darola .
- **Model Town Drain:** It has a total length of 15.90 km and originates near the confluence of the boundary of village Seuna, Baran and Hasanpur Prohatan and outfalls in Jacob drain near Main factory.



- **Tafazalpura Drain:** It has a total length of about 3.32 km. It originates near D.M.W and outfalls in Patiala Nadi down stream near railway line.
- **Jhambowali Choe:** It has a total length of 96.66 km and flows in western direction of L.P.A. and enters L.P.A. at village Balipur and after flowing through various villages it exits L.P.A at village Lalauchhi.

Apart from the natural drainage lines, L.P.A has numerous man made water channels. Of this category Bhakra canal is the most important. It runs through the centre of L.P.A in north-south direction. This main canal through its branches, distributaries and minors provide irrigation water to various areas in L.P.A. The main Bhakra canal has a good network of its branch, minors and distributaries comprising of Choa branch, Karhali distributary, Karamgarh distributary, 3RD distributary, 2L –distributary and Seuna minor, Kherimalan minor and Motibagh minor, Baradari minor and Patiala Navigation Channel. Similarly Sanaur distributary alongwith Bahadurgarh minor, part of Arnauli distributary, Fatehpur minor, IIIrd Feeder distributary, Dhablan distributary, Bir Jahlan distributary, Akash distributary, Mohabatpur minor and Kauli minor are part of extensive network of man made water channels within LPA Patiala (as shown in Fig 4).

2.6. Brief history of the City and its Landmarks

Though historians have tried to trace the origin of Patiala (as far as the name is concerned) to Rig Vedic literature yet the town as it stands today was founded by Ala Singh with the construction of the Qila Mubarak in the year 1763. One gets the impression as if the city was designed and developed according to a plan akin to that of temple architecture. In the heart of the city was the seat of the king similar to the house of the deity and the residential areas of communities developed almost status-wise. The city of Patiala was founded by **Baba Ala Singh** around 1763 as a military stronghold on a site protected by rivers and thick forests, which quickly became the focal point of culture in this region. Baba Ala Singh belonged to the Phulkian family. He consolidated his hold on 84 villages including the site of Patiala which formed part of the Jagir owned by Mohd. Khokar and emerged as the most powerful leader in the Malwa region. It was the fall of Sirhind in 1763 which facilitated the establishment of Patiala state. In this partition, Sirhind and its surrounding areas fell to Raja Ala Singh. Ahmed Shah Durrani conferred a rich *khillat* and title of Raja on Baba Ala Singh who laid the foundation of the Qila Mubarak. Baba Ala's stronghold grew around Qila Mubarak and the area covered now by the ruins of Pattan-wala; it is popularly believed that the word Patiala comes either from

Pattan-wala, or from a combination of the word '**Pati**' which means '**territory**', and '**Ala**' from founder **Baba Ala Singh**.

To counter the growing power of Maharaja Ranjit Singh at Lahore, Patiala entered into a treaty with British against Ranjit Singh in 1808. Patiala prospered in the following decades of peace becoming a center for the arts. Maharaja Narendra Singh (1845-1862) fortified the city of Patiala by constructing ramparts and ten gates around the city. It was Maharaja Bhupinder Singh (1900-1930) who gave the Patiala state a prominent place on the political map of India and, in the field of international sports. Most of the buildings with splendid architectural designs were constructed during his reign.

As a capital of an independent princely Sikh state from the 18th to early 20th century, and later of Patiala East Punjab State Union (PEPSU), ***Patiala was considered the most beautiful city in Punjab.***

Royal patronage has given Patiala a rich heritage: a magnificent masonry fort, palaces and gardens. Patiala was also an important market town for the neighbouring countryside so typically, Patialvi culture combines Punjabi folk traditions with Mughal and Rajput influences. The city's museums are rich with historical and cultural artefacts and the city itself is filled with a wealth of educational and cultural institutions and some of the finest monuments in Punjab.

The town of Sanaur lies 6.4 Kms. south-east of Patiala, connected by a metalled road. It lies on a high mound. The town is of some antiquity but of no historical importance. In 1748 it came into the possession of Maharaja Ala Singh. The town is a good market for red chillies, and a rich vegetables growing area. Earthen *jhajhris* (jars), and Ber fruit are the specialties of Sanaur.

2.7. Major Events in the Development History

2.7.1. Development Milestones in Patiala:

Patiala has a very rich historical past. Its formation started in 1763 when the foundation stone of Patiala fort 'Qila Mubarak' was laid by Baba Ala Singh. After this Patiala city witnessed major developments. During 19th Century, the city of Patiala was fortified by ramparts and construction of ten gates around the city. The famous Mall Road was constructed during 1862-1876. Old Moti Bagh Palace, Baradari Garden and Palace were also constructed during 19th century. The first hospital 'Rajindra Hospital' was established in 1883. In the year 1884, the railway line connecting Patiala with Rajpura

was opened. In 1902, under Maharaja Bhupinder Singh, world famous planner Patrick Geddes was invited to Patiala to suggest improvements for the city. The first piped water supply to the city was provided in 1910 and Army Headquarter, Soldiers' club, Power House and Fire brigade were established during 1938-48. The PEPSU (Patiala and East Punjab States Union) was established in 1948 and merged with Punjab in 1956. Another major development was the planning of underground sewerage system in 1972. Also the development of Industrial Focal Point in 1993 contributed to the development of Patiala city.

Table No.2.7.1 Development Milestones in Patiala

Sr. No.	Year	Events
1.	1763	Foundation Stone of Patiala fort 'Qila Mubarak' was laid
2.	1845-1862	Fortification of city construction of Ramparts and Ten Gates around the city by Maharaja Narendra Singh
3.	1862-1876	Establishment of The Mall Road
4.	1878	Old Moti Bagh Palace was established
5.	1878	Mud wall surrounding the town was demolished
6.	1880	The Baradari Garden was established
7.	1883	Rajindra Hospital was established
8.	1884	Railway Line connecting Patiala with Rajpura was opened
9.	1884	Rajindra Palace in Baradari Garden was established
10.	1910	Construction of 'A-Tank' or Minto Tank
11.	1938-1948	Army Head Quarter, Soldiers Club, Power House & Fire Brigade.
12.	1948	Establishment of Patiala and East Punjab States Union (PEPSU)
13.	1954	Factory Area Developed
14.	1956	Merger of PEPSU with Punjab
15.	1972	Underground Sewerage System Planned
16.	1993	Development of Industrial Focal Point Near D.C.W., Northern Bye Pass, near village Alipur Raian, Patiala

Source: Gazetteer of Patiala, DTP Office, Internet

2.7.2. Institutional Milestone

The city of Patiala witnessed many institutional milestones. During the regime of Maharaja Mohinder Singh in 1875, 'Mohindra College' was built which was the only degree college between Delhi and Lahore during that time. After independence, the development process got expedited. In 1952, Govt. Ayurvedic College was established and in the subsequent year i.e. in 1953, Govt. Medical College was built. In 1961, Patiala was brought on national map with the establishment of National Institute of Sports and in 1962, Punjabi University was established. The first National Law University of north i.e. Rajiv Gandhi National University of Law was set up in 2006. (as shown in Table No.2.7.2)

Table No. 2.7.2 : Institutional Milestones of Patiala

Sr. No.	Year	Events
1	1875	Mohindra College was established
2.	1952	Govt. Ayurvedic College was established
3.	1953	Govt. Medical College was established

4.	1956	Thapar Institute of Engineering and Technology was established
5	1956	The Central State Library was established
6.	1957	Headquarters of Punjab Public Service Commission was shifted from Shimla to Patiala
7.	1961	N.I.S. was established
8.	1962	Establishment of Punjabi University
9.	2006	Rajiv Gandhi National University of Law was established.

Source: Gazetteer of Patiala, DTP Office, Internet

2.7.3. Planning and Administrative Milestones

Patiala has always remained an administrative hub and possesses sound planning structure. One of the major developments to look after the public amenities of the town was the establishment of Municipal Committee in 1904. In 1945 a Small Town Committee was constituted at Sanaur and was converted into a class III Municipality in the year 1995. A major landmark in the history of town planning of Patiala was the setting up of the Office of Divisional Town Planner in 1967 which officially took the responsibility of planned development of Patiala under the aegis of Town Planning Department. The year 1971 witnessed first launching of Town Planning Scheme and in the same year, first Master Plan was prepared for Patiala. In 1972, the first Urban Estate in Patiala was set up. The Improvement Trust was established in the year 1973. Year 2002 marked the setting up of Patiala Development Authority (PDA). For development of areas falling within and outside the Municipal limits of Patiala, L.P.A Patiala was notified in year 2008 under section 56(1) of "The Punjab Regional and Town Planning and Development (Amendment) Act, 2006".(refer to Table no 2.7.3)

Table No. 2.7.3 Planning and Administrative milestones of Patiala

Sr. No.	Year	Events
1.	1904	Establishment of Municipal Committee
2.	1945	A small Town Committee was constituted at Sanaur.
3.	1967	Office of Divisional Town Planner Patiala was set up at Patiala
4.	1971	First Master Plan for Patiala was prepared
5.	1971	First Town Planning Scheme was prepared
6.	1972	First Urban Estate was setup.
7.	1973	Patiala Improvement Trust was setup.
8.	2002	Patiala Urban Planning and Development Authority (PDA) was constituted.
9.	2008	L.P.A, Patiala was notified.

Source: Gazetteer of Patiala, DTP Office, Internet

2.8. Legal Framework for Preparation and Implementation of Master Plan

Master Plan of L.P.A Patiala is being prepared as per the provisions of "The Punjab Regional and Town Planning and Development (Amendment) Act, 2006" (PRTPD Act, 2006)". Main provisions of the law are given as under:-

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 Local Planning Area 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.

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

- Under section 56(1), L.P.A Patiala was notified vide notification no. 12/74/06-4HGI/38 dated 2.1.2008 (Annexure - II) 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.
- After the declaration of planning area, as above State Govt. has to designate the Planning Agency for the L.P.A under section 57. Accordingly Chief Town Planner, Punjab has been designated as the Planning Agency for L.P.A Patiala vide notification no 12/74/06-4HGI/44 dated 2.1.2008 (Annexure - III)
- 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, L.P.A 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 purposes of preparing regional plan, master plan and a new town development plan;
 - (iii) Prepare a regional plan, master plan and a new town development plan.
- Section 59 deals with the preparation of present land use map and fixes six months time for this purpose, after the designation of Planning Agency which may be extended by the State Govt. from time to time.
- Section 60 provides for expenses that the State Government or any other authority functioning in the Planning Area 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 deals with the preparation and approval of Master Plans of towns / cities.

- The section 70(1) 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.
- Section 70(2) regulates the form and contents of the master plan and shall include such maps and such descriptive matter as may be necessary to explain and illustrate the proposals in the master plan.

- Section 70(3) 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.
- Under section 70(4), 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.
- Under section 70(5), 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.
- According to section 75, the Master Plan shall come into operation from the date of publication. Refer to sub section 5 of section 70.
- The section 76 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.

Development Control

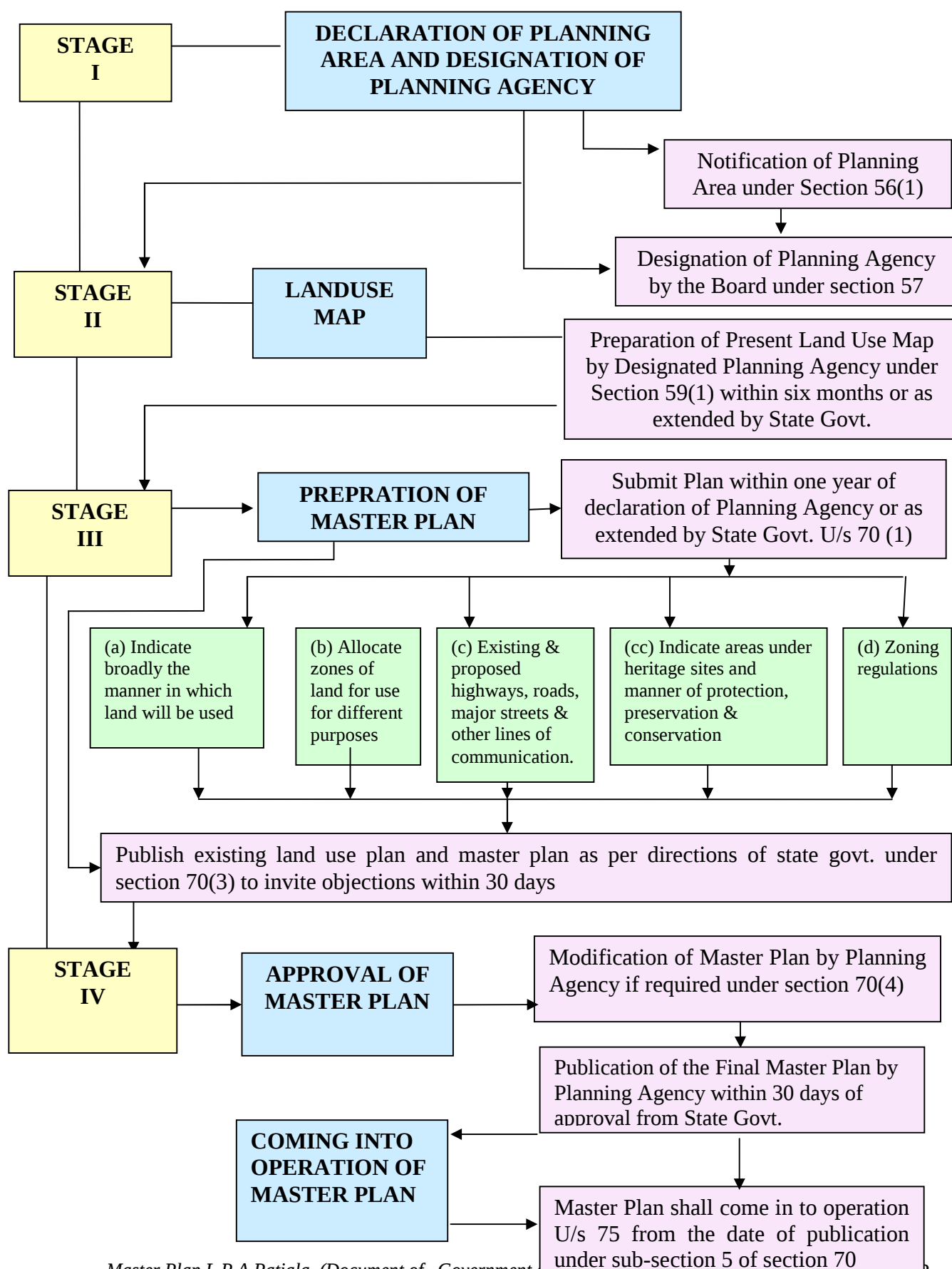
Chapter XI of the Punjab Regional & Town Planning & Development Act provides for “Control of Development and Use of Land in Areas where Master Plan is in Operation”. This chapter in conjunction with the Punjab Regional Town Planning & Development (General) Rules 1996 has laid down the

- (a) Procedure for applying for development permission
 - (b) The manner in which development permission may be granted., including the provisions for deemed permission.
 - (c) Validity and lapsing of development permission
 - (d) Provision serving “acquisition notice” if beneficial use of land is rendered impossible.
 - (e) Control of unauthorized development
- Chapter XII, 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 proposals 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. It has a vital role in the preservation and protection of objects of historical importance i.e. natural beauty or heritage and of building actually used for religious purposes. Similarly it takes care of imposing of conditions and restrictions with regard to open space to be maintained around building and various development controls etc.

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

FIG 5: STAGES OF MASTER PLAN PREPRATION
 (As per "The Provisions of the Punjab Regional & Town Planning & Development
 (Amendment) Act, 2006")



2.8.2. Other Legislations

The acts mentioned below though do not have direct role in the preparation of Master Plan but have a definite role to play in the implementation of the Master Plan.

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:

- (i) It helps to provide planned development through the mechanism of Development Schemes.
- (ii) It makes land available for the development of social and physical infrastructure like schools, health, parks and play grounds, good road network etc.
- (iii) Social housing can be made available within the purview of this act.

Punjab Apartment and Property Regulation Act, 1995 (PAPRA)

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. 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 considering the interest and rights of individual buyers of plots / flats. In order to check, control and regulate the activities of private colonizers and to protect the interest of the consumers keeping in view the National Housing Policy, the legislature enacted the 1995 Act.

This act is an important tool for ensuring planned development within the framework of Master Plan. Master Plan envisages good 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 and enacting proper urban land development policies in the following manner:

1. It provides planned development thus checking, controlling and regulating the activities of the private developers.
2. It makes available funds for off-site or external development.
3. It provides land for the development of physical and social 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.

3. POPULATION, HOUSING, ECONOMY AND EMPLOYMENT

The true character of the town can be judged by statistical data related to demographic profile in terms of the population growth, population density, literacy rate etc. The decadal study of population growth and its characteristics are of great help in bringing out the trends of population growth, population density, literacy rate etc. and for perceiving the future of the city. Thus, the following study examines the population growth and various characteristics of population in L.P.A Patiala, Patiala city and Sanaur M.Cl.

3.1. Population Growth and Characteristics

3.1.1. Population Growth Rate of L.P.A Patiala

The L.P.A Patiala comprises of 155 villages which include Patiala U.A. and Sanaur M.Cl. Table No. 3.1(a) reveals the growth trends of L.P.A Patiala. It shows that during the decade of 1981-91, the growth rate of population was 23.67% which fell down to 18.88% in the decade of 1991-2001.

Table No. 3.1(a): Population Growth 1981-2001

PUNJAB STATE GROWTH RATE (%)		
	1981 - 1991	1991 -2001
Total	20.81	20.10
Urban	28.95	37.86
Rural	17.69	12.65
L.P.A PATIALA GROWTH RATE (%)		
	1981 -1991	1991 -2001
Total	23.67	18.88
Urban	22.88	26.51
Rural	25.24	3.98

Source: Census of India: 1981, 91 & 2001

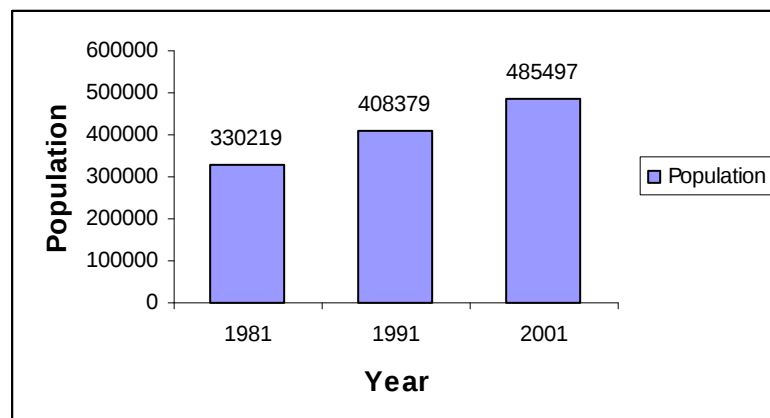


Fig. 6 Population growth trend of L.P.A Patiala

It can be observed from Table No. 3.1(b) that the total percentage share of population of L.P.A. in context of Punjab in the year 1981 was 1.97% which increased to 2.01% in

1991 and again came down to 1.99% in 2001. The percentage of urban population of L.P.A. Patiala to total urban population of Punjab state was 4.73% in 1981, 4.51% in 1991 and slightly declined to 4.14% in 2001. The decline is the outcome of decreasing urban growth in LPA Patiala from 1991-2001. The share of rural population of L.P.A. in context of Punjab's rural population increased slightly in 1991 and slightly decreased from the period of 1991 to 2001. It was 0.91% in 1981, 0.97% in 1991, and 0.89% in 2001.

Table No. 3.1(b): Share of L.P.A Patiala Population in Punjab

Year	Total			Urban Population			Rural Population		
	Punjab	L.P.A Patiala	% share	Punjab	L.P.A Patiala	% share	Punjab	L.P.A Patiala	% share
1981	16788915	330219	1.97	4647757	219888	4.73	12141158	110331	0.91
1991	20281969	408379	2.01	5993225	270196	4.51	14288744	138183	0.97
2001	24358999	485497	1.99	8262511	341819	4.14	16096488	143678	0.89

Source: Census of India: 1981, 91 & 2001

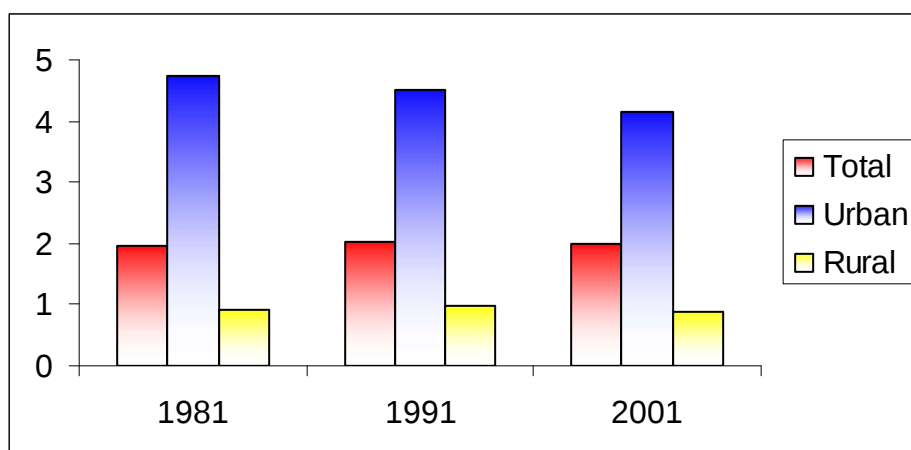


Fig. 7: Share of L.P.A Patiala Population in Punjab

- Population Growth since 1901 of Patiala UA & Sanaur M.Cl.**

The growth of population in Patiala U.A. and Sanaur M.Cl. from 1901 to 2001 is shown in Table No.3.1(c). It is observed that the decadal growth rate of Patiala U.A. had a varying character prior to independence or till 1941. The decade of 1941-51 marked a sharp increase in the growth rate of population in Patiala U.A. i.e. from 27% in 1941 to 40% in 1951. One of the major reasons behind this increase in growth rate of population was the large influx of population from Pakistan after the partition of India. After year 1951, the growth rate of Patiala U.A. fell down for two consecutive decades. Again, the decade of 1971-81 witnessed an increase in the growth rate of population. During 1981-91 the growth rate plummeted down to 22% due to the outbreak of riots in Punjab and large number of people migrated to other states. In the decade of 1991-2001, the growth rate of population of Patiala U.A. again fell down to 20%. The growth rate of population

in Sanaur M.CL also fluctuated in the period of 1901 to 1941. The decade of 1941-1951 i.e. decade in which India got independence witnessed negative growth rate of Sanaur M.CL. The decade of 1951-61 witnessed positive growth rate. The growth rate of Sanaur M.CL increased to 25% in the decade of 1961-71. From 1991-2001, the growth rate of Sanaur M.CL came down and from 1991-2001 it showed a sharp decline.

Table No. 3.1(c): Growth Trends –Patiala U.A And Sanaur M.Cl.(1901-2001)

Years	Population of Patiala U.A. (Persons)	Decadal Growth rate of Patiala U.A. (%)	Population of Sanaur (Persons)	Decadal growth rate of Population of Sanaur M.Cl.(%)
1901	53545	-	8580	-
1911	46974	- 12	6307	-26
1921	47531	1	6532	4
1931	55129	16	6846	5
1941	69850	27	8426	23
1951	97869	40	7948	-6
1961	125234	28	9007	13
1971	151041	21	11217	25
1981	206254	37	13634	22
1991	252171	22	16490	21
2001	323884	20	17935	09

Source: Census of India, 2001

Table No. 3.1 (d) reveals the share of population of Patiala U.A and Sanaur M.Cl in total urban population of Punjab. In the case of Patiala U.A and Sanaur M.Cl the percentage share of population has a decreasing trend from 1971 to 2001. In Patiala U.A. it was 4.69% in 1971, 4.43% in 1981, 4.20% in 1991 and it fell down to 3.92% in 2001. In Sanaur M.Cl the percentage share in 1971 was 0.34%, 0.29% in 1981, 0.27% but in 2001 it fell down sharply to 0.21%.

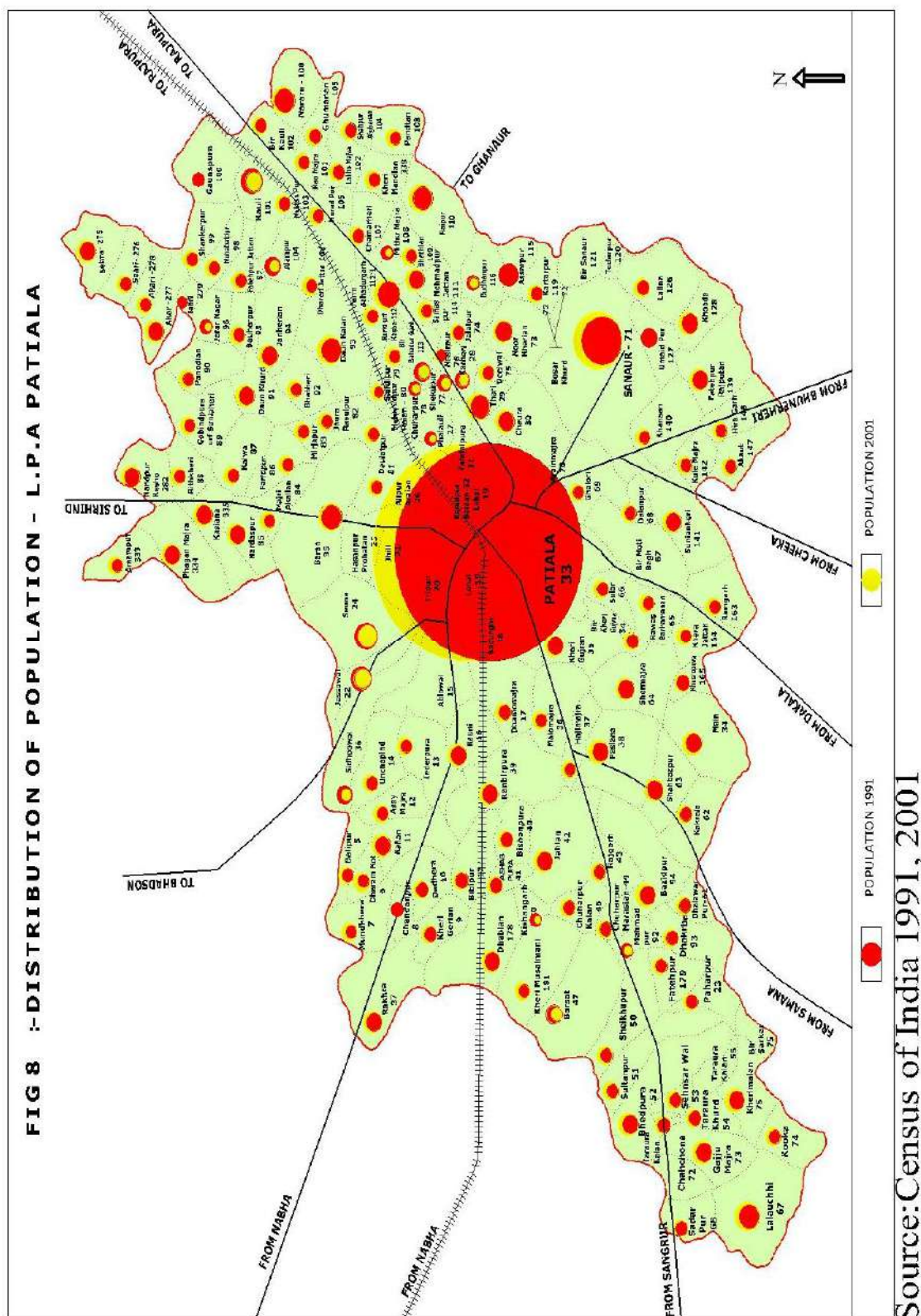
Table No. 3.1 (d): Share of Population of Patiala U.A, Sanaur M.Cl in Total Urban Population of Punjab

Years	Urban Population of Punjab (Persons)	Population of Patiala U.A. (Persons)	Population of a Patiala U.A as %age of Total Urban Pop. of Punjab	Population of Sanaur M.Cl (Persons)	Population of Sanaur M.Cl. as% of Total Urban Population of Punjab
1971	3216179	151041	4.69	11217	0.34
1981	4647757	206254	4.43	13634	0.29
1991	5993220	252171	4.20	16490	0.27
2001	8245566	323884	3.92	17935	0.21

Source: Census of India, 2001

• Distribution of Population in L.P.A Patiala

The study of distribution of the rural population of L.P.A Patiala for the year 1991 and 2001 reveals that there is high concentration of population in the vicinity of Patiala-



Rajpura road i.e. north direction of L.P.A Patiala which has the villages of smaller size. The rural population is moderately concentrated in the villages lying along Patiala-Sangrur Road with the exception of Lalauchhi which is having high concentration of

population. Similar trend of moderate concentration has been noticed along Patiala-Sirhind road and Patiala-Samana road whereas rest of the L.P.A rural indicates low concentration of population as shown in the Fig 8.

Positive growth rate has been noticed predominantly in all the rural settlements of L.P.A Patiala except the villages namely Seuna, Jassowal, Mehmadpur, Kishangarh, Sidhoowal, Jafarnagar, Karheri, Shekhupur, Kauli, Budhanpur, Barsat.

- **Density (Patiala M.Corp. and Sanaur M.Cl.)**

The density of population of Patiala city has increased from 6,575. persons/sq km in 1981 to 8193 persons/sq km in 2001 (Table No.3.1 e). The population density of city increased in the year 1991 to 7,640 persons/sq. km and again rose to 8193persons/sq km in 2001. The increase in density of population from the year 1991-2001 occurred despite the increase in the area of Municipal Corporation which was earlier 31.20 sq. km in 1981 as well as in 1991 but increased to 37.00 sq. km. in 2001. Whereas, in the case of Sanaur M.Cl. the density of population has shown an increasing trend from 1981-2001 as it was 14056 persons/sq km in 1981. In the year 1991 it rose to 17000 persons/sq km and further increased to 18490 persons/sq km in 2001.

Table No.3.1 (e): POPULATION DENSITY (PATIALA M.C. and SANAUR M.CL)

Year	Patiala M.Corp.			Sanaur M.Cl.		
	Total Population	Area (sq km)	Density (persons/sq km)	Total Population	Area (sq km)	Density (persons/sq km)
1981	2,05,141	31.20	6,575	13634	0.97	14056
1991	238,368	31.20	7,640	16490	0.97	17000
2001	303,151	37.00	8,193	17935	0.97	18490

Source: Census of India: 1981, 91 & 2001

The density of population within Patiala municipal corporation limits is not uniform all over the city. It varies from ward to ward as given in Table No. 3.1 (f)

Table No. 3.1 (f) Ward wise Population Density of Patiala city: 2001

Sr.No.	Ward No.	Area in Hect.	Population	Density Persons Per Hectares
1	Ward No - 1	181.38	28232	156
2	Ward No - 2	21.86	6274	287
3	Ward No - 3	203.24	10974	54
4	Ward No - 4	217.81	28374	130
5	Ward No - 5	348.58	41932	120
6	Ward No - 6	51.01	7924	155
7	Ward No - 7	89.88	3103	35
8	Ward No - 8	116.20	7800	67
9	Ward No - 9	165.18	11647	71

10	Ward No - 10	223.48	4836	22
11	Ward No - 11	421.05	17587	42
12	Ward No - 12	160	8132	51
13	Ward No - 13	27.12	2724	118
14	Ward No - 14	23.08	4170	181
15	Ward No - 15	72.47	8424	116
16	Ward No - 16	10.53	2434	231
17	Ward No - 17	6.88	1710	248
18	Ward No - 18	6.07	2189	359
19	Ward No - 19	13.76	5607	406
20	Ward No - 20	14.57	4122	284
21	Ward No - 21	7.70	3222	418
22	Ward No - 22	7.28	2599	356
23	Ward No - 23	51.01	4747	93
24	Ward No - 24	247	18522	75
25	Ward No - 25	203.24	5404	27
26	Ward No - 26	29.15	8075	277
27	Ward No - 27	10.93	2064	188
28	Ward No - 28	16.60	4301	259
29	Ward No - 29	14.57	2972	205
30	Ward No - 30	14.57	4213	289
31	Ward No - 31	17.81	7493	420
32	Ward No - 32	435.62	3847	9
33	Ward No - 33	32.39	8120	251
34	Ward No - 34	6.88	1483	215
35	Ward No - 35	203.24	17894	88
	Total	3672.14	303151	6303

Source: Census of India 2001

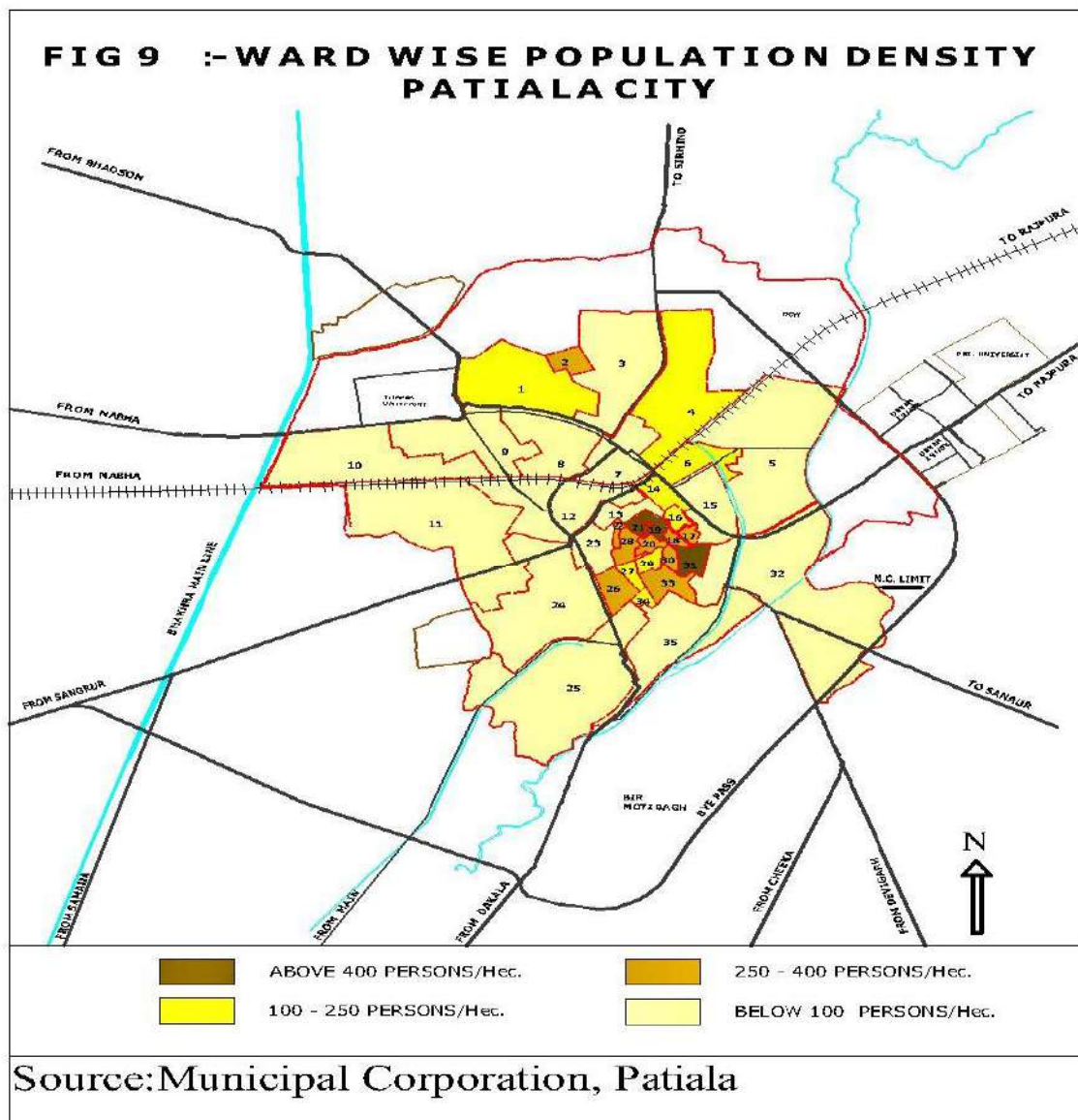
Inter Census comparison of ward wise density is however not possible as ward boundaries have been changing over the years. The density gradient of 2001 ward-wise population depicts that highest density i.e. 420 persons/ha. has been noticed in ward No. 31 and lowest density i.e. 9 persons/ha. has been observed in Ward no.32.

The density gradient of population has been given in Table No.3.1 (g)

Table No. 3.1 (g): Density Gradient Patiala M.Corp (ward wise) 2001

Sr. No.	Density slab (Persons/ha.)	Ward numbers
1	above 400	19,21,31
2	250 – 400	2,17,18,20,22,26,28,30,33
3	100 – 250	1,4,6,14,16,27,29,34
4	below 100	3,5,7,8,9,10,11,12,13,15,23,24,25,32,35

The highest density zone i.e. above 400 persons/ha. falls in the inner walled city, whereas peripheral areas have low density. The density gradient as given above is shown in fig 9.



- **Age Structure (Patiala M. Corp.)**

The age structure of population is given by grouping different age groups. (Table No.3.1 (h) It helps in assessing various facilities provided as well as required by city population. In the year 2001, the maximum population i.e. 34.7% was in the age group of 20-39 i.e. working age group. The age group of 5-19 precedes the age group of 20-39 with a population of 30.5%, the age group of 60+, had population of 7.7% only. The highest number of males as well as females are in the age group of 20-39 i.e. the working age group.

Table No. 3.1 (h): Age Structure Patiala M.Corp. 2001

Age Group	Persons	%age	Males	Females
0-4	21230	7.0	11825	9405
5-19	92469	30.5	50725	41744

20-39	105346	34.7	55066	50280
40-59	60052	19.8	32659	27393
60 & above	23431	7.7	11918	11513
Age not stated	623	0.2	380	243
Total	303151	100	162573	140578

Source: Census of India, 2001

- **Sex Ratio**

According to the Census 1981, there were 881 females per thousand males in case of L.P.A Patiala Urban (Table No3.1 (i) below). In 1991, the sex ratio increased to 909 females per thousand males from 881 females but then reduced to 865 in 2001.

Table No 3.1 (i): Sex Ratio (Urban)

Year	Total	Males	Females	Sex-Ratio
1981	219888	116874	103014	881
1991	270196	141516	128680	909
2001	341819	183295	158524	865

Source: Census of India 1981, 91 & 2001

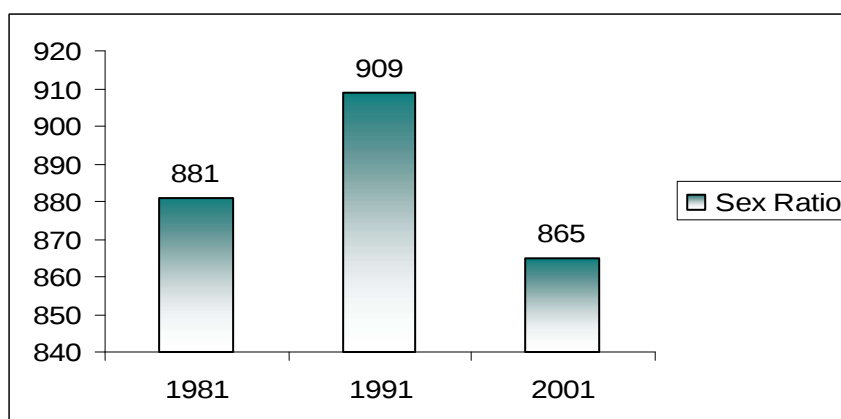


Fig 10: Sex Ratio (Urban)

* **L.P.A Urban = Patiala U.A. +Sanaur M.Cl.**

- **Literacy (L.P.A Patiala)**

The literacy rate in L.P.A Patiala has increased from year 1981 to 2001. In 1981 it was 53.51%, in 1991 it further increased to 69.15% and reached to 77.14% in 2001 having 56.32% males, 43.68% females as literates. In comparison to the literacy rate of Punjab in (2001) i.e. 69.7%, the literacy rate of L.P.A Patiala is 77.14% which shows quite high level of literacy. A considerable increase in the literacy rate of Patiala city and Sanaur M.Cl. has been witnessed in the decade of 1981 and 2001 (Table No. 3.1 (k)). The literacy rate of Patiala M.Corp. which was 65.03% in 1981, 78.17 % in 1991, increased to 85.66 % in 2001 i.e. more than the total literacy rate of L.P.A Patiala. The literacy rate of Sanaur M.Cl. also increased from 36.41% in 1981 to 56.36 % in 1991 and rose to 79.22%

in 2001. It shows that awareness for education is more prevalent in the urban folk than the whole of L.P.A.

Table No.3.1 (j) Literacy Rate of L.P.A Patiala

Year	Total Population	Population (0-6year)	Total Literates	Literacy Rate
1981	330219	N.A	176708	53.51
1991	408379	64450	237840	69.15
2001	485497	53742	333042	77.14

Source: Census of India: 1981, 1991 & 2001

Table No. 3.1 (k): Literacy Rate of Patiala M .Corp and Sanaur M.Cl.

Patiala M.Corp.				
Year	Total Population	Population (0-6year)	Total Literates	Literacy Rate
1981	206254	N.A	133419	65.03
1991	238368	37447	159305	78.17
2001	303151	33692	230837	85.66
Sanaur M.Cl.				
1981	13031	N.A	4965	36.41
1991	14612	2956	7628	56.36
2001	17935	2273	11263	79.22

* Literacy rate is shown in terms of literates as percentage of population above 6 years in age.

Source: Census of India: 1981, 1991 & 2001

• Migration

The Census of India defines the migration as:

Migrants by place of birth: Migrants by place of birth are those who are enumerated at a village/town at the time of census other than their place of birth.

Migrant by place of last residence: A person is considered as migrant by place of last residence, if the place in which he is enumerated during the census is other than his place of immediate last residence.

➤ Migration at Punjab Level

Being a prosperous state, Punjab attracts a large number of people from within India and outside India. Migration in Punjab is predominantly male sex selective and it affects the demographic profile of the state. Approximately 0.81 million people from outside Punjab and 0.02 million from outside India migrated to Punjab whereas 0.5 million out migrated from the state. Agricultural development due to green revolution has worked as a pull factor for migrants from U.P, Bihar, Haryana, Orissa etc.

Table No. 3.1 (l): Migrants in Punjab by last residence – duration 0-9 years.

1991 Pop.	In migrants	Out migrants	From other countries	Net Migrants	Migration rate per 100
20,181,969	811,060	501,285	26,861	336,636	1.7

➤ Migration in Patiala

According to Census 2001, the total population of Patiala U.A. is 323884 persons in which 26966 persons (8.33%) are in-migrants coming from different parts of the country for higher education as well as for job purposes. (Detailed table of migration is attached at Annexure IV).

According to Census of India, the total population of Patiala U.A. in 2001 is 323,884 persons which shows an increase of 70178 persons in the decade of 1991-2001 as it was 253,706 persons in 1991. The total number of migrants that came to Patiala U.A. in the duration of 0 – 9 years is 26,966 persons i.e. 38.43% of population increase in the decade of 1991-2001.

Table No 3.1 (m): Migrants in Patiala U.A.

1991 Pop.	2001 Pop.	Increase of Pop. (1991-01)	In migrants in the duration of 0-9 years	% of migrants to increase of pop. (1991-01)
253,706	323,884	70,178	26,966	38.43%

Source: Census of India, 2001

3.2. Housing

The Census of India defines a 'Census House' as a building or a part of a building having a separate main entrance from the road, common courtyard or staircase etc., used or recognised as a separate unit. Hence, the 'Census House' has been taken as a unit for the study of housing component in Master Plan Patiala which not only includes residential component but also comprises of other type of buildings like shops, offices, hospitals etc. However, main focus of the study is on the residential and other uses. Housing characteristics (stock) reflects the economic and social status of the people residing in a particular area.

The growth of residential houses and households has been found to be keeping pace with the growth of population. Housing stock from the year 1981 to 2001, (table below) reveals that the number of occupied residential houses in the city increased from 37637 to 74256 because of the rapid urbanization of the city. A growth rate of 11% has been observed in 1981-1991 and sharp increase in growth of 78% has been witnessed in the decade of 1991-2001. The number of households in 1981 was 37699 only which increased to 44897 in 1991 showing a growth rate of 19% in the decade of 1981-1991. It further increased to 58298 households in 2001 and reported 30% of growth in 1991-2001. The household size of population of the Patiala city shows an inverse correlation with the number of households and occupied residential houses in Patiala city. The household size which was 5.4 in 1981, decreased to 5.3 in 1991 and it further came down to 5.2 in the

year 2001. Consequently, the number of households and number of occupied residential houses increased during this decade. The fast paced development, awareness among people of a small family and breaking up of joint families into nuclear families has resulted into the decrease in the household size of the city. The given table shows the growth pattern of houses, households and household size.

Table No. 3.2 Growth Pattern of Occupied Residential Houses and Number of Households:

Year	Occupied residential houses	% growth rate of residential houses	No. of households	% growth rate of households	Household size
1981	37637	-	37699	-	5.4
1991	41718	11	44897	19	5.3
2001	74256	78	58298	30	5.2

Source: Census of India 1991, 2001

- **Housing Characteristics**

- **Pattern of use of housing stock**

The pattern of use of census houses in Patiala, in the year 2001 (table below) reveals that 2/3rd of houses in Patiala are used for residential purposes (67.57%). The use of residential premises for other purposes is also widespread. Every 6th house in the city is being used as shop/office whereas every 18th house in the city is used for school, college, hotel, lodge, guest house, hospital, dispensary, factory, workshop, work shed, place of worship and other non - residential uses. Every 35th house of the city is used for both residential and other purposes. It reveals that occupation density of census houses is very high but it is a matter of concern that almost every 12th house in the city is lying vacant or unoccupied.

Table No.3.2 (a): Pattern of Use of Census Houses – Category wise (2001)

S.No.	Category	No. of Houses	%age of total houses
1.	Residential	54515	67.57
2.	Residential cum other use	2296	2.85
3.	Shop/office	12984	16.09
4.	School/College	286	0.35
5.	Hotel/Lodge/Guest House etc	175	0.22
6.	Hospital/ Dispensary	245	0.30
7.	Factory/Workshop/ Work shed etc	985	1.22
8.	Place of Worship	391	0.48
9.	Other Non residential uses	2379	2.95
10.	Vacant Houses	6425	7.96
	Total Census houses	80681	100

Source: Census of India, 2001

Type of housing structure

As per 2001 Census, in Patiala city 95% of houses i.e. 53913 houses have permanent structure, 2242 houses i.e. 4% of total census houses have semi-permanent structure. The total number of temporary housing structure houses is 614, out of which 384 are serviceable and 230 are non serviceable.

In the case of Sanaur M.Cl, 84% census houses i.e. 2617 houses are permanent structures and 399 houses are semi-permanent structures constituting 13% of the total census houses, 83 census houses i.e. 3% of total census houses have temporary structure .The detail of the distribution of census houses by their type of structure is shown in Table No. 3.2(b).

Table No.3.2 (b): Distribution of residential houses by their type of structure in Patiala M.Corp. & Sanaur M.Cl. (2001)

Type of structure	Permanent	Semi-Permanent	Temporary			Unclassifiable
			Total	Serviceable	Non-Serviceable	
Patiala M.Corp.						
No. of houses	53913	2242	614	384	230	4
% age of total	95	4	1	1	0	0
Sanaur M.Cl						
No. of houses	2617	399	83	83	0	0
% age of total	84	13	3	3	0	0

Source: Census of India, 2001

➤ Households by number of dwelling rooms

As per the Census 2001 out of the total households 29.58% i.e. 17245 households are living in two rooms whereas 24.34% households are having three rooms set. 10020 households are having only one room and 9350 households are sharing four rooms set. 6.94% and 5.27% households have five rooms and six rooms and above respectively. Only 0.64% i.e. 374 households have no exclusive room.

Table No.3.2 (c): Room wise distribution of households by ownership status and number of dwelling rooms in Patiala M.Corp. (2001)

No. of rooms	No exclusive room	One room	Two rooms	Three rooms	Four rooms	Five rooms	Six rooms & above	Total
Households	374	10020	17245	14187	9350	4048	3074	58298
%Age of total	0.64	17.19	29.58	24.34	16.04	6.94	5.27	100

Source: Census of India, 2001

➤ Services Available to the Housing Stock

As per the figures of Census 2001, out of the total households in Patiala city 76% i.e. 4418 households are using tap as a main source of drinking water, 16% i.e. 9486

households have hand pumps, 2003 households i.e. 4% and 1691 households constituting 3% of total households have tubewell and any other source of their drinking water respectively.

In Sanaur M.Cl. 60% has tap as their main source of drinking water, while 1039 households use hand pump, 108 households use tubewell and 114 households depend on any other sources of drinking water.

As per the figures given in Census 2001, 92% households of Patiala M.Corp. have bathroom facility within the house. 62% have water closet, 14% have pit latrine whereas 20% have other type of latrines, and 2606 households of Patiala city have no latrine facility. In terms of connectivity for waste water outlet is studied, it is observed that 62% households have closed drainage, 27% have open drainage and 11% have no drainage facility.

In the case of Sanaur M.Cl., 1291 households i.e. 41% have pit latrines 19% have water closet, 20% uses other types of latrine and 20% have no latrine facility. In the case of drainage of waste water 87% households have open drainage, 11% have closed drainage and 2% have no drainage facility. It shows that in terms of discharge of waste water flow Patiala M.Corp. and Sanaur M.Cl. has totally different drainage system.

3.3. Economy

Punjab being an agrarian state, agriculture has played a pivotal role in the economic development of the state. Through green revolution in the 60's, Punjab took a major stride 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 a period of time. During 2006-07, it contributed 75.3% wheat and 31.2% rice to the central pool. However, the growth of secondary sector especially of manufacturing sector is not of satisfactory level. Neighbouring states got an edge over Punjab in the growth of manufacturing sector due to locational advantages and due to more conducive policy regime. Punjab has grown at a rate of 5.08% during 10th Five 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.3.3: 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	5.2	5.54	6.32
Per Capita Income at 1999-00 Prices	(Rs)	27851	28872	30158
Percentage Share to Central Pool				
Wheat	%	55	60.9	75.3

Rice	%	36.9	32	31.2
Electricity Generated	(mk w.h)	21296	24642	23695
Per Capita Power consumption	(kw.h)	871	906	968

Source: Economic survey of Punjab, 2007-2008

The overall economy of Punjab has witnessed a growth rate of 5.54% at constant (1999-2000) prices during 2005-06 and 6.32% during 2006-07.

The share of agriculture (proper) in GSDP has declined from 26.2 % in 1999 - 2000 to 20.65% in 2006-07. The share of primary sector which includes agriculture and livestock has come down from 37.53% in 1999-2000 to 31.97% in 2006-07. The share of secondary sectors has increased from 22.75% 1999-2000 to 25.90% in 2006-07, which is mainly due to increase in activity of construction sector. The share of tertiary, which comprises of services sector, has increased from 39.72% in 1999-2000 to 42.13% in 2006-07. This growth is mainly due to increase in contribution of transport, storage & communication, trade, hotels & restaurants and banking & insurance sector. It is evident that this structural change in Punjab's economy is the main underlying reason for sustained urbanization.

3.4. Employment of L.P.A Patiala

The economy of Patiala and its L.P.A is based mainly on trade, commerce, agriculture and agro based industry. City or district wise estimates of domestic products are not available. However, education, tourism, hospitality, real estate business like multiplexes, malls and other commercial establishments, financial and banking services etc also contribute to the economic wellbeing of the people of the city.

• Occupational Structure in L.P.A Patiala

The Occupational structure reflects the economic status of a region. The percentage of total workers in L.P.A Patiala shows an increasing trend during the decadal period of 1981-1991 as well as 1991-2001. In 1981 growth rate was 29.91%, in 1991 it became 29.72% and in 2001 it increased to 33.98%. The percentage of non-workers shows inverse trend as it was 70.09% in 1981, 70.28% in 1991 and 66.02% in 2001. as shown in Table No. 3.4(a).

Table No. 3.4(a): Workers and Non Workers (L.P.A)

Year	Total Workers		Non Workers	
	Number	%age to total population	Number	%age to total population
1981	98773	29.91	231446	70.09
1991	121373	29.72	287006	70.28
2001	164972	33.98	320525	66.02

Source: Census of India 1981, 91 & 2001

If workforce of L.P.A is further classified, it shows that from 1981-2001, both the number of cultivators and agricultural labourers decreased. The number of cultivators

which was 14880 (1981) fell down to 14389 (2001) and the number of agricultural labourers which was 13453 (1981) dropped to 10128 in 2001.

Household Industry has been defined by Census 1991 as an industry conducted by the head of the household at home or within the village in rural areas and only within the precincts of the household who live in urban areas. It is related to manufacturing, processing, servicing and repairing of goods. The percentage of workers in household industry increased from 1.16% in 1981 to 3.22% in 2001 showing that the trend of using a part of residence for industrial and semi-industrial purposes is catching up among the people to increase their economic gains.

If percentage of other workers i.e. those who are engaged in non household industry, electricity, gas and water supply, public administration and defence, compulsory social security, education, health and social work, other community, social and personal service activities, private household with employed persons, extra-territorial organisation and bodies are examined it shows an upward graph because in 1981 it was only 68.44%, in 1991 it became 72.52% and in 2001 it rose to 73.82%.

Table No. 3.4(b): Detail of Workers L.P.A Patiala

Year	Total Workers	Main Workers							
		Cultivators		Agricultural Labourers		Household Industries		Others	
		No.	%age	No.	%age	No.	%age	No.	%age
1981	98773	14880	15.06	13453	13.62	1143	1.16	67603	68.44
1991	121373	15257	12.57	14416	11.88	2849	2.35	88017	72.52
2001	164972	14389	8.72	10128	6.14	5313	3.22	121789	73.82

Source: Census of India 1981, 91 & 2001

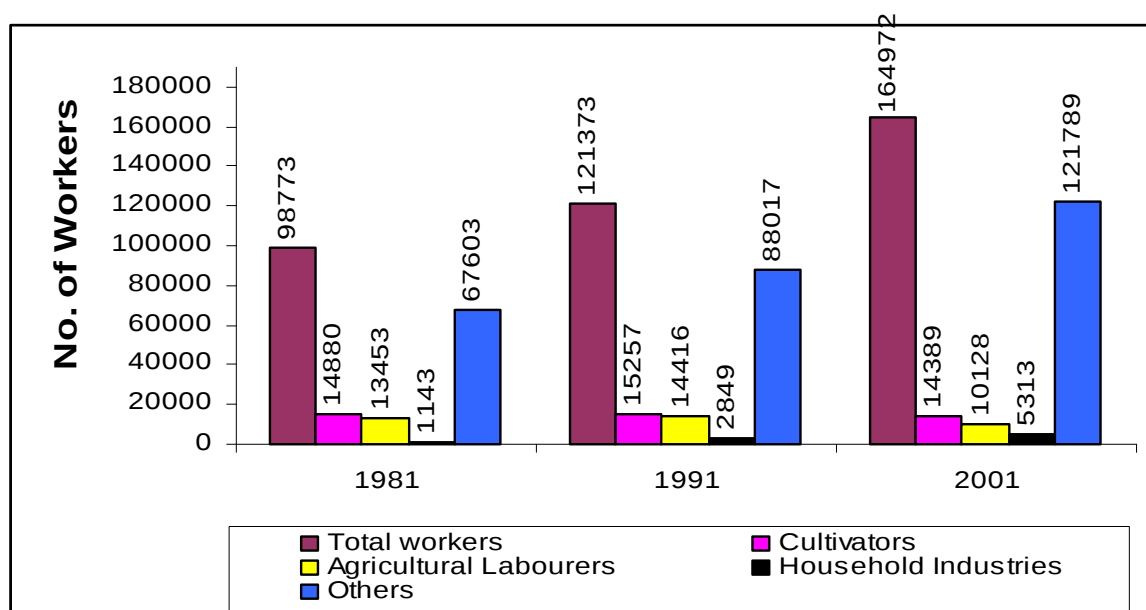


Fig. 11: Distribution of Total Workers in L.P.A Patiala

- **Distribution of Workers according to Industrial Categories (Patiala M.C.)**

Besides studying detail of workers, when the workers are examined on the basis of industrial categories given by the Census of India it reveals that in the year 2001 in Patiala city a very small proportion of main workers i.e. 3.36% are engaged in cultivation, agricultural labour, planting, forestry and fishing, mining and quarrying altogether. In comparison to main workers in transport, storage and communication activities that involve 5222 workers, the main workers engaged in construction activities are less in number i.e. 4460. The main workers engaged in electricity, gas and water supply makes 4.16% of main workers.

The percentage of city population involved in wholesale and retail trade constitutes 20.83% of main workforce, the second highest number of main workers falls in this category. 1.19% workers are engaged in business of hotels and restaurants. The total of 7306 main workers are engaged in financial intermediation, real estate renting and business activities i.e. 7.58% of the workforce. The highest percentage in the workforce of Patiala city is of those workers who are involved in activities like 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 i.e. 37.70% of main workers. (Refer to Table No. 3.4 (c))

Table No.3.4 (c) Category wise distribution of workers (2001) in Patiala (M. Corp.)

Code	Type of workers	No. of workers	Percentage
A & B	Cultivators	584	0.61
	Agricultural labourers	1744	1.81
	Planting, forestry hunting and fishing	846	0.88
C	Mining & quarrying	56	0.06
D	Household industry	3466	3.60
	Non household industry	11136	11.55
E	Electricity, Gas & Water Supply	4006	4.16
F	Construction	4460	4.63
G	Wholesale & Retail trade	20078	20.83
H	Hotels & Restaurants	1152	1.19
I	Transport, storage & communication	5222	5.42
J & K	Financial intermediation; Real Estate Renting & Business Activities	7306	7.58
L to Q	Public Administration & Defence Compulsory Social security, Education, Health & Social Work, Other Community, Social & Personal Security activities, Private Households with Employed Persons, Extra Territorial Organizations and Bodies.	36346	37.70
Total		96402	100

Source: Census of India 2001

*The variation of total number of workers in the table above w.r.t total workers data of 9 categories workers is at the source only.

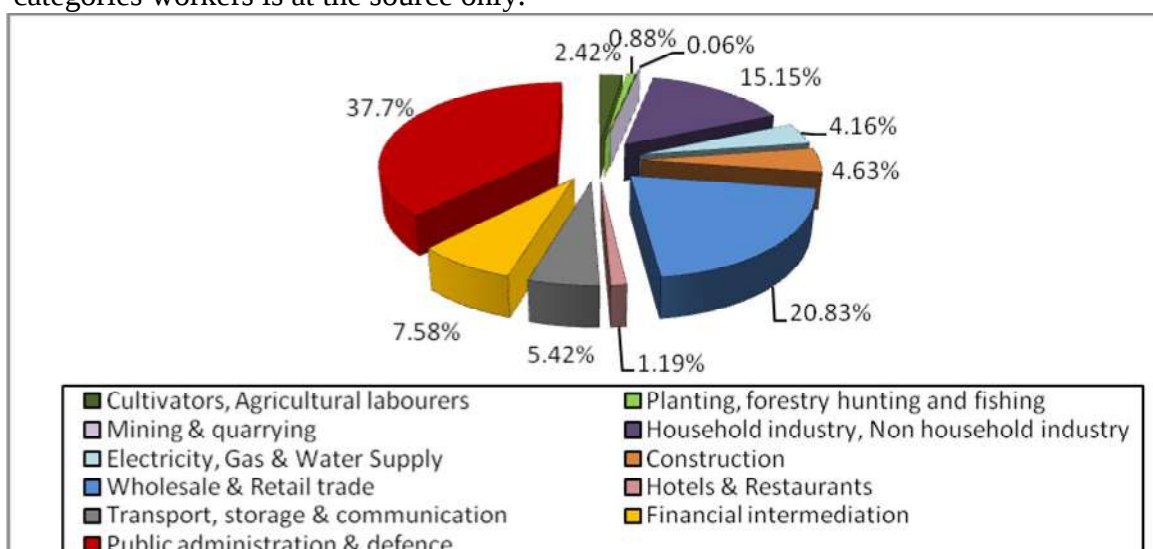


Fig. 12: Category wise distribution of workers in Patiala (M.C) 2001

- Distribution of workers in Patiala outgrowth and L.P.A Rural**

However, similar data are not available for other urban and rural settlements of L.P.A but with suitable assumption employment by industrial categories can be estimated from data available for Patiala district.

- Distribution of Workforce in Patiala Outgrowth.**

For estimating 2001 employment of outgrowth, it is presumed that it is similar to Patiala District Urban minus Patiala M.Corp. The category wise distribution of workers is given below (refer to Table No. 3.4 (d)).

Table No. 3.4 (d): Category wise distribution of workers (2001) in Patiala Outgrowth.

Code	Type of workers	No. of workers	Percentage
A & B	Cultivators	212	3.29
	Agricultural labourers	174	2.70
	Planting, forestry hunting and fishing	133	2.07
C	Mining & quarrying	8	0.12
D	Household industry	202	3.13
	Non household industry	1186	18.39
E	Electricity, Gas & Water Supply	117	1.82
F	Construction	473	7.34
G	Wholesale & Retail trade	1590	24.66
H	Hotels & Restaurants	105	1.62
I	Transport, storage & communication	397	6.16
J & K	Financial intermediation; Real Estate Renting & Business Activities	373	5.79
L to Q	Public Administration & Defence Compulsory Social security, Education, Health & Social Work, Other Community, Social & Personal Security activities, Private Households with Employed Persons, Extra Territorial Organizations and Bodies.	1478	22.91
	Total	6449	100

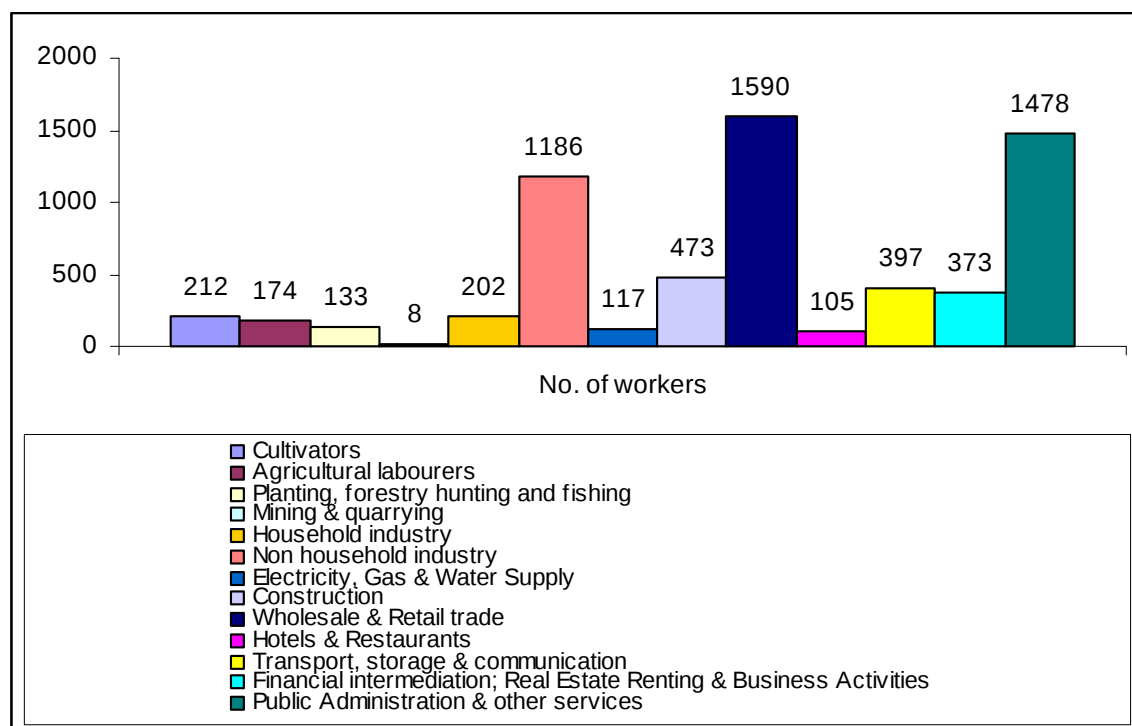


Fig. 13 Category wise distribution of workers (2001) in Patiala Outgrowth

The detail of workers engaged in different industrial categories in Patiala outgrowth reveals that collectively 8.18% of main workers are working as cultivators in agriculture, hunting, fishing and allied activities, mining and quarrying. The number of workers engaged in non – household industry is 1186 i.e. 18.39% of main workers, whereas only 202 main workers i.e. 3.13% are engaged in household industry. 6320 workers are working in electricity, gas and water supply constituting 1.82% of main workers.

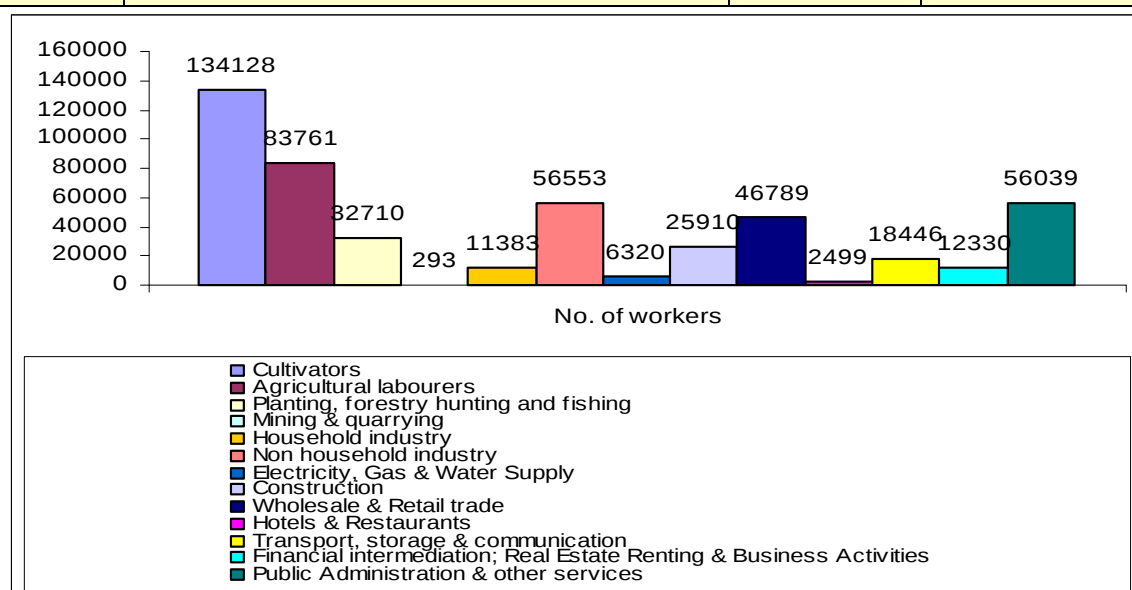
A large number of main workers i.e. 1590 (24.66%) are employed in wholesale and retail trade, 473 (7.34%) main workers are engaged in construction sector, 502 main workers constituting 7.7% of main workers are working in hotels and restaurants, transport storage and communication business. In terms of workers engaged in finance, real estate and business services and public administration and other services are 373 (5.79%) and 1478 (22.91%) respectively.

- **Category wise distribution of workers in L.P.A Rural**

For calculating workers engaged in industrial categories, it has been assumed that L.P.A rural is taken equivalent to Patiala District Total minus Patiala M.Corp. because of its closeness to Patiala city. So it is assumed to be a pattern which is an average of rural and urban exclusive of Municipal Corporation. The detail of the categorical distribution of workforce in L.P.A Rural is given in Table No. 3.4(e).

Table No. 3.4 (e): Category wise distribution of workers in L.P.A Rural (2001)

Code	Type of workers	No. of workers	Percentage
A & B	Cultivators	134128	27.53
	Agricultural labourers	83761	17.19
	Planting, forestry hunting and fishing	32710	6.71
C	Mining & quarrying	293	0.06
D	Household industry	11383	2.34
	Non household industry	56553	11.61
E	Electricity, Gas & Water Supply	6320	1.32
F	Construction	25910	5.32
G	Wholesale & Retail trade	46789	9.60
H	Hotels & Restaurants	2499	0.51
I	Transport, storage & communication	18446	3.79
J & K	Financial intermediation; Real Estate Renting & Business Activities	12330	2.53
L to Q	Public Administration & Defence Compulsory Social security, Education, Health & Social Work, Other Community, Social & Personal Security activities, Private Households with Employed Persons, Extra Territorial Organizations and Bodies.	56039	11.50
	Total	487160	100

**Fig.14 Category wise distribution of workers in L.P.A Rural (2001)**

From the above table it comes to the fore that a considerable proportion of cultivators i.e. 134,128 (27.53%) of main workers and 83,761 (17.19%) of main workers are engaged in agriculture, hunting and forestry depicting true rural character. A total of 32710 (6.71%) of main workers are employed in fishing, hunting and allied activities. Only 293 (0.06%) persons are employed in quarrying. The number of workers engaged in non-household industry is 56553 (11.61%) i.e. more than 11383 (2.34%) of main workers engaged in household industry.

- **Manufacturing Industry**

Industrially, both L.P.A Patiala and Patiala city are underdeveloped. A very small number of large medium and small scale industries have been set up in and around the whole city yet it is worth mentioning that 14602 workers i.e. 15.15% of main workers of Patiala city are engaged in industrial sector, out of which 11.55% workers are engaged in non-household industries while 3.60% workers are engaged in household industry.

- **Warehousing & Wholesale Trade**

When wholesale trade and warehousing sector of L.P.A is examined, then it is observed that wholesale trade and warehousing is primarily concentrated in and around Patiala City. The Gur Mandi, Wholesale Cloth Market, Medicine Market, Timber Market, Fruits & Vegetable Market, Sarafa bazar etc are famous wholesale markets. Majority of the warehouses and godowns are located on the Sirhind road. As per census of 2001 as many as 20078 workers constituting nearly 20.83% of main workers in Patiala city are engaged in wholesale and retail trading. This shows that this sector provides job opportunities to a major chunk of population of Patiala. Therefore it shows that Patiala city serves as a major wholesale hub in the L.P.A region.

- **Tourism and Hospitality:**

From the tourism point of view, Patiala city is very famous and has great historical relevance where many heritage buildings like Qila Mubarak, Sheesh Mahal, Old Moti Bagh Palace, Gurudwara Dukhniwaran Sahib, Kali Devi temple etc., are situated. The city has great tourism potential but the tourism is still underdeveloped here. To cater to the needs of tourists as well as people of Patiala city, nearly 1152 persons comprising 1.19% of total workers are working in hotels and restaurants. Almost 8 guest houses and 22 hotels and rest houses are located in different areas of the city. But the concentration of hotels and restaurants is more pronounced near bus stand, Gurudwara Dukhniwaran Sahib, Baradari Gardens & Chotti Baradari complex etc. Patiala also has a heritage hotel which is located in the heart of Patiala city i.e. within Baradari Gardens.

- **Finance, Insurance and Banking:**

Finance, insurance and banking sector plays a vital role in the economy of L.P.A Patiala. Patiala city is more developed in terms of banking, insurance and finance sector. Mainly 50 banks are located in Patiala city. The head office of State Bank of Patiala is located here. Number of insurance companies and finance companies are located in the Bank square i.e. in the Chotti Baradari Complex and Leela Bhawan Market providing financial

assistance to the city population as well as the population of L.P.A. Except these, few banks are also located in rural areas but majority of L.P.A.'s population come to Patiala city for their financial trade. Out of the total workforce of this area the workers engaged in financial sector forms a small share of 7.58% only.

3.5. Recent Development Initiatives

Several recent development initiatives have been identified within L.P.A Patiala which will have a considerable impact upon the development of Patiala city as well as that of L.P.A. The boom in real estate activities especially during recent years has also been experienced in L.P.A Patiala particularly the upcoming integrated Township of Baran a joint venture of PDA and OMAXE on Sirhind road which will play pivotal role in accentuating physical and economic growth of Patiala. The development of other PUDA approved colonies namely Bajwa Developers, Chinar Bagh, Panchwati Enclave alongwith other small colonies in private sector will also contribute towards the development of the city. Besides this, the upcoming Wedding Mall, Multiplex and other earmarked shopping malls will contribute towards enhancing the economic development.

Another potential project is the upcoming of multi level Sabzi Mandi on Sanaur road which is first of its kind and second largest in Punjab which will contribute substantially towards the economy of Patiala. Similarly the upcoming Rajiv Gandhi University of Law in Sidhoowal within L.P.A Patiala, along with just completed Columbia Asia Hospital of foreign group of hospitals within city will generate enormous employment and would contribute significantly towards overall development of L.P.A Patiala.

4. EXISTING LAND USE AND TRANSPORT NETWORK

4.1. Preparation of base map

The work of preparation of base map for the, L.P.A Patiala was assigned to Punjab Remote Sensing Centre, P.A.U., Ludhiana as per the decision taken in the meeting held on dated 20th October 2007 in the committee room of PRSC, Ludhiana and as per the instructions issued to Punjab Remote Sensing Centre, Ludhiana by Chief Town Planner, Punjab vide their memo no. 4827 CTP (Pb) / SP 480 dated 22-10-2007. The base map of entire L.P.A Patiala is generated on 1:10,000 scale using Cartosat I data of **2.5m spatial resolution**. The Cadastral maps of the villages falling in L.P.A were procured from the District Revenue Office by the office of District Town Planner, Patiala and these maps have been scanned in the office of PRSC, Ludhiana and registered with Cartosat I data to demarcate village boundaries. The features like forests, roads, rails, high and low lands, canals, minors, drains and settlements etc. have also been delineated from Cartosat I data, by the concerned agency and shown on the draft base map prepared on the basis of satellite imagery. After editing the map details, the attributes to different features were assigned. After the preparation of LPA on 1:10,000 scale using Cartosat I data, the draft base map for densely populated built up areas of Patiala city (core areas) was prepared on 1:5000 scale using Quickbird satellite data of **0.6 mtr. spatial resolution**. The Quickbird data (satellite imagery) has been received by the PRSC, Ludhiana from National Remote Sensing Agency, Deptt. of Space, GOI, Hyderabad.

4.2. Enhancement through field surveys-Land use and Road network

The draft base map for the L.P.A Patiala and the densely built up areas (i.e. core areas) received from Punjab Remote Sensing Centre, P.A.U., Ludhiana were updated through ground truthing conducted by the office of D.T.P Patiala. The various land uses have been identified at the site and earmarked accordingly. Similarly the road network, drains, distributaries and other communication zones have been verified and checked at site. After conducting field surveys, the necessary feedback was supplied to P.R.S.C Ludhiana which offer incorporating the same ultimately prepared an updated base map The Office of D.T.P Patiala again conducted second round of field verification (ground truthing) and the corrections were then supplied to P.R.S.C and the staff of D.T.P office personally assisted the concerned staff of PRSC in getting them incorporated and a final Land Use map thus was prepared.

4.3. Existing Land use: L.P.A Patiala

The base map (shown in Drg no. **DTP(P) 3485/09 dated 12.06.09**) prepared by Punjab Remote Sensing Centre, Ludhiana as described above shows the existing landuse of L.P.A Patiala. Based on this plan, following is the break up of Existing Landuse of L.P.A Patiala:-

Table No. 4.3 Existing Land use: L.P.A Patiala

LANDUSE TYPE		AREA (Ha.)	%age
RESIDENTIAL	Urban Residential	2239	4.51
	Rural Residential	1335	2.69
	Residential Plots	584	1.18
	Internal Road Area	730	1.47
	TOTAL	4888	9.84
COMMERCIAL	Retail Shopping	129	0.26
	General Business & Commercial District/ Centres	51	0.10
	Whole Sale, Godowns, Ware Housing Regulated Market	101	0.20
	TOTAL	281	0.56
INDUSTRY	Service and Light Industry	114	0.23
	Planned Industrial Areas	91	0.18
	Medium, Large & Heavy	219	0.44
	TOTAL	424	0.85
UTILITIES	Water Works	19	0.04
	Electric Grid	49	0.10
	Sewage Disposal	-	0.00
	Solid Waste	7.85	0.02
	Communication	3.0	0.01
	Sewage Treatment Plant	1.6	0.00
	TOTAL	80.43	0.16
PUBLIC & SEMI-PUBLIC	Govt / Semi Govt/ Public Offices	163	0.33
	Govt Land (Use Undetermined)	51	0.10
	Education and Research	472	0.95
	Medical & Health	44	0.09
	Social, Cultural & Religious	103	0.21
	Cremation & Burial Grounds	26	0.05
	TOTAL	859.00	1.73
TRANSPORTATION	Roads	1140	2.29
	Bridges / Flyovers	4.1	0.01
	Roundabouts	1.3	0.00
	Parking Areas	15	0.03
	Railway line & Siding	39	0.08
	Railway Station	2	0.00
	Bus Terminus	2	0.00
	Truck Terminus	14.60	0.03
	TOTAL	1218	2.45
RECREATIONAL	Play Grounds, Stadium, Sports Complex	136	0.27
	Parks & Gardens (Public Open Spaces)	89	0.18
	TOTAL	225.0	0.45

AGRICULTURAL	Agriculture	36233.57	72.91
	Kachha. Road	34	0.07
	Forest	1002	2.02
	Extractive Area	66	0.13
	Water Bodies	292	0.59
	Canal	68	0.14
	Plantation & Orchards	627	1.26
	Dairy and Poultry Farms	41	0.08
	Vacant Land	1524	3.07
	TOTAL	39887.57	80.26
SPECIAL AREA	Heritage & Conservation Area	56	0.11
	Other Use	1777	3.58
	TOTAL	1833	3.69
	GRAND TOTAL	49696	100.00

Source P.R.S.C. Ludhiana

4.4. Existing Land use: Patiala (M.C.Limit+O.G)

The total area of Municipal Corporation of Patiala is the 50.11 sq. kms. The details of major existing land uses within the M.C. Limits is given in Table below:

Table No. 4.4:-Patiala area under different landuse (M.C. Limit + O.G.)

LANDUSE TYPE		AREA (Ha.)	%age
RESIDENTIAL	Urban Residential	2141.93	33.42
	Residential Plots	212.88	3.32
	Internal Road Area	245.78	3.83
	TOTAL	2600.59	40.58
COMMERCIAL	Retail Shopping	107.28	1.67
	General Business & Commercial District/ Centres	27.88	0.44
	Whole Sale, Godowns, Ware Housing Regulated Market	47.14	0.73
	TOTAL	182.3	2.84
INDUSTRY	Service and Light Industry	42.73	0.67
	Planned Industrial Areas	70.90	1.11
	Medium, Large & Heavy	92.15	1.44
	TOTAL	205.78	3.21
UTILITIES	Water Works	10.84	0.17
	Electric Grid	19.64	0.31
	Sewage Disposal	0.03	-
	Solid Waste	7.85	0.12
	Communication	2.85	0.04
	Sewage Treatment Plant	0.39	-
	TOTAL	41.60	0.65
PUBLIC AND SEMI PUBLIC	Govt / Semi Govt/ Public Offices	158.15	2.47
	Govt Land (Use Undetermined)	49.74	0.78
	Education and Research	402.60	6.28
	Medical & Health	35.98	0.56
	Social, Cultural & Religious	67.07	1.05
	Cremation & Burial Grounds	6.26	0.10
	TOTAL	719.8	11.23
TRANSPORTATION	Roads	589.59	9.20
	Bridges / Flyovers	3.74	0.06

	Roundabouts	1.32	0.02
	Parking Areas	14.72	0.23
	Railway line & Siding	27.76	0.43
	Railway Station	2.07	0.03
	Bus Terminus	1.97	0.03
	Truck Terminus	14.60	0.23
	TOTAL	655.77	10.09
RECREATIONAL	Play Grounds, Stadium, Sports Complex	122.77	1.92
	Parks & Gardens (Public Open Spaces)	76.74	1.20
	TOTAL	199.51	3.12
AGRICULTURAL	Agriculture	577.24	9.01
	Kachha. Road	2.56	0.04
	Forest	2.53	0.04
	Water Bodies	99.99	1.56
	Canal	2.88	0.04
	Plantation & Orchards	95.25	1.49
	Dairy and Poultry Farms	0.17	-
	Vacant Land	790.88	12.34
	TOTAL	1571.50	24.52
SPECIAL AREA	Heritage & Conservation Area	25.82	0.40
	Other use	206.33	3.22
	TOTAL	232.15	3.62
	GRAND TOTAL	6409	100

Source P.R.S.C. Ludhiana

Table No. 4.4 (a):-Sanaur area under different landuse (M.C. Limit)

LANDUSE TYPE		AREA (Ha.)	%age
RESIDENTIAL	Urban Residential	53.73	55.36
	Residential Plots	11.22	11.56
	Internal Road Area	1.78	1.83
	TOTAL	66.73	68.75
COMMERCIAL	Retail Shopping	2.73	2.81
	General Business & Commercial District/ Centres	0.21	0.22
	TOTAL	2.94	3.03
INDUSTRY	Medium, Large & Heavy	1.39	1.43
	TOTAL	1.39	1.43
UTILITIES	Water Works	0.08	0.08
	Electric Grid	0.62	0.64
	Communication	0.09	0.09
	TOTAL	0.72	0.81
PUBLIC AND SEMI PUBLIC	Govt / Semi Govt/ Public Offices	0.68	0.70
	Education and Research	2.09	2.14
	Medical & Health	0.04	0.04
	Parks & Gardens (Public Open Spaces)	1.45	1.49
	Social, Cultural & Religious	4.25	4.37
	Cremation & Burial Grounds	0.37	0.38
	TOTAL	8.88	7.63

TRANSPORTATION	Roads	8.93	9.20
	Bus Terminus	0.16	0.16
	TOTAL	9.09	9.36
AGRICULTURAL	Agriculture	6.79	6.99
	Water Bodies	0.14	0.14
	Plantation & Orchards	0.19	0.19
	Open Space	0.18	0.18
	TOTAL	7.30	7.50
GRAND TOTAL		97.05	100

4.4.1. Residential

It is quite evident from table above that residential use has a larger share of developed area. Out of the total area of U.A Patiala, 2600.59 ha. is under residential use which includes both planned and unplanned development. Out of this, total developed residential area of 1504.61 ha. is under planned / regulated schemes which is almost 58%. This planned, regulated residential area comprises of Tripuri, Model Town, CPA and Town Planning Schemes, three Urban Estates, one pocket under OUVGL scheme of PUDA, two Development Schemes of Improvement Trust and are uniformly located in the city except south and south – west. The details of various planned / regulated areas is shown in fig 15 and table no 4.4.1

Table No. 4.4.1: Planned Regulated Areas

Sr. no.	Name of Scheme	Name of agency	Area in acres
1	Tripuri	PTDB	122
2	Model Town	State govt.	118
3	Town Planning Schemes	Local govt.	1914
4	Development Schemes	Improvement Trust	181.73
5	(i) Urban Estate (Phase I,II and III)	PUDA	615.00
	(ii) OUVGL (Phulkian Enclave)	PUDA	34.37
6	Govt. Housing	State govt.	380.29
7	DMW		351
	Total Area		3716.39 acres (1504.61 ha.)

Unplanned residential area comprises of walled city and area surrounding the planned areas namely Ranjit nagar I and II, Adarsh colony, Anand nagar, Ratan nagar, Aman vihar, Officer's colony, Gurbax colony, Ekta nagar, Jujhar nagar, etc. These colonies are characterised by narrow roads, lack of parks and open spaces.

LEGEND

- MC LIMIT
- OUTER GROWTH OF MC LIMIT
- RE-SEMI RURAL
- RESIDENTIAL
- RESIDENTIAL PLOTTED
- RE-PAV. RESIDENTIAL
- COMMERCIAL
- RETAIL SHOPPING
- GENERAL BUSINESS DISTRICT CENTRE & MULTIPLEX
- WHOLESALE, GROCERIES, WAREHOUSING, REGULATED MARKETS
- INDUSTRIAL
- SERVICE & LIGHT INDUSTRY
- PLANNED INDUSTRIAL AREAS
- MEDIUM DENSITY & HEAVY INDUSTRY
- PUBLIC AND SEMI PUBLIC
- GOVT. LAND GOVT./PUBLIC OFFICES
- EDUCATIONAL & RESEARCH
- MEDICAL & HEALTH
- SOCIAL, CULTURAL & RELIGIOUS
- CREATION & BURIAL GROUNDS
- UTILITIES
- WATER WORKS
- ELECTRICITY STATION
- WASTE TREATMENT PLANT
- SOLID WASTE
- CONVEYANCES
- RECREATION
- PLAY GROUND, STADIUM, SPORTS COMPLEX
- PARKS & GARDENS PUBLIC OPEN SPACES
- TRANSPORTATION & COMMUNICATION
- ROADS
- KATCHA RASTA
- RAILWAY LINE & STOPS
- RAIL TERMINUS
- RAILWAY STATION
- TRUCK TERMINAL
- PARKING AREAS
- GROCES & FLY OVER
- AGRICULTURAL
- AGRICULTURE
- FOREST
- EXTRACTIVE AREAS
- WATER BODIES
- PLANTATION & ORCHARD
- DARK, PASTURE FARM AND FISH POND
- VACANT LAND
- SPECIAL AREAS
- HERITAGE BUILDING
- OTHER USE

SCALE: 1 centimeter equals 200 metres

0 385 775 1240 2310 3805 METRES

DEPTH OF TOWN AND COUNTRY PLANNING, PUNJAB

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APPROVED: *[Signature]*

DESIGNED BY: *[Signature]*

DRAWN BY: *[Signature]*

CHECKED BY: *[Signature]*

DATE: 22/09/2009

PROJECT NO.: *[Signature]*

PROJECT NAME: *[Signature]*

PROJECT LOCATION: *[Signature]*

PROJECT SCALE: *[Signature]*

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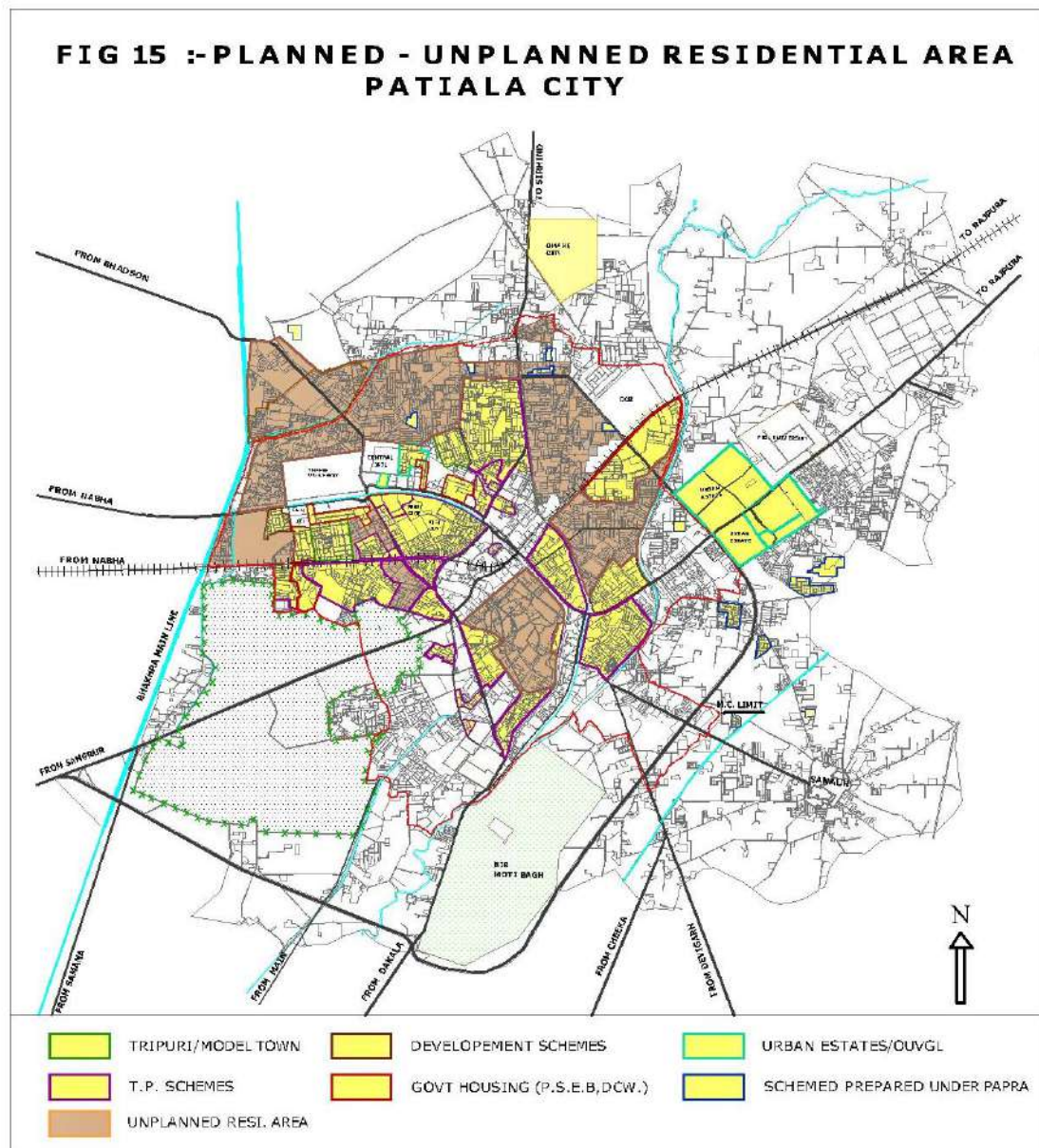
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PROJECT INTRODUCTION: *[Signature]*





4.4.2. Commercial

The commercial use is the most important use of the urban area though it may have lesser share in the areal extent. It plays a vital role in the formation of city character. In case of Patiala city, the total area covered under planned as well as unplanned commercial use is 182.3ha. which is 2.86% of the total developed area. Out of this, 39.06 ha. area is under planned commercial, which is **21.43%** of the total commercial area. The main unplanned commercial area is confined to walled city especially Dharampura bazaar, Adalat bazaar, Arya Samaj chowk and Qila chowk. Similarly the famous wholesale markets namely Gurmandi, Sher-e-Punjab wholesale cloth market, Medicine market, Timber market,

Fruits & Vegetable market, Sarafan bazaar are also located within walled city. The commercial areas within walled city are in the form of line bazaars. This area lacks in parking and other public amenities. There are only two paid parking's within walled city i.e. one at the back of A.C market and another opposite to the old Kabari market which are insufficient to meet the demand of parking. Other than walled city, all the unplanned residential areas have commercial (retail) activity along the main roads. Similarly Patiala has a good share of following planned commercial areas:-

Table No. 4.4.2: Planned Commercial Areas.

Sr. no.	Name of area	Name of developing agency	Area (in acres)
1	Commercial area near Dukhniwaran Sahib	I.T	6.10
2	Sai Market development Scheme	I.T	3.06
3	Chotti Baradari development Scheme	I.T	25.36
4	Leela Bhawan Scheme	M.Corp, Patiala	10.85
5	City Centre, Bhupindra road	I.T	1.74
6	Mid Town Plaza	M.Corp, Patiala	1.00
7	Old dispensary building (Adalat bazaar)	(OUVGL Scheme)	0.25
8	Commercial Scheme P.W.D store area (Sher-e-Punjab market)	PUDA (OUVGL)	0.62
9	Commercial area of U.E Phase-I, II and III	PUDA	39.00
10	Commercial area in S.S.T nagar	I.T	5.87
11	Commercial area in Model Town Scheme	M.Corp, Patiala	0.1
12	Commercial area in D.L.F colony	M.Corp, Patiala	1.60
13	Total		96.48 acres (39.06 ha..)

The wholesale Grain market of **33.50** acres is located on Sirhind road which is quite centrally located.

4.4.3. Industrial

Under this use comes the industrial area on Sirhind road, Industrial Focal Point, DMW. Apart from above there are few rice- shellers and tool manufacturing industries. Besides this, there is (PRTC) PEPSU Road Transport Corporation workshops on Nabha road and Rajpura road comprising of 7.90 ha. In these workshops all the buses of PRTC are repaired. There is another service industry comprising of 12.5 ha near Rajpura road known as Hira Bagh between marriage palace of Palm Court and Gurudwara on Bari nadi. Here repair of trucks, truck body buildings is carried out.

Industrial Focal Point and DMW are located on inner bye-pass. Industrial Focal Point has been developed on the basis of planned layout plan supported by basic essential

infrastructure and services to provide appropriate environment for industrial growth and development. DMW was established on an area of 225 ha in 1981. It comprises of 83 ha. under industrial use and 142 ha. under staff colony having well laid road network, all the amenities namely separate water works, STP, hospital, school, market and golf course. Thus the total area under industry within U.A Patiala comprising of service small and large industry is 205.78 ha. which is 3.21% of the total developed area.

4.4.4. Public & Semi Public

This use comprises of areas covered under Govt. / Semi Govt. offices, Education, Health, Socio-cultural, Cremation grounds etc. As per table of existing land use, the total area covered by this use is 719.8 ha. which is 11.3.% of the total Patiala U.A This is on a higher side because Patiala has two universities namely Thapar and Punjabi University, 5 degree / post graduation colleges of fame, 4 specialised colleges, 2 polytechnics and 2 I.T.I's. In addition to this, Patiala is having head and district level offices of many prestigious departments of the state namely PSEB, Public Health, P.W.D B&R, Excise & Taxation, Pollution Control Board, PRTC, Archives and this use includes area under Jail, Police lines, govt. dairy farm, Punjab Public Service Commission, Judicial Complex etc. Similarly on health side, it includes medical college, ayurvedic college and dental colleges alongwith one main Rajindra hospital comprising of dental hospital also and three specialised hospitals namely T.B hospital, Mata Kaushalya Maternity hospital, Saket hospital and many other govt. health centres. Similarly it includes area under religious places and cultural places like clubs, community centres, Central Public Library. Lastly there are four cremation grounds within the city.

High percentage of area under this use indicates that the city is a hub of educational, medical centres along with administrative head after Chandigarh.

4.4.5. Recreational

This use comprises of playgrounds, stadiums, sports complex, parks and gardens. As per the table of existing landuse, the total area covered by this use is 199.59 ha. which is 3.12% of the total Patiala U.A. This comprises of Dhruv Pandove Cricket Stadium, Pologround, Stadium adjoining Y.P.S, National Institute of Sports comprising of velodrome of cycling and other numerous grounds and stadium alongwith swimming pool. This use also comprises of Baradari Garden and major parks like Environmental Park, Sunken Park, Rose Garden and other parks including Deer Park also.

4.4.6. Traffic & Transportation

This use comprises of roads, railway line & station, truck terminus, bus terminus, bridges and flyovers. As per table of existing landuse, the total area covered by this use is 646.63 ha. which is 10.09 % of the total developed area. The further detailed study of traffic & transportation has been covered in chapter no 4.5 and chapter no 5.5 ahead. However, table depicts that out of this use, major share i.e. 9.20% of total developed area is covered under roads.

4.4.7. Utilities

This use comprises of Sewage Treatment Plant (STP), Electric Grid Stations (E.G.S), OHSRs (Overhead Service Reservoirs), solid waste dump site, MPS (Main Pumping Station) covering a total area of 41.60 ha which is 0.65% of the total developed area.

4.4.8. Agricultural

There are small unevenly distributed chunks of agricultural land falling within M.Corp. limits, which comprises of 1580.64 ha. which is 24.06% of the total developed area. This area lies on the north direction of the Patiala city behind village Jhill and west side of village Ablawal near Bhakhra Main Line. Some agricultural area comprising of village Dalanpur and Ghalori lying between Bir Moti Bagh and elevated Southern Bye Pass has been kept under agricultural use. Except these, small patches of land are scattered all over the city which are still being used for agricultural purposes.

4.4.9. Special areas

Special areas include other use and protected heritage buildings which have been declared as protected under the “Punjab Ancient and Historical Monuments and Archaeological Sites and Remains Act, 1964”. Out of the prominent heritage buildings of Patiala, Qila Mubarak and Sheesh Mahal have been taken under this use. Rest of the numerous heritage buildings are under one or other use like govt. offices, training centers, rest houses, hotels, clubs, cinemas, museums etc. which have been shown under their respective uses in the plan. The special area comprises of 232.15 hectare which is 3.62% of the total developed area.

4.5. Existing Road-Rail Transport Network

Transport is the backbone of economy and social structure of any region. If urban centers have been recognized as engines of economic growth, traffic and transportation has rightly been termed as wheels of such engines. Road and Rail network plays a vital role in

the urban planning and traffic & transportation has been considered as a function of land use planning. Transport network is considered as the life line of the city and if any bottleneck or obstruction comes in between it poses a severe threat to day to day life of the city people. The good road and rail network is the symbol of the sound development of any city and the study of transportation helps in understanding the existing situation, potentials, weaknesses etc. and helps to draft out strategies and projects for the future development.

Road and Rail sector occupy the significant roles in the transport sector in Patiala and surrounding areas. The road network has been studied in terms of classification of roads, length of roads, cross section of roads (divided and undivided carriageways), area under major existing roads and major road intersections. Available data regarding rail network has also been studied.

4.5.1. Road Network at L.P.A. Level

The L.P.A Patiala is well served by roads connecting it to various cities of other districts and within district. One National Highway i.e. (N.H.-64) from Rajpura to Sangrur passes through it. There are two State highways passing through L.P.A. namely Patiala – Samana (S.H-10), Patiala – Devigarh (S.H-8) and from Patiala – Cheeka (MDR-25) towards Haryana. There are three scheduled roads namely Patiala-Nabha (S.R.-32), Patiala-Sirhind (S.R.-31) and Patiala-Samana (S.R.-18). Other major roads connecting Patiala are Patiala – Sanaur, Dakala, Main and Bhadson as shown in Fig No. 16

National highway No 64 has divided carriageway both within M.C. limits as well as in the outer limits upto village Bahadurgarh on Rajpura road and upto Bhakra Canal on Sangrur road. Both the State highways have undivided carriageways. In the case of scheduled roads i.e. S.R.-32, S.R- 31 and S.R.-18 have divided carriageways inside M.C. limits and are partly undivided outside M.C. limits. In case of other major roads except for Patiala-Bhadson Road which has divided carriageway within M.C. limits the other roads leading to Sanaur, Dakala and Main have undivided carriageways both within as well as outside municipal limits.

Table No. 4.5.1 Length & width of Major Roads in L.P.A Patiala

Sr. No.	Name of Roads	Length of roads in L.P.A. (Km)		Width of road (ROW) (in m)	Width of carriage ways (outside M.C. limits)	Divided/ undivided
		Total	Outside M.C. limits			
1.	Patiala- Rajpura (N.H.64)	16.75	12.25	37.8	17.75	Divided (Partly)

2.	Patiala-Sangrur (N.H. 64)	23.3	16.5	38.41	7.31	Undivided
	State Highway					
3.	Patiala-Devigarh(S.H-8)	12.25	7.25	33	6	Undivided
4.	Patiala-Samana(S.H-10)	5.4	5.4	25	10	Undivided
	Scheduled Roads					
5.	Patiala-Nabha (S.R.-32)	16.50	10.73	25	14	Divided within M.C.
6.	Patiala-Sirhind (S.R.-31)	12.75	7.5	25	16	Divided (MC.) partly
7.	Patiala-Samana (S.R.-18)	13.75	6	17	10	Undivided
	Other Major Roads					
8.	Patiala-Cheeka(MDR-25)	9.25	4.25	27	7	Undivided
9.	Patiala-Sanaur	8.25	3.25	33	9	Undivided
10.	Patiala-Dakala	10.5	5.0	12	5	Undivided
11.	Patiala-Bhadson	9.25	5.05	21	15	Divided (M.C.)
12.	Patiala-Main	10.25	5.25	20	6	Undivided
	Total	142.8	83.03			

Source: Field survey, 2009

The existing road network in L.P.A Patiala shows that it is well served by the regional roads which provide a high level of connectivity with other parts of the state. These roads have a total length of 142.8 kilometers within L.P.A out of which 83.03 km fall outside Municipal Corporation limits of Patiala.

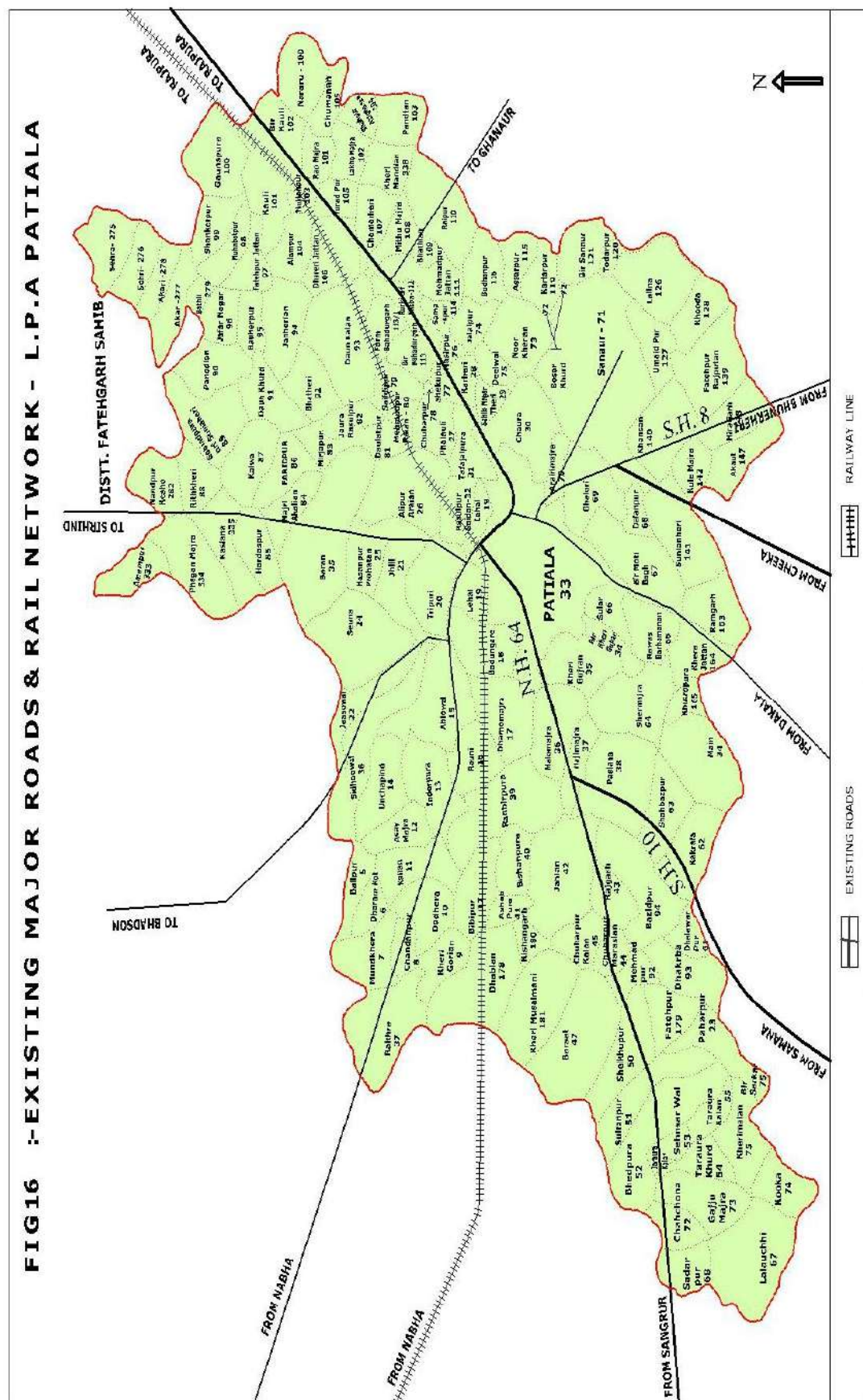
Out of the total road length of these main roads within L.P.A., National Highway 64 comprises of 40.05 km with a total right of way of 37.8 m of Patiala – Rajpura road. The total area outside M.C. limits covered by these roads has been calculated as 238.665 ha. which is about 0.48% of the total area of L.P.A. The road network of these main roads of L.P.A Patiala is shown in fig 16 attached alongwith.

4.5.2. Road Network at City Level

The existing road network in the city is partially radial in pattern. The Nabha road also carries the traffic of Bhadson road which merges at Thapar University Chowk and meets Sirhind road at Gurudwara Dukhniwaran Sahib and then lead to the city. Similarly Sangrur road also carries the traffic of Samana road which bifurcates near Bhakra main line. Rajpura road carries the traffic from Chotti Nadi onwards and from transport nagar it also carries the traffic of Sanaur road, Cheeka road and Pehowa road.

The National Highway 64 enters the city from two sides i.e north east and south west, two

FIG16 :-EXISTING MAJOR ROADS & RAIL NETWORK - L.P.A PATIALA



Source: Punjab Remote Sensing Centre, Ludhiana

state Highways enter the city from south-west and south-east, several other important roads enter the city from north, north-west, south-west and south directions.

These important roads entering the city are listed below:

1. Sangrur – Patiala (N.H. 64)
2. Rajpura – Patiala (N.H. 64)
3. Pehowa – Patiala (State Highway no. 8)
4. Samana – Patiala (State Highway no. 10)
5. Nabha-Patiala (scheduled road)
6. Bhadson – Patiala (Scheduled road)
7. Sirhind – Patiala (Scheduled road)
8. Sanaur – Patiala (Other distt. road)
9. Cheeka – Patiala (Other distt. road)

Table No 4.5.2 Length & width of Major Roads in Patiala City (M.C. Limit)

Sr. No.	Name of the Road	Length in K.M.	Width of Road (in meter)	Width of Carriage way (in meter)	Divided/ Un-divided	Footpath (in-meter)	Area
1.	From bus stand to Rajpura Road up to M.C. Limit	4.80	37.80	8.23	Divided	-	18.14
2.	From Bus stand to S.S.T. Chowk	1.80	24.39	7.32	Divided	2.4 (both side)	4.39
3.	From S.S.T. Chowk to Sangrur Road up to M.C. Limit	2.20	38.41	6.71	Divided	-	8.45
4.	From Bridge (on Chotti Nadi) to Devigarh Road	1.05	33.00	10.00	Divided	-	3.46
5.	From Sanaur-Devigarh Junction to Sanaur Road up to M.C. Limit	0.35	33.00	10.00	Undivided	-	1.15
6.	From Old Octroi (on Patiala-Rajpura Road) up to Bridge along Chotti Nadi	0.90	18.0	5.5	Undivided	-	1.62
7.	Gurudwara Dukhniwaran Sahib to Thapar Univ. (Jail Road)	2.25	27.43	7.30	Divided	-	6.17
8.	From Thapar University to Nabha Road unto M.C. Limit.	2.60	25.00	6.90	Divided	-	6.5
9.	Gurudwara Dukhniwaran Sahib to Sirhind Road up to M.C. Limit	4.40	25.00	7.32	Divided	-	11
10.	From Mahindra College to Dakala Road up to M.C. Limit	1.30	12.00	7.00	Undivided	-	1.56
11.	From Thapar Univ. Chowk to Bhadson Road (up to Jail end)	0.80	23.48	6.71	Divided	-	1.88
12.	From Jail end to Bhadson Road (up to M.C. Limit)	1.05	21.00	10.00	Undivided	1.2 (both side)	2.20
13.	Gurudwara Moti Bagh to Vill. Main Road	1.25	20.00	9.10	Undivided	-	2.50
14.	From Bus Stand to Gurdwara Dukhniwaran Sahib Chowk	0.90	18.29	6.71	Divided	2.4 (both side)	1.64
15.	From Bus Stand to Gurbax Colony (up to Chotti Nadi)	2.10	20.80	6.0	Divided	-	4.37
16.	From Fountain Chowk to Leela Bhawan Chowk	0.70	32.93	13.5	Divided	2.0 (both side)	2.30
17.	From Fountain Chowk to Mahindra College (Lower Mall)	2.25	29.30	10.0	Undivided	2.0 (both side)	6.59
18.	From Leela Bhawan Chowk to	2.10	34.15	7.32	Divided	2.0 (both	7.17

	Nabha road Chowk (Bhupindra Road)					side)	
19.	From Leela Bhawan Chowk to Gurudwara Dukhnawaran	1.46	32.93	13.5	Divided	2.0(One Side)	4.80
20.	Leela Bhawan Chowk to Sheran Wala Gate (Through Baradari)	1.10	14.33	6.5	Undivided	2.4 (both side)	1.58
21.	Leela Bhawan Chowk to Lal Singh Memorial Hospital Chowk (Income Tax Road)	0.70	30.48	21.95	Undivided	-	2.13
22.	S.S.T Chowk to Gurudwara Moti Bagh (Upper Mall)	1.90	37.50	7.5	Partially Divided	2.0 (both side)	7.12
23.	S.S.T Chowk to Lal singh Memorial Hospital Chowk	0.80	34.0	30	Undivided	-	2. 72
24.	Gandhi Nagar to Rajpura Road Chowk (In front of bus stand)	0.10	44.51	8.85	Divided	2 (both side)	0.44
25.	War Memorial to Military Area (Woman College Road)	1.00	19.30	14.63	Undivided	2 (both side)	1.93
26.	Bus Stand to D.C.W Road (Up to Bye-Pass)	3.00	18.90	6	Undivided	-	5.67
27.	Budha Dal (Ragho Majra Puli) Chowk to Vill. Main Road	1.84	19.0	10	Partially Divided	-	3.49
28.	Lal Singh Memorial Hospital Chowk to Railway line Via Badunger	1.85	16.11	5	Undivided	-	2.98
29.	Gurudwara Dukhniwaran to Bhupindra Road (Passey Road)	2.00	18.29	10	Undivided	-	3.65
30.	Jail Road to Village Jhill Via Tripuri	2.70	10.0	5	Undivided	-	2.70
31.	From Hotel Fly Over to Bundha (Factory Area Road)	0.80	18.6	5	Undivided	-	1.48
32.	Rajbaha Road to State College (Lehal Road)	0.60	10.0	6.5	Undivided	-	0.60
33.	State College to Bhupindra Road	1.40	13.70	8	Undivided	-	1.91
34.	Bye Pass (Northern)	4.7	60.0	12.2	Undivided	-	28.2
35.	From Kohli Sweet Chowk to Gurudwara Kashmirian (Tripuri Road)	1.00	27.4	13.4	Divided	-	2.74
36.	From Nabha Road to 24 No. Phatak	1.45	9.0	4.8	Undivided	-	1.30
37.	From Nabha Road to Ablawal Grid	1.4	8.0	4.6	Undivided	-	1.12
38.	From Tripuri to Ranjit Nagar	2.0	10.0	6.0	Undivided	-	2.00
39.	Road on Defence Bundh from Industry area to Sirhind Road	1.18	13.0	10	Undivided	-	1.53
40.	Road in Azad Nagar	0.56	10.0	6.0	Undivided	-	0.56
41.	Road from Bye Pass to Railway line (Ghuman Nagar)	2.31	8.0	5.0	Undivided	-	1.84
42.	From Rajpura Road to Bishan Nagar (Sector Road)	0.81	30.0	6.7	Divided	2.5	2.43
43.	Rajpura Road to Bishan Nagar (S.S.T. Portion)	0.54	24.40	12.0	Partially divided	2 M	1.31
44.	From S.S.T Nagar to Bishan Nagar, Jujhar Nagar up to Bari Nadi (from Rajpura road)	1.3	10.0	6.0	Undivided	-	1.30
45.	T.B.Hospital road	1.61	12.20	10.0	Undivided	-	1.96
46.	Southern circular road of walled city	4.73	24.20	8.0	Undivided	-	11.44
47.	From S.S.T Nagar to Hanuman	0.43	9.10	6	Undivided	-	3.91

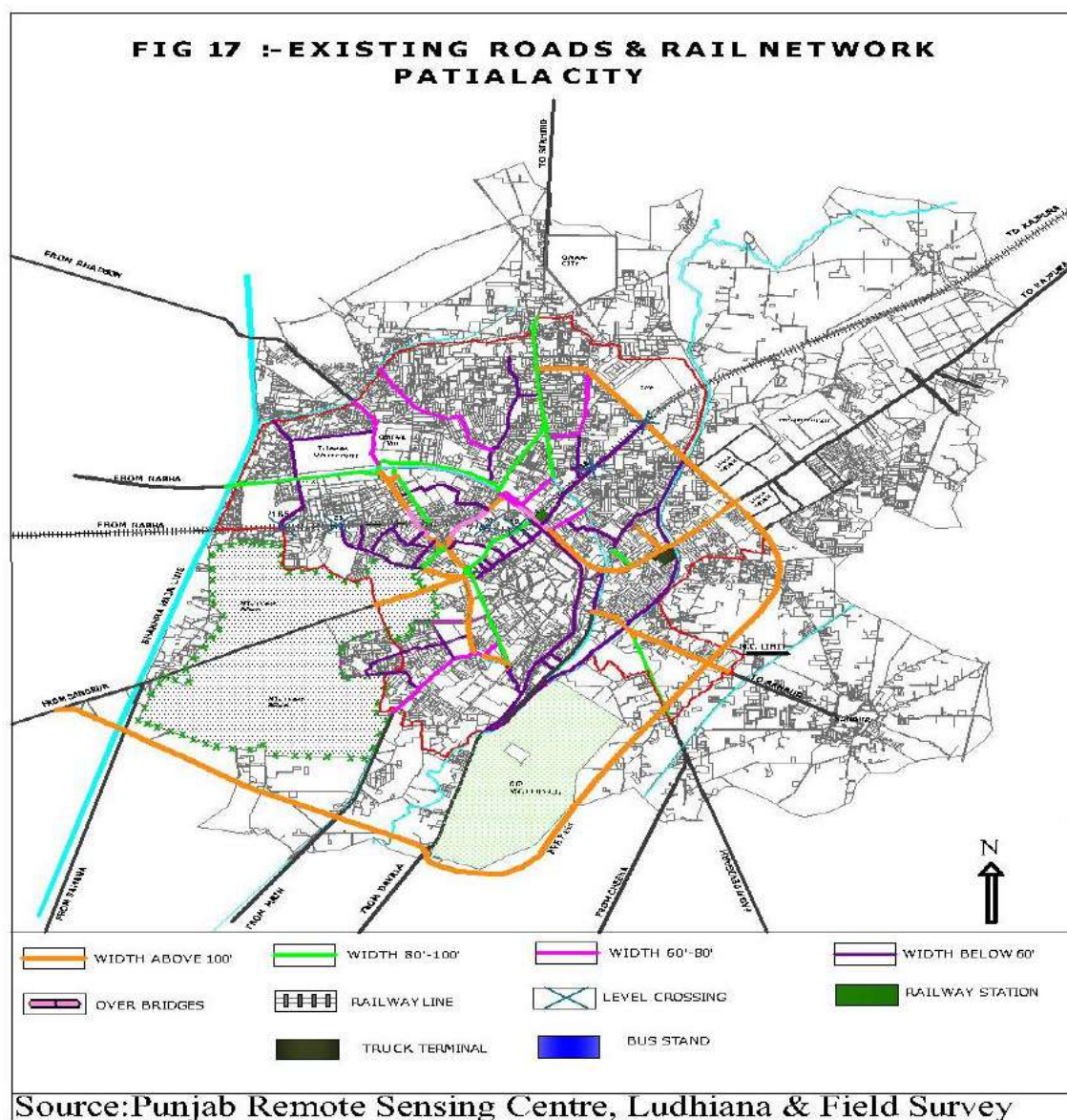
	Mandir Chowk (via Bishan Nagare)						
48.	From Hanuman Mandir to Gurbax Colony road (Via Rajpura Colony)	0.65	18.30	7	Undivided	-	1.18
49.	From Upper Mall to Vill. Kheri Gujran	1.8	18.29	10.0	Undivided	2m (both side)	3.29
50.	From Sullar road to Kheri Gujran	1.07	6.50	4.0	Undivided	-	6.95
51.	Road from Bypass to M.C limit(Along Bari Nadi)	6.0	-	15	-	-	9.00
52.	Road Backside Thapar University	1.5	6.0	5	Undivided	-	0.9`

Source: D.T.P Office, Patiala

Area of the 52 roads = 202.63 ha.

Length of the 52 roads = 89.09 Kms

The existing positions of these roads have been shown in Fig 17



The above mentioned major city roads carry the traffic from one segment to other i.e. they are the sector roads which have irregular alignments with varying widths (i.e. between 4m and 21.95m) and frequent intersections leading to serious capacity constraints. The data given above about the length and width (in terms of right of way) of the National Highway, State Highways and other major roads existing in the city shows that the total length of National Highway 64 coming from Rajpura and leading to Sangrur works to 10 kms and of State Highways namely Patiala - Pehowa and Patiala - Samana road works out to 2.5 kms The total road length of major roads works out to 89.09 kms. The length of these roads have been measured from their respective starting points to the end of M.C.Limit. The total area under these major roads works out to 202.63 ha. which is 4.05% of total area under M.C limit.

4.5.3. Road Intersections

While examining the road network of the city, a total number of 27 road intersections have been identified within the limits of Municipal Corporation which remain almost busy throughout the day. The detail of road intersections is given in the table below:-

Table No.4.5.3 Road Intersection in Patiala City

Sr. No.	Name of Junction	Type of Junction
1.	Bus Stand Battiyan Wala Chowk	Signalized
2.	Sirhind Gate Chowk	Signalized
3.	Truck Union Chowk	Signalized
4.	Devigarh/Sanaur Road Chowk near Bari Nadi	Signalized
5.	Gurdwara Dukhniwaran Chowk on Rajbaha Road	Signalized
6.	Police Line Road near Dhillon Residence	Signalized
7.	Mini Secretariat	Signalized
8.	Thapar College Chowk	Signalized
9.	Civil Line Chowk	Signalized
10.	P.R.T.C. Workshop, Nabha Road	Signalized
11.	Children Memorial Chowk	Signalized
12.	Capital Cinema Chowk	Signalized
13.	State Bank of Patiala Chowk/Sheranwala Gate	Signalized
14.	Ranbir Marg at Bhupindra Road	Signalized
15.	Modi College	Signalized
16.	Model Town Chowk	Roundabout
17.	Fountain Chowk	Roundabout
18.	Sewa Singh Thikriwala Chowk	Roundabout
19.	Y.P.S. Chowk	Roundabout
20.	N.I.S. Chowk	Roundabout
21.	Lahori Gate	Crossing
22.	Bye Pass Rajpura Road	Crossing
23.	Ragho Majra Chowk	Crossing
24.	Ayurvedic College Chowk	Crossing
25.	Sirhind Road T-point (Near Dukhniwaran Sahib)	T-Junction
26.	Bye Pass Sirhind Road	T-Junction
27.	Corner Hotel on Mall Road	T-Junction

Source: Field Survey, 2009

From the above table it comes to the fore that out of 27 road intersections 15 intersections are signalized, whereas, 13 intersections do not have signals and 3 are T- junctions. Besides these 27 intersections, there are numerous intersections located in the inner part of the city of Patiala which have not been listed in the above table.

4.5.4. Road Under Passes (RUPs)

City has one RUP opposite Rajindra hospital on Sangrur road to facilitate pedestrian movement only.

4.5.5. Rail Network

Rail is considered as the lifeline of a nation and a good rail network boosts the economy. Patiala is not very fortunate in terms of rail network as it has a single railway line i.e. branch line of Rajpura railway line. Many trains pass through this single railway line and connect Patiala to various cities and states of India. The main rail route passing through Patiala has been listed in the table given below:

Table No.4.5.5 Railway Routes in Patiala

Sr. No.	Name of the route	Important cities connected
1.	Patiala-Ambala	Rajpura - Ambala
2.	Ambala Cant. - Bathinda	Ambala Cant, Rajpura, Patiala, Dhuri, Bathinda
3.	Haridwar – Shri Ganga Nagar Express	Haridwar, Ambala, Rajpura, Patiala, Dhuri, Bathinda, Ganga Nagar
4.	New Delhi – Bathinda	New Delhi, Ambala, Rajpura, Patiala, Dhuri, Bathinda
5.	Ambala – Shri Ganga Nagar	Ambala, Rajpura, Patiala, Dhuri, Bathinda, Ganga Nagar
6.	Kalka – Jodhpur	Kalka, Chandigarh, Ambala, Rajpura, Patiala, Bathinda, Jodhpur

Source: Station Master, Railway, Patiala 2009

4.5.6. Level Crossings / R.O.Bs

Although, there is only one railway line i.e. branch line of Rajpura passing from the middle of city yet there are 10 level crossings which are all manned. This railway line has three R.O.B's located at 22 No. Phatak, 21 No. Phatak and near Bus Stand which reduces the chaotic traffic condition at the level crossings. The detail of level crossings is given in the table:

Table No .4.5.6 Detail of Level Crossings / R.O.Bs

Sr. No.	Name of Level Crossings/ R.O.B/ Underpass	Location	Status
1.	Phatak No. 15	Divn. (On Rajpura- Sirhind Bye Pass)	Manned
2.	Phatak No. 16	Near Railway Godown	Manned
3.	Phatak No.17	Near Railway Station	R.O.B.
4.	Phatak No.18	In front of Bus stand	Closed
5.	Phatak No. 19	Lahori Gate (In Baradari)	Manned
6.	Phatak No. 20	In Baradari	Manned
7.	Phatak No. 21	Rajbaha Road	R.O.B.
8.	Phatak No. 22	Bhupindra Road	R.O.B.
9.	Phatak No. 23	Opposite Model Town	Manned
10.	Phatak No. 24	Partap Nagar	Manned

Source: Station master, Railway, Patiala; D.T.P Office, Patiala

5. EXISTING INFRASTRUCTURE

5.1. Water Supply

Piped water supply was first introduced in Patiala town in the year 1910, by the then ruler of this princely town. This was based on 12 number percolation wells. These wells are located on Nabha road and are generally known as “Baran Khuh.” The water from these percolation wells used to get collected in to an underground tank located near these wells from where it was pumped into over head steel tanks situated in the walled city area known as “A Tank” and “B Tank”. These tanks were designed to work as balancing reservoirs. With the passage of time, these percolation wells outlived their life, and the water supply was then based on deep tubewells. Similarly “A Tank and B Tank” are being replaced by R.C.C over head service reservoirs.

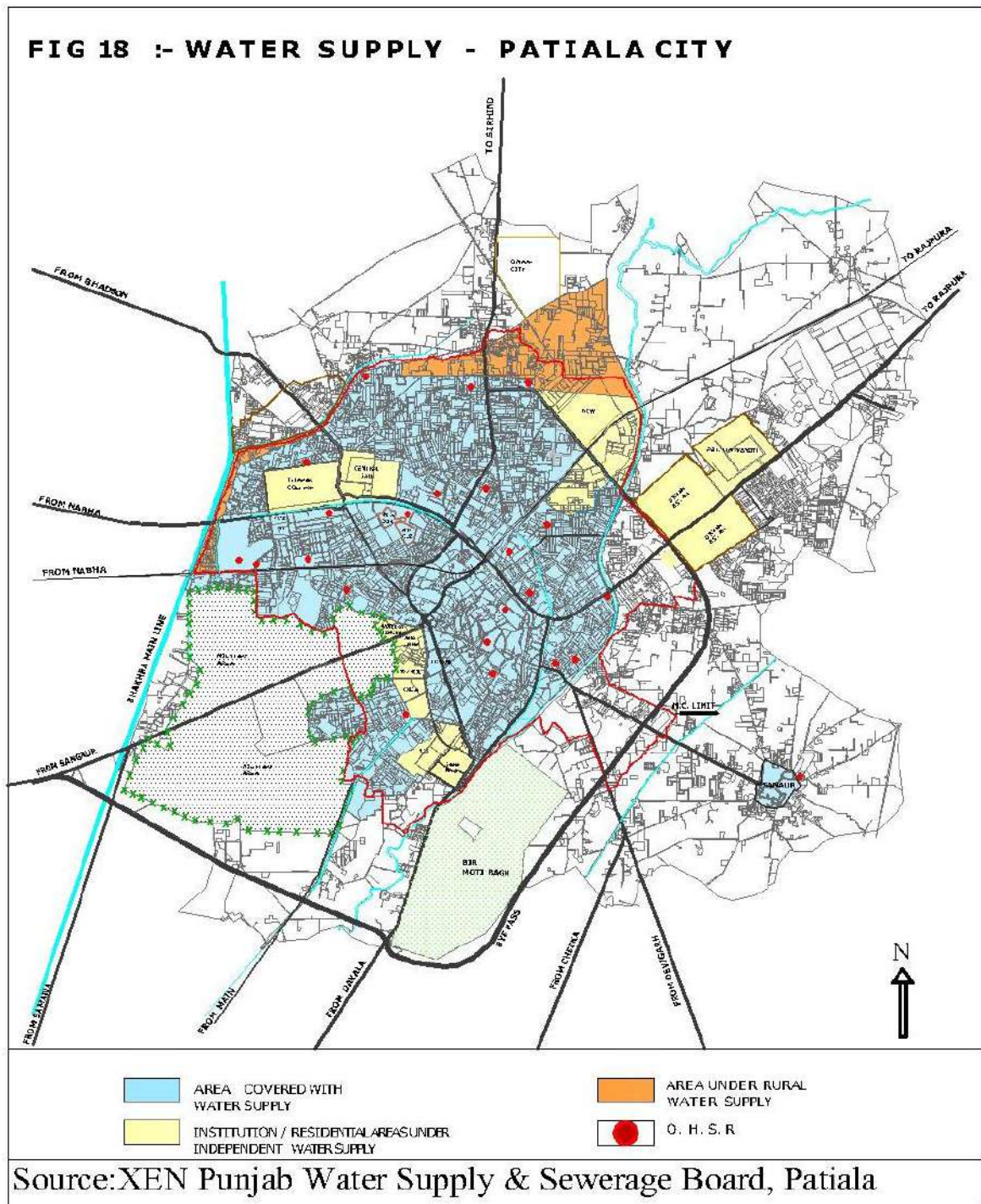
- **Source of Water Supply**

The system of water supply is based upon the underground water by digging wells in the city and pumping it to the destinations.

- **System of Water Supply and Area Coverage**

Municipal Corporation Patiala provides water supply to the city and takes care of its operational and maintenance services. The state level agency i.e. Punjab Water Supply and Sewerage Board (PWSSB) handles the entire process of planning, designing, laying the major network and construction of tube wells and OHSR. The city is having either direct system of water supply through pumping or dual system. The source of water supply in both the cases is underground water. As far as the existing water supply network is concerned, 80% of the city is served with water supply i.e. 40.06 sq km coverage (as shown in fig 18), 90% of the population of the city is served with water supply by intermittent system and 10% of the population is totally uncovered under this system.

Municipal Corporation Patiala has a network of 96 tube wells. Out of these 96 tube wells, 68 tube wells are used for direct supply of water in the system without any intermediate storage. However 28 tube wells supply water through storage tanks. The amount of water supplied through storage tanks is 11.36 mld., whereas 70.05 mld is through direct system. There are 22 OHSRs with a varying capacity between 0.23 to 1.36mld.



The total water supplied on per capita basis works out to more than 210 lpcd (liters per capita per day) which is higher than the norm of 135 lpcd. The duration of water supply is three times a day and the total works out to be 12 hrs on daily basis.

- **Water supply network (LPA) rural**

The water supply pattern of the villages falling in the LPA reflect that 100% of population of the LPA is covered by the water supply.

5.2. Sewerage

The quality of life of a city depends upon the kind of urban amenities with which it is being provided. This includes not only potable water supply but also the kind of waste water disposal system the city is equipped with. It is the necessity of the day to have an efficient sewerage network in all the cities and Patiala is not an exception.

• Area Coverage

The sewerage system was first introduced in the city in the year 1959 and the system comprised three main intercepting sewers along:-

- (i) Jacob outfall
- (ii) Lower Mall
- (iii) Central Nallah together with some laterals in the adjoining areas.

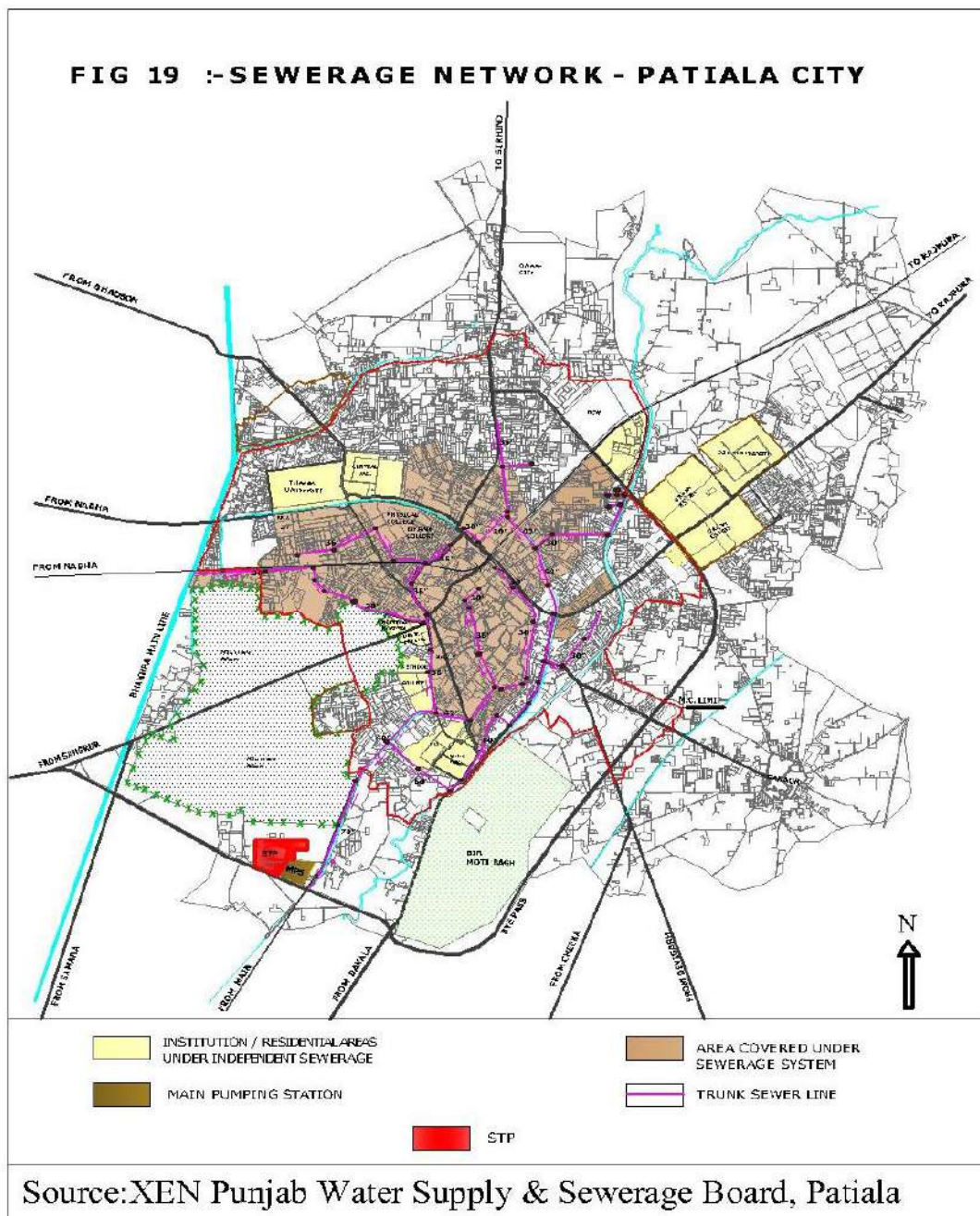
Patiala Municipal Corporation provides the facility regarding disposal of sewerage from the area under the Corporation. This includes waste generated both from domestic, commercial and institutional units operating in the city. Out of the total city area of 50.11sq.km. the coverage under the sewerage system is to the extent of only 75% i.e. about 37.5 sq.km. The city has a total length of 356 km sewer out of which 53 km comprises of main sewer line and 303 km comprises of Branch sewer line. The main institutes comprising of Thapar University, Central Jail, Rajindra Hospital, Ayurvedic Hospital, N.I.S etc. have their own sewerage system but now a days have been connected with main sewer line. Similarly Urban Estate Phase I, II, III and D.M.W have their own sewerage system and have their respective sewage treatment plants (STPs). Sewerage Treatment Plant measuring 6.7 acre is being set up adjoining existing Main Pumping Station (as shown Fig 19).

• Population Coverage

As far as the population of the Patiala city is concerned about (3.3 lac) 88% of the total population (3.78 lac as on 31.3.08) has the facility of sewerage system whereas 12% of the population is devoid of this facility resulting in the poor sanitation conditions. This also leads to the high degree of pollution of underground water and poor environment in and around their habitat.

• Quality of waste generated

The city has a total water supply of 48 mld (million liter per day) out of which 80% is considered to be the wastage and only 20% of the water is consumed actually. Hence the sewerage works out to be 38.4 mld (million liters per day)



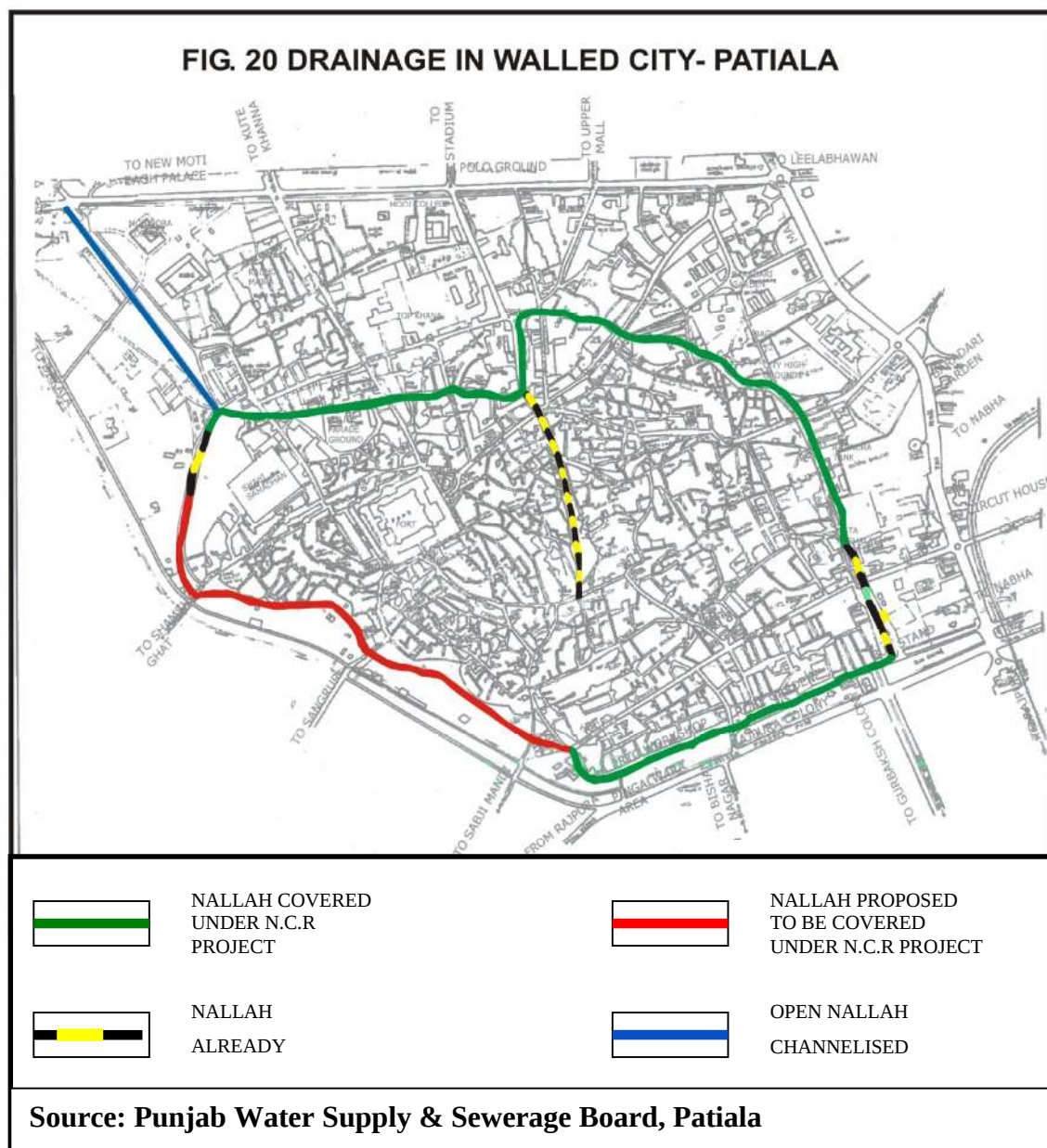
- **Waste Disposal**

At present the disposal of the waste generated in the city is being done in Jacob drain through main pumping station of 66mld (million liters per day) located on Main - Patiala Road.

5.3. Storm Water Drainage

The drainage system of walled city was designed by Chief Engineer, Sir Ganga Ram in the beginning of 20th Century. The then designed system was based on open drains and nallahs to carry the sullage and storm water collectively and the section of the drain was kept trapezoidal to provide the self cleaning velocity to the discharge. The main drain is

locally called Gandha nallah. Part of this Ganda Nallah between Arna- Barna chowk and Anardana chowk was covered in the first phase in 80's so as to have a wider approach road. Later on due to unhygienic conditions prevalent around Ganda Nallah, a length of 6.5kms of Ganda nallah has been covered under NCR scheme. This has not only improved the environment around Ganda Nallah but has also provided wider road upto 80 feet within walled city. Storm water within entire walled city drains into Ganda Nallah through road side small drains. Gratings have been provided at regular intervals for the discharge of rain water into Ganda Nallah. The network of drainage through Ganda Nallah is as shown on Fig 20.



Storm water drainage facility has only been provided in Urban Estate Phase-I, II & III in the area outside walled city which ultimately drains into Bari Nadi. Rest of the city has no

drainage system. Some storm water of the city gets drained into 3 drains namely Bari Nadi, Chotti Nadi and Model Town drain. Out of these drains, Chotti Nadi has been encroached upon at number of places through unauthorized developments. It is high time that these encroachments are removed so that natural drainage remains undisturbed.

5.4. Solid Waste Management

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.

Solid Waste Management is the prime responsibility of Patiala Municipal Corporation within the Corporation area Corporation discharges this duty through the infrastructure created for collection, storage, transportation 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 its own conservancy workers and a fleet of vehicles and dumpers-placers. Municipal Corporation collects solid waste from all the residential areas within its municipal limits collection facility is provided in 100% area occupied by people.

- **Type & Quantity of waste generated:**

There has been no formal study estimating the amount of solid waste generated in the Patiala Municipal Corporation. . In all city generates garbage to the tune of 177.1 metric tons out of which 150 metric ton / day is the solid waste generated by domestic sector, 20 metric ton constitutes malba of houses, 5 metric ton by green belt / sabzi mandi, 0.1 metric ton by slaughter house and 2.0 metric ton from hospital. Higher garbage generation can be attributed to the living style and the economic character of the city.

It is worth mentioning that industrial focal point is located outside the Municipal Corporation limit and area falling under industrial area on Sirhind road is yet to be handed over to Municipal Corporation. Similarly Diesel Motor Works falling outside Municipal Corporation has its independent solid waste management in terms of collection, storage, and dumping. PUDA gets the solid waste collected from respective Urban Estates Phase I, II and III and dumps it at Sanauri adda dumping site of Patiala city.

Although Municipal Corporation has not made any arrangement of segregation of solid waste but rag pickers on their own segregate some of the plastic, glass and other material at the collection point and sell them to kabaris or at the recycling plant at the Industrial Focal Point.

Disposal of solid waste

The method adopted by the Patiala Municipal Corporation for disposal of the solid waste is through the mechanism of landfills. At present Patiala Corporation uses one site for dumping of the solid waste. The site is located at Sanauri adda. The area under this site is 17 acre approximately. The solid waste collected at 240 sites created at the community level is transported to dump site at Sanauri adda. The landfill site is not lined and properly defined. Moreover land filling is being done in an unscientific manner. The waste is directly dumped, without any segregation. There is no compaction of the waste undertaken to compress it since no road rollers are available with the Health Deptt. for this purpose. In the absence of scientific disposal of the waste lot of valuable waste is lost due to absence of recycling.

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. No treatment of the solid waste is undertaken during the dumping process as required in the system of sanitary landfills. This dump site is very close to Tej Bagh residential colony, the occupants of which have to face this ugly scene. Municipal Corporation is looking for a suitable dump site. Thus the present practice of disposing solid waste does not comply with Municipal Solid Waste Rules 2000 of the Ministry of Environment and Forest Govt. of India.

5.5. Traffic And Transport

Without transportation the cities could never have developed. First of all transportation forms the circulatory system that connect cities with each other and with the countryside. Cities are the culminating points in a system of overlapping and interconnected transportation nets of rail road, highways etc.

- **Vehicle composition on main Road Network**

The staff of office of District Town Planner, Patiala conducted the traffic volume survey of the following main roads of Patiala city in order to know the vehicular composition and volume on these roads.

Table No. 5.5 (a): Vehicular Composition on main roads of Patiala city.

Sr. No	Name of the road	Cycle	Rickshaw /Rehri	Scooter/ M-Cycle	Car/ Jeep/ Auto	Bus/ Truck/ Tractor/ Trolly	Cart	Total
1	(i) Fountain Chowk – Bus Stand	467	517	1263	1466	225	25	3963
		12	13	32	36.3	6	0.7	100
	(ii) Fountain Chowk - Leela Bhawan	583	247	705	864	438	5	2842
		21	9	25	29.8	15	0.2	100
	(iii) Fountain Chowk - Lower Mall	464	358	722	878	34	12	2468
		19	14.5	29	35.6	1.4	0.5	100
	(iv) Fountain Chowk - Thikriwala Chowk	605	576	1633	1625	521	13	4973
		12	11.6	33	33	10.1	0.3	100
2	(i) Leela Bhawan Chowk- Cantonment	251	180	547	265	33	4	1280
		20	14	42	21	2.6	0.4	100
	(ii) Leela Bhawan Chowk- Thapar College	554	349	1275	1106	112	8	3404
		16.3	10.2	37.5	32.5	3.3	0.2	100
	(iii) Leela Bhawan Chowk- Gurdwara Sahib (Rajbaha Road)	381	319	1427	1179	714	20	4040
		9.4	7.6	35.2	29.2	17.6	1	100
	(iv) Leela Bhawan Chowk- Baradari Garden	371	180	580	144	2	3	1280
		29	14	45.3	11.3	0.15	0.25	100
3	(i) Thapar Univ. - Bhadson Road	198	118	350	371	112	22	1171
		16.9	10	30	31.7	9.6	1.8	100
	(ii) Thapar Univ. - Nabha Road	108	18	251	215	42	3	637
		17	2.8	39.4	34	6.6	0.2	100
	(iii) Thapar Univ. - Bhupindra Road	234	73	552	285	33	5	1182
		19.8	6.2	46.7	24.1	2.8	0.4	100
	(iv) Thapar Univ. - Gurudwara Sahib	404	92	548	347	196	5	1592
		25.4	5.8	34.4	21.8	12.3	0.3	100
4	(i) Gurudwara Sahib Chowk - Sirhind Road	110	69	272	317	120	12	900
		12.2	7.66	30.2	35.2	13.3	1.44	100
	(ii) Gurudwara	252	96	563	447	80	3	1441

	Sahib Chowk - Nabha Road	17.49	6.66	39.07	31.02	5.56	0.2	100
	(iii) Gurdwara Sahib Chowk - Bus Stand Road	267	201	584	535	129	15	1731
		15.4	11.6	33.7	31	7.4	0.9	100
5	(i) Bus Stand Chowk - Rajpura Road	451	320	1062	1440	544	21	3838
		11.75	8.34	27.7	37.5	14.17	0.54	100
	(ii) Bus Stand Chowk - Gandhi Nagar	720	627	1137	577	325	16	3402
		21	18.5	33.4	17	9.6	0.5	100
	(iii) Bus Stand Chowk - Gurbax Colony	407	459	1104	65	5	-	2040
		20	22.5	54.1	3.2	0.2	-	100
6	(iv) Bus Stand Chowk - Dukhniwaran Sahib	253	147	1029	1258	704	12	3403
		7.4	4.3	30.2	37	20.7	0.4	100
	(i)Sanaur-Devigarh junction- Sanaur Road	114	22	174	102	31	7	450
		25.3	4.9	38.7	22.7	6.7	1.7	100
	(ii)Sanaur-Devigarh Junction-Devigarh Road	285	48	335	297	125	29	1119
		25.5	4.4	30	26.5	11	2.6	100
7	(iii) Sanaur-Devigarh Junction -Patiala Road	144	30	150	118	72	12	526
		27.4	5.7	28.5	22.4	13.7	2.3	100
	(i) Thikriwala Chowk - Sangrur Road	191	207	651	880	425	3	2357
		8.1	8.8	27.61	37.34	18.03	0.12	100
	(ii) Thikriwala Chowk - Badungar Road	171	158	470	338	29	2	1168
		15	14	40	28.4	2.5	0.1	100
	(iii) Thikriwala - Upper Mall	243	211	512	407	67	8	1448
		17	15	35	28	4.5	0.5	100

Source: Field Survey, 2009

Note: Figures in bold shows the percentages of the vehicles on the respective roads.

A mixed composition of vehicles i.e. heavy vehicles like trucks, buses, tractor, medium vehicles, two wheelers, four wheelers and other light weight vehicles are widely observed on the main roads of Patiala city.

The vehicular composition on main roads reveals that main outer roads namely Nabha Road, Bhadson Road, Sirhind Road, Rajpura Road, Sanaur Road, Devigarh Road, Sangrur Road have mixed vehicular composition with predominantly cars, jeeps, autos moving on these outer main roads, with an exception of Sanaur road which has 28.5%

scooter/motorcycles and 27.4% cycles and Nabha road which has 39.4% scooter/m-cycles and 34% cars/jeeps/autos plying on them.

In the case of inner main roads of the city, the use of cycles and motor cycles as means of transport is predominant. In terms of absolute numbers two inner city main roads namely from fountain Chowk to Thikriwala Chowk and the road from Bus Stand to Gandhi Nagar have 605 cycles and 720 cycles respectively moving on them which indicates that besides the use of autos, bikes, cars etc. cycles are still considered as one of the important means of transportation in Patiala city.

- **Volume Capacity ratio on Main Roads of Patiala City**

The volume capacity ratio indicates the capacity of roads to hold a given volume of vehicles. The capacity of urban road is normally expressed in terms of a common unit, namely Passenger Car Unit (PCU). The relative PCU of particular vehicle type is affected to a great extent by increase in its proportion in the total traffic. The value of volume capacity ratio if comes out to 1 is considered as an ideal condition. If the ratio exceeds 1, it indicates over utilization/ congestion or if it is below 1, the road capacity is under-utilized. Following table shows recommended PCU factors for various types of vehicles on urban roads as given in UDPFI Guidelines.

Table No. 5.5 (b) Recommended PCU factors for various types of vehicles on urban roads:

Sr. No.	Type of vehicles	Equivalent PCU factors
1.	Cycle	0.4
2.	Two Wheeler M/Cycle or Scooter	0.5
3.	Passenger Car, Pick up Van	1.0
4.	Auto Rickshaw	1.2
5.	Cycle Rickshaw/Tonga	1.5
6.	Truck or Bus	2.2
7.	Agricultural Tractor Trailor	4.0

Source:UDPFI Guidelines.

The urban roads are classified that taken under duration have been under three categories:-

- **Arterial Road:** The road which connects the town to a State Highway or a National Highway is termed as arterial road. Main characteristics of arterial roads are:
 - i) Road for intra-urban through traffic.
 - ii) No frontage access.
 - iii) No standing vehicles and very little cross traffic and minimum roadway intersection spacing 500 m.

- **Sub Arterial Road:** These roads are also known as major roads or second roads. They are contained within city limits and they connect important town centers. Main characteristic of sub arterial roads are:
 - i) Roads for intra-urban through traffic with frontage access but no standing vehicles having high cross traffic.
 - ii) High capacity intersection and minimum roadway intersection spacing 300 m.
- **Collector Street:** These roads are also known as the minor roads. They collect traffic from various parts of the town and lead it to another minor road or major road. Main characteristics of collector streets are:
 - i) Streets for collecting and distributing traffic from arterial roads to local streets.
 - ii) Providing access to arterial and sub-arterial road.
 - iii) Having free frontage access but no parked vehicle and having heavy cross traffic and minimum roadway intersection spacing 150m.

Table 5.5 (c) reveals the volume capacity ratio on the main roads of Patiala city. It can be retrieved from the table that volume capacity ratio on 19 main roads of Patiala city ranges between 0-1 which shows that these roads are wide enough to accommodate the present volume of traffic and have smooth traffic flow. Only three roads namely from Fountain chowk to Leela Bhawan, from Thapar Univ. to Gurudwara Dukhniwaran Sahib and from Fountain chowk to Mohindra college (Lower Mall) and have the volume capacity ratio of 1.2, 1.02 and 1.28 respectively. Since the heavy vehicular traffic i.e. mainly trucks and buses are diverted through Rajbaha Road via Gurudwara Dukhniwaran Sahib junction to Sangrur road, this road from Leela Bhawan Chowk to Fountain Chowk carries the heavy vehicular traffic of Rajpura Road, traffic of Sirhind & Nabha road including intra-city traffic of four roads converging at Leela Bhawan Chowk.

Table No.5.5 (c): Volume Capacity ratio on Main Roads of Patiala City

Sr. No.	Location	Name of The Road	Peak hour volume (PCU) 'V'	Capacity (PCU) 'C'	V/C	Type of carriageway	Classification of Road
1.	Bus Stand Chowk	(i) Bus Stand to Rajpura Road	2435	2900	0.84	4 lane (divided two way)	Sub Arterial
		(ii) Bus Stand to Dukhniwarn Gurdwara	2622	2900	0.90	4 lane divided (two way)	Sub Arterial
		(iii) B-Stand to Fountain Chowk (Mall road)	2815	2900	0.78	4 lane divided (two way)	Sub Arterial
		(iv) B.Stand chowk to Gurbax colony	1156	900	1.28	2 lane (divided) two way	Collector street
2.	Leela	(i) Leela Bhawan	1936	2900	0.66	6 lane divided	Sub Arterial

	Bhawan Chowk	to Thapar Univ.				(two way)	
		(ii) Leela Bhawan-Gurudwara Dukhniwaran	2932	2900	0.10	4 lane divided (Two way)	Sub Arterial
		(iii) Leela Bhawan to Baradari	529	1800	0.29	4 lane undivided	Collector
		(iv) To Income Tax	1433	1800	0.80	Undivided 4 lane (two way)	Collector street
3.	Thapar Univ.	(i) Thapar to Bhadson	1635	1800	0.90	4 lane undivided (two way)	Collector street
		(ii) Thapar Univ. to Bhupindra	611	2900	0.21	4 lane divided (two way)	Collector street
		Thapar Univ. to Gurudwara Dukhniwaran	2244	2200	1.02	4 lane divided (two way)	Sub Arterial
4.	Sewa Singh Thikriwala Chowk	i) S.S.T. Chowk to Khalsa college	680	900	0.75	2 lane (two way)	Collector
		(ii) To Moti Bagh	884	2900	0.30	4 lane divided (two way)	Sub Arterial
5.	Gandhi Nagar to Rajpura Road Chowk	-	2215	3600	0.61	4 lane divided (two way)	Arterial
6.	Devigarh Road	-	1140	1200	.92	2 Lane undivided (two way)	Sub Arterial
7	Sanaur	-	530	1800	.29	4 lane undivided (two way)	Collector street
8.	Patiala – Sangrur Road	-	1934	2900	0.67	4 lane divided (two way)	Sub Arterial
9.	Fountain Chowk	(i) Fountain Chowk to Leela Bhawan	1992	4300	.46	6 Lane divided (two way)	Sub Arterial
		(ii) Fountain Chowk to Mahindra college (lower mall)	1485	1200	1.2	6 lane divided (two way)	Collector street
10.	Dukhniwala Road Chowk	(i) Dukhniwaran to D.C. Office	1773	2200	0.80	4 lane divided (two way)	Collector street
		ii) Dukhniwaran Chowk to Sirhind Road	1355	2900	0.46	4 Lane divided (two way)	Sub Arterial
11	Nabha Road	From Thapar University	750	2200	0.34	4 Lane divided (two way)	Collector street

Majority of the roads are sub- arterial or collector streets. The sub- arterial roads show prominent characteristic of arterial roads as these connect Patiala to National Highway as well as State Highway also.

- **Bus Transport**

- **Bus Terminal**

The only bus terminal of Patiala is located on Patiala - Rajpura Road. The total area of bus stand is 6 acres and a workshop of 4.2 acres adjoining it and another workshop cum head office of P.R.T.C on Nabha road comprising 13.50 acres .The most preferred mode of transport in the area is bus transport as buses from all the districts of Punjab and neighbouring states on their way halt at the bus stand and quite a few originate and terminate at the main bus stand. Bus transport is also considered as a preferred means of transport for the daily commuters which considerably contributes to the increasing bus traffic. There is a proper link between bus stand and railway station that makes its location appropriate as far as the change of mode of transportation is concerned. The over bridge on Phatak No. 17 has been developed and heavy vehicular regional traffic has been diverted through the over bridge. There is no cycle rickshaw stand, auto rickshaw stand or taxi stand in and around the bus stand, with the result these are parked along road side along with rehriwallas which reduces the effective width of road thus resulting in congestion, lowering of journey speed and intersection delay.

A proposal of shifting the bus stand to a new location with state of art facilities is also on the cards of the concerned authority and land has been cleared from encroachments for the same and development works are to be initiated.

- **Bus Routes And Intercity Bus Services**

The table pertaining to daily bus traffic of Patiala city (2009) reveals that 1484 PRTC buses operate from Patiala city. It also includes 545 buses owned by Private Transporters 180 mini & local buses are also operated from Patiala and facilitates the traffic movement within the city and the adjoining villages and small towns. Whereas in 2008 total number of buses operating form Patiala was 1444 and in 2007 it was 1298. It shows a sharp increase in the number of P.R.T.C buses operating from Patiala city from 2007 to 2009. As per data provided by General Manager, PRTC Patiala nearly 63000 passengers daily use buses as a mode of transport. The data provided by PRTC also reveals that in the year 2009, 244 PRTC buses runs on Patiala - Ludhiana route, 137 buses on Patiala – Patran route, 130 on Patiala - Malerkotla route, 120 buses on Patiala – Pehowa route respectively. Number of buses of PRTC as well as Private Transporters connect Patiala to other places also like Rajpura, Bathinda, Sangrur, Cheeka, Kaithal, Bhadson, Amloh, Mohali etc. Another noticeable on three routes namely Patiala – Sirhind – Ludhiana,

Patiala – Nabha – Malerkotla and Patiala – Devigarh – Pehowa, the number of buses has recorded a considerable increase. The detail of the no. of buses connecting Patiala to other cities and towns is given below:-

Table No.5.5 (d): Daily Bus Traffic Route wise in Patiala city (2007-2009)

Sr. No.	Name of the Route	Number of Buses		
		2007	2008	2009
1	Patiala – Sirhind – Ludhiana	170	233	244
2	Patiala – Rajpura	45	48	48
3	Patiala – Nabha – Malerkotla	125	130	150
4	Patiala – Sangrur – Bathinda	75	79	87
5	Patiala – Samana – Pattran	130	137	137
6	Patiala – Cheeka – Kaithal	63	69	70
7	Patiala – Devigarh – Pehowa	105	120	120
8	Patiala – Bhadson- Amlah – Ludhiana	45	59	59
9	Patiala – Rajpura – Mohali	15	24	24
10	Private Transport Buses & outer	525	545	545
11	Sub Total	1298	1444	1484
12	Mini Buses	160	180	180
13	Grand Total	1458	1624	1664

SOURCE:- PRTC, General Manager, Patiala

➤ Intra City Bus Service

Public transport system is not very much developed in Patiala city. Increased number of private vehicles like cars, motorcycles, scooters, light- weight scooters etc. have reduced intracity distances. In walled city mainly hand driven rickshaws are used. Local bus service has few buses and connects Patiala to some localities as well as villages located on the periphery of Municipal Limits of Patiala. Buses of various educational institutes like Punjabi University, RIMT, Bhai Gurdas Engineering College, Desh Bhagat Group of Institutes, Chitkara and other engineering colleges, nursing colleges and educational colleges of nearby towns, as well as school buses also contributes towards the bus traffic of Patiala city.

● Truck Terminal

Patiala city's only authorized Transport Nagar is located on Rajpura Road. It has an area of 40 acres out of which 9 acres of land has been allotted to Kabari market which has been shifted from the walled city. Present Transport Nagar requires more area for expansion. Although there is a full fledged truck terminal but small autos and tempos are parked below the fly over opposite Sandhu Nursing Home.

● Taxi Terminal

Intermediate modes of transportation are significant in the urban settlements for the movement of passengers. Presently Patiala has no authorized taxi terminal. There are some unauthorized taxi terminals which includes Taxi Terminal opposite Capital cinema

on Mall Road; opposite Rajindra Hospital along Medical College Boys Hostel; opposite bus stand near Desi Mehmandari, behind Corner hotel and near abandoned Phatak No. 18.

- **Goods Vehicle Movement**

Besides passenger vehicles, goods are also contributing to the city traffic. Main incoming products to Patiala city are pebbles and sand from Zirakpur, sugar from U.P, spare parts from Delhi, cement from Ropar, Kartarpur, H.P, Bathinda Rice comes from W.Bengal and wheat comes from the neighbouring villages. The outgoing products are wine, milk powder, products of DMW and Escorts etc which are sent to Bombay, Calcutta, Delhi, J&K etc.

- **Goods Booking Agencies**

The field survey conducted by the office of District Town Planner, Patiala has identified a goods booking agencies and companies in Patiala city. Out of these 9 agencies, 5 are located near Saifabadi Gate two in Hira Bagh and one in Lakkar Mandi and remaining one on Namdarr Kahn road Patiala. It shows that most of the goods booking agencies are located on and near Patiala – Rajpura road. Mostly goods are transported to different districts of Punjab as well as to different states of India especially Delhi, Chandigarh, Mumbai and Gujrat. The detail of the goods booking agencies and their location is given below:-

Table No. 5.5 (e): Goods booking Agency in Patiala City

Sr. No.	Name of the Goods Booking Agency	Location	No. of Vehicles
1	New Kohli Transport Company	Saifabadi Gate, Patiala	80 Trucks
2	Bharat Motors Transport Company	Saifabadi Gate, Patiala	6 Trucks
3	Patiala Transport Company	Saifabadi Gate, Patiala	10 Trucks
4	Chadha Motors Transport Company	Saifabadi Gate, Patiala	6 Trucks
5	Sadana Goods Carrier	Saifabadi Gate, Patiala	6 Trucks
6	Amritsar Transport Company	Lakkar Mandi, Patiala	10 Trucks
7	T.C.I Transport Company	Hira Bagh, Patiala	6 Trucks
8	M.V.R South Eastern Roadways	Namdarr Khan Road, Patiala	7 Trucks
9	Delhi-Punjab Transport Company (Chadha Motors)	Hira Bagh, Patiala	40 Trucks

Source: - Goods Booking Agencies and Truck Unions.

- **Management of Urban Transport**

A number of agencies are involved in the management of urban transport in L.P.A Patiala. Several govt. agencies like Patiala Development Authority, Municipal Corporation, State P.W.D, National Highway Authority of India and the Central Ministry of Surface Transport are involved in the development and maintenance of roads and the associated infrastructure. The licensing agency of motorized vehicles is District Transport Agencies and non-motorized vehicles is Municipal Corporation. In terms of providing bus

transport service both govt. agencies like P.R.T.C and private transporters are involved. For traffic management, Traffic Police Patiala is responsible and rail services comes under the control of Ministry of Railways. The management and development of urban transport is undertaken independently by these numerous agencies. They plan their activities and operate independently without any coordination among themselves. The funds for developments/management of traffic and transport are sourced independently and are spent by them, which creates severe problems in integrated traffic management.

- **Rail Based Transport**

Besides road traffic, rail transport also plays a vital role in the traffic and transportation network of the city. A total number of 18 passenger trains passes through the railway line of Patiala on the route of Patiala – Dhuri - Bathinda and Patiala – Rajpura. Both routes have equal number of passenger trains incoming and outgoing from Patiala.

In addition to the passenger trains, goods trains also pass through Patiala. The volume of goods train on Patiala - Dhuri rail route is more than goods train traffic on Dhuri – Patiala rail route.

- **Major Traffic Problems**

The major traffic problems in the royal city of Patiala are as follows:-

I) Through Traffic :- The major traffic problem of Patiala is passing of the regional traffic through the city which adds to the volume of the city traffic and creates congestion, as it has a radial pattern of roads and the major regional roads namely Patiala – Nabha , Patiala – Sirhind , Patiala – Sangrur , Patiala – Rajpura converges in the central part of the city.

A Southern elevated bye- pass i.e. 19.6 km long is under construction that will connect Patiala- Rajpura & Patiala – Sangrur road which will give great relief to the city from through traffic.

II) Parking Problems: The parking problem in Patiala city can be divided into the following categories:-

- **In the walled city**

Due to the presence of old structure, mixed land use, presence of wholesale and specialized markets namely Book market, Gur Mandi, Maniari Bazar (Sirhindi Bazar), wholesale cosmetics & shoes (Gher Sodhian), cloth market (Shere-e-Punjab market), Aachar Bazar, Churian wala Bazar, Bartan Bazar (near Kasera Chowk), Timber market near Safabadi Gate, wholesale fruit and vegetable market, dairies,

godowns, etc. creates severe traffic problems because of negligible parking space. It gets worsened by the presence of hand carts, horse carts, three wheeler carrier, tempo, rickshaw, rehri etc. which causes traffic bottlenecks in the city.

A site of new wholesale fruit and vegetable market has been acquired on Sanaur road and development works have started.

➤ **In planned commercial centres**

In case of Leela Bhawan commercial scheme, provision of parking has fallen short because of sharp rise in the number of vehicles which results in parking overflows on Bhupindra Road and thus reducing the effective width of road. Big branded showrooms have also sprung up with clearance from Municipal Corporation along Bhupindra road with little parking area in front of them, thus creating traffic chaos.

➤ **Along Commercial Streets**

Mushrooming of informal commercial on road front without the provision of adequate parking is another major traffic problem in certain pockets of Patiala city like Lower Mall Road, Fountain Chowk, Bhupindra Road (near 22 no phatak) Gurdwara Dukhniwaran Chowk, Bus Stand Chowk, part of Model Town, Bhadson Road, major roads in Tripuri Township, Jhill road, Seona road, entire Gurbax Colony, etc.

➤ **In Residential Colonies**

Roadside parking has reduced the road width which hampers the free flow of traffic and cause traffic problems. Private nursing homes and private tuition schools opened in residential houses without any provision of parking lots hampers free flow of traffic especially in areas like Professor Colony, Hembagh, Officer's Colony etc.

➤ **In Institutional Areas**

Most of the private schools have inadequate parking facilities that leads to traffic congestion especially during peak hours mainly in front of D.A.V. school (Bhupindra Road), British Co-Ed (Lower Mall Road), Y.P.S. (Stadium Road), Guru Nanak Foundation School (Sular Road) Budha Dal Public School (Lower Mall Road), Lady Fatima School & Saint Peter's School (Ajit Nagar).

➤ **Near Transport Terminals**

No organized parking and space for taxi/auto rickshaws near bus stand and railway station because of which autos, taxis, rickshaws etc. are parked along the mall road there by reducing the effective road width to a considerable extent and causes congestion in front of closed 18 No. and 19 No. phataks along Mall Road and in front of Bus Stand.

III) Reduction of road width

Encroachment along both sides of the roads by the shopkeepers reduces the effective road width and restricts the free flow of traffic in central business district (Adalat bazaar, Dharampura bazaar). Roadside parking of autos and rickshaws especially near bus stand and railway station reduces the road width.

IV) Heavy Traffic Level Crossing

Traffic is increasing day by day on bye-pass road which has to cross the level crossing. The present railway line is being upgraded to double track and frequency of trains is going to increase in light of two upcoming Thermal Plants around Bathinda which will make the traffic stranded frequently. At the same time two roads running immediately along the railway track on both sides are creating junctions immediately close to level crossing, thus creating havoc with the traffic. All this hampers the free flow of traffic necessitating the early construction of railway overbridge on this level crossing.

5.6. Fire Prevention and Protection

Fire accidents have become a common day phenomenon, so to prevent & protect from fire it is necessary to provide essential services in the city. Due to the advancement in technology and high rise construction, the industrial accidents, short-circuiting in commercial establishments are most vulnerable for fire incidents. It becomes the foremost obligation of the govt. to provide security from these accidents.

- **Availability of Fire Stations**

There are two fire stations having an area of one acre each in the city, one Head Fire Station at Bahera Road and another sub-fire station at Barakhuan near Harpal Tiwana Academy. Out of these two fire stations, the Head Fire Station is in the heart of the city and is serving the old city areas, Urban Estates, S.S.T. Nagar etc. and the sub fire station is serving the areas near Thapar University i.e. Model Town, Civil Lines, Tripuri, Phulkian Enclave, Manjit Nagar, Anand Nagar, D.L.F Colony etc. So fire stations available in Patiala serve Nabha, Samana, Patran .In case of emergency these serve not only the city but the entire district and at times out of the district also, especially, Bhawanigarh. So, the area served by these Fire Stations is very large and unmanageable thus much beyond the norms.

- **Existing infrastructure in Fire Stations**

As per the information supplied by the respective fire stations, there are only five fire tenders in both the stations, one fire jeep and one Maruti ambulance.

Table No. 5.6 (a) Existing infrastructure in Fire Stations

Sr. No.	Name of Facility	Norms	Existing	Surplus	Deficiency
1	Fire Station	1 fire station or sub-fire station within 1 to 3 km to be provided for 2 lakh population	2	-	-

5.7. Environmental Status

Patiala city is predominantly occupied by the service class people and there are not many industries in the surrounding areas of Patiala City. The main industries which could have significant impact on the local environment include Federal Moughal Goetze India Ltd. and Milkfood on Rajpura Road, Verka Milk Plant, DMW and Focal Point on Sirhind Road, Maltex Malsters on Nabha Road. Almost all the industries have installed suitable pollution control systems and thereby the impact of industries on the local environment is negligible.

Air pollution

There is minimal air pollution due to the industrial activities in Patiala City. The main sources of air pollution in Patiala City are burning of LPG gas/kerosene oil in households/restaurants, vehicular movement within and around the city, operation of D G Sets in case of failure of electrical power etc. Beyond this, after harvesting, the burning of leftover of crops by farmers is a major source of pollution in the city. All the industries as mentioned above are complying with the statutory standards as laid by the Punjab Pollution Control Board. The air pollution due to the burning of LPG gas/kerosene oil is minimal.

It is intimated that the Punjab Pollution Control Board is monitoring the Ambient / Air quality of Patiala city. The Punjab Pollution Control Board has set up two monitoring stations i.e. one at office of Fire Brigade at Lower Mall, Patiala, which represents the residential area and another at Ceylon Biscuits factory, Factory Area, Patiala. Though, the sample placed at the Ceylon Biscuit Factory in Factory Area, Patiala is supposed to represent industrial zone but there is no major industry in the Factory area and major area is occupied by the residential houses. So, this station may also be considered representing the residential area.

The monitoring stations are being operated regularly for 24 hours, twice a week i.e. 104 samples are collected in a year. The data of Ambient Air Quality Monitoring carried out during the period of 2006-08 is given as under

Year	Avg. concentration at Fire Brigade, Patiala			Avg. concentration at Ceylon Biscuits Factory, Factory Area, Patiala		
	SPM	NO _x	SO ₂	SO ₂	NO _x	SO ₂
2006	185	17	6	182	18	6
2007	214	20	7	211	21	7
2008	207	19	8	207	19	7

Prescribed Standards

Area	Pollutants		
	SPM (ug/Nm ³)	NO _x (ppm)	SO ₂ (PPM)
Residential	140	60	60
Industrial	360	80	80

From the above, it is evident that the concentration of SPM as observed during the year 2006, 2007 & 2008 is more than the prescribed standards of 140 ug/Nm³. This may be attributed to the vehicular emissions and general road dust.

• Water pollution

Patiala city is having the minimum water pollution problem. The main source of water pollution is sewage generation from the households. In urban areas, sewage generation @ 135 liters/person/day is considered. Accordingly, Patiala City generates around 65000 Kiloliters of sewage per day. The sewage is transported through sewerage lines laid throughout the city and finally all the sewerage is disposed off into Bari Nadi, Patiala. There are no sewage treatment plants installed in the city for the treatment of sewage except for urban estates, DMW, Punjabi University etc. The Municipal Corporation Patiala is planning to install the sewage treatment plant for the treatment of sewage generated from the city. After treatment, the sewage will not have any adverse effect on the Bari Nadi which ultimately meets with the Ghaggar River.

The regular withdrawal of underground water i.e. through tubewells for water supply is another serious problem associated with the city. Average ground water table in the area is going down day by day. The ground water withdrawal rate is much more than the recharge potential in Patiala City. Considering the same, to overcome the long term impacts, rain water harvesting systems should be adopted in the city. There is urgent requirement to supplement the present water supply through tubewells with canal based water supply as Patiala has the advantage of Bhakra main line passing close by.

Noise pollution

There is minimal noise pollution due to vehicular traffic only, especially the trucks, buses and cars on the main roads. No other source of noise is there, except for certain occasions

of social or community celebrations. As such, the effect is well within the permissible levels and is not stressful.

5.8. Power Supply

The Power supply to Patiala city and L.P.A Patiala is provided by Punjab State Electricity Board through 17 grid stations which are installed in L.P.A Patiala, out of which 11 are situated within the limits of Municipal Corporation and 6 are located outside Municipal Corporation limits but within the L.P.A Patiala including one Power Grid of Grid Corporation of India at Phagan Majra. The detail of Grid stations of Punjab State Electricity Board alongwith Power Grid of Grid Corporation of India is given in Table No. 5.8

Table No.5.8 Grid Stations in Patiala City and L.P.A Patiala

Sr. No.	Name and Location	Capacity	Location
1	Power Grid, Phagan Majra	400KV	L.P.A
2.	Grid Sub Station Ablowal	220 KV	Within City
3.	Shakti Vihar	66 KV	Within City
4.	Focal Point	66 Kv	Within City
5.	N.I.S.	66 KV	Within City
6.	Power House Colony	66 KV	Within City
7.	Mall Road	11 KV	Within City
8.	Nehru Park	11 KV	Within City
9.	Rajindra Hospital	11 KV	Within City
10.	Anardana Chowk	11 KV	Within City
11.	Darshani Gate	11 KV	Within City
12.	Factory Area	11 KV	Within City
13.	Bhateri	220 KV	L.P.A.
14.	Grid Sub Station Bahadurgarh	66 KV	L.P.A.
15.	Baran	66 KV	L.P.A.
16.	Urban Estate	66 KV	L.P.A.
17.	Pasiana	66 KV	L.P.A.
18.	Opposite Kali Devi Mandir	11 KV	Within City

Patiala city is presently being fed through one 400KV Power Grid, three 220 KV sub station and five 66 KV sub stations. The supply to Patiala city is fed through two 220 KV substation namely Ablowal and Bhatheri and four 66 KV sub station namely 66KV Patiala, 66 KV N.I.S., 66 KV Shaktivihar and 66 KV Urban Estate I.F.P. The grid station falling in L.P.A are Bhateri with capacity of 220 KV, and 4 Sub Stations of 66 KV capacity are located at Pasiana, Bahadurgarh, Baran, Urban Estate respectively.

5.9. Educational Facilities

Educational facilities play an important role in the overall development of a city. These facilities enhance economic growth and employment. Patiala in this context has been fortunate enough to have large number of educational institutes and boasts of being the educational hub of the state. Patiala city and L.P.A Patiala have large number of

educational institutes both at lower and higher level of education which not only cater to the needs of the city but also to the region and the nearby towns/cities.

L.P.A Patiala has a large number of institutions imparting education at school level. At present it has 146 primary schools, 36 middle schools, 78 secondary schools and 47 senior secondary schools. In addition to all these schools, the city houses educational institutes for handicapped also, it has three schools for special children.

Besides providing good education facilities at school level, Patiala is a frontrunner in higher education also. There are three universities located in Patiala, namely Rajiv Gandhi National University of Law, Punjabi University, Thapar University. Punjabi University, the pioneer of university education in Patiala and its neighbouring region, is the only university after Hebrew University of Israel to be named after a language. In respect of degree colleges, Patiala has 12 degree colleges which impart education in varied fields like arts, commerce, science, sports education etc., both at graduation and post graduation level.

Patiala city is the first city to have a degree college i.e **'Mohindra College' in the northern part of the country between Delhi and Lahore during the era of 1870's** and its still considered as a topmost educational institute in the whole region. Patiala city has two colleges of education i.e. State College of Education and another Mata Sahib Kaur College of Education located at Partap Nagar. Another college of education located within the L.P.A is Jasdev Singh College of Education, Kauli. There are two Industrial Training Institutes, one for boys and another for girls and two polytechnic colleges, one in S.S.T. Nagar and another in Thapar College. Another polytechnic college is coming up at village Rakhra which falls within the L.P.A limits. There are three Engineering Colleges in Patiala city i.e. University College of Engineering in Punjabi University, Thapar Institute of Engineering And Technology and Punjab Aircraft Maintenance Engineering College. Two engineering colleges are located in L.P.A also namely Jasdev Singh Institute of Engineering & Technology, Kauli and Patiala Institute of Engineering and Technology for Woman, Nandpur Kesho.

In addition to engineering institutions, Patiala is also a hub of medical education in the state. It houses Govt. Medical College and two Dental Colleges on Sangrur road, Ayurvedic College namely National Institute of Ayurveda Pharmaceutical Research on Upper Mall Road which not only imparts education but also provides good scope of research in the field of medicine, surgery, dentistry and ayurveda. The location of these colleges in the city has made Patiala a nodal centre of health care in the region. There is

one dental college i.e. Laxmi Bai Institute of Dental Sciences and Hospital in L.P.A Patiala. One degree college of Pharmacy in Girls Polytechnic and another full fledged department of pharmacy in Punjabi University are running both graduation and post graduation courses.

Besides this, some new educational institutions are coming up in L.P.A Patiala. It includes one full fledged engineering college at village Bhedpura, one engineering and management college at village Majri Akalian and one engineering and M.C.A college at village Rakhra. A new polytechnic college; B.B.A and B.C.A college are opening at village Rakhra. At village Kauli and Fatehpur new multiple education institutes have also come up. All these institutes are playing an important role in bringing rural areas on the educational landscape of Patiala.

If the availability of educational institutes in L.P.A Patiala is analyzed, it is observed that in Patiala there are a number of educational institutions imparting diversified education in all the fields i.e. in medical, engineering, Arts, Commerce, Law, Management etc. Considering the existing population and the norms defined for educational institutions in UDPFI* Guidelines, quantitatively the number of institutions are more than to cater to the needs of the education of the city, but qualitatively some of the schools have been found to be deficient in the basic amenities and facilities. The availability of educational institutions at various levels both in the area of technical and non technical education have been detailed below in Table No. 5.9 (Fig 21)

Table No. 5.9: Educational Facilities in L.P.A Patiala

Sr. No.	Name of Facility	Norms	Existing	Surplus
1	Primary and Elementary Schools	1 for 5000 pop.	146	49
2	High / Secondary Schools and Senior Secondary Schools	1 for 7500 pop.	161	96
3	Degree Colleges	1 for 1.25 lakh pop.	4	-
	Specialised Colleges			
	i) Bikram College of Commerce	-	1	-
	ii) State College Of Education	-	1	-
	iii) B.Ed College at Partap Nagar	-	1	-
	iv) Jasdev Singh College of Education, Kauli	-	1	-
	v) Gurmat College	-	1	-
	vi) Prof. Gursewak Singh	-	1	-

	College of Physical Education			
	vii) Berkley College for M.B.A , M.C.A	-	1	-
	viii) Malwa Institute of Management, Dhablan	-	1	-
4	Technical Institutions	1 for 10,00,000 Population	4	3
5	Engineering Colleges	2 numbers to be provided in urban extension	5	3
6	Medical / Dental / Pharmacy College	2 numbers to be provided in urban extension	6	4
8	University	New University Area: 60.00 ha	1	-
	Specialised Universities			
	i.)Thapar Institute of Engineering And Technology	-	1	-
	ii.) Rajiv Gandhi National University of Law	-	1	-
	Total		337	165

Source: D.E.O. Patiala, Census 2001

**UDPFI Guidelines : Urban Development Plans Formulation and Implementation guidelines, Govt. of India*

5.10. Health Care

Health of its citizens tops govt. agenda and also to provide health services across various sections of society is its top priority. Though initially health care remained in the public domain, gradually private players started playing a significant role in providing health-based services. Same is the case with L.P.A Patiala where govt. as well as private operators play a very significant role in providing health care facilities.

Besides education, L.P.A Patiala is at a forefront in providing health care facilities as it has 169 health care units which serves not only Patiala but also its neighbouring towns/cities. LPA Patiala has 27 hospitals which includes 2 famous hospitals i.e. Rajindra Hospital on Patiala-Sangrur road and Mata Kaushalya Hospital at Lahori Gate. In addition to these hospitals there is a Military Hospital adjoining Rajindra Hospital and a charitable hospital named Maharaja Aggarsain Hospital on Rajpura road. Patiala city also has one of the famous T.B Hospital of the region namely Dr. Khushdeva Singh Memorial Chest Diseases and T.B Hospital located in the heart of the city. As per information obtained from the Chief Medical Officer, Patiala city has 65 and Sanaur M.Cl. has 2 Private Nursing Homes and Clinics. Besides this, LPA Patiala has one Dental Institute cum Hospital i.e. Laxmi Bai Institute of Dental Sciences and Hospital. Patiala is also well known for Ayurvedic system of health treatment as it has one Govt. Ayurvedic Hospital near Municipal Corporation

office and one private Ayurvedic Hospital in DLF colony. Patiala has 8 Ayurvedic dispensaries; out of which four are located in the city, one at Sanaur and rest of three are situated in LPA villages. LPA Patiala has the provision of health care facilities for pets and animals. There are 16 Veterinary Dispensaries; three are located in Patiala city only. It also has 14 Veterinary Hospitals including 3 located at Patiala and one at Sanaur.

The detail of the different health care facilities in LPA Patiala are given in Table No 5.10 and Fig 21.

Table No. 5.10: Health Care Facilities in LPA Patiala

Sr.no	Nature of the Facility	Norms	Existing	Surplus	Deficit
1	General Hospital	1 for 2.5 lakh pop.	2*	-	-
2	Intermediate Hospital Category A	1 for 1 lakh pop.	5	-	-
3	Intermediate Hospital Category B	1 for 1 lakh pop.	9	4	-
4	Nursing Homes, Child Welfare and Maternity centre	1 for 0.45-1 lakh pop	67	62	-
5	Dispensary	1 for 0.15 lakh pop	43	11	-

Source: C.M.O. Patiala, Census 2001

- *Rajindra Hospital covers an area of 13 hectare and has 907 bed strength which is equivalent to two hospitals as per UDPFI guidelines.*

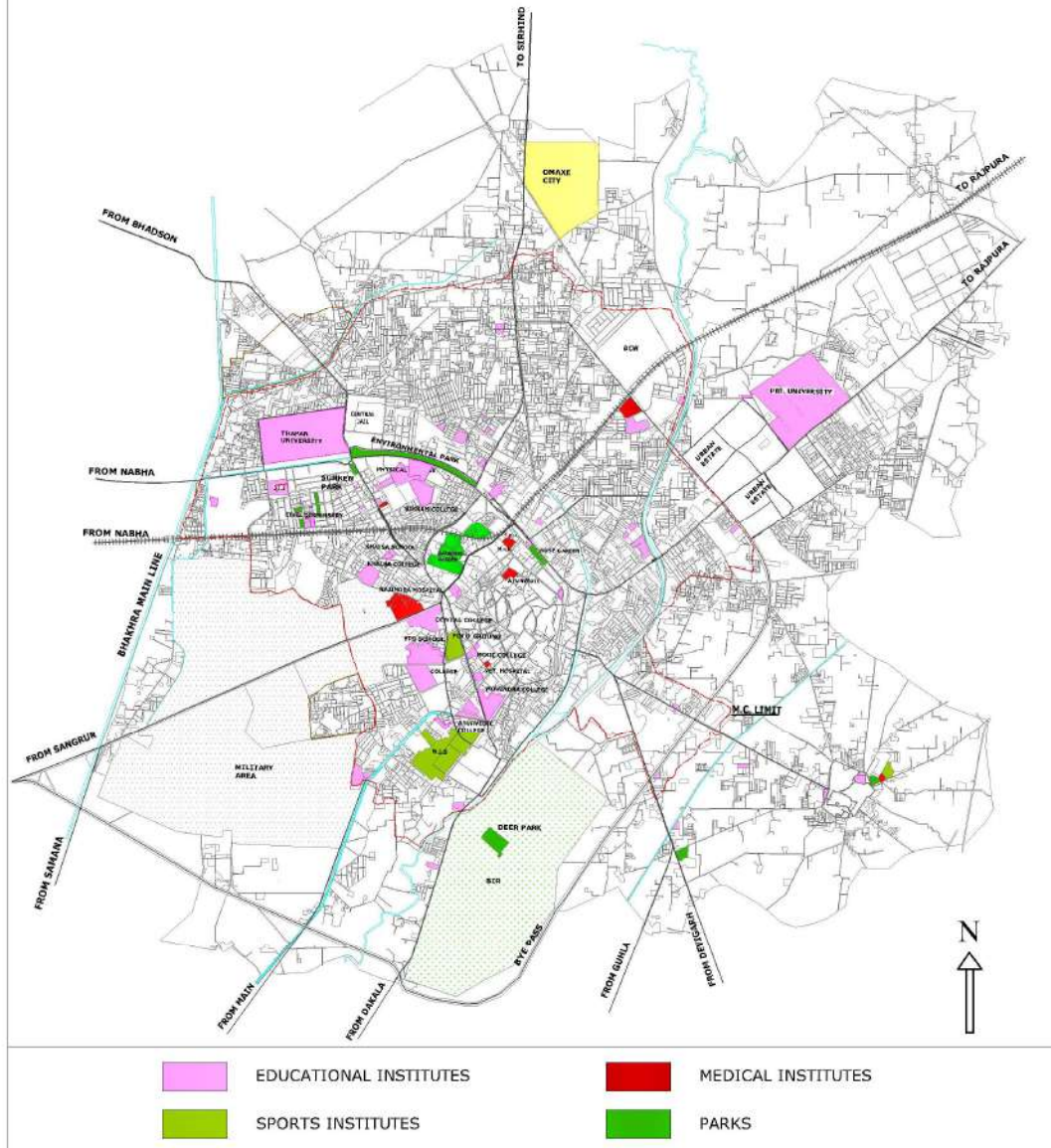
5.11. Sports and Recreation

For physical and social development of an individual recreational facilities are far and foremost important. Therefore, the provision of these facilities at local; sub city and city level in a balanced form is necessary. Recreational facilities exist in the shape of parks, open spaces, stadiums, museums, sport related activities, clubs, libraries, amusement parks etc. In order to cater to the essential needs of the individuals and communities these facilities need to be provided. Patiala city has number of recreational facilities which are elaborated as:-

• Parks and open spaces

There are three city level parks in the city namely Baradari Garden under green cover has an area of 53 acre; Environmental Park (27 acre); Rose Garden (4.75 acre). In addition to these, there are number of neighborhood and small parks in the city, for e.g. Model Town Park covering an area of about 14 acre, Sunken Park (2.5 acre) etc. Most of these parks form the integral part of planned colonies (Development schemes, Urban Estate, Model Town) which have been developed by various planning agencies viz. Improvement Trust Patiala, Punjab Urban Development Authority, Municipal Corporation etc. These areas

FIG 21 :- EDUCATIONAL , MEDICAL , SPORTS INSTITUTES & PARKS -PATIALA & SANAUR



cover only some parts of the city and the walled city area is in acute shortage of open spaces due to high degree of congestion and buildings in these areas.

Patiala also has one Zoological Park famous as 'Deer Park' on Patiala - Dakala road and one amusement park known as 'Dhillon Fun World' on Patiala – Devigarh road. (As shown in Fig 21)

- **Grounds**

There are four grounds in the city i.e. Ram Leela ground in old city, Modi Mandir Ground, Sheesh Mahal Ground and Central Library Ground on the Mall road. These grounds serve for the festival gatherings e.g. Dassehra celebration, exhibitions and crafts mela etc.

- **Theatres & Multiplex**

At present there are five theatres namely Capital Theatre, Malwa Theatre, Phool Theatre, Tagore & Mini Tagore. Out of these, first three theatres are situated on the Mall road and other two theatres in Model Town. A new multiplex named Omaxe Wedding Mall on Mall Road has come up in the city.

- **Museums**

There are two museums in the city namely The National Sports Museum at N.I.S. Patiala and The Sheesh Mahal and Museum which serve as a pleasure complex.

- **Other Recreational Facilities**

In terms of other recreational facilities Patiala has three libraries namely Musafir Memorial Central State Library, N.I.S. Library and Punjabi University Library. There are six swimming pools in the city located at Thapar College, Yadvindra Public School, Mohindra College, Maharani Club, N.I.S and Kesar Bagh Colony. Patiala city also has three clubs i.e. Rajindra Gym Khana Club located in Baradari Garden, Elite club in Urban Estate Phase III and one club at N.I.S. In addition to these, there are five branches of Lion's Club in Patiala. Patiala also has North Zone Cultural Centre located in the backside of Sheesh Mehal and Museum which propagates cultural activities and serves as a major recreational centre for both young and old.

- **Sports**

Patiala is far ahead in sports infrastructure. It has emerged on the National sports scene with the establishment of National Institute of Sports in 1961 which has been serving the cause of sports for the entire country and is imparting training to coaches. With the exceptions like the N.I.S which imparts training to coaches. Patiala houses cricket ground in Baradari and two cycling velodromes, one at Punjabi University and another at N.I.S. It has four stadiums i.e. indoor stadium at Polo ground, Y.P.S. stadium, Dhruv Pandove Cricket stadium and DMW stadium and Physical College. In addition to these, Thapar University, Punjabi University and N.I.S. have their own playgrounds having sufficient area which serves not only the institutes but also the surrounding areas.

Sanaur M.Cl, also has one stadium. There are two golf courses in Patiala; one is available in DMW residential area and another one in Cantonment area.

5.12. Post & Telegraph

Due to the rapid advancement in technology, communication by this time has changed its modes but post and telegraph still remains the most popular option of communication for

vast majority of population. Patiala city has 23 sub post offices and one head post office. Sanaur also has one sub post office. The detail of Post Offices located in L.P.A Patiala is given below:

Table No.5.12: Post Offices in L.P.A Patiala

Sr. No.	Name of Facility	Patiala city	Sanaur M.CI	L.P.A Patiala
1.	Branch Post Office	-	1	23
2.	Sub Post Office	23	1	27
3.	Head Post Office	1	-	1

Source: Head Post Office, Patiala

5.13. Telephone Exchanges

Large number of private companies have emerged in the telecommunication sector due to introduction of privatization. Consequently demand for providing telephone exchanges has grown up. To cater to the communication needs of population, L.P.A Patiala has 4 Govt. Telephone exchanges; 3 in Patiala city and 1 in Sanaur. Many private communication giants like Reliance, Airtel, Idea, Vodafone, Connect etc. are also having a major share in the telecommunication sector of L.P.A Patiala.

5.14. Police Facilities

Maintaining law and order situation in the region is one of the primary functions of the police administration. To fulfill this purpose Patiala has 5 police stations and 3 Police Posts at various locations in the city. In addition to these police facilities in Patiala city, there is a police line, covering an area of 349 Kanal and 19 Marlas, housing an Administrative Block, M.T. branch, Petrol pump meeting hall, hospital, barrack, training hall, mess, dog squad, stable, gas agency godown, govt. residences, family quarters etc. Whereas C.I.A Patiala is presently housed in Mai ji di Sarai, Patiala covering an area of 33,000 sq. ft.

Table No.5.14: Police Facilities in Patiala City

Sr. No.	Nature of Activity	Present in Number
1.	Police Station	5
2.	Police Post	3
3.	Police line	1
4.	Distt. Jail	1
5.	C.I.A.	1

Source: SSP Office, Patiala

6. HERITAGE

6.1. Built Heritage

Heritage provides vital link between past and present and it also has an important role in shaping the destiny of the community. These foot prints of past provide us with vital information and knowledge about the ancient culture, way of life, level of development, building architecture besides physical, social and economic edges of a society of a particular period. It becomes important that these repositories of knowledge forming irreversible links between past and present are not only carefully and thoughtfully preserved but also appropriately maintained and developed in order to ensure that they are not lost to the posterity.

If India has inherited enormous wealth of built heritage, State of Punjab in general and Patiala city in particular has also followed the footprints of the great nation and state. With city growth and development revolving around Qila Mubarak built in 1763, Patiala city grew in an organic manner radiating in all directions. One gets the impression as if the city was designed and developed according to a plan akin to that of temple architecture. In the heart of the city was the seat of the king similar to the house of the deity and the residential areas of communities developed around status-wise.

Royal patronage has given Patiala a rich heritage, a magnificent masonry fort palaces and gardens, painting crafts. The important one of which are elaborated as under:

- Qila Mubarak
- Bahadurgarh Fort
- Old Moti Bagh Palace
- Sheesh Mahal and Museum
- Rajindra Kothi
- **QILA MUBARAK COMPLEX**

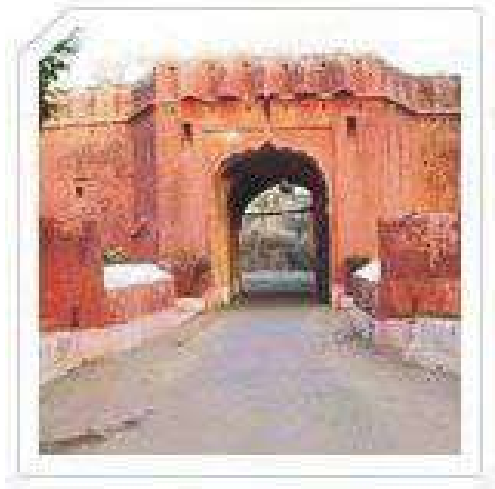
The Qila Mubarak Complex stands within 10 acre grounds in the heart of the city and contains the main palace or Qila Androon (literally inner fort), the guest house or Ran Baas and the Darbar Hall. Outside the Qila are the Darshani Gate, a Shiva temple and bazaar shops which border the streets that runs around the Qila and sell precious ornaments, jootis and bright nalas and parandis.



- **Qila Androon:** The entrance is through an imposing gate. The architectural style of this palace is a synthesis of Late Mughal and Rajasthani style. The complex has 10 courtyards along the north-south axis, and each courtyard is unique in size and character laid with a formal garden. *Burj Baba Ala Singh even today has a fire smoldering ever since the time of Baba Ala Singh along with a flame brought by him from Jwalaji.* Though the Androon is a single interconnected building, it is spoken of as a series of palaces which are described below:-
- **Rang Mahal and Sheesh Mahal:** Within the Qila Mubarak are 16 painted and mirror worked chambers, and the painting theme for each room is linked to the function of the room. The frescoes, among the finest painted in India in the second half of the 19th century are evidently the work of artists from Rajasthani, Pahari and Avadhi traditions.
- **Ran Baas:** This building was probably a guest house. It has an imposing gateway and two courtyards both with fountains and small tanks. A room in the first courtyard – with painted walls and a gilt throne – was probably for semi – formal audiences.
- **Lassi Khana (Kitchen):** It is an another small, two storey building with a central courtyard and a well which adjoins the Ranbaas and a passage links it to the Qila Androon. A 20 feet long portion of three feet wide wall near Lassi Khana and Ranbaas collapsed in September 2008 due to incessant rain.
- **Darbar Hall:** Used for large audiences and important public occasions, the Darbar has been converted into a mini museum where rare arms and armours including a sword of Nadir Shah known as "Shikar Gah' are on display. Most precious pieces of art are the rich collection of tree like chandeliers made of Bohemian cut glass emitting prism like radiant splendour and sheen.
- **Jalau Khana:** It is a small two storey building with a central hall in late colonial style where regalia has been displayed. *Sard Khana* provided an escape from the summer heat. A deep well inside acted as a wind tunnel bringing air into the ground floor rooms and the basements.
- It is worth mentioning that shops of specific use as mentioned above along the wall of Qila Mubarak were initially given to people with a small depth which are being encroached upon ruthlessly.

- **BAHADURGARH FORT**

At a distance of about one and half kilometer from the main gate of Punjabi University on Patiala – Rajpura road, is located on right side the Bahadurgarh Fort. It is named so as to commemorate the holy memory of Guru Teg Bahadur who paid visit to this place at the invitation of another holy person Saif Khan. It was in 1837 that Maharaja Karam Singh built the present fort around the original palace of Nawab Saif-ud-Din and named it Bahadurgarh. The fort is presently being used by the Punjab Armed Police as a training centre for police commandos.



- **OLD MOTI BAGH PALACE**

The next great architectural landmark is the Moti Bagh Palace which is a four storeyed structure with massive stone walls, arched openings. The facade has Rajasthan style Jharokas and Chhatris, and the palace is set in a beautiful garden with terraces, water channels designed on the pattern of Shalimar Gardens of Lahore and a Sheesh Mahal. The Old Moti Bagh Palace now houses the National Institute of Sports.



- **SHEESH MAHAL AND MUSEUM**

The Sheesh Mahal was built behind the main Moti Bagh Palace to serve as a pleasure complex. The paintings in two of its well maintained, mirror-worked chambers are of Kangra and Rajasthani qalam. The Sheesh Mahal now houses a museum and an art gallery. Besides miniature paintings, there are fine objects of Tibetan art particularly the sculpture of different kinds of metals. Ivory carvings of Punjab, royal wooden carved furniture, and a large number of Burmese and Kashmiri carved object are



also exhibited Medal Gallery set up in the Sheesh Mahal has on display ***the largest number of medals and decorations in the world numbering 3200*** collected by Maharaja Bhupinder Singh from all over the world, which were gifted to the Punjab Government Museum. The restoration work of Sheesh Mahal has been started recently by Punjab Heritage and Tourism Promotion Board through conservative architect. The lake within Mahal shall also be landscaped.

Lachman Jhula: In the foreground of the Sheesh Mahal is a huge tank with two towers on both sides. A suspended bridge popularly knows as the Lakshman Jhula connects the palace with the Banasar Ghar which houses the Natural History Gallery.

- **RAJINDRA KOTHI**

The entire complex is spread over 4.65 acres in the midst of Baradari Gardens. The royal grandeur of Punjab has been resurrected with the restoration of the 132-year old Rajindra Kothi that has been re-christened as the Baradari Palace by the Neemrana Hotels, a hotel chain known for its specialisation in preservation of heritage buildings across India as hotels.



The Rajindra Kothi was built by Maharaja Bhupinder Singh in 1876 to ensure a place where foreigner guests of the Maharaja could stay amid luxury and comforts. This was taken over by the Punjab State Archives which had preserved more than 35,000 rare documents and books, pertaining to princely states in the building till about two years back when it was leased to the Neemrana Group by Punjab Govt for 30 years on a profit sharing basis. Originality has been the basis of the entire restoration process which is the first example of readaptive use in Punjab.

- **BARADARI GARDEN**

The name is derived from two words of Punjabi, Bara and Dar. Bara stands for twelve and dar stands for door. It means garden with twelve entrances. It was built in a mughal style in 1876 by Rajinder Singh. Baradari gardens are in the north of Patiala City situated in the outer part of Sheranwala



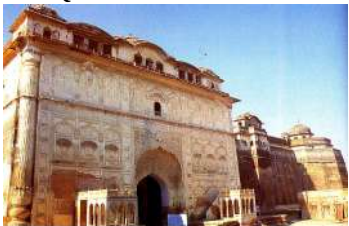
Gate. It was constructed near the Baradari palace. Baradari palace was a residence of Emperor Rajinder Singh. He brought rare species of trees and flowers from different places and planted them in this garden. The big fruit trees, the Fern House and the Rock Garden shows his interest towards nature.

The 19th century Fern House, a replica of the one in Kolkata forms a unique attraction along with quaint Rink Hall. The Baradari garden not only has extensive rare trees and shrubs but is also dotted with impressive colonial buildings of great architectural interest on big plots with sprawling lawns namely Rajindra Kothi (Heritage Hotel), Rajindra Gymkhana Club, Yadvindra Services Officers Institute, Circuit house, Punjab Public Service Commission building, Dhruv Pandove Stadium.

Out of the total land of 237.21 acres of Baradari, 28.23 acres fall under Central Planning Authority Scheme of Yadvindra Enclave, Town Planning scheme of Nihal Bagh, Wakf Board Land and some private land.

Many other important buildings in Patiala of historical, cultural and more of architectural importance including the above mentioned main heritage buildings and green area of Baradari have been listed below and shown in Fig 22 and Plan Drg no. DTP (P) 3526/10
Dated 04/ 08 / 10.

6.2. List of Heritage/Protected Buildings and Green Area in Patiala

Sr. No.	Name of monuments, buildings precincts etc.	Location	Ownership	Usage	Special features	Date
1.	Qila Mubarak  (Area: 11.6 acre)	Qila Chowk	State Archaeology Deptt.	It remained as the official residence of the ruling royal family till A.D. 1862. Outer portion used for commercial purpose and inner part for Tourism purpose	Various forms of internal rooms, galleries & external court yards are an amalgam of Rajput, Mughal and British architectural influences.	1765-1781
i)	Qila Androon 			In the past it was used as the official residence of the Royal Family.	Rajasthani and Mughal Architecture, rooms painted with frescos, mirrors and gilt, sacred flame smouldering ever since the time of Baba Ala Singh.	
ii)	Darbar Hall 			It was used as a court room by the rulers. Now it has mini museum of rare arms and armours, Bohemian-cut glass chandeliers and canon park.	Mughal and Rajput style architecture includes decorative wooden doors, elaborate stucco work, decorative sandstone brackets and jallis.	
iii)	Rang Mahal & Sheesh Mahal 			It was used for pleasure.	It has 19th Century finest painted frescos by Rajasthani, Pahari & Avadhi artists.	

2.	Mai Ji Di Sarai  (Area: 3.12 acre)	Ghalori Street, Sanauri Adda	C.I.A. Organization	Earlier used as Sarai now houses C.I.A. Office.	Mughal influence with minutely carved facade, pointed arch windows, decorative cornices, arch niches; walls are made up of Lakhori bricks with lime mortar and plaster; flat roof with jack arch roofing.	Early 18 th century
3.	Shahi Samadhan  (Area: 3.33 acre)	Shahi Samadhian street near Dal Dalia Chowk	Royal family of Patiala	Cenotaphs of erstwhile rulers of Patiala Outer area comprising of gate is used as Post Office, J.T.O. Office of Telephone Deptt.	Marble carved inner and outer walls, four marble domes on third floor, open verandah has red stone domes on either sides, double storeyed gate with jack arch type, red stone roof and outer walls decorated by geometrical & floral designs.	1845
4.	Bahadurgarh Fort  (Area: 65 acre)	At Bahadurgarh on Rajpura – Patiala Road	Punjab Commando Police	Fort was originally the palace of Nawab Saif Khan. Guru Teg Bahadur stayed in this palace in A.D. 1656. Presently used as Commando Training Centre	Ruins show foliated arch openings, niches, mouldings and cornices in Mughal style.	Constructed during 1837-1845
5.	Old Moti Bagh Palace 	Thandi Khui Chowk	Central Govt.	It was a palace and guest house of Royal Family. later on converted into National Institute of Sports	Mughal & Rajput style architecture; four storeyed structures with massive stone-walls, arched openings, filter & ornamental grills & crowning domes, Rajasthani style jharokhas & chattries. Having gardens designed on the pattern of Shalimar Gardens of Lahore with terraces, water channels.	1845

6.	Sheesh Mahal and Museum  (Area: 25365 sqft)	Located at the back of Old Moti Bagh building	State Archaeology Deptt.	It was built to serve as a pleasure complex but now it has a Museum, Art gallery with beautiful miniature painting, metal sculptures, mirror worked chamber of Kangra & Rajasthan Qualm, fine objects of Tibetan art.	Mughal & Rajput Style architecture with decorative mouldings, jallis, foliated arch openings and floral paintings in the interiors; also have Lachman Jhula (suspended bridge),	1850
7.	Samania Gate  (Area 185 sqft)	Samania Gate Street	State Archaeology Deptt.	Serve as doorway	The structure has Mughal and Rajput influence with foliated arch gateway and door window openings with wooden shutters. The structure is also adorned with decorative mouldings, niches, pilasters, cornices and paintings.	1845-1862
8.	Darshani Gate  (Area 270 sqft)	Qila Chowk	State Archaeology Deptt.	Serve as doorway	The structure shows Mughal influence in terms of its decorative features, which includes double height cusped arch entrance, blind arch windows with elaborate stucco work in lime around it, decorative pilasters, moldings and cornices defining its rich architectural character.	1845-1862
9.	Sirhindi Gate  (Area 190 sqft)	Sirhindi Street	State Archaeology Deptt.	Serve as doorway	The structure has a Mughal influence with paintings over the exterior as well as interior walls but all are obliterated due to natural causes. The voluminous structure is adorned with a central foliated arch opening and crowned with fortress like parapet.	1845-1862
10.	Sunami Gate  (Area 185 sqft)	Sunami Bazar Street	State Archaeology Deptt.	Serve as doorway	It is being conserved, the roof of which was badly damaged.	1845-1862

11.	Mohindra College  (Area: 27 acre)	Mohindra College Road	State Govt.	College	Colonial style architecture (French architecture) with semi-circular arch and ionic columns along the length of corridor, pediment over the entrance portico, decorative cornices, pilasters, stucco work on the external facade, decorative parapets, gothic style minarets.	1875
12.	Rajindra Kothi (Heritage Hotel)  (Area: 0.75 acre)	Within Baradari Gardens	State Govt.	Earlier used as a luxury guest house for foreigner guests of Maharaja. Two years back it has been leased to Neemrana Group for setting up a heritage hotel Earlier Punjab State Archives had preserved rare documents and book in this building	Has Colonial influence with semi-circular arc openings and doors with wooden shutters, decorative railings and balusters, mouldings and decorative parapet on top.	1876
13.	Archives Department  (Area: 0.821 acre)	Mall Road, Opposite Central State Library	State Govt.	First hospital of Patiala Old Rajindra Hospital now houses Archives Department	Has colonial style architecture.	1883
14.	Baradari Garden (Green Area) 	Mall Road	State Govt.	Recreation	Rare trees, shrubs, dotted with impressive colonial buildings and marble statue of Maharaja Rajinder Singh and the kin house. The huge trees in the Rock Garden and rare ferns and plants in fern house stand testimonial to his interest.	19 th Century

15.	Mohindra Kothi (Law University)  (Area: 5. acre)	Mall Road, adjoining Phul Cinema	State Govt.	Earlier used as High Court by rulers of Patiala now houses Law University	Influence by colonial style with rectangular and semi-circular arch opening, sunshades, parapet on the roof terraces, decorative columns; mouldings, flat roof supported by I-section girders.	1940
16.	Ijlas-e-Khas (P.S.E.B. Office)  (Area: 5 acre)	Mall Road	State Govt	Administrative centre of the princely state (Ijlas-e-Khas) now houses P.S.E.B. Office	Mughal and Rajput influence with decorative features including Jharokhas, Chattris, fort like parapet; terrazzo and marble flooring; cusped arched openings with carved wooden shutters.	Late 19 th century
17.	Phul Cinema  (Area: 3.30 acre)	Fountain Chowk	State Govt. On lease	Entertainment	Art Deco style with Indian flavour, has rectangular openings with wooden shutters, vertical louvers and an entrance porch on the ground floor.	Early 20 th century
18	Painted Chamber of Kali Devi Temple  (144 Sqft)	Located with in premises of Mata Kali Devi Mandir	State Archaeology Deptt.	Sculptures of Lord Shiva, Kali Mata and Mata Rajeshwari are preserved in this room.	Room painted with frescos.	Early 19 th century

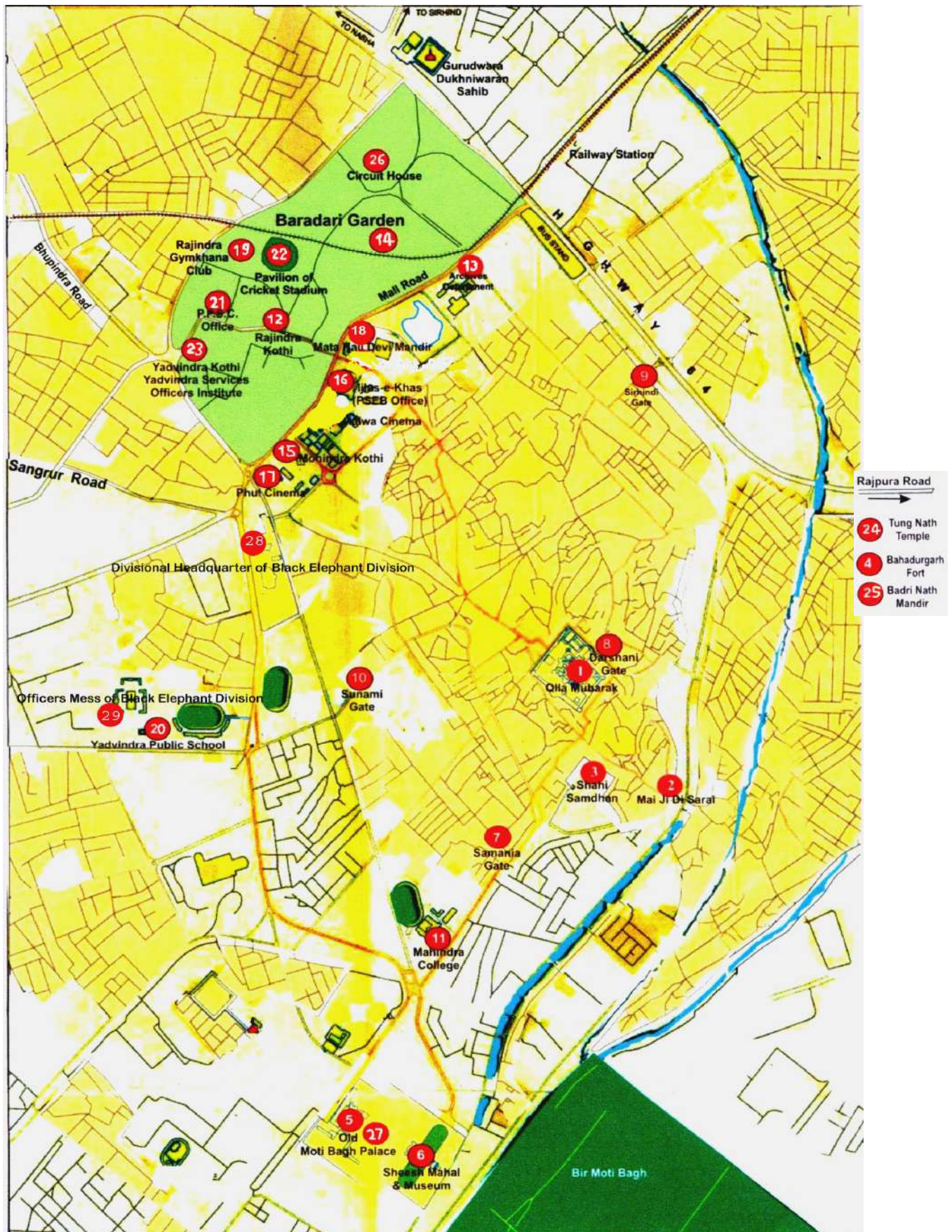
19.	Rajindra Gymkhana Club  (Area: 2.95 acre)	Baradari Street	Gymkhana Club Authority	Club	Colonial influence (French style) series of semi-circular flat arch opening, large pitched roof, gables and eave boards, towers and chimneys on the roof.	Early 20 th century
20.	Yadvindra Public School  (Area: 27.60 acre)	Opp. Govt. Women College, Stadium Road	Trust	Educational	70 years old building built in colonial era. Has decorative features like arch entrance, series of rectangular openings with elaborate stucco-work, different domes and chattris in different sizes crowns the structure.	1938
21.	Old Maharani Club (P.P.S.C office)  (Area: 4.82 acre)	Within Baradari Garden	State Govt.	Old Maharani Club now used by P.P.S.C	Constructed on 2ft high platform with modern bricks, cement & mortar, doors and opening arch type.	Inaugurated in 1940
22.	Pavilion of Cricket Stadium  (Area: 8 acre)	Within Baradari Gardens	Pandov Sports Union	Club and Stadium	Colonial influence with semi-circular openings, pitched roof, decorative plasters, pediments and finials on top of the linear towers.	1805

23.	YadavindraKothi  (Area: 2.17 acre)	Opp. Head Post Office, Outer limits of Baradari Garden	Army	Yadavindra Kothi was used by central school and now being converted in to Yadavindra Services Officers Institute.	Structure has colonial influence; Kota stone and marble flooring; columns pilasters, cornices and rich geometrical pattern along the decorative parapets, arch opening with wooden shutters.	1845
24.	Tung Nath Temple  (Area: 8.36 acre)	Near Urban Estate	State Archaeology Deptt	Temple	For vaishnav sect and resembles temples of Rishikesh, Haridawar & Badrinath. Real architecture is kept intact.	1852
25.	Badri Narayan Temple  (Area: 25.34 acre)	Near Bahadurgarh Fort	State Archaeology Deptt.	Temple	Sacred pond. Archite-cture resembles Badrinath Temple of Uttarakhand.	1852
26.	Old Residence of Prime Minister (Circuit House)  (Area: 5.07 acre)	Baradari Garden	State Govtt.	Earlier used as Residence of Prime Minister of Princely State of Patiala.	Big rooms, high jack arch. roofs and false ceiling, big gallery, porch, outer architecture kept intact.	1940

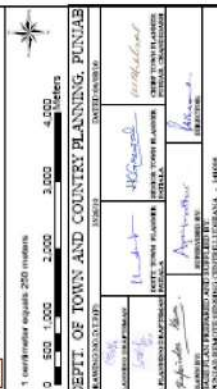
27.	Baradari, Old Moti Bagh  (Area 15872 sqft)	Within Old Moti Bagh	State Archaeology Deptt.	Pleasure Pavilion	The structure has strong Mughal influence with numerous decorative features which includes cusped arches, pillars, sculptural and floral, carvings, brackets and perforated jallis and parapets all in marble.	Late 19 th century
28.	Divisional Headquarter of Black Elephant Division  (Area 15872 sqft)	Upper Mall	Govt.of India - Ministry of Defence	Office	Has decorative features like arch openings, series of rectangular openings, different domes and chattris in different sizes crown the structure.	1950
29.	Officer's Mess of Black Elephant Division  (Area 15872 sqft)	Near Yadvindra Public School	Govt.of India - Ministry of Defence	It was earlier NCOs (Non commissioned Officers) mess of Patiala State Forces. Now it is functioning as officers mess of Division.	It has series of rectangular openings with two hexagonal domes on top of the main building.	1945/50

Source: INTACH, Patiala Heritage Society and Internet,
Punjab Heritage & Tourism Promotion Board,
Estate Office, P.W.D (B&R)

FIG.22: HERITAGE BUILDINGS/PRECINCT IN PATIALA



HERITAGE / PROTECTED BUILDINGS PLAN - 2009



Almost all govt. owned heritage buildings have been listed including those considered by INTACH in its study. Out of the above mentioned buildings some of them namely Qila Mubarak, Baradari of Moti Bagh Palace, Sheesh Mahal and Museum, outer wall and ditch of Bahadurgarh fort, Samania Gate, Sunami Gate, Sirhindi Gate, Darshni Gate of Ten Gates, Badri Narayan Temple, Tung Nath Temple and also painted chamber of Mandir Mata Kali Devi Ji have been declared as protected monuments under 'The Punjab Ancient & Historical Monuments and Archaeological Sites & Remains Act, 1964' which have been in existence for not less than 100 years and are given in **Annexure vi**. This Act provides for the preservation of ancient and historical monuments and archaeological sites and remains other than those of national importance, for the regulation of archaeological excavations and for the protection of sculptures, carvings and other like objects.

6.3. The Punjab Heritage and Tourism Promotion Board

In order to preserve and conserve the rich heritage and promote tourism of Punjab including Patiala, the govt. of Punjab has constituted 'The Punjab Heritage and Tourism Promotion Board with following aims and objectives:-

- 1) To take all necessary steps for planning, coordination and implementation of all activities, events, celebrations, projects and other matters connected therewith for the conservation, preservation, dissemination and documentation of Cultural Heritage of Punjab in all its forms and for the development of tourism in the state.
- 2) To undertake the overall comprehensive development of heritage properties in Punjab including their landscaping, renovation and setting up infrastructure such as conference centres, auditoriums, museums, libraries, hotels etc. with a view to promote tourism.
- 3) To do any and everything to promote, preserve, propagate, culture and tourism in Punjab. Without prejudice to the generality of the foregoing objects, the Board shall, in particular, have the following immediate objectives for its programmes and activities:
 - i) To coordinate with Government of India, various State Government. Organisations, NGOs and other organisations, as well as eminent individuals within India and abroad for seeking financial contributions for the fulfillment of the objectives.
 - ii) To secure the participation and involvement of the largest number of Government Organisations and widest cross section of individuals worldwide with a view to preserve the cultural heritage of Punjab and develop tourism in the State.

The constitution of 'The Punjab Heritage and Tourism Promotion Board' at the State Level is as follows:-

Official Members

I CONSTITUTION

	Chief Minister, Punjab	Chairman
1)	Finance Minister, Punjab	Member
2)	Minister of State for Tourism & Cultural Affairs, Punjab	"
3)	Principal Secretary to Chief Minister, Punjab	"
4)	Secretary to Government of Punjab, Department of Housing & Urban Development	"
5)	Secretary to Government of Punjab, Department of Tourism	"
6)	Secretary to Government of Punjab, Department of Local Government	"
7)	Secretary to Government of Punjab, Department of Culture, Archaeology & Museums	"
8)	Secretary to Government of Punjab, Department of Public Works (Building and Roads)	"
9)	Principal secretary to Government of Punjab, Department of finance	"
10)	Chief Town Planner, Punjab	"
11)	Chief Architect, Punjab	"
12)	Director Cultural Affairs, Archaeology & Museums, Punjab	"

7. VISUALISING THE FUTURE

Visualising future is necessary for the formulation of proposals of the Master Plan. Population and employment forecast for the horizon year is the first step in that direction.

7.1. Population Projections 2031

Indian urbanisation has shown different trends in the year 2001 as compared to past trends. As per census 2001 reduction in growth rate of urban population and also reduction in URGD (Urban Rural Growth Differential) has been observed. Hence population forecast instead of trend projection is based on the estimates of Punjab total and its share towards national urban component projected by report of technical group on population projections constituted by the National Commission on Population May 2006 entitled "POPULATION PROJECTIONS FOR INDIA AND STATES 2001-2026" has been considered. The basic assumption is that the share of Patiala city population to Punjab Urban as observed in 2001 will remain constant for coming years until 2026. For subsequent period upto 2031 imputed growth rate during 2021-2026 is used. L.P.A Patiala comprises of two urban settlements viz Patiala U.A and Sanaur M.Cl.

Following assumptions have been used for the population projection of these two urban areas:

1. By first estimating the share based on the actual shares observed in 2001; shares in future can be estimated and then the population forecast for Patiala urban as well as Patiala rural has been calculated.
2. For population projections of Patiala M.Corp., Outgrowth and Sanaur M.Cl. same share i.e. taken in L.P.A Patiala urban is taken.
3. The share of Patiala and Sanaur towards Punjab urban (2001) and L.P.A Patiala rural towards Punjab Rural (2001) will remain constant in future.

Table No.7.1 Population Projections of L.P.A Patiala for 2031

LPA PATIALA POPULATION FORECAST							
Year	2001	2006	2011	2016	2021	2026	2031
Punjab Urban Pop '000	8263	9439	10681	11940	13185	16456	
PATIALA M.C	303	346	392	438	484	604	754
PATIALA U.A - Patiala M.C.	21	24	27	30	33	41	52
SANAUR M.Cl	18	20	23	26	29	36	45
Total LPA Patiala Urban	342	390	442	494	545	681	850
Share in Punjab Urban	4.14%	4.14%	4.14%	4.14%	4.14%	4.14%	
Growth rate decadal			29.26%		23.44%		
Punjab Rural Pop '000	16096	16620	16997	17172	17138	14889	

LPA Patiala Rural	144	148	152	153	153	133	115
Share in Punjab Rural	0.89%	0.89%	0.89%	0.89%	0.89%	0.89%	
Growth rate decadal			5.60%		0.83%		
LPA Patiala Total Pop '000	485	539	594	647	698	814	965
Growth rate decadal			22.26%		17.66%		

Thus the total population of LPA Patiala that was 4.85 lakhs in 2001 is expected to grow to 9.65 lakhs by 2031.

7.2. Workforce Projections, 2031

Projections of workforce by different sectors of economy of Patiala can be attempted by assuming that the ratio of total workforce to population as observed in 2001 would hold good for 2031 and the sectoral distribution of the workforce as observed in 2001 would also remain unchanged. This may not be a rigorous method but provides a broad approximation considering available data. Moreover the 2001 census data available for Patiala M.C and Patiala Distt. (urban and rural separately). Therefore for estimating the sectoral workforce for L.P.A Patiala following assumptions are made.

- Outgrowth of Patiala within the Patiala U.A. and Sanaur (L.P.A. Urban Excluding Patiala M.Corp.) presumed to be similar to Distt. Urban minus Patiala M.Corp.
- L.P.A. Rural is similar to Patiala Distt. Total minus Patiala M.Corp. Because of its close proximity to Patiala city, instead of assuming that L.P.A. rural is exactly similar to District Rural it is assumed to be similar to an average of rural and urban exclusive of Patiala M.Corp.

Based on these assumptions percentages of main workers to population and categories wise employment of main workers is arrived at.

Table No. 7.2 LPA PATIALA EMPLOYMENT FORECAST 2031

Data and assumptions 2001	Population	Main workers	Industrial category												
			Cultivators	Agriculture, Hunting & Forestry	Fishing, Hunting & allied activities	Mining & Quarrying	House hold Industry	Non HHI	Electricity Gas & Water Supply	Construction	Whole Sale & Retail Trade	Hotels & Restaurants	Transport Storage & Communication	Finance Real Estate and Business Services	Public Admin & Other Services
Patiala (M Corp.) 2001	303151	96402	584	1744	846	56	3466	11136	4006	4460	20078	1152	5222	7306	36346
Main Workers as % of Population and categories as % of main workers		31.80%	0.61%	1.81%	0.88%	0.06%	3.60%	11.55%	4.16%	4.63%	20.83%	1.19%	5.42%	7.58%	37.70%
Patiala Out Growth (Patiala UA - Patiala M Corp)	20733	6449	212	174	133	8	202	1186	117	473	1590	105	397	373	1478
		31.10%	3.29%	2.70%	2.07%	0.12%	3.13%	18.39%	1.82%	7.34%	24.66%	1.62%	6.16%	5.79%	22.91%
Patiala District Excl Patiala (M Corp) 2001	1,521,050	487,160	134,128	83,761	32,710	293	11,383	56,553	6,320	25,910	46,789	2,499	18,446	12,330	56,039
		32.03%	27.53%	17.19%	6.71%	0.06%	2.34%	11.61%	1.30%	5.32%	9.60%	0.51%	3.79%	2.53%	11.50%
Forecast 2031															
Patiala M Corp	754000	239772	1453	4338	2104	139	8621	27698	9964	11093	49938	2865	12988	18172	90400
LPA urban	96000	29859	981	807	618	35	936	5490	543	2192	7362	485	1840	1728	6842
Rest of LPA Rural	115000	36832	10141	6333	2473	22	861	4276	478	1959	3538	189	1395	932	4237
Total	965000	306463	12575	11477	5195	197	10417	37464	10985	15244	60838	3539	16223	20832	101479

Quantitatively the above assumptions and output imply that:

- 1) The workforce participation rate that was 32.7% in 2001 remain unchanged for 2031.
- 2) There would be a more than double increase in the categories namely non household industry, wholesale and retail trade, finance, real estate business services, public administration and other services and therefore these will require more land space for the future establishments.
- 3) The number of workers of Patiala M.Corp. engaged in non-household, industry will increase from 11136 in 2001 to 27698 in 2031.
- 4) In Patiala M.Corp. the number of main workers engaged in wholesale and retail trade is also expected to more than double from 20078 in 2001 to 44938 in 2031.
- 5) Other important economic activities of urban areas namely finance, real estate and business services, public administration and other services will also witness a double increase from 43652 main workers in 2001 to 108572 in 2031.
- 6) The main workers residing in L.P.A. urban are also expected to witness a two fold increase in different economic activities.

7.3. Infrastructure Demand

Infrastructure is the basic requirement of urban life and its adequacy and accessibility are two important ingredients and key contributors in the upgradation and enrichment of quality urban life. Infrastructure is divided into two parts viz. Physical Infrastructure & Social Infrastructure.

Infrastructure has been worked out for 8,50,000 persons of L.P.A. urban by 2031.

(A) Physical Infrastructure:-

Physical Infrastructure includes water supply, sewerage, drainage, solid waste disposal, electricity, transportation.

Table No 7.3 Requirement for Water Supply and Sewerage for Patiala – 2031

Sr. No.	Year	Population	Water Supply		Sewerage	
			As per Standards	Requirement	As per Standards	Requirement
1	2011	4,42,000	135 lpcd	59,670,000 lpcd	80% of water requirement	47,736,000 lpcd
2	2021	5,45,000	135 lpcd	73,575,000 lpcd	80% of water requirement	58,860,000 lpcd
3	2031	8,50,000	135 lpcd	114,750,000 lpcd	80% of water requirement	91,800,000 lpcd

Solid Waste

The production of solid waste is considered as an important function of the socio-economic profile of the population and activities in urban area. According to UDPFI Guidelines, the generating of waste varies from about over a quarter kilogram in small

town to about half a kilogram per capita in large and metro cities. Patiala which falls in the category of large cities, the waste generation will be ½ of kilograms per capita per day. This implies that total waste generation in L.P.A urban by 2031 would be around 425 Metric Tons

Power

According to UDPFI Guidelines and based on the estimated requirements of power supply as per the Master Plan of Delhi, the average consumption works out to 2 KV per household at the city level and includes domestic, commercial, industrial and other requirements. One electric substation of 11 KV switching station for a population of 15,000 is recommended. For Patiala city, future requirement for power are estimated in the given table:

Table No 7.3 (a) Future Requirement of Power for L.P.A Urban

Year	2006	2011	2016	2021	2026	2031
Household	78000	88400	98800	109000	136200	170000
Power consumption in MW	156	177	197	218	272	340

The above table shows that for the projected population of 850000, 340 MW of power is required in 2031 i.e. for 170000 projected household as per the norms of UDPFI guidelines, 9 electric sub-station of 66 KV capacity are required for the projected population of 2031.

Transport-Vehicular Growth

For projecting vehicular growth in Patiala city, the standard given by Indian Road Congress [IRC] has been adopted which says that if reliable data is not available then the growth rate of 7.5% for National Highways and urban roads and 6% for rural roads can be assumed for calculation and Patiala city is adopting the same.

Table No 7.3 (b): Projected vehicular growth 2011

Sr. No.	Location	Name of The Road	Existing volume in PCU/hr	Projected
			2009	2011
1.	Bus Stand Chowk	(i) to Rajpura Road	2435	2814
		(ii) to Dukhniwarn Gurdwara	2622	3030
		(iii) to F.Chowk (M.road)	2251	4639
		(iv) to Gurbax colony	1156	1336
2.	Leela Bhawan Chowk	(i) to Thapar Univ.	1936	2237
		(ii) to Gurdwara Dukhniwaan	2932	3388
		(iii) to Baradari	529	611
		(iv) to Income Tax Office	1433	1656
3	Fountain Chowk	(i) to Leela Bhawan Chowk	1992	2302
		(ii) to Mahindra college (lower mall)	1485	1716
4	Dukhniwarn Road Chowk	(i) to D.C. Office	1773	2049

		ii) to Sirhind Road	1355	1566
5	Thapar Univ.	(i) to Bhadson	1635	1837
		(ii) to Bhupindra Road	611	706
		(iii) to Gurdwara Dukhniwarn	2244	2593
6	Sewa Singh Thikriwala Chowk	i) to Khalsa college	680	786
		(ii) to Moti Bagh	884	1022
7	Gandhi Nagar to Rajpura Road Chowk	-	2215	2560
8	Devigarh Road	-	1140	1281
9	Sanaur road	-	530	612
10	Patiala – Sangrur Road	-	1934	2235
11	Nabha Road	-	750	867

(B) Social Infrastructure and Public Services

Social infrastructure includes facilities of education, health, police, fire protection, recreation etc.

Table No. 7.3 (c): Requirement of Educational Facilities

Educational Facilities	Area Required	Norms	Projected Requirements	Existing	Project increase in numbers	Projected Area Required
College	4 ha.	1 for 1.25 lakh pop.	6	8	-	-
Sec. Schools	1.60 ha.	1 for 7500 pop.	107	161	-	-
Primary School	0.4 ha.	1 for 5000 pop.	161	146	-	-
School for special children	0.50 ha.	1 for 45000 pop.	17	3	-	-

Note: Quantitative availability satisfies the norms, accessibility consideration shall lead to additional schools in new residential areas.

Existing area of schools for special children is enough to accommodate the future requirements of the city

Table No 7.3 (d): Technical Education

	Norms	Area required	Required	Existing	Projected increase
Polytechnic	1 for 10 lakh pop.	240ha.	1	2	-
I T I	1 for 10 lakh pop.	1.60ha.	1	2	-

As per UDPFI norms, one I.T.I & one Polytechnic needs to be provided for every 10 lakh population. Patiala already has one Polytechnic in S.S.T.Nagar and another in Thapar University, two I.T.I's (1 for boys on Nabha Road and another for girls near Bhasha Bhawan.)

Professional Education

According to UDPFI norms, two new engineering colleges have to be provided in urban extension each having 60.00 ha. area with a strength of 1500-1700 students.

L.P.A Patiala has one deemed university namely Thapar Institute of Engineering and Technology, one engineering college within Punjabi University campus and one engineering college (Jasdev Singh Institute of Engineering & Technology, Kauli). Thus, L.P.A Patiala doesn't require any new engineering college.

Two sites of medical college of 15 ha. each with a space for specialised general hospital are required in urban extension according to norms of UDPFI Guidelines. LPA Patiala already has Govt. Medical college, Ayurvedic college, Govt. Dental college and one dental college Laxmi Bai Dental College in its vicinity which are sufficient to support present as well as future requirements of projected population for 2031.

Table No 7.3 (e): Requirement of Medical Facilities

Medical facilities	Norms	Projected Requirements	Existing	Project increase in numbers	Projected Area Required	Remarks
General hospital	1 for 2.5 lakh pop.(area:6 ha each and 500 beds)	3	2	-	-	Rajindra hospital having 13 ha area and 907 beds is serving equivalent to 2 hospitals.
Intermediate hospital (category A)	1 for 1 lakh pop.(area 3.7 ha each and 200 beds, initially 100 beds)	6	5	2	7.4ha	-
Intermediate hospital (category B)	1 for 1 lakh pop.(area:1 ha each and 80 beds, initially 50 beds)	6	9	-	-	-
Polyclinic	1 for 1 lakh pop.(area:0.20-0.30 ha each)	6	68(Pvt.)	-	-	-
Nursing Homes, Child Welfare and Maternity centre	1 for 0.45-1 lakh pop.(area:0.20-0.30 ha each and 25-30beds,)	6	32(Pvt.) 2 C.H.C, 2 (Sanaur)	-	-	-
Dispensary	1 for 0.15 lakh pop.(area 0.08-0.12 ha each)	50	15+6*+3* *=24	-	-	
*Thapar Univ, Punjabi Univ, D.M.W, P.S.E.B, N.I.S, Urban estate have their own dispensaries. ** Three dispensaries are in the villages falling in urbanisable limit *New medical facilities should be provided in proposed residential area						

Note: Quantitative availability for most of medical facilities satisfies the norms, from accessibility point of view additional facilities shall be provided in proposed residential zones.

Table No. 7.3 (f) Per Capita Land Requirement for Police Units

	Norms	Area/Unit (in ha.)	Total Required units	Total area (in ha.)
Police Station	one for 90,000 persons	1.5	10	15 ha
Police Post	two for 50,000 persons	0.16	34	5.44 ha
Total				20.44 ha

Fire Station

As per norms of UPDFI Guidelines, 1 fire station or sub station with in 1-3 Km. is to be provided for 2 lakh population. Area for fire station with essential residential accommodation is 1.00 ha and area for sub fire station with essential residential accommodation is 0.60 ha. The requirement of fire stations by 2031 would be four, out of which two would be additional requirement. Area required for these additional fire stations would be 1.60 ha.

Recreational Facilities

According to UDPFI Guidelines recreational facilities include parks and open spaces, amusement parks, sports centre and play ground, botanical and zoological park, water bodies and other natural features, places of tourist interest etc The norms of UDPFI states that 10sq.m-12sq.m. Per person area for recreational facilities is required at city level. At this norm, area required for L.P.A urban by 2031 would be 850 ha, out of which 325.32 ha. is already available.

7.4. VISION LPA 2031

- **The Strength Weakness (limitation) Opportunities Threats (SWOT) Analysis of L.P.A.:-** The present strengths and the weakness of LPA Patiala and the Opportunities and threats lithely to be experienced by the L.P.A Patiala have been deliberated in the think tank meetings. The following strengths, weaknesses, opportunities and threats for L.P.A Patiala have emerged from such deliberations

Strengths and Opportunities

The strengths and opportunities are the factors which allow positive change or increase development options or alternatives. The following are the strengths and opportunities in the context L.P.A Patiala.

- Royal Patronage has given a rich heritage in terms of magnificent forts, palaces, gardens, cenotaph which dot the Patiala city. It can therefore be developed as a major destination for heritage tourism with a wealth of attractions for visitors to experience. It can thus be made a tourist hub in the east of the state attracting

staying visitors rather than being simply a day visit destination. So there is a vast potential to develop Patiala as an important tourist centre of Punjab and heritage tourism industry can be boosted.

- (ii) Patiala is far ahead in sports infrastructure in the state with the Institution like National Institute of Sports (N.I.S.) imparting training to the coaches, National level cricket ground in Baradari. Two cycling velodromes one in N.I.S. and other in Punjabi University. Similarly nobility gave Patiala a sporting culture, in particular polo which is enjoying resurgence today.
- (iii) Patiala is a destination of par excellence of education as there is regional level education infrastructure namely, Thapar Technical Deemed University, Punjabi University and Rajiv Gandhi University of Law and other higher educational institutions (Medical College, two dental colleges, Ayurvedic College and numerous other degree colleges) which attract knowledge workers to live and work here. It is a destination for learning and should be catalyst to propel the economy.
- (iv) It is a headquarter of Patiala Division locating number of State and Regional level offices and institutions such as Punjab State Electricity Board, Chief Engineer P.W.D. (B&R) & Public Health Commissioner, Income Tax (G.O.I.), Head Office of State Bank of Patiala, Commissioner Excise & Taxation (Punjab), Punjab Public Service Commission (P.P.S.C.) Punjab Pollution Control Board, State Archives and North Zone Cultural Centre.
- (v) Availability of strategically located vacant as well as under utilized govt. land for providing various uses as well as providing land for public purposes.
- (vi) Availability of land at cheaper prices in comparison to most of the other important cities of Punjab i.e Ludhiana, Jalandhar and S.A.S Nagar.
- (vii) It is a counter magnet of National Capital Region hence NCRPB as a source of funding for development projects is available.
- (viii) Presence of Civil Aviation Club in the city will facilitate chartered flights
- (ix) Eco-friendly environment of Patiala city provides healthy opportunities for sustainable development.
- (x) Developing a tourist circuit connecting places of tourist interest, which would involve development of related infrastructure.

Weakness (limitations) and Threats

- (i) The foremost weakness (limitation) of Patiala is its location with respect to its connectivity with main rail and road route of the state. It is situated away (at a

distance of 25kms) from main Amritsar-Delhi rail link. It is only connected through rail by branch line of Rajpura. Similarly it is located away from Amritsar-Delhi National Highway No. 1 i.e. G.T. Road. This is one of the main reasons that it is lagging behind in industrial development.

- (ii) Secondly it is not directly connected to Chandigarh through rail, which is the important economic centre of the state.
- (iii) Non channelisation of Chotti Nadi (drain) accompanied by its encroachment and bad sanitation conditions are an eye sore at the entrance of the city which gives a bad impression about erstwhile princely town.
- (iv) Insufficient heritage management. Lack of civic awareness about heritage and conservation.
- (v) Competing development in the vicinity the neighboring city Chandigarh i.e. the Capital of Punjab and Haryana which is only at a distance of 67 km is also a major commercial and administrative centre and is a major counter magnet of Patiala.
- (vi) Patiala is prone to floods due to its terrain and drains flowing through L.P.A especially Patiala Nadi.
- (vii) No new investment especially in the field of industries is another threat to further expansion of city. Concentration of rapid industrial and institutional growth takes place between Rajpura-Chandigarh Road and Rajpura – Ambala Road. Thus, Patiala getting ignored and becoming devoid of industrial development.

• **VISION 2031**

For the Master Plan, it is necessary to formulate a long term (2031) vision for the city that takes into account the present strengths, opportunities, weaknesses (limitations) and threats (SWOT). For visualizing future city of Patiala, the govt. vide letter no. 7463-72 dated 1-12-2008 had ordered the constitution of a "Think Tank" under the chairmanship of Deputy Commissioner, Patiala. The basic objective of this "Think Tank" is to discuss SWOT for the Master Plan, Patiala and ensure the Govt. and public participation so that the Master Plan so prepared takes care of all the aspects of future town development taking care of the requirements of each section of the society and is readily acceptable to the public.

As directed by the Govt., the "Think Tank" was constituted in such a way that almost all sections of the society viz public sector, private economic sector and social sector are duly represented. Five meetings of think tank were held under the Chairmanship of Deputy

Commissioner, Patiala and the Vision 2031 and various strategies as discussed in these meetings have been finalized through intensive deliberations.

VISION 2031:

To maintain Patiala as the centre of excellence of educational and sports activities at the state, national and international level and to strengthen its role as the destination of heritage and cultural tourism of Northern India by augmenting regional connectivity and enhanced quality of life through improved physical and social infrastructure in an environmentally sustainable manner.

7.5. Strategies to Attain Vision

Based on SWOT analysis, following strategies as discussed in Think Tank meetings are required to be developed for attaining the above referred VISION 2031:-

I In order to overcome the weakness (limitation) of connectivity following strategies are proposed:

- (a) Although it is not in the purview of Master Plan to overcome the biggest weakness (limitation) of connectivity of Patiala which is otherwise counter magnet of NCR is its distant location from main rail and road route. It was suggested by member of Think Tank to have a chord railway line from Sirhind and Kurukshetra via Patiala as shown in Alternative –I (Fig 23). This will not only bring Patiala on main rail route (shorter one) but will also act as an alternative route connecting Amritsar-Delhi especially in case of an exigency. At the same time it will give relief to the Ambala – Rajpura section which has enormous rail traffic necessitating automatic signaling at short intervals to reduce timing between two consecutive trains. This volume of traffic is going to increase manifold with the upcoming Thermal Plants at Rajpura and Goindwal Sahib. Another route as envisaged in Patiala Counter Magnet of NCR Delhi is linking of Patiala with Jakhal-Delhi rail through Samana, Patran as shown in Alternative – II (Fig 23).
- (b) Since Patiala is counter magnet of NCR, it is of vital importance to widen and strengthen Sirhind – Patiala and Patiala – Pehowa road (State Highway no.8) so as to bring Patiala on main road route with Delhi (shorter one).
- (c) Rail link between Rajpura and Mohali is need of the hour so that Patiala gets connected with Chandigarh which is big economic centre. This link will prove complementary & supplementary to road links with Chandigarh. This rail link will not only link Patiala with Chandigarh but will also connect the other southern districts of Punjab especially Bathinda which is a new emerging economic centre alongwith parts

FIG. 23. PROPOSED REGIONAL RAIL AND ROAD LINKS



of Haryana and Rajasthan states.

- II** In order to maintain active green area of Baradari comprising of orchards with rare plants and trees, rock garden, green house, fern house, flower nursery and dotted with colonial style buildings, it is of utmost importance to conserve and preserve this.
- III** Local drainage and regional flood protection infrastructure need to be planned for and implemented effectively. Flood protection measures and comprehensive drainage plans need to be set out to utilize the various drains within the city and promote rapid drainage and minimize flooding and creating better environment around drains.
- IV** Allocation of sufficient land (as per requirement) for industrial and commercial activity to provide a comprehensive range of retail and wholesale commercial services and provision for light and service industries and allied activities.
- V** To provide efficient transportation system, provision of a Ring Road, elevated roads, flyovers, ROB's, underpass, new sector roads, bus stand (new) and truck terminus (extension), and promotion of bus rapid transportation shall be made.
- VI** To provide utilities that will satisfy the needs of the residents of L.P.A following need to be adopted:-
- To ensure 100% coverage of the city in terms of Sewerage System.
 - To ensure 100% coverage of the city in terms of Water Supply partly supplemented by canal based water supply.
 - To promote eco-friendly decentralized sewage treatment plant.
 - To promote rain water harvesting and recycling of water.
- VII** To provide social infrastructure like education, health and recreational etc. following methods will be adopted:-
- Through utilization of vacant govt. /M.C./Panchayat/Wakf Board lands etc.
 - By encouraging planned development as provided in PAPRA 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 in public interest.
- VIII** To promote an eco-friendly Solid Waste Management system following steps need to be adopted:-

- Promote recycling of solid waste.
- Installation of Solid Waste Processing Plants to reduce the waste for disposal and at the same time generating energy from the solid waste or preparing manure.

IX The variety and magnificent architectural heritage tourism potential in Patiala arguably rivals that of Rajasthan. Hence successful conservation, restoration and appropriate contemporary use of the identified heritage buildings needs to be carried out. Then subsequently various measures by govt. to promote heritage and cultural tourism need to be exploited.

8. THE MASTER PLAN

8.1. Components of the Master Plan

The scope of a master plan confines to the broad proposals and allocation of land for various uses such as residential, industrial, commercial, recreational, public and semi-public etc. It will propose a road network and pattern of streets. It will identify areas covered under historical, architectural and cultural heritage required to be preserved and conserved and development of areas of natural scenery and landscape together with preservation of features, structures of environmental value. It will include zoning regulations for regulating development within each zone. Therefore, a master plan is an important instrument for guiding and regulating development of a city over a period of time and contributes to planned development both conceptually and operationally.

8.2. Master Plan Objectives

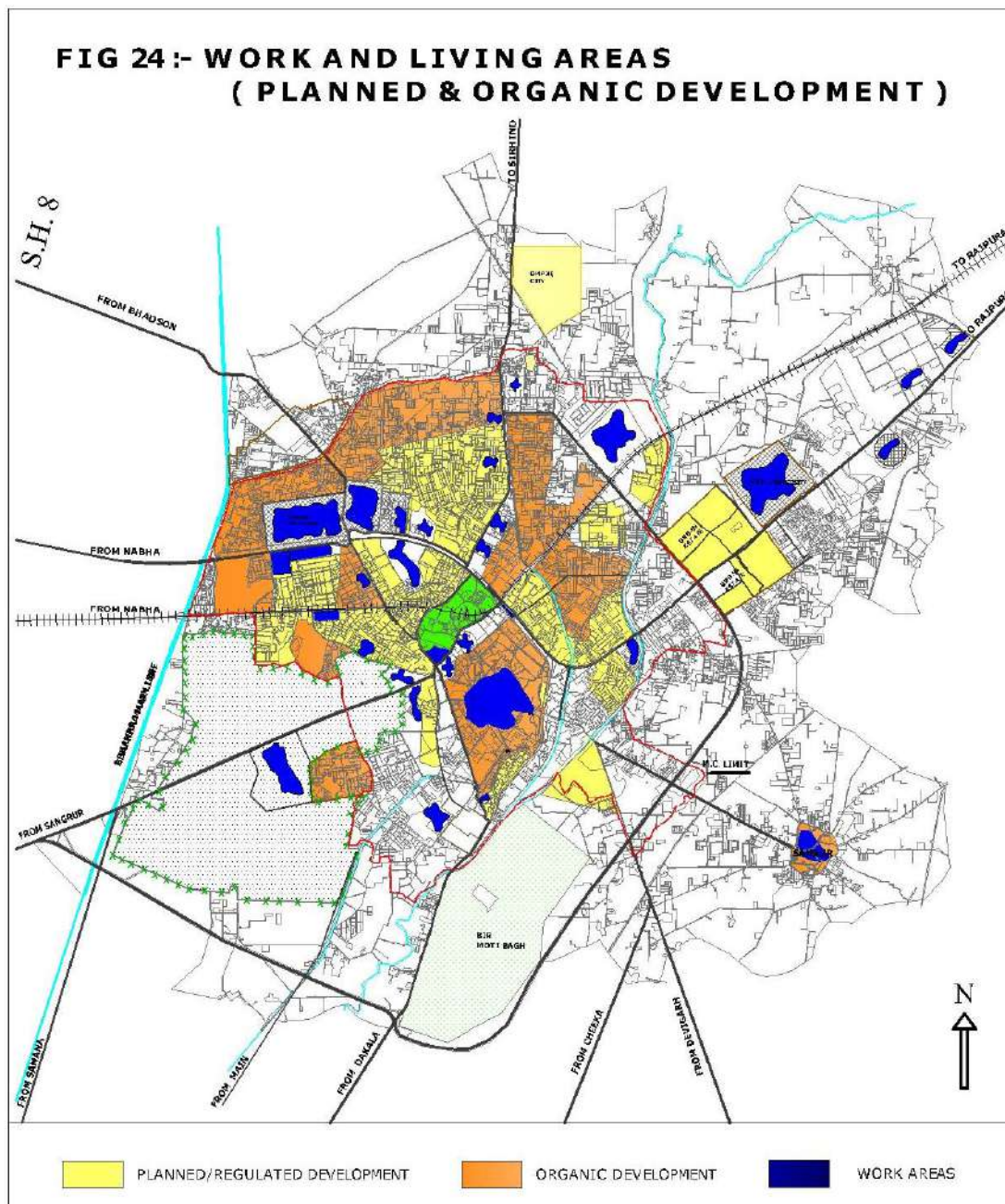
Supporting the earlier elaborated vision is a set of development objectives with reference to the relevant strategies recommended for L.P.A Patiala:-

- i) To propose and improve regional rail, road connectivity of the city so that it not only gets connected with important cities of state but with New Delhi as well.
- ii) To make land allocation in an environmentally sustainable manner.
- iii) To make land available for public purposes.
- iv) To effectively plan the traffic and transportation within L.P.A and to minimize intra city travel by creating self contained neighbourhoods.
- v) To facilitate creation of an efficient, comfortable and cost effective road based rapid mass transportation system so as to minimize use of personal vehicles.
- vi) To keep in tact green cover of the city and create city forest and parks on the available govt. land within the city.
- vii) To identify manmade architectural and natural heritage and to make heritage conservation as an integral part of the city planning and development process.
- viii) To help establish Patiala as a major heritage tourism destination.
- ix) To maintain and preserve existing drains.
- x) To plan L.P.A as an integrated single unit.

Other objectives related to urban management, urban finance and local economic development etc. are outside the scope of Master Plan and hence not deliberated.

8.3. Relationship of Living and Work Areas

The plan showing work areas and living areas reveals predominant work areas in terms of govt. offices/educational institutes, commercial areas and industries that have been shown



separately and on the other hand planned/regulated development and organic development of residential areas i.e. the living areas have been shown separately.

Work areas in terms of offices/educational institutes are distributed throughout the city, whereas, commercial area is predominantly concentrated within the walled city and few other main commercial areas are located in Leela Bhawan, City centre, Gain Market and Chotti Baradari. Industry is located on Rajpura road, Sirhind road and D.C.W. The

remaining city is devoid of any industrial area except one on Nabha road and another brewery on Main road. The planned/regulated residential development is located on all the four sides of the city with organic growth surrounding the planned areas on three sides.

From the above it is concluded that living areas and work areas are complementary to each other in terms of location.

8.4. Evaluation of Alternative City Structures

Cities in a natural course grow like an organism in all directions depending upon the availability of land and potential for growth, sometimes leapfrogging the natural as well as manmade barriers. On the basis of existing trend of development and studies conducted by the office of District Town Planner Patiala, it is observed that the development activities around Patiala are concentrated along main roads passing through the city besides the area falling in the vicinity of existing developed area of the city. Keeping in view the present growth trend, three different alternative structures are conceived for the future city of Patiala. The different alternatives are as follows:-

- I Developing Twin Centres.
- II Expansion along transport radials.
- III Compact development of the city with intensification of core area and development of vacant lands in municipal limits (including optimum utilization of strategically located underutilized govt. land)

I. Developing Twin Centres

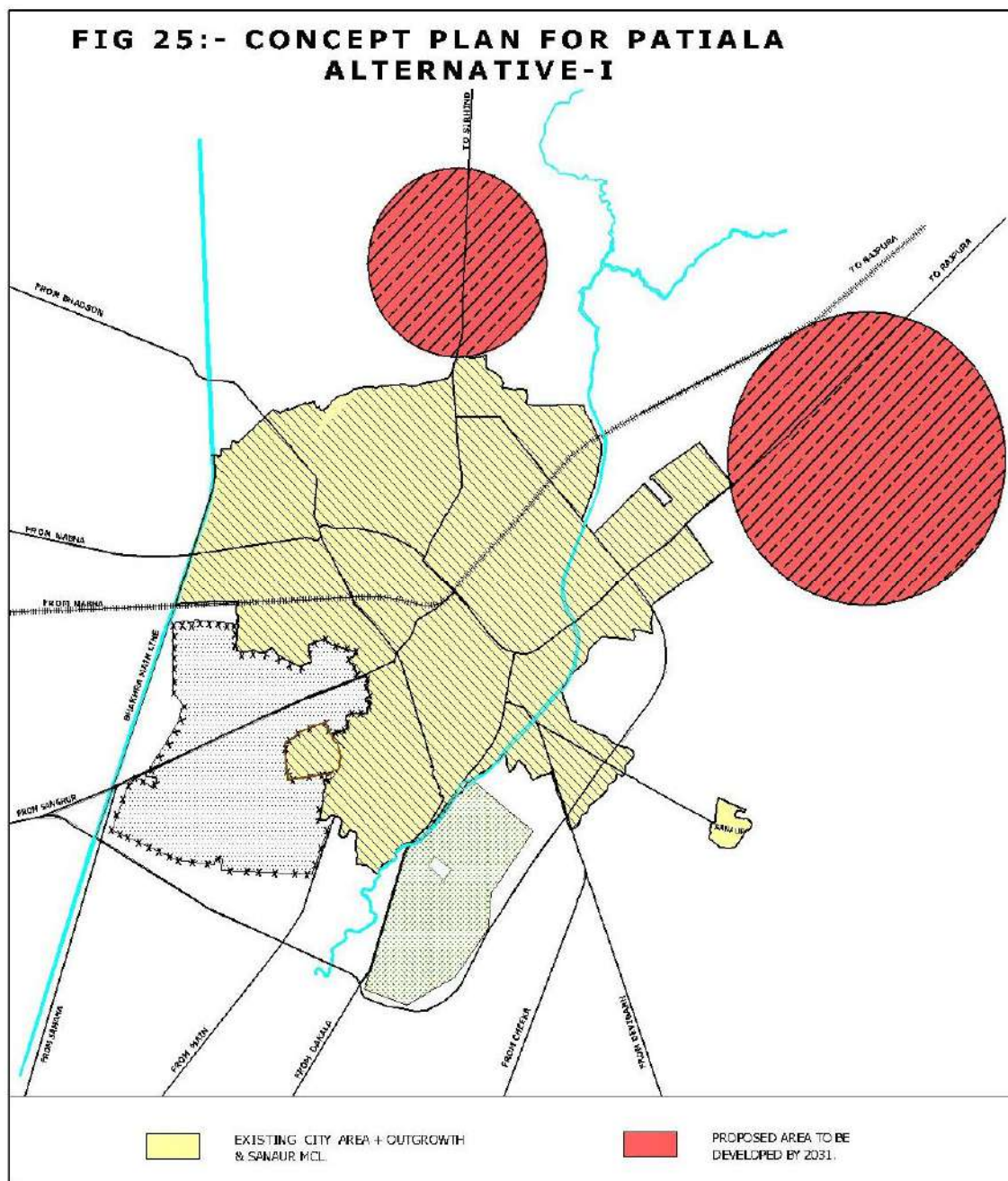
Developing Twin Centres around principal radials keeping in view the existing trend of development i.e. one new centre along Patiala – Sirhind road and another along Patiala – Chandigarh road.

Merits

- 1. It will develop as a sizeable agglomeration.
- 2. This pattern of development will help in the decentralization of Patiala city.
- 3. Land values in the twin centres will be comparatively lower and within the reach of general public.
- 4. Vast tracts of virgin land are available in these centres and thus planned development with higher level of physical and social infrastructure could be planned.
- 5. Twin centres being located on major transport routes shall have good connectivity with main urban settlement of Patiala and rest of the state.

Demerits

- 1. Overloading of major transport routes.
- 2. Longer intra city trip lengths associated with more travel time and costs.
- 3. More cost will be involved in providing adequate infrastructure in different locations.
- 4. Low density development will result in less efficient use of land and infrastructure.

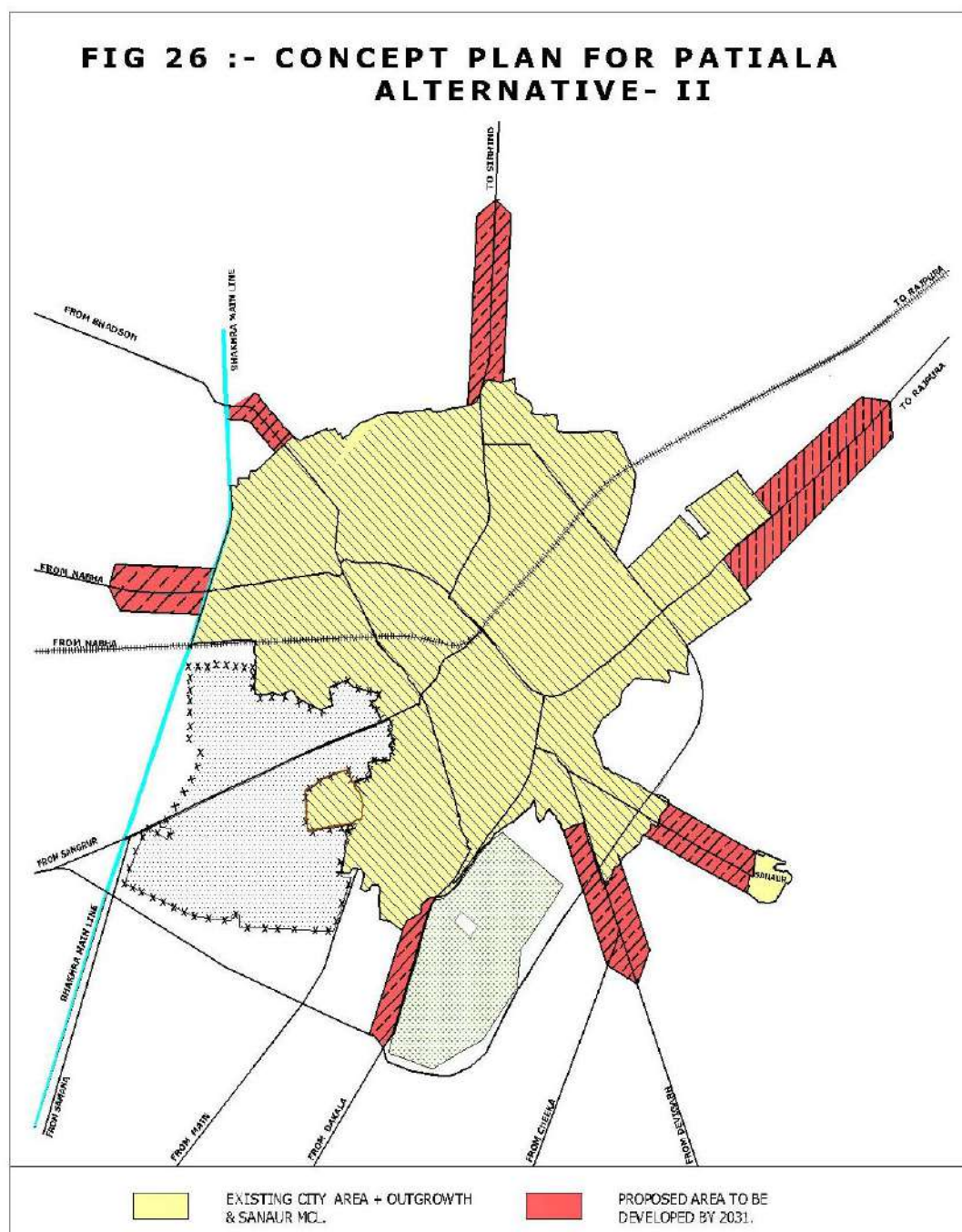


II. Expansion along transport radials

This alternative provides the opportunities to develop future city of Patiala along the main transport radials passing through the city:-

- Patiala – Nabha road
- Patiala – Sirhind road
- Patiala – Rajpura road
- Patiala – Sanaur road
- Patiala –Cheeka road
- Patiala – Bhunherheri road

The above radials comprise of upcoming residential colonies and two main marriage palaces on Patiala – Nabha road beyond Bhakra canal, big residential complex (joint venture of Omaxe & PDA) at village Baran on Sirhind road, urban sprawl on both sides of Patiala – Sanaur road, Chaura –Sanaur road and development along Patiala –Devigarh road including urban sprawl outside the municipal limits of Sanaur. Development of Punjabi University, Urban Estate Phase-I, II, III including authorized and unauthorized colonies around them, Bahadurgarh fort, Federal Mogul, Milk food industries on one side and Bahadurgarh Kasba on the other side of Patiala - Rajpura road.



Merits

1. It will help in decentralization of the core area which is already over – burdened due to concentration of economic activities.
2. Development along the major transport routes shall have good accessibility.
3. Planned development is possible on the virgin lands in the form of good road network, housing, industrial, trade and commerce, offices, recreational parking, green spaces, social infrastructure, utilities etc.
4. The premium land value along the major transport routes and high visibility locations can be safeguarded and enhanced.
5. Living and work area relationship can be better achieved through this concept.

Demerits

1. Overloading of major transport routes.
2. May invade upon large areas of fertile land.
3. Leap – frogged development results in wastage of prime agricultural land which is already getting scarce in Punjab state.
4. The cost of providing overall infrastructure, services and the cost of their maintenance will increase.
5. The urban sprawl will have negative economic, social and environmental impacts.
6. The low density development along the major transport routes with ribbon development shall have longer trip lengths associated with more travel time and costs.
7. Longer the transmission lines of power and water supply, more are the transmission losses.

III. Compact development of the city with intensification of core area and development of vacant lands (including optimum utilization of strategically located govt. lands)

Merits

1. Efficient / optimal use of land and infrastructure.
2. The cost of providing overall infrastructure services and the per capita provision and maintenance of infrastructure for compact development can be advantageous.
3. The higher the density, the smaller is the built up and the shorter trip lengths with less travel time and cost.
4. 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.

Demerits

- 1 The core area of Patiala 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.
- 2 The land value in the core areas is very high. More pressure on this area will further shoot up the land values.
- 3 Densification of core area means a concrete of high rise buildings away from the natural environment. Moreover Punjabis especially people of Patiala are not socially inhabited to live in multi storeyed apartments / high rise buildings.
- 4 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.

No single alternative can be adopted for L.P.A Patiala, keeping in view the trend of development and urban sprawl all around the municipal limits of Patiala. Hence a

combination of all the three alternatives need to be applied for better planning and development of the area i.e twin centres, one centre along Patiala - Sirhind road and another along Patiala – Rajpura road with development along Patiala – Nabha road and Patiala – Bhadson road has been proposed, including optimum utilization of strategically located govt. lands. Similarly development between Sangrur road and Nabha road, Nabha

road and Bhadson road, Bhadson road and Sirhind road and finally till Rajpura road has been envisaged taking care of urban sprawl and thus achieving compact development around Municipal Corporation limits.

which has been recognized in the proposals. Thus the proposed growth of Patiala M.C and Sanaur M.CI by 2031 shall be as shown in adopted conceptual plan of city structure.

8.5. Land Use Requirements

Before proceeding to prepare proposed land use plan and transport network the areas required for different purposes is to be worked out on the basis of norms and standards of various organizations.

➤ Residential Use

As per the data available from Census of India as described in table 3.2 (c) in housing chapter, out of total households about 17.19% have one room, 29.58 % have two rooms, 24.34 % have three rooms and 16.04 % have four rooms per dwelling unit. These households together comprise 87.15% of the total households. The average dwelling unit thus has 2.5 rooms. For calculating the housing requirements following assumptions have been kept in mind:

Table No. 8.5 (a): Calculation of average plot area in L.P.A Urban

Sr.No.	Description	Area in sq.m.
1	Carpet area of average dwelling unit. 1 Living Room, 2 Bed Rooms, 1 Kitchen and other	120
2	Built up area inclusive of walls, verandahs etc	150
3	Plot area @ footprint to plot ratio of 0.60	230

Table No. 8.5 (b): Stage wise housing requirements- L.P.A Urban.

Year	2011	2016	2021	2026	2031
No. of families	88400	98800	109000	136200	170000
Net land requirements in ha.	1355	1515	1671	2088	2606
Gross land requirements in ha.	2710	3030	3342	4176	5212

- Assuming 1.5 dwelling unit might be accommodated in each plot.
 - Assumed family size =5
 - 50% area is assumed under convenient shopping, parks & open spaces and public building.
- a) Projected area required for residential purposes by 2031 = 5212ha. (12874 acres).
- b) Existing area under residential use = 2600 ha.
- c) Proposed increase in residential use = a-b = 5212 - 2600 ha.
- = 2612 ha. (6451.64acres)

➤ Commercial Use

As per norms given in the UDPFI Guidelines the area requirements for commercial activity has been worked out. As per the classification of towns given for medium size town has a population upto 5 lakhs whereas the large city size starts from population of minimum 25 lakhs. The projected population of L.P.A Urban by 2031 would be 850000.

Therefore logically Patiala would remain a medium size town, so the norms of medium size town have been taken for calculating area requirements for commercial use as per tables given below:

Table No. 8.5 (c): Hierarchy of commercial centers

Planning unit	Class S	of M	settlements L	Population served	Hierarchy of commercial centre
Housing cluster	-	*	*	1000-4000	Cluster centre
Sector	-	*	*	5000-20000	Sector centre
Community	*	*	*	25000-100000	Community centre
District	-	*	*	125000-500000	District centre
Sub city	-	-	*	25 lakhs -50 lakhs	Sub City centre
City	-	-	*	50 lakhs+	City

S = Small towns; M=Medium towns; L= Large towns

Table No. 8.5 (d): Area for commercial centres

Hierarchy of commercial centre	Area per 1000 persons sq.m
Cluster centre	220
Sector center	300
Community Centre	500
District Centre	880
Total	1900 sq. m

As per the figures given in the table above 1900 sq.m area for different categories of commercial areas has been proposed for 1000 persons, thus 1.9 sq .m (say 2 sq. m) area is required per person . The total projected population of L.P.A Urban workes out to 850000 persons, therefore total area required for commercial use is estimated to be 176 ha. (435 acre)

➤ Industrial Use

The total projected industrial workers for L.P.A Urban as per table no 7.2 work out to 33188 for the year 2031.This works out to incremental industrial employment of 20866 during 2001-2031. Area required for incremental workforce at a denstiy of 100 workers / ha.(As recommended by UDPFI Guidelines) would be 210 ha.(519 acres)

8.6. Transport Network Requirements

• At City Level

It has come to the fore from the study of chapter 4 that number of main roads and regional roads merge in Patiala city and create traffic problems like bottlenecks, traffic congestion and various other traffic snarls. As per the traffic volume survey conducted by this office, it has been observed that most of the main roads of Patiala city are underutilised, whereas two roads carry more volume of traffic than their carrying capacity. In the absence of detailed traffic studies for projecting vehicular growth in Patiala city the standard given by Indian Road Congress [IRC] has been adopted which says that if reliable data is not

available then the growth rate of 7.5% for National Highways and urban roads and 6% for rural roads can be assumed for calculation and for Patiala city the same is adopted. Since there are many factors which govern the growth of traffic, the long term projections of traffic can be estimated only after detailed studies and transport modeling. Therefore traffic on main city roads is projected for the year 2011 as given in Table No 8.6

Table No. 8.6 Projected Traffic Volume on city roads of Patiala.

Sr. No.	Name of The Road	Exiting volume in PCU/hr	Projected	Capacity PCU	V/C	Type of carriageway	Classification of Road
		2009	2011				
1.	Bus Stand to Rajpura Road	2435	2814	2900	0.97	4 lane (divided two way)	Sub Arterial
	Bus Stand to Gurdwara Dukhniwar Road	2622	3030	2900	1.04	4 lane divided (two way)	Sub Arterial
	Bus Stand chowk to Gurbax colony	1156	1336	900	1.5	2 lane (divided two way)	Collector street
	Mall Road	2251	2796	2900	0.96	4 lane divided (two way)	Sub Arterial
2.	Leela Bhawan Chowk to Thapar Univ.	1936	2237	2900	0.77	4 lane divided (two way)	Sub Arterial
	Rajbaha Road	2932	3388	2900	1.17	4 lane divided (Two way)	Sub Arterial
	Leela Bhawan Chowk to Baradari road	529	611	1800	0.34	4 lane undivided	Collector street
	Leela Bhawan Chowk to Income Tax Deptt Road	1433	1656	1800	0.92	4 lane Undivided (two way)	Collector street
3.	Thapar Univ. to Bhadson	1635	1837	1800	1.02	4 lane undivided (two way)	Collector street
	Thapar Univ. to Bhupindra Road	611	706	2900	0.24	4 lane divided (two way)	Sub Arterial
	Thapar Univ. to Gurdwara Dukhniwar	2244	1741	2200	0.79	4 lane divided (two way)	Sub Arterial
4.	S.S.T. Chowk to Khalsa college	680	786	900	0.87	2 lane (two way)	Collector street
	S.S.T. Chowk To Moti Bagh (Upper Mall Road)	884	1022	2900	0.35	4 lane divided (two way)	Sub Arterial
5.	Gandhi Nagar to Rajpura Road Chowk	2215	2560	3600	0.71	4 lane divided (two way)	Arterial
6.	Devigarh Road	1140	1281	1200	1.1	2 Lane undivided (two way)	Sub Arterial
7.	Sanaur Road	530	612	1800	0.34	4 lane undivided (two way)	Collector street
8.	Patiala Sangrur Road	1934	2235	2900	0.77	4 lane divided (two way)	Sub Arterial
9.	Fountain Chowk to Leela Bhawan	1992	2302	4300	0.54	6 Lane divided (two way)	Sub Arterial
	Fountain Chowk to Mahindra college (lower mall)	1485	1716	1200	1.43	4 lane undivided (two way)	Collector street
10.	Dukhniwaran Chowk to D.C. Office	1773	2049	2200	0.93	4 lane divided (two way)	Collector street
	Dukhniwar	1355	1566	2900	0.54	4 Lane divided	Sub Arterial

	Chowk to Sirhind Road					(two way)	
11	Thapar Univ. to Nabha road	750	867	2200	0.39	4 Lane divided (two way)	Collector street

Projected Volume Capacity Ratio(2011) of main roads of Patiala city indicates that out of 22 roads,15 roads of Patiala city will be having volume capacity ratio between 0.24 - 0.97 that means these roads will not suffer from congestion. 7 roads will be having volume capacity ratio between 1.02 – 1.5 implying that they will need wideing or diversion of traffic to maintain desirable speed. Amongst these, 2 roads namely one from Bus Stand to Gurbax colony and another from Fountain Chowk to Mohindra College (Lower Mall) will need attention on priority.

Ring Road

Development of inner ring road connecting Sirhind road, Nabha road, Sangrur road along Model Town drain as well as proposed outer ring road at L.P.A level connecting the regional roads i.e. Sangrur road, Nabha road, Bhadson road, Sirhind road and Rajpura road are proposed.

• Bus Terminal

Area of the existing bus stand is not adequate to accommodate the present requirement as well as its inner city location creates traffic congestion. Therefore, a new site of bus terminal with the state of art facilities on an area of 5.58ha. **(13.78 acres)** on Patiala - Rajpura road is coming up.

• Truck Terminal

Presently truck terminal located on Patiala - Rajpura road has an area of 40 acres out of which 9 acres has been given to Kabari Market shifted from the walled city.

8.7. 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'

R2: 150'

R3: 100'

R4: 80'

The ROW of above roads will incorporate provisions for footpaths and cycle tracks as per standards given below:

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	
		5%	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	-	-

8.8. Space Norms for Social Infrastructure and Public Utilities

Comparative statement of Norms and Standards suggested by Master Plan Zoning Regulations / Punjab Govt. Policies, UDPFI Guidelines and Delhi Master Plan is given as under:-

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 a) Old city: (over 650 ppha): 1.00 ha b) 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 Patiala because of the following reasons:

- The norms and standards suggested by UDPFI Guidelines are more detailed and cover almost each and every physical and social infrastructure as compared to Master Plan Zoning Regulations / Govt. policies.

- Norms and standards suggested by UDPFI Guidelines are more realistic and suitable 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 are 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 L.P.A Patiala because these norms are of higher level, formed especially for Mega cities like Delhi, where development controls are very stringent and, population is more than 1.25 crores and the land is scarce & costly.

However it has not been possible to designate the location and extent of the above mentioned facilities in the proposed land use plan. While preparing the detailed sector / zonal plans, the standards listed above and the strategy adopted for obtaining land for public purposes will be taken into account in designating land for above mentioned facilities.

Stage Wise Land Requirements For Projected Population L.P.A Patiala - 2031

Sr. No	Aspect	Norms and Standards	Existing No.	Additional Requirement by 2031 (in no.)	Stage Wise Requirement (Number and area in hectares)						Total area (in ha)
					2011		2021		2031		
					No.	Area(in ha.)	No.	Area(in ha.)	No.	Area (in ha.)	
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	146	96	22	8.8	21	8.4	53	21.2	38.4
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	161	63	14	22.4	14	22.4	35	57	101.8
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	5*+ 4**= 9	1					1	4	4
4	University	New University Area: 60.00 ha	3		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	4		No additional requirement for the Technical Education Centre						
6	New Engineering College	2 numbers to be provided in urban extension Number of students: 1500-1700 Area per college: 60.00 ha	4	-	No additional requirement for the New Engineering College						

Note:

* Mohindra College covering an area of 11 hectares with strength of 4000 students is equivalent to three colleges as per UDPFI guidelines.

** Specialised colleges namely State College of Education, Physical College, Gurmat College, Berkley College for MBA, MCA etc.

7	Medical / Dental / Pharmacy College	Population: 10,00,000 (DMP) Area: 5 acres (Rural) Area: 2.5 acres (Distt. Headquarter Corporation Limit)	2***+ 2****+ 2*****=6	-	No additional requirement for the Medical / Pharmacy College						
8	Dispensary	Population: 15,000 Area: 0.08 to 0.12 ha	21	32	7	0.6	7	0.6	18	1.4	2.6
9	Nursing Home	Population: 45,000-1,00,000 Capacity: 25 to 30 beds Area: 0.20 to 0.30 ha	35	-	1	0.2	1	0.2	3	0.6	1
10	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	2*****	1	-	-	-	-	1	6	6
11	Veterinary Hospital/ Dispensary	Population: 5,00,000 Area: 2,000 sq m (0.2 ha)	15+15=30	-	No additional requirement for the Veterinary Hospital/ Dispensary						0.4
12	Library	Population: 15,000 Area: 2,000 sq m (0.2 ha)	3	-	7	1.4	7	1.4	18	3.6	6.4
13	Club	Population: 1,00,000 Area: 10,000 sq m (1.0 ha)	3	-	1	1	1	1	2	2	4
14	Amusement Park	Area: up to 10 ha	1		No additional requirement for the Amusement Park						-
15	City level park	Population: 5,00,000 Area: 10 acres (4.0 ha)	3	-	-	-	-	-	1	4	4
16	Neighborhood level park	Population: 10,000 Area: 10,000 sq m (1.0 ha)	2	27	Neighborhood level park are required to be provided within proposed urbanisable area.						27
17	Golf Course	Population: 10,00,000 Area: 10-30 ha	3	-	No additional requirement for the Golf Course						
18	Sports Centre / Stadium	Population: 5,00,000 Area: 3-10 ha	2/ 5	-	No additional requirement for the Sports Centre / Stadium						

Note: *** Govt. Medical College (Allopathic) , Ayurvedic College.
**** Govt Dental College within city ,Lakshmi bai institute of Dental Sciences & Hospital in LPA Patiala.
***** One degree college of Pharmacy is in Girls Polytechnic and another full fledged department in Punjabi University running graduation and post graduation classes.
***** Rajindra Hospital covers an area of 13 hectare and has 907 bed strength which is equivalent to two hospitals as per UDPFI guidelines.

19	Post and Telegraph Office	Population: 10,000 Area: 0.1 ha	-	-	11	1.1	10	1	27	2.7	4.8
20	Orphanage / Children Centre	Population: 5,00,000 Area: 1,000 sq m (0.1ha)	4	-	No additional requirement for the Orphanage / Children Centre						
21	Multipurpose Ground (Exhibition cum Fair Ground)	Population: 1,00,000 Area: 20,000 sq m (2.0 ha)	4	4	1	2	1	2	2	4	8
22	Police Post	Population: 40,000- 50,000 Area: 0.16 ha (area inclusive of essential residential accommodation)	45	9	2	0.3	2	0.3	5	0.8	1.4
23	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	3	5	1	1.5	1	1.5	3	4.5	7.5
24	Police Line	Population: 20,00,000 Area: 4.00 to 6.00 ha	1	-	No additional requirement						
25	District Jail	Population: 10,00,000 Area: 10.00 ha	1	-	No additional requirement						
26	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	2	2	1	1	-	-	1	1	2

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 LPA population in 2001 (4,85,000) and projected population for 2011 (5,94,000), 2021 (6,98,000) and 2031 (9,65,000)

8.9. Strategies for Obtaining Land for Public Purpose

A city typically requires 40 to 50% of its area for variety of public purposes. Where land is owned by the state as in Delhi Chandigarh or Navi Mumbai it is easier to allocate land of public purposes, However where private land market is active, to ensure land for public purpose is a major challenge in preparing Master Plans. Conventional master planning relied on the powers of compulsory acquisition of land designated in the master plan for public purposes. However limitations of this approach have been painfully exposed. At the same time not addressing the question of land for public purposes may limit the utility of the master plan itself.

With this background a wide menu of strategies to obtain land for public purposes is examined. The land required for public purpose can be divided into four-fold classification as diagram below.

	A. Specific Location	B. Flexible Location
A. Positive impact on land prices	AA. Arterial Road network	AB. Parks, play grounds, schools etc.
B. Negative price or environmental impact invoking NIMBY response	BA. Sewage pumping stations and treatment plants	BB. Solid waste disposal sites

(In many cases necessity of a particular activity at the city scale is recognised e.g. solid waste disposal site or a slaughterhouse. But they are locally undesirable and invoke "Not in my backyard" response.)

The strategic approach would relate to geographically depicting the sites required for public purpose and proposing whether shown on the plan or not. For this, master plan has to consider a wide menu. Described below is a possible menu which can be adopted for LPA Patiala:-.

- 1) Identifying vacant government (including municipal) land and using it as source for providing land for public purposes. However given the need for using government land for generating financial resources, entire stock of government land need not be assigned to non-remunerative public purposes. In fact government land would offer many opportunities for PPP where part of the land could be used for public purpose. For example a plot of government land could be allocated for an intercity bus terminal with a budget hotel.
- 2) Rationalising obsolete uses of public lands could be another way of putting public land to more relevant public purpose. Old jail or agricultural produce markets in the congested part of the city are common examples. But this requires public land at other location.

- 3) Make specific designations on the master plan and then proceed with compulsory acquisition of land. Impracticability of this is too well known to be recounted here. But this may be unavoidable in certain cases-particularly A (specific location) category public purposes (arterial road network, sewage pumping station and treatment plant)
- 4) Alternative to monetary compensation could be award of transfer of development Rights either to remainder of the land or to a distant location. This could be in three generic cases viz.
 - Roads and Roads widening: Development rights calculated at the FAR permissible in adjoining area may be allowed to be used in the remainder of the plot up to a limit. Development rights that cannot be so consumed can be transferred elsewhere in receiving areas. If FAR is related to width of the road, resistance to widening may get reduced.
 - Public purposes on open land or exclusive plots: Lands required for parks and playgrounds or exclusive uses like secondary school, fire station etc. can receive TDR in lieu of compensation. Weight related to price differentials in originating and receiving zones could be considered as an incentive.
 - Public purposes that require built-up space but not necessarily exclusive plot: Examples of this could be municipal vegetable market, library etc. In such cases landowner may be allowed to fully use his development rights provided that he offers the built up space required for the public purpose.
- 5) Layout and sub-division regulations: These regulations depending upon the total area of layout can provide for some reservation for general public purpose in addition to local requirements. This is currently being used under the colonization rules operated under the PAPRA Act.
- 6) Land pooling or Town Planning (Development) Schemes: This essentially pools the small individual plots to enable re-plotting with proper roads and open spaces and equitably spread the burden on all benefiting landowners.

The possible alternatives for obtaining land for public purposes such as roads, educational, health, parks, water supply, sewerage, social 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 for 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 benefits. Cost borne by those who lose land and benefits enjoyed by surrounding landowners	❑ Lack of finances for compensation ❑ Landowners' resistance ❑ Iniquitous distribution of cost and benefit. Cost borne by those who lose land and benefits enjoyed by surrounding landowners ❑ But where real estate prices are high particularly where land price	❑ This is the method currently relied upon where minimum area for colony is set at 10 – 75 acres, as I case of PAPRA. ❑ This is 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 of owners. ❑ Time consuming and complicated process ❑ Equitable distribution of costs and benefits to different share holders. ❑ New concept difficult to be	❑ Locational disadvantages in certain cases. ❑ Minimum area requirement may not be fulfilled ❑ Source of revenue for Panchayat Bodies / Waqf Board gets depleted.

		is several times the construction cost, chances of success are high. ☐ Could also be used for heritage conservation. ☐ New concept difficult to be implemented.		implemented.	
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No single alternative needs to be used throughout the city. It may vary for example, in core areas vs outlying areas. Similarly different alternatives may be suitable for different types of public purposes. The above lays down a broad frame work for obtaining land for public purpose. However, no specific proposals are included in the Master Plan as they will be dealt with in the detailed zonal plans.

8.10. Planning Proposals

Based on the detailed studies conducted by the office of DTP Patiala pertaining to L.P.A Patiala, the selected city structure as described in chapter 8.4 has been translated in to a proposed landuse plan and transport network. The proposed landuse plan and transport network has been finalised after various discussions held at different levels i.e. with S.H.U.D, Adviser Town Planner and Chief Town Planner(Pb.)

After examining the various patterns of landuses suggested in Urban Development Plans Formulation & Implementation (UDPFI) Guidelines, the following landuse zones have been adopted for the Proposed Landuse Plan:-

- Residential Zone.
- Commercial Zone.
- Wholesale & Warehousing Zone.
- Industrial Zone.
- Mixed Landuse Zone
- Rural & Agricultural Zone.

The concerned aspects of above different landuse zones have been detailed out below which have to be read with Zoning Regulations specified for different land uses. However, the lands which come under the Optimum Utilization Of Vacant Govt. Lands (OUVGL) scheme of the state Govt., use of such lands/sites shall be determined by the Govt. at any appropriate time notwithstanding the provisions of Master Plan.

The sites on which various projects have been approved or whose change of landuse has already been permitted by competent authority/govt., such sites shall be deemed to be in compliance with the Master Plan.

8.11. Proposed Land Use Plan (2009-2031)

Although it has been observed from the studies that there is a tendency of growth along transport corridors, considering areas with great potential for development, wider areas of development have been considered. Therefore the proposed areas under various landuse zones will exceed the areas calculated for different uses which are the minimum required. Based on above considerations, Proposed Land Use Plan has been prepared and presented in Drg. no.DTP (P) 3486/09 dated 24.6.09 which has been revised as Drg. no.DTP (P)3524/10/dated 04.08.2010 in light of decision taken in the 19th meeting of the Punjab Regional and Town Planning and Development Board held on 29.07.2010. The Land use distribution of the urbanisable area and total L.P.A Patiala -2031 is given in tables below.

Table 8.11- Break-up of Major Proposed Landuse Zones in of LPA Patiala, -2031

LANDUSE ZONE		AREA (Ha.)	%age
RESIDENTIAL ZONE	High density RD ₁	352.12	0.71
	Medium density RD ₂	4203.83	8.46
	Low density-I RD ₃	11736.06	23.62
	Low density-II RD ₃	2037.66	4.10
	Rural settlement	892.14	1.80
	TOTAL	19221.81	38.68
COMMERCIAL ZONE	General Business , Commercial District Centres	17.08	0.03
	Whole Sale, Godowns, Ware Housing Regulated Market	154.58	0.31
	TOTAL	171.66	0.34
INDUSTRIAL ZONE	Industry	2212.82	4.45
	TOTAL	2212.82	4.45
MIXED LANDUSE ZONE	Mixed landuse	1364.45	2.75
	Industrial mix	12	0.02
	TOTAL	1376.45	2.77
DESIGNATED AREAS	Public and semi public	158.02	0.32
	Education/Instututional	316.73	0.64
	Sports Complex/Parks/open-spaces/play ground	204.45	0.41
	Electric grid station	41.77	0.08
	Sewage Treatment / Pumping Station	4.38	0.01
	Railway line & siding	38.29	0.08
	Railway station	2.07	0.00
	Bus terminus existing / proposed	8.91	0.02
	Truck terminus existing / proposed	17.07	0.03
	TOTAL	791.69	1.59
SPECIAL AREAS	Heritage Building	10.46	0.02

	Protected Green	53.18	0.11
	Restricted Area/No Development zone	512.94	1.03
	Other Use	1818.66	3.66
	TOTAL	2395.24	4.82
AGRICULTURE ZONE	Forest	995.81	2.00
	Water bodies	296.09	0.60
	Green belt	332.07	0.67
	Agriculture	21902.36	44.07
	TOTAL	23526.33	47.34
	GRAND TOTAL	49696	100.00

Source P.R.S.C. Ludhiana

Table 8.11(a)- Break-up of Major Proposed Landuse Zones with in Urbanisable area of L.P.A -2031

LANDUSE ZONE		AREA (Ha.)	%age
RESIDENTIAL ZONE	High density RD ₁	350.82	1.46
	Medium density RD ₂	4162.95	17.31
	Low density-I RD ₃	11601.99	48.25
	Low density-II RD ₃	1553.57	6.46
	Rural settlement	235.74	0.98
	TOTAL	17905.07	74.46
COMMERCIAL ZONE	General Business , Commercial District Centres	17.08	0.07
	Whole Sale, Godowns, Ware Housing Regulated Market	147.10	0.61
	TOTAL	164.18	0.68
INDUSTRIAL ZONE	Industry	2183.85	9.08
	TOTAL	2183.85	9.08
MIXED LANDUSE ZONE	Industrial mix	12	0.05
	TOTAL	12	0.05
DESIGNATED AREAS	Public and semi public	158.02	0.65
	Education /Instututional	305.10	1.27
	Sports Complex /Parks/open-spaces/play ground	204.45	0.85
	Water works	0.00	0.00
	Electric grid station	19.03	0.08
	Sewage Treatment / Pumping Station	4.38	0.02
	Railway line & siding	37.29	0.16
	Railway station	2.07	0.01
	Bus terminus existing / proposed	8.91	0.04
	Truck terminus existing / proposed	17.09	0.07
	TOTAL	756.34	3.15
SPECIAL AREAS	Heritage Buildings	10.46	0.04
	Protected Green	53.18	0.22
	Other use	1701.05	7.08
	TOTAL	1764.69	7.34
AGRICULTURE ZONE	Forest	720.40	3.0
	Water bodies	206.09	0.86
	Green belt	332.07	1.38
	Total	1258.56	5.24
	GRAND TOTAL	24044.69	100.00

P A T I A L A **LOCAL PLANNING AREA** **PROPOSED LAND USE PLAN- 2009-2031**

LEGEND

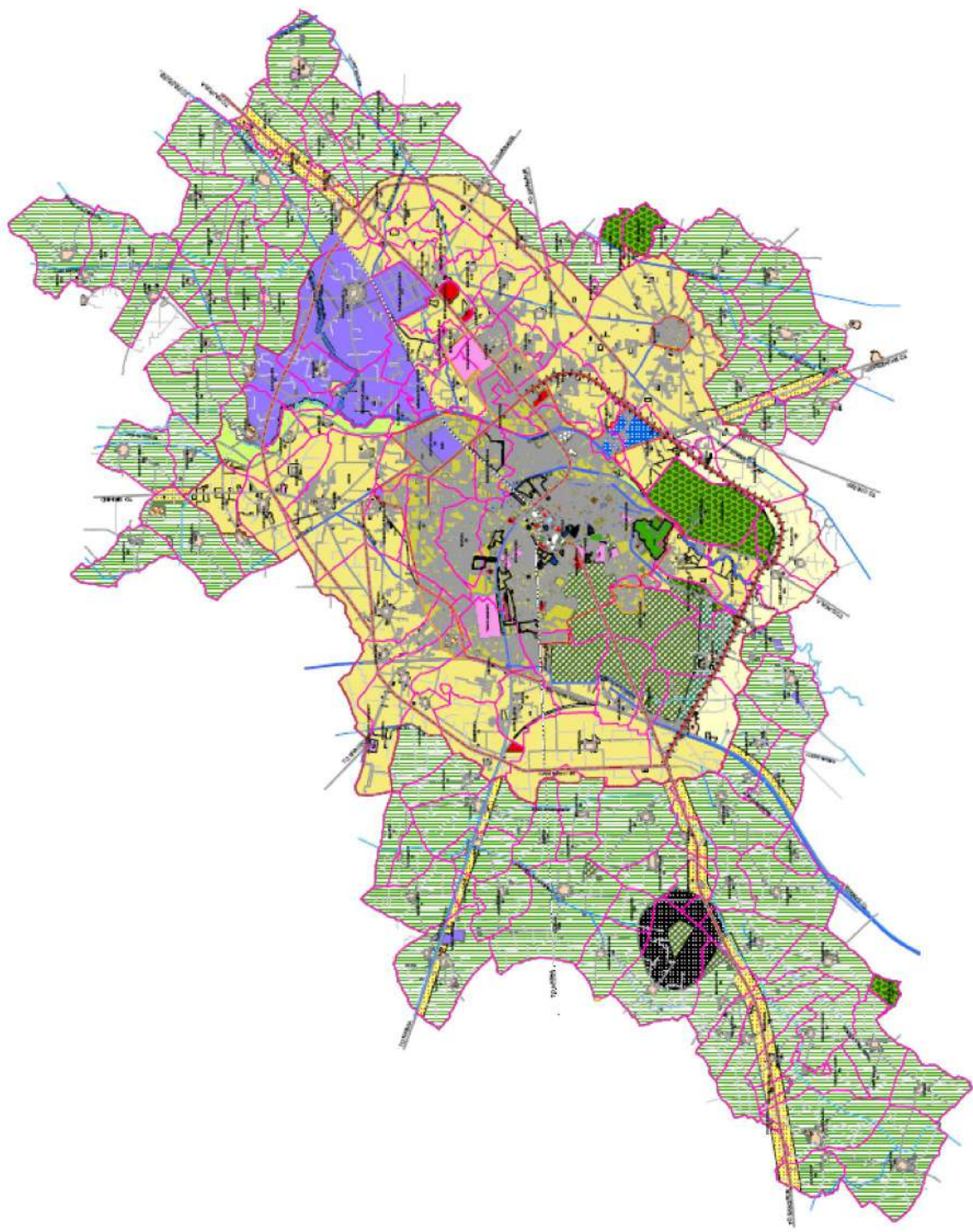
- UPA BOUNDARY/URBANISABLE UNIT
- MUNICIPAL CORPORATION UNIT
- VILLAGE BOUNDARY
- RESIDENTIAL
 - HIGH DENSITY RD-1
 - MEDIUM DENSITY RD-2
 - LOW DENSITY I RD-3
 - LOW DENSITY II RD-3
 - RURAL SETTLEMENT
- COMMERCIAL
 - GENERAL BUSINESS, DISTRICT CENTRE, MULTIPLEX
 - WHOLE SALE AND WAREHOUSING
 - WHOLE SALE MARKET AND WAREHOUSING
- INDUSTRIAL
 - INDUSTRY
 - MIXED LANDUSE
 - MIXED LANDUSE
 - INDUSTRIAL MIX
- AGRICULTURAL
 - RURAL AND AGRICULTURE
- DESIGNATED USES
 - RAILWAY STATION / LINE SINKS
 - BUS TERMINUS EXISTING / PROPOSED
 - TRUCK TERMINUS
 - EXISTING MAIN / LINK ROADS
 - OTHER LOCAL / KATCHA ROADS
 - EXISTING / PROPOSED ROAD (R-1)
 - PUBLIC AND SEMI PUBLIC
 - EDUCATIONAL / INSTITUTIONAL
 - SPORTS COMPLEX/PARKS/PLAY GROUNDS
 - ELECTRIC GRID STATION
 - SEWAGE TREATMENT PLANT/ PUMPING STATION
 - HERITAGE BUILDING
 - PROTECTED GREEN
 - GREEN BELT
 - FOREST
 - WATER BODIES
 - RESTRICTED ZONE
 - OTHER USE

NOTE: MAPS UP TO MAPS FROM PAGE 1 TO 10. CONTAINING THE DETAIL OF BACKGROUND, OBJECTIVES, EXISTING SCENARIOS, VISION, PROJECTIONS AND PROPOSALS ALONG WITH ANNEXURES IS ENCLOSED HERE WITH AS A SEPARATE BOOKLET. THE MAPS UP TO MAPS FROM PAGE 1 TO 10. CONTAINING THE DETAIL OF BACKGROUND, OBJECTIVES, EXISTING SCENARIOS, VISION, PROJECTIONS AND PROPOSALS ALONG WITH ANNEXURES IS ENCLOSED HERE WITH AS A SEPARATE BOOKLET. THE MAPS UP TO MAPS FROM PAGE 1 TO 10. CONTAINING THE DETAIL OF BACKGROUND, OBJECTIVES, EXISTING SCENARIOS, VISION, PROJECTIONS AND PROPOSALS ALONG WITH ANNEXURES IS ENCLOSED HERE WITH AS A SEPARATE BOOKLET.

SCALE: 1 centimeter equals 400 meters
 0 1,000 2,000 4,000 6,000 8,000 Meters

DEPT. OF TOWN AND COUNTRY PLANNING, PUNJAB

DATE: 10/05/2010	BY: 10/05/2010
APPROVED BY: 10/05/2010	APPROVED BY: 10/05/2010
APPROVED BY: 10/05/2010	APPROVED BY: 10/05/2010
APPROVED BY: 10/05/2010	APPROVED BY: 10/05/2010



DECLARATION: I hereby declare that the above map is a true and correct representation of the land use plan for the year 2009-2031 and is in accordance with the provisions of the Punjab Town and Country Planning Act, 1977 and the Punjab Town and Country Planning Rules, 1978.

8.11.1. Residential Zone

The existing and proposed residential areas have been divided into various densities which are based on the study of ward wise densities of 2001 as covered in Chapter 3. This study leads to range of observed gross densities as given in table no. 3.1 (g). These are gross residential densities. Making an allowance for areas for social infrastructure and roads, residential densities as shown below have been proposed for existing and proposed residential areas in the Master Plan:-

I High Density RD₁

The high residential area comprises of walled city only with net residential density of above 200 persons per acre.

II Medium Density RD₂

The medium density residential area comprises of area outside walled city but within urban agglomeration (M.C+ Outgrowth) limits, including urban estate phase III. The average net residential density works out to 143 persons / ha, yet large chunks of vacant lands are still to be developed. This zone has a greater potential for growth in future. Thus, we can assume the average net residential density upto 151-200 persons / acre.

III Low Density RD₃

I. Low Density I RD₃

II. Low Density IIRD₃

The new proposed residential areas will have net residential density of 101-150 persons per acre. except the area lying on the other side of elevated road between Patiala-Samana road and Patiala-Bhunerheri road upto village boundaries. This area has been proposed as Low density II RD₃ i.e. with density of upto 100 persons per acre keeping in view the potential of development.

New Proposed Residential Areas:

The projected population of Patiala city and the villages falling in proposed urbanisable limit works to be 8,50,000 persons by the year 2031 which is more than two times the number of 2001 census, therefore the rise in demand for residential areas is inevitable. In order to accommodate the growing population within the limits of proposed urbanisable area of Patiala and other town i.e. Sanaur M.Cl, the proposals have been suggested for the pockets which have been identified as most potential and suitable for residential purpose. As stated in chapter 8.5 an area of 5212 ha. is required for residential purpose for Patiala and Sanaur within urbanisable area by the year 2031. Keeping in view the trend and growth potential of residential areas and accessibility of area around Bhadson and Sirhind

road and location of Omaxe Integrated Township on Sirhind road etc. some potential pockets have been identified suitable for residential purpose such as on northern side of Patiala, between Bhakra canal and existing bandha along Bari Nadi up to proposed outer ring road. The area falling within the revenue boundary and existing permanent feature on the other side of outer ring road has also been proposed for residential use so as to control the haphazard / unauthorised construction along the ring road.

On eastern side, there is a good potential area along Rajpura road due to location of Urban Estates, Punjabi University and some industrial area. Keeping in view the above factors, residential area has been proposed between railway line and Rajpura road and between Rajpura road and proposed outer ring road.

On south-eastern side of Patiala city, there is a good potential area lying between Rajpura road and proposed stretch of southern bye-pass because of location of already developed Urban Estate Phase I, III, unauthorized colony alongwith PAP residential and official area. On the same style, area falling outside the proposed ring road either upto village boundary or permanent feature has been proposed as residential. Similarly Sanaur M.CI is located at a distance of 4 Kms from Patiala M.C boundary. Keeping in view the urban sprawl between Patiala and Sanaur along the transport nodes, outgrowth of Sanaur and potential of growth, area of entire revenue boundary within Sanaur has been proposed for residential purpose.

Area lying on the other side of the elevated southern bye-pass between Patiala-Bhunherheri road & Patiala-Samana road upto village boundary has been proposed as low density II RD₃ with upto 100 persons/acre keeping in view the potential of development.

On western side of city, area lying between Bhakra canal and proposed outer ring road has been proposed for residential purpose. Area out side the proposed outer ring road and existing elevated ring road upto village boundary area has been proposed for residential purpose to control the haphazard development.

Similarly area all around the Rajiv Gandhi University upto village boundary has been proposed for residential use. The above mentioned residential area has been proposed as low density I RD₃ with 101-150 persons per acre.

8.11.2. Commercial zone

General Business

As discussed in chapter 3.4 the second largest share of workforce of Patiala city is engaged in commercial activity which is about 21% of total workforce. The study reveals that the existing walled city which acts as Central Business District (C.B.D) or the main

commercial centre of city is very congested where lack of parking facilities and inadequate approach etc are the major problems. Therefore to serve the additional population of the city, more new commercial areas are proposed to be developed in the new expansions. It has also been kept in mind that Patiala will continue to function as a regional centre and will serve the larger area than its planning area. More commercial centers will be required in new residential areas but the sites would be earmarked only at the stage of preparation of zonal plans. The existing commercial areas shall remain the part of proposed commercial use zone. Thus total area comprising of 29.06 hectares as shown in table 8.11.2 which has already been proposed and approved by govt. as commercial area in various schemes is yet to develop.

The latest trend of commercial development i.e. Shopping Malls and Multiplexes are also coming up in Patiala. Sites of five such type of complexes have been cleared by govt. Out of these five complexes, three have been covered under OUVGL scheme which comprises of one multiplex i.e. Wedding Mall on the Mall Road which is near completion. The other two shopping malls which have been cleared by govt. and auctioned comprises of Old District Education Office near Sheran Wala Gate and 40 –D in Chotti Baradari but development works have not started as yet. Similarly development of fourth site i.e. Rakhra Multiplex cleared by Municipal Corporation on Bhupindra road is yet to start. Fifth site has been earmarked in 25.5 acre scheme of PUDA along Patiala - Rajpura road. However, present city centre would continue to maintain its status in spite of the challenges of latest trend.

Table No 8.11.2- Proposed Commercial Areas

Sr.No.	Name of the Commerical Pocket	Area	
		Acres	Hectares
1	40 –D Shopping Mall	1.18	0.41
2	D.E.O Office Shopping Mall	0.65	0.24
3	Wedding Mall	3.15	1.29
4	Old M.C Mid Town Plaza	1.00	0.41
5	Adjoining D.A.C	5.32	2.16
6	In Yadvindra Enclave	0.58	0.23
7	Kaurji di Haveli (Old Tehsil)	4.33	1.76
8	Patiala Hotel	2.70	1.10
9	Omaxe commercial	11.90	4.83
10	Phase-II Commercial Pocket	27.31	11.07
11	Phase-III Commercial Pocket	9.93	4.03
12	26.7acres scheme Rajpura road	3.74	1.53
	Total	71.79	29.06

Besides above, several pockets already planned as commercial in Urban Estates, Development Schemes and under OUVGL schemes have also been zoned as commercial

which will not only serve the local needs of city dwellers, but also of the larger region.

Informal Sector

A survey of unorganized trading activity in Patiala was conducted by this office and identified about 22 locations (8 in walled city and 14 outside walled city) in the city where concentration of informal sector in the form of rehri, roadside sellers, tharas etc was found to be maximum. It is felt that organized sites for informal sector are required to be created near the main city functions such as Railway Station, Bus stand, Hospital, Major institutions, Courts and other transport nodes etc. It is suggested to propose organized rehri sites in the land of commercial use in Urban Estate Phase II, III and Development schemes of S.S.T Nagar, Yadvindra Enclave and Phulkian Enclave Scheme under OUVGL scheme. Similarly new commercial areas to be developed or underutilized, strategically located govt. lands when redeveloped for commercial use, should have adequate provision of planned rehri markets and should be made an integral part of planned commercial as has been done in Chandigarh.

8.11.3. Wholesale Market and Warehousing Zone

New fruit and vegetable market comprising of 21 acre on Sanaur road is coming up. This market is going to be the first multilevel and second largest fruit and vegetable market of Punjab, which will have cold store along with ripening centre also. Keeping in view the potential of this important market and strategic location of triangular area **comprising of 133.58 ha between Devigarh road and Sanaur road extending upto M.C limits has been proposed** as wholesale market and warehousing zone comprising of commercial activity, warehouses, service industry, cold store uses as well. This zone has been proposed keeping in view the good accessibility to the site as it abuts SH-8 Bhunerheri road which leads to Delhi via Pehowa. Secondly its connectivity with NH-64 i.e Rajpura road and Sirhind road via link along Bari nadi. The other wholesale markets such as Grain market, Cloth market, Book market and Medicine market which are existing in the city would continue as such. The future requirements of wholesale markets will be fulfilled in this pocket.

8.11.4. Industrial Zone

The proposed area worked out for industrial use comes out to 210 ha which is based on the assumption of present share of industrial workers in the total work force. This percentage of work force engaged in industrial sector may increase with the passage

of time depending upon the new liberal industrial policy of Punjab govt. and presuming the initiation of direct rail link between Patiala and Delhi. Keeping in view the above facts, **industrial zone comprising of 1788.82 ha** has been proposed between Bari Nadi and village Daun kalan & proposed outer ring road and railway line. Similarly the area falling on the other side of the outer ring road upto village boundaries has been proposed as industrial. This zone has been proposed keeping in view the accessibility from Sirhind bye-pass through existing 60' wide road of Industrial Focal Point alongwith existing road on bandha which can be widened and from Rajpura road via Daun kalan road. At the same time this site has the advantage of railway siding for the development of industrial growth. Additional area has also been proposed in continuation of existing industries namely Federal Mogul and Milk food around Rajpura road. Where the industrial and residential use zone coincide, 15m wide green strip of broad leaved trees shall be provided within the industrial use zone as per the notification no. GPC/Gen./419/2009/ 3658-63 dated 2-2-09 issued by Punjab Pollution Control Board.

DMW, Industrial Focal Point on Bye-Pass, Industrial Estate on Sirhind Road, Verka Milk Plant have been spot zoned in the proposed Land use Plan.

Industries which have not been spot zoned and which do not conform to the provisions of Zoning Regulations shall be treated as per section 79 of "The Punjab Regional & Development (Amendment) Act, 2006".

8.11.5. Mixed Landuse Zone

Keeping in view the higher level of potential for development along transport corridors, a mixed landuse zone has been proposed outside the urbanisable limits of Master Plan of L.P.A.Patiala as shown in Drg.no. DTP(P)3524/10 dated 04.08.2010. The principle objective of mixed land use development is to provide a variation of residential, commercial, institutional, recreational uses and 95 industries (not included in green, orange and red category as listed by Punjab Pollution Control Board (PPCB) or as amended from time to time shall be permissible subject to environmental safeguards.) in a regulated manner. The mixed landuse zone is proposed on both sides of roads upto a depth of 200 mts including adequate provision of service road with the exception of Patiala – Rajpura road where the depth proposed is 300 mts.

- Patiala – Nabha road (one side)

- Patiala – Sirhind road
- Patiala – Bhunerheri road
- Patiala – Samana road (one side)

It was decided in the 19th meeting of Punjab Regional & Town Planning and Development Board held on 29.07.2010 that based on Aerocity Project launched by Greater Mohali Development Authority, same pattern may be adopted for project at Patiala on priority. Development in terms of residential, commercial and institutional use in area upto 500 mts on both sides of proposed 5.5 km long road originating from Sirhind road and joining the proposed ring road near Bhakra canal as envisaged by P.W.D (B & R) and thereafter crossing Bhakra canal along proposed R-1 road upto Sangrur road via Nabha road shall be taken on priority.

Mixed landuse of 200 mts on both sides of 200' wide road from Sirhind road to Rajpura road (excluding Industrial focal point, D.C.W and Urban Estate Phase-II) comprising of residential, commercial and institutional uses shall be permissible which shall have a minimum set back of 5 mts.

Industrial mixed use has been proposed in Old Factory Area which has a mix character comprising of residential, commercial and industrial use. It is worth mentioning that no industry other then those permitted by Punjab Pollution Control Board shall be allowed in the industrial mix area (Old Factory Area).

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.
- 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.

8.11.6. Rural and Agricultural Zone

With the intention of preserving the basic character of agriculture, the remaining part of the rural area which has not been proposed for any other use will be retained as predominantly agricultural. This zone also includes village Abadis and their permitted expansion upto 100 metres from existing phirni. This zone broadly comprising of agriculture, poultry, piggery, horticulture, floriculture, forest and other uses complimentary to agriculture are proposed, the detail of which is given in zoning regulations. Out of total area of 49696 hectares of LPA Patiala **23526.33 hectares** have been proposed to be kept under rural and agricultural zone which is 47.34 % of total area. Drg no. DTP(P)3524/10 dated 04-08-2010 clearly shows that major share of land is allocated to rural and agriculture zone.

Green belt between bandha and Bari nadi and the area where Bari nadi and Chotti nadi meet has been proposed. The location of this area is shown in the proposed land use plan

of LPA Patiala. Similarly green belt of 30 meters on the other side of Bari Nadi within proposed sectors has been proposed.

8.11.7. Designated Areas

Public & Semi-public

As it has already been discussed in chapter 4 of the report, there are several categories of designated areas such as Public & Semi-public uses existing in the Patiala city, Sanaur and in LPA Patiala. The existing important educational institutes namely Thapar University, Punjabi University, Rajiv Gandhi University, of Law along with Mohindra College, Modi College, Govt. College For Women, State College of Education, Medical College, Dental College, Ayurvedic College and Yadvindra Public School, Polytechnics and two ITTs have been proposed to be retained and have been spot zoned as designated area. Similarly the existing medical institutes namely Rajindra hospital, Dental hospital, Ayurvedic hospital, Mata Kaushalaya hospital, & T.B hospital have been proposed to be retained as such and shown as designated area. Similarly the other educational and medical institutes have been shown as part of residential zone. More such institutes will be required in new residential areas but the sites would be earmarked only at the stage of preparation of zonal plans.

The Baradari Garden and major parks like Environmental Park, Sunken Park, Rose Garden have been spot zoned as designated area, however the smaller parks are supposed to be part of the residential zone. For future requirements the green areas as per the provisions of PAPRA Act, 1995 would be carved out at the time of preparation/approval of residential estates/colonies. The existing National Institute of Sports, Dhruve Pandove Cricket Stadium, Polo Ground have been spot zoned as designated area however the other play grounds, swimming pools forming part of institutes have been retained in the residential zone.

The new upcoming bus stand on a site of (13.78 acre) 5.58 ha has been earmarked opposite S.S.T. Nagar which has been approved by govt. The encroachments on the site have been already removed.

Utilities

The area covered under utilities namely water works, electric grid stations, sewage disposal, solid waste, communication and sewage treatment plant are designated for the same use and have been proposed to be retained as such. The future requirements shall be

taken care of at the time of preparation of Zonal Plans.

There is a proposal to have one Sewage Treatment Plant (STP) comprising of 6.5 acres of land along elevated bye-pass adjoining the recently established Main Pumping Station (MPS) along Jacob drain, Main road. Similarly shifting of dump site is under active consideration of administration.

8.11.8. Conservation Areas

- **Heritage Protected Areas**

28 important heritage/protected buildings and active green area of Baradari have been listed out of which 12 buildings have been declared as protected monuments under 'The Punjab Ancient & Historical Monuments and Archaeological Sites & Remains Act, 1964' by the Department of Cultural Affairs, Archaeology and Museums, Punjab.(as per list attached at Annexure-V).

Conservation of Baradari Garden

The main Baradari Garden is a fascinating example of the 19th century landscaping which includes orchards, botanical garden, an ornamental garden, rock garden, fern house, green house, fountains, Rajindra Park and a flower nursery. This alongwith Rajindra Kothi (Heritage Hotel), Rajindra Gymkhana Club, Yadvindra Services Officers Institute, Circuit house, Punjab Public Service Commission building, Dhruv Pandove Stadium buildings out of the listed heritage buildings have variety of architectural styles build by successive rulers of Patiala State and meandering avenues in Baradari garden have immense heritage value that needs to be conserved and preserved. This has been the vital outcome of deliberations of SWOT analysis by Think Tank Members.

Any site included under OUVGL scheme will automatically get incorporated as such in the master plan.

Proposal of Heritage Committee

Though such an agency is there at the state level as mentioned in chapter 6, but constitution of Heritage Committee at city level is of immense importance which can provide expert advice for listing, identifying and documenting by preparing measure drawings wherever possible and detailed architectural photography may be done with the help of institutions like INTACH and Architecture Colleges imparting training in architectural conservation Also grading of these listed buildings needs to be done with a view to manage their conservation, reuse and redevelopment.

Following is the recommended composition of Heritage Committee at city level:-

1. Administrator Patiala Development Authority
2. Senior Architect, Patiala
3. District Town Planner, Patiala
4. X.E.N P.W.D, B&R (Provincial division)
5. Historian from Punjabi University
6. Conservation Architect
7. Representative of NGO like INTACH

Any proposal for reconstruction, redevelopment of listed heritage buildings, precinct must be referred to Heritage Committee and recommendations of this committee must be followed by competent authority whether Municipal Corporation, Patiala ,PUDA or PDA. The committee will put forth its consolidated proposals for conservation, redevelopment and reuse of various heritage buildings to 'The Punjab Heritage and Tourism Promotion Board' who would arrange the financial help for these proposals.

The broad framework of grading is given as under:-

Listed Heritage Buildings/Precincts may be graded into three categories. The meaning of these Grades and basic category for development permissions are as follows:

Grade-I	Grade-II	Grade-III
A.DEFINITION: Heritage Grade-I comprises of buildings, and precincts of national or historical importance, embodying excellence in architectural style, design, technology and material usage, they may be associated with a great historical event, personality, movement or institution. They have been and are, the prime landmarks of the City.	Heritage Grade-II (A & B) comprises of buildings of regional or local importance, possessing special architectural or aesthetical merit, cultural or historical value, though of a lower scale than in Heritage Grade-I. They are local landmarks, contributing to the image and identity of the City. They may be the work of master craftsmen, or may be models of proportion and ornamentation, or designed to suit particular climate.	Heritage Grade-III comprises of buildings, and precincts of importance for town scope including rock formations they evoke architectural aesthetic or sociological interest though not as much as in Heritage Grade-II. These contribute to determine the character of the locality, and can be representative of life style of a particular community or region and, may also be distinguished by setting on a street line, or special character of the facade and uniformity of height, width and scale.
B. OBJECTIVE: Heritage Grade-I richly deserves careful preservation.	Heritage grade-II deserves intelligent Conservation	Heritage Grade-III deserves protection of unique features and attributes.
C. SCOPE FOR CHANGES: No interventions would be permitted either on the exterior or interior unless it is necessary in the interest of strengthening, and prolonging the life of the	Grade-II(A) Internal changes, and adaptive reuse will be generally allowed, but external changes will be subject to scrutiny. Care would be taken to ensure the conservation of all special aspects	External and internal changes and adaptive reuse would generally be allowed. Changes can include extensions, additional buildings in the same plot or compound provided that extension/

buildings or precincts or any part or features thereof. For this purpose, absolutely essential and minimal changes would be allowed and they must be in accordance with the original	for which it is included in Heritage Grade-II Grade-II(B) In addition to above extension or additional buildings in the same plot or compound could, in certain circumstances, be allowed provided that the extension/additional buildings is in harmony with (and does not detract from) existing Heritage Building(s) or precincts especially in terms of height and facade.	additional buildings is in harmony with and does not detract from the existing heritage building/precinct especially in terms of height and/or facade. Reconstruction may be allowed when the building is structurally weak or unsafe or when it has been affected by accidental fire or any other calamity or if reconstruction is required to consume the permissible Floor Space Index and no option other than reconstruction is available.
D. Procedure:- Development permission for the changes would be given by Municipal Corporation, Patiala, Patiala Development Authority on the advice of the proposed Heritage Committee to be appointed by State Government	Development permission for the changes would be given by Municipal Corporation, Patiala, Patiala Development Authority in consultation with Heritage Conservation Committee.	Development permission would be given for change by Municipal Corporation, Patiala, Administrator Development Authority itself but in consonance with guidelines, which are to be laid down by Heritage Conservation Committee.
E. Vistas/surrounding Development : All development in areas surrounding Heritage Grade-I shall be regulated and controlled, ensuring that it does not mar the grandeur of or views from, Heritage Grade-I.		

Forest Zone

The area comprising of Bir Moti Bagh, Bir Kheri Gujran, Bir Sanaur and Bir Sarkar / Kheri Mallah has been declared as protected forest as per notification no 2026/Ft(iv)-61/3654 dated 5th July, 1961 as attached at Annexure VII (a) These forests come under the purview of The Indian Forest Act, 1927, Forest (Conservation) Act, 1980. More area under forest cover exists than the above notified forest area as shown on proposed land use plan.

Areas on sides of canals, distributaries, drains, P.W.D roads and railways have been declared as 'Protected Forests' II class, by Govt. of Punjab Notification No. 3059-FT-58 dated 24.6.58, No. 6058-FT-111-57/3305 dated 31.12.57 and 4362-FT-58/1456 dated 19.11.58 respectively which are given in Annexure VII (b) only.

8.11.9. Defence Land

A large area of **1613.66 hectares** belongs to Defence Department in which only the uses related with defence department are permissible. Similarly area comprising of 205 ha lying between elevated bye-pass and defence land has been proposed for defence

purposes as acquisition proposal of same was received by the office of District Town Planner, Patiala from Deputy Commissioner, Patiala. This makes total area under defence use to the tune of 1818.66 ha.

Restricted Areas

There is a restricted area (Prohibited) where restrictions are clearly spelled out in part II Section 4 for the Gazette of India – New Delhi, 16 January, 2006 where the Ministry of Defence in exercising the powers of section 3 and 7 of The Works of Defence Act, 1903 had found it expedient to impose restrictions upon the use and enjoyment of the land lying in the vicinity of Ammunition Dump in LPA Patiala. As per the gazette notification in respect of Ammunition Dump, Patiala issued by Government of India, Ministry of Defence vide No PC to MF 13/50542/AD Patiala/LW (West) /28/US (D) / D (Land)/2005 dt 16.Jan 2006, no construction is to come up with in 1000 yards (914.4m) from the crest of the outer parapet of Ammunition Dump. The above restricted zone will be observed in the Master Plan.

8.11.10. Transportation

Transport network and land use need to be considered in an integrated manner. For Master Plan of LPA Patiala extensive road network has been proposed, taking into account the connectivity requirements. The entire network will develop in phases as the traffic demand builds. However, it is emphasized that land use proposals of Master Plan may be reviewed as the road network actually develops.

The concurrent planning of urban and rural growth in L.P.A Patiala and the transportation system is required to provide an integrated, safe and efficient system for transportation of people and goods. The system is intended to meet the projected travel needs. The significant roads in the transport sector in L.P.A Patiala have been proposed as under:-

Proposed Road Network

The proposed road network for LPA Patiala has been developed in collaboration with the proposed land use pattern as shown in the Plan, Drg.No DTP (P) 3525/10.dt 04-08-2010. As far as possible efforts have been made to follow the existing road network while proposing the new hierarchy of the roads. The following hierarchy of roads has been proposed:-

- R-1 200 feet wide.
- R-2 150 feet wide.

- R-3 100 feet wide.
- R-4 80 feet wide

As per the projected volume of traffic on major roads of the city, few roads are going to be over crowded just by the year 2011 which indicates that by 2031 most of the roads will be overcrowded. In order to reduce pressure on these roads, it is envisaged to propose outer ring road of category R-1 connecting all the main radial roads entering the city.

Outer Ring Road Part-I (R-1 200')

Keeping in view the alignment of existing elevated southern bye-pass connecting Sangrur road with Rajpura road, northern outer ring road of R-1 category 26 km long shown in red & grey has been proposed so as to achieve a proper outer ring around Patiala city. This has been envisaged to discourage the movement of regional traffic with in Patiala city.

Outer Ring Road Part-II (R-1 200')

Since elevated southern bye-pass meets the Rajpura road near Urban Estate Phase I and II, large stretch of Rajpura road between Urban Estate Chowk and Bahadurgarh remains uncovered with the facility of bye-pass which will remain a traffic hazard due to huge regional and city level traffic movement. In order to give relief to this stretch of road portion, a small southern ring 200' wide has been proposed in the south-east direction of Patiala city connecting Rajpura road with elevated southern bye-pass and Sanaur road. Similarly the existing National Highways (radial roads namely Patiala-Rajpura road, Patiala-Sangrur road have been proposed to be widened to 200'.

R-2 Roads (150')

R-2 roads shown in green is the existing State Highway No. 8 namely Patiala-Bhunerheri road and Patiala–Sanaur road which have been proposed to be widened to 150' keeping in view the potential of development.

R-3 Roads (100')

R-3 roads shown in magenta and proposed as the outer sector roads which are predominantly the existing important roads connecting Patiala with surrounding towns namely Samana, Nabha, Bhadson, Sirhind, Ghanaur, Cheeka and Main .

R-4 (80')

These have been shown as mustard and are the important existing roads namely Ghanaur road via Chaura to Noorkherian and another from Patiala- Rajpura road along PAP head quarter via Jalalpur and Budhanpur.

P A T I A L A

LOCAL PLANNING AREA

PROPOSED TRANSPORT NETWORK PLAN (2009-2031)

LEGEND

	LPA BOUNDARY		R.O.B EXISTING
	MC LIMIT		R.O.B PROPOSED
	VILLAGE BOUNDARY		R.U.P EXISTING
	ROADS		R.U.P PROPOSED
	HATCHA ROADS		PEDESTRIAN OVERBRIDGE/UNDERBRIDGE
	RAILWAY LINE		JUNCTION TO BE DETAILED
	EXISTING / PROPOSED ROAD (R-1)		RAILWAY STATION
	EXISTING / PROPOSED ROAD (R-2)		EXISTING BUS STAND
	EXISTING / PROPOSED ROAD (R-3)		NEW BUS STAND SITE
	EXISTING / PROPOSED ROAD (R-4)		EXISTING TRUCK STAND
			WATER BODIES

DEPT. OF TOWN AND COUNTRY PLANNING, PUNJAB			
DRAWN BY: <i>[Signature]</i>	CHECKED BY: <i>[Signature]</i>	DATE: <i>10/10/2009</i>	SCALE: <i>1:10,000</i>
DESIGNED BY: <i>[Signature]</i>	APPROVED BY: <i>[Signature]</i>	DATE: <i>10/10/2009</i>	SCALE: <i>1:10,000</i>
PUNJAB GOVT. ENGINEERING DEPT. (PUNJAB) PUNJAB GOVT. ENGINEERING DEPT. (PUNJAB) PUNJAB GOVT. ENGINEERING DEPT. (PUNJAB)			

Road Cross – Sections of proposed R1, R2, R3 and R4 shall be procured from concerned road authority.

Proposed roads for capacity enhancement in Urban Area-2031

Following three roads for widening have been proposed as under:-

- i. Lower Mall – From Fountain Chowk to N.I.S Chowk.
- ii. There is urgent need to widen the existing road along Bari nadi between Sanaur bridge and bye-pass from 27' to 52' by maintaining appropriate angle of repose as per the availability of land.
- iii. Similarly road along Chotti nadi from Sheesh Mehal to Rajpura road needs to be widened to join the Sirhind road by using bandh parallel to nadi if only Railway Authority allows the functioning of level crossing and thereafter the railway overbridge.

R.O.B's

There are three Railway Over Bridges (R.O.B's) presently existing in the city. In order to ensure the smooth flow of regional and local traffic over the existing and proposed roads of LPA Patiala, four more R.O.B's are proposed. The list of R.O.B's in order of priority is given as below;

- On inner bye-pass near D.C.W.
- On outer ring road connecting Rajpura road with Sirhind road on Rajpura railway line.
- On outer ring road connecting Sangrur road with Nabha road on Dhuri railway line.
- On new link connecting Sirhind road with Rajpura road along Chotti nadi by using bandh parallel to nadi.

Road Under Pass (RUP)

In order to facilitate free movement of traffic on following intersections, RUP's are proposed

- RUP between Urban Estate Phase-I and II
- RUP in front of new bus stand and S.S.T Nagar.

In order to facilitate the movement of pedestrians while crossing the congested Rajpura-Patiala-Sangrur road, the following four Subways are proposed:-

- At Bahadurgarh chowk
- In front of Punjabi University
- Near Birji cremation ground
- Near Kali Devi Mandir

Furthermore, another pedestrian overbridge/underbridge near Gurudwara Dukhniwaran Sahib is proposed.

Termini

- **Bus Terminal**

The Existing bus stand falls in the centre of the city and at present is over crowded. In order to provide relief to city roads, new bus stand for inter city traffic has been finalised opposite to S.S.T Nagar. The site measuring about 5.58ha. (13.78 acres) approximately with State of art facilities has been cleared of the encroachments and development work has to start

- **Truck Terminal**

The present site of truck stand is located on 41 acres out of which 9 acres has been given to Kabari Market shifted from walled city.

Bus Rapid Transit System

L.P.A Patiala is estimated to have a population of over 8 lakhs by 2031. A city of this size with increasing vehicular ownership would face serious traffic and environmental problems. Effective and efficient public transport in the form of bus service will be an imperative need. To maximize the advantages of bus transport, bus rapid transit system needs to be introduced in an integrated manner that includes exclusive bus lanes, properly designed bus stops and modern fleet. In addition, BRTS may have its bus depot at suitable location and part of the site of existing bus stand when relocated to new site can be used as terminal. Some of the routes that seem to be suitable for BRT routes are identified and listed below, however, a detailed feasibility study will have to be undertaken before introduction of BRTS:-

- Starting from Chamarheri village on Patiala-Rajpura Road crossing Punjabi University, Urban Estates upto existing bus stand and thence towards Nabha road upto village Rauni.
- Starting from village Chamarheri upto existing bus stand and then after crossing Gurudwara Dukhniwaran Sahib upto village Hardaspur on Sirhind Road.
- Starting from village Rauni on Nabha Road then turning right on Bhupindra Road upto Rajindra Hospital and finally village Ranbirpura on Sangrur road.
- From bus stand via Fountain Chowk, Upper Mall upto village Main.

Proposals for urban roads

The study of existing city road network reveals that there are several roads which are overcrowded at present carrying more volume of traffic than the capacity. There is no possibility or scope of widening of these roads in thickly built up areas of the city, however, some measures of road engineering can be adopted for improving the capacity of these roads. As per the guidelines for capacity enhancement of urban roads in plan

areas published by the Indian Road Congress, in the event of traffic on a road section exceeding the design service volume at the desired level of service, the operating conditions will deteriorate. If so, the available practical capacities can be improved through applications of traffic engineering techniques besides better enforcement. The following are the measures that could be considered for enhancement of capacity of existing roads after carrying out extensive survey of each road and junction:-

- Prohibiting on –street parking of vehicles, and simultaneously developing off –street parking facility;
- Segregating the bi-directional traffic flow through central verge/median;
- Provision of segregated right – of – way for slow moving vehicles;
- Imposing restrictions on the movement of animal drawn /other slow moving vehicles, and/ or heavy commercial vehicles on busy arterial/ sub-arterials during selected periods, specially the peak hours;
- Reduction of roadside friction through control of abutting land – use and roadside commercial activity;
- Provision of adequate facilities for pedestrians and cyclists;
- Banning certain conflicting movements at major intersections, particularly during peak hours;
- Controlling the cross traffic and side –street traffic by regulating the gaps in median.

Arboriculture

The list of trees as given in Annexure VIII is to be followed for plantation along roads R1, R2, R3 and R4.

8.12. ZONAL DEVELOPMENT PLANS

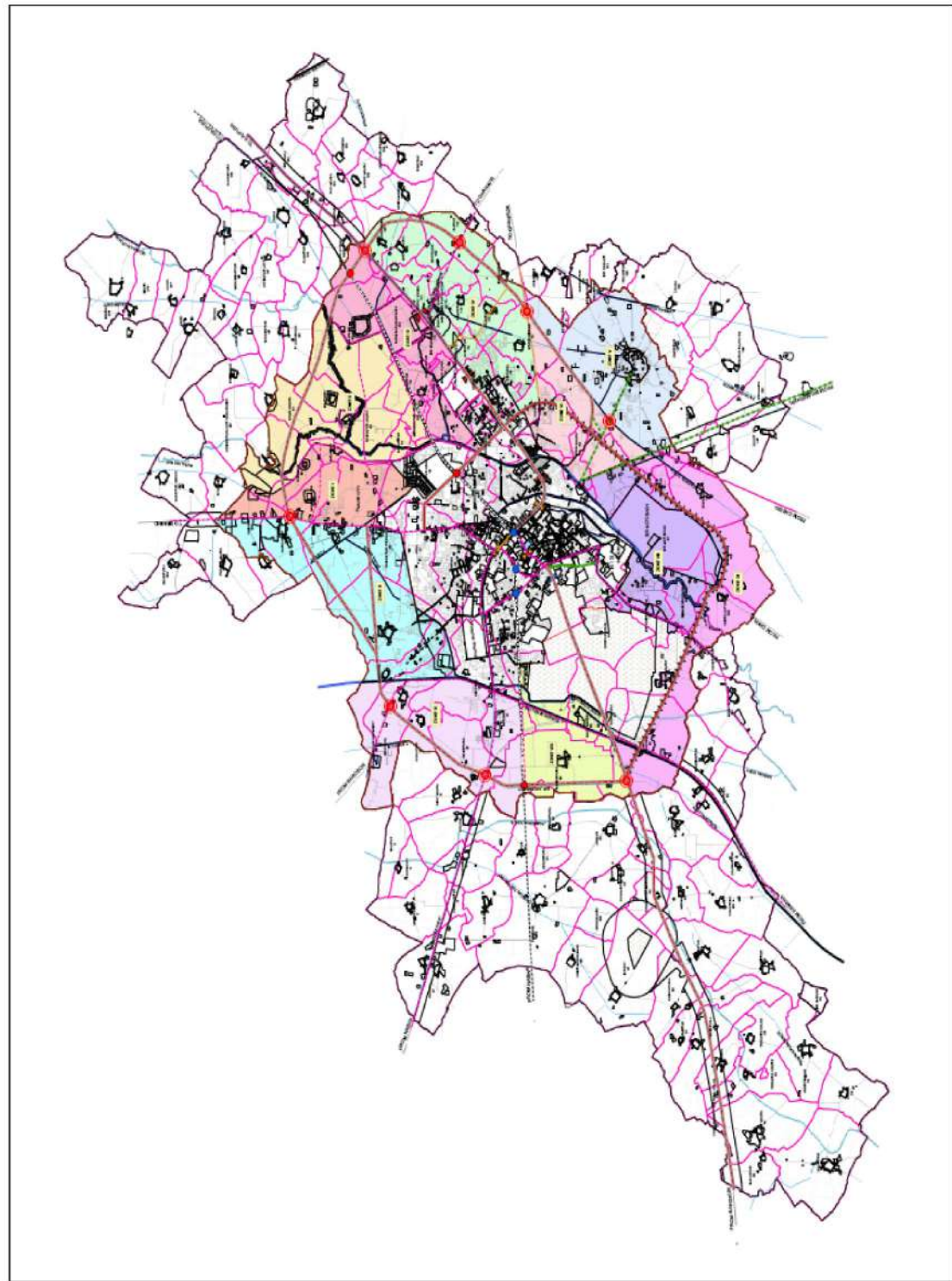
In order to realise the proposals of Master Plan, the proposed area within urbanisable limits of Master Plan has been divided into eleven zones as shown on drawing no.DTP(P) 3527/10 dated 05-08-10, the detail planning of which shall be carried out later on.

Wherever any ambiguity arises in colour/notation and road alignment shown in the proposed landuse plan, the same shall be clarified in the zonal development plans and shall be followed.

8.13. Zoning Regulations

The zoning regulations proposed for adoption in L.P.A Patiala are as below:-

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, Patiala declared under section 56(i) 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 Master Plan prepared for Local Planning Area, Patiala.

8.13.1 SHORT TITLE, SCOPE, EXTENT & COMMENCEMENT

Title

These regulations shall be called the Zoning Regulations for Local Planning Area, Patiala 2009 (hereinafter referred to as “these Regulations”).

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.

Jurisdiction

These regulations shall apply to all “development” in the Local Planning Area, Patiala declared under section 56(i) of "The Punjab Regional and Town Planning and Development (Amendment) Act, 2006" vide notification no 12/74/06 – 4 HGI/38 dated 2-1-2008.

Date of Coming into 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 in considering the applications for permission for development shall have due regard to the draft proposals including these regulations.

8.13.2 DEFINITIONS

For the purpose of these zoning regulations, the following definitions, unless the context otherwise requires, shall apply:-

1. **“Act”** means "The Punjab Regional and Town Planning and Development (Amendment) Act, 2006" (Punjab Act No. 11 of 1995).

2. **“Government”** means the Government of the State of Punjab.
3. **“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.
4. **“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, Patiala.
5. **“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 No 12/74/06-4HG1/ 38 dated 2-1-08.
6. **“Existing Landuse Plan”** means the Plan showing the different landuses existing at the time of preparation of the Existing Landuse Plan of Local Planning Area, Patiala and as indicated on Drawing No. DTP (P) 3485/09 dated 12-6-09.
7. **“Proposed Landuse Plan”** means the plan showing the proposed admissible uses of different areas and landuse zones covered in the Local Planning Area, Patiala and as indicated on **Drawing No. DTP (P) 3524/10/ Dated 04-08-2010.**
8. **“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 landuse.
9. **“Zonal Plan”** means the detail plan of a part of Master Plan as delineated in the plan showing different zones and this zonal plan will show all or any of the following:-
 - a) Areas earmarked for various land uses as per approved Proposed Land Use Plan.
 - b) Existing railway lines, existing and proposed road network, water bodies etc.
 - c) Area temporarily or permanently prohibited for the building operation.
 - d) Any other detail required to be provided in the zonal plan.
10. **“Zoning Plan”** means the plan of area or part there of 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 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.

11. **“Mixed Landuse”:** Mixed landuse development is to provide a variation of residential, commercial, institutional, recreational uses and 95 industries (not included in green, orange and red category as listed by Punjab Pollution Control Board (PPCB) or as amended from time to time shall be permissible subject to environmental safeguards.) in a regulated manner.
12. **“I.T. Park”:** Information Technology can be defined in various ways. Among the most common is the BEA’s (Bureau of Economics Analysis) category “Office, Computing and Accounting Machinery (OCAM) which consists primarily of computers. some researchers looks specifically at computer capital, while others consider the BEA’s broader category,”
13. **“Fashion Technology Park”:** Design when applied to fashion means art dedicated to creation of wearing apparel and life style. Fashion design is creating new clothing designs and setting or wearing them.
14. **“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 effects on air and water and causing no nuisance whatsoever. Uses in such parks will be determined by Chief Town Planner, Punjab.
15. **“Logistic Park”** is an integrated facility to serve as a business hub for storage, insurance and distribution purposes for the trading of manufactured products.
16. **“Farm House”:** Farm house means a building allowed on a holding of agricultural land for residential and agricultural activity of the land holder. The total floor area of such farm house shall not exceed 2% of the area of holding or 200 sq.mtr whichever is less.
17. **“Industry”:** This includes green, orange and red category and any other category as categorized by PPCB/Department of Industries or as amended from time to time. It excludes mining and quarrying.
18. **“House Hold Industry”:** 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.

19. **“Public and Semi Public activities”:** Public and semi public activities means governmental/semi governmental offices, educational, medical institutions, recreational and entertainment facilities, cultural and religious institutions etc.

Terms and phrases used, but not defined in these regulations, shall have the same meaning as assigned to them in Act.

8.13.3 LAND USE ZONES

The proposed land use plan incorporated in the Master Plan of LPA Patiala depicts the following land use zones:-

- 3.1 Residential
- 3.2 Commercial
- 3.3 Industrial
- 3.4 Wholesale and Warehousing
- 3.5 Mixed Landuse
- 3.6 Rural and Agricultural

USE PROVISIONS IN LANDUSE ZONES:-

Permissible uses in the above land use zones are given below:-

4.1 Residential: Permissible Uses

Housing

- Plotted housing, Group housing, Farm houses
- Oldage homes, Orphanages, Homes for mentally/physically challenged children, leprosy ashram, hostels
- Service apartments, Hotels, Motels, Guest houses, Dharamshalas, Lodging houses, Serai, Rayan Baseras
- Jails, Asylums, Reformatories

Trade

- Retail trade and service shops, restaurents.
- Professional services such as those provided by lawyers, accountants, town planners, architects and others, A.T.M., Cyber Cafes
- Rehri markets
- Departmental stores, shopping malls
- Filling stations
- Gas distribution (without storage of cylinders)
- Milk chilling plant (in low density residential only)
- Gas godown / kerosene oil storage/fire cracker storage (in low density residential zone on independent plot only which shall be permissible till that time the residential or any other activity compatible to residential comes within a radius of 100 mts from the site)

- Dhobi ghats
- Household industry, Cottage industry, Atta chakki
- Repairs of household articles, cycles & scooters
- I.T.Park, Knowledge Park, Fashion Technology Park

Public, Semi-Public

- Education- schools, coaching classes, I.T.I., polytechnic, engineering college, medical college and other degree colleges, universities, professional research and training Institutions, advanced education and training like IIM or IIT.
- Health care- Clinics, health centres, dispensaries, nursing homes / nursingcare facilities health clubs, hospitals(including super specialty hospitals) (subject to notification no.17/7/5-Hg2-311/11.1.08), veterinary dispensaries and hospitals
- Art, entertainment, cultural and religious activities such as libraries, museums, clubs, marriage palaces, bhawans, sports activities including parks, gardens, play grounds, swimming pools, gymnasia, stadia, golf courses etc ., amusement parks, cinemas, auditoriums, theatres, places of worship.
- Public utilities and Services- Fire station, Dhobi ghat, Police stations, Post office etc., Bus Stand, Auto Rickshaw/Taxi Stand, Telecom & Transmission Towers.
- Plant, nurseries and green houses related to nurseries, floriculture
- Cemeteries/ Cremation ground/ Graveyard/ existing Caracus sites
- Water harvesting measures

Any other use not mentioned above but sub-servient to residential use shall be allowed with special permission from Chief Town Planner, Punjab.

4.2 Commercial: Permissible uses

Trade

- Retail trade, business showrooms & service shops, restaurants.
- Rehri markets, Informer markets
- A.T.M., Cyber Cafes
- Super markets, Departmental stores, shopping malls, multiplex
- Trade fairs, Exhibition & Convention centres
- Filling stations
- Gas distribution (without storage of cylinders)
- Printing presses, Atta chakki
- Automobile showrooms & motor market (Garages)

Housing

- Service apartments, Hotels, Motels, Guest Houses, Dharamshalas, Lodging Houses
- Residences on upper floors only

Offices

- Offices of all types

Public Semi - Public

- Education- coaching classes, distant education, I.T. enabled services
- Health care- Clinics, health centres, dispensaries, nursing homes, hospitals
- Art, entertainment, cultural and religious activities such as libraries, museums, marriage palaces, sports activities including parks, gardens, play grounds, swimming pools, gymnasia, stadia, golf courses etc ., amusement parks, cinemas, auditoriums, theatre, betting & gambling, pubs & bars, night clubs, night food streets, discotheques
- Plant, nurseries and green houses related to nurseries, floriculture

- All Public utilities and Services- Fire station, police stations, post office etc., Bus Stand, Auto Rickshaw/Taxi Stand, Telecom & Transmission Towers.
- Water harvesting measures

Any other use not mentioned above but sub-servient to commercial use shall be allowed with special permission from Chief Town Planner, Punjab.

4.3 Industrial: Permissible uses

All types of industries as classified by the department of industries and commerce further categorised by PPCB (Punjab Pollution Control Board) and following uses are permissible in the industrial zone:

- Junk yards, disposal works, gas works, power plant
- I.T.Parks, Knowledge Parks, Industrial Parks, Fashion & Technology Park, Film City
- Warehouses, godown & covered storage for industries, cold stores, logistic parks, freight complex, container yards, dry port, weigh bridges
- Loading & unloading yards, truck terminals, bus terminals, railway station and siding, railway yards, helipads, metro stations
- Tempo / Taxi stand, Bus stops, Tonga stand
- *Petrol filling / service stations, fuel storage, LPG storage, storage of fire crackers
- Education- Schools, coaching classes, I.T.I., polytechnic, engineering college, medical college and other degree colleges, universities, professional research and training Institutions, advanced education and training like IIM or IIT.
- Health care- Clinics, health centres, dispensaries, nursing homes, health clubs, hospitals, including super specialty hospitals (subject to notification no.17/7/5-Hg2-311/11.1.08), veterinary dispensaries and hospitals
- Entertainment centre, multimedia centre, hotel, restaurant, showroom of mills, marriage palaces, places of worships, automobile showrooms
- Govt., Semi – Govt / Private business offices, financial institutions
- Residences for watch & ward staffs, residences for industrial workers / management
- All public utilities, police beat box, fire station, cemeteries / graveyard, caracrus site (existing only), slaughter house
- Farming, quarrying

****The siting of petrol pumps shall be subject to instructions / guide lines of IRC / MORTH / TCPO / Punjab Govt. issued from time to time***

Any other use not mentioned above but sub-servient to industrial use shall be allowed with special permission from Chief Town Planner, Punjab.

4.4 Whole sale and Warehousing Zone: Permissible uses

- Whole sale trades with storage of all commodities including grain, fruit & vegetable market, iron and timber markets
- Residences for watch and ward staff
- Retail trade including markets for fruits & vegetables, meat & fish, super markets, informal shopping
- Department stores, Malls including Super Market, Multiplexes & Restaurants
- Showrooms of mill/factory retail outlets
- Petrol filling / service stations
- Kerosene storage/gas godown and storage of fire works
- Trade fairs, Exhibition & Convention centres

- Manufacturing of food products, furniture, repair of machinery & equipment
- Milk Chilling independent plot, Pasteurisation Plant, cold storage
- Warehousing, Rail and Air Freight terminals, Truck terminals, Bus terminals, Logistic Park Storage, Godown, Freight Complex, Container Yards
- Telecom & Transmission Towers
- Medical & Dental dispensary, Veterinary dispensary
- Places of worship
- Marriage Palaces
- Police Station, Fire station, Cemeteries, Grave yards, Cremation grounds
- Water collection, treatment & Supply
- Sewerage
- Water harvesting measures
- Plant nursery, green houses related to nursery, floriculture

Any other use not mentioned above but sub-servient to whole sale and warehousing zone shall be allowed with special permission from Chief Town Planner, Punjab.

4.5 Mixed Land Use Zone: Permissible uses

- All uses permissible in residential, commercial and 95 industries not included in green, orange and red category as listed by PPCB or as amended from time to time shall be permissible outside the urbanisable limits subject to environmental safeguards.
- The mixed land use zone shall not include uses like manufacturing industries prohibited in such area by the Science, Technology and Environment Deptt. However, existing industrial units may continue as per the provisions made in section 79 of Punjab Regional & Town Planning & development Act (Amended) 2006 for a specific period.

Any other use not mentioned above but sub-servient to mixed land use zone shall be allowed with special permission from Chief Town Planner, Punjab.

4.6 Rural & Agricultural Zone: Permissible Uses

This zone is sub divided into two zones viz Village Abadis and 100mts around phirni and rest of the area.

Permissible uses in Village Abadis and area upto 100mts of phirni

- Residential development in the form of plotted and group housing
- Educational, Medical, Cultural, Religious and Recreational uses which commensurate with the scale of village population
- Local commercial, service industry, dhobi ghat
- Public utilities & Services including communication towers

Permissible uses in the rest of the area

- Farm houses, hostels for students, working women
- oldage homes, orphanages, jails, asylums
- Agriculture, Horticulture, Dairy, Piggery, Fishing, Poultry Farming, Mushroom growing centre, Slaughter house
- Milk collection centres, Chilling Stations and Pasteurisation plants, Rice Shellers, Processing of farm (grains, fruits and vegetables) products, Brick Kiln, Lime Kiln, Charcoal Kiln
- Storage of Fuel Oils, LPG Storage Godowns, storage of Fire Crackers, wholesale trade of agricultural products only Warehousing, Godowns, Logistic park, Cold storage, Cement / Sand and Concrete mixing plant

- Railway station, sidings, bus stop, truck terminal, container yard, air freight and parking area
- Public buildings and utilities including Electric sub-stations, sewage treatment plant (STP) solid waste dump site, caracas disposal site
- Transmission and telephone lines and poles, telecommunication towers, surface drainage, water bodies including irrigation canals
- Afforestation including orchards, gardens and commercial timber, Land preservation and conservation measures such as storage, check dams, Water harvesting measures
- I.T.Park, Knowledge Park, Fashion Technology Park
- Education- schools, coaching classes, I.T.I., polytechnic, engineering college, medical college and other degree colleges, universities, professional research and training Institutions, advanced education and training like IIM or IIT.
- Health care- clinics, health centres, dispensaries, nursing homes / nursingcare facilities health clubs, hospitals(including super specialty hospitals) (subject to notification no.17/7/5-Hg2-311/11.1.08), veterinary dispensaries and hospitals
- Art, entertainment, cultural and religious activities such as libraries, museums, clubs, trade fairs, exhibition, mela grounds, camping grounds, marriage palaces, bhawans, sports activities including parks, gardens, play grounds, swimming pools, gymnasia, stadia, golf courses etc ., amusement parks, places of worship.
- Panchayat ghars, dharamshalas and any other project of Central and State Govt. agencies / Deptt. / undertaking / Local Bodies.

Any other use not mentioned above but sub-servient to rural & agricultural zone shall be allowed with special permission from Chief Town Planner, Punjab.

8.13.4 DESIGNATED AREAS

Following areas have been specifically designated in the proposed land use plan.

1. Traffic and Transportation
2. Recreational Uses
3. Utilities
4. Public & semi public
5. Protected Monuments/Conservation Sites
6. Heritage Buildings and Sites
7. Other Special Areas
8. Prohibited Areas
9. Forest Areas

USE PROVISIONS IN DESIGNATED AREAS

Following uses are permissible in the designated areas

1 Traffic & Transportation: Permissible uses

Rail yards, Railway station & sidings, Transport Nagar (including, Post & Telegraph offices & Telephone exchange, dhabas, labour yards, areas for loading and unloading, stores, depots, and offices of goods booking agencies, Petrol Filling station & service garages, parking spaces, public utilities and buildings broadcasting station, Bus Terminus & depot, bus stop shelter, taxi/ tonga/ rickshaw/scooter stands, parking spaces.

2 Recreational uses: Permissible uses

Sports Complex, Sports training centers, Swimming Pools with built up areas not exceeding 2 %. Regional parks, Local Parks, Green Belts, Play Grounds , Holiday Resorts with ground coverage not exceeding 2%, Open air cinema/auditorium, Shooting ranges, with built up areas not exceeding 2%.

Green belt proposed between bandha and Patiala-Ki-Rao shall be used for golf course, race course, play ground, parks, open spaces, orchards and gardens with no permanent building activity subject to clearance from Drainage deptt.

3 Utilities: Permissible uses

Water supply, Sewerage system (including main pumping station and Sewage Treatment Plant {STP}), drainage, storm water, waste processing and disposal, electricity, communication systems and related installations etc.

4 Public and semi-public activities: Permissible uses

Governmental and semi-Governmental offices, Governmental administrative centres, Secretariat, Educational- Cultural and Religious institutions including theaters, auditoriums etc. Medical Health Institutions, Community Centres, Club, Orphanage, Old Age Home, Banks, Police Stations etc.

5 Protected/ Conservation Sites: Permissible uses

In exercise of the powers conferred by rule 29&30 of 'The Punjab Ancient And Historical Monuments And Archaeological Sites And Remains Rules,1965' vide draft notification No. 10/46/09-4 T.C. dated 5.5.09 Department of Cultural Affairs, Archaeological Sites and Museums, Punjab had given one month's notice of its intention to declare under Rule 29(2) prohibited areas, 100 meters from the protected limits and further beyond it upto 200 meters near or adjoining protected 12 monuments located in L.P.A Patiala declared under. 'The Punjab Ancient And Historical Monuments And Archaeological Sites And Remains Act,1964' to be prohibited and regulated areas respectively for purpose of both mining operation and construction. The final notification under rule 30 of the said rules has not been issued so far.

6 Heritage Buildings and Sites

Material changes to heritage buildings by way of repair, replacement, reconstitution or change of use of any part or whole of the heritage building will require prior consent of the Heritage Committee (when constituted) New construction on the heritage site shall be

in conformity with the design, materials and elevation of the existing heritage structure and shall be permitted only with the consent of the Heritage Committee.

7 Other Use: Permissible uses

All the uses related to Defense Services and any other use as decided by the Ministry of Defense. No other uses are permitted.

8 Restricted Zone

There is a restricted area (Prohibited) where restrictions are clearly spelled out in part II Section 4 for the Gazette of India – New Delhi, 16 January, 2006 where the Ministry of Defence in exercising the powers of section 3 and 7 of the works of Defence Act, 1903 had found it expedient to impose restrictions upon the use and enjoyment of the land lying in the vicinity of Ammunition Dump in District of Patiala. As per the gazette notification in respect of Ammunition Dump, Patiala issued by Government of India, Ministry of Defence vide No PC to MF 13/50542/AD Patiala/LW (West)/28/US(D)/D(Land)/2005 dated 16.Jan 2006, no construction is to come up within 1000 yards (914.4m) from the crest of the outer parapet of Ammunition Dump. The above no development zone will be observed in the Master Plan.

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.

9 Forest Areas: Permissible uses

This area indicates all Reserved Forests as notified by the Forest Department and as shown on the Proposed Landuse Plan bearing drawing no. DTP(P) 3524/10 Dated 04/08/2010. No activity other than Forest is permitted in this area unless expressly allowed by the Forest Department.

8.13.5 SPECIAL CONDITIONS

- The siting of Petrol Pump / Filling Stations shall be subject to fulfillment of instructions/guidelines of IRC/MORTH/TCPO /Punjab Govt. issued from time to time.
- Minimum width of access road for warehousing uses shall be 80'.
- All public and semi-public uses in residential zone shall be located on independent plots with minimum access of 80'.

- All types of industries permitted in the designated land use zone are subject to the fulfillment of conditions issued by industries department / Punjab Pollution Control Board from time to time.

8.13.6 EXCEPTIONS

- 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.
- Notwithstanding the above, the uses specifically provided for in the Sector / Zonal Plans shall be permissible or as may be allowed by the Chief Town Planner, Punjab after special appeal where Sector / Zonal Plan is not prepared.
- Uses determined by the Chief Town Planner, Punjab as compatible with uses permissible shall be allowed in respective zones.
- Developments approved prior to coming into force of these Regulations shall be deemed to be in compliance with these regulations.
- The site on which various projects have been approved or whose change of landuse has already been permitted by competent authority/Govt. such sites shall be deemed to be adjusted.
- Uses of Land covered under Optimum Utilisation of Vacant Govt. Land (OUVGL) Scheme of the State Government shall be determined by the Government at any appropriate time notwithstanding the provisions of these regulations subject to the fulfillment of other requisites like minimum area, road width and frontage etc. of the respective landuse.
- 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 shall prevail.
- 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.

- 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.

8.13.7 RESIDENTIAL DENSITIES

Residential zone is divided into three sub zones viz. High Density Zone, Medium Density Zone and Low Density Zone and are shown on the Proposed Land Plan Drg no. DTP (P) 3524/10 dated 04-08-2010. The maximum permissible density in these zones shall be as shown in table below:

Sr.No.	Zone	Density
1	High Density Residential Zone RD ₁	Above 200 persons/acre
2	Medium Density Residential Zone RD ₂	151-200 persons/ acre
3	(a) Low Density I Residential Zone RD ₃	101-150 persons/ acre
	(b) Low Density II Residential Zone RD ₃	Upto 100 persons/ acre

Note:

However to encourage group housing and save agricultural land, 60 dwelling units/acre shall be permissible in stand alone group housing projects irrespective of the density of particular zone.

8.13.8 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.
- Similarly land owners proposing development of certain uses on their land can obtain a certificate of “Compliance with Master Plan” from a designated authority.

- In the extended M.C limits after the notification of Master Plan the stipulations in the Master Plan for area outside Master Plan shall continue to be applicable in the extended M.C limits.

8.14. Development Control Regulations

Section I: Development Control Regulations

The purpose of the Development Control Regulations (DCR) is to assist developers and end users within the Local Planning Area, Patiala to strive for a more quality and environment –friendly development.

These Development Control Regulations are applicable to new and future developments. The developers are requested 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 of these into operation will continue to be honoured subject to the terms and conditions of approval and shall not be affected by these controls.***

Chapter XI of "The Punjab Regional and Town Planning and Development (Amendment) Act 2006" provides for 'Control of Development and Use of Land where Master Plan is in Operation.' The chapter lays down the procedural framework for exercising the development control. "Development" as defined by the Act means the carrying out of building, engineering, mining, quarrying or other operation in, on, over or under land or making of any structural or material changes in any building or land including that which affects the appearance of any heritage site and includes demolition of any part or whole of the building or change in use of any building or land and also includes reclamation, redevelopment, a layout or sub-division of land. Some of the key regulations currently in force are reproduced below.

8.14.1 Residential

Category	Minimum area of colony		
	Medium Potential Zone I	Medium Potential Zone II	Low Potential Zone IV
Residential Plotted	Comprising of area within M.C. limits 5 Acres	Comprising of area Outside M.C. limits *25/50 Acres	10 Acres

*Where Zonal/Sector plan has been notified, the minimum area for residential colony shall be 25 acers.

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.

Note:

1. The above potential zones falling in L.P.A.Patiala are as per notification no. 17/17/2001-5HG2/PF.1 dated 20.06.2010 or as amended from time to time.
2. The minimum area of colony is as per Memo No.18/182/06-6HG2/5598 dated 17.07.2007, Memo No. 17/17/01-5HG2/7655 dated 19.09.2007 and Memo No. 17/17/01-5HG2/1640 dated 18.06.09 or as amended from time to time.
3. F.A.R, height and ground coverage for individual residential plots within municipal areas, building byelaws of Municipal Corporation shall be applicable and outside Municipal Corporation limit, the building bye-laws of respective Development Authority shall apply. However, saleable area (residential and commercial) shall not exceed 55%.

Parking requirements for plotted developments

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 space within plot area
169-425 sq m (201-500 sq yd)	2 car parking space within plot area
425 sq m and more (500 sq yd and more)	3 car parking space within plot area

Note:

- i. Deviation of up to 10% of this control is allowed, if it is arising from site conditions / constraints.
- ii. 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.
- iii. Size of the front gate on boundary wall and construction of front boundary wall is optional to meet the parking requirements.

Group Housing

1	Minimum Plot size	
	Within MC limits	4000 square meters
	Outside MC limits	
	a)For General Category	5 acres
	b)For EWS	2.5acres
2	Minimum road width	18m (60feet) Group housing stand alone projects, shall be permissible on minimum existing 60' wide road with condition that the promoter shall be 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 within & outside M.C limits
4	Permissible FAR	1:1.75
5	Permissible Height	There shall be no restriction on the height of building subject to clearance from Air Force Authority and fulfilment of other rules such as set backs, distance between buildings etc. However structural safety and fire safety requirements as per National Building Code 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 3ECS per dwelling unit.

Note:

- i. Construction of residential houses sold by promoters on floor basis shall also be considered as group/flatted housing development & parking requirement shall be as per the norms applicable to Group Housing.

Farm House

Minimum area	2.5 acres
FAR	0.04
Group Coverage	2%
Number of storeys	2
Height	Single Storey 18'-0" Double Storey 28'-0"
Hard Surface	10%

Note:

Farm House shall only be allowed to upkeep the farm operations and it shall not be used for independent residential or any other purpose.

8.14.2 Commercial

Commercial use in residential zone located within the municipal limits shall be allowable along 80' wide roads with minimum frontage of 20m. The area requirements for such commercial developments shall be as per the Municipal Corporation 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)

1	Minimum area required	as per M.C norms 1000 sq m (outside M.C.limit)
2	Minimum frontage	20 meters
3	Maximum F.A.R	1:1.75
4	Maximum 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 setbacks, distance between buildings etc. However, structural safety and fire safety requirements as per N.B.C shall be compulsory.
5	Maximum ground coverage	40%
6	Parking	For projects with no multiplexes, the minimum parking shall be 2ECS per 100 sq m of covered area (including circulation area) For projects with mutiplexes/cinemas/theatres, the minimum parking shall be: a) 3 ECS per 100 sq m of covered area in respect of the covered area of the mulitplex component +30% of the total covered area of that component and b) 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.
7	Basement	Multi level basement will be allowed behind the building in zoned area except in setbacks provided it is proposed for parking purposes only and satisfy the public health and structural requirements.
8	Minimum approach road width	80 feet
9	If the site area is 1 acre or more minimum 15% area is to be reserved for landscaping.	
10	For the movement of fire tender the minimum set back distance to comply with the existing norms and standards.	

Note:

The E.C.S shall be 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

Commercial at Local Level

There will be provision for small scale, single storey commercial facilities at the local level within as well as outside the Municipal limits, subject to the condition that these shall be abutting roads with a minimum width of 18 m (60') & with minimum 6 m (20') set back 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 Master Plan. Instead, they shall be subsumed under the predominant residential land use.

Outside Municipal Limits

Within residential zones located outside the municipal limits, commercial development shall be allowed subject to compliance with the following conditions:

- Minimum development plot size of 1000 sq m.
- Development plot is compact and regularly shaped.
- Minimum frontage of 20 meters (70').
- Development plot abuts a road with a minimum width of 24 meters (80').

All properties within and outside the municipal limits that abut National Highways, State Highways, other intercity roads and proposed ring road R-1 (width 200') shall be through service lanes and minimum ROW and no construction zone along the major roads shall be followed as given below:-

Sr. No.	Name of the road	Right Of Way (in mts)		No construction zone on both sides of ROW (in mts)
		Within M.C limits	Outside M.C. limits	Within and Outside M.C.limits
1.	Patiala-Sangrur road (N.H. 64)	60	60	5
2.	Patiala-Rajpura road (N.H. 64)	60	60	5
3.	Patiala-Bhunerheri road (S.H.8)	45	45	5
4.	Patiala-Samana road (S.H.10)	30	30	5
5.	Patiala-Nabha road (Scheduled road)	30	30	5
6.	Patiala-Sirhind road (Scheduled road)	30	30	5
7.	Patiala-Bhadson road (Outside Bhakra main line)	30	30	5
8.	Patiala-Sanaur road	45	45	5
9.	Patiala-Cheeka	30	30	5
10.	Proposed Ring road (R-1)	60	60	5

Note:-

- Front set back shall be over and above the proposed widening width of road, if any.
- If there is any extension of Municipal limits of any local body falling in LPA, after final notification of Master Plan, the development controls / zoning regulations as applicable to the area outside M.C. limits shall apply to the area so covered under extended M.C. limits.

8.14.3 Institutional:

Components

Minimum Plot size
Minimum frontage
Minimum width of approach road
Maximum F.A.R
Maximum ground covered
Parking

Institutional

As prescribed by affiliating authority.
200 feet
60 feet (18m)
1:1
40%
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.

Note:

Other building regulations shall be governed by Zoning Plan as approved by the competent authority.

8.14.4 Industrial

Size of Plot	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 per 100 square meters of the covered area.
Road width	The minimum road width for industrial unit shall be 12 mts.

Note:

- **Residential component:** 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.
- 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.
- 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.
- Industrial / IT Park shall have minimum 10 acres area. In IT Park, IT component shall have FAR 2.0. In industrial park, for an industry component FAR shall be 1.0 and other components shall have FAR as mentioned under different uses in the Master Plan.

8.14.5 Environment Considerations:

- Minimum buffer of 15 meters green belt of broad leaf trees should be provided around the boundary of village abadies falling in the industrial zone of Master Plan. This should 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. However, for special type of industries such as Rice Shellers / Sella Plant, Stone Crushers, Hot Mix Plant, the standards prescribed by the Punjab Pollution Control Board or any other agency shall apply.

- 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 Director General, Factory Adviser Service Labour Institute. 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.

8.14.6 Other Development Controls and Guidelines Required

- i. Expansion of village abadies: Contiguous expansion of village abadies in non residential zones of Master Plan is permissible up to 100mts 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.
- ii. The contiguous expansion of village abadies falling under agricultural zone of Local Planning Area is also permissible to accommodate the natural growth of village abadies.
- iii. 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.
- iv. 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.
- v. Minimum 5 meters wide green strips on each side of minor, drain, canals shall be maintained and Bari nadi shall have minimum 30 meters green strip on eastern 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.

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.

8.14.7 Transferable Development Rights

To facilitate development, it is necessary to accord top priority to the implementation of public utilities and infrastructure (such as roads, parks, green belts etc,) which will in turn encourage urbanization.

However, the respective technical agency or authority will not be able to proceed with its implementation programmes until the ownership of private land affected by these public utilities and infrastructure has been transferred to the state or to the relevant authority(s).

Acquisition of private land for this purpose can be carried out through one of the following options:

- Cash compensation can be made to affected land owners whose land is to be acquired.
- A government – approved land pooling scheme can be implemented.
- Transferable Development Rights (TDR).

Of these options, TDR is recommended because of following reasons:-

- It is relatively simple and straightforward to implement and execute.
- The requisite public infrastructure projects can be implemented quickly, thus facilitating rapid urban development.
- The most important factor is that the interests of affected land owners can be protected.

Under the TDR scheme, the affected land owner(s) shall be entitled to additional FAR for the development of his balance land parcel at a rate of 1:1. The additional FAR will not be subjected to any CLU, EDC or license / permission fees. The land owner(s) also has the option to sell it in total or in parts to a third party.

All the records of transactions administered under the TDR scheme shall be maintained by the state and / or relevant authority(s), based on the precedence set in Mumbai Maharashtra.

The TDR scheme shall be restricted to development projects for public infrastructure and facilities which shall be announced from time to time. The additional FAR shall not be transferable from one L.P.A to another.

Detailed policy guidelines on the operation and implementation of TDR Scheme shall be prepared and announced by the competent authority in due course of time.

Annexure-I

List of Town/Villages falling within Patiala Local Planning Area

Sr. No.	Name of Town/Village	H.B.No.	<u>Population</u>	
			1991	2001
1	2	3	4	5
1.	Baran	35	2342	2671
2	Seuna	24	2994	2456
3	Jassowal	22	1241	1186
4	Sidhoowal	36	1988	1515
5	Rauni	16	1581	1954
6	Dhamo Majra	17	681	1287
7	Kheri Gujran	35	1165	1440
8	Malo Majra	36	371	506
9	Haji Majra	37	148	179
10	Pasiana	38	1872	2404
11	Sher Majra	64	1447	1657
12	Bir Kheri Gujran	34	188	544
13	Sular	66	993	1612
14	Rawas Brahmanan	65	577	723
15	Khera Jattan	164	721	833
16	Ramgarh	163	917	1072
17	Sunianheri	141	1020	1099
18	Kule Majra	142	399	445
19	Khansan	140	955	1305
20	Dalanpur	68	211	126
21	Bir Moti Bagh	67	55	44
22	Ghalori	69	196	432
23	Sanour(UA)	71	16490	17935

24	Chaura	30	1544	2263
25	Kartarpur	119	518	576
26	Assarpur	115	1016	1169
27	Noorkherian	73	1398	1536
28	Deelwal	75	512	625
29	Theri	29	2110	2534
30	Karheri	28	3774	1325
31	Phaluali	27	370	184
32	Nasirpur	76	45	116
33	Jalalpur	74	1091	1346
34	Budhanpur	116	638	637
35	Samaspur	114	779	1584
36	Mehmadpur Jattan	111	1250	1338
37	Raipur	110	2041	2335
38	Rurki urf kasba	112	4550	8179
39	Bir Bahadurgarh	113	282	397
40	Farm Bahadurgarh	113/1	302	304
41	Shekhpur	77	4428	1931
42	Saifdipur	79	547	613
43	Mehmudpur Raian	80	113	134
44	Daulatpur	81	276	360
45	Chuharpur	78	134	-----
46	Bosar Khurd	72	-----	-----
47	Inderpura	13	362	422
48	Uncha Pind	14	913	1049
49	Khusropur	165	335	365
50	Hardaspur	85	1287	1498
51	Majri Akalian	84	685	773
52	Faridpur	86	202	215
53	Mirjapur	83	327	423

54	Shahbazpur	63	1094	1204
55	Main	34	1482	1833
56	Multanpur	103	192	1098
57	Bir Kauli	102	477	582
58	Rao Majra	101	411	436
59	Lakho Majra	102	757	790
60	Muradpur	105	931	1011
61	Chamarheri	107	750	840
62	Mithu Majra	108	629	601
63	Bhathlan	109	274	337
64	Dhareri Jattan	106	993	1118
65	Alampur	104	1229	1171
66	Kauli	101	2303	1638
67	Gaunspura	100	431	430
68	Arian Majra	70	613	-----
69	BhatHeri	92	610	697
70	Balipur	5	235	317
71	Dharmkot	6	336	361
72	Mundkhera	7	820	914
73	Chandanpur	8	15	0
74	KheriGorian	9	675	818
75	Dadhera	10	887	1202
76	Rakhra	37	1843	1974
77	Bibipur	177	634	747
78	Dhablan	178	1968	1989
79	Ashabpura	41	208	259
80	Bishanpura	40	403	405
81	Ranbirpura	39	1820	2189
82	Kheri Musalmani	181	917	1002
83	Kishangarh	180	37	11

84	Barsat	47	1592	1564
85	Jahlan	42	1520	1711
86	Chuharpur Kalan	45	666	931
87	Chuharpur Marasian	44	244	308
88	Sheikhupur	50	529	601
89	Sultanpur	51	747	906
90	Mehmadpur	92	742	699
91	Bazidpur	94	1386	1638
92	Rajgarh	43	640	732
93	Bhedpura	52	1174	1267
94	Sehnsarwal	53	606	664
95	Taraura Kalan	55	651	753
96	Taraura Khurd	54	453	469
97	Chahchona	72	1	0
98	Sadarpur	68	430	532
99	Gajju Majra	73	1500	1712
100	Lalauchhi	67	2612	2829
101	Kooka	74	717	777
102	Kheri Malan	75	1019	1261
103	Bir Sarkar	76	4	2
104	Paharpur	23	981	1204
105	Fatehpur	179	744	850
106	Dhakrba	93	884	992
107	Dhlawarपुर	61	248	303
108	Kakrala	62	729	746
109	Daun Kalan	93	3113	3201
110	Kheri Mandlan	338	676	971
111	Pandtan	103	865	970
112	Shahpur Afghanan	104	135	139
113	Ghumanan	105	864	947

114	Nararu	100	2035	2189
115	Kalwa	87	921	1078
116	Kasiana	335	1391	1530
117	Rith Kheri	88	752	800
118	Phagan Majra	334	1620	1784
119	Amampura	333	663	770
120	Nandpur Kesho	282	1254	1383
121	Kalian	11	1817	1882
122	Bir Sanaur	121	-	-
123	Todarpur	120	8	0
124	Lalina	126	550	659
125	Umaidpur	127	25	0
126	Khooda	128	1486	1647
127	Fatehpur Rajputan	139	1192	1574
128	Hirgarh	148	618	680
129	Akaut	147	561	681
130	Daun Khurd	91	1053	1167
131	Gobinpura urf Suniarheri	89	151	181
132	Panodian	90	682	723
133	Bauherpur	95	485	525
134	Janherian	94	1081	1199
135	Jafar Nagar	96	462	425
136	Fatehpur Jattan	97	270	314
137	Mohabatpur	98	281	344
138	Shankarpur	99	967	1083
139	Bathli	279	269	269
140	Akar	277	1077	1140
141	Akari	278	492	620
142	Sehri	276	635	686

143	Sehra	275	1260	1399
144	Jaura Rasulpur	82	785	878
145	Asay Majra	12	572	694
146	Patiala (Rural)	33	238368	323884
147	Ablowal	15	2408	MC
148	Tafajalpura	31	MC	MC
149	Alipur Araian	26	2884	MC
150	Jhill	21	1930	MC
151	Rasulpur Saidan	32	394	MC
152	Hasanpur Prohatan	25	814	MC
153	Lehal	19	MC	MC
154	Tripuri	20	MC	MC
155	Badungar	18	MC	MC
	GRAND TOTAL		392806	484037

Annexure-II

GOVERNMENT OF PUNJAB DEPARTMENT OF HOUSING AND URBAN DEVELOPMENT (HOUSING BRANCH-1)

NOTIFICATION

THE

2-1-2008

NO:-12/74/06-4HGI/38 Whereas it appears to Governor of Punjab that to meet the challenge of rapid growth of Patiala city and to provide for a workable framework for comprehensive planned and regulated development, preparation of Statutory Master Plan of Patiala city is very essential. Hence in order to develop Patiala city and its surrounding in orderly manner and to prepare its Master Plan under "The Punjab Regional and Town Planning and Development Act 1995", the Governor of Punjab is pleased to declare the local planning area of Patiala city within the meaning of sub section (1) of section 56 of "The Punjab Regional and Town Planning and Development (Amendment), Act, 2006, "The total area proposed for local planning area is 49033 hectares (121111 acres) shown on Drg. No. DTP (P) 3440/07 dated 18.10.07 which includes Patiala and Sanaur town & adjoining 155 villages. The schedule of boundary of Local Planning Area is as under:-

SCHEDULE OF BOUNDARY

NORTH: Starting from point 'A' which is the meeting point for western boundary of village Rakhra and northern boundary of Patiala-Nabha Road . Thence moving towards East along the Northern boundary of village Rakhra (HB.37), Village Mund Khera (HB.7), Village Balipur (HB.5), Village Sidhoowal (HB.36) crossing Patiala-Bhadson Road. Thence along the Northern Boundary of Village Jassowal crossing B.M.I canal thence again along the Northern boundary of Village Jassowal (HB. 22), village Seuna (HB. 24), Village Baran (HB. 35) up to point 'B' which is the meeting pint of common village boundary of Village Baran and Hardaspur with Northern boundary of Village Baran. Thence towards North along the Western boundaries of village Hardaspur (HB. 85), village Kasiana (HB. 335), village Phagan Majra (HB. 334) and village Amampur (HB. 333) upto point 'C' which is the meeting point of Western boundary of vllage Amampur and common boundary of districts Patiala & Fatehgarh Sahib. Thence towards East along the common boundary of district boundary of Patiala and Fatehgarh Sahib crossing

Patiala – Sirhind Road up to point 'D' which is the meeting point of Eastern boundary of village Sehra (HB. 275) & common / boundary of District Patiala & District Fatehgarh Sahib.

EAST: Starting from point 'D' towards south along the Eastern boundary of village Sehra (HB. 275), village Sehri (HB. 276), village Akari (HB. 278) and village Akar (HB. 277). Thence towards East along the Northern boundary of Village Shanker Pur (HB.99). Thence towards East along the Northern Boundary of village Gaunspura (HB. 100) thence toward South along the Eastern boundary of village Gaunspura (HB. 100) crossing Patiala – Rajpura railway line. Thence towards South along the Eastern boundary of village Gaunspura then towards Bir Kauli (HB. 102) crossing Patiala – Rajpura a road (N.H. 64) again along the North, Eastern boundaries of village Kauli, village Nararu (HB.100), thence along the East and Southern boundaries of village Ghumanan (HB. 105) Eastern Boundary of village Shahpur Afghanan (HB. 104) Eastern, Southern boundary of village Pandtan (HB. 103) then towards South along the East Southern boundary of village Rai Pur (HB. 110), village Budhanpur (HB. 116), village Assarpur (HB. 115), village Kartar Pur (HB. 119), village Bir Sanaur (HB. 121) village Todar Pur (HB. 120) village Lalina (HB. 126) and village Khooda (HB. 128) thence towards West along the Southern boundary of village Fatehpur Rajputan (HB. 139), village Hiragarh (HB. 148) crossing Patiala – Bhunerheri road unto point 'E' which is the common point of Western boundary of Patiala Bhunerheri road and Southern boundary of village Hira Garh (HB. 148).

SOUTH: Starting from point 'E' towards South West along the Southern boundary of village Hiragarh (HB. 148), and village Akaut (HB. 147) thence moving toward West along Southern & Western boundary of village Kule Majra (HB. 142) crossing Patiala – Cheeka road thence moving to wards South along the Southern boundary of village Sunianheri (HB. 141), village RamGarh (HB. 163), then moving towards West along the Southern boundary of village Ramgarh (HB. 163), village Kheri Jattan (HB 164) crossing Patiala – Dakala Road. Thence moving towards West along the Southern boundary of village Khusropur (HB 165), village Main (HB 34), village Kakrala (HB 62), crossing Patiala – Samana Road and Bhakra Main Line Canal then again along the Southern boundaries of village Dhalawarpur (HB 61), Dhakraba (HB 93), thence along the Eastern boundary of

village Paharpur (HB 23), thence Eastern & Southern boundary of village Bir Sarkar (HB 76) then towards West along the Southern boundary of village Bir Sarkar (HB 76), village Kheri Malan (HB 75), then along the Eastern & Southern boundary of village Kooka (HB 74) and Southern and Western boundary of village Lalluchhi (HB 67) and village Sadarpur (HB 68) up to point 'F' which is the meeting point of Western boundary of village Sadarpur and Southern boundary of Patiala- Sangrur Road (N.H 64)

WEST: Starting from point 'F' toward North crossing Patiala – Sangrur road (N.H 64) along the Northern boundary of village Sardarpur (HB 68) and South Eastern boundary of village Chahchona(HB 72) then along the Western boundaries of village Bhedpur (HB 52), village Sultanpura (HB 51), village Sheikhupur (HB 50), village Barsat (HB 47), village Kheri Musalmaniya (HB 181), village Dhablan (HB 178), crossing Patiala – Nabha road railway line thence along the western boundary of village Dhablan (HB 178) & village Rakhra (HB 37) the crossing Patiala-Nabha Road upto point 'A' which is the starting point.

These boundaries have been shown on drawing No.3440/07 DTP (P) dated 18-10-2007. All provisions laid down u/s 56(2) of "The Punjab Regional and Town Planning and Development (Amendment) Act, 2006" and all the concerned rules framed under this act have been taken into consideration.

Place: CHANDIGARH

Date: 28.12.2007

(Arun Goel, I.A.S)
Secretary to Govt. Punjab,
Housing & Urban Development Department.

Annexure-III

**PUNJAB GOVERNMENT
DEPARTMENT OF HOUSING AND URBAN DEVELOPMENT
(HOUSING BRANCH-1)**

NOTIFICATION

DATED: 2.1.08

No. 12/74/06-4HG1/44 Whereas the Governor of Punjab was pleased to declared the Local Planning Area of Patiala City and its surrounding area U/s 56(1) of "The Punjab Regional and Town Planning and Development Act 1995" vide notification No. 12/74/06-4HG1/38 dated: 2.1.2008

Further the Governor of Punjab is pleased to designate the Chief Town Planner Punjab as Planning agency for the above Local Planning Area under section 57 of "The Punjab Regional and Town Planning and Development Act, 1995".

Dated : Chandigarh
28-12-2007

Arun Goel
Secretary to Government of Punjab
Deptt. Of Housing & Urban Development

.....
From _____: Fax No. Jun. 12 2009 02:40

Endst No.12/74/06-4HG1/45

Dated: Chandigarh, the

A copy along with spare copy is forwarded to the Controllor, Printing and Stationary, Punjab Chandigarh with the request that this notification may be published in the official gazette (Ordinary) and 50 copies of the printed notification may be sent to the Government for record.

Additional Secretary
Deptt. Of Housing & Urban Development

Endst No. 12/74/06-4HG1/46

Dated: Chandigarh, the 2/1/08

A copy of the above is forwarded to the following for information & necessary action:-

- 1) Chief Town Planner Punjab, Chandigarh
- 2) Chief Administrator, PUDA, Mohali
- 3) Additional Chief Administrator, PUDA, Mohali

Additional

Annexure-IV

Migration

Details of migrants from different states to Patiala U.A

Sr. No	States	All durations		10 years and above	
		Persons	Percentage of Total	Persons	Percentage of Total
1	Andaman and Nicobar Islands	6	0.01	2	0.01
2	Andhra Pradesh	304	0.63	40	0.19
3	Arunachal Pradesh	12	0.03	0	0
4	Assam	374	0.78	48	0.23
5	Bihar	3,019	6.30	798	3.80
6	Chandigarh	2,471	5.15	927	4.42
7	Chhattisgarh	336	0.70	41	0.20
8	Dadra and Nagar Haveli	0	0	0	0
9	Daman and Diu	0	0	0	0
10	Delhi	2,780	5.80	1364	6.50
11	Goa	5	0.01	3	0.01
12	Gujarat	314	0.65	81	0.39
13	Haryana	11,044	23.03	5,843	27.85
14	Himachal Pradesh	2,787	5.81	1,481	6.06
15	Jammu and Kashmir	825	1.72	212	1.01
16	Jharkhand	453	0.94	178	0.85
17	Karnataka	201	0.42	21	0.10
18	Kerala	296	0.62	38	0.18
19	Lakshadweep	0	0	0	0
20	Madhya Pradesh	768	1.60	191	0.91
21	Maharashtra	910	1.90	204	0.97
22	Manipur	38	0.08	9	0.04
23	Meghalaya	8	0.02	1	0
24	Mizoram	2	0	0	0
25	Nagaland	29	0.06	1	0
26	Orissa	331	0.69	70	0.33
27	Pondicherry	3	0.01	0	0
28	Punjab	0	0	0	0
29	Rajasthan	2,241	4.67	831	3.96
30	Sikkim	11	0.02	1	0
31	Tamil Nadu	374	0.78	36	0.17
32	Tripura	6	0.01	0	0
33	Uttar Pradesh	13,929	29.05	6,565	31.29
34	Uttaranchal	2,945	6.14	1,651	7.87
35	West Bengal	1,124	2.34	343	1.63
	Total Number of Migrants	47,946	100	20,980	100

Source: Census of India 2001.

Details of migrants in Patiala U.A (2001)

Sr. No	Place of last Residence	No. of Migrants in Persons	%age of total Migrants
1	Elsewhere in the District of enumeration	23,489	18.88
2	In other districts of the state of enumeration	44,329	35.64
3	States in India beyond the state of enumeration	47,946	38.54
4	Last residence India	8,630	6.94
	Total Migrants	124,394	100

Source: Census of India 2001

ANNEXURE – V

L.P.A: Patiala

Sheesh Mahal Patiala	No:433-lig-72/4904	25365 Sq. ft.
Quila Mubarak Patiala	No:1/57/93-4TC/2869	11,6 Acre
Samania Gate Patiala	No:12/227/89/4TC/2414	185 Sq. ft.
	Dated:16-10-90	
Sunami Gate Patiala	No:12/227/89/4TC/2414	185 Sq. ft.
	Dated:16-10-90	
Sirhindi Gate Patiala	No:12/227/89/4TC/2414	190 Sq. ft.
	Dated:16-10-90	
Darshani Gate Patiala	No:12/227/89/4TC/2414	270 Sq. ft.
	Dated:16-10-90	
Baradari Moti Bagh	No:3987-3TC-77/29587	15872 Sq. ft.
	Dated:19-11-77	
Painted Chamber of Kali Devi Temple	No:3082-TC-76/17070	144 Sq. ft.
	Dated:4-6-76	
Quila Beer, Bahadurgarh (only outer wall and ditch)	No:12/152/90/4TC/4641	520 Kanal ,
	Dated:17-12-92	8 Marla
Shahi Samadha, Patiala	No:10/147/08-4TC/231	26 Kanal,
	Dated:30-01-2009	13 Marla
Mandir Shri Badri Narain (Bahadurgarh), Patiala	No:12/81-4TC/898	202 Kanal ,
	Dated:13-4-2006	14 Marla
Mandir Shri Tung Nath Patiala	No:12/109/4TC/1494	66 Kanal ,
	Dated:5-6-2006	17 Marla

Government of Punjab
Department of Cultural Affairs
(Tourism Branch)
Preliminary Notification

Dated:-18/5/2009

No:10/46/09-4TC/968 Government of Punjab, Department of Cultural Affairs, Archaeology and Museums, Punjab, had declared, following Monuments as Protected Monuments under the "Punjab Ancient and Historical Monuments and Archaeological Sites and Remains Act, 1964".

Kos Minar, Bharowal, Gate of Sarai and Mosque, Fatehabad, Old Tehsil, Ajnala, Kos Minar-Norangabad in (District Amritsar). Anglo Sikh War Memorial, Sabhraon, Anglo Sikh War Memorial, Ferozeshah, Anglo Sikh War Memorial, Misriwala, Anglo Sikh War Memorial, Mudki in (District Ferozpur), Aam Khas Bagh, Sirhind, Tomb of Ustad, Vill. Talania, Sirhind, Tomb of Amr Ali, vill. Dera Meer Mian, Mosque of Bhagat Sadna Kasai, Sirhind, Jahaji Haveli, Todar Mal, Sirhind in (District Fatehgarh Sahib), Old Thana Monument, Jaito in (District Faridkot), Jhandewala Temple, Dholbaha, Exacavated Temple, Dholbaha, Mansa Devi Temple, Dholbaha, Ancient Temple, Dholbaha, Octagonal Well, Dholbaha, Samadh Takhawal, Mukerian, Mandir Hari Devi, Bhawanipur in (District Hoshiarpur), Kos Minar, Vill. Toot, Commissioner's Residence, Jalandhar, in (District Jalandhar), Moorish Mosque, Kapurthala, Hndira-Sultanpur Lodhi, Gol Kothi Kapurthala in (District Kapurthala), Mughal Sarai, Doraha, Anglo Sikh War Memorial Aliwal with approach path way, Ancestral House of Lala Lajpat Rai at Jagraon & Plot in front of house, Kos Minar, Kot Paniach, Ancestral House of Shaheed Sukhdev Thapar Ludhiana, Quila at Payal, Sarai Lashkari Khan, Teh. Khanna., in (District Ludhiana), Ancestral House of Shaheed Bhagat Singh, Khatkar Kalan, Maharaja Ranjit Singh Hill Park, Asraon in (District : Shaheed Bhagat Singh Nagar (Nawanshahar), Sheesh Mahal Patiala, Quila Mubarak Patiala, Samania Gate Patiala, Sunami Gate Patiala, Sirhindi Gate Patiala, Darshani Gate Patiala, Baradari Moti Bagh, Painted Chamber of Kali Devi Temple, Quila Beer, Bahadurgarh(only outer wall & ditch), Painted Chamber, Rani Hall, Nabha, Bhikham Shah Da Maqbra, Ancient Mound at Ghuram, Kos Minar, Rajgarh, Kos Minar, Vill. Nausehra, Samadh Baba Maghi Dass, vill Chhintanwala, Mugal Sarai, Shambhu, Patiala, Historical Bridge on Patiala-Sanaur Road, Mandir Shri Badri Narain (Bahadurgarh), Mandir Shri Tung Nath, in (District Patiala), Tomb of Alawal Khan, Behlolpur, Tomb of Hussain Khan (Father) Behlolpur, Tomb of Nawab Bahadur Khan (Son)

Behlolpur, Bauli at vill. Majha Mohewal in (District Ropar), Diwan Khana, Sangrur, Marble Baradari including Tank, Sangrur, Samadh and Bauli, Bagrian, Ancestral House of Shaheed Udham Singh, Sunam, Ancestral House of Akali Phoola Singh, Dehla Sheehan in (District Sangrur), Quila at Manauli, Ancient Mound at Chhat in (District Mohali) and Quila at Patti, in (District Taran Taran)

Now, the Government of Punjab Department of Cultural Affairs, Archaeology and Museums, Punjab, in exercise of powers conferred under rule 29 and 30 of the "Punjab Ancient and Historical Monuments and Archaeological Sites and Remains Rule, 1965", intends to declare under Rule 29(2) prohibited areas, 100m from the protected limits and further beyond it, up to 200m near or adjoining to the each protected monument as specified above to be regulated areas respectively, for the purpose of mining operation or construction or both. Accordingly under the Rule 29(i) of the "Punjab Ancient and Historical Monuments and Archaeological Sites and Remains Rule, 1965", one month notice of its intention is given for declaring an area as described above as prohibited and regulated areas. This notification is without prejudice to any notification issued earlier. This notification would also apply to all protected monuments already declared or to be declared in future.

Any person interested in this area specified above can file objections under Section 29 (2) to the declaration of this area around monument to be prohibited and regulated areas in writing within one month from the date of issue of this Notification.

Any objection if, received, from any persons, within the period specified, as above, will be taken into consideration by the Principal Secretary to Government of Punjab, Department of Cultural Affairs, Archaeology and Museums, Punjab, and the final notification will be issued under section 30, after dealing with such objections received if any.

Place:-Chandigarh

Dated:-5.5.2009

Principal Secretary to Govt. of Punjab,
Department of Cultural Affairs,
Archaeology & Museums, Punjab, Chd.

Endst.No. 10/46/09-4 TC/972-A

Dated, Chandigarh: 18-5-2009

A copy is forwarded to the following for information and necessary action:-

- 1) Director, Cultural Affairs, Punjab Chandigarh with their reference. No. Pura/DCAM/2008/2310, dated 29.4.2009.
- 2) All the Deputy Commissioners (State of Punjab).
- 3) All the Divisional Commissioners (State of Punjab).
- 4) Director. Public Relations, Punjab with the request that it may be published in the leading Newspapers (In Punjabi and English) the bills of this Newspapers may be sent to the Director Cultural Affairs, Punjab for the payment.
- 5) A copy along with spare copy is being sent to the Controller, Printing and stationary with the request that this Notification may be got published in the Gazette (Ordinary) and 300 copies may be made available to this Department for official use.

Superintendent

Annexure-VI (a)

Part I PUNJAB GOVT. GAZ. JULY 14, 1961 (ASAR, 23, 1883 SAKA)

Page 2

The 5th July, 1961

Notification No. 2026/FT (IV)-61/3654, - In exercise of the powers conferred the proviso to sub-section (3) of section 29 of the Patiala Forest Act, 1999 - BK. (No. VII of 1999 BK) and all other powers enabling him in this on behalf, the Governor of Punjab is pleased to declare the areas of Government Birs demarcated by boundary pillars, whether under the growth or not, described in the following schedules to be Second Class Forests.

SCHEDULE

Sr. No.	District	Tehsil	Name of Bir	Hadbast No.	Area in acres
	1	2	3	4	6
1.	Patiala	Patiala	Bir Bhunerheri	154	2058
2.	Do	Do	Miranpur	267	839
3.	Do	Do	Bir Sarka (Kari Mallah)	76	159
4.	Do	Do	Bir Gogpur VRF (Bhagwanpura)	263	274
5.	Do	Rajpura	Bir Chhat	285	
6.	Do	Patiala	Bir Kule-Majra	143	
7.	Do	Do	Bir Kheri Gujran	34	176
8.	Do	Do	Bir Sanaur	121	330
9.	Do	Do	Bir Majal	207	291
10.	Do	Do	Bir Motibgh	67	1296
11.	Patiala	Nabha	Bauran	203	997
12.	Do	Do	Bir Doshajhan	207	1279
13.	Do	Do	Bir Mehs Bir Mehs Mashmula Nabha	188	2753
14.	Do	Do	Bir Bhadson	142	2662
15.	Do	Do	Bir Agaul	167	2931
16.	Do	Do	Bir Amlah	27	42
17.	Sangrur	Sangrur	Bir Aishban	38	661

No. 2026/Ft-IV-61/3655-WHEREAS by Punjab Government notification No. 2026/Ft (IV)-61/3654, dated the 5th July, 1961, certain Government waste lands demarcated by boundary pillars whether under tree growth or not as mentioned in the Schedule annexed to the said notification have been declared to be II Class forests under section 29 of the Patiala Forest Act, 1999-BK.

Now therefore, the Governor of Punjab in exercise of the powers conferred by Section 30 of the said Act is pleased:-

- to declare all trees standing upon these lands to be reserved from the date of Publication of the notification in the official Gazette; and
- to prohibit from the same date, the quarrying of stones, burning of lime or charcoal or collection or subjection to any manufacturing process, or removal of any forest produce in the said forests and the breaking up or clearing for cultivation, for building, herding cattle or for any purpose, of any land in any of the said forests.

No.2026/Ft-(IV)-613656- Whereas by Punjab Govt. notification No. 2026/Ft(iv)-61/3654, dated the 5th July, 1961 certain Government waste lands whether under tree growth or not as mentioned in the schedule annexed to the said notification have been declared to be Second Class Forests under section 29 of the Patiala Forest Act, 1999-BK.

Now, therefore, in exercise of the powers conferred by section 32 of the said Act. The Governor of Punjab is pleased to make the following rules applicable to lands specified in the Schedule of the aforesaid notification:

FOREST DEPARTMENT

1. Forest Land.

With location (on map)
and area.

Annexure –I

2. Any new policies:

Areas on sides of Canals, distributaries, drains, PWD roads, and railways have been declared as 'Protected Forests' IInd class, by Govt. of Punjab Notification No. 3059-FT-58 dated 24.6.58, No. 6058-Ft-III-57/3305 dated 31.12.57, and 4362-Ft-58/1456 dated 19.11.58 respectively. The Management of these forests is done under the provisions of Indian Forest Act 1927, Forest Conservation Act 1980 & other Supreme Court Judgments.

Under FCA 1980 and Supreme Court Judgments dated 12.12.96 dated 4.3.97, and 29.10.02, forest area cannot be used for any 'non forest' purpose without permission of Govt. of India, irrespective of ownership of forest land.

Dy. Divisional Forest Officer,
Patiala Forest Division,
Patiala

Areas of Strips in of Patiala Forest Range

Sr. No.	Name of Strip/km	Length Mtrs	Width Left Sides	in Mtrs Right	Total Width Mtrs	Total Area Sqm	Total Area in Ha	Marked on Map No.
1.	Pta-Sanour Road Km. 3.50 to 5.50, 5.50- 8=4.50 km	4500	10	10	20.00	90000	9	2
2.	Band No 1 R.D. 10 to 50=40	12000	30	23.5	53.50	642000	64.2	1
3.	Band No.2 RD 0-26=25 RDs	7950	6.5	6.5	13.00	103350	10.33	1
4.	Band No 2 RD 26-40= 15 RDs	4500	6.5	6.5	13.00	58500	5.85	1
5.	Bara Dari Minor 2.5 km	2500	1.5	1.5	3.00	7500	0.75	1
6.	Main Road km 1 to 4= 4 km	4000	1.5	1.5	3.00	12000	1.2	1
7.	Pta-Ghulla Cheka Road km 6.60 to 8.60 = 2km	2000	(7.5)6.5	6.5(7.5)	15.00	30000	3	2
8.	Pta Pehowa Road km 3.4 to 11=6.61km(7.61)	7600	12	12	24.00	182400	18.24	2
9.	Sangrur Road 0 to 8=8km	8000	10	10	20.00	160000	16	1
10.	B.M.L RD 235-270=35Rd(deleted e)	10500	20.7	18	38.70	406350	40.635	1
11.	Railway line km 10 to 38=28km	28000	4.689	5.4	10.09	282492	28.249	1
12.	Pta-Nabha Road km 3.800 to 18.200=14.4	14400	3.24	1.8	5.04	72576	72.57	1
13.	Pta-Bhadson Road 0to6=6km	6000	2.58	2.25	4.83	28980	28.98	2
14.	Patiala-Sirhind road km 1.34 to .12= 10.66	10660	5.33	5.33	10.66	113636	11.36	1
15.	Chd-pta road =16.5km km38.50 to 55	16500	14.42 (del.0)	14.42	28.84	475860	47.58	2
16.	Old PNC = 16 Rd	4800	38.5	9.7	48.20	231360	23.136	1
17.	New PNC =0-12=12Rd	3600	38.5	9.7	48.20	173520	17.35	1
18.	New PNC=12-15240=3240 Rd	1080	38.5	9.7	48.20	52056	5.2	1
19.	Chd-Hissar Road 38.500 to 63	24500	14.42	14.42	28.84	706580	70.658	1.2
20.	Pta-Dakala rd 0 to 7	7000	3	3	6.00	42000	4.20	1
21.	Tripuri Road 0 to 1.700	1700	6	4.5	10.50	17850	1.785	1
22.	Pass road 0 to 3 km	3000	1.8	1	2.80	83(4)00	0.84	1
23.	Rajbaha road 0 to 2 km	2000	1.5	1.5	3.00	6000	0.6	1
24.	Sanour Disty. Rd 25 to 55	10000	3	8	11.00	110000	11.00	1
25.	Moti Bagh Minor (Nabha road to Sangrur road) 17 RDs = 5100 mtrs	5100	2	1	3.00	15300	1.53	1
26.	Northern Bye Pass 0 to 5km	5000	28	25	53.00	265000	26.5	1
27.	Ganda nala Rd 1 to 9	8000	10	10	20.00	160000	16.00	1
28.	Pepsu Bhakra Road 0 to 500mt	500	2	3	5.00	2500	0.25	1
29.	Bhupindra road 0 to 2km	2000	8	8	16.00	32000	3.2	1
30.	Ranbir Marg 0 to 0.250 mt	250	8	8	16.00	4000	0.4	1
31.	Model town drain 0 to 51	17000	3	3	6.00	102000	10.20	1
32.	Sular Road (Dakala road to Sular Chowk 2.8km.)	2800	1.2	1.2	2.40	6720	0.672	

33.	High Level Channel	50	1	1	2.00	100	0.01	1
34.	Rajendra Tank 0-1 km.	1000	1	1	2.00	2000	0.2	1
35.	Bus stand to Gurbax colony road 0-1 km.	1000	2	2	4.00	4000	0.4	1
36.	Dukhniwaran Road (Gurdwara Sahib to Railway station)	600	5	1	6.00	3600	0.36	1
37.	Patiala Drain 0 to 6 Rds	2000	8	8	16.00	32000	3.20	Not drawn on Map supplied
38.	C.A.P. Road 0 to 0.600	600	8	8	16.00	9600	0.96	1
39.	Southern Bye Pass 0-19 km.	19000	15	6	21.00	399000	39.9	Incompletely drawn on Map supplied
						TOTALS	593.295	HAC.

Divisional Forest Officer
Patiala Forest Division
Patiala

ANNEXURE-VII

TO BE PUBLISHED IN PART-II, SECTION 4, FOR THE GAZETTE OF INDIA

Government of India
Ministry of Defence

Notification

New Delhi, the 16 January 2006

S.R.O. – In exercise of the powers conferred by section 3 of the Works of Defence Act, 1903 (7 of 1903), the Central Government hereby declares that it is necessary to impose the restrictions specified in clause (b) of section 7 of said Act upon the use and enjoyment of the land described in the Schedule below, being land lying in the vicinity of Ammunition Dump in District of Patiala, State of Punjab, in order that the said land may be kept free from buildings and other obstructions from the date of publication of this notification.

2. A sketch plan of the said land may be inspected in the Office of Deputy Commissioner, Patiala in the State of Punjab.

Schedule

All the land comprised in the area lying within the distance of 1000 yards (914.4 meters) from the periphery of the Works of Defence, namely, Ammunition Dump Patiala, District Patiala in the State of Punjab)

(F.No. PC to MF B/50542/AD Patiala/LW(West)

(V.B.DUBEY)

Under Secretary to the Government of India

Publish

(V.B.DUBEY)

Under Secretary to the Government of India

D(Coord)

MOD I.D. No. PC to MF B/50542/AD Patiala/LW (West)/28/US(D)/D(Lands)/2005
dated 16 January 2006

Annexure-VIII

List of trees recommended for plantation on the main roads within limits/master plan areas.

Sr. No.	Name of tree (Botanical/Common)	Description
1.	<i>Alstonia scholaris</i> (Chhatim)	Tall tree with columnar shape, Evergreen, very ornamental, bears greenish-white flowers in October-December
2.	<i>Barringtonia acuitangula</i> (Smudar 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.	<i>Bauhinia blackiana</i> (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.	<i>Bauhinia purpurea</i> (Kachnar)	Medium tree, with columnar form, evergreen, bears purple coloured flowers in November.
5.	<i>Bauhinia variegata</i> (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, April
6.	<i>Cassia fistula</i> (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.	<i>Cassia grandis</i> (Pink Mohur)	Medium in height, with spreading habit. Highly ornamental tree. Bears deep carmine flowers in November, December.
8.	<i>Cassia javanica</i> (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.	<i>Cassia Marginata</i> (Pink Mohur)	Medium in height, spreading and graceful tree, bears deep pink flowers in May and June.
10.	<i>Cedrela tuna</i> (Tun)	Tall columnar shaped tree, leafless in Dec.-January. Fairly fast growing and hardy tree with creamy white flowers in March-April.
11.	<i>Chakarassia Tabularis</i>	Tall spreading tree, evergreen and hardy. Excellent for shade. Flowers and greenish, white in April-May.
12.	<i>Chorisia speciosa</i> (Maxican Silk Cotton Tree)	Medium in height, pyramidal in shape, leafless from October to January, fast growing, bottle shaped green trunk. Flowers are of pink and yellow colour in October-November.
13.	<i>Delonix Regia</i> (Gulmohar)	Tall tree, with spreading crown, leafless from Jan.-March. Fast growing, very ornamental creates mass colour effect with orange red flowers from April to June.
14.	<i>Ficus religiosa</i> (Pipal)	Tall columnar shaped tree, leafless in February-March. Very hardy and fast growing, flowers pale green in April.
15.	<i>Ficus infectoria</i> (Pilkhan)	Tall spreading, fast growing and hardy tree, leafless in March, good for shade, need protection from cattle, green yellow flowers in Nov, Dec.
16.	<i>Hetrophragma roxburghii</i> (Marour Phaly)	Tall columnar tree, ever green, flowers are of pale, yellow brown colour in March.

17.	Jacrandia mimosaeifolia (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 Phanoos)	Tall and spreading tree, evergreen hardy and fast growing flowers are of crimson, yellow and brown colour in April- May.
19.	Lagerstroemia frosreginae (Queen'sflower)	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 Dec-Feb, flowers of mauve colour from June to December.
21.	Lagerstroemia rosea	Medium in height, columnar tree, very pretty. Leafless in winter (December-Feb.) with deep pink flowers from April to September.
22.	Pongamia Glabra (Karanj)	Tall spreading and fast growing tree, leafless in March. Bears mauve coloured flowers in April, May.
23.	Pterospermum acerifolium (Kanak Champa)	Tall columnar tree, ever green, handsome, bears sweet scented flowers of creamy white colour in March-April.
24.	Putranjiva 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 Feb.-March.
26.	Schleichera Frijuga (kusum)	Tall columnar shaped tree, evergreen, good for shade, leaves become red in March, April and again in July, -Sept. Flowers are of green colour in Feb-March.
27.	Sweitnia (Mahogany)	Evergreen, Shady, attractive foliage, very hardy, tall tree with columnar shape, blooms in April, tree is slow growing and very good for avenues.
28.	Tabebuia Rosea	Small in height, golumnar in shape, deciduous from December to February, Scanty foliage, flower colour is purple pink in February-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-October.
30.	Terminalia Chebula (Bahera)	Tall, Columnar shaped tree, leafless in March, Pale-yellow flowers all the year around.

GOVERNMENT OF PUNJAB
DEPARTMENT OF TOWN AND COUNTRY PLANNING PUNJAB

Notification

The 21st July, 2011

No. 5099 CTP (Pb)/SP-40 Whereas Master Plan Patiala has been notified vide notification no. G422CTP(Pb)/SP-40 dated 23/8/10. Whereas certain changes were necessitated in the public interest during implementation u/s 77 of The Punjab Regional and Town Planning & Development (Amendment) Act, 2006.

The Government in consultation with The Punjab Regional and Town Planning and Development Board has approved that within municipal limits, municipal bye-laws will be applicable and also approved that mixed land use will be allowed along the already notified commercial streets within the municipal limits. Before the notification of Master Plan u/s 70(5).

It shall come into operation from the date of its notification.

This issues with the approval of the Government vide memo no. 12/74/2006-4H/1/2706 Date 15-7-11

Sd/-

(K.S. Dhaliwal)

Chief Town Planner, Punjab,
Old Estate Office Building, Madhya
Marg, Sector 18-A, Chandigarh

Endst No. 5100 CTP(PB)/SP-40

Dated Chandigarh, the, 21-7-2011

A copy is forwarded with a spare copy to the Controller, Printing and Stationery Department, Punjab. Chandigarh along with soft copy (CD.) and report containing all documents with the request to publish this notification in the Punjab Government Gazette and 100 copies thereof be supplied to this Department for office use.

Sd/-

Chief Town Planner,
Punjab, Chandigarh.

Endst No.5101-CTP(Pb)/- Sp-40

Dated Chandigarh, the, 21-7-2011

A copy is forwarded to Secretary, Housing and Urban Development Deptt. Punjab Chandigarh w.r.t. memo no No. 12/74/2006-4H/1/2706 Date 15-7-2011 for information

Sd/-

Chief Town Planner,
Punjab, Chandigarh