CONTENTS

LIST OF FIGURES

LIST OF TABLES

LIST OF ANNEXURES

1. EXECUTIVE SUMMARY

1.1 Introduction

Khanna town has an area of 26.75 square kilometers as per Municipal Council, Khanna, its population is 103099. Khanna is Sub-Divisional headquarter and Police district headquarter. A Statutory master plan is being framed under the provisions of "The Punjab Regional and Town Planning & Development Act 1995(Amendment 2006)". The Local Planning Area of Khanna comprising of 2 settlements namely Khanna and Payal and 80 villages and having a total area of 24963 hectares was notified vide no12/3/2008-4HGI/417 dated 15-1-2008 under section 56(1) of "The Punjab Regional and Town Planning and Development Act 1995 (Amendment), 2006". In continuation of this Notification, The Local Planning Area boundary has been rectified and revised within the meaning of section 56(7) of "The Punjab Regional and Town Planning and Development Act 1995 (Amendment), 2006" vide notification no 12/3/2008-4HGI/1413 dated 20/5/2010, the total area proposed for Local Planning Area is substituted as 24967 hectares which comprises of Khanna M.C., Payal M.C. and adjoining 80 villages.

1.2 Regional Setting

Khanna is a very old town situated on the historic Grand Trunk Road (National Highway No.1), 45 km. Southeast of Ludhiana in Punjab. The city is centrally located in the state and situated on Amritsar-Delhi railway line which is considered the backbone of State.

1.3 Historical Background

Jathedar of Dahedu cut out a KANA which signifies a small portion (1/4) of his territory between Dahedu and Nabha to his daughter namely Rani Daya Kaur. With the passage of time word KANA came to be known as KHANNA.

1.4 Legal Framework

The Punjab Regional and Town Planning and Development Act, as amended 2006 provide the legal framework for preparation of Master Plan. The four stage process involves declaration of Local Planning Area, 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.
(d) 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.
(e) 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".

1.5 Population growth

The population of LPA Khanna is 209339 (2001) growing at a decadal growth rate of about 20.74%. The growth rate of the population of Khanna has not been uniform as the population change depicts irregular growth pattern. The highest population growth rate was 93.07% in the decade 1951-61 It was due to mass migration of refugees to the city. In 2001, the growth rate was 43.2%. The gross population density of Khanna City (2001) is 39 persons per hectare.

1.6 Employment

The work force participation rate of LPA Khanna (2001) is 37% and that of Khanna City (2001) is 33%. In Khanna city, the percentage of non workers has shown a decreasing trend from 1981 (71.60%) to 2001(66.91%) but still there percentage is greater than total workers. It reflects that worker/non worker ratio is low and is creating huge pressure on the working population as well as the economy of the area.

1.7 Housing

According to Municipal Council, khanna data about 97.08 % of the houses are of pucca nature, 2.15 % are jhuggi and only 0.77 % kutcha houses. As per census 2001 data, in terms of availability of rooms only 51.05% of the household's lives in one-room dwelling units in Khanna. As regards access to service, 91.14% have drinking water facility, 96.39% have electricity and 88.30% households in Khanna have toilet facility. According to Census 2001 about. 21.6% of Khanna City's population was slum dwellers.

1.8 Present Land Use and Transport Network

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 a total LPA area of 24963.4 ha (As calculated by PRSC) maximum proportion is occupied by agricultural use 87.12% followed by residential 8.01%, transport 1.88% and industrial 1.09 %. In case of Khanna City out of a total area of 2844.55 ha. 29.02% is occupied by residential use, 4.8% by industrial use, 1.7% each by public & semi public uses and 49.87% by agriculture shown in Existing Land Use Plan Khanna DTP (L) 42/2009 dated 24.12.2009.

1.9 Physical Infrastructure

The system of water supply is based upon the underground water by digging wells in the city and pumping it to its users. Municipal Council Khanna provides water supply to the city and takes care of its operational and maintenance services. As far as the capacity of the existing water supply network is concerned the city is served up to an extent of 60% coverage area with water supply i.e. 57.45 sq km coverage. The population of the city is not adequately served with the water supply system as 36% of the population is totally uncovered under this and 64% of the population is served with water supply by intermittent system.

Khanna Municipal Council provides the facility regarding disposal of sewage from the area under the Council. 60% of the total area is covered but still 40% area is uncovered in terms of sewerage network.

Khanna city generates garbage to the tune of 43 M.Ton per day. The amount of garbage generated on per capita basis is in accordance to the pattern of garbage generation in other cities of the country which ranges between 300 to 450gms.

There are total 34 garbage collection points in the Khanna city which are maintained by the M.C. Khanna.

The regional road system of Khanna Urban Area consists of National Highway No.1 (G.T. Road) as well as other district roads. The number of fatal accidents rose from 109 in 2003 to 153 in 2007. Amloh Chowk and Malerkotla chowk are accident prone areas. This is mainly because of poor circulation pattern, mixed traffic condition, prevailing on the roads, and absence of road geometry elements and entrance of regional traffic in the town. Registered vehicle figure in Khanna is closed to 57260 as per the record of Sub Divisional Magistrate, Khanna. The average registration of vehicles per month exceeded 50. In the absence of organized Truck Terminal; trucks are parked on the road for loading and servicing. Bus stand exists along N.H. - 1 leading to congestion.
Khanna has large number of educational and healthcare related facilities which not only serve the city population but also the region. There are four parks, three cinemas, one stadium, four auditoriums, two swimming pools and two clubs existing in the city.

1.11 Environment

As per air pollution data provided by Pollution Control board at two stations in Khanna, it is found that air contains large volume of suspended particles and the higher presence of such particles against the permissible limit of 120µg/m3 indicating polluted quality of air in Khanna.

1.12 Population and Employment forecast

The population of LPA Khanna is projected to grow to 3.56 lacs by the year 2031 with estimated workforce to be 1.5 lacs. Projected workforce of Khanna L.P.A. is 43 % of projected population.

1.13 Infrastructure Demand

The infrastructure requirements of LPA Khanna by year 2031 are expected to be:

(a) Water supply: 36.09 mld
(b) Wastewater: 30.67 mld
(c) Solid waste management: 87.18 mt per day
(d) Power: 93 MW

1.14 Vision 2031

"To promote Khanna city as wholesale, commercial, Industrial and Institutional hub in the region by providing high quality physical and social infrastructure to all its residents in an inclusive and 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 of providing a conducive land use planning framework to attain the vision.

1.15 Proposed Land Use and Road Network

In the light of the above approach proposed land use and road network plans are incorporated in the Master Plan. The proposed land use plan is shown in DRG No. DTP (L) 1/2011 dated 03.01.2011.

1.16 Zoning Regulations

The Punjab Regional and Town Planning and Development (Amendment) Act, 2006 provides a framework for the "Control of Development and Use of Land in Area where Master plan is in Operation". However for control of development through parameters like sub-division of land, ground coverage, FAR, parking requirements, norms for building construction etc. have already been established on a state wide basis by the Government. The zoning regulations included in the Master Plan are therefore confined to use of land.

2. INTRODUCTION

2.1 Regional Setting

Khanna is a very old town situated on the historic Grand Trunk Road (National Highway No.1), 45 km. Southeast of Ludhiana in Punjab. The city is centrally located in the state (refer location plan at illustration no.1) and situated on Amritsar-Delhi railway line which is considered the backbone of State. This city is located at a distance of about

A) 60 kms from Chandigarh "The Capital of Punjab"

B) 18 kilometers from Samrala

C) 70 Kms. from Ambala

D) 265 kilometers from Delhi

The city falls within Malwa region of the state. It is an important industrial town in which steel units are operating as it is having contiguous growth with the main steel city of the country i.e. Mandi Godindgarh. Khanna is mainly popular as Asia's largest grain mandi, there are approximately 250 arhtiyas or licensed commission agents, selling 10 lakh tones of wheat in a season. Khanna is an ancient town which came into existence 500 year back.

ILLUSTRATION NO.: 1

2.1.1 Connectivity

The city is very well connected with other areas of the state and country through road and rail links. NH-1 (Grant Trunk Road) is connecting the city with other parts of state/country like Ambala, Ludhiana, and Amritsar-Delhi etc. The other major links of the city are Khanna-Samrala, Khanna-Malerkotla and Khanna-Amloh. Similarly, Khanna lies on the main broad gauge line i.e. Amritsar-Delhi line.

2.1.2 Constituent Areas & Jurisdiction:

Khanna town has an area of 32 square kilometers as per census of 2001, its population is 103099.

2.1.3 Local Planning Area:

To meet the challenge of rapid growth of Khanna city and to provide for a workable framework for comprehensive planned and regulated development, preparation of statutory master plan of Khanna city is essential. Hence in order to develop Khanna city and its surroundings in an orderly manner there is need to prepare its Master plan under "The Punjab Regional and Town Planning and Development 1995 (Amendment) Act-2006".

The Local Planning Area of Khanna city for the preparation of Master Plan of the city was notified vide notification no12/3/2008-4HGI/417 dated 15-1-2008 under section 56(1) of "The Punjab Regional and Town Planning and Development Act 1995 (Amendment), 2006" (list attached at annexure I) however as per satellite imaginary data, the Local Planning Area boundary needed rectification and in view of above, the boundaries of Local Planning Area have been revised as per notification no 12/3/2008-4HGI/1413 dated 20/5/2010 (list attached at annexure no. II) within the meaning of section 56(7) of "The Punjab Regional and Town Planning and Development Act 1995 (Amendment), 2006. The total area proposed for Local Planning Area is substituted as 24967 hectares which comprises of Khanna M.C., Payal M.C. and adjoining 80 villages".

2.2 Physiography and climate:

2.2.1 Topography of the town: - The topography of Khanna city and its surrounding area is a typical representative of an alluvial plain. The city is centrally located in plain region. Khanna is located between 30°- 40' to 30°-46' latitude and 76°- 7' to 76°-18' longitude. It has an average altitude of 254 meters (833 feet) from mean sea level.

2.2.2 Climate conditions and seasons and their duration:

The typical climate of the region is very hot in summers and extremely cold in winters. The cold season is from about the middle of November to the earlier part of the March. The succeeding period upto the June is the hot season. July, August and the first half of the September is Monsoon period. Mid September to about the middle of November may be termed as the post monsoon or transitional period.

2.2.3 Temperature:

June is generally the hottest month with the mean daily maximum temperature of 44 degree centigrade and the mean daily minimum at 27.2 degree centigrade. The January is the coldest month. The mean daily maximum in the January is 19.5 degree centigrade and the mean minimum is 6.4 degree centigrade. (See table no.1)

2.2.4 Rain fall:

About 70% of the annual rainfall is received during period from July to September. The rain fall during the period of December to March accounts about 16% of the rainfall. The average annual rainfall in the city is 859.4mm. (See table no. 1)

Table no.: 1

Temperature and Rainfall in Khanna

Maximum Temperature	44 degree centigrade
Minimum Temperature	6.4 degree centigrade
Average Rainfall	859.4 mm

Source: Census of India, 2001

2.3 Historical Background

Brief History of the City and Its Landmarks

2.3.1 Khanna Town

Khanna is a Punjabi word, which means one quarter (1/4 or 0.25). The city was named thus because of its size, which used to be just a quarter of what normal city should be. In other words, it was a very small city originally Khanna is an ancient town which came into existence 500 years back. As per Revenue records, Khanna Town was founded by Kahana Rajput and derived its name from him. The historical development of Khanna is shown in illustration no.:2.

Khanna is an ancient town which came into existence 500 years back*[1]. History reveals that Sher Shah Suri built a number of Sarais (inns) at every 12 to 15 miles along Delhi Lahore road. One of the Sarais was built in this area which is till known as Purani Sarai. After the decline of mughal rule in Punjab, Banda Bahadur captured the area from Sirhind to Hoshiarpur. After that a jathedar of Dahedu controlled and occupied the whole of area from Dahedu to Nabha. He married his daughter Daya Kaur to king of Nabha. When a family dispute arose between king of Nabha and Rani Daya Kaur, she left Nabha for good and came back to Dahedu her parental home. According to Indian conventions she could not remain with her parents forever. Therefore, her father cut out a KANA which signifies a small portion of territory between Dahedu and Nabha. With passage of time word KANA came to be known as KHANNA. The original area of Khanna is chotta Khanna while the present extension is now called Khanna town.

The town first developed on one side of the G.T. Road which is the old town. The military encamping ground was also established on this side. Gradually with the opening of the Railway in 1870, Khanna has started developing on the other side of G.T. road along the railway road as some industries and commercial establishments were developed here.

[1] Source: http://ludhiana.nic.in/admin/admin_mc_khanna.html

After the partition of the country, a small Model town colony was developed by the government on the North West of the town along the Samrala road for rehabilitation of the refugees.

The town registered continuous increase in a number of activities. A large number of small and big industrial units have come up. Trade and commercial activities also flourished and the town has a rising trade in grain, cotton, salt, ground nut oil, timber and iron etc. Khanna's Grain Market is one of the biggest Grain Market in the Asia. Gurudwara Manzi Sabhib situated on Ludhiana- Khanna G.T. road near Khanna city is also a historical gurudwara.

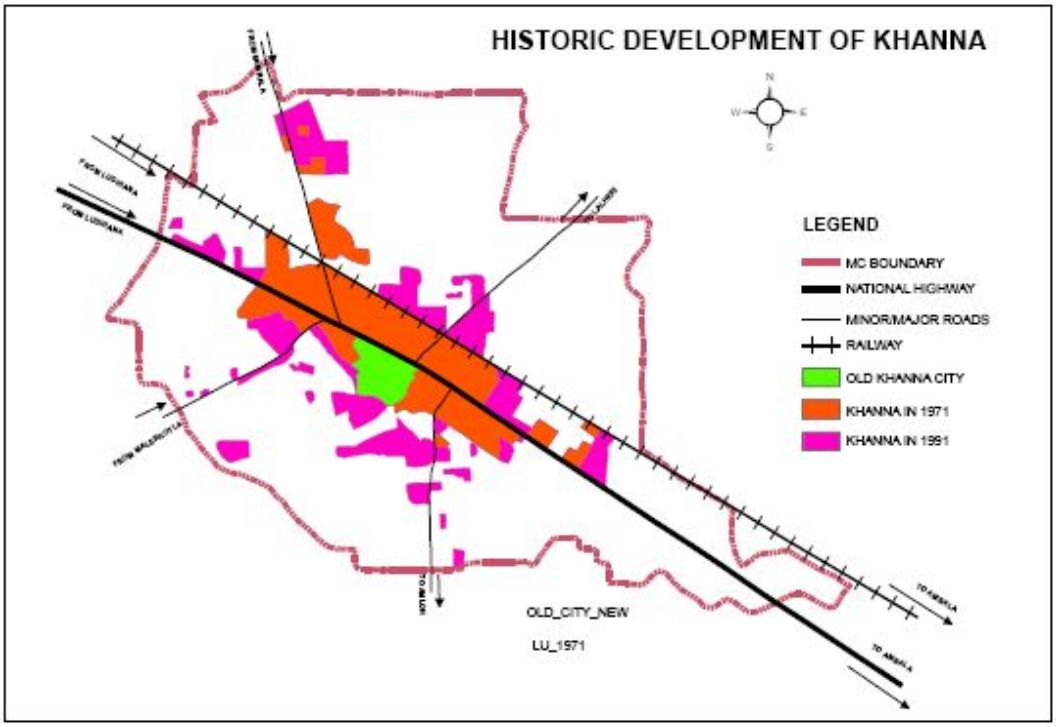

ILLUSTRATION NO.:2

2.3.2 Payal Town

Payal town has an ancient and historical background. This city has faced many sultanates and rulers. About 770 years ago a Muslim Faqir Shah Hussain settled here on a 'Tilla'.

Then his followers also came and settled here. When this land was dug out to build houses, then an anklet (payal) was found. So, Faquir Shah Hussain named this place as “Payal”. The grave of Shah Hussain is present here today also. After that during 1580-85,

this city was ruled by King Akbar. During the year 1766, Maharaja Amar Singh of Patiala made this city, a part of the state “Patiala”. Maharaja Amar Singh got built a fort in this city with the co-operation of Mughals in 1771. At present, Govt.Girls High School is being run in this fort. Besides this fort, there are 17 Hindu temples, five Pir, Gompir, Samadhi of queen, Mazar of Baba Main Maula and about five gurdwaras in this town. There is a very ancient temple of Lord Shiva and Goddess Parwati. There is also a temple named “Dasnam’s Akhara”.

2.3.3 Landmarks

2.3.3a Sarai Lashkari Khan

Sarai Lashkari Khan is suitated at a distance of about 26 Kilometers from Ludhiana on G.T. road towards Khanna. On the basis of an inscription on a marble slab on the front main gate the sarai was built by Lashkari khan, a general of emperor Aurangjeb in 1078 A.H. (1667 A.D.). Sarai Lashkari khan is an impressive building with the four walls still intact. The structure however appears to have been neglected since long. The vast enclosure about 100 yards on each side gives some idea of its magnificent structure and exceptional size. The interior of the saria has been allotted to an agriculturist and is under cultivation. The sarai has 4 gates on four sides and 120 hujras (small rooms). Of the two wells, one adjoining the mosque in the centre of the courtyard is broken and in disuse. The other is used for irrigation. A small contingent of soldiers could easily be deployed in the sarai for safety of the inmates as is evident from the construction pattern of gates.

2.3.3b Fort In Payal

Maharaja Amar Singh got built a fort in Payal city with the co-operation of Mughals in 1771. At present, Govt.Girls High School is being run in this fort.

2.3.3c Gurudwara Manji Sahib Kotan, Sixth Guru

Gurudwara Manji Sahib kotan is situated on NH-1 12 km from Khanna city towards Ludhiana. This gurudwara is of sixth Guru Shri Guru Hargobind Sahib ji. After getting released from Gwalior fort along with Jahangir, shri Guru Hargobind Sahib ji visited this place.As per local theory this place came into light on 12-08-1953 when s. Harbhajan singh s/o Baba Kirpal Singh and S. Gurdev singh were ploughing the filed, their plough (hal da fala) got struck with Manji Sahib. After discussion with the elders of the village and other people, the earth was dug and Manji sahib was taken out from the ground. Now, at present a very large gurudwara sahib has been built also, a medical dispensary for local people, and mata Ganga ji Khalsa College for women have also been established on this place. This is a very sacred place for all.

2.3.3d Mahadev Mandir, Payal

As per local theory Mahadev Mandir in Payal is such a historic place, to which no attacks either from Babar or other forces could demolish it wholly. When the forces of Babbar tried to demolish one of the Shivlings, the upper part of the Shivling showed blood stains seeing this part, the attackers panicked and ran away. Instead of demolishing it, they constructed a temple.

In this temple, there are six shivlings. Though there are no prayers done around the demolished shivlings, but this is the only place where partly demolished shivlings are worshipped.

It is generally said that if this small temple is filled with water then during drought, this activity helps in raining. Opposite to this mandir, there is a smadhi of swami jadogiri. There are also a smadhi of eight other sadhus who took a live Samadhi during those times. In north India, after Kashi, Payal is next place where sadhus took the live Samadhi.

2.3.4 Major Events in Development History of L.P.A. Khanna

Year	Event
Fort in Payal	1771
A.S. Sr. Sec. School, Khanna	1815
Headquarters of a petty Sikh chief, Khanna along with its large jagir, lapsed to the British on the death of last representative of the family named Mai Daian Kaur.	1850
Sirhind Gate, Payal	1865 and 1992 (reconstructed during this period)
Khanna was small settlement with population of 3408 persons	1868
Railway line(Ludhiana to Khanna)	1870
As per Revenue records, Khanna Town was founded by Kahana Rajput and derived its name from him.	1882
Khanna was constituted a class II municipality.	1886
Grain market, Khanna	1906
Khanna was reduced to a notified area committee in accordance with the Punjab Municipal Act,1911	1911
Khanna was again raised to the status of a small town committee in accordance with the Punjab Small Town Act,1922	1924
Khanna was resorted to a class II municipality vide Punjab Notification No.24113, dated 22nd September, 1993.	1933
The boundaries of the Municipality Khanna was specified vide notification No.3822/C/52/11/3410, dated 11th june,1952	1933
Hindi Putari Pathshala School	1941
Government Sr. Sec. School, Khanna	1943
Gurudwara in Payal	1945
A.S. college of boys	1946
Small Model town colony developed by Government on North West of town along Samrala Road	1947-49
Khanna as Sub tehsil headquater in Tehsil Samrala	Immediately after partition of India
The Municipal Committee, Khanna was superseded	1952
Radha Vatika Sr. Sec. School	1954
The Municipal Committee, Khanna was reconstituted	1955
Electricity in Khanna	1955

Electricity in Payal	1955
Manzi Sahib Gurudwara	1953
Cinema, Khanna	1970
Raksha Mittal Hospital	1970
Khanna registered as class III town in Punjab	1971
Improvement Trust, Khanna	1972
Civil Hospital in Khanna	1972
Municipal Council, Payal	1973
A.S. college of women	1973
Electric grid in Khanna	1976
Water supply network in Khanna	1978
Water supply network in Payal	1980-81
Sewerage network in Khanna	1980-83
Telephone network in Khanna	1984
Electric grid in Payal	1988
Telephone network in Payal	1990
Khanna Nursing Home	2000
Ist PUDA Licensed Colony (Sun City, Khanna)	21.04.2006
L.P.A. Khanna	15.1.2008 (Notification NO.12/3/2008-4HGI/417) under section 56(1) of "The Punjab Regional and Town Planning and Development Act 1995 (Amendment), 20/5/2010 (Notification no 12/3/2008-4HGI/1413) boundary of L.P.A .has been rectified under section 56(7) of "The Punjab Regional and Town Planning and Development Act 1995 (Amendment), 2006".

***Source**: Municipal Council, Khanna, Municipal Council, Payal, Improvement trust, Khanna ,Master Plan of Khanna (1971-91), Khanna IDSMT (1980-85), P.S.E.B Khannal*,http://ludhiana.nic.in/admin/admin_mc_payal.html,http://ludhiana.nic.in/admin/admin_mc_khanna.html

2.4 Legal Framework for Master Plan

2.4.1 Main provisions of the Act: Master plan of Khanna is prepared as per the provisions of "Punjab Regional and Town Planning and Development (Amendment) Act, 2006". Main provisions of the law are given as under:

Section 56 (i) Under Section 56 (i) State Government may declare and publish any planning area.

Section 57: After the declaration of planning area, the State Government has to designate the Planning Agency for the Local Planning Area.

Section 59: The Designated Planning Agency shall not later than 6 months after its designation or within such time as the government may from time to time extend prepare a present land use map indicating the present use of every piece of land in the planning area.

Section 60: The State Govt. may determine in the prescribed manner the amount which a local authority, State Govt. or any other authority functioning in the Planning Area shall pay to the Designated Planning Agency as Contribution towards the expenses incurred by it.

Section 70 (i): After the declaration of a Planning area and after the designation of a Planning agency for that area, the designated Planning agency shall prepare Master Plan and submit to state govt. 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) Indicate regulations (hereinafter called "Zoning 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 building, structures and land.

Section 70 (3): State Government shall direct the Planning Agency to publish the Existing Land-use Plan and Master Plan and place its copies for public objections and suggestions within 30 days time after publication. State Government shall consider the objections / suggestions so received in consultation with the Board Government shall direct the Planning Agency to modify the Master Plan or may approve it as such. State Government shall finalize the Master Plan and direct the Designated Planning agency to publish the intimation to Government within 30 days from the date of its approval.

Section 75: Operational date of Master Plan shall now be the date of publication.

The legal framework of the master plan is illustrated in the form of flow chart below.

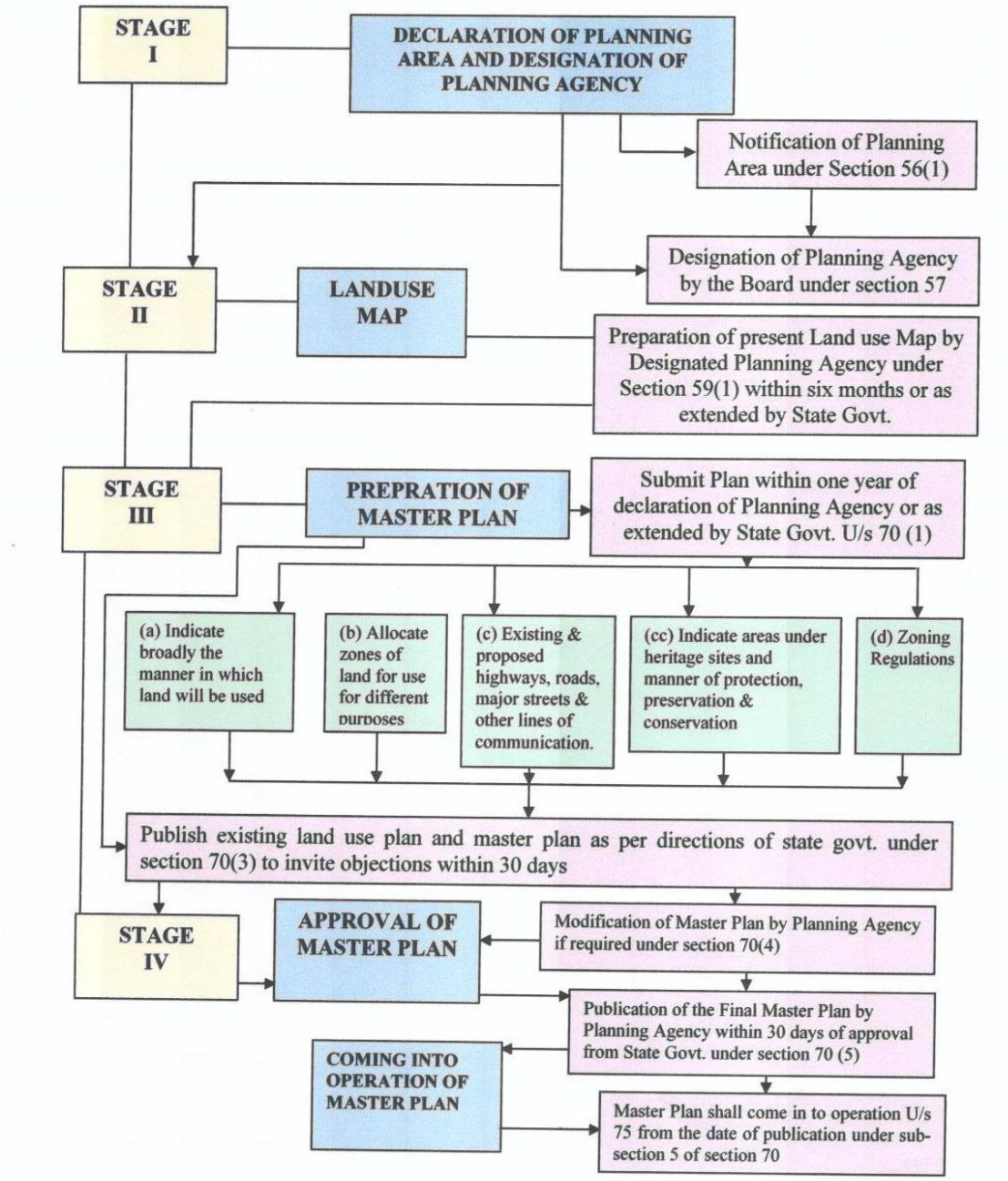

Figure no.1: Stages of Master Plan Preparation

2.4.2 Methodology Adopted/Stages For Plan Preparation:

(A.) DECLARATION OF PLANNING AREA AND DESIGNATION OF PLANNING AGENCY :

- Notification of Planning Area under section 56(1)
- Designation of Planning Agency by the Board under section 57

(B.) LAND USE MAP :

- Preparation of present land use map by Designated planning Agency under section 59 (1)
- Time schedule: six months or as may be extended by the state government under section 59(1)

(C.) PREPARATION AND APPROVAL OF MASTER PLAN:

- Submit plan within one year of declaration of Planning Agency (or as extended by state government) under section 70(1)
- Publish existing land use plan and master plan as per directions of state govt. under section 70 (3) to invite objections within 30 days.
- Modification of Master Plan by Planning Agency if required under section 70(4)
- Publication of the Final Master Plan by Planning Agency within 30 days of approval from state government.

(D.) COMING IN TO OPERATION OF MASTER PLAN:

- Master plan shall come in to operation from the date of publication under sub section 5 of section 70 referred to.

(E.) AMENDMENT OF MASTER PLAN:

- Preparation of revised master plan at any time after the Master Plan comes into operation and at least once after every 10 years under section 76 (1)
- Its approval in the same manner as in case of Master Plan under section 76(2)

(F.) MINOR CHANGES IN MASTER PLAN:

- Minor changes by agency with prior approval of the state govt. in the Master plan as necessitated by topographical and cartographical error provide no such change shall be made unless it is in public interest and notified to the public under section 77

3. POPULATION, ECONOMY, HOUSING AND EMPLOYMENT

3.1 Population Growth and Characteristics of L.P.A. Khanna

The basic character of the town can be judged by examining physical, social, and economical needs of the people. Population is one of the most important assets of a country or a region. Socio-economic and demographic profile of the town reflects the true condition of a town, its requirement and needs, and infrastructure availability.

The character of the town can be judged by statistical data related to socio-economy and demography. The town planner examines population growth characteristics like literacy, age sex structure, sex composition caste composition, population density urbanization etc to get a picture of the existing demography of the town on the basis of which future projections to develop the city are made.

Demographic profile helps us in determining the demographic character of the area in terms of the population, growth rate, population density, literacy rate, etc. that helps in determining the social as well as the economic character of the area.

Density is an important factor to judge the overall development pattern and the kind of living/ working conditions prevailing in a particular area. It also helps in finalizing the density pattern of of the area, so that the required facilities/amenities are provided as per the norms. Thus the following study examines the population growth and its various characteristics.

3.1.1 Population Growth since 1901 of Khanna Municipal Council and Payal Municipal Council

Growth rate of population refers to the net change in the number of people living in a particular period between two given points of time and is expressed in percentage.

Table: 2 GROWTH TRENDS-URBAN POPULATION IN PUNJAB, KHANNA CITY AND PAYAL CITY

Years	Urban Population of Punjab (Persons)	Decadal Growth rate of Urban Pop of Punjab (%)	Population of Khanna Municipal Council (Persons)	Population of Khanna Municipal Council as %age of Total Urban Pop. of Punjab	Decadal Growth rate of Khanna Municipal Council (%)	Population of Payal Municipal Council(Persons)	Population of Payal Municipal Council as% of Total Urban Population of Punjab	Decadal growth rate of Population of Payal Municipal Council
1901	934766	-	-	-	-	-	-	-
1911	813224	13.00	-	-	-	-	-	-
1921	869526	6.92	-	-	-	-	-	-
1931	1168413	34.37	6555	0.56	-	-	-	-
1941	1657415	41.85	7941	0.47	21.14	-	-	-
1951	1989267	20.02	12646	0.63	59.24	-	-	-
1961	2567306	29.06	24416	0.95	93.07	-	-	-
1971	3216179	25.27	34182	1.06	39.99	-	-	-
1981	4647757	44.51	53761	1.15	57.27	5224	0.11	-
1991	5993220	28.95	71990	1.20	33.90	5852	0.09	-
2001	8245566	37.58	103099	1.25	43.21	7267	0.08	

Source: Census of India, 2001

Starting from a budding stage of a rural settlement, Khanna has grown to become the 18th largest urban centre of the Punjab. During the past years, the town has grown rapidly around the village Khanna Kalan in an unplanned and haphazard manner.

The growth rate of the population at Khanna has not been uniform one. The marked factors of population change have been fast and irregular growth. It has been clear from population data for the period 1931-2001 which has been given in table no.2 given above. Table no.: 2 shows that the highest population growth rate which the city ever attained was in the decade 1951-61 when it was 93.07%. It was due to mass migration of refugees to the city. In the subsequent decade, in 1961-71, the growth rate fell down to 39.99%. In 1981, the population growth rate was 57.27%, which was on higher side as compared to last decade due to improved infrastructure i.e. water supply network and sewerage network.

In 2001, the growth rate is 43.21%. Khanna town is developing as a major industrial and educational town and as large number of migrants are migrating to it for jobs and facilities. Likewise Khanna will also sustain high growth rate in the coming decades as it is developing at faster rate.

3.1.2 Population Growth of Local Planning Area, Khanna

The Local Planning Area of Khanna comprises of two urban areas (namely Khanna and Payal) and 80 villages. Table No.3 (table below) reveals the growth trends of Local Planning Area of Khanna. It shows that during the decade of 1981-91 the growth rate of population was 21.75% which fall down to 20.74% in the decade of 1991-2001. The fall in the growth rate of LPA is the result of awareness regarding small family size among the population, large rate of migration of people to other cities/countries for better job opportunities available and many other indirect factors . However the L.P.A. has witnessed an absolute increase in population because of other factors of urbanization viz; improved economic status of the people of the LPA, better health facilities etc.

Table no.3: Population growth of Local Planning Area, Khanna

S.No.	Year	Population	Decadal Growth %age
1	1981	142389	-
2	1991	173371	21.75
3	2001	209339	20.74

Source: Census of India, 2001

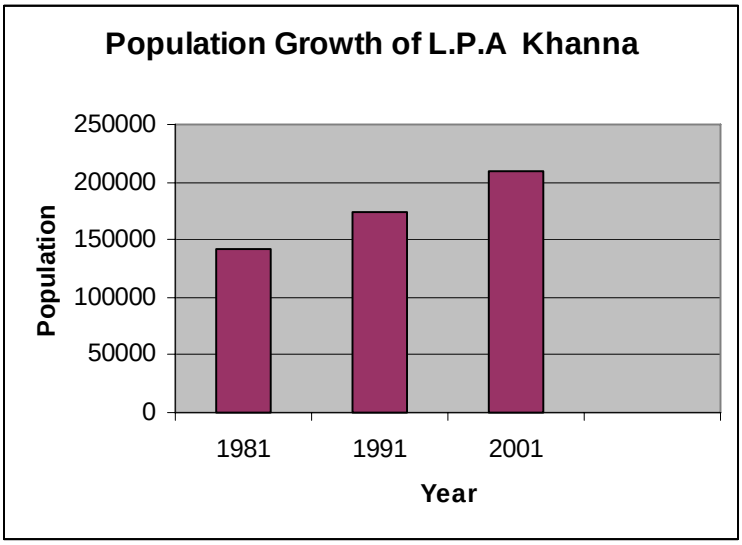

Fig.2 Population growth of Local Planning Area, Khanna

3.1.3 Age Sex distribution, sex ratio, literacy of Khanna.

3.1.3a Age Structure

The most important demographic characteristic of a population is its age-sex structure. The age structure of population is given by grouping different age groups. (Table No.4 below) It helps in studying various facilities provided as well as required by city population. In the year 2001, the maximum population i.e. 33.54% is in the age group of 20-39 i.e. working age group. Age structure is also a tool for deciding the job structure and providing job opportunities in the city. The percentage of persons in the age group of 20-39 (33.5%) is more as compared to age group 5-19 (31.72%) i.e. the youth and their needs i.e. services and facilitates including educational facilities like schools and colleges, sports, facilities, library, recreational facilities to be considered while earmarking proposals. 7.50% population of the city falls in the age group of 60+, this age group is dependent population of the area but requires various facilities like hospitals, clinics, parks, community centre, old age homes etc. Area requirements and location aspects to be given special attention while planning for this age group.

Table no.4: AGE STRUCTURE

KHANNA CITY 2001

Age Group	**Persons**	**%age**	**Males**	**Females**
0-4	8306	8.05	4602	3704
5- 19	32696	31.72	17959	14737
20-39	34575	33.54	18118	16457
40-59	19068	18.49	10264	8804
60 & above	7731	7.50	3945	3786
Age not stated	723	0.70	388	335
Total	**103099**	**100**	**55276**	**47823**

Source: Census of India, 2001

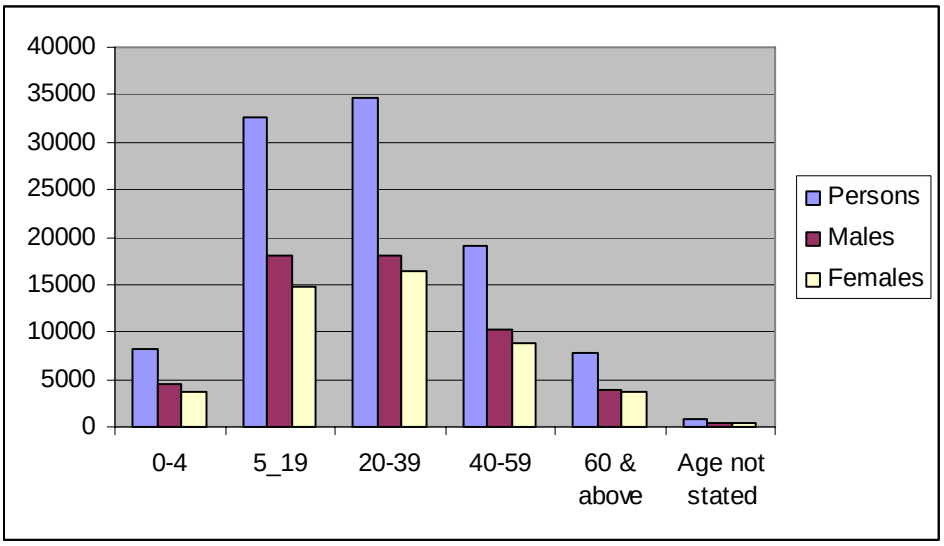

Fig.3 Age Structure

3.1.3b Sex ratio:

The numerical measurement of sex composition of population is often expressed in terms of sex ratio. It is the number of females per thousand to males. Sex ratio helps in determining the occupational structure and facilities required by males and females. Thus, it decides the deciding area requirements in the planning of L.P.A. Khanna. According to the census 1981, there were 881 females per thousand to males in L.P.A. urban (Table No.5 below). In 1991, the sex ratio increased up to 891 females per thousand to males which reduced to 866 in 2001. The figure in the table no.5 shows a decreasing trend i.e. the number of females in comparison to males are less in number. Prevalence of social evils like dowry system, female foeticide and infanticide are the major reasons for low sex ratio in L.P.A. Khanna

Table 5: SEX RATIO IN KHANNA CITY

Year		Total	Males	Females	Sex-Ratio
1981	**L.P.A. Khanna**	142389	76149	66240	870
1991		173371	92006	81365	884
2001		209339	111922	97417	870
1981	**Municipal Council Khanna**	53761	28610	25151	879
1991		71990	38094	33896	890
2001		103099	55276	47823	865
1981	**Municipal Council Payal**	5224	2754	2470	897
1991		5852	3063	2789	911
2001		7267	3866	3401	880
1981	**Urban**	58985	31364	27621	881
1991		77842	41157	36685	891
2001		110366	59142	51224	866
1981	**L.P.A. Rural**	83404	44785	38619	862
1991		95529	50849	44680	879
2001		98973	52730	46243	877

Source: Census of India, 2001

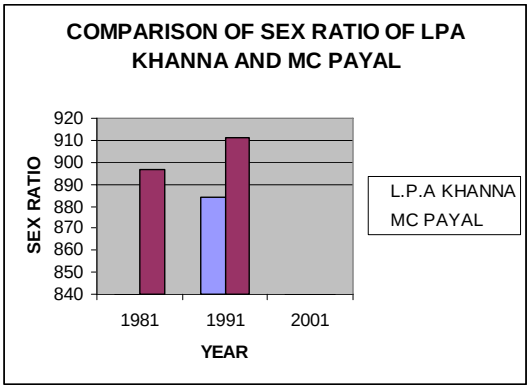

Fig.4 Sex Ratio of L.P.A Khanna and MC Payal

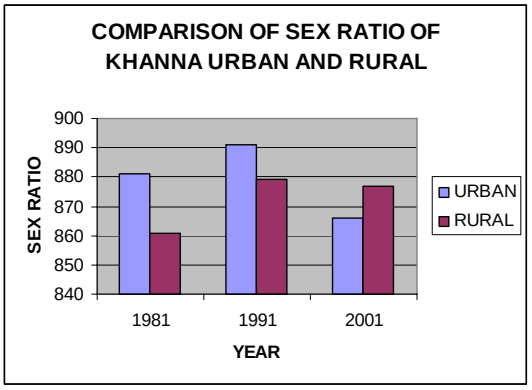

Fig.5 Sex Ratio of Khanna Urban and Rural

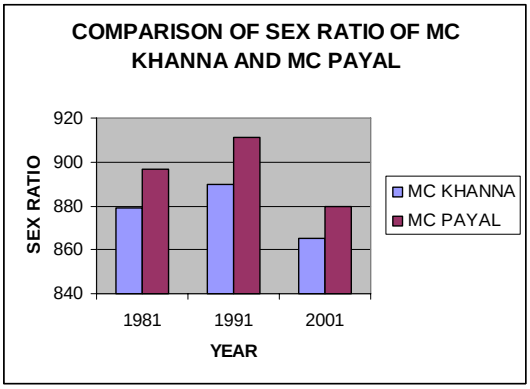

Fig.6 Sex Ratio of MC Khanna and MC Payal

3.1.4 CASTE COMPOSITION (L.P.A.) KHANNA

Schedule caste population and %age of S.C. Pop to Total

Table 6: CASTE COMPOSITION *POPULATION*

		1981			1991			2001	
	Total population	**S.C. Pop**	**%age of S.C.Pop**	**Total population**	**S.C Pop**	**%age of S.C.Pop**	**Total population**	**S.C Pop**	**%age of S.C.Pop**
LPA Total	142389	44563	31.29	173371	56331	32.49	209339	69404	33.15
Rural (Villages)	83404	33073	39.65	95529	39338	41.17	98973	41373	41.80
Urban	58985	11490	19.47	77842	16993	21.83	110366	28031	25.39
Khanna (Municipal Council)	53761	9670	17.98	71990	14709	20.43	103099	25198	24.44
Payal (Municipal Council)	5224	1820	34.84	5852	2285	39.04	7267	2833	38.98

Source: Census of India

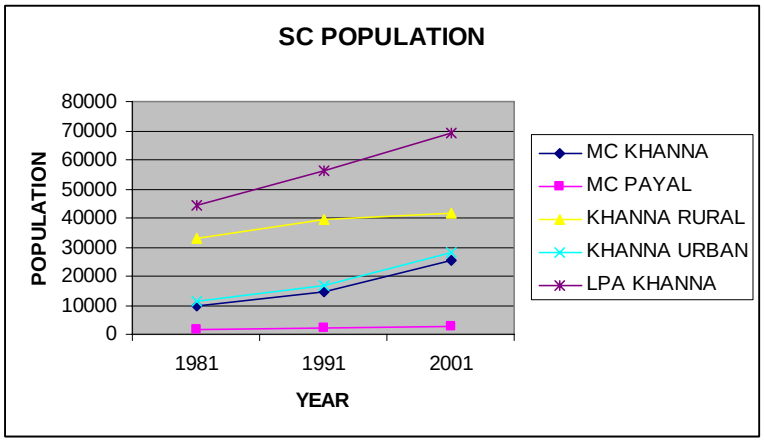

Fig.7 SC Population

The major reason for the increase in number of scheduled caste population in L.P.A. Khanna is the availability of jobs and development of various facilities as well as the incentives being given to the scheduled caste under various state level policies and schemes in Punjab. There is consistent increase in the number of scheduled caste population in Local Planning Area of Khanna i.e. 31.29% in 1981and 32.49% in 1991 and increase in 2001 it was 33.15%. (Table No.6 above)

In case of Khanna Municipal Council, the percentage of scheduled caste population to total population has increased from 17.98% (1981) to 24.44% (2001). Similarly, in Payal Municipal Council, scheduled caste population to total population has increased from 34.84% in 1981 to 39.04% in 1991 but declined to 38.98% in the year 2001. The percentage of S.C population to total population in villages increased from 39.65% (1981) to 41.80 % (2001).

3.1.5 Density:

Density of population refers to the man-land ratio. The density of population of Khanna city has increased from 2553 persons/km^2 (1981) to 4494 persons/km^2 (1991) (table No.7 below). The population density of city increased in the year 1991, but decreased in the year 2001 (3854 persons per sq.km.). The decline in density of population from the year 1991-2001 is because of the increase in the area of Municipal council Khanna which was earlier 1602 sq.hectares but has now increased to 2675 sq.hectares.

Table 7: POPULATION DENSITY KHANNA M.C.

Year	**Total Population**	**Area (Hectare)**	**Decadal**	
			Persons/sq.km	**Persons/hectare**
1981	53761	2106	2553	26
1991	71990	1602	4494	45
2001	103099	2675	3854	39

Source: Census of India, 2001

The density of population of Payal city has increased from 1243 persons/km^2 (1981) 1393 to persons/km^2 (1991) (table No.8 below). The population density of city increased in the year 1991, but decreased in the year 2001(1530 persons per sq.km). The decline in density of population from the year 91-2001 is also because of the increase in the area of Municipal council Payal which was earlier 42 sq.hectartes but has now increased to 475 sq.hectares.

Table 8: POPULATION DENSITY PAYAL M.C.

Year	Total Population	Area (Hectare)	Decadal persons/sq.km	persons/hectare
1981	5224	42	1243	124
1991	5852	42	1393	139
2001	7267	475	1530	15

Source: Census of India, 2001

The population density of L.P.A. Khanna increased from 694 persons per sq .km in year 1991 to 837 persons per sq. km in year 2001.

Table 9: POPULATION DENSITY OF L.P.A. KHANNA

Year	Total Population	Area (Hectare)	Decadal	
			Persons/sq.km	Persons/hectare
1981	142389	24967	570	6
1991	173371	24967	694	7
2001	209339	24967	838	8

Source: Census of India, 2001

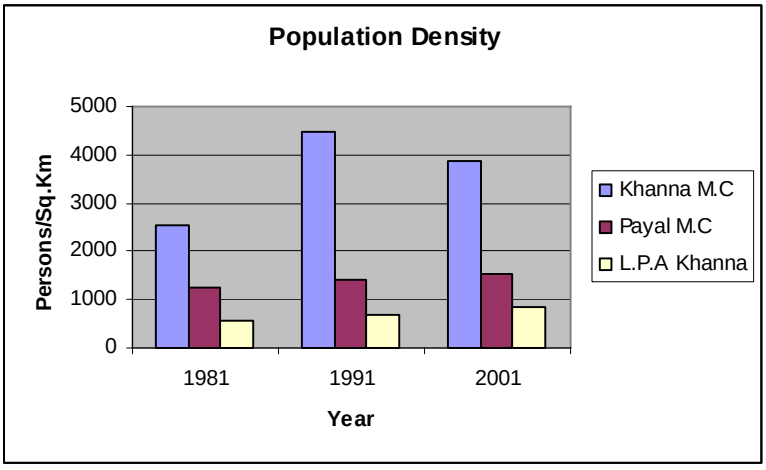

Fig.8 Population Density of L.P.A Khanna, MC Khanna,MC Payal

3.1.6 Literacy Rate

Table no.10

Type	Year	Total Population	Total Literates	Males		Females		Literacy Rate
				Number	%age	Number	%age	
L.P.A. Khanna	1981	142389	69960	42354	29.74	27606	19.38	49.13
	1991	173371	99815	58159	33.54	41656	24.03	57.57
	2001	209339	140897	-	-	-	-	67.3
Municipal Council Khanna	1981	53761	30442	17954	33.40	12488	23.23	56.62
	1991	71990	44932	25439	35.34	19493	27.08	62.41
	2001	103099	72847	40799	39.57	32048	31.08	70.65
Municipal Council Payal	1981	5224	2714	1590	30.44	1124	21.51	51.95
	1991	5852	3182	1821	31.12	1361	23.26	54.37
	2001	7267	4742	2617	36.01	2125	29.24	65.25
L.P.A. Rural (80 villages)	1981	83404	36804	22810	27.35	13994	16.78	44.13
	1991	95529	51701	30899	32.34	20802	21.78	54.12
	2001	98973	63308	-	-	-	-	63.9

Source: Census of India, 2001

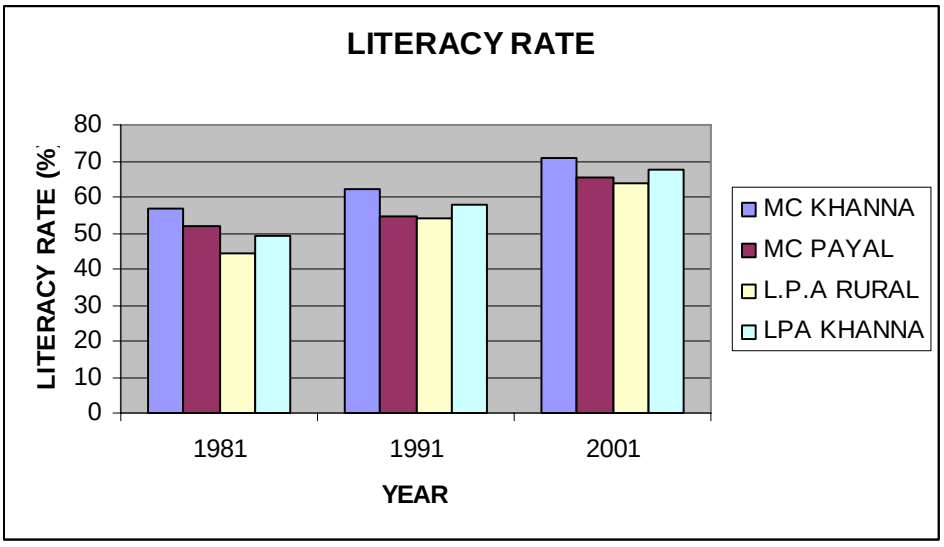

Fig.9 Literacy Rate

Socio- Economic status of the city is well determined by literacy rate. The literacy rate in L.P.A. of Khanna is increasing from year 1981 to 2001. In 1981, it was 49.13 % only and in 1991 it was 57.57%. In 2001, it further increased to67.3 %.

In comparison to the literacy rate of Punjab in (2001) i.e. 69.7% the literacy rate of L.P.A. Khanna is 67.3%. It shows that the literacy level among the population of L.P.A is quite high. A major reason of high literacy rate in L.P.A. Khanna is that Khanna city is the education centre of Punjab . A Large number of schools, colleges have been opened up and awareness related to education is also very high. High literacy rate shows that population can use the available socio-economic resources in a better way.

3.1.7 Population Growth in Context of Punjab State

Table 11: PUNJAB POPULATION GROWTH 1981-2001

PUNJAB STATE

	1981 (Pop.)	**1991 (Pop.)**	**Growth rate**	**2001 (Pop.)**	**Growth rate**
Total	16788915	20281969	20.81	24358999	20.10
Urban	4647757	5993225	28.95	8262511	37.86
Rural	12141158	14288744	17.69	16096488	12.65

Source: Census of India, 2001

Table 11(a): L.P.A. KHANNA POPULATION GROWTH 1981-2001

	1981 (Pop.)	**1991 (Pop.)**	**Growth rate(%age)**	**2001 (Pop.)**	**Growth rate(%age)**
Total	142389	173371	21.75	209339	20.77
Urban	58985	77842	31.96	110366	41.78
Rural	83404	95529	14.53	98973	3.60

Source: Census of India, 2001

From table no.11 (a) it is clear that growth of Khanna L.P.A. (urban) is increasing i.e. 31.96% in 1991 to 41.78% in 2001. Whereas the growth rate in case of rural L.P.A. is decreasing i.e. 14.53% in 1991 to 3.60% in 2001. This is due to increasing urbanization and migration from rural areas.

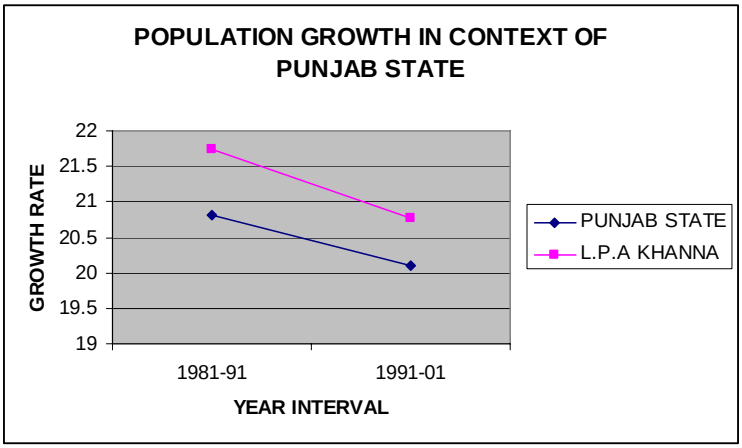

Fig.10 Population Growth in context of Punjab state

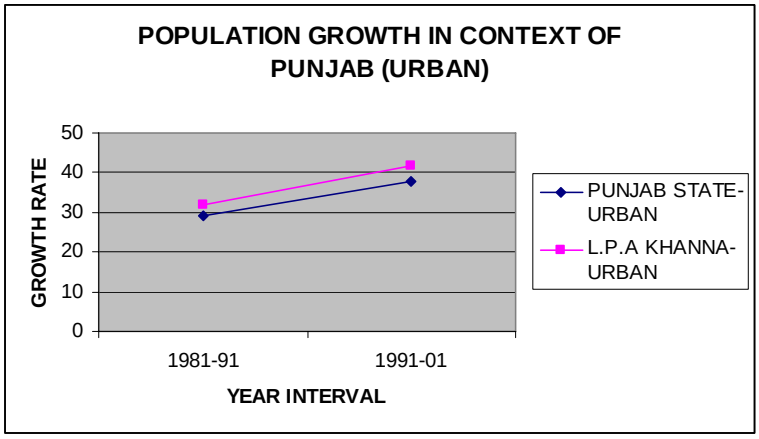

Fig.11 Population Growth in Context of Punjab (Urban)

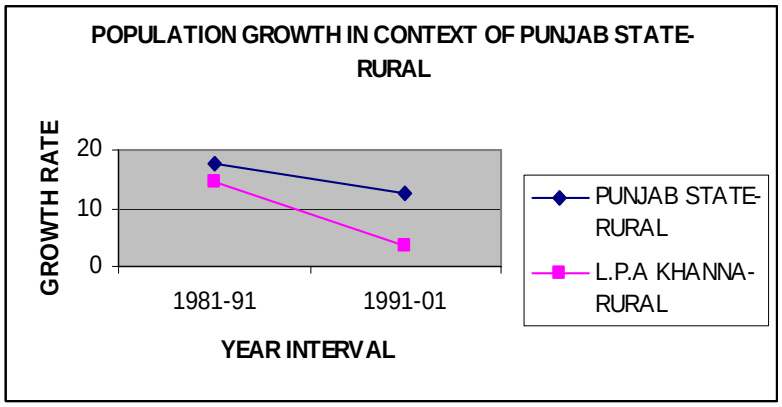

Fig.12 Population Growth in Context of Punjab state - Rural

TABLE 12: SHARE OF LPA IN PUNJAB (%age)

	1981	1991	2001
Total	0.84	0.85	0.86
Urban	0.35	0.38	0.45
Rural	0.49	0.47	0.40

Source: Census of India, 2001

From table no.12 above it is clear that share of Khanna L.P.A. urban in Punjab is increasing i.e. 0.38% in 1991 to 0.45% in 2001. Whereas the share of Khanna L.P.A. rural is decreasing from 0.47% in 1991 to 0.40% in 2001. As more and more people are migrating from rural areas due to lack of basic faculties and moving toward urban areas for job opportunities and in search of facilities.

3.1.8 Urban – Rural Growth Differential

The process of urbanization can be best examined through Urban Rural Growth Differential (URGD). From year 1981-2001 the URGD of Punjab was 11.26% which increased in the decade of 1991-01 i.e. 25.21%. In the context of Local Planning Area of Khanna the URGD has increased i.e. 17.43% in 1991 to 38.13% in 2001. Urbanization has been found to have high degree of positive co-relationship with the processes of industrialization and globalization. The development of commercial areas, industrial areas and housing areas in Khanna urban has lead to high URGD.

TABLE 13: URBAN – RURAL GROWTH DIFFERENTIAL

Year	Punjab (%)		URGD	Khanna (L.P.A.)		URGD
	Urban	Rural		Urban	Rural	
1981	-	-	-	-	-	-
1991	28.95	17.69	11.26	31.96	14.53	17.43
2001	37.58	12.65	25.21	41.78	3.60	38.13

Source: Census of India, 2001

3.1.9 Migration

Table No. 14: Number of Migrants in Khanna Municipal Council

Year	Migrants	Males	Females	Total population	%age to total population of L.P.A.
2001	59231	28238	30993	209339	28.3%

Source: Census of India, 2001

Table No. 15: Migration Age Group(1-4 years)

Year	Migrants	Males	Females	Total population(L.P.A.)	%age to total population of L.P.A.
2001	2703	1702	1001	209339	1.3%

Source: Census of India, 2001

Table No. 16: Migration Age Group(5-9 years)

Year	Migrants	Males	Females	Total population(L.P.A.)	%age to total population of L.P.A.
2001	2474	1456	1018	209339	1.2%

Source: Census of India, 2001

Table No. 17: Migration Age Group(Above 10 years)

Year	Migrants	Males	Females	Total population(L.P.A.)	%age to total population of L.P.A.
2001	6256	3228	3028	209339	3%

Source: Census of India, 2001

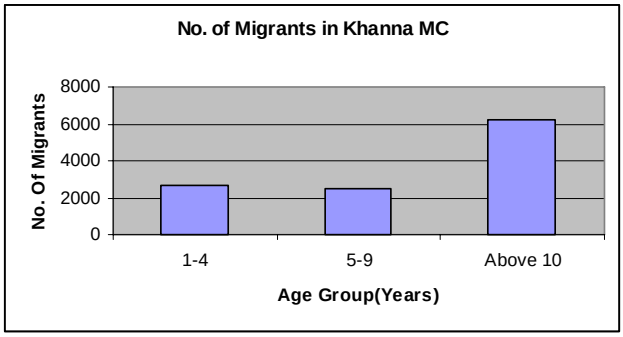

Fig.13 Number of Migrants in Khanna Municipal Council

All time Migration

Table no: 18

All time Migrants in Khanna Municipal Council

Year	Migrants	Males	Females	Total population(L.P.A.)	%age to total population of L.P.A.
2001	13326	7385	5941	209339	6.4%

Source: Census of India, 2001

From Table no.14 it is clear that there are 28.3% of total migrants to the total population L.P.A., Khanna. This is because Khanna town being second largest town in Ludhiana district and an agro based industrial centre in Punjab.

Majority of migrants belongs to the age group above 10 years i.e. there are 3% of total migrants to the total population L.P.A., Khanna. Whereas, there are 1.2 % and 1.3% of migrants to total population of L.P.A., Khanna in the age group 5-9 years and 1-4 years age group respectively. (Table no. 15,16,17 and 18 above). So there is need to take into account the increasing population of migrants and plan basic facilities for them like water supply, sewerage network, accommodation facility.

3.2 Economy and Employment

3.2.1 Salient features of Punjab's Economic Growth:

Punjab being an agrarian state, agriculture has played a pivotal role in the economic development of the state. In the recent past the primary section along with the other two sectors of the economy i.e. secondary and tertiary have also played an important role in strengthening Punjab's Economic growth. The description of key economic indicators of Punjab as per the Economic survey of Punjab, 2007-08 Economic Adviser to Government of Punjab is as per table below:-

Table 19: Key Economic Indicators:

Item	Unit	2004-05	2005-06	2006-07
GSDP at 1999-2000 prices	(Rs. crores)	81229.39 (R)	85729.29 (P)	91148.12 (Q)
Growth Rate of GSDP at 1999-00 Prices	Percent	5.20 (R)	5.54 (P)	6.32 (Q)
Per Capita Income at 1999-00 Prices	(Rs.)	27851 (R)	28872 (P)	30158 (Q)
Food grain Production	(000 Tonnes)	25662	25180	25309
Contribution to Central Pool	(Lakh Tonnes)			
Wheat	-do-	92.4	90.1	69.5
Rice	-do-	91.1	88.6	78.3
Electricity Generated	(mk W.h)	21296.00	24642.00	23965.00
Per Capita power consumption	()k W.h)	871	906	968
Fiscal Deficit	(Crores)	4114.94	2653.97	4383.58*
Revenue Deficit	(Crores)	3390.55	1240.25	1748.69*
Committed Expenditure	(% of Revenue Receipts)	93.55	77.99	80.15
Debt Stock	(Crore)	44982	48838	48344
Net Irrigated Area	(000,Hect)	4035	4060	4078
Cropping Intensity	(Percent)	189.00	189.00	187.88

The sectoral growth rate in GSDP at 1999-2000 prices is as follows:-

As per provisional estimates the overall economy of Punjab has witnessed a growth rate of 5.54 % at Constant (1999-2000) prices during 2005-06 and it is expected to grow by 6.32% during 2006-07 as per Quick estimates.

The Gross State Domestic Product (GSDP) at Constant (1999-2000) prices has increased to Rs.85729 crore (P) in 2005-06 from Rs. 81229 crore in 2004-05 showing a growth rate of 5.54 % (P) in 2005-06 as compared to 5.20 % in 2004-05. Quick estimate of GSDP at Constant (1999-2000) prices for 2006-07 is Rs. 91148 crore showing a growth rate of 6.32 percent.

The GSDP from primary sector which comprises mainly of agriculture and livestock activities has increased from Rs. 27541 crore in 2004-05 to Rs. 28004 (P) crore during\2005-06 registering a growth rate of 1.68 % at constant prices(1999-2000)as compared to 2.16 % in 2004-05. According to quick estimates, it will further increase to Rs.29138 crore in 2006-07 showing a growth rate of 4.05 percent.

The GSDP from the secondary sector which covers the manufacturing, construction and power sectors has increased from Rs.19086 crore in 2004-05 to Rs. 21408(P) crore in 2005-06 showing a growth rate of 12.17% at Constant Prices (1999-2000) as compared to 9.66 % in 2004-05. Its share in 2006-07 (Q) is Rs 23609 crore registering a growth rate of 10.28 %.

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

The Per Capita Income at Constant (1999-2000) prices in Punjab is Rs. 28872 (P) during 2005-06 as against Rs.27851 during 2004-05 registering an increase of 3.67%. It is expected to increase to Rs. 30158 as per quick estimates in 2006-07 showing a growth rate of 4.45%. The per capita income at current prices is Rs. 36759(P) in 2005-06 as against Rs.33158 in 2004-05 showing an increase of 10.86%. As per Quick estimates, per capita income is Rs. 40566 during 2006-07, registering a growth rate of 10.36 percent.

The detail of sectoral growth rate in GSDP at 1999-2000 prices is a shown in table in 20 and the detailed of gross state domestic product at factor cost by industry of origin at 199-2000 prices is as per table No. 21

Table 20: Sectoral growth rates in GSDP at 1999-2000 prices

Percentage change over the previous year							
Item	**2000-01 (R)**	**2001-02 (R)**	**2002-03 (R)**	**2003-04 (R)**	**2004-05 (R)**	**2005-06 (R)**	**2006-07 (Q)**
I.A.griculture & Allied (Primary)	1.42	0.81	(-)1.12	5.77	2.16	1.68	4.05
II. Industry (Secondary)	5.66	(-)2.07	3.02	6.85	9.66	12.17	10.28
Manufacturing	3.87	(-)5.19	6.09	3.72	6.46	7.66	6.03
Electricity,Gas &WaterSupply	0.03	0.06	4.47	6.75	1.61	8.12	4.20
Construction							
Construction	16.19	5.98	(-)6.27	16.61	23.71	24.98	21.77
III.Services (Tertiary)	5.39	5.21	6.11	4.63	5.34	4.95	5.74
Trade, Hotels & Restaurants	7.01	3.47	3.26	5.35	6.22	4.03	5.12
Transport, Storage & Communication	14.90	18.67	12.24	13.76	7.15	8.63	10.45
Banking & Insurance	4.95	4.72	11.26	(-)1.00	9.57	8.43	9.00
IV.Total GSDP	3.96	1.92	2.81	5.52	5.20	5.54	6.32

Table 21: GROSS STATE DOMESTIC PRODUCT AT FACTOR COST BY INDUSTRY OF ORIGIN, PUNJAB AT 1999-2000 PRICES (As on 28.02.2008)

Sr.No.	Sector	1999-00	2000-01	2001-02	2002-03	2003-04	2004-05	2005-06	2006-07
1	Agriculture	2482182	2515667	2534660	2499371	2640414	2701155	2743768	2853584
2	Forestry & logging	21685	22378	21825	21906	22189	21834	22451	22640
3	Fishing	16904	18632	20791	24535	29973	27840	30687	34007
	Agr and Allies								
4	Mining & quarrying	2520771	2556677	2577276	2545812	2692576	2750829	2796906	2910231
a	Sub Total of Primary	543	363	414	3134	3319	3247	3512	3612
5.	Manufacturing	2521314	2557040	2577690	2548946	2695895	2754076	2800418	2913843
5.1	Manu-Registered	1003007	1041824	987766	1047913	1086872	1157065	1245737	1320832
5.2	Man-Unregistered	606925	626045	577670	607056	611218	653926	701394	736534
6	Construction	396082	415779	410096	440857	475654	503139	544343	584298
7	Electricity, gas and Water supply	293846	341433	361859	339188	395527	489290	611518	744645
b	Sub Total of Secondary Industry	231173	231253	231398	241738	258057	262216	283521	295429
8.	Transport, storage & communication								
8.1	Railway	1528026	1614510	1581023	1628839	1740456	1908571	2140776	2360906
8.2	Transport by other means	1528569	1614873	1581437	1631973	1743775	19118118	2144288	2364518
8.3	Storage	317263	364547	432607	485563	552363	591847	642936	710123
8.4	Communication	377263	364547	432607	485563	552363	591847	642936	710123
9	Trade, hotels & restaurants	817678	875021	905370	934903	984903	1046156	1088321	1144043
10	Banking & Insurance	298416	313192	327978	364904	361268	395842	429092	467819
11	Real estate, ownership of dwellings & business services	314121	321389	329311	336614	344158	359364	367851	380321
12	Public administration	329565	330718	336930	365853	377043	38577	405258	420171
13	Other services	591240	607199	626456	651616	665105	681286	698177	717586
c.	Sub Total of Tertiary	2668283	2812066	2958652	3139453	3284840	3460292	3631735	3840063
14	State domestic product (Rs.lacs)	6717623	6983616	7117365	7317238	7721191	8122939	8572929	9114812
15	Calculated State domestic product (Rs. lacs)	6717623	6983616	7117365	7317238	7721191	8122939	8572929	9114812
16	Population	23854000	24310000	24621000	25076000	25540000	26012000	26493000	26983000
17	State Per Capita Income (Rs)	28161	28727	28908	29180	30232	31228	32359	33780

The share of agriculture (proper) in GSDP has declined from 26.27% in 1999-2000 to 20.65 % in 2006-07(Q). 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(Q).The share of secondary sector has increased from 22.75% in 1999-2000 to 25.90% in 2006-07(Q) which is mainly due to increase in activity of construction sector. The share of tertiary sector which comprises of services sector has increased from 39.72% in 1999-2000 to 42.13% in 2006-07(Q). This growth is mainly due to increase in contribution of transport, storage & communication, trade, hotels & restaurants and banking & insurance sector. It is evident that structurally Punjab's economy is following a trend that a fall in the share of agricultural sector in GSDP has given a corresponding rise in the tertiary sector.

3.3 Employment

Development of various economic sectors i.e. primary, secondary and tertiary form the economic base of the city. The economic viability of an area lies in its carrying capacity and its ability to provide employment opportunities.

Emphasis should be laid on tertiary sector activities such as commerce, IT applications, development of integrated freight complexes/ wholesale markets and informal sector. The economic factors are supreme as nothing can impede the human occupancy of an area than its economic incompetence.

The number of total workers in Khanna Municipal Council has increased in recent decades. As Khanna is fast developing agro based industrial centre town in Punjab, large number of migrants are coming to Khanna town for employment. The percentage of total workers in Khanna Municipal Council shows an increasing trend during the decadal period of 1981-1991 as well as 1991-2001. In 1981 growth was (28.40%), 1991 (29.31%) and in 2001 it was 33.08%. Similarly, the percentage of non workers have decreased i.e. in 1981 as it was 71.60% , 70.68% in 1991 and 66.91% in 2001 as shown in Table no.21 given below.

Table No. 21(a)

WORKERS & NON WORKERS
(Khanna Municipal Council)

Year		Total Workers		Non Workers	
	Population of Khanna M.C.	No. of Workers	%age to total population of L.P.A. Khanna	No. of Non-Workers	%age to total population of L.P.A. Khanna
1981	53761	15267	28.40	38494	71.60
1991	71990	21102	29.31	50888	70.69
2001	103099	34111	33.09	68988	66.91

Source: Census of India 1981, 1991, 2001

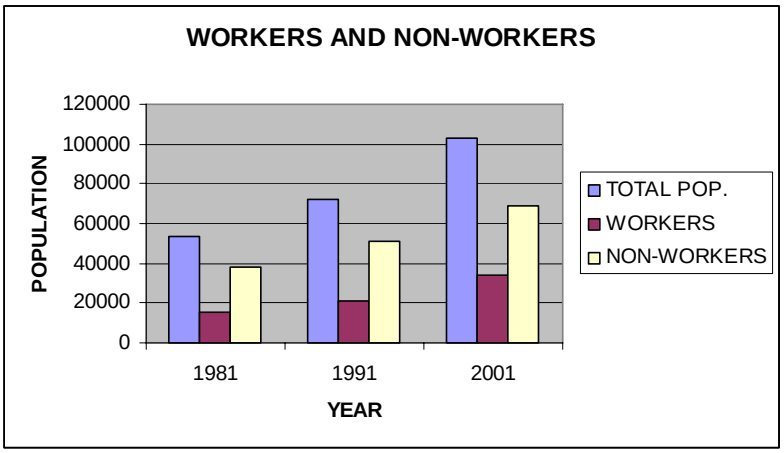

Fig.14 Workers & Non Workers

Table No. 22

DISTRIBUTION OF WORKFORCE
(Khanna Municipal Council)

Year	Total Workers	Cultivators		Agricultural Labourers		Household Industry		Others		Marginal Workers	
		No	%age of total workers	No.	%age	No.	%age	No.	%age	No.	%age
1981	15267	233	1.53	502	3.29	375	2.46	14124	92.51	33	0.21
1991	21102	251	1.19	1801	8.54	150	0.71	18900	89.56	-	-
2001	34111	385	1.13	616	1.80	1307	3.83	29510	86.51	2293	6.72

Source: Census of India 1981, 1991, 2001

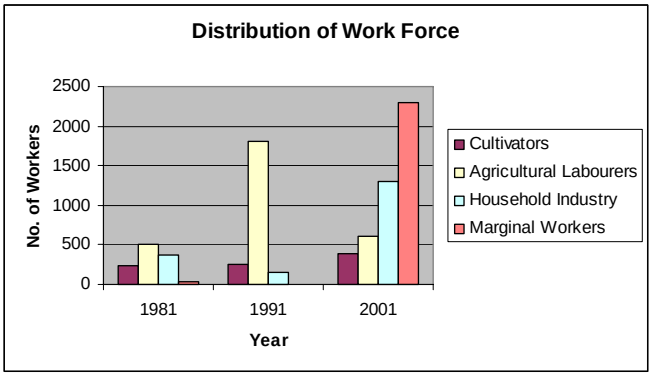

Fig.15 Distribution of Workforce (Khanna MC)

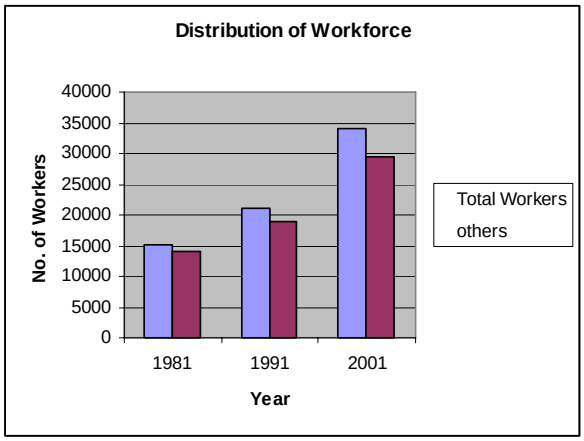

Fig.16 Distribution of Workforce (Khanna MC)

From the above table no.21, it is clear that in Khanna Municipal Council the percentage of non workers have shown an decreasing trend from 1981 (71.60%) to 2001(66.91%) but still there percentage is greater than total workers. If the workers are further classified as shown in table no. 22 given above, it shows that from 1981-2001, both the number of cultivators and agricultural labourers in Khanna decreased during 1981-2001. The number of cultivators which was 1.53% (1981) fell down to 1.13% (2001) and agricultural labourers which were 3.29% (1981) drooped to 1.80% in 2001. It is due to the increasing number of workers in other occupations like transportation, service industry etc.

In case of Payal Municipal Council, percentage of workers have increased from 1981(27.58%) to 2001(39.20%). Table no.24 given below depicts that similar trend is seen in Payal Municipal Council as in Khanna Municipal Council that household industry, other occupation sectors possess more number of workers. 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 lives in urban areas. It is related to manufacturing, processing, servicing and repairing of goods.

Table no: 23

WORKERS & NON WORKERS
(Payal Municipal Council)

Year		Total Workers		Non Workers	
	Population of M.C. Payal	No. of Workers	%age to total population	No. of Non-Workers	%age to total population
1981	5224	1441	27.58	3783	72.42
1991	5852	1691	28.90	4161	71.10
2001	7267	2849	39.20	4418	60.80

Source: Census of India 1981, 1991, 2001

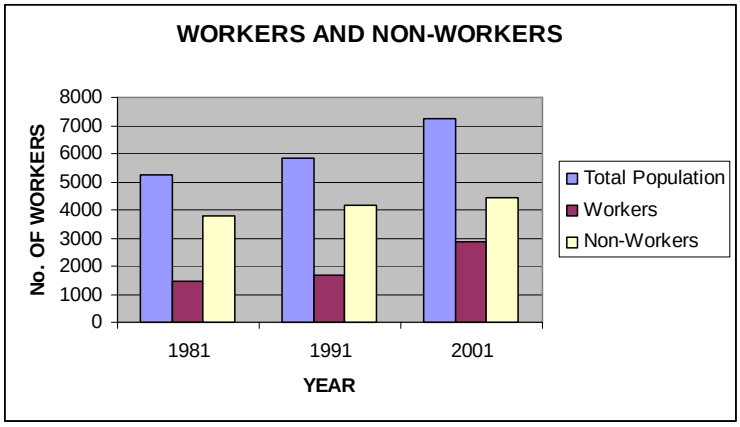

Fig.17 Workers and Non- Workers (Payal MC)

Table No. 24

DISTRIBUTION OF WORKFORCE
(Payal Municipal Council)

Year	Total Workers	Cultivators		Agricultural Labourers		Household Industry		Others		Marginal Workers	
		No	%age	No.	%age	No.	%age	No.	%age	No.	%age
1981	1441	273	18.94	247	17.15	74	5.14	835	57.94	12	0.83
1991	1691	254	15.03	505	29.86	15	0.88	917	54.23	-	-
2001	2849	215	7.54	69	2.42	61	2.15	2343	82.23	161	5.66

Source: Census of India 1981, 1991, 2001

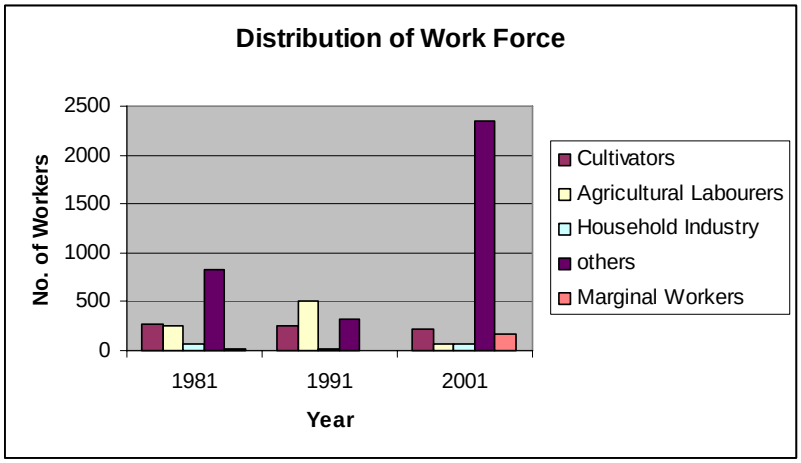

Fig.18 Distribution of Workforce (Payal MC)

Table No.25

Workers and Non Workers (L.P.A. Khanna)

Year	Total population	Total Workers		Non Workers	
		Number	%age to total population of L.P.A. Khanna	Number	%age to total population of L.P.A. Khanna
1981	142389	42526	29.86	99863	70.14
1991	173371	51620	29.77	121751	70.23
2001	209339	77908	37.22	131431	62.78

Source: Census of India 1981, 91 & 2001

Table No. 26

DISTRIBUTION OF WORKFORCE
(L.P.A. Khanna)

Year	Total Workers	Main Workers								Marginal Workers	
		Cultivators		Agricultural Labourers		Household Industries		Others			
		No.	%age	No.	%age	No.	%age	No.	%age	No.	%age
1981	42526	9261	21.77	7990	18.79	1109	2.61	23470	55.19	696	1.64
1991	51620	9748	18.88	10891	21.10	290	0.56	30681	59.45	10	0.01
2001	77908	9026	11.59	4552	5.84	3060	3.92	53756	69.00	7514	9.65

Source: Census of India 1981, 91 & 2001

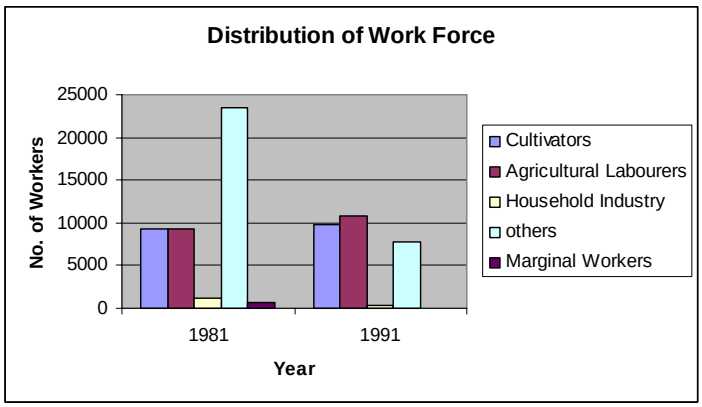

Fig.19 Distribution of workforce (l.P.A. Khanna)

According to census 1991, the percentage of total workers in L.P.A., Khanna is 29.77% and non workers are 70.18% as shown in table no.25. It reflects that non workers are still putting huge pressure on the working population as well as on the economy of L.P.A.

3.3.1 Manufacturing Industries

Manufacturing has a greater role to play in the development of a region and in this respect industrialization is a process of economic development in which a growing part of national resources are mobilized to develop a technically up to date diversified domestic economic structure.

Khanna town is developing as a major industrial town and large number of migrants are migrating to it for jobs and facilities. Organic development has come up in residential areas and along the main roads (G.T. road) in haphazard manner leading to various problems such as adverse impact on surroundings in terms of air pollution, noise pollution, water pollution.

Small scale industries

Table no.:27

Small scale industries

Number of units	Investment (lacs)	Employment
708	27500	6000

Source: District Industrial Centre, Ludhiana

Large Scale Industry

There are two large scale industries in Khanna i.e. Markfed Vanspati & allied Industry on G.T. road, Khanna and Milkfed Cattle feed plant, Bhattian (Khanna).

Table no.:28

Large scale industries

Number of units	Investment (lacs)	Employment
2	1978	298

3.3.2 Warehousing & Wholesale Trade

Khanna's Grain Market is one of the biggest Grain Market in the Asia, located in the west of the town between G.T.Road and Samrala Road. It has a total area of about 31.32 acres having 206 shops, 144 shop-cum-flats, 10 extra/vacant booths, 28 extra/vacant shops. There are about 250 arhtiyas (Licensed Commission Agents) in a Mandi setting about 11 lac quintal (for the year 2008-09), wheat 24 lac quintal (for the year 2008-09) paddy in a season. Apart from it another site comprising an area of 26 acres and is located near Samrala road near Model Town is also used for Mandi Purposes.

Table no.29: Production of Wheat, Paddy, Groundnut in Grain Market Khanna

		Wheat			**Paddy**			**Groundnut**
Sr. No.	Year	Production in quintals	Rate Rs.	Total amount	Production in quintals	Rate Rs.	Total amount	Quantity in Quintals.
1.	2001-02	1280307	620	793790340	2312083	500	1156041500	561
2.	2002-03	1330572	660	878177520	2627419	500	1313709500	578
3.	2003-04	1029152	650	668948800	2966064	580	1720317120	637
4.	2004-05	1075397	700	752777900	2774775	590	1637117250	-
5.	2005-06	1039166	915	950836890	2234013	600	1340407800	01
6.	2006-07	991780	970	962026600	2068716	650	1344665400	-
7.	2007-08	824346	1005	828467730	2324725	680	158081300	-
8.	2008-09	1146578	1050	1203906900	2410890	890	2145692100	-
9.	2009-10	1256824	1100	1382506400				

Table No.30: Production of Rice and Mustard in Grain Market Khanna

		Rice			**Mustard**		
Sr. No.	Year	Production in quintals	Rate per quintal Rs.	Total amount Rs.	Quantity in quintals	Rate per quintal Rs.	Total amount Rs.
1.	2001-02	-	-	-	1803	-	-
2.	2002-03	2133	958	2043414	2361	1685	3978285
3.	2003-04	77628	650	50458200	1184	-	-
4.	2004-05	42808	-	-	66	-	-
5.	2005-06	2341	950	2223950	426	1530	651780
6.	2006-07	01	-	-	115	1530	175950
7.	2007-08	4478	900	4030200	286	1900	543400
8.	2008-09	9222	-	-	156	-	-

Table No.31: Production of Sunflower and Cotton in Grain Market Khanna

	Sunflower			**Cotton**
Year	Production in quintals	Rate per quintal Rs.	Total Amount Rs.	Productions in quintals
2001-02	-	-	-	1
2002-03	-	-	-	-
2003-04	46212	1250	57765000	-
2004-05	51731	1300	67250300	6
2005-06	44586	1500	66879000	-
2006-07	22011	1400	30815400	2
2007-08	35827	1780	63772060	-
2008-09	82287	-	-	-

Apart from Grain Market, Khanna has a Sabzi Mandi with a total area of 7 acres having shop-cum-flats-55, booths-13, fruit booth-37, others (booths/shops)-7.

Table No.32: Production of Vegetables and Fruit

Sr.No.	Year	Vegetables in Quintals	Fruit in Quintals
1	2001-2002	321609	436516
2	2002-2003	363346	392220
3	2003-2004	374319	158558
4	2004-2005	380704	498415
5	2005-2006	382598	169154
6	2006-2007	355470	150092
7	2007-2008	368173	181150
8	2008-2009	420153	202072

Grain Market is well equipped with the infrastructure facilities such as Water Supply, Sewerage etc.

Grain Market & Fruit/Sabzi Mandi generates its revenue by charging market fee 2% sell value and 2% Rural Development Fund(R.D.F) .

The values of wheat and paddy in the above table shows a regular increase in production since 2007-2008. Whereas since 2001-02 till 2007-08 there has not been a stable production due to various reasons

There are about 6 Godowns in Khanna. Out of six godowns, One Markfed godown exists on Samrala Road, one on Warehousing godown beside Grain Market, two F.C.I. Godown, one each on Railway road & G.T. Road.

3.3.3 Finance, Insurance & Banking

To cater the economic growth of Khanna, there are total 34 banks operating in city and 3 banks are operating in Payal. The number of banks include both national and private baking sector.

Apart from banks, there has been a growth of insurance companies in the town to capture the market of Khanna town and adjacent villages.

3.3.4 I.T. Sector

As compared to Ludhiana, the development in I.T. sector in Khanna town is still lagging. So far, no I.T. industry has been set up in the town. But still a number of I.T. institutes/training centers have come up to educate the students and to train them for the future industry.

3.4 HOUSING

Housing is one of the basic human need and ranks top after food and clothing in terms of priority. Housing constitute one of the most important part of the social environment where an individual is nurtured, grows and matures as a human being , part of the society and as a citizen. Housing, in addition to making contribution to the quality of living also plays a significant role in improving the national economy and generation of employment. Housing has multiplier effect on the economy and industry of the country. It does not provide merely a shelter but gives an identity to the human being besides making him better human beings. Poor quality of housing or absence of appropriate shelter has considerable impact on the economy and productivity of human beings besides health and hygiene. Housing has been considered to have critical role in maintaining the social health and stability and in ensuring the people a decent quality of life. Accordingly, housing has been placed high on the agenda of any national government committed to the cause of promoting human welfare. Considering the role and importance of housing in the national economy, productivity, industrial growth, employment and quality of life number of policies dedicated to creating affordable housing has been framed at the national level. The agenda of these policies have been focusing on the ultimate goal of providing affordable shelter to all by 2021.

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

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 recognized as a separate unit.

Hence, the 'Census House' has been taken as a unit for the study of housing component in Master Plan Khanna which not only includes residential component but also comprises of other type of buildings like shop, offices, hospitals etc. However, main focus of the study is on the residential and residential cum other uses.

3.4.1 Housing Characteristics (Stock)

Housing characteristics (stock) reflects the economic and social status of the people residing in a particular area. Increase in the number of houses is an indicator of increase in population and development. The development provides job opportunities which attract people not only from surrounding cities but states also. The in migration requires additional housing stock which results in the increase in number of houses in both planned and unauthorized way.

3.4.2 Housing in Khanna

Housing is an activity which is mainly driven by individuals to provide itself with an appropriate shelter. With the rapid increase in population, number of houses has also recorded an increase. Besides individuals, Agencies have also contributed to the household stock of the Khanna city. Improvement Trust, PUDA/GLADA and Municipal Council, Khanna are the main agencies which facilitate housing. Improvement Trust, Khanna has so far promoted 5 Development schemes in the city. Municipal Council has contributed by framing 5 Town Planning Schemes offering residential plots to the people. In addition, Efforts have also been made by private developers in the city by getting colonies approved under The Punjab Apartment & Property Regulation Act 1995. The description of planned development within L.P.A. Khanna is shown in table below:-

Table No.33: Detail of Planned Development Schemes in Khanna M.C.

Sr. No	Agency	No. of schemes	Area in acres
1.	Improvement Trust	5	79.07
2.	T.P Schemes	5	115.45
3.	Promoters/PUDA approved	13	151
	Total Area	**23**	**345.52**

Source: Improvement Trust Khanna, M.C. Khanna, GLADA

*The detail of schemes is attached at the annexure no.3.

As mentioned in table no.34 the growth of residential houses and households have been almost at the same pace with the growth of population in the Khanna city. As per the Census 2001, the number of houses increased at the growth rate of 33.43% during 1981-91 and 51.68% during 1991-2001. The highest growth rate in housing in Khanna recorded during 1991-2001can be attributed to the natural growth as well as in-migration of population during this period. Following the pattern of growth in residential houses, number of households has also increased at same pace. The number of households in the city shows a growth rate of 51.38% in the last decade. In the year 1991, the number of households was 12402 which rose to the figure of 18775 households in the year 2001. The household size of population of the Khanna city shows an inverse correlation with the number of households and occupied residential houses in Khanna city. The household size of the city in year 1991 was 5.8 which came down to 5.5 in the year 2001 whereas 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 in decrease in the household size of the Khanna city as well as Payal and other rural part of LPA Khanna. The tables no.34,35 and 36 show the growth pattern of houses, households and household size of Khanna city, Payal and Khanna LPA (Rural) respectively.

Table No.34: Growth pattern of occupied residential houses and no. of households (M.C. Khanna)

Year	Occupied residential houses	%age growth rate of residential houses	No. of households	%age growth rate of households	Household size
1981	9030	-	9040	-	5.9
1991	12049	33.43	12402	37.19	5.8
2001	18277	51.68	18775	51.38	5.5

Source: Census of India 1981, 1991, 2001

Table No. 35: Growth pattern of occupied residential houses and no. of households (M.C. Payal)

Year	Occupied residential houses	%age growth rate of residential houses	No. of households	%age growth rate of households	Household size
1981	848	-	853	-	6.12
1991	961	13.32	980	14.88	5.97
2001	1295	34.75	1320	34.69	5.5

Source: Census of India 1981, 1991, 2001

Table No.36: Growth pattern of occupied residential houses and no. of households (Khanna Rural)

Year	Occupied residential houses	%age growth rate of residential houses	No. of households	%age growth rate of households	Household size
1981	12777	-	12845	-	6.5
1991	15381	20.38	15393	19.83	6.2
2001	17208	11.87	17234	11.95	5.7

Source: Census of India 1981, 1991, 2001

3.4.3 Pattern of Using Housing Stock:

Looking at the pattern of use of the existing housing stock, it has been observed that majority of households are being used as residential houses which comprise of nearly $2/3^{rd}$ of the total housing stock.(61.63%). Mixed use of houses has also been observed in large number of cases.18% houses in the city are being used both for residential and commercial/office purposes. In addition, every 20^{th} house has been found to have additional use besides serving for residential purposes. Despite the fact that the occupation density in the housing is very high, 9.19% houses in the city remains vacant or unoccupied. Thus it has been observed that the available housing stock is also not being put to optimal use. The large number of vacant houses can be attributed to the legal framework including the Rent Control Act which leads to unwillingness on the part of the

owners to rent out the houses. Accordingly, favorable environment needs to be created in order to minimize the number of vacant houses so as to ensure the optimum use of the housing stock. Details of use pattern of housing stock available in the city are given below:-

Table no.37: Pattern of Census houses - Category wise (year 2001)

(Khanna M.C.)

S. no.	Category	No. of houses	%age of total houses
1.	Residential	17709	61.63
2.	Residential cum other use	835	2.90
3.	Residential cum shop cum office	5198	18.09
4.	School/college	68	0.24
5.	Hotel/Lodge/Guest House	36	0.12
6.	Hospital/dispensary	89	0.30
7.	Factory/Workshop/Work shed	607	2.12
8.	Place of Worship	93	0.33
9.	Other Non Residential uses	1461	5.08
10.	Vacant houses	2640	9.19
	Total census houses	**28736**	**100**

Source: Census of India 2001

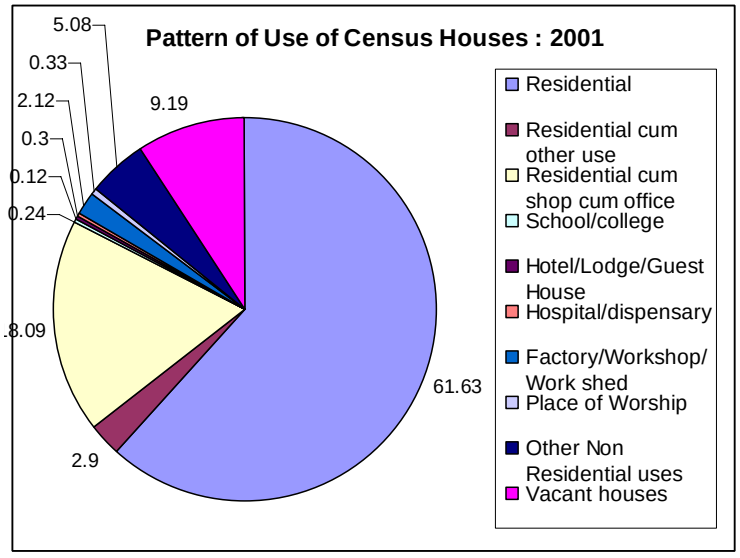

Fig.20 Pattern of Census houses –Category wise (Khanna M.C.)

3.4.4 Predominant Materials used in the Census Houses.

Besides looking at the housing stock in term of various uses, the use of material for the roof of the residential houses has also been looked into in order to qualitatively ascertain the housing stock. It has been observed that the majority of the housing stock has a permanent roof which constitutes around 93.5% of the total housing stock. As against this only 6.5% of the housing stock has temporary roofing which includes materials like grass, thatch, bamboo, wood, mud, plastic, polythene, slates, GI material and stones etc. This indicates that the economic conditions prevailing in the city are much better. Most of the housing stock having temporary roofing have been found to be located in the existing slums of the city

It has also been observed that among the predominant material used for roof approximately 3/4th of the housing stock has cement concrete roofing. Despite the fact that majority of housing stock is fairly placed so far as quality of roofing is concerned but still there are more than 1900 houses which require up-gradation of their roofs in order to improve the quality of housing. Table no.38 indicates the distribution of census houses by predominant material of roof in Khanna (year 2001).

Table No. 38: Distribution of census houses by predominant material of roof in Khanna M.C. (year 2001)

S. no.	Material	No. of houses	%age of total
1	Concrete	20078	69.87
2	Brick	5580	19.42
3	Tiles	1109	3.86
4	Grass, Thatch, Bamboo wood, Mud etc.	844	2.94
5	Plastic Polythene	286	0.99
6	Slate	52	0.18
7	G.I Metal, Asbestos	626	2.18
9	Stone	51	0.18
10	Other material	110	0.38
	Total	**28736**	**100**

Source: Census of India 2001

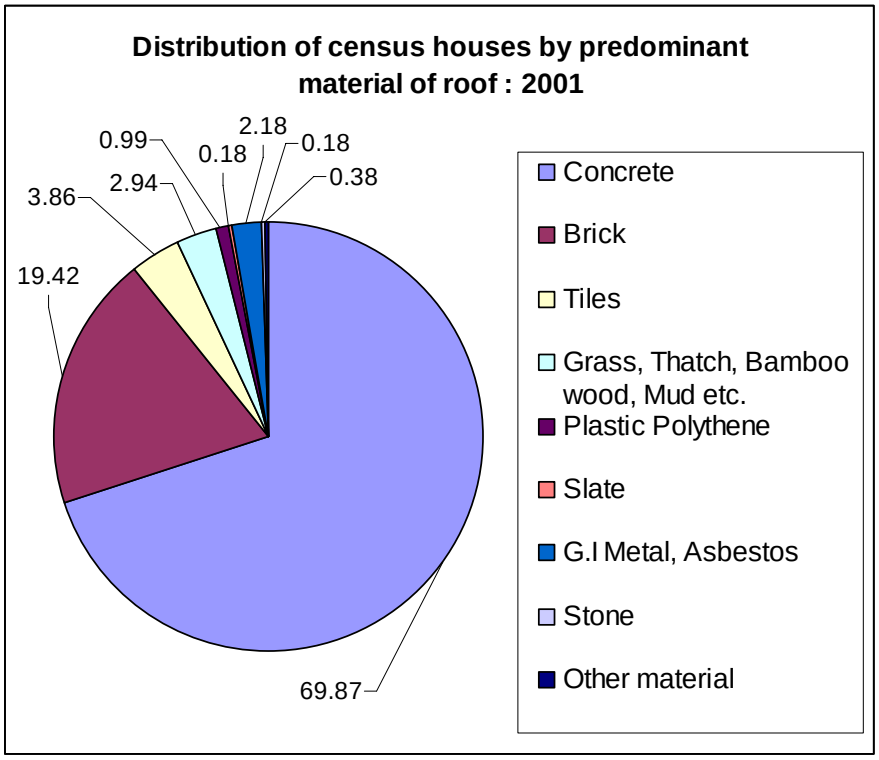

Fig.21 Distribution of census houses by material of roof in Khanna M.C

3.4.5 Services Available to the Housing Stock:-

The services available to the housing stock help to examine the basic infrastructural facilities and services provided by Govt. In the year 2001, 96.39% households of Khanna MC and 94.92% households of Payal M.C. are served with electricity. 91.14% households of Khanna M.C. and 91.59% of Payal M.C has drinking water facility. The facility of toilet is available to 88.30% households of Khanna city and 60.75% of Payal M.C. This reveals that basic facilities like electricity and drinking water are adequately available in Khanna and Payal city but in case of toilet facility it is not up to mark in Khanna as well as Payal city. Table given below gives the detailed information regarding the services available to the households of Khanna city.

Table 39: Distribution of household by Service of Electricity, Drinking water & Toilet facility (2001) (Khanna M.C.)

Area	Total No. of House holds	Electricity (No. of households)		%age of served with Elec.	Drinking water (No. of households)		%age of served with D.Water	Toilet facility (No. of household)		%age of served with toilet facilities
		Available	Not available		Available	Not available		Available	Not available	
M.C. Khanna	18776	18099	677	96.39	17113	1663	91.14	16580	2196	88.30
M.C. Payal	1320	1253	67	94.92	1209	111	91.59	802	518	60.75
Khanna Rural	16842	16419	423	97.48	15119	1723	89.76	10142	6700	60.22
Total	36938	35771	1167	96.8	33441	3497	90.5	27524	9414	74.5

Source: Census of India 2001

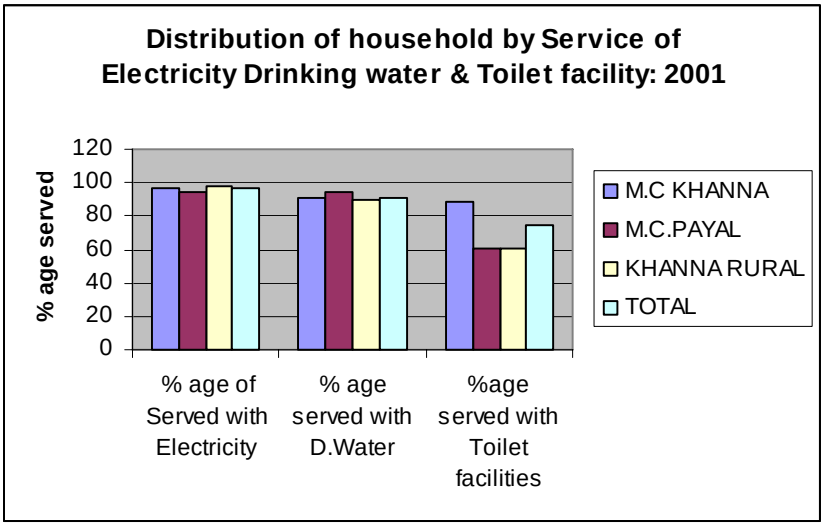

Fig.22 Distribution of household by Service of Electricity Drinking water & Toilet facility

3.4.6 Room Wise Distribution of Households With Respect To Its Ownership Status:-

In the year 2001, 15055 (80.18%) households have their own accommodation, 3155 (16.80%) households in rented accommodation and 566 (3.02%) is in any other accommodation.

In the case of owned households, out of the total number of the owned households, 0.42% lives in no exclusive room, 17.08% in one room, 30.03% in two room sets, 25.39% in three rooms, 16.15% in four room sets, 5.97% in five rooms and 4.96 % lives in six rooms which shows that households which are owned enjoy high status of living. As show in the table no.40 the percentage is lower in the case of rented households and any other.

It shows that a good percentage of city population have owned households and lives in two or more than five dwelling rooms showing the good status of city people and a small proportion of households falls in the category of rented households and any others.

Table No. 40: Room wise distribution of households by ownership status and number of dwelling rooms(Khanna M.C.)

Dwelling rooms	**Owned**		**Rented**		**Any other**		**Total No. of Households**
	No.	%age	No	%age	No	%age	
No exclusive room	64	0.42	24	76	14	2.47	102
One room	2571	7.08	2097	66.40	368	65.01	5036
Two rooms	4520	30.03	644	20.41	129	22.79	5293
Three rooms	3823	25.39	262	8.31	29	5.13	4114
Four rooms	2431	16.15	72	2.28	15	2.65	2518
Five rooms	899	5.97	24	0.77	4	0.71	927
Six rooms & above	747	4.96	32	1.01	7	1.23	786
Total	15055	100	3155	100	566	100	18776

Source: Census of India

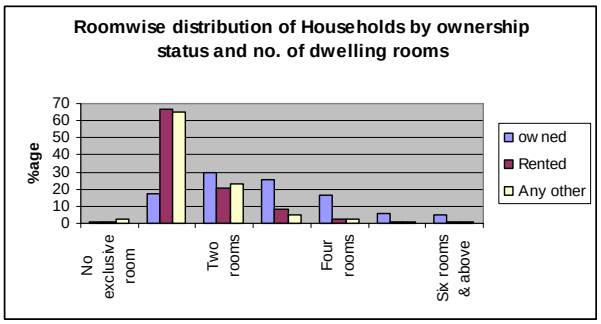

Fig.23 Roomwise distribution of Households by Ownership (Khanna MC)

3.4.7 Houseless Population:

According to 2001 census, despite the fact that 2640 houses were vacant in the city, 73 people were found to be without roof on their head. In all 15 households were observed to constitute the houseless population. Most of these people have been found to squat on the public places and occupy available open spaces/public places for their shelter. The average size of household in this category has been found to be 4.9 persons. However, the size of the household has been found to vary from as low as one to as high as seven which reveals that Majority of these houseless people are either single or having large family size. High land prices, high rentals and lack of resources seems to be the prime reason for number of houseless in the city.

3.4.8 Unplanned Housing

Housing is one of the most important necessities of human life. In urban communities where population grows at a faster rate because of continuous migration of population there is a frequent shortage of houses. As a consequence thereof, a large number of substandard houses in the form of shed and huts emerge which ultimately grow into slums. One other reason of the unplanned/unauthorized housing is lack of planned schemes by the government for the lower income groups. These two factors mainly lead to the unplanned development i.e. unauthorized colonies and slums. In Khanna there are 31 unauthorized colonies having area of 174 acres identified by the M.C. Khanna from which 3 colonies are regularized by the M.C. and remaining 28 colonies are still devoid of basic facilities like water supply, sewerage network etc. table no. 41 gives the detail information regarding the unplanned development.

There are 15 slums as per municipal council data attached at annexure no.4. However as per recky survey, there are three other localities which are developed in slummy condition namely Azad Nagar (Rajasthani Colony),Anand Nagar and Kartar Nagar and are facing severe problems with regard to infrastructure i.e. water supply, sewerage network etc. The location of slums has been marked on the thematic map at illustration no: 3.

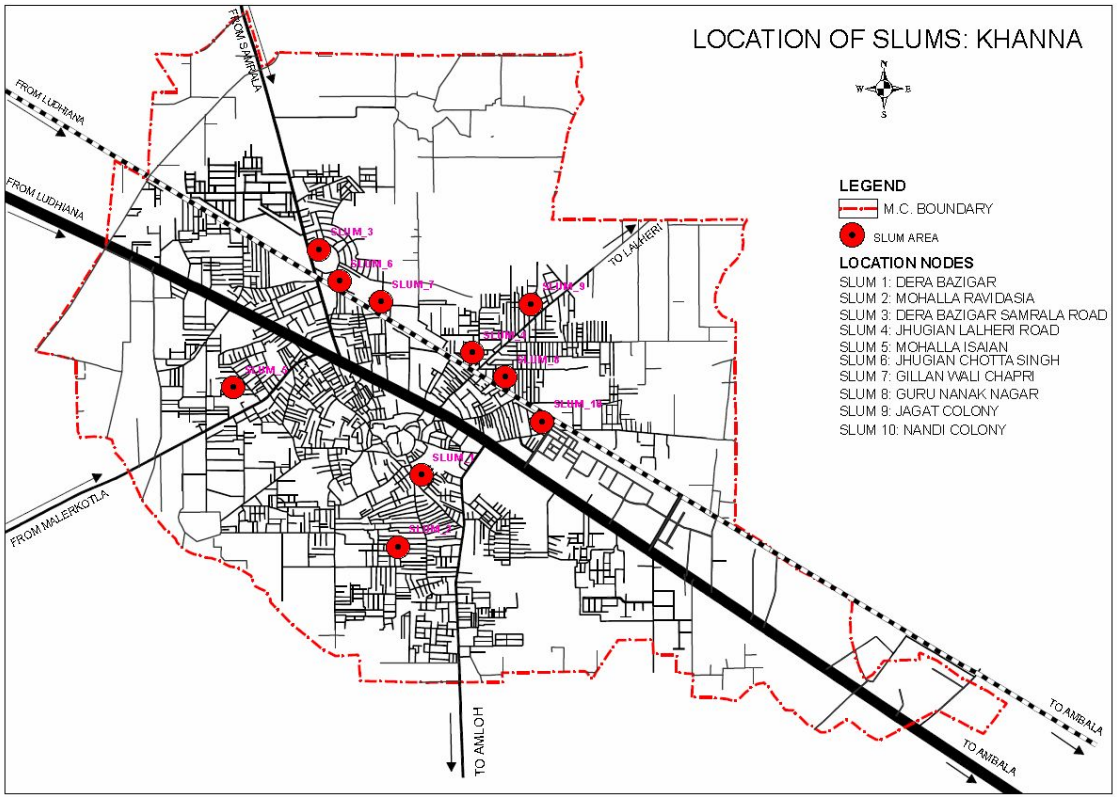

ILLUSTRATION NO.:3

Table No. 41: Unplanned development in Khanna M.C.

Sr. no.	Development	Number
1.	Unauthorized colonies	31
2.	Slums	15

Source: M.C. Khanna

3.4.9 Ownership Pattern

As per the data made available by Khanna Municipal Council there are in all 15 slums existing in the city. Majority of these slums have been found to be located on the private land as compared to the Government lands. Only 13.34 % of the slums are located on Government land whereas the balance 86.66 % occupies the land owned by the individuals or private sector. Out of 15 existing slums, 13 slums are located on purely private land and 2 slums have come up on government land. The land ownership of the slums of Khanna is as in Table 42.

Table No.42: Ownership of Land in Slums (M.C. Khanna)

Sr. no	Ownership of land	Number of slums	%Age
i.	Government land	2	13.34
ii.	Private land	13	86.66
iii.	Not available	-	-
	Total	15	100

Source: M.C. Khanna

It is clear from table no.42, slums dwellers have the tendency of encroaching private land and in Khanna town 100% of slums are located in the residential areas as depicted in table given below.

Table No: 43: Slums according to the land use (M.C. Khanna)

Sr. no	Location	Number of slums	%Age
1.	Residential	15	100
2.	Industrial	-	-
3.	Commercial	-	-
4.	Total	15	100

Source: M.C. Khanna

The existence of majority of slums on the private land can help in finding appropriate solution for the removal of the slums with the involvement of the owners of the land based on providing higher incentives and subsidies for creating appropriate shelter for the slum dwellers occupying such lands. Slum dwellers occupying the land can be treated as coparceners in the entire process by asking them to contribute part of the cost of the shelter. On its parts, parastatal agencies can be asked to waive off all the charges and fees levied for construction, sanction of the building plans etc.

3.4.10Household Profile

The table given below shows that out of the 18277 houses recorded in the Census 2001 in Khanna city, it has been observed that 3941 houses are occupied by slum dwellers whereas the balance 14336 houses are under the occupation of non-slum dwellers. Accordingly, 21.6% of the household stock in the city belongs to the slum dwellers whereas 78.4% is occupied by the non-slum dwellers.

Table No.44:The Profile of the Households (M.C. Khanna)

Category	Total No. of Houses	%age of total household
Slum Areas	3941	21.6
Non Slum Areas	14336	78.4
Total	18277	100

Source: Census of India, 2001

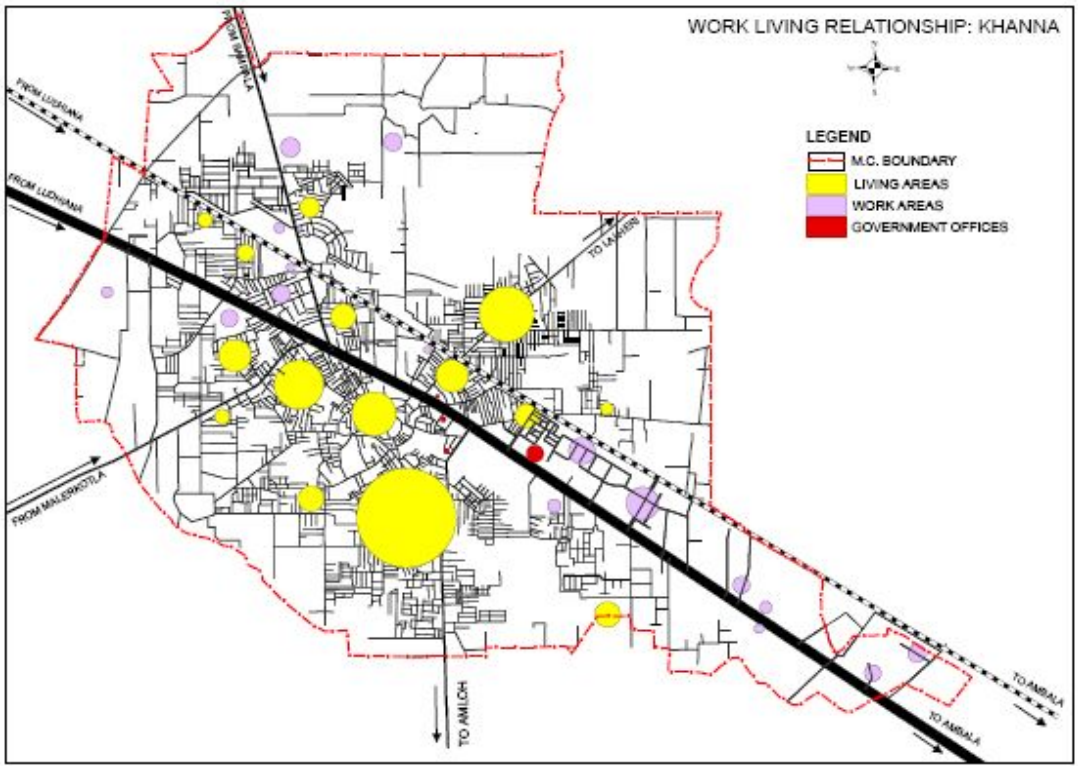

ILLUSTRATION NO.:4

3.4.11 Type of Housing Structures in Slum Area:

Wide varieties of housing structures have been found to exist in the Slum areas of Khanna. The table below shows that 97 % of the houses are pucca structures whereas only 2.15 % have been depicted as kutcha houses and the remaining 0.7% are juggies.

Table No.45: Type of housing structures in Slum Area(M.C. Khanna)

Sr. No.	Category	No. of Houses	Percentage
1	Pucca Houses	3826	97.08
2	Jhuggi	85	2.15
3	Kutcha Houses	30	0.77
	Total	3941	100

Source: M.C. Khanna

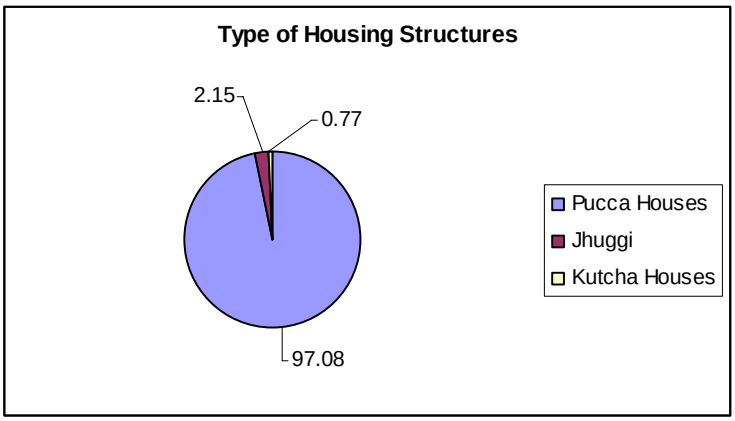

Fig.24 Type of housing structures (M.C. Khanna)

3.4.12 Housing demand and supply

The total number of houses required to shelter 103099 persons in Khanna is 18745 i.e. the housing demand in Khanna town is of 18745 houses. Whereas the current housing supply in the town is of 18277 houses as per Census 2001. There is demand/Shortage of 468 houses in the town. There is need to provide shelter to people at location near to their work places.

4. EXISTING LAND USE AND TRANSPORT NETWORK

4.1 Preparation of base map

The work of preparation of base map for the Local Planning Area, Khanna was assigned to Punjab Remote Sensing Centre, P.A.U, Ludhiana vide memo no 4803-20CTP (Pb) / SP-480 dated 22-10-07 of Chief Town Planner, Punjab. The base map of the Planning Area Khanna is generated on 1:10,000 scale using Cartosat I data of 2.5m spatial resolutions. The Cadastral maps of the villages falling in Local Planning Area were procured from the State Revenue department by the office of District Town Planner, Ludhiana and these maps have been scanned in the office of PRSC, Ludhiana and registered with Cartosat I data to demarcate village and musteel boundaries. The features like roads, rails, high and low lands, drains and settlements etc. have also been interpreted from Cartosat I data, by the concerned agency and shown on the draft base map prepared on 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 Khanna 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, Hyderabad.

4.2 Enhancement through field surveys-Land use and Road network

The draft base map for the Local Planning Area, Khanna 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 field survey by the office of D.T.P Ludhiana. 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 had ultimately been incorporated and an updated base map was prepared by P.R.S.C, P.A.U Ludhiana. The Office of D.T.P Ludhiana again conducted second round of field verification (ground truthing) and the updated (corrected) plans were then supplied to P.R.S.C, this exercise was repeated several times

and the field staff of D.T.P office personally assisted the concerned staff of PRSC and a final Land Use map thus was prepared.

4.3 Existing Land Use: LPA, Khanna

The LPA Khanna comprises 24967 hectares of area as per revenue record whereas as per calculations of P.R.S.C. it works out to 24963.4 Hectares variation of 0.01% only is very negligible.

Table No.46: Existing Land Use LPA Khanna-2009

	LAND USE	**AREA**		**%age**
		Sq.mtrs	***Hectare***	
1.	**Residential**	**20005475.84**	**2000.55**	**8.01**
2.	**Commercial**			
	Storage & Wholesale Market	925877.7	92.59	
	Commercial	891537.1	89.15	
		1817414.8	***181.74***	***0.73***
3.	**Public and Semi Public**	***1919236.6***	***191.92***	***0.77***
4.	**Industrial**	***2719168.40***	***271.92***	***1.09***
5.	**Recreational**			
	Parks	72593.8	7.26	
	Stadium	241619.01	24.16	
		314212.82	***31.42***	***0.12***
6.	**Traffic and Transportation**			
	Bus Stand	19594.96	1.96	
	Railway Station	10959.28	1.09	
	Roads	4663079.09	466.29	
		4693633.33	***469.36***	***1.88***
7.	**Government**	**635040.6**	**63.50**	**0.25**
8.	**Rural and Agriculture**	**217475497.66**	**21747.55**	**87.12**
9.	**MISCELLANEOUS**			
	Petrol Pump	*54200.22*	*5.42*	*0.02*
	GRAND TOTAL	***249633880.26***	***24963.38***	100

Source: PRSC, PAU, Ludhiana

LPA Khanna covers the revenue estates of 80 villages which also includes the areas of two urban centers i.e. Khanna and Payal. Local Planning Area Khanna is mostly covered under agricultural landuse. The detail of breakup of major existing land uses is given in Table no.46.

4.4 Existing Land Use: Khanna city

LPA, Khanna comprises of 24967 hectares. The total area of Municipal Corporation of Khanna in the Year 2001 is 2675 hectares whereas as per calculations of P.R.S.C. it works out to 2844.55 Hectares. The detail of major existing land uses within the M.C. Limits is given in table no.47 below :

Table No.47: Existing Land Use Khanna City -2009

	LAND USE	**AREA**		**%age**
		Sq.Km	***Hectare***	
1.	**Residential**	**8254187.4**	**825.42**	**29.02**
2.	**Commercial**			
	Storage & Wholesale Market	606654.25	60.66	
	Commercial	558021.98	55.80	
		1164676.23	**116.47**	**4.09**
3.	**Public and Semi Public**	**490159.23**	**49.02**	**1.72**
4.	**Industrial**	**1383006.28**	**138.30**	**4.86**
5.	**Recreational**			
	Parks	72347.86	7.23	
	Stadium	28594.22	2.85	
		100942.08	**10.09**	**0.35**
6.	**Traffic And Transportation**			
	Bus Stand	16933.66	1.69	
	Railway Station	10959.29	1.09	
	Roads	2443098.25	244.30	
		2470991.2	**247.10**	**8.69**
7.	**Government**	**383511.54**	**38.35**	**1.35**
8.	**Rural And Agriculture**	14184181.12	1418.42	49.87
9.	**Miscellaneous**			
	Petrol Pump	13834.77	1.38	**0.05**
	GRAND TOTAL	**28445489.85**	**2844.55**	**100**

Source: PRSC, PAU, Ludhiana

4.4.1 Residential

It is very much clear from Table No.47 that the residential use has a larger % age share of city area. Out of total Municipal area of 2844.55 hectares about 825.42hectares (28.02%) of area is under residential use which includes both planned and unplanned development. The gross density of the Khanna town is 36.24 Persons/hectare. As far as planned residential development is concerned there are 5 T.P Schemes, 5 Improvement

schemes and 13 PUDA approved colonies. Majority of these planned and regulatory schemes are located in the north east part of the town while other side of the town is having unplanned and haphazard residential development. The inner zone of the town is characterized by irregular street pattern, narrow lane, low ventilation of buildings, dilapidated structures etc.

4.4.2 Commercial

The commercial use is the most important use of the urban areas. In case of Khanna city the total area covered under commercial use is 116.46 hectares which is 4.08 % of the total developed area. The main commercial center in Khanna which acts as CBD of the town is confined to old town, mainly Subash Bazaar, Chandla market. The commercial areas of the city lack adequate parking and other public amenities. These are old linear and narrow bazaars. Apart from this there are informal bazars in the form of temporary shops like Rehri walas, farhi walas and kiosks located in the existing commercial areas and near the bus stand, railway station, grain market.

Under Commercial land uses wholesale markets such as Grain Market and fruits & vegetable are the main features of the city. The Wholesale grain market is located in the North West part of the town over an area of 31.32 acres.

4.4.3 Industrial

As Table no. depicts that the total area under industrial use is 138.3 hectares which is 4.86% of the total municipal area. There are 708 small scale registered industrial units like flour mills, steel rolling, detergent based, plywood, paper mill, forging industries, steel tubes industries, agro based industries in Focal Point, Khanna, tyre making and cattle feed industries.

There are two large scale industries in Khanna i.e. Markfed Vanspati & allied Industry on G.T. road, Khanna and Milkfed Cattle feed plant, Bhattian (Khanna).

4.4.4 Traffic & Transportation

The total area under traffic and transportation is 247.10 hectares which is 8.69 % of the total developed area. The percentage of use under this head is low as compared to norms and standards. The major problems related to this aspect are missing road hierarchy, lack of parking places, traffic bottlenecks, encroachment of roads, lack of traffic signals etc. The further detailed study of traffic & transportation is covered in chapter no.5 . The details of existing road network and other uses relating to traffic transportation are shown in Existing Land Use Plan Khanna DTP (L) 42/2009 dated 24.12.2009.

4.4.5 Recreational

The total area under recreational use other than lakes is only 10.09 hectares which is 0.35 % of the total municipal area. Maximum number of recreational facilities have been found to be in the shape of parks. There are in all 4 parks which include both small and large sized open spaces. In addition to the parks, there are three cinemas, one stadium, four auditoriums, two swimming pools and two clubs existing in the city. Looking at the fast population growth and rapid physical expansion of the city, it is important that adequate level of recreational facilities are created in the city and distributed to cover the entire population of the city.

4.4.6 Public & Semi-Public

This Use comprises the areas covered under Education, Health, Socio-Cultural, cremation grounds etc. As per Table No.47 the total area covered by this use is about 49.02 hectares which is 1.72% of total municipal areas. The most of public and semi-public uses are concentrated along G.T. road (N.H.-1) as it is clear from the Existing Land use Plan DRG No. DTP (L) 42/2009 dated 24.12.2009.whereas few uses of this category are also spread in the outer parts of the city.

4.4.7 Government

Khanna is Sub-Divisional headquarter and Police district headquarter. This use covers the area of 38.35hectares i.e 1.35 %age of total municipal area. It comprises of Govt. /Semi Govt. offices, Govt. Lands.

4.4.8 Rural and Agriculture

There are some chunks of land falling within municipal limits which are still being used for agricultural purposes. About 1418.42 hectares are under agricultural use which is 49.87 % of total area.

5. EXISTING INFRASTRUCTURE

5.1 Physical Infrastructure

5.1.1 Water Supply

Piped water supply was first introduced in Khanna in the year 1980, by the M.C. Khanna. It was proposed that city should have piped water supply system. Since the initiation of this scheme a reasonable program has been made in the field.

(a) Source of Water Supply:

There is no perennial river in the close vicinity of Khanna. A minor distributory is passing by the city but this is not used for water supply. The system of water supply is based upon the underground water by digging wells in the city and pumping it to its users.

(b)System of Water Supply and Area Coverage: Municipal Council Khanna 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, construction and laying the major network and construction of tube wells and OHSR. Board undertakes this work for and on behalf of the Municipal Council and after completing the system is handed over to Municipal Council.

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. In the first case i.e. direct system the water is extracted from ground through tube well and directly supplied into the main lines via pumping. This system does not involve any kind of storage of water. In the second system i.e. dual system, has the pump set as well as storage tank (overhead reservoir). This system has the capability of supplying water directly by pumping it in the main line and also has the storage capacity for the emergency or for meeting the requirements of fire safety by the Fire Brigade Department.

As far as the capacity of the existing water supply network is concerned the city is served up to an extent of 60% coverage area with water supply i.e. 57.45 sq km coverage. The population of the city is not adequately served with the water supply system as 36% of the population is totally uncovered under this and 64% of the population is served with water supply by intermittent system. The detail of the water supply is given in table no. 4.8.

Table No.:48
Area under Water Supply Coverage (Khanna M.C.)

Item	Pipe length in sq. km.	Area under coverage sq. km.	Population under coverage
Total Municipal Area	57.45	60%	64%

Source: M.C. Khanna

The area covered under water supply network and number of tubewells is shown in illustration no.:5.

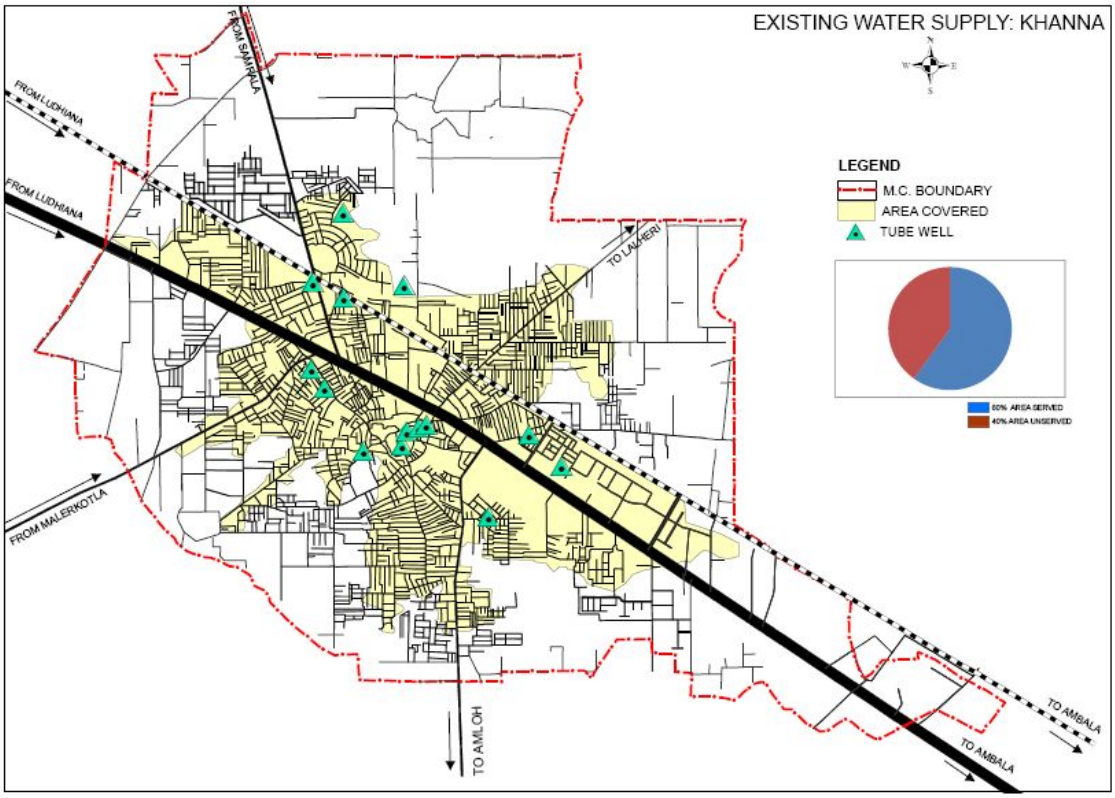

ILLUSTRATION NO.:5

As already explained the system is completely dependent on ground water. The city is having direct water supply system mainly. At present a network of 18 tube wells spread over the city are used by the Khanna Municipal Council to supply water. These deep tube wells extract water from a depth of 400ft. and above. Total amount of water extracted by these tube wells is to the tune of 1 lac mld. All the tube wells are equipped with chlorinators.

Municipal Council, Khanna is having a network of 18 tubewells. Out of these 18 tubewells, 14 tubewells are used for direct supply of water in the system without any intermediate storage. However 4 tubewells are having supply through storage tanks hence having the supply with the dual system.

There are 6 OHSR with a varying capacity of 1 lac gallon Per OHR according to the M.C. Khanna. Since the supply is mainly through direct system, so the residents face a great difficulty in case of electricity failure as the pumping systems becomes non-operational. The detail of tubewells under the different system is given in the table below:

Table No.49:
Water Supply Network, Khanna M.C.

Sr. No.	Item	Quantity	Remarks
1.	Total no. of the tube wells	18	Minimum area and population served by a tube well is 60% and 64%
2.	Deep tube wells	10	
3.	Shallow tube wells	8	

Source: M.C. Khanna

Table No.50:

Type of Network

Network system	No. of tube wells	No. of water tanks	Remarks
System Direct supply i.e. without intermediate storage	14	-	
System-2 dual supply system	4	6	Capacity of one water tank is 1,00,000 gallon
Total	18	6	

Source: M.C. Khanna

(c) Connections: The Khanna city is having 8202 connections up to dated 31.3.09. The water supply was made operational in the year 1980. The total consumption of water in Khanna is 6.85 mld, which is higher than norms i.e. 135 lpcd.

Table No: .51

Increasing Profile of water supply connections during last three years

Years	Domestic	Commercial	Connections (free from bill)	Total
2006-07	2408	605	5027	8040
2007-08	2362	571	5187	8120
2008-09	2347	566	5289	8202

Source: M.C. Khanna

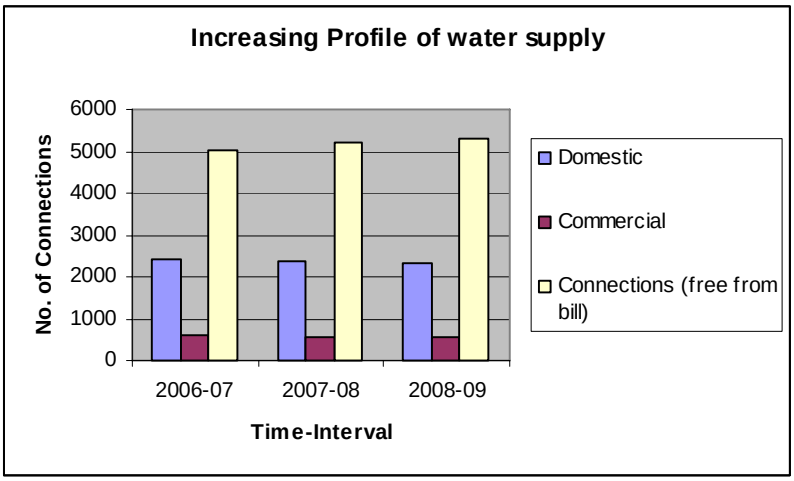

Fig.25 Increasing Profile of water supply connections

5.1.2 Sewerage Network

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 disposal system the city is equipped with. The non-hygienic system of disposal or the absence of any planned disposal system may lead to the spread of epidemics and will affect the quality of environment. Hence it is the necessity of the day to have an efficient sewerage network in all the cities and Khanna is not an exception. Sewerage network was introduced in 1980-83 in Khanna city.

(a) Area Coverage

Khanna Municipal Council provides the facility regarding disposal of sewage from the area under the Council. This includes waste generated from domestic, industrial, commercial and institutional units operating in the city. Despite the fact that sullage disposal is one of the critical activity of the Council, but still in the existing scenario the total city area is yet to be covered under this facility. Out of total 28.56 sq.kms. area, the extent of area covered under the sewerage system is 17.14 sq. kms which works out to be 60% of the total area. The area coverage under sewerage network is shown in illustration no.6. In Khanna city still 40% area is uncovered in terms of sewerage network. In uncovered area there exists no provision of sewerage system and the population living

therein is using septic tanks, soak pits and open drains as the mechanism for disposal of sullage. The areas which are devoid of sewerage facility are the areas which are falling on the right side of Ludhiana-Ambala railway line.

It is estimated that the remaining area of Municipal Council (11.42 Sq.Kms.) would require an additional network. The detail showing the area coverage and the extent of network laid besides the additional network requirement to cover the entire city is given in Table No. 52.

Table No.:52

Detail of Existing & additional sewerage network required:-

Sewerage Network	**Year 2008**	
	Current coverage	**Additional requirement**
Area in sq km	17.14 sq.km.	11.42 sq.km.
Sewerage line	-	
Pipe length main sewer	5.00 km	22 kms.
Pipe length branch	51.60 km	58 kms.

Source: M.C. Khanna

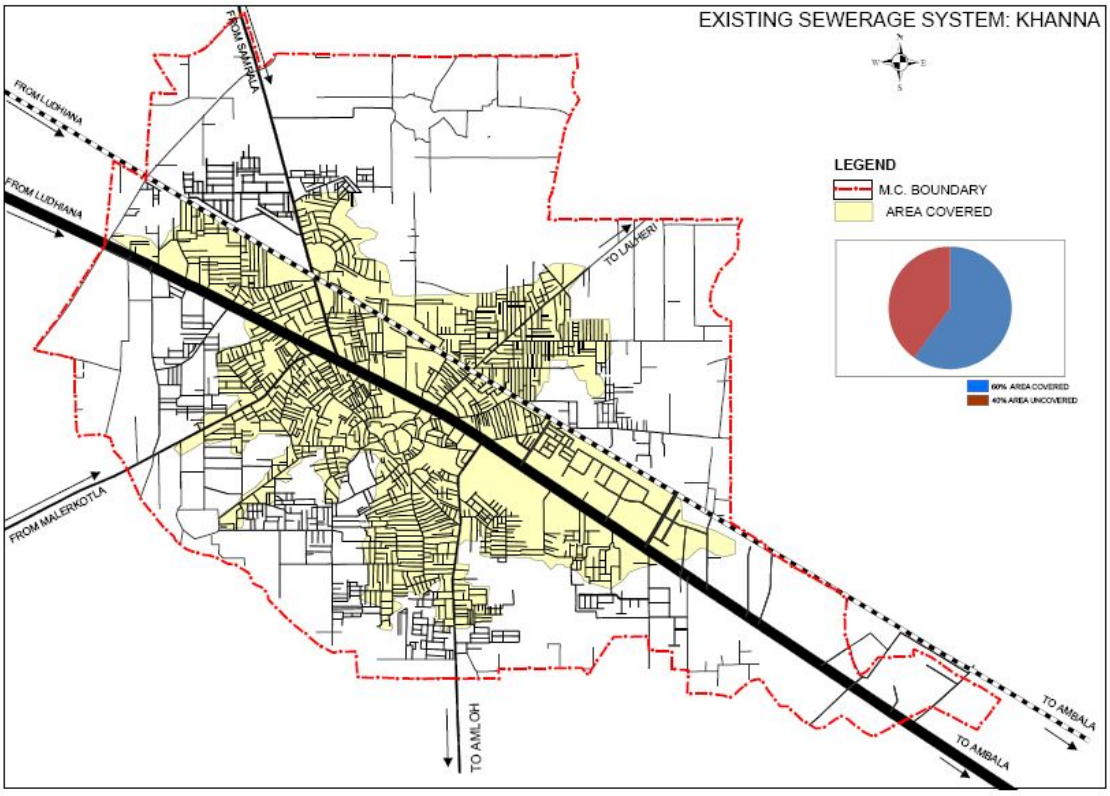

ILLUSTRATION NO.:6

(b)Population Coverage:

With regard to the population coverage, 55% of the total population has the facility of sewerage system whereas 45% population does not have any access to the system with the result that they continue to suffer on account of polluted ground water and poor environment in and around their habitat. The detail of the population covered under the sewerage network is given in Table no.53 given below.

Table No. : 53

Extent of area and population covered under the sewerage system

Item	Total Area(in sq.km)	Area under coverage (%)	Total Population(in lacs)	Population coverage (%)
Total M.C. Area	28.56	60	103099	55

Source: M.C. Khanna

Table No.:54

Number of sewer connections

Item	Quantity Nos.
No. of connections	2946
Residential	2521
Commercial	425
Total	5892

Source: M.C. Khanna

5.1.3 Solid Waste Management

5.1.3.1 Introduction:

Waste is unwanted material near places of animal and human habitation or material left over from the manufacturing process. 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 effective managements. Solid waste

arising from human activity has emerged as one of the major environmental issue leading to extensive pollution and threat to human health. The national Conservation Strategy and Policy Statement on Environment and Development has laid stress on adopting stringent measures for prevention and control of pollution due to indiscriminate disposal of solid waste on land and into water resources. Hence, immediate steps are required for proper management of urban solid waste.

Solid Waste Management is the prime responsibility of Khanna Municipal Council within the M.C. area. Council discharges this duty through the infrastructure created for collection, storage, transportation, processing and disposal. The public Health department of the Council is vested with the responsibility of day to day solid waste collection and disposal. The Council organizes the collection and transportation through of its own conservancy workers and a fleet of vehicles and dumpers-placers. Municipal Council collects solid waste from all the residential area within its municipal limits. Collection facility is provided in 100% area occupied by people.

Solid Waste Management is a part of public health and sanitation, and according to the Indian Constitution, falls within the purview of the State List. Since this activity is non-exclusive, non-rivaled and essential, the responsibility for providing the service lies within the public domain. The activity being of a local nature is entrusted to the Urban Local Bodies (ULB). The Urban Local Body undertakes the task of solid waste service delivery with its own staff, equipment and funds. In this sector, very large numbers of people are involved, whether as "Scavengers" or "rag pickers' or Municipal workers.

5.1.3.2 Type & Quantity Of Waste Generated:

There has been no formal study estimating the amount of solid waste generated in the Khanna Municipal Council. However, it is estimated that per capita waste generated per day is of the order of 417 gms. Khanna city generates garbage to the tune of 43 M.Ton per day. The amount of garbage generated on per capita basis is in accordance to the pattern of garbage generation in other cities of the country which ranges between 300 to 450gms.

Table No.:55

Sources and Type of M.S.W.

Sr. No.	Sources	Typical activities & Location	Type of MSW
1.	Domestic (43 m.ton)	Single & Multifamily dwelling streets, offices, commercial areas construction material	Food waste rubbish ashes street waste

Sources: Municipal Council, Khanna

5.1.3.3 Solid Waste collection - Household Waste.

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

The waste generated at individual premises is removed initially by the owner or the Municipal employees. This collected solid waste is then dumped at various collection points identified by the council, and other unauthorized open places by the use of Wheel barrows and cycle rickshaws. Although Municipal council has not made any arrangement of segregation of solid waste but waste pickers segregate the plastic, glass and other material at the collection point and sell them to Kabaris. These collection points consists of 34 community bins (containers), designated open sites and portable bins. However the waste in many cases is not dumped directly into the community bins. It is dumped either outside the bin, into any open areas or just dumped on the road side. This shows the awareness level in terms of importance of solid waste management is very low.

5.1.3.4 Road Side Waste

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

5.1.3.5 Road Sweeping

Corporation has employed various safai sevaks to sweep the roads daily and collect the solid waste. Each safai sevak is given approximately 1 km of road length for sweeping of municipal roads.

There are total 34 garbage collection points in the Khanna city which are maintained by the M.C. Khanna. There are two garbage collection sites marked by M.C. Khanna for dumping the collected garbage. The details are given in table below. Open land fill system is adopted by the M.C. for dumping the solid waste.

The location of Dumping spots and garbage collection points are marked on thematic map at illustration no.:7.

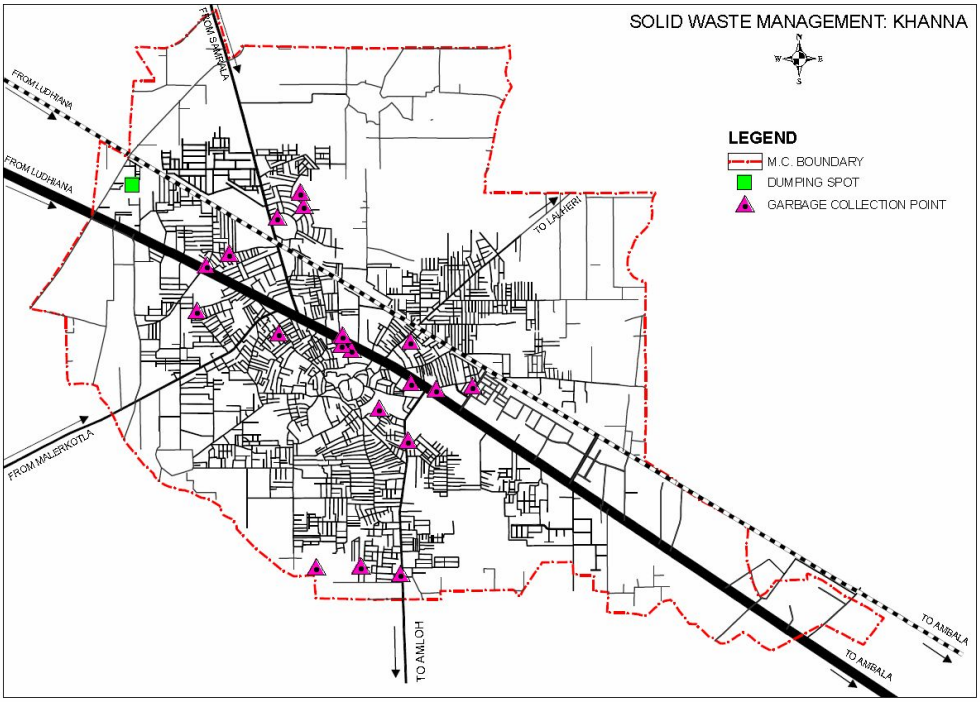

ILLUSTRATION NO.:7

Table No.:56

Details of Dumping points in different zones-2006

Sites	Area (in Acres)	Paved (pucca)	Containerized sites	No. of containers placed
Bhattian	3.5	-	34	34
Bhaghour	5	-	-	

Sources: Municipal Council, Khanna

5.1.3.6 Transportation of Waste:

As shown in table no. 56 the solid waste from 34 designated collection sites created at the secondary level is then transported to the dumping site at Bhattian and Bhaghour for final disposal by Municipal Council staff on regular basis. The waste collected at the open sites is then lifted with the help of JCB into tipper trucks or tractor trolleys for transportation to the disposal sites. The containers used for collection are directly lifted for transportation to the disposal site. Solid waste so collected in the community bins and at other open places is presently being transported to the dumping site by using of Tractor

Trolley in shifts. Detail of fleet deployed for waste collection including the vehicles and trips undertaken by them is given in table no.57.

Table No.:57
Detail of fleet deployed for waste collection (2008)

Type of vehicles	Available vehicles	No. of shifts
JCB Machines	-	
Truck Tippers	-	
Dumper Placers	1	8 AM-5PM
Tractor Trolly & Hawer tuggers	5	8 AM-5PM
Refuse collector compactors machine	25	

Sources: Municipal Council, Khanna

5.1.3.7 Manpower deployed:

The responsibility for the solid waste management within the urban limits of Khanna Municipal Council has been vested with the Health Department of the Council. The Department manages the work with the help of 189 personnels which includes Sanitary Inspectors, Safai Sewaks and Drivers etc. In all 174 Safai Sewaks have been deployed which include full time, part time workers besides daily wagers and contract based employees.

The staff is not much aware of the current technological developments in the field which creates road blocks on scientific planning and disposal of the solid waste. There is absence of formal system of communication between the Supervisors and the subordinates. Most of the communication is through informal channel that is conveying verbally which leads to mismanagement of the system. Further there is no rational system of recording the public complaints regarding the solid waste. In the absence of the system, redressal of complaints has a low priority. Large scale absence of workers from their duty has also been observed. The detail of manpower deployed in the solid waste management is detailed in Table No.58.

Table No.:58
MSW-Existing man power deployment

Sr. No.	Name of the Official	Number
1.	Health Officers	-
2.	Chief Sanitary Officers	-
3.	Sanitary Inspectors	2
4.	Sewadars	1
5.	Sanitary Supervisors	7
6.	Safai Sewaks (Full time)	173
7.	Drivers	5
	Total	188

5.1.4 Traffic and Transportation

Transportation is one of the most important creations of man's creative urges. The role of this component determines the size of town and cities. The cities are growing in sizes but area under circulation is not increasing in same proportion. As per the standards about 20% area of the city should be under circulation. But in India rarely any city attain these standards.

The traffic in the streets has reached chaotic condition in many cities, leading to frustration, delays, increased vehicle operation costs, greater accident occurrence and degraded environment.

For safe and comfortable movement of the residents, the traffic and transportation requirements of the city have to be assessed and plans have to be formulated to achieve the desired goals. As a result of steep growth of motor vehicle population, the traffic has been increasing, both in terms of volume and intensity. The investment on the development and upkeep or maintenance of roads have not been at pace with the growth of traffic, with the result there are severe problems of traffic e.g. poor condition of roads ,congestion ,vehicle Speeds are slow ,vehicle operation costs are more and accident rate is usually high.

The rapid growth of motor vehicles in the past few decades has given rise to new problems which affect the safe, comfortable and efficient movement of goods and people. It is no longer sufficient to plan piece-meal improvement schemes.

Isolated solutions such as widening or strengthening the pavements, improvement of junctions, traffic regulations etc. can only give temporary solutions but will fail to yield permanent and satisfactory answers. It is more important to have a comprehensive approach to the total transportation problems embracing all aspects, viz. land use, traffic generation and its distribution, model choice, alternative solutions to transport network.

Transport planning seeks to establish a relationship between Land use and traffic and then to formulate analytical solutions.

5.1.4.1 Existing Road Network:

Detailed knowledge of existing traffic and transport conditions is essential in order to measure current level of traffic service and to determine the magnitude of

deficiencies resulting from the impact of growth on the existing system. Therefore, collection and analysis of data relating to existing traffic conditions is basic to determine the future transport facilities.

The Regional Road System:

The regional road system serving the Khanna Urban Area consists of National Highway No.1 (G.T. Road) as well as other district roads. These roads perform the function of providing road connections between Khanna and its immediate surroundings as well as other towns of the state. These roads are:

(i) National s highway No. 1-Connects Khanna with Ludhiana ,Amritsar one one side and Ambala, Delhi and other parts of the country.

(ii) Khanna-Amloh road- a district road connects Khanna with Amloh, Nabha, Sangrur and then Patiala.

(iii) Khanna-Samrala road - District Road connects Khanna with Samrala, Machhiwara, Ropar, Chandigarh and Ludhiana.

(iv) Khanna-Malerkotla road, connecting Khanna with Malerkotla and Sangrur.

(v) In addition to these Rattanheri road, Lalheri road and other roads connects Khanna with villages of its surroundings.

Table no.:59

Road Geometry within Municipal Council, Khanna

Road	**Carriage way (in feet)**		**Road reservation**		**Central verge**	**Footpath**	**R.O.W.**
	Left		*Left*	*Right*			
G.T. road (near SSP office)	28'	29'	124'	55'	14'	-	250'
G.T. Road (near Sr. Sec school, Khanna)	33'6”	31'	77'	79'	4'	8'	232'6”
Amloh Road	22'		22'	22'			66'
Samrala Road	32'		22'	16'			70'
Malerkotla Road	32'		26'6”	24'6”			83'
Lalheri road(near red light chowk)	27'6”		13'	136”			14'
Lalheri road(300’ from red light chowk)	21'		10'	12'			43'
Rattanheri road	19'		15'	10'			44'
Railway station road	58'		-	-			58'

Source: Primary Survey, 2009

Urban Road System:

The existing road network in the city follows a radial pattern and is dominated by both rail and road network. The inner road system does not form an organized form or pattern. It has narrow roads, irregular alignment.

Road Hierarchy:

As per norms and standard, width of the road recommended for different categories of roads are:-

Arterial	50-60 m
Sub-arterial	30-40 m

In Khanna, Khanna-Amloh road, Khanna-Samrala road, Khanna-Malerkotla road and Khanna-Lalheri road are arterial level roads because of their functionality. These roads do not have effective width.

G.T. Road: The entire network consists of G.T. Road (NH-1) passing through the centre of the city. It connects Ludhiana with Ambala. The length of G.T. road within municipal limits of Khanna is about 5.936 kms with road land reservation of 156' to 179' at various sections. The carriageway width of road varies 57' to 66' from section to section. Commercial activity is developed along the road resulting in encroachment by the shopkeepers and haphazard parking on road side.

Amloh Road - The length of the road within municipal limits is 1.1 km., with road reservation of 44'. Carriageway width is 22' having uncontrolled intersections with G.T. road, Govt. School road and road from A. S. College for Women. Commercial activity is abutting along the road, creating hindrance in free flow of traffic.

Samrala road: Length of the road within municipal limits is 2.3 km, road reservation is 38’ and carriageway width of 32'. The gate of main grain market falls on the road near the railway level crossing and is uncontrolled. The road has irregular alignment, absence of

road geometry elements. The presence of commercial activity along the road and on street parking encroach the road and reduces the effective width of road. This road is arterial road and carries both through and local traffic, but it is unable to cater the needs of today's traffic. Thus causing inconvenience to public.

Malerkotla Road: The length of the road within municipal limits is 1.3 km. The carriageway width is about 32' and road reservation is about 51'S. This road has poor alignment, isolate geometry, uncontrolled inter sections, and inadequate street lights lower standard of road safety and capacity. It provides access to abutting properties.

Lalheri Road: The carriageway width varies from 30' to 40' . Commercial activity is abutting along the road and it invites lot of traffic. Due to encroachment by the shopkeepers and absence of management traffic jams are frequent seen on this road. It connects Khanna with the surrounding villages and provides access to the abutting properties also. But it does not conform to the daily traffic needs due to isolate road alignment and poor geometry.

Railway Road: Huge business and commercial activities are abutting this road, with encroachments along the road. The loading and unloading of goods and mixing of traffic on the road causes congestion, slow speed, traffic jams and pollution. Moreover, the to and fro of traffic from railway station makes the condition more badly.

Rattanheri Road: It provides access to the surrounding villages and abutting properties. Residential land use abuts the road.

Road Accidents

Table no: 60

Number of Accidents

Year	No. of Accidents	Fatal	Non Fatal
2003	88	109	62
2004	141	93	90
2005	175	99	140
2006	207	138	81
2007	251	153	174
2008	182	128	147
2009			

Source: SSP Office, Khanna

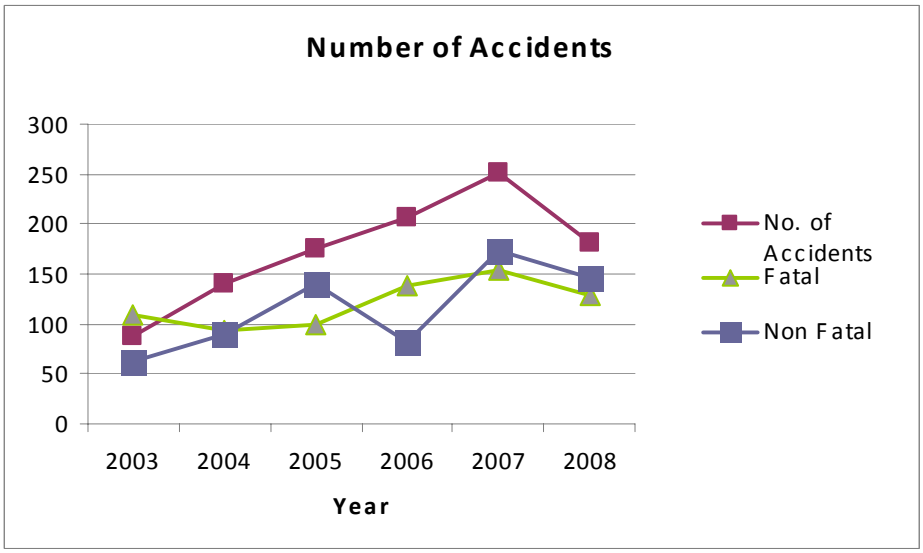

Fig.26 Number of Accidents

The spectacular increase in the number of motor vehicles on the road has lead to increase in number of accidents. The number of accidents recorded in 2003 were 88 whereas in 2007 were 251. This figure is quite alarming. It is clear from the Table No: 60 that the number of fatal accidents rose from 109 in 2003 to 153 in 2007. Number of non fatal accidents increased from 62 in 2003 to 174 in 2007. Accident prone areas are shown in illustration no.:8.

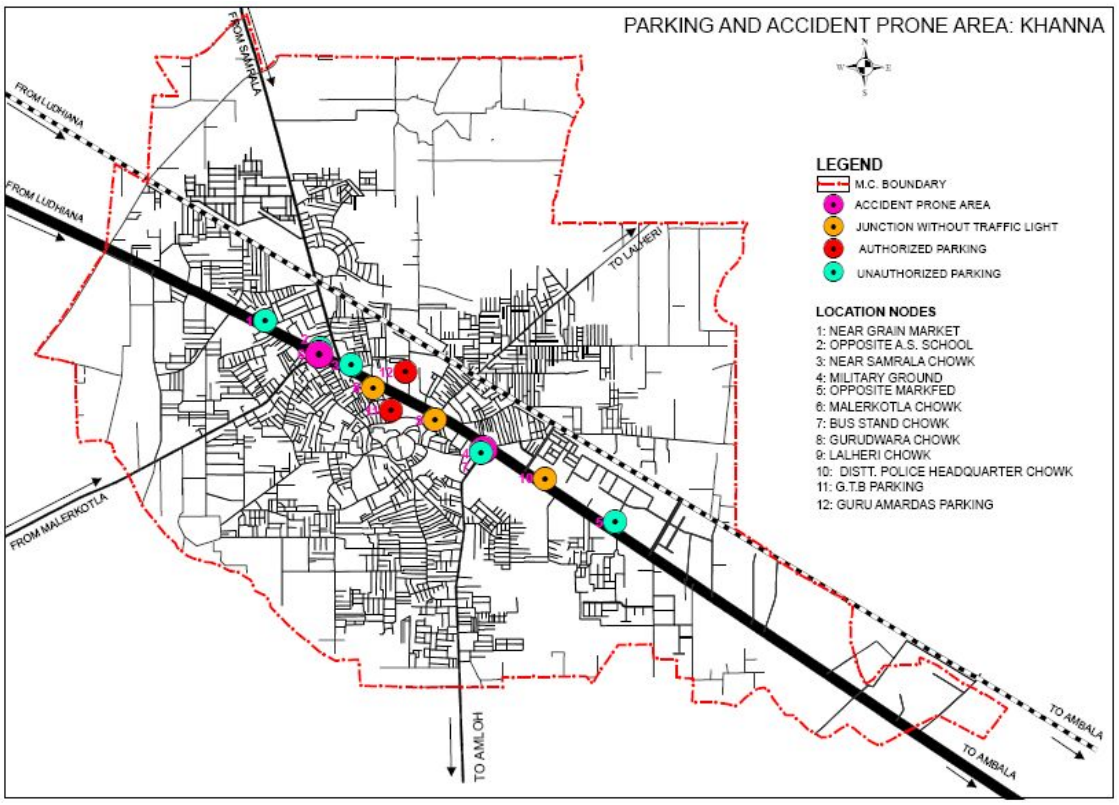

ILLUSTRATION NO.:8

The number of accidents is increasing year by year. This is mainly because of poor circulation pattern, mixed traffic condition, prevailing on the roads, and absence of road geometry elements and entrance of regional traffic in the town. Amloh Chowk and Malerkotla chowk are accident prone areas. Bus stand chowk , Subash bazaar chowk, Gurudwara chowk, district police headquarter chowk are junctions without traffic lights and are poorly managed and are becoming one of the reason for accidents.

Vehicular Growth:

Table no: 61

Total Registered Vehicles

Year	No. of vehicles
2001	4998
2002	4994
2003	3989
2004	1905
2005	9917
2006	9967
2007	9966
2008	9929
2009	1595
Total	**57260**

Source: SDM, Khanna

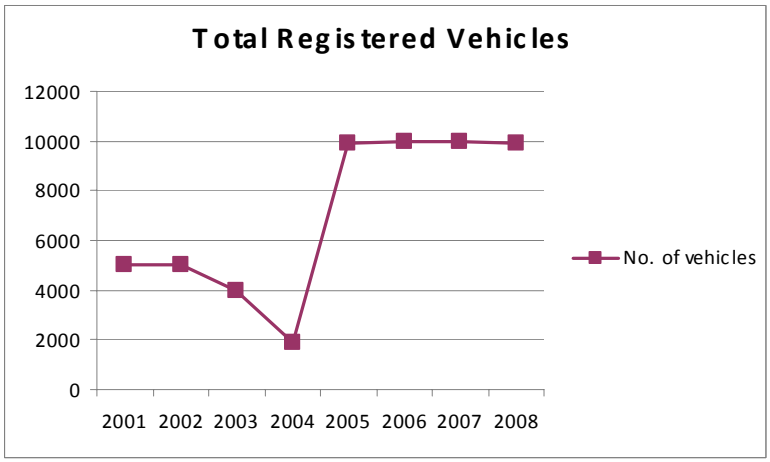

Fig.27 Total Registered Vehicles

Table no: 62

Registered vehicles category wise

Year	Four wheeler	Three Wheeler	Two Wheeler	others	Total yearly	Grand total	%age growth rate
2001	2214	-	2784	-	4998	4998	-
2002	1522	-	3472	-	4994	9992	99.91
2003	953	-	3036	-	3989	13981	39.92
2004	676	-	1229	-	1905	15886	13.62
2005	1384	-	8533	-	9917	25803	62.42
2006	1310	-	8657	-	9967	35770	38.62
2007	1310	-	8656	-	9966	45736	27.86
2008	1314	-	8615	-	9929	55665	21.70
2009	204	5	1386	-	1595	57260	2.86
Total	10887	5	46368	-	57260		

Source: SDM, Khanna

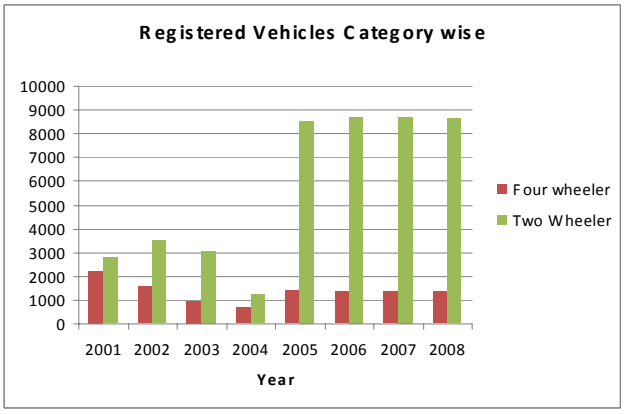

Fig.28 Registered Vehicles Category Wise

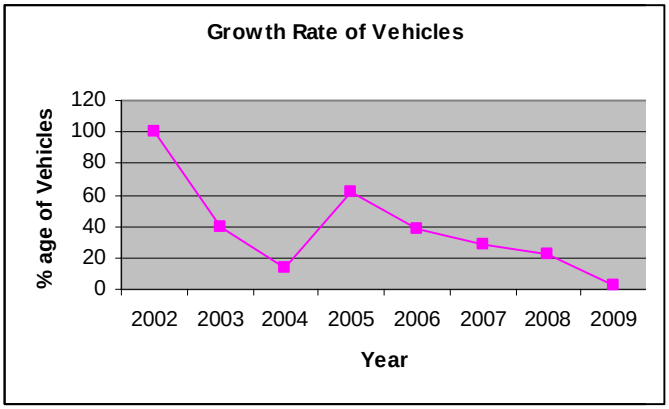

Fig.29 Growth Rate of Vehicles

Table no: 63

Slow Moving Vehicles Category wise

Year	Men driven	Animal driven	Total slow moving(yearly)	Grand total	%age of total vehicles	%age growth rate
2001	22	30	52	52	2.27	-
2002	56	65	121	173	5.29	232.6
2003	70	70	140	313	6.12	80.9
2004	120	70	190	503	8.31	60.7
2005	135	75	210	713	9.19	41.7
2006	150	120	270	983	11.81	37.8
2007	225	145	370	1353	16.19	37.6
2008	270	160	430	1783	18.81	31.7
2009	300	202	502	2285	21.96	28.1
Total			**2285**	**8158**		

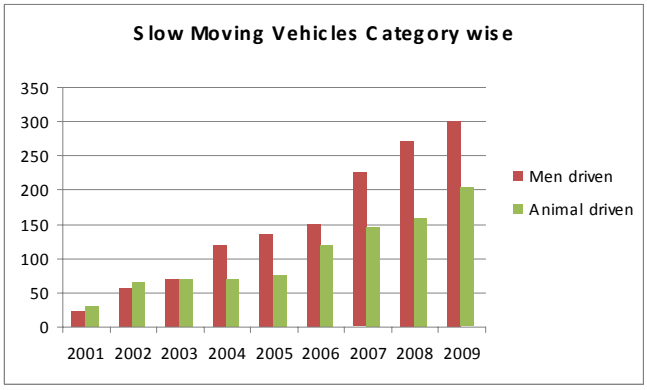

Fig.30 Slow Moving Vehicles

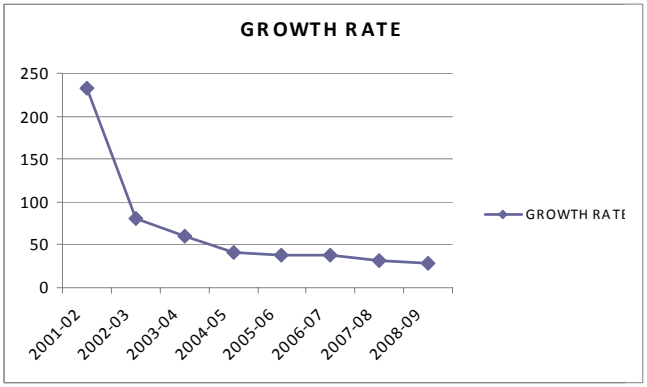

Fig.31 Growth Rate of Slow Moving Vehicles

The numbers of registered vehicles are showing an increasing trend. Highest growth in number was recorded to the year 2002 and 2005 when the percentage growth rate was 99.91% and 62.42 % respectively. Registered vehicle number in Khanna is closed to 57260 as per the figure available by the Sub Divisional Magistrate, Khanna. The average registration of vehicles per month exceeded 50. The annual growth rate of registered vehicles has risen between 11-28%. Table No: 62 above shows that two wheelers account

for 87% of the total registered vehicles and four wheelers accounted for 13% of the total vehicles in year 2008.

Table No: 63 above showing the composition of vehicles indicates that proportion of slow moving vehicles as compared to the fast moving vehicles has been going down. It is clear from Table No: 63 above that in the category of slow moving vehicles, men driven vehicles are 63 % as compared to animal driven vehicles i.e. 37 % in the year 2008. Mixing of traffic on the roads have lead to slow speed, more accidents, congestion, constrained capacity, conflicts, delays and pollution.

5.1.4.2 Rail Terminal

Total area of railway station is 130669 sq.mts. The inflow and outflow of trains at Khanna railway station reveals that about 52 trains arrives and 52 depart from the terminal in a day and about 1800(approximately) passengers use the railway terminal on a typical day. About 32 goods wagons arrive at the rail terminal per day. The loading and unloading is done at the railway station. The presence of Intermediate Public Transport (IPT) modes, which commute the passenger to the different parts of the city from railway station. So, there is no problem of IPT mode in front of railway station.

Table no: 64

No. of passenger trains passing through City per day

Year	**Khanna- Ambala**		**Khanna-Ludhiana**	
	Incoming	**Outgoing**	**Incoming**	**Outgoing**
2003	46	46	46	46
2004	47	47	47	47
2005	48	48	48	48
2006	48	48	48	48
2007	49	49	49	49
2008	52	52	52	52

Source: Station Master, Northern Railway Region, Khanna

It is clear from table no.64 above, that in all 104 pairs of passenger trains pass through the city on daily basis which cater to the traffic on Khanna –Ambala and Khanna – Ludhiana routes.

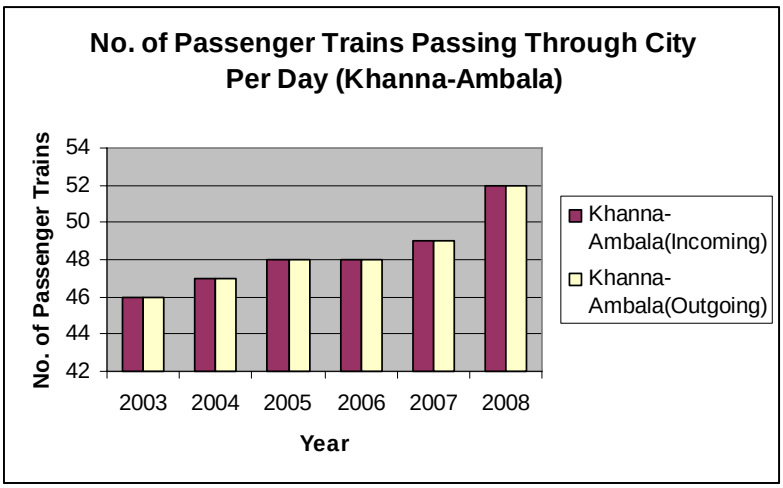

Fig.32 No. of passenger trains passing through City per day (Khanna-Ambala)

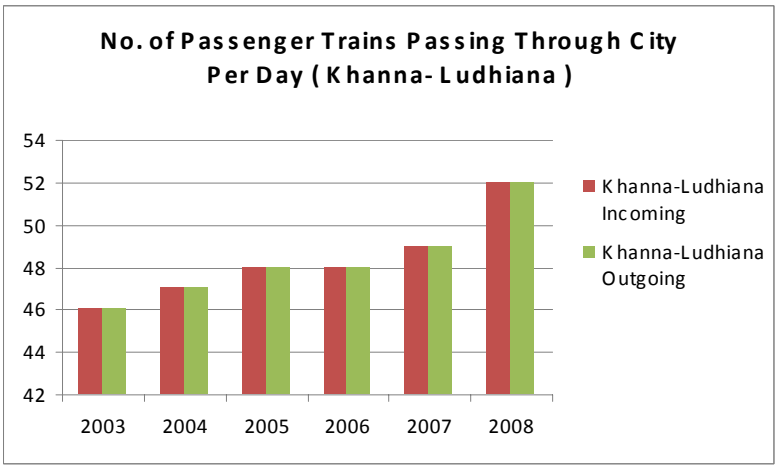

Fig.33 No. of passenger trains passing through City per day (Khanna-Ludhiana)

Table no: 65

Number of passengers per year

Year	Khanna-Ambala
1999	611319
2000	634500
2001	681962
2002	608319
2003	581363
2004	553463
2005	594009
2006	581608
2007	677741

Source: Station Master, Northern Railway Region, Khanna

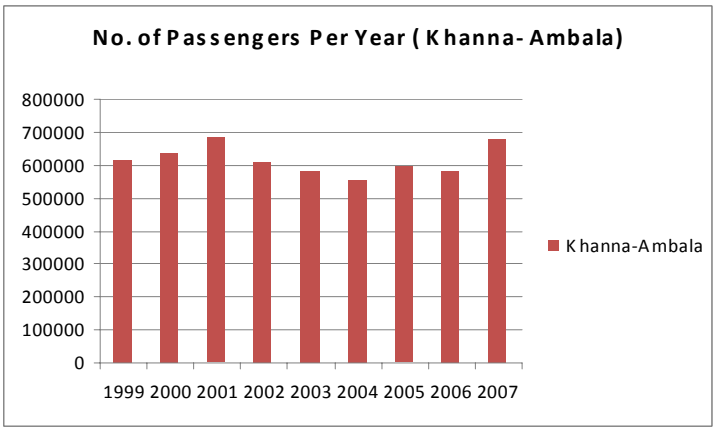

Fig.34 Number of passengers per year

It has been observed that passenger traffic catered to by railways is also on the increase. From 581363 passengers in 2003, the number rose to 677741 in 2007. Growth rate recorded 2004-05 was 7 % whereas it increased to 17% in 2006-07. However railways cater to large volume of traffic which basically comprise of daily commuters from & to the city, large number of migrants coming to serve in the agriculture and the industrial sector.

With 2 platforms, it has all basic facilities like waiting hall, reservation centre, parking facilities, ticket booths etc. in the terminal. There is proposal of extending both the

existing platforms to accommodate maximum coaches and construction of freight corridor line.

Railway station has parking lots for two wheeler and rickshaw stand of capacity to accommodate 200 two wheelers and 40 rickshaws respectively.

In addition to passenger trains, large number of goods trains also pass through the city for bring in and taken out raw material like fertilizer, paddy husk, salt, cement, maize etc and finished goods. Table no.66 given below indicates that number of goods trains plying on Khanna –Ambala route and vise versa are showing an increasing trend i.e. 26 goods trains in 2003 and 32 goods trains in 2009.

Table no: 66

No of Goods Trains Passing Through City per Day

From-To	2003	2004	2006	2007	2008	2009
Khanna to Ambala	26	28	27	29	30	32
Ambala to Khanna	26	28	27	29	30	32

Source: Station Master, Northern Railway Region, Khanna

The old and shabby structures adjoining the railway station gives dirty look to the railway station, which needs to be cleared off. Being the industrial and commercial centre, it also caters to large volume of goods traffic, both in the shape of raw material and finished goods. So, it attracts large volume of men and material and also intermixing of traffic creates traffic havoc, reducing their usable capacity and creating major bottlenecks.

Rail Network

Strong network of rail links with other parts of State /country exists in the city like Khanna - Ambala railway line, Khanna-Ludhiana railway line. These railway lines cut the road network of the city at numerous level crossings which become centre for traffic bottlenecks. To facilitate the people with the smooth traffic flow of , one ROB’s have been built in the city

5.1.4.3 Bus Terminal

The total area of the bus terminal is 1.7 hectare. About 8000 passenger use the bus terminal. Buses move in all the directions on inter city and intra city roads.There is problem of parking in bus stand as only 7000 sq. ft. (0.16 acre) area where four wheelers, two wheelers and cycles are parked.

The description of the yearly bus traffic route-wise is given in the table below: -

Table no: 67

Yearly Bus traffic route-wise

Route	**1999**	**2001**	**2003**	**2005**	**2007**	**2009**
Khanna to Jammu	151	170	180	207	220	240
Khanna to Delhi	65	72	85	96	108	127
Khanna to N.Shehar & Machiwara	-	-	-	-	30	40
Khanna to Nabha	20	29	39	47	55	63
Khanna to Malerkotla	29	39	52	63	71	78
Khanna to Mohalli	47	57	61	69	76	83
Khanna to chandigarh	3	5	9	14	18	24
Khanna to Ludhiana	90	111	123	140	160	178
Total	**408**	**483**	**559**	**636**	**738**	**813**

Source: Municipal Council, Khanna

Table No. 67 indicates that over the years, bus traffic has recorded an increase with few exceptions. However number of buses has recorded rapid growth on Ludhiana road, G.T. Road, Delhi route, Chandigarh Road.

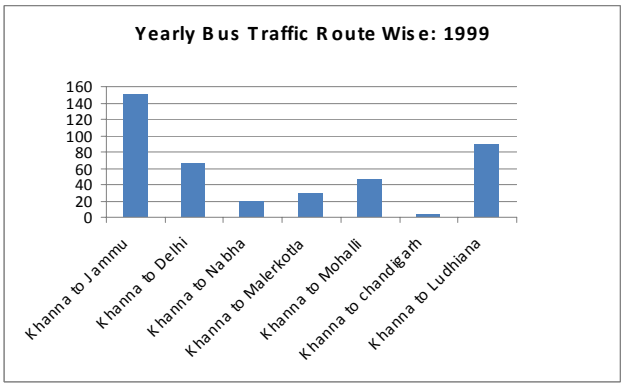

Fig.35 Yearly Bus Traffic-1999

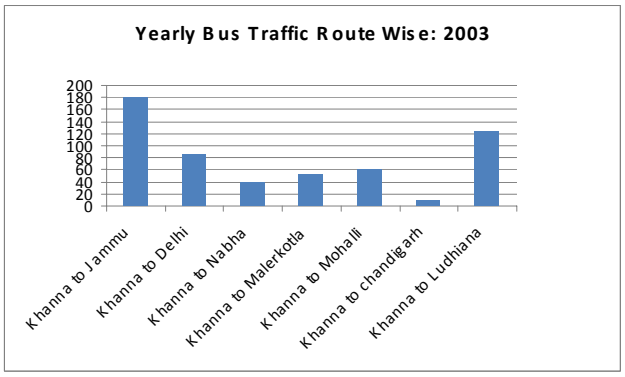

Fig.36 Yearly Bus Traffic-2003

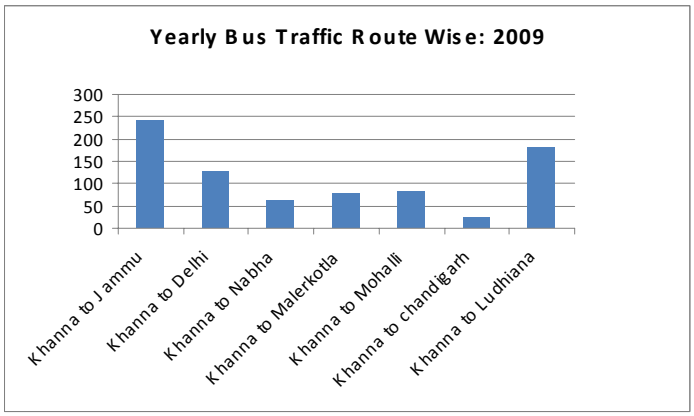

Fig.37 Yearly Bus Traffic-2009

Intermediate public transport system plays an important role in transportation system. Auto rickshaw, cycle rickshaw, tempos are the best mode of intermediate public transport system which commute to different parts of the city from bus stand.

5.1.4.4 Truck Terminal

At present there are 8 private goods transport booking agencies in the Khanna city. These agencies together own 300 trucks. All the booking agencies are located on G.T. road where loading and unloading of goods is done and trucks are parked. This creates traffic jams and hampers free movement of through traffic.

5.1.4.5 Traffic Characteristics

Traffic Volume

Traffic volume is another important aspect of the traffic and transportation plan. Traffic volume represents the number of vehicles passing from a point during a period of time and is an indicator of intensity of traffic on the road. Volume and composition of traffic are the indicators of structure, design and character of the city. The capacity is measured in PCU's per lane of road width. The V/C ratio is up to 1 is considered as the optimum condition. If ratio exceeds 1, it indicates condition of congestion whereas figure below 1 indicates under utilization of the road capacity.

In order to assess the capacity utilization of roads, a detailed analysis of the existing road network has been made in terms of volume & capacity of important roads. The peak hour

volume of different categories of major road net work in Khanna has been assessed to calculate volume capacity ratio. Traffic volume counts were taken at different locations.

Table no.:68

Volume capacity ratio on main approaching roads (year 2009)

Name of the road	Hour	Peak hour volume(PCU)	Capacity (PCU)	V/C ratio
Ludhiana-Khanna	8 am to 10 am	3530	5400	0.65
	2 pm to 4 pm	4006		0.74
	5 pm to 7 pm	3550		0.65
Khanna-Ludhiana	8 am to 10 am	3773	5400	0.69
	2 pm to 4 pm	4254		0.78
	5 pm to 7 pm	3281		0.60
Khanna-Ambala	8 am to 10 am	4869	5400	0.90
	2 pm to 4 pm	4003		0.74
	5 pm to 7 pm	3620		0.67
Ambala-Khanna	8 am to 10 am	2812	5400	0.52
	2 pm to 4 pm	4536		0.84
	5 pm to 7 pm	4464		0.82
Khanna-Malerkotla	8 am to 10 am	3421	2400	1.42
	2 pm to 4 pm	3812		1.59
	5 pm to 7 pm	4122		1.71
Khanna-Samrala	8 am to 10 am	3621	2400	1.50
	2 pm to 4 pm	4727		1.96
	5 pm to 7 pm	5364		2.23
Khanna-Lalheri	8 am to 10 am	3008	1500	2.00
	2 pm to 4 pm	2235		1.49
	5 pm to 7 pm	2619		1.74
Khanna-Ratanheri	8 am to 10 am	1700	1500	1.13
	2 pm to 4 pm	1597		1.06
	5 pm to 7 pm	1553		1.03
Khanna-Badla	8 am to 10 am	935	1500	0.62
	2 pm to 4 pm	1226		0.81
	5 pm to 7 pm	1351		0.90

Source: Primary Survey, 2009

The traffic volume on the roads like Khanna-Malerkotla, Khanna-Samrala has v/c ratio more than 1.0 i.e. the level of service on these stretches is below the accepted level of service and are saturated beyond their capacities. Although the saturation capacities are below 0.8 at some of the junctions of the town and they require geometric improvements and appropriate control to ensure the smooth flow of traffic and pedestrian safety.

5.1.5 Fire Prevention and Protection

Fire services have to play pivotal role and be fully prepared in protecting people from fire hazards, building collapse, road accidents and other unforeseen emergency etc. At present there are five fire stations in city.

Fire stations

Table no.:69

Fire facilities

Sr.no	Type	Population/unit(approx.)	Existing	Required
1	Fire station	3-4 km radius	1	-
	Fire tenders	-	2	3 (as per data supplied by Municipal Council, Khanna)
2	Fire post	5-7 km radius	-	-
3	Disaster Management centre	1 in each administrative zone	-	-
4	Fire training institute/college	City level(one site in urban extension)	-	1

Source: Municipal Council, Khanna

There is one fire station and two fire tenders in Khanna city serving the whole population.

Area and Population Served

103099 persons and 26.75 km of population and area is served respectively by fire station in Khanna.

5.1.6 Environmental Management

Khanna city is situated along the N.H. 1 (G.T. Road) and having contiguous growth with the steel city Mandi Gobindgarh. These two factors are affecting the environment of Khanna at a great extent. Impact of pollution has been witnessed in the city in the form of quality of air, quality of water both surface and underground, noise pollution, degradation of the natural resources, low vegetation cover etc. These environmental problems have already reached a critical stage, calling for an immediate action. The intensity of the pollution in terms of air, water and noise have been evaluated in order to clearly understand the level and causes of pollution existing within the city so that appropriate strategies are put in place to tackle the problem of pollution.

5.1.6.1 Air Pollution: As per Central Pollution Control Board (CPCB), "Air pollution" means any solid, liquid or gaseous substance (including noise) present in the atmosphere in such concentration as may be or tend to be injurious to human beings or other living creatures or plants or property or environment.

The important gases which act as pollutants are oxides of sulphur compounds (SO_2, SO_3, H_2S), nitrogen compounds (NO, NO_2, NH_3) and suspended particulate matter (SPM). When the air is not clean, the entire environment is affected because both plants and animals depend on air to breath. The major sources of air pollution are:

Natural sources:

- Gases from volcanoes
- Forest fires and biological respiration
- Particulate matter like pollen grains, bacteria, viruses from biological resources.
- Particulate matter from outer space
- Soil particles from ground surface

Anthropogenic Sources:

- Emission from industries, automobiles, aero planes, railways, kitchen and domestic heating
- Pollution from developmental activities
- Incineration of municipal and domestic waste
- Pollution from agriculture waste burning

In case of our cities air pollution, vehicular pollution and noise pollution are basic three types of environmental pollution.

5.1.6.2 Vehicular Pollution: Transportation plays a significant role in overall development of a country. Availability, intensity, frequency, efficiency and cost of transportation are considered as index of development. But as the numbers of vehicles are increasing rapidly, it has slowly but surely started hindering our atmospheric purity with the vehicular and noise pollution. Vehicular pollution is mainly an urban problem. It is seen that in the table below that in case of Khanna the number of registered vehicles is increasing which leads to vehicular pollution in the city i.e. increase in Vehicular exhaust, containing harmful gases like carbon monoxide (CO), oxides of nitrogen, oxides of Sulphur and unburnt hydrocarbons.

Table no.:70

Registered vehicles category wise

Year	Four wheeler	Three Wheeler	Two Wheeler	Total yearly	Grand total
2001	2214	-	2784	4998	4998
2002	1522	-	3472	4994	9992
2003	953	-	3036	3989	13981
2004	676	-	1229	1905	15886
2005	1384	-	8533	9917	25803
2006	1310	-	8657	9967	35770
2007	1310	-	8656	9966	45736
2008	1314	-	8615	9929	55665
Total	10683	5	44982	55665	

Factors Responsible For Vehicular Pollution

- Increase in vehicular number is itself an indicator of increase in vehicular pollution over the years in the state. Besides increase in the number of vehicles the poor maintenance of vehicles is major reason for the high vehicular emissions.
- Majority of the three-wheelers, fitted with diesel engines, use diesel and kerosene as fuel, which causes lot of pollution in the State.
- Improper traffic management and road conditions

5.1.6.3 Industrial pollution: There 235 red category industries situated along G.T. road near Mandi Gobindgarh. It includes steel rolling mills, foundry industries, dying and chemicals industries etc.

Table no.:71
Ambient Air Quality in Khanna, 2008

Sr.no	Station	M/S Markfed, Khanna			A.S. School, Khanna		
	Month (2008)	SO2	NOx	SPM	SO2	NOx	SPM
1	June	9	39	255	9	36	240.5
2	July	10	42	257	9	38.46	246
3	August	10	39	252	9	38	244
4	September	10	41	249	10	37	244
5	October	11	44	256	11	40	250
6	November	11	43	258	11	41	251
7	December	11	45	255	10	39	245

Source: Pollution Control Board, Ludhiana

The Permissible Levels of different particulates in air are given below:
Residential and commercial area: SPM = 120 µg/m^3, SO_2 = 80 µg/m^3, NO_x = 80 µg/m^3
Industrial area: SPM = 200 µg/m^3, SO_2 = 120 µg/m^3, NO_x = 120 µg/m^3

From table no. 71 it is seen that level of SO_2 has been found to be within limits. Also the level of NO_2 has been found to be within the permissible limits and well below the prescribed standards at all the stations during the years 2008.

As per air pollution data collected by pollution Control board at two stations in Khanna given in above table, it is clear that air contains large volume of suspended particles and the higher presence of such particles against the permissible limit of 120µg/m^3 indicating lower quality of air in Khanna. The presence of higher level of SPMs can be attributed to mixing of dust from open land, pollutants from Industrial Area and smoke from vehicular traffic.

The higher level of SPMs has been found to exist throughout the year with lowest recorded during the period June to August and highest during September to December. However, the data in the above table indicates the higher presence of the SPMs, SO_2 and NO_2 over the years indicating the deteriorating quality of ambient air in Khanna.

5.1.6.4 Noise pollution: The Air (Prevention and Control of Pollution) Act, 1981 of Section 2 (a) includes noise in the definition of 'air pollutant'. Air pollution means any solid, liquid or gaseous substance including Noise present in the atmosphere such concentration as may be or tent to injurious to human beings or other living creatures or plants or property or environment. Further, according to Encyclopedia Britannica, in acoustic noise is defined as any undesired sound.

Sources of noise pollution:

- Natural Sources: Air, Noise, Volcanoes, Seas, Rivers, Exchanging voices of living organisms including man and animals.
- Anthropogenic Sources: Industries, Transportation (air, rail and road), Community and religious activities.

5.1.7 Power Supply

Power is one of the prime movers of economic development and common denominator for all technologically advanced societies. Correlation between per capita income and per capita power consumption is very strong. If the power industry is below-par, overall growth is hobbled. The level of availability and accessibility of affordable and quality power is also one of the main determinants of qualify of life. The power sector has not kept pace with the growth in demand with the result that the country has always faced energy and peaking shortages.

5.1.7.1 Grid Stations

There are four grid stations of 66 KV capacity having an area of 8 acre, 1.75 acre, 2.90 acre, 1.25 acre respectively. Total area under grid stations is 13.9 acre. There are 5 offices and 8 complaint centers and area under one office is 13000 sq.ft. Location of complaint centre and P.S.E.B. office within M.C is shown in thematic map at illustration no.:9.

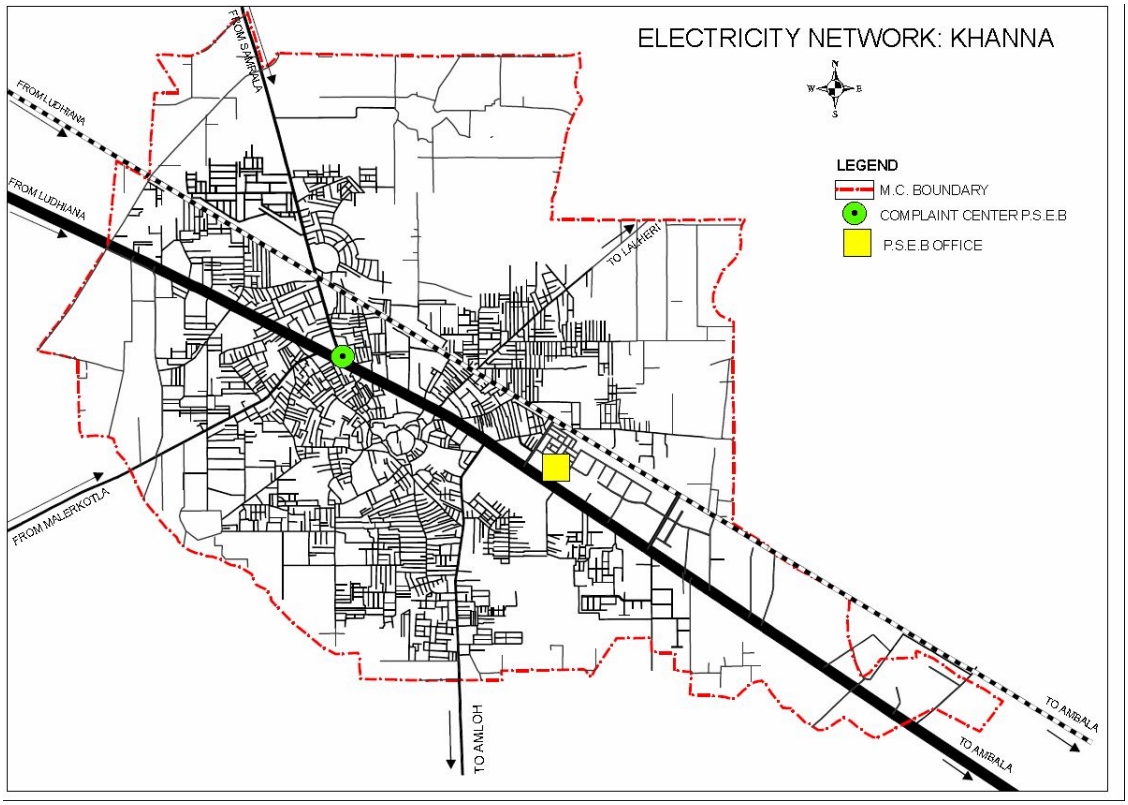

ILLUSTRATION NO.:9

.

5.2 Social Infrastructure

Social infrastructure can be considered in term of facilities available in the urban areas at various levels. This includes facilities pertaining to education, health, recreation parks and open spaces, post offices etc. It needs to be ascertained that spatial distribution of the social infrastructure is such that it is available to the entire population and is within their easy reach. Often it is found that social infrastructure is concentrated in few pockets of the city whereas certain areas have been found to be deficient. This adversely impacts the community living in deficient areas which are required to travel considerable distance to avail them. In the process, city faces problems due to unnecessary travel necessitated by irrational distribution of these services. According for proper and efficient functioning of the urban centers it is not only critical, that urban infrastructure in appropriate quality and quantity are provided but also it will be important that they are spatially distributed in a

manner, So as to cover the entire city and its population. Based on this premise the available social infrastructure in the Khanna city have been studied and evaluated.

5.2.1 Educational Facilities

Educational Facilities certainly impact the quality of manpower available in the urban areas. In addition, these facilities have been found to leverage the economic growth development and employment. Khanna city has various schools and colleges which fulfill the need of city as well as surrounding villages. A.S. Trust and Management society is one of the main trust which is running schools and colleges in Khanna city.

The Anglo-Sanskrit High School Khanna Trust and Management Society

The Management is an organization of donors and philanthropists who raise funds from time to time for the progressive development of its institutions. The five Institutions already running under this management are:

1. **A.S. Senior Secondary School, Khanna (Estd. 1915)**
2. **A.S. College, Khanna (Estd. 1946)**
3. **A.S. College for Women, Khanna (Estd. 1968)**
4. **A.S. Modern Senior Secondary School, Khanna (Estd. 1970)**
5. **M.G.C.A.S. Junior Model School, Khanna (Estd. 2004)**
6. **A.S. College of Education, Kalal Majra, Khanna (Estd. 2007)**
   (Affiliated to Panjab University, Chandigarh and approved by Pb. Govt. & NCTE, Jaipur)

These educational institutions hold a significant place on the educational map of Punjab. The main focus is to regenerate mankind and transform society through quality education. These institutes serve the Khanna city as well as its surrounding areas.

Besides this there are other major schools are as under:

1. Hindi Putri Pathshala School
2. Radha Vatika Senior Secondary School
3. Government Senior Secondary School, Khanna

Including above mention educational facilities Khanna city has 32 primary/Elementary schools which are more than standards as per Master Plan Ludhiana. 22 primary/Elementary schools are surplus in Khanna. In case of Higher and senior

secondary schools the number is more than the requirement. Besides these schools 2 colleges and one study centre of IGNOU (Indra Gandhi National Open University) is also situated in the city to serving the local as well as surrounding population. in case of Payal city the situation is also same as in Khanna city, the number of schools are more than the requirement in this city. Tables given below clear the picture of education facilities in Khanna and Payal.

Table no.:72

Educational Facilities (Khanna M.C.)

Sr. No.	Nature of Facility	Existing in Number	Standard (as per Master Plan Ludhiana)	Required as per standard	Deficit	Surplus
1.	Primary/Elementary schools	32	1 for 10,000	10	-	22
2.	Higher secondary & Sr.Sec. Schools	17	1 for 10,000	10	-	7
3.	Colleges	2	1 for 5 lac.	-	-	1
4.	ITI open university	1				

Source: Census of India, 2001

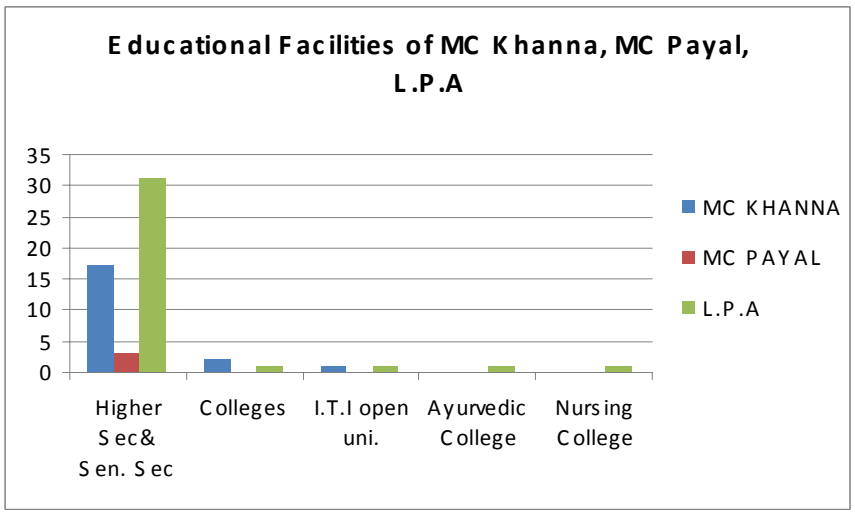

Fig.38 Educational Facilities (M.C Khanna,MC Payal, L.P.A Khanna)

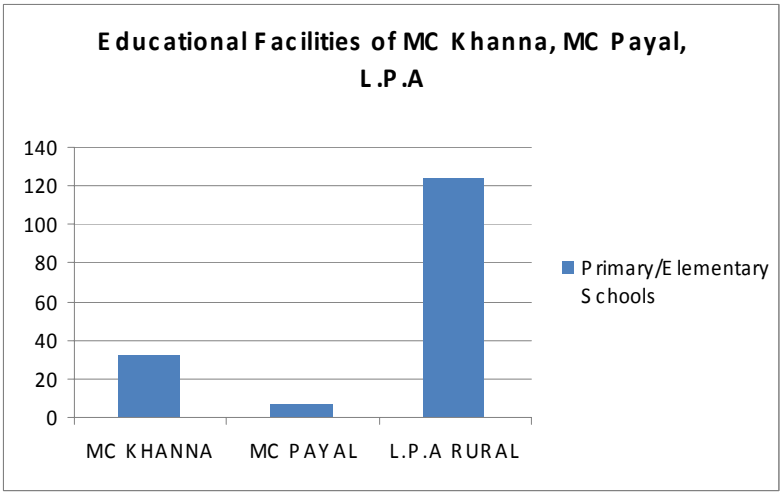

Fig.39 Educational Facilities (M.C Khanna,MC Payal, L.P.A Khanna)

Table no.:73

Educational Facilities (Payal M.C.)

Sr. No.	Nature of Facility	Existing in Number	Standard (as per Master Plan Ludhiana)	Required as per standard	Deficit	Surplus
1.	Primary/Elementary schools	6	1 for 10,000	1	-	5
2.	Higher secondary & Sr.Sec. Schools	3	1 for 10,000	1	-	2
3.	Colleges		1 for 5 lac.	-	-	-

Source: Census of India, 2001

In case of LPA rural

Table no.:74

Khanna L.P.A. (Rural)

Sr. No.	Nature of Facility	Existing in Number	Standard (as per Master Plan Ludhiana)	Required as per standard	Deficit	Surplus
1.	Primary/Elementary schools	124	1 for 10,000	-	-	-
2.	Higher secondary & Sr.Sec. Schools	31	1 for 10,000	-	-	-
3.	Colleges	1	1 for 5 lac.	-	-	-
4.	Ayurvedic college	1	1 for 5 lac.	-	-	-
5.	I.T.I.	1	1 for 5 lac.	-	-	-
6.	Nursing College	1	1 for 5 lac.	-	-	-

Source: Census of India, 2001

5.2.2 Health Care

Table no:75

Medical Healthcare Facilities (Khanna (M.C.)

Sr. No.	Nature of Facility	Existing in Number	Standard (as per Master Plan Ludhiana)	Required as per standards	Deficient	Surplus
1.	Hospital	2				
2.	Sub Health Centre	2	1 for 10,000	10	8	-
3.	Nursing Homes/Private hospitals	49	1 for 50,000	2	-	47
4.	Ayurvedic Dispensary	1	1 for 10,000	10	9	-
5.	Veterinary Hospital	1	1 for 50,000	2	1	-
6.	Veterinary Dispensary	1	1 for 10,000	10	9	-

Source: Census of India, 2001

Khanna has large number of healthcare related facilities which not only save the city population but also that of region. There are two hospitals, two sub health centre, 49 Nursing homes/Private hospitals and one ayurvedic dispensary in Khanna city.

Table no.:76

Medical Healthcare Facilities (Payal (M.C.)

Sr. No.	Nature of Facility	Existing in Number	Standard (as per Master Plan Ludhiana)	Required as per standards	Deficient	Surplus
1.	Hospital	1				
2.	Sub Health Centre	1	1 for 10,000	1	-	-
3.	Nursing Homes/Private hospitals	4	1 for 50,000	-	-	-
4.	Ayurvedic Dispensary	-	1 for 10,000	1	1	-
5.	Veterinary Hospital	1	1 for 50,000	-	-	-
6.	Veterinary Dispensary	-	1 for 10,000	1	1	-

Source: Census of India, 2001

It is clear from the above table no.76 that there is one hospital, 4 nursing homes/ private hospitals and one veterinary dispensary existing in Payal city. These healthcare facilities are sufficient for Payal population.

Table no: 77

L.P.A. (Rural)

Sr. No.	Nature of Facility	Existing in Number	Standard (as per Master Plan Ludhiana)	Required as per standards	Deficient	Surplus
1.	Hospital	1				
2.	Sub Health Centre	20	1 for 10,000	10	-	10
3.	Nursing Homes/Private hospitals	2	1 for 50,000	1	-	1
4.	Ayurvedic Dispensary		1 for 10,000	10	-	7
5.	Homeopathy Dispensary	2	1 for 10,000	10	8	-
5.	Veterinary Hospital	9	1 for 50,000	1	-	8
6.	Veterinary Dispensary	7	1 for 10,000	10	3	-

Source: Census of India, 2001

Table no:78

LPA Khanna

Sr. No.	Nature of Facility	Existing in Number	Standard (as per Master Plan Ludhiana)	Required as per standards	Deficient	Surplus
1.	Hospital	4				
2.	Sub Health Centre	23	1 for 10,000	10	-	13
3.	Nursing Homes/Private hospitals	55	1 for 50,000	1	-	54
4.	Ayurvedic Dispensary	1	1 for 10,000	10	-	8
5.	Homeopathy Dispensary	2	1 for 10,000	10	8	-
5.	Veterinary Hospital	11	1 for 50,000	1	-	10
6.	Veterinary Dispensary	8	1 for 10,000	10	3	-

Source: Census of India, 2001

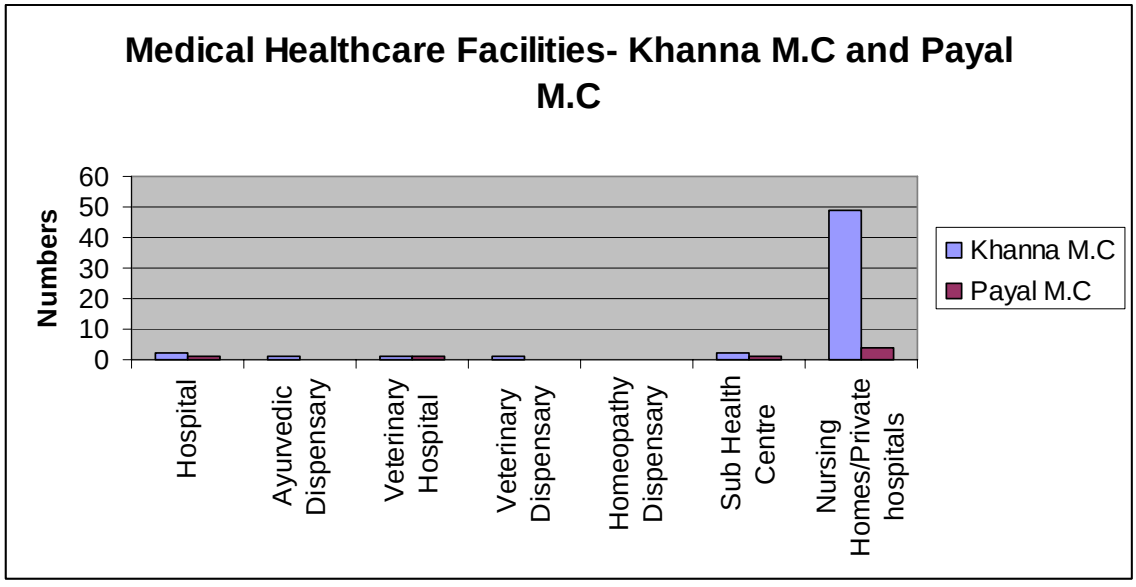

Fig.40 Medical Healthcare Facilities Payal MC and Khanna M.C

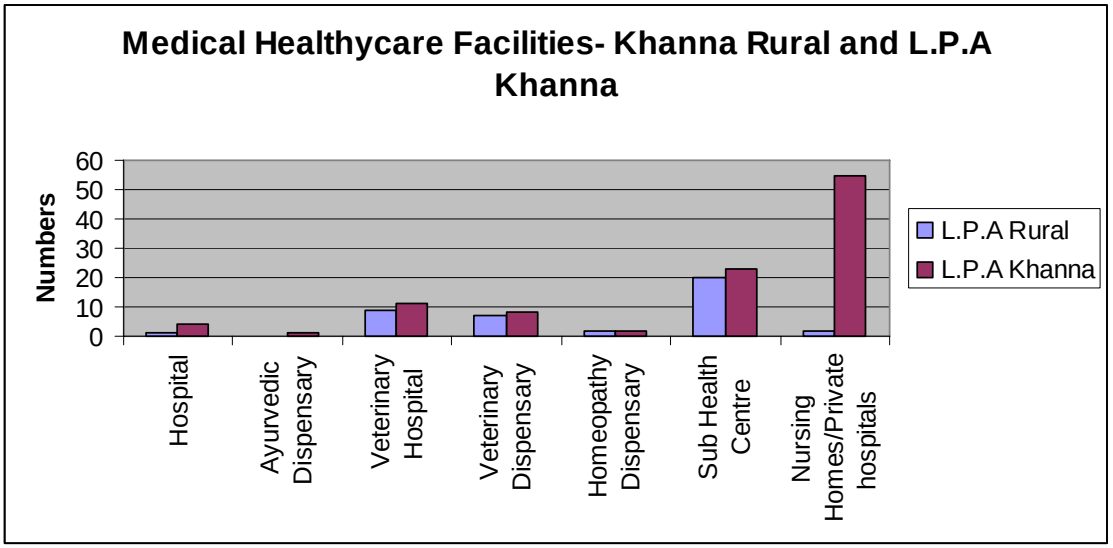

Fig.41 Medical Healthcare Facilities L.P.A Rural and L.P.A Khanna

Khanna LPA provides an efficient system of healthcare to pets and animals. To cater to this segment there are 19 units operating in the city out of which 8 are veterinary dispensaries and 11 veterinary hospitals.

5.2.3 Sports and Recreation

For physical and social development of an individual, recreational facilities are very important, therefore the provision of these facilities at local, sub city and city level in a balanced form is most important. In Khanna city there are a number of recreational facilities enumerated in table no. .

Recreational Facilities

Recreational facilities have been found to exist in the shape of parks and open spaces cinema, stadiums, museums, sports related activities, clubs, library etc. Provision of active and passive recreational facilities is given in order to cater to the essential needs of the individuals and communities.

. **Table No.:79**
Recreational Facilities

Sr. No.	Name of the Facility	Existing in Numbers
1	Parks	4
2	Cinemas	3
3.	Stadium	1
4	Museum	-
5	Swimming Pool	-
6	Clubs	2
7	Library	1
8	Auditorium	4

Source: Census of India, 2001

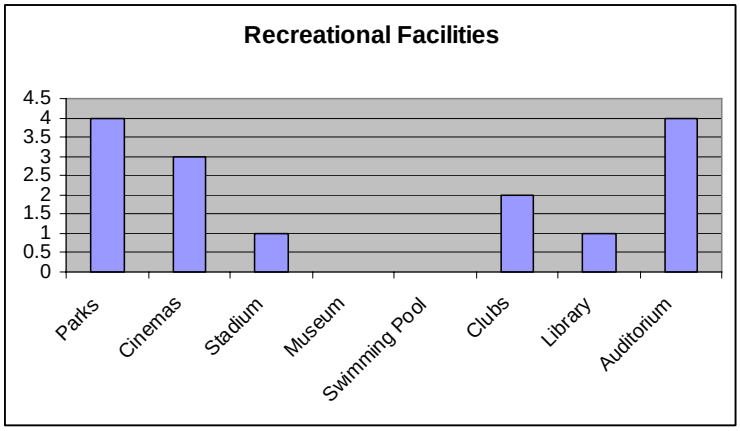

Fig.42 Recreational Facilities

Maximum number of recreational facilities has been found to be in shape of parks. There are in all 4 parks which include both small and large sized open spaces. One of the parks exists on the back side of Municipal Council, Khanna and is well maintained by the office. But there is an urgent need to create adequate number of additional parks and open spaces in the city as per the specified norms besides ensuring their rational distribution in the city in order to ensure their availability to all the residents of the city.

In addition to the parks, there are three cinemas, one stadium, four auditoriums, two swimming pools and two clubs existing in the city. Looking at the fast population growth and rapid physical expansion of the city, it is important that adequate level of recreational facilities are created in the city and distributed to cover the entire population of the city.

5.2.4 Post and Telegraph:

Rapid progress made in different modes of communications, post and telegraph still remains the most popular option of communication for vast majority of population. Number of post offices is reducing due to availability of better option of communication which is not only faster but also cheaper. But still, these facilities serve considerable proportion of population both at city level and national level. There are in all 31 post offices operational in the city out of which 30 are branch level and 1 head post office. There are also telegraph offices in the city. Details of the post offices available within Khanna are provided in the table given below.

Table No.:80
Post Offices

Sr. No.	Name of the Facility	Existing in Numbers
1	Branch Post Office	30
2	Sub Post Office	-
3	Head Post Office	1

Source: Head Post Office, Khanna

6. PLANNING PROBLEMS AND ISSUES

To assess the development problems of the entire city, it has been divided into 5 different zones intercepted between various roads as detailed below.

6.1 Area Between Lalheri Road and G.T Road

Industrial Area

- **Shortage of Housing for Industrial Worker:** Industrial area along G.T. Road lacks affordable housing for industrial workers as the result workers are forced to live in pitiable conditions.
- **Dominance of Central Corridor:** Activities both commercial and industrial are more concentrated along G.T. road due to well developed rail and road network. These activities attract traffic and causes traffic chaos.
- **Absence of Truck Stand/Truck Transport Nagar:** At present there is no planned truck stand in Khanna city. Trucks are parked haphazardly along G.T. road reducing effective road width and posing major hindrance to the movement of traffic.
- **Solid Waste Management:** There is poor solid waste management as no site has been provided for dumping of hazardous and solid waste from industries. As the result industries dispose off waste on vacant land causing water pollution.
- **Encroachments:** Number of 'Khokhas' have come up near the Focal Point creating hindrances in the movement of vehicles.

Residential Area

- **There are a number of unauthorized residential areas** in this area namely Navi Abadi, Bant Colony, Jagat colony, Professor colony, Kahar colony, Nandhi Colony, Guru Teg Bahadur Nagar, Azad Nagar. Due to unplanned development**,** roads/streets have narrow width and poor road circulation. The streets in these colonies are narrow which results in the congestion.

- Numbers of **slums are cropping up** in these areas. These areas are provided with water supply and sewerage network. These slum dwellers are using illegal electricity connections.

Mix Landuse

- **Mixed land use** is the major characteristic of this zone. The commercial & industrial activity co-exists with residential along side Station road causing air, noise and smoke pollution. The high commercial traffic in these areas causes inconvenience to the public.
- The growth of commercial activity on both sides of Lalheri road, Samrala road without having adequate parking and loading /unloading facility has further added to the traffic congestion.

Commercial

- **Mushrooming of commercial** activity on road fronts without provision of adequate parking is another major traffic problem in certain pockets of this area.

6.2 Area Between G.T Road and Amloh Road

Mix Landuse

- The **mushrooming of Shopping Mall, Hotel & Marriage Palace** culture without adequate parking on G.T. Road is another problem due to parking of customer vehicles on road side which sometimes becomes a major hindrance in the traffic movement. This problem is quite frequent near Marriage Palaces (especially during marriage season).

Residential Area

- **The unplanned growth of residential area** namely Radha Swami Colony, G.T. road, New Friends Colony, Model Town, Bulepur form house, Appu-Ghar Colony, Bulepur Road, Colony Opposite Sun–City, Colony near Guga Mari Amloh road has narrow and zig zag street pattern. These colonies lack proper

connectivity with the surrounding areas and area under roads and open spaces is just 20 % of total area. The road/street hierarchy is also missing in these colonies.

- There is one slum existing in this area namely Mohalla Isaian along Amloh Raod. The slum has poor housing structure, lacks basic infrastructure.

Industrial Area

- **The growth of Industrial Units/Commercial activity** along G.T. road is another major traffic problem. The most of the industries like steel industries along G.T. road have come up in an unplanned manner generating ash as the by product causing air pollution.
- Poor condition of roads.
- Lack of Plants and parks in the area.
- No green belt along railway line and G.T. road.
- Lack of dustbins.
- No sewerage treatment plant.
- Absence of Truck Stand/Truck Transport Nagar.

Traffic and Transportation

- **Mixed traffic:** Absence of service lane along G.T. road, foot paths, cycle tracks, slow moving traffic on this road especially cycle rickshaws, hand-carts (rehris) and auto rickshaws causes hindrance in the free movement of heavy traffic especially buses and trucks on this road.
- Junction formed by road from Bulepur village towards G.T. road is problematic junction. Commercial and industrial activity is clubbed along this junction generating traffic and creating problem in smooth flow of traffic.

6.3 Area Between Malerkotla Road and Amloh Road

- **Mixed traffic:** Although the Amloh carriage way width is sufficient enough i.e. 22 feet wide but there is no service lane so as to segregate the slow moving

traffic from the fast moving traffic. Due to absence of service lane number of streets join this road directly causing major threat to traffic on this road.

- Absence of parking: The commercial construction on this road without parking and other provisions related with commercial activity have made this road more congested because the vehicles of shop owners and of their customers are parked on road side.
- Lack of planned markets in this part of the city has resulted in haphazard growth of commercial activities on road points causeing environmental and traffic problems.
- **Encroachment:** The shopkeepers from both sides of this road display their articles on footpaths and road berms, further reducing the traffic carrying capacity of the road which results in traffic congestion. The existing foot path is encroach by shopkeepers; pedestrians are forced to move on metalled portion of the road causes hindrance in the free movement of traffic their safety is left at the mercy of the vehicle drivers.
- **Narrow streets/road circulation:** The urban growth in this pocket is mostly unplanned having irregular, zig zag street pattern. The street width varies between 20-25 feet wide approximately which is quite inadequate to take mixed traffic and as a result, the streets remain over busy during the day.
- **Unplanned residential areas:** The area includes unplanned residential areas namely Gulmohar Nagar, Krishna Nagar, Basant Nagar, Ahluwalia Mohalla, Prem Nagar, Atam Nagar, Jethi Nagar, Banda Bahadur Nagar. Due to haphazard & unplanned growth of residential areas in this part of the city, there is acute shortage of wide roads, open spaces etc. The road circulation in unplanned colonies does not have proper linkages and connectivity.
- **Slums**: Slums are a major source of nuisance to the residents of the planned colonies. In absence of sewerage system, these slum dwellers litter in the nearby areas, thus causing unhygienic conditions for the residents. Moreover, these slum dwellers park their rehris, rickshaws along side roads and their children also play on roads which cause traffic hindrance. Apart from creating unhygienic

conditions in an area, these slums create environmental and developmental problems.

- **Accident prone areas:** Malerkotla Chowk, G.T. road and Amloh Chowk, G.T. road are accident prone areas. Number of activities are clubbed along this junction like Bus Stand, commercial area, college generating lot of traffic and causing traffic congestion.

6.4 Area Between Malerkotla Road and G.T Road

Industrial Area

- Poor condition of roads.
- Lack of parking facility.
- Industries create noise pollution and air pollution due to the production of ash fly.
- Lack of Plants and parks in the area.
- No green belt along railway line and G.T. road.
- Lack of dustbins.
- No sewerage treatment plant.

Residential Area

- Existence of unplanned residential area along Malerkotla road puts pressure on existing infrastructure and has bad impact on aesthetics of the town.

Mixed Landuse

- Mixed land use along G.T. road and Malerkotla road faces traffic problems.

6.5 Area Between G.T Road and Samrala Road

- Due to absence of any truck stand in the area, trucks are parked along both sides of G.T. road and opposite grain market which act as hindrance in traffic flow.

- Lack of planned markets in the area has lead to haphazard growth of commercial activities along road front acting as nuisance as they lead to environmental pollution.

Mixed traffic:

There is no segregation of fast and slow moving traffic on Samrala road due non existence of service lane as also discussed in other zones.

PROBLEMS AND EYE SORES AT KHANNA

Encroachments by hawkers

Trucks parked along road side

Scattered garbage Breeding grounds for diseases

Polluting industry

Slums in Khanna

Unhygienic conditions in slums

Mixed traffic

Dilapidated houses at Slums

Encroachments along roadside causing traffic problems

Vacant plot used for garbage dumping

Encroachments by shopkeepers: reducing road width

Traffic jam in old area

POTENTAILS AT KHANNA

Sarai lashkari khan

Manzi sahib gurudwara

Fort at payal

Grain market at khanna

Development schemes

Railway station

7. VISUALIZING THE FUTURE

The requirements of infrastructure to be provided whether social or physical has to be based on the population projected up to the year 2031. Population and workforce are the first few things to be visualized. For this purpose the past trends of population growth of Khanna city as well as that of rural and other settlements falling in L.P.A Khanna has been taken into account.

7.1 Population Projections 2031

In order to achieve more realistic forecast of population a simplified version of ratio method has been used. Population of L.P.A is derived from the forecast made for Punjab state in the Report of the technical group on Population projections constituted by the National Commission on Population entitled "POPULATION PROJECTIONS FOR INDIA AND STATES 2026". For that purpose observed ratios of LPA population to the state population have been used. The population projections for Punjab state as presented in the report are reproduced in Table 81 below:

Table 81: Projected Population of Punjab – Total and Urban 2001-2026

Year	**2001**	**2006**	**2011**	**2016**	**2021**	**2026**
Punjab Total	24359	26059	27 678	29112	30323	31345
Punjab Urban	8263	9439	10681	11940	13185	16456
Percentage Urban	33.92	36.22	38.59	41.01	43.48	52.50

(*Population in Thousands*)

The population projection up to the year 2031 based upon above table are given in table no. 82

7.1.1 Population Projections for Urban Areas

Share of population of urban areas falling in Khanna L.P.A to the total urban population of Punjab state is given in Table below.

Table no.82: Share of Population of Urban Areas of LPA Khanna to the Total Urban Population of Punjab State 1981-2001

Urban areas	Population of LPA Urban / Punjab Urban population		
	1981	1991	2001
Khanna city (% Age)	1.15	1.20	1.25
Payal (% Age)	0.11	0.09	0.08

Population projection of urban areas of LPA Khanna is calculated assuming that its share in Punjab Urban (2001) will remain constant in future up to 2026. However the population for the year 2031 has been projected by Graphical method by extrapolating the trend line. Thus, Population Projection of urban areas of LPA Khanna up to the year 2031 is given in Table no.83 below:

Table no.: 83: Projected Population of Urban Areas of LPA Khanna 2006- 2031

Year	2006	2011	2016	2021	2026	2031
Khanna city						
% Age of Punjab Urban	1.24	1.24	1.24	1.24	1.24	-
Projected Population	117044	132444	148056	163494	204054	232500
Payal						
% Age of Punjab Urban	0.08	0.08	0.08	0.08	0.08	-
Projected Population	7551	8544	9552	10548	13165	17500

The projected population of urban areas in LPA Khanna is shown in the above table no.83. The year 2031 is taken as horizon year for the master plan Khanna to tally with

the census year keeping in view the infrastructural requirements of Khanna city for the future.

7.1.2 Population Projections for Villages of LPA Khanna

Population of rural areas of LPA Khanna has been projected in similar manner as applied in L P A Urban i.e. by using the ratio of LPA Rural to Punjab Rural.

Table no.84: Projected Population of L.P.A Rural 2011-2031

Population	2001	2006	2011	2016	2021	2026	2031
Punjab Rural in '000	16096	16620	16997	17172	17138	14889	-
Projected LPA Rural	79183	81438	83285	84143	83976	72956	84994
Share of LPA Rural %	0.49	0.49	0.49	0.49	0.49	0.49	-

7.1.3 Population Projection for LPA, Khanna

The projected population of LPA Khanna is calculated by adding the projected population of urban areas in LPA Khanna and projected population of villages falling in L P A Khanna. It is shown in Table no.85 below:

Table 85: Projected Population of LPA Khanna 2006-2031

Years	2006	2011	2016	2021	2026	2031
Projected Population	225977	244669	262357	278584	308042	356242

7.1.4 Villages of Urban fringe Khanna

It is observed that some of the villages of LPA Khanna situated near the M.C. limits will adopt urban character in near future and will act as an urban fringe around the city. The following villages have been included in this fringe area as shown in Table no.86 below:

Table no.86 Villages and Population included in Urban Fringe

Name of Village	***Population(2001)***
Bulepur	804
Galwaddi	710
Khatra	1260
Majri	1183
Rasulra	2248
BahoMajra	1303
Kauri	2438
KalalMajra	1882
Majra Rahaun	1039
Harion Kalan	1448
Lalheri	2045
Mahaun	637
Rattanheri	1194
Alour	1644
Total	**19835**

(*Source: District Census Hand Book 2001)*

The Revenue estate of few villages namely; Bulepur, Galwadi, Majri, Rasulra, Kauri, Lalheri, Rattanheri, Alour, falls partially in M.C. Khanna and partially outside. Whereas the village Bhattian's revenue estate also falls in the same category as of above mentioned villages but its population is counted in M.C. unlike the other above mentioned villages.

Population projection of above villages have been done separately to assess the urban thrust and have been calculated as per the method adopted for calculating the projections for villages falling in LPA Khanna. The projected population of these villages is given in Table below.

Table no. 87: Projected Population of Villages included in Urban Fringe

Years	2006	2011	2016	2021	2026	2031
Projected Population	19944	20396	20606	20566	17867	21248

The consolidated populations of Khanna city and its fringe area are given in Table below:

Table no.88: Projected Population of Khanna City and its Urban Fringe

Years	2006	2011	2016	2021	2026	2031
Projected Population	136988	152840	168662	184060	221921	253748

7.2 Workforce Projections

For calculating the workforce projection, LPA, Khanna is divided into three parts:

(i) Khanna city

(ii) Other towns in LPA, Khanna (Payal)

(iii) Villages in LPA, Khanna

Category wise Employment data is available for Khanna city and Khanna district- as Total, Rural and Urban. To estimate category wise employment, for the year 2031 certain assumptions have been made as:

- Employment Pattern of Khanna city will be same as observed in 2001
- Employment pattern of other towns will be similar to District Urban – (excluding Khanna Municipal Council.)
- Employment pattern of villages falling in LPA will be similar to Khanna total – (excluding Khanna Municipal Council.)

Table No.89: Total Workers and Employment Category Wise of Constituent Areas of LPA Khanna

Data and assumptions 2001		Khanna(M Council) 2001	Main Workers as % of Population and categories as % of main workers	Khanna outer towns in LPA (Payal)	Main Workers as % of Population and categories as % of main workers	Khanna L.P.A Excluding LPA Khanna urban	Main Workers as % of Population and categories as % of main workers
Population		103099		7267		98973	
Total workers		34111	33.08%	2849	39.2%	40948	41.37%
A	Cultivators	385	0.37%	215	2.95%	8426	20.57%
B	Agriculture Hunting Forestry	616	0.59%	69	0.94%	3867	9.44%
C	Household Industry	1307	1.26%	61	0.83%	1692	4.13%
D	Others	29510	28.62%	2343	32.24%	21903	59.48%
E	Marignal Workers	2293	2.22%	161	2.25%	5060	13.35%

Table no.:90: Employment Forecast for LPA Khanna 2031

Data and assumptions 2001		Forecast 2031			
		Khanna (M. Council)	Khanna outer towns (Payal)	Rest of LPA	Total
Population		232500	17500	106242	356242
Main workers		76911	6860	20498	104269
A	Cultivators	285	202	4216	4703
B	Agriculture Hunting Forestry	454	64	1935	2453
C	Household Industry	969	57	846	1872
D	Others	22012	2212	12192	36416
E	Marginal Workers	1707	154	2736	4597
	Total workers	**102338**	**9549**	**42423**	**154310**

- **Proposed of Khanna L.P.A. = 43%**

7.3 Infrastructure Requirements

7.3.1 Water Requirements

General: The term water demand refers to the estimated quantity of water required for a city to fulfill water needs of the people residing in the city. The estimated water demand includes per capita consumption, system losses, industrial and commercial consumption, fire fighting demand etc. The water demand is broadly classified as domestic and non-domestic water demand.

7.3.1.1 Rate of water supply

7.3.1.2 Domestic water demand:

The Indian codal precisions recommended a minimum water supply of 135 lpcd for cities and Khanna adopts the same. The residential area in Khanna is expected to have a much higher demand in future due to better life style adopted by the residents. However considering the availability of water and the norms followed by the PWSSB, a rate of supply of 135 lpcd for domestic purpose will be adopted for requirement purpose.

7.3.1.3 Industrial water demand

Bulk supplied to industrial establishment will be considered as per specific requirement of each industry. However the figures of 135 lpcd include water requirements for commercial, institutional and minor industries.

7.3.1.4 Unaccounted for water (UFW):

As per Central Public Health and Environmental Engineering Organization (COPHEEO) manual a maximum provision of 15% towards losses, unaccounted water shall be made.

7.3.1.5 Fire Demand:

As per COPHEEO recommendations a provision of in kilo liter per day based on formula of 100 p where P= population in thousands shall be kept in mind.

7.3.1.6 Estimation of Water Demand:

The water demand calculated based on water requirements of a one person per day as per UDPFI guidelines i.e 135 lpcd. However, the requirement of a particular unit to be calculated separately as per the norms. The net water demand comprises consumption of domestic and non domestic purposes. Non domestic user includes consumption by Institutions (Colleges, School and Hospital), Commercial Establishment, Industries, Public Parks, Hotels, Tourist places etc. For non domestic user also average demand of 135 lpcd is calculated. Gross water demand comprises network demand and physical & non-physical losses (assumed 15%). Estimated net water demand and Gross water demand as calculated is given in Table no.91.

Table no.:91 : Projected Net and Gross water Demand for Khanna City 2031

Year	2006	2011	2016	2021	2026	2031
Net water demand in MLD	15.8	17.87	19.98	22.07	27.54	31.38
Gross water demand in MLD	18.17	20.56	22.98	25.38	31.67	36.09

7.3.2 Sewerage requirements

7.3.2.1 Per capita waste water flow

The rate of wastewater flow depends upon the rate of water supply to community and the rate of ground water infiltration.

The entire water used by community should normally contribute to the total flow in a sewer. However, the actual dry weather flow quantities usually are slightly less than the per capita water consumption. Since some water is lost in evaporation, seepage into ground, leakage etc. Generally, 80% of the water supply may be expected to reach the sewers.As per PWSSB's practical wastewater flows has been estimated considering 85% of water supplied to the consumers that will reach the sewers.

7.3.2.2 Projected waste water flows

Considering 85% of the water supplied to the consumption reaching the sewer and adopting the recommended norms for infiltration the projected waste water flows has been calculated.

Table no.:92: Projected and Gross Waste Water Flows

Year	2006	2011	2016	2021	2026	2031
Net waste water flows in MLD	13.43	15.18	16.98	18.75	23.40	26.67
Gross waste water in MLD	15.44	17.47	19.53	21.57	26.9	30.67

7.3.3 Solid waste disposal

The production of solid waste in an urban area is a function of the socio economic profile of the population and activities in the area. As per UDPFI guidelines the generating of waste varies from about over a quarter of a kilogram in small towns to about half a kilogram per capita in large and metro cities. For Khanna city which is medium sized city the waste generation will be 3/8 of kilogram per capita i.e. 3/8 x 232500 = 87187.5 kg = 87.18 metric ton per day.

7.3.4 Power

As per the standards given in UDPFI guidelines the power consumption works out to be 2 KW per household at city level. Based on above the power consumption for Khanna city on five yearly basis is calculated in the Table below:

Table No.93: Power Requirement of Khanna City 2006-2031.

Year	2006	2011	2016	2021	2026	2031
Household	23409	26489	29611	32699	40811	46500
Power consumption in MW	47	53	59	65	82	93

For the requirements of electric sub station, for the population of 15000 persons one electric sub station of 11KV is required as per the UDPFI guidelines. Thus for the projected population of 2,32,500, 3 electric sub stations of the capacity of 66 KV are required.

7.4 The Strength Weakness Opportunities Threats (SWOT) Anaysis of L.P.A

Master Plan is an important instrument for guiding and regulating development of towns and cities over a period of time and contributes to planned development. It is an instrument to workout land and infrastructure requirements for various urban and rural uses ,allocates land for various uses to result in harmonious and sustainable distribution of activities so that cities are provided with harmonious form and structure.

For the master plan, it is necessary to develop a long term (2031) vision of the city that takes into account the present strengths of the city, opportunities, weakness and the threats {SWOT} emanating in the region. The present population of the L.P.A. Khanna is 209339 persons (as per Census 2001) which have been envisaged as 356242 in the year 2031. The detail of SWOT is given as under:-

7.4.1 Strengths:

Strengths are shown in illustration no.:10

1) Its topography is relatively gradual and generally suitable for urban development.
2) Khanna city is having Asia's largest Grain Market. There are 250 arthiyas or licensed commission agents, selling tones of wheat in a season. It gives lots of opportunities for Labour workers, from Punjab as well as other states.
3) Khanna city is well linked to the surrounding areas by a good network of National highway, State highway and other roads. NH-1 runs from the Khanna city which connects Khanna to the national capital -Delhi , which is 320 kms away from Khanna. Six laning of NH-1 is going on which would increase the road capacity and shorten travel time. Besides good road connectivity, there is a vital rail link which also connects it with National capital, Delhi. Both Road and Rail connectivity has given speedy economic growth to the Khanna city.

4) It is Sub Division Headquarter and Police District headquarter having Important administrative offices.

5) It is having good number of education and medical facilities. Educational institutions are helpful for giving quality education to the young generation.

6) Diversified economic activities like steel industry, cattle feed industry etc.

7.4.2 Weaknesses:

Weakness are shown in illustration no.:11

1) Poor quality of public utilities in terms of water supply & sewerage etc.
2) Lack of parking facilities.

3) Depletion of water table
4) Not properly linked to State capital, Chandigarh.
5) Presence of slums along the railway line.
6) Unplanned residential areas and unauthorized developments along roadsides.

7.4.3 Opportunities:

- The city is having growth potential because of its regional setting and links with the important cities like Ludhiana, Amritsar, Rajpura, Ambala, Patiala. Khanna has Asia's largest grain market which is giving lots of work opportunities for labourers both from Punjab as well as other states. Satisfactory connectivity by rail and road provides speedy economic growth and attracts investors in Khanna city.
- The growth pattern of industrial development in the steel town of Mandi Godindgarh in the vicinity of Khanna is acting as a boost to the industrial growth of the city because of no physical barrier in between the cities.

Opportunities are shown in illustration no.:10

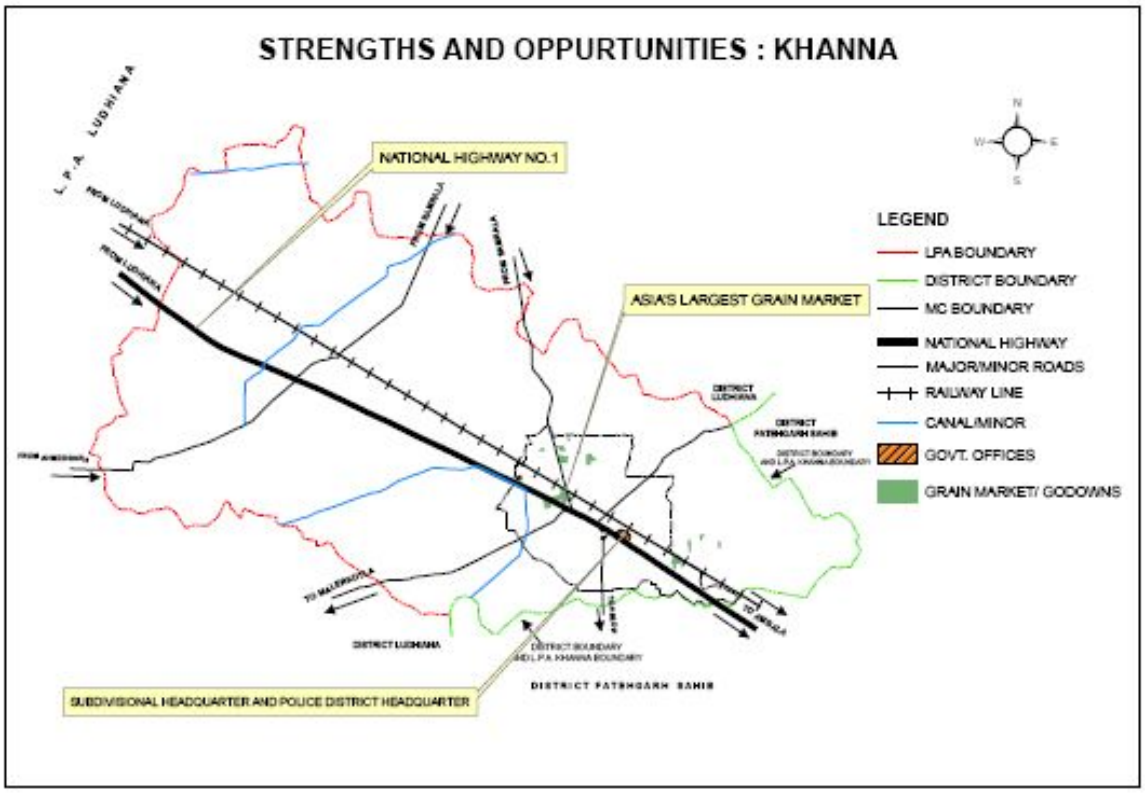

ILLUSTRATION NO.:10

7.4.4 Threats:

Threats are shown in illustration no.:11

1) Haphazard growth may result in massive environmental degradation.

2) The city is developed along the both sides of G.T. Road dividing the city Into two parts leading to traffic hazards because of inappropriate measures adopted.

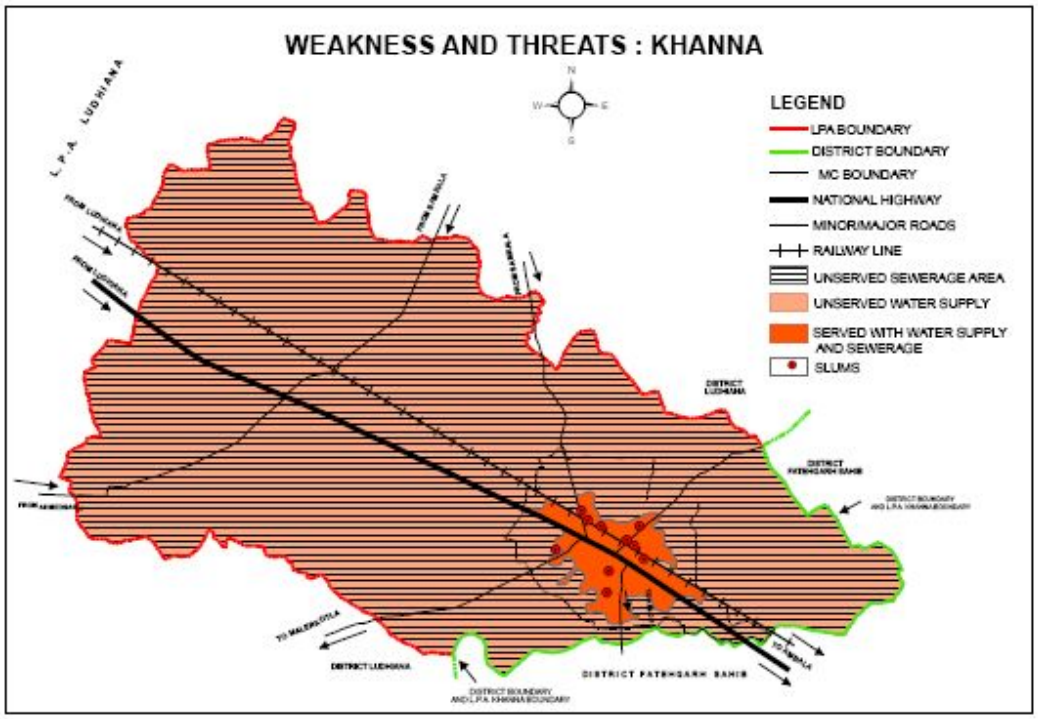

ILLUSTRATION NO.:11

7.5 Vision- 2031

- ***"To promote Khanna city as wholesale, commercial, Industrial and Institutional hub in the region by providing high quality physical and social infrastructure to all its residents in an inclusive and environmentally sustainable manner."***

7.6 Strategies to Attain Vision

In order to achieve the objectives and goals enshrined in the vision statement, the action plan is listed below:

- To develop Khanna as industrial and economic centre of Punjab.
- To integrate the planning and development of Khanna with Gobindgarh and the adjoining towns.
- To develop Khanna Grain market with world class infrastructure that will satisfy the needs of the farmers, laborers.

7.6.1 Growth management

- Making effective implementation and enforcement of plan as integral part of city planning and development process.
- Conserving the cultural fabric.
- Promoting planned development through effective city planning.
- Rationalizing land use pattern for effective traffic management and provision of basic services and amenities.
- Making growth management process participatory.
- Review of master plan on regular basis.
- Improving system of approvals of building plan through use of IT and GIS.
- Making urban development self sustaining.

7.6.2 Urban Environment

- Creating / developing new and improving existing parks and open spaces.
- Promoting better water management.
- Making city free from air, water and noise pollution.
- Discouraging the growth of slums and improving existing slums.
- Effective treatment of all sewage generated within the city.
- Improving solid waste management.
- Promoting better water management.
- Making city free from air, water and noise pollution.
- Discouraging the growth of slums and improving existing slums.

7.6.3 Urban Services:

7.6.3.1 Water supply

- To ensure safe, equitable, reliable, adequate and quality water supply to all residents.
- To ensure 100% water supply coverage of the city
- To promote rain water harvesting and recycling of water.

7.6.3.2 Sewerage and Drainage

- To minimize sewerage generation through water saving appliances
- To promote recycling of sewage
- To promote protection of natural water bodies
- To promote optimum use of storm water as an alternate source of water supply.
- Total coverage of the city with sewerage and drainage system including slums.
- To promote eco-friendly decentralized treatment system.

7.6.3.3 Solid waste management

- To improve the solid waste management in the city using best practices.
- To use PPP model for Solid waste management.
- To promote "Recycling" system of SWM.
- To make solid waste management people centric

7.6.3.4 Storm water disposal

- To introduce the storm water disposal system in the entire city
- To improve the capacity of the water bodies existing within the city
- To improve the natural water drainage channels by de-silting and stopping the sewage water from entering the channels.

7.6.3.5 Traffic and Transportation

- To segregate and rationalize the inter and intra city traffic
- To improve road geometry and road capacity of existing network
- To minimize pollution caused by traffic and transportation and improve environment.
- To improve safety, mobility and efficiency of traffic within and out side the city
- To create new road network and to improve the existing network to promote operational efficiency of traffic.
- To provide adequate parking spaces to remove traffic bottlenecks.
- To plan and provide effective public transport services

7.6.4 Social Infrastructure

- To involve private and corporate sectors for providing / developing and maintenance of social infrastructure.
- To make optimum use of mechanism of planned development for developing adequate and quality infrastructure.
- To provide adequate sites based on norms, for creating / developing various social infrastructures.

To provide social infrastructure like education, health and recreational etc. following methods will be adopted:-

- 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.

To provide utilities that will satisfy the needs of the residents of Local Planning Area, it would be imperative:-

- 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 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 of preparing manure.

8. THE MASTER PLAN

8.1 Need for Master Plan

With the rapid growth and development of urbanization, there is need to promote the development in a planned manner to meet the basic needs of physical infrastructure. All the parameters of physical planning are to be given due consideration i.e. ecology and environment, housing, transport, socio-cultural and institutional facilities. The future growth framework of the urban centers is defined by the Master /Development Plans which are evolved for each settlement at individual level. Master Plan has been considered as one of the most effective mechanism to promote planned growth of the urban centers. It lays down the road map, agenda and framework within which the city growth is envisioned. It provides a tool for the authorities to take decision with regard to current and future development related issues.

Master plan provides the framework for deciding the extent of the city for the coming years, deciding the land use distribution in an environmentally appropriate manner and rationalizing the orderly movement of traffic and transportation within the city and defines the area for laying down network of various services. The plan is used for promoting integrated development of the urban centre by rationalizing its pattern of land use and their interrelationship. It provides options for accommodating the future addition to population which is likely to come to the urban centre due to natural growth and migration. To make Khanna a balanced fusion of old and modern with up coming ultra modern futuristic development having sustainable living and working environment. First the extension of steel industry in Mandi Gobindgarh reaches Khanna as a result of which new industrial activities were started. Second factor of Khanna city's growth was the Asia's largest grain market where large quantities of grain and rice changes hands. With the passage of time, people from other parts of the state also come to this town in search of employment and ultimately settled in this Town. Due to this demand for housing, water supply, sewer, education, health, shopping etc. increases. Industrial focal points and other development was not sufficient to bear the load of population pressure and subsequently a large nos. of unplanned colonies came up which not only resulted in the

haphazard growth of the town but also lacked proper road network, park and open spaces, spaces for education, health and other social infrastructure. The many parts of town lack potable water supply and sewerage facilities etc. The Town also lacked planned shopping centers with organized parking facilities which gave birth to mushrooming of commercial activities along the frontage of NH-1 because this city located on the both sides of National Highway No.1 and other important roads/streets. The new industrial area also came up in an unplanned manner without required industrial infrastructure.

It was in this background that the Government of Punjab through the Department of Town & Country Planning made an attempt to prepare the Master Plan of Khanna Town so to control the haphazard urban sprawl and provides better water supply, sewer system, good road network, reduce gap between demand and supply of housing stock, commercial & industrial activity, recreational and sports spaces and other social infrastructure etc.

8.2 Review of Past Master Plan

The first master plan for Khanna City was prepared for the period of 1971-91 having the total area of 11756 acres. The revised master plan Khanna 1990-2010 was prepared with the Punjab Government letter No.17/7/88-I/HG-4/9085 dated 27.6.89 to give better services to the Khanna City. This master plan Khanna was prepared for the period of 20 years with projected population of 67265 and up to year 2010 covering an area of 11790 acres. This master plan is still in existence but all these Master Plans lacked legal backing which has been considered a major obstacle in the implementation of these Master Plans.

Now with the enactment of Punjab Regional and Town Planning and Development (Amended) Act 2006, simple legal framework has been provided for the preparation of Master Plan for town/cities of the state. Accordingly, the Govt. of Punjab has declared Khanna in the list of priority towns for preparation of Master Plan.

8.3 Delineation of Local Planning Area Khanna (2007-31)

As a first step towards the preparation of Master Plan Khanna was delineated and notified u/s 56(1) of "The Punjab Regional and Town Planning and Development 1995 (Amendment) act, 2006" in the official gazette vide Notification No.12/3/2008-4HG1/417 dated 15-1-2008 (list attached at annexure I) however as per satellite imaginary data, the Local Planning Area boundary needs rectification and in view of above, the boundaries of Local Planning Area have been revised, the total area proposed for Local Planning Area is substituted as 24967 hectares which comprises of Khanna M.C., Payal M.C. and adjoining 80 villages within the meaning of section 56(7) of "The Punjab Regional and Town Planning and Development Act 1995 (Amendment), 2006" vide notification no 12/3/2008-4HGI/1413 dated 20/5/2010,(list attached at annexure no. II). The details of area, population, schedule of boundaries and drawing No. DTP (L)28/09 dated 23.09.2009 of Local Planning Area Khanna are given in Annexure-II.

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

i) Administrative boundary limits of the villages and the district has been followed for better identification and management of the LPA.

ii) Geographical features like canal, water distribution and other physical feature like roads and railway lines have been also kept in mind.

iii) For better accessibility, the means of transportation and communication have been considered for better development of the area.

iv) The present and future growth trends and distribution of the population is another important factor considered for delineation of this area.

v) Industrial location and commercial activities of the city/towns and their surrounding areas.

vi) Economic base and commercial activities of the city/towns and their surrounding areas.

vii) Preservation of historical and cultural heritage of the areas.

viii) Urban expansion trends and management of periphery areas for ecological and environmental balance have also been kept in mind.

8.4 Components of the Master Plan

Master Plan is an important instrument for guiding and regulating development of a city over a period of time and contributing to planned development both conceptually and operationally. Master Plan has been considered as one of the most effective mechanism to promote planned growth of the urban centres. It lays down the road map, agenda and framework within which the city growth is envisioned. It provides a tool for the authorities to take decision with regard to current and future development related issues.

Under the Punjab Regional & Town Planning & Development Act, 1995, master plan of a Local Planning Area 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 purpose;
c) Indicate, define and provide the existing and proposed highways, roads, major streets and other lines of communication.
d) 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;
e) Include regulations (hereinafter called "Zoning Regulations") to regulate within each Zone the location, height, number of storey's and size of buildings and other structures, open spaces and the use of buildings, structures and land.

8.5 Master Planning Objectives

The Master Plan is a critical step in identifying the challenges facing the town and establishing the values which should influence town policy and decisions. The Master Plan objectives represent policy and planning guidelines for identifying and evaluating the development alternatives by more clearly defining the future needs of the area. The overall focus and objective of the Master Plan is growth management.

The following objectives have guided the development of the Master Plan of Khanna:

- To control haphazard, unplanned and sub-standard growth and development of the city and to achieve planned growth to create healthy environment.
- To ensure safety, mobility and efficiency of traffic within the city through the mechanism of rationalizing the land use pattern defined in the Master Plan.
- To improve accessibility / connectivity with both the Urban Extension and the Rural Areas.
- To Upgrade Infrastructure.
- To preserve natural resources and eco system and maintain a safe and secure operating environment.
- To ensure that all development activities are sensitive to environmental impacts and maintain land use compatibility with surrounding communities.
- To examine potential future development that will detrimentally impact natural and cultural resources in the Town, particularly in view of the marginal nature of much of the remaining undeveloped land.
- To reflect and enhance the area's character and diversity
- To improve the area's image, identity and attractiveness
- Improving its understanding of the current and future surrounding land uses.
- To protect and preserve open space and make land available for public purposes.
- Establish future parking development triggers based on demand parameters.
- To make land market more effective and efficient by making available sufficient amount of developed land for urban purposes at the most affordable cost.
- Identify appropriate locations for commercial and business development opportunities that advance long-term economic interest in the area and are consistent with the land use planning and development objectives of local authorities/government.

8.6 Evaluation of Alternative City Structures:

8.6.1 Evaluation of Existing Structure

To visualize future structure to accommodate the projected growth, a thorough understanding of existing city structure is must. Evaluation of existing city structure is very helpful for deriving alternative city structures.

A thematic map of Khanna shows such a structure which exists at present. A careful study of this map brings out the following:

- Work Areas
- Living Areas (Planned)
- Living Areas (Unplanned)
- Slum Areas

Work Areas

Grain Market is the major work place of Khanna city, which is the biggest grain market in the Asia, located in the west of the town between G.T.Road and Samrala Road. There are about 6 Godowns in Khanna. Out of six godowns, One Markfed godown exists on Samrala Road, one on Warehousing godown beside Grain Market, two F.C.I. Godown, one each on Railway road & G.T. Road. There are two large scale industries in Khanna i.e. Markfed Vanspati & allied Industry on G.T. road, Khanna and Milkfed Cattle feed plant, Bhattian (Khanna). Other work areas are vegetable and fruit market, industrial focal point located G.T. road in the eastern side of the town.

Living Areas

The main living areas which are developed by various agencies like PUDA (GLADA), Improvement Trust and Municipal Council are located towards northern part of city along the Samrala road, these are the planned living areas. Whereas the PUDA approved colonies and unauthorized development colonies are located along the Bulepur road and outer side of the Khanna city.

Slum Areas

Slum areas are also situated along the railway track passing through the city.

8.6.2 Alternative city structures -2031.

The cities are expanding in all directions resulting in large-scale urban sprawl and results in changes in the pattern of urban land use. There is a demand to constantly monitor such changes and understand the processes for taking effective and corrective measures towards a planned and healthy development of urban areas.

On the basis of studies conducted by the office of District Town Planner Ludhiana, it is observed that the development activities around Khanna are concentrated along main roads passing through the city besides the area falling in the vicinity of existing developed areas of the city. Keeping in view the present growth trend three different alternative structures could be envisaged for the future city of Khanna. The different alternatives are as follows:

1. Compact core with expansion along main Axes
2. Development along main highways
3. Development at potential road intersections

1. Alternate –I Compact core with expansion along main Axis:

To save the fertile and scarce land resource of the state it has been conceived to shape the future city of Khanna as a compact urban settlement along the main road and rail axis running from West to East. This alternative is based on the trend of residential colonies along the main axis such as Samrala road, Malerkotla road, Lalheri road and Amloh road. Model Town and Amar Shaheed Sukhdev Estate are along the Samrala road, and Amar Shaheed Rajguru Nagar, Jagat Colony and Guru Nanak Nagar are along the Lalheri road. These developments give the base to think upon this alternative to propose the future city along main axis. The alternate –I is shown in illustration no. 12.

Merits:

- Minimum invasion upon fertile and scarce land resource of the state.
- Compact and integrated development of the city, avoiding sprawl
- An effective, economic and efficient infrastructure development
- Close relationship of work-place and residential areas.

Demerits:

- It may put extra pressure on main road.
- It may create a feeling of congestion and more load on existing infrastructures
- Improving core city infrastructure to cope with increased population may be difficult.
- Constrained availability of land for authorized development may increase the price of land in developable area and/or lead to unauthorized development.

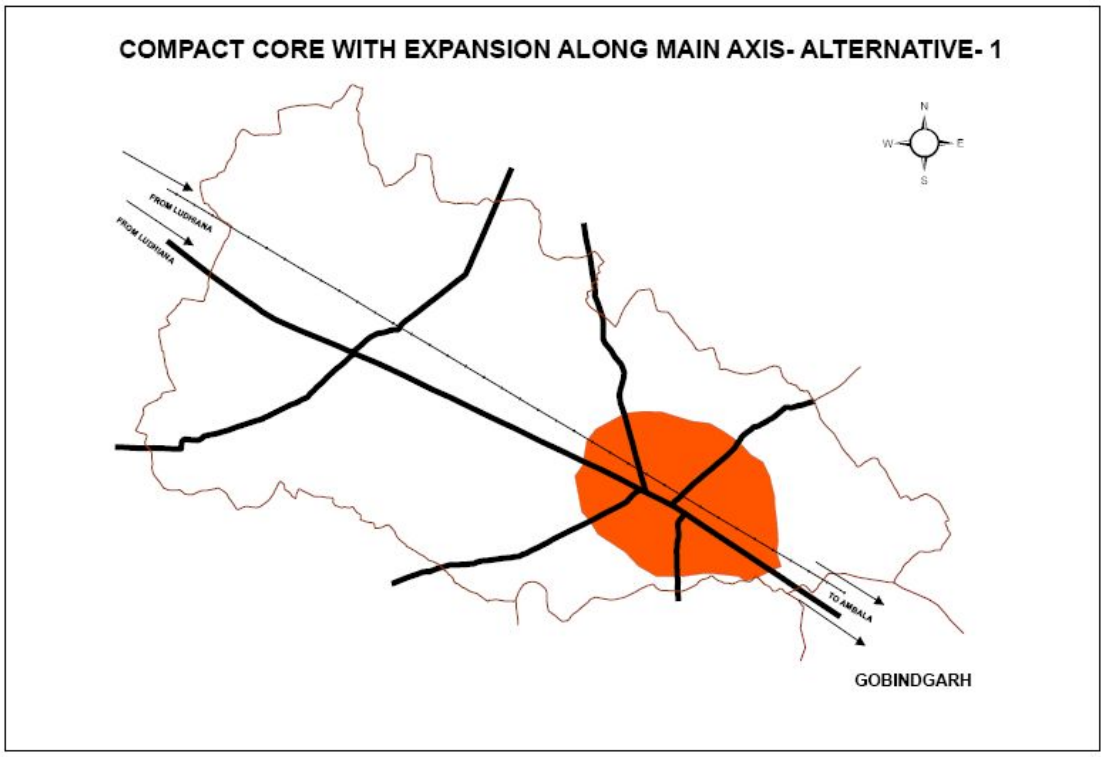

ILLUSTRATION NO.:12

2. Alternate –II Development along main Highways:

This alternative provides the opportunities to develop future city of Khanna along the main highways passing through the city. The upcoming residential colonies on Samrala road, Lalheri road, Malerkotla road and Amloh road and cluster of other development activities such as Industries on G.T Road, Grain Market , hotel and marriage palaces attract the future development of the city towards the respective potential areas along

main arteries besides areas all- around the existing city. The alternate –II is shown in illustration no.13.

Merits:

- Maximum utilization of existing infrastructure specifically the accessibility being provided by the main highway and Rail network.

- Provides new avenues of development on basis of the existing trend of growth of the city.

Demerits:

- May invade upon large area of fertile land.
- May be difficult to provide infrastructure up to long distances
- Ribbon development around main roads would take place.

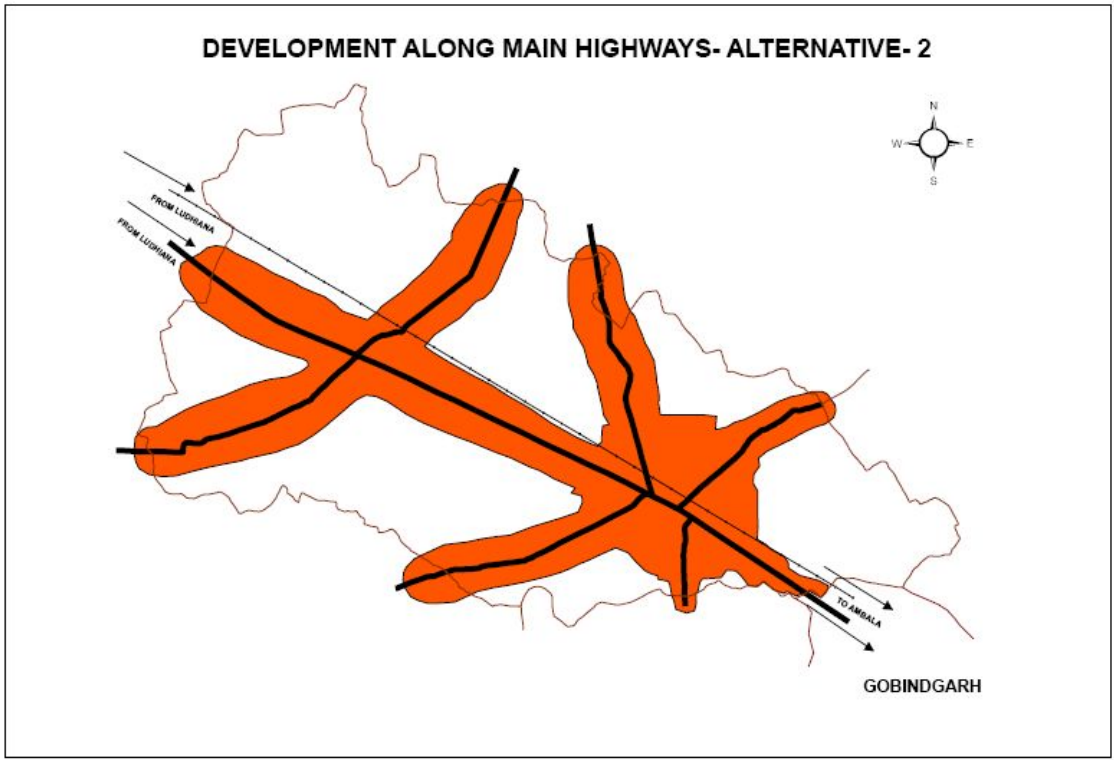

ILLUSTRATION NO. 13

3. Alternate –III Development at Potential intersections:

While studying the existing road network of LPA Khanna and some proposed linkages, it is found that certain very important road junctions are coming up on all sides of Khanna city which may prove to be potential nodal centers of development around the existing Khanna city. Besides the potentiality due to future road intersections, all these nodal centers are having their own justification and reasons to grow. The alternate –III is shown in illustration no.:14.

Merits:

- Would provide relief to the core city
- Would provide broader base for future expansion
- Conducive to present trends and increasing car ownership.

Demerits:

- May be difficult to integrate the infrastructure in near future.
- May be disastrous for limited fertile land resource of the state
- This type of leapfrogged development may not help maintain a close relationship between residence and place of work.
- All these centers may not fully develop by 2031 and the growth may appear to be a sprawl for quite some time.

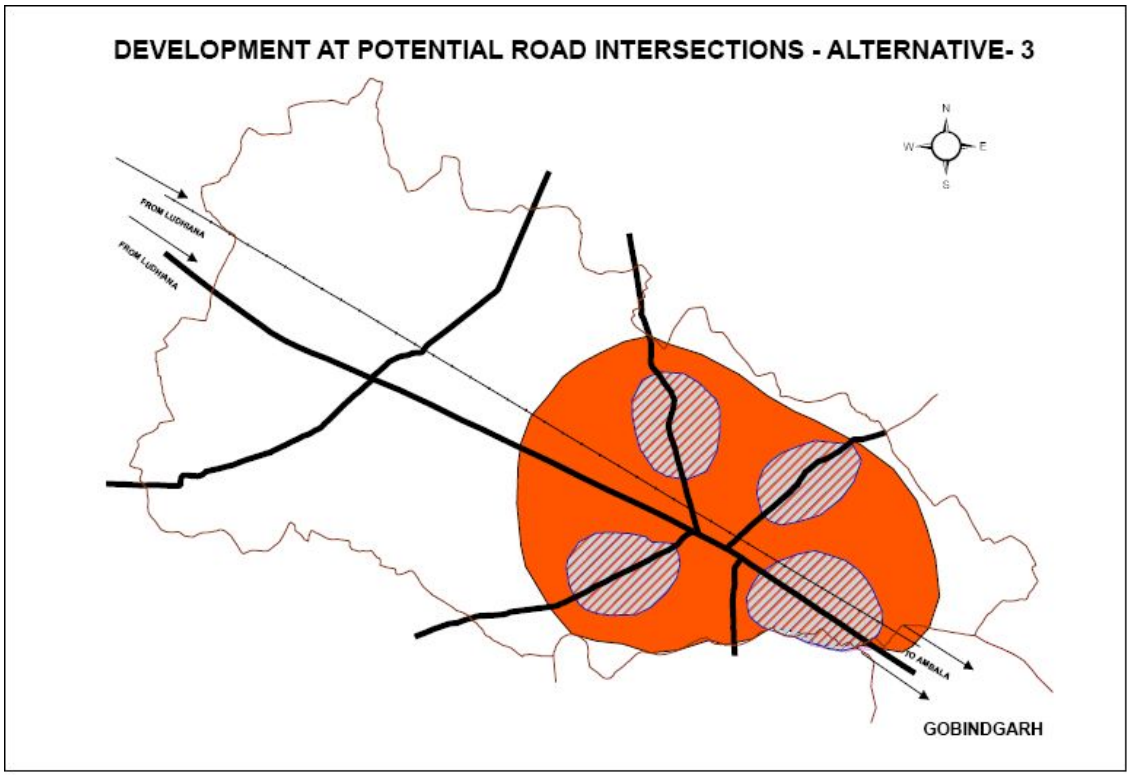

ILLUSTRATION NO.14

Before proceeding with the detailed Master Plan, It would be useful to keep in view and consider all the above alternatives and select the optimal. The merits and demerits of the alternatives are brought out from the basic spatial planning objectives like preventing sprawl, promoting compact cities to protect fertile farmlands. Developers assemble farmland where it is available at relatively low price but with accessibility by road, then provide basic local infrastructure like access roads, water supply and local sewerage and create gated communities of people having relatively high car ownership. Law like PAPRA also supports this type of development. The actual building activities and occupation of such colonies may be spread over a longer period of time. The legal practice ensures land for public purposes and finances for external development. Each alternative have its own Merits and Demerits and we have to work on combination of these alternatives as per the feasibility.

8.6.3 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.

Table No.94: Stage Wise Residential Area Requirements for KHANNA L.P.A (2011-2031)

City	Year	No.of Families	Net Land Required in hectare (Assumed 1 family plot)	Gross Land in hectares
Khanna M.C & URBAN Fringe	2011	30568	679	1358
	2016	33732	749	1498
	2021	36812	817	1634
	2026	44384	985	1970
	2031	50750	1127	2254
Payal M.C.	2011	1709	38	76
	2016	1910	42	84
	2021	2110	47	94
	2026	2633	58	116
	2031	3500	78	156
Khanna L.P.A. Rural	2011	16657	370	740
	2016	16829	374	748
	2021	16795	373	746
	2026	14591	324	648
	2031	16999	377	754
Total	2011	48934	1087	2174
	2016	52471	1165	2330
	2021	55717	1237	2474
	2026	61608	1367	2734
	2031	71249	1582	3164

Table No.95: Stage Wise Residential Area Requirements for Urban Areas (2011-2031)

City	Year	No. of Families	Net Land Required in hectare (Assumed 1 family plot)	Gross Land in hectares
Khanna M.C & Urban Fringe	2011	30568	679	1358
	2016	33732	749	1498
	2021	36812	817	1634
	2026	44384	985	1970
	2031	50750	1127	2254
Payal M.C.	2011	1709	38	76
	2016	1910	42	84
	2021	2110	47	94
	2026	2633	58	116
	2031	3500	78	156
Total	2011	32277	717	1434
	2016	35642	791	1582
	2021	38922	864	1728
	2026	47017	1043	2086
	2031	54250	1205	2410

Note:

Assumed family size = 5

50% area is assumed under convenient shopping, roads, parks & open spaces and public buildings etc.

Assumed 1 family per plot

Table No.96: Area of Commercial Centers

Name of Centre	Area per 1000 persons (sq.m.)	Number of shops
Cluster Centre	220	1 for 110 persons
Sector Centre	300	1 for 200 persons
Community Centre	500	1 for 200 persons
District Centre	880	1 for 300 persons
Total	1900	

As per the figures given in the table above 1900 sq. mts. area for different categories of commercial areas has been proposed for 1000 persons thus 1.9 sq. mts. (say 2 Sq. mts.) area is required per person.

Table No.97: Commercial Area Requirements for Urban Areas of LPA Khanna

Sr .No	Name of Town	Projected Population	Commercial Area Required@ 2 sq. m. per person (In Hectares)
1	Khanna M.C & Urban Fringe	2,53,748	50.7
2	Payal M.C	17,500	3.5
	Total	2,50,000	54.2

8.6.3.1 Informal Trade

Projected population of L.P.A Khanna = 356242 persons

Table No.98: Number of formal and informal shops

L.P.A Khanna				
	Norms & standards	**Requirement**	**Norms & standards**	**Requirement**
Name of Centre	**Number of formal shops**	**Number of Formal shops**	**Number of informal shops**	**Informal shops**
Cluster Centre	1 for 110 persons	3239	3 to 4 units per 10 formal shops (to be provided in informal bazaar/service market components).	1296
Sector Centre	1 for 200 persons	1781		712
Community Centre	1 for 200 persons	1781		712
District Centre	1 for 300 persons	1187		475
Total		7988		3195

Table No.99: Number of formal and informal shops

Projected population of Khanna town and urban fringe = 253748 persons

Khanna Town and Urban Fringe				
Name of Centre	**Norms & standards**	**Requirement**	**Norms & standards**	**Requirement**
	Number of formal shops	**Number of Formal shops**	**Number of Informal shops**	**Number of Informal shops**
Cluster Centre	1 for 110 persons	2307	3 to 4 units per 10 formal shops (to be provided in informal bazaar/service market components).	923
Sector Centre	1 for 200 persons	1269		508
Community Centre	1 for 200 persons	1269		508
District Centre	1 for 300 persons	-		-
Total		485		1939

Projected population of Payal town = 17500 persons

Table No.100: Number of Formal and Informal Shops

Payal Town				
Name of Centre	**Norms & standards**	**Requirement**	**Norms & standards**	**Requirement**
	Number of formal shops	**Number of Formal shops**	**Number of Informal shops**	**Number of Informal shops**
Cluster Centre	1 for 110 persons	159	3 to 4 units per 10 formal shops (to be provided in informal bazaar/service market components).	64
Sector Centre	1 for 200 persons	88		35
Community Centre	1 for 200 persons	88		35
District Centre	1 for 300 persons	-		-
Total		335		134

Table No.101: Norms for service markets and organized informal bazaars

	Sub City level (DC/CC)	Community level(LCS/CC)
Population	About 5 lakhs	About 1,00,000
	Service market	
Area (Ha.)	6.0	0.2
Activities permitted	Service and repair activities like auto work shops, fruit and vegetables, general merchandise, hardware and building materials, gas godowns etc.	Service and repair activities like auto work shops, fruit and vegetables, general merchandise, hardware and building materials, kabari etc.
	Informal bazaar	
Area (Ha.)	5.0	0.1
Activities permitted	Informal shops, weekly markets, organized eating places, handicraft bazaar, used book/furniture/building materials bazaar, cycle and rickshaw repair, kabari etc.	Informal shops,weekly markets, handicraft bazaar, cycle and rickshaw repair, kabari etc.

Note: Utilities, public conveniences shall be provided as per requirements

Table No.102: Planning Norms

S. No.	Use zones/use premises	No. of informal shops/units
1.	Retail trade: Metropolitan city centre, district centre, community centre, convenience shopping centre	3 to 4 units per 10 formal shops(to be provided in informal bazaar/service market components)
2.	Government and commercial offices	5 to 6 units per 1000 employees
3.	Wholesale trade and freight complexes	3 to 4 units per 10 formal shops
4.	Hospital	3 to 4 units per 100 beds
5.	Bus terminal	1 unit for 2 bus bay
6.	Schools Primary Secondary/ Senior secondary/integrated	 3 to 4 units 5 to 6 units
7.	Parks District parks Neighbourhood parks	 8 to 10 units at each major entry 2 to 3 units
8.	Residential	5 unit/1000 population
9.	Industrial	5 to 6 units per 1000 employees

8.6.3.2 Industrial

A total projected industrial worker for Khanna & Fringe is 16750 for the year- 2031. The projected industrial workers have been calculated taking 20% of total workers (which is 33% of Population)

Existing Industrial workers (2001) = 6,298
Projected (2031) = 16,750
Additional workforce = 10452
Proposed Industrial Workers Density = 100 person/hectares
Additional Area required = 104.52 hectares

For calculating the industrial use requirements the proposed land use structure standards cited in UDPFI guidelines are adopted.

Total existing industrial area of Khanna city = 300.00 Acre
Industrial workers (2001) = 6298
Industrial workers density = 30 persons/hectare
Norms and standards for percentage of
industrial use (as per UDPFI standards) = 10-12 %

The efforts have been made to work out the actual requirements of industrial area for urban settlements falling in LPA Khanna as follows:

Table No.103: Projected Urbanisable Area Requirements for Khanna and Payal Municipal Areas-2031

S. No	City	Year	Gross Residential Land required	Urbanisable area required*	Industrial use requirement **
1	Khanna & Urban Fringe	2011	1358	3395	272
		2016	1498	3745	300
		2021	1634	4085	327
		2026	1970	4925	394
		2031	2254	5635	451
2	Payal	2011	76	169	14
		2016	84	187	15
		2021	94	209	17
		2026	116	258	21
		2031	156	347	62

Note:

* For calculating the Urbanisable area the residential use is assumed as 40% of the total urbanisable area for Khanna city and 45% for Payal city being a small town.

** Industrial use = 8% (assumed) for Khanna & Payal city of total urbanisable area as per UDPFI standards.

- The proposals have been marked keeping its regional and locational importance into consideration of Khanna and Payal and these will not only act as an independent self sustaining city/town but will also act as a regional focus centre to serve the higher level infrastructure to the surrounding settlement in the near vicinity.
- The area of M.C. Khanna is 2675 hectares. Keeping its potential of development like industrial, institutional and wholesale into consideration urbanisable area of Khanna is marked.
- The area of M.C. Payal is 475 hectares. Keeping its potential into consideration RD2 has been envisaged for urbanisable area of Payal. However, others Land uses like industrial, commercial, institutional etc. have also been designated as per the UDPFI guidelines.

8.6.3.3 Land required for social infrastructure:-

The land requirement of social infrastructure for Health Care, Police, Fire, Education and Recreational facilities for Khanna urban is calculated as below:

Table No.24: Land Requirement for Educational Facilities (for 100000 populations)

	Norms	**No. of units**	**Area/unit (in ha.)**	**Total area (in ha)**
College	100000	1	4	4
Secondary School	7500	13	1.6	21
Primary School	5000	20	0.4	8
Pre-primary school	2500	40	0.08	3.2
Total				**37**

Area per person required in sq.mts. =3.7

Total area required for Khanna M.C. & fringe 3.7 x 253748 = 94 ha.

Total area required for Khanna L.P.A Rural 3.7 x 84994 = 31.4 ha

Total area required for Payal M.C. 3.7 x 17500 = 5.36 hectares
As the population of Payal is less therefore only school facilities are sufficient

Table No.105: Land Requirement for Higher Educational Facilities

Sr.no	Category	Norms and standards (UDPFI)		Requirement	
		Population/Unit	Area (ha)	No.	Area (ha)
1	Technical education				
(i)	Technical education centre (A)	10 lakh	4	1	4
(ii)	Technical centre (B)	10 lakh	4	1	4
2	Professional education				
(i)	New Engineering college	2 sites to be provided in urban extension	60	2	120
(ii)	New medical college	2 sites to be provided in urban extension	15	2	30
	Total				158

Total area required for educational facilities = 289 hectares or 714 acres.

Keeping Khanna's regional importance into consideration, higher level educational facilities like technical and professional colleges are proposed in Khanna. It will not only serve Khanna but its adjoining towns.

Table No. 106

For Payal City	**Norms**	**No. of units Req.**	**Area/unit (in ha.)**	**Total area (in ha)**
Secondary School	7500	2	1.6	3.2
Primary School	5000	4	0.4	1.6
Pre-primary school	2500	7	0.08	0.56
Total				**5.36**

Table No. 107: Land Requirement for Medical Facilities (for 250,000 persons)

	Norms	No. of units	Area/unit (in hects.)	Total area (in hects.)
Hospital	250000	1	4	4
Intermediate (Category-A)	100000	2.50	2.7	6.75
Intermediate (Category-B)	100000	2.50	0.6	1.50
Dispensary	15000	17	0.1	1.7
Total				**13.92**

- Area per person required in sq. mts. 0.56 Or Say 0.6
- Total area required under medical facilities for Khanna M.C & fringe
  0.6 x 253748 = 15.22 Hectares
- Total area required under medical facilities for Khanna L.P.A Rural
  0.6 x 84994 = 5.0 Ha
- Total area required under medical facilities for Payal M.C. = 0.12 hectares
- Due to Payal's small population, it requires only dispensary as per UDPFI Guidelines.
- Total area required for medical facilities =20 hectare or 49 acres
- Total area under institutions = 309 hectare or 763 acres.

8.6.3.4 Land Requirement for Police. (For 100,000 persons)

Table No.108: Land Requirement for Police. (For 100,000 persons)

	Norms	No. of units	Area/unit (in ha..)	Total area (in hects.)
Police station	100000	1	1.5	1.5
Police Post	50000	2	0.16	0.32
Total				**1.82 (or 18200 sq. mtrs.)**

- Area per person required in sq.mt. 0.18 Say 0.2
- Total area required for police for Khanna M.C = 232500 x 0.2 =4.7 ha
- Total area required for police for Payal M.C = 17500 x 0.2 =0.35 ha
- Total area required for police for Khanna L.P.A. Rural =106242 x 0.2 =2.12 ha

- Additional area required for Police line and Distt. Jail as per UDPFI Guidelines = 6+10=16 hectares
- Existing area of police line and Distt jail = 22 hectares
- Total area required for police = 22+12=34 hectares

Table No.109: Land Requirement for Fire Station 2 Lacs

	Norms	No. of units	Area/unit (in hectares)	Total area (in hectares)
Fire/Sub Fire station	200000	1	1	1

- Area per person required = 0.5 sq.mt
- Total area required for Khanna M.C = 232500 x 0.5 =11.6 ha
- Total area required for Payal M.C = 17500 x 0.5 =.88 ha
- Total area required for Khanna L.P.A. Rural =106242 x 0.5 =5.3 ha

8.7 Strategy for Obtaining Land for Public Purposes

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 Mumbai it is easier to allocate land of public purposes. However where private land market is active, how to ensure land for public purpose it 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 in this chapter. The land required for public purpose can be divided into four-fold classification as illustrated in 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 recognized e.g. solid waste disposal site or a slaughterhouse. But they are locally undesirable and invoke "Not in My Backyard" response.)

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

8.7.1 Through PAPR Act 1995

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.

8.7.2 Through O.U.V.G.L. Scheme:

Identifying vacant government land (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.

Rationalizing obsolete uses of public lands could be another way of putting public land to more relevant public purpose. An old Jail or an agricultural produce market in the congested part of the city is common examples. But this requires public land at other location.

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' category public purpose.

8.7.3 Through Land Pooling or Town Planning (Development) Schemes:

As per the provisions of section 91 (Chapter XII) of Punjab Regional and Town Planning & Development (Amended) Act, 2006, the concerned Authority may for the purpose of implementation of the provision of the Master Plan or for providing amenities where the same are not available or are inadequate, frame the Town Development Scheme and land for various amenities can be earmarked as per the provisions of sub section 2(g) of section 91.

The strategic approach would relate to geographically depicting the sites required for public purpose and proposing regulatory framework for obtaining the land for public purpose whether shown on the plan or not. For this, master plan has to consider a wide menu. Described below is a possible menu. Admittedly all items on the menu may not be available for every city.

Table No.110: Strategy for Obtaining Land for Public Purpose

Alternative	Land Acquisition through 1894 Act	TDR	Development of land through PAPR Act 1995, TDS under PRTPD Act 2006 and Development Schemes under PTI Act, 1922	Land Pooling	Govt / Panchayat / Waqf Board lands
Plan Proposal	Land designated for public purposes	Land designated for public purposes	Land designated for public purposes	Land designated for public purposes	Land designated for public purposes
Regulation	No separate regulatory provision necessary	Regulation about use of TDR on receiving plots is necessary	Certain proportion (about 40%) of land is dedicated for public purposes.	This requires a separate legal process to be followed of reconstitution of plots along with evaluation of compensation and betterment as provided in Chapter XII of the 1995 Act.	No separate regulatory provision necessary
Means of securing land	Compulsory acquisition by paying monetary compensation	Monetary compensation substituted by Transfer of Development Rights (TDR)	Availability of land through layout plan provisions		Land can be made available through transfer of ownership from one department to another. No monetary compensation is involved.
Limitations	Lack of finances for compensation	Lack of finances for compensation	This is the method currently relied upon where minimum area for colony is set at 10 acres, as in case of PAPRA.	Comprehensive Land Pooling Policy is required to be framed.	Locational disadvantages in certain cases.

	Landowners' resistance	Landowners' resistance	This is to be market driven and present response is said to be not so encouraging.	Difficulty in pooling of land of large number of owners.	Minimum area requirement may not be fulfilled
	Iniquitous stribution of sts and nefits. Cost rne by those o lose land d benefits joyed by rrounding ndowners	Iniquitous distribution of costs and benefits. Cost borne by those who lose land and benefits enjoyed by surrounding landowners		Time consuming and complicated process	Source of revenue for Panchayat Bodies / Waqf Board gets depleted.
		But where real estate prices are high particularly where land price is several times the construction cost, chances of success are high.		Equitable distribution of costs and benefits to different share holders.	
		Could also be used for heritage conservation.		New concept difficult to be implemented.	
		New concept difficult to be implemented.			

Given the details included in the Master Plan, it is not possible to specify which of the above techniques will be used for obtaining land for public purpose. This would be address in the detail zone plans.

8.7.4 Residential Schemes

With the growing population and improvement in economic condition of the people of Khanna, there has been a demand of planned residential area with the passage of time since long. Govt. has played a vital role for providing the planned residential area for the residents. Different agencies of the government like Improvement Trust, M.C. Khanna, and PUDA has been able to deliver the number of planned developments within individually.

8.7.5 Role of Improvement Trust Khanna:

Improvement Trust Khanna has so far planned five colonies which includes Residential, Residential-cum-commercial, Commercial colonies etc. Out of five colonies, 2 residential colonies namely Narotam Nagar Extension and Guru Teg Bahadur Nagar scheme are fully developed. And there are two commercial schemes namely Guru Amardas Market and Shivaji Complex, Railway Road Scheme. The former is fully developed and the latter is partially developed. Improvement Trust has also planned one residential-cum-commercial scheme namely Narotam Nagar Scheme, which is also fully developed.

The above mentioned scheme with their respective areas has been mentioned in table below:-

Table No.111: Improvement Trust Schemes

Sr.No.	Name of scheme	Area in acres	Position
1.	Narotam Nagar Residential-cum-commercial	43.23	Fully developed
2.	Narotam Nagar Extension Residential scheme	5.50	-do-
3.	Guru Teg Bahadur Nagar Residential scheme.	23.00	-do-
4.	Guru Amardas Market (Commercial).	5.50	-do-
5.	Shivaji Complex, Railway Road (Commercial).	1.84	50% developed.

All the data of schemes of Improvement Trust has been incorporated based on the information received from the Improvement Trust, Khanna.

8.7.6 Role of M.C. Khanna:-

Khanna M.C. has also planned few T.P. schemes to meet the demands of the residents, which are mentioned in the table below:-

Table No.112: T.P. Schemes, Khanna

1.	T.P.Scheme No.2	Samadhi Road	6.40 acs.
2.	T.P.Scheme No.14	Punjabi Bagh Colony,Samrala Road	7.30 acres
3.	T.P.Scheme No.15	Sunder City, Samrala Road	90.01 acs.
4.	T.P.Scheme No.16	Sunny Enclave, Rahaun Road.	5.75 acs.
5.	T.P.Scheme No.17	Country Homes,Samrala Road	5.97 acs.

Out of these schemes, T.P. Scheme No. 2 on Samadhi Road Khanna (Area 6.40 acres) is fully developed. Whereas most of the other schemes have yet to take off in a row of development. Though in few schemes, every infrastructure facility has been provided but still the occupancy has not taken its pace.

8.7.7 Role of PUDA:-

PUDA has played a major role in the approval of Residential Schemes in Khanna. So far, PUDA has approved 13 residential colonies in Khanna, the detail of respective colonies w. r. t. their areas has been given in Table below:-

Table No.113: PUDA approved schemes*

Sr. No.	Name of Colony	Location	Area in acres.
1.	Kisan Enclave	Near Atwal Palace Khanna	13.54
2.	Sun City	Amloh Road, Khanna	28.29
3.	New City Khanna	Bulepur Road, Khanna	23.91
4.	Green Enclave	G.T.Road Opp.Atwal Palace, Khanna	14.78
5.	Surya Enclave	Amloh Road, Khanna	9.625
6.	Friends Enclave	G.T.Road, Opp. Shani Mandir,Khanna.	2.31
7.	Rajdhani Enclave	G.T.Road, Bhattian,Khanna	9.89
8.	Luxmi Nagar	Rahaun/Samrala Road, Khanna	3.459
9.	Karan Enclave	Model Town, Samrala Road,Khanna	9.50
10.	G.K.Enclave	Near Kehar Singh Colony, Khanna	9.772
11.	Golden City	Rattanheri Road, Khanna	9.00
12.	Silver City	Amloh Road, Khanna	9.09
13.	Silvery City	Amloh Road, Khanna	8.86

* The data quoted for analyzing the aspect of planned development only however the actual status of licensing etc. of the above colonies will be as per GLADA from time to time.

Though the development in Khanna has spread in all the directions, but the growing trend of residential development can be more seen on Amloh Road. And with the opening of Railway Over Bridge on Khanna-Samrala Road, trend of development is also putting a foot forward on this road.

8.8 Proposed Land use (2010-2031)

Based on analysis, assumptions and projected population of LPA Khanna, detailed studies conducted by the office of DTP, Ludhiana pertaining to LPA Khanna and discussions held at different levels i.e. with S.H.U.D, Adviser, Town Planning, Chief Town Planner and Think Tank, different landuse zones have been earmarked such as residential, commercial, industrial, mix land use, rural and agricultural etc. in the Proposed Land Use Plan 2031.

The land which comes under the optimum utilization of vacant Govt Lands (OUVGL) scheme of the state Govt., the use of such lands/sites shall be determined by the Govt. later on at any appropriate time, irrespective of their existing / proposed landuse.

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 adjusted as sanctioned/permitted.

Table no.: 114 Break-up of Major Proposed Landuse LPA Khanna 2031

LAND USE	AREA (Sq. mtrs)	Hectare	%age
RESIDENTIAL	**63190788**	**6319.5**	**25.2**
INDUSTRIAL	**35474518**	**3547.43**	**14.2**
Industrial zone	33998426.46	3399.83	
Industrial mix	1476091.11	147.6	
COMMERCIAL	**14205714**	**1420.47**	**5.7**
Wholesale	1244788.89	124.47	
Retail	583095.98	58.3	
Mixed Landuse along road front	9943486.309	994.3	
Logistic Park	2434343.21	243.4	
GOVERNMENTAL	**595399.6**	**59.5**	**0.23**
Govt. Office	132958.76	13.2	
Govt. Land	462440.84	46.2	
RECREATIONAL	**604231.31**	**60.4**	**0.24**
Parks	-	-	
Proposed Green Buffer	604231.31	60.4	
RURAL and AGRICULTURE	**123439800**	**12343.98**	**49.5**
Agricultural Land	122654800	12265.48	
Dairy	160748.25	16.0	
Pond and Water bodies	625617.07	62.5	
TRAFFIC and TRANSPORTATION	**10543666**	**1054.23**	**4.2**
Existing Roads	4057386.60	405.73	
R2	1770706.30	177.07	
R3	1927451.21	192.74	
R4	1548679.21	154.86	
R5	482729.85	48.27	
Bus Stand	19336.56	1.9	
Railway Station	38645.60	3.86	
Railway Reservation	698730.95	69.8	
PUBLIC and SEMI PUBLIC	**1828183.69**	**182.81**	**0.73**
TOTAL	**249883251.16**	**24988.32**	**100**

Table no.115: Break-up of Major Proposed Landuses Khanna 2031 with in Urbanisable area of L.P.A -2031

LAND USE	AREA (Sq. mtrs)	Hectare	%age
RESIDENTIAL	**57448460.7**	**5744.87**	**58.84**
INDUSTRIAL	**22925000**	**2292.54**	**23.5**
Industrial Zone	21449400	2144.94	
Industrial mix	1476091.12	147.6	
COMMERCIAL	**7993795**	**799.356**	**8.1**
Storage	956.18	0.096	
Commercial	413934.51	41.39	
Wholesale Market	1186085.79	118.60	
Mixed Landuse along road front	3958475.31	395.84	
Proposed Logistic Park	2434343.21	243.43	
GOVERNMENTAL	**382218.45**	**38.22**	**0.4**
Govt. Office	132018.53	13.2	
Govt. Land	249881.21	24.99	
Post Office	318.71	0.03	
RECREATIONAL	**633409.71**	**63.34**	**0.6**
Parks	16943.60	1.69	
Proposed Green Buffer	616466.11	61.64	
RURAL and AGRICULTURE	**398470.15**	**39.84**	**0.4**
Agricultural Land	40933.59	4.09	
Ponds	196788.32	19.67	
Dairy	160748.24	16.07	
TRAFFIC and TRANSPORTATION	**6869355**	**686.9**	**7.06**
Roads	2647187.13	264.71	
Bus Stand	19336.56	1.93	
Railway Station	38645.60	3.86	
R2	1368311.45	136.83	
R3	322081.07	32.20	
R4	1363412.49	136.34	
R5	411650.15	41.16	
Railway reservation	698730.59	69.87	
PUBLIC and SEMI PUBLIC	**970831.05**	**97.08**	**0.96**
Electric Grid	64007.8	6.4	
Educational Institution	537610.04	53.76	
Cremation Ground	15506.90	1.55	
Hospital	53328.61	5.33	
Sewerage Treatment Plant	3467.53	0.34	
Religious Place	221487.02	22.14	
Water Treatment Plant	58648.46	5.87	
Sanitary Landfills	16774.69	1.68	
MISCELLANEOUS	**3550.75**	**0.36**	**0.14**
Petrol Pump	3550.75	0.36	
GRAND TOTAL	**97625005.45**	**9762.50**	**100**

8.8.1 Planning Zones

Urbanisable area of 9762.50 hectares has been marked in order to achieve compact development and to meet with the demand of future growth. The other parameters which have been considered for determining /delineating urbanisable area are the existing development scenario and its trend of growth in different directions, physical features/barriers, revenue boundaries etc. The one prominent factor which is considered as the alignment of proposed ring road around Khanna in integration with proposals of Master Plan Gobindgarh. Considering this proposed alignment as prospect for future growth urbanisable area has been defined within this proposed alignment. Different land uses have been elaborated below:

8.8.1.1 Residential

Keeping in view the trend of growth of residential areas and to meet with the demand of future growth some potential pockets have been identified suitable for residential purposes. The total residential area proposed works to be 5744.87 hectares that is 58.84 % of total urbanisable area. However, at LPA level a total area of 6319.5 hectares (including urban and rural) has been proposed for residential use which is 25.2 % of total LPA area as given in Table No. 114.

The projected population of Khanna city and the villages falling in urban fringe is 253748 persons by the year 2031. So in order to accommodate the projected population, residential areas are earmarked at various sites considering future potential nodes in the Khanna like in north- eastern direction i.e. on both sides of Lalheri road and on both sides of Samrala road and in the south-western direction of Khanna city i.e. below railway line on both sides of Malerkotla road and on both sides of Amloh road.

Residential areas are mainly developed along Samrala road e.g. Model Town Scheme which is old planned residential scheme and the area also has T.P. scheme and other planned and unplanned colonies, so it has been considered future potential node.

There is emerging trend of residential area along Amloh road and Malerkotla road as number of colonies are coming up. So Amloh road and Malerkotla road are also taken as potential axial nodes for future development in southern side of Khanna city.

Proposed Density Gradient LPA Khanna 2031

The Existing density gradient pattern of Khanna city is studied to propose density gradients for different density zones in Khanna city. Hence, three wards each from high density zone and medium density zone have been selected and the average net residential density has been calculated as follows:

High Density Zone

The existing ward wise density gradient of Khanna city based on population figures of year 2008 as shown in Table below earlier which shows the Gross densities of various wards. As per this Table wards are having Gross Densities more than 350 persons per hectare with the highest figure of 485 persons per hectare in case of ward no 16. Deducting the areas under roads and other public uses (@ of about 30% from the total area of ward, the average net residential density of the above mentioned three wards falling in the internal part of the city (High density zone) exceeds 557 persons per hectare as given in table below:

Table No.116: Net Residential Density of the Wards falling in High Density Zone

Ward Number	16	6	17
Total population	3738	4221	4205
Total area (in hectares)	8	12	12
Gross Density (persons per hectare)	485	352	350
Area in non-residential uses (in hectare)	2.4	3.6	3.6
Net residential area (in hectare)	5.6	8.4	8.4
Net residential density (persons per hectare)	667.5	502.5	500.5
Average Net Residential Density (persons per hectare)	557		
Average gross density(persons per hectare)	396		
Average gross density(persons per acre)	160		

Medium Density Zone

The wards surrounding the internal part of the city (medium Density Zone) have a Gross Residential Density between 150- 250 persons per hectare. The net residential density of three wards of this category is detailed as below:

Table No. 117 Net Residential Density of the Wards falling in Medium Density Zone

Ward Number	18	20	25
Total population	5345	5158	4368
Total area (in hectares)	24	28	24
Gross Density (persons per hectare)	223	184	182
Area in non-residential uses (in hectare)	7.2	8.4	7.2
Net residential area (in hectare)	16.8	19.6	16.8
Net residential density (persons per hectare)	318.15	537.29	260
Average Net Residential Density (persons per hectare)	370		
Average gross density(persons per hectare)	196		
Average gross density(persons per acre)	80		

Based upon the above density gradients prevailing in the city, following density pattern emerges for the residential development i.e. High density: 100-150 persons per gross acre and Medium density: Less than 100 persons per gross acre.

Hence proposed Residential density for Inner Core Area is: 300 persons /gross acre and for Outer Core Area is 200 persons /gross acre.

8.8.1.2 Commercial:

General Business

The existing Central Business District (C.B.D) (Sarafa bazaar, Meena Bazaar, Subash Bazaar, Chandla bazaar, Kataba wala Bazaar, Guru Amardas Market, Guru Teg Bahadur Market) are very congested and lack parking facilities and other infrastructure etc. It has been observed that Khanna will continue to function as a regional centre and will cater to the demands of L.P.A. as well its surroundings settlements due to its location and character. The latest trend of commercial development has changed as Shopping Malls and Multiplexes are also coming up at Khanna. Such types of complexes are coming up on the main roads. However the old city centre would continue to maintain its status in spite of the challenges of latest trend.

Wholesale market, fruit & vegetable and grain market, godwons

Khanna's Grain Market is one of the biggest Grain Market in the Asia, located in the west of the town between G.T. Road and Samrala Road. It has a total area of about 31.32 acres having 206 shops, 144 shop-cum-flats, 10 extra/vacant booths booths, 28 extra / vacant booths/shops.

Apart from Grain Market, Khanna has a Sabzi Mandi with a total area of 7 acres located along Amloh road having shop-cum-flats-55, booths-13, fruit booth-37, others (booths/shops)-7. There are about 6 Godowns in Khanna. Out of six godowns, One Markfed godown exists on Samrala Road, one on Warehousing godown beside Grain Market, two F.C.I. Godown, one each on Railway road & G.T. Road. The provision for wholesale has been clubbed in the marked for logistic site.

Wholesale and Logistic Park

Wholesale market is also proposed in logistic park between Samrala road and Ludhiana-Ambala railway line. Total area under Logistic Park is 243.4 hectares which covers the components like wholesale, warehousing, godwons, loading & unloading and offices. This zone has been proposed keeping in view the linkages available in terms of road and rail network. The site is proposed in the vicinity of the existing mandies. The site abuts Samrala road, proposed ring road and railway line also passing through it to facilitate cargo and logistics. The site has been designated as wholesale and logistic park and has not been fragmented for Logistic or wholesale component so that any of the two components i.e. grain/fruit or any wholesale market etc may come up along logistic as per actual demand or feasibility at the site since both of these activities are interrelated and compatible to each other.

Planning norms for informal trade

Informal sector is proposed to be made as an integral part of planning process. Planned development would incorporate the informal sector trade in various use zones. The provision of informal sector trade units should be ensured at the time of sanction of building plans/layout plans as per the norms already given in the Table No.102.

8.8.1.3 Mixed Land Use along Road Front

The need for creating mixed use along road front in Master plan Khanna arises from the fact that Khanna city being an important economic centre has a large number of areas characterized by a mix of different land uses. So keeping in view the potentiality of transport corridors flexible planned approach has been adopted as mixed land use along road front have been proposed on main roads. The prime objective of the mixed land use development is to regulate the corridor development, entertainment, residential and marketing convenience for citizens and workers of the city as well as general public of the region. The mixed land use zone is proposed on both sides of identified roads up to a depth of 200 meters from the boundary of road (i.e. Proposed right of way) the following roads have been identified along which mixed land use zone has been proposed. Mixed Landuse will be permissible along the road front upto a depth of 200 meters except the abadi deh of the village.

The mixed land use has been proposed on the following roads as shown on the proposed Land use Plan as illustrated in Proposed Landuse Plan DRG No. DTP (L) 1/2011 dated 03.01.2011.

- Khanna-Samrala Road
- Khanna-Malerkotla Road
- Ludhiana- Ambala G.T road (N.H.-1)
- Payal –Bija road
- Bija- Samrala road

8.8.1.4 Industrial: Industrial Land use has been categorized into two parts.

(i) **Industrial Zone**: This zone has been proposed along NH-1 i.e towards Ludhiana & towards Mandi Gobindgarh keeping existing growth pattern in to consideration. Towards Ludhiana within Khanna L.P.A. boundary, revenue estate of Bishanpura and a part of villages of Jaspalon, Barmalipur, Kot Panaichan, Kot Sekhon, vill.Mandiala Kalan integrating it with the proposals of Ludhiana Master Plan and area above Ludhiana- Ambala railway line upto revenue boundary of vill.Kauri In Payal town also a part is proposed for industrial zone within M.C. limit on Payal- Barmalipur road. Towards Malerkotla road upto Khanna LPA boundary in North West side of Khanna, industrial zone has been purposed.

Towards Mandi Gobindgarh, Industrial Zone has been proposed between N.H.1 and Ludhiana- Ambala railway line upto L.P.A boundary covering the revenue estates of villages Boothgarh, Sahibpur, Ismailpur, Bhadla Nichla, Bhadla Ucha, Alipur, Manak Majra, Alour, Bulepur, Rattanheri as shown in Proposed Land use Plan to boost the industrial development, keeping the potential of steel township of Mandi Gobindgarh which adjoined the area.

(ii) **Industrial Mix:** Towards Ludhiana within urbanisable limit of Khanna, a part of revenue estates of villages Kauri, Libra, Daudpur along G.T. Road behind proposed mix land use along Road front have been proposed as industrial mix. Residential, Commercial and green industries will be allowed in this zone. Existing polluting industry will be given incentives to shift from the area.

8.8.1.5 Rural and Agricultural Zone: With the intention of preserving the big asset of agricultural land urban sable limit has been proposed in a compact manner, the remaining part of the Planning 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 exiting 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 24988.32 of hectares of LPA Khanna, 12343.98 hectares have been proposed as rural and agricultural zone which is 49.5 % of total area. DRG No. DTP (L) 1/2011 dated 03.01.2011 clearly shows that major share of land is allocated to rural and agriculture zone.

PAYAL

Payal is another important settlement of Khanna L.P.A. after Khanna. Landuse proposals are given for its urbanisable limit for its planned development. Landuse distribution of Payal is given in the table below:

Table no.118: Break-up of Major Proposed Landuses LPA Payal 2031 with in Urbanisable area of L.P.A -2031

LAND USE	AREA (Sq. mtrs)	Hectare	%age
RESIDENTIAL	5225746.24	522.58	71.20
INDUSTRIAL	798828.90	79.88	10.88
COMMERCIAL	446645.11	44.66	6.09
GOVERNMENTAL	34876.05	3.49	0.48
TRAFFIC and TRANSPORTATION	683205.87	68.32	9.31
PUBLIC and SEMI PUBLIC	150000.35	15.00	2.04
GRAND TOTAL	**7339302.5**	**733.93**	**100**

BIJA VILLAGE The location of Bijja abuts on N.H. –1. To regulate the corridor development and to cater the demands of growth of this settlement. Residential and mixed land use along road front has been proposed to avoid unorganized growth in future as per Master Plan Land use in Drawing No. DTP (L) 1/2011 dated 03.01.2011 i.e. 50.2 hectares area has been earmarked for future development of village to cater the growth of population.

8.9 Traffic and Transportation

Transport network is the basic component of Proposed Landuse Plan to achieve smooth and safe mobility of the residents. Extensive road network has been proposed taking into account the connectivity requirements at regional as well as local level.

The concurrent planning of urban and rural growth in Khanna Local Planning Area and the Transportation system is required to provide an integrated, safe and efficient system for transportation of people and goods.

Entire Local Planning Area and Khanna City will be served by well structured and well defined road hierarchy in order to cater the traffic needs of the city population living areas with work areas. This would include redefining of existing road network and the network to be created in the areas proposed to be brought under urbanization. Keeping in view the future shape and size of Khanna urban area there is need to create/ propose a high-speed network in the shape of ring and radial roads without any traffic delays which is the major problem prevailing in the city.

8.9.1 Proposed Road Network:

The proposed road network for LPA Khanna has been developed in concurrence with the proposed land use pattern as shown in the Plan, DRG No. DTP (L) 1/2011 dated 03.01.2011. In order to provide relief to the city roads and keeping in view the increased volume of traffic in future, the concept of ring radial road pattern has been followed. Ring road is proposed along the urbanizable boundary of LPA Khanna. The existing roads have been adopted as radial roads. Efforts have been made to follow existing roads wherever available or along the irrigation channels. The vast areas falling within the ring and radial roads have been proposed to be served by next lower hierarchy of roads as shown in DRG No. DTP (L) 1/2011 dated 03.01.2011. The following hierarchy of roads has been proposed:

- R-1 Above 150 feet wide.
- R-2 150 feet wide.
- R-3 100 feet wide.

All these roads shall have 5mts no construction zones on both sides after ROW.

- R-4 80 feet wide
- R-5 60 feet wide

The detail of these roads is given at annexure no: 8

Cross sections of 60', 80', 100' and 150' roads are attached at annexure no.5. List of trees to be planted along roads is appendixes at annexure no.6.

8.9.2 Regional Road Network

Apart from above the overall regional network of L.P.A. has also been studied carefully and the alternate regional network of 100' (R3) width has been proposed to serve area mainly the industrial area present in the vicinity of Doraha and this road connects Samrala road in right side and than passes through Village Alaud, Bumb, vill. Dhinndsa, vill. Lopon, vill. Chak Sarai, vill. Jaspalon. It connects Ludhiana-Ambala road. It connects vill.Baramalipur and further joins Payal Town on hand and joins Bishanpura village on other hand.

8.9.3 Ring Road:

Looking forward for the year 2031 and keeping in view the proposed city structure of LPA Khanna, ring road is proposed and road network of khanna is integrated with road network of Gobindgarh (Drg. No. DTP (FGS) 1310/09 DT.23.12.2009 as annexed in master plan of Gobindgarh).

This proposed Ring road starts from Khanna L.P.A. boundary then it meets Bhadla Uchha road and further encircle villages Boothgarh, Mahaun, Lalheri meets Lalheri road then proceeding towards Samrala road and further connecting G.T. road, Malerkotla road and finally touching L.P.A. Boundary near Ikolaha Village and it further connects proposed ring road of Gobindgarh town as shown in DRG No. DTP (L) 1/2011 dated 03.01.2011. The total length of Proposed Ring Road has been calculated to be 24 kms approximately. Their shall be 5mts no construction zone on both sides after ROW.

8.9.4 Other Roads

The existing roads like Malerkotla road, Amloh Road and Samrala Road have been proposed as second hierarchy roads (R-2) however N.H.1 have been proposed to work as R-1 category because of the function of the road. The project of 6 laning of N.H.-1 is in process so it will be developed as per the proposals of National highway authority of India. The lower hierarchy roads of R-3 which covers Lalheri road and R-4 category

have been proposed to provide accessibility upto interior areas. All the existing link roads are to be widened proportionate on both sides to 60 feet.

The proposed road network as explained above has been shown in DRG No. DTP (L) 1/2011 dated 03.01.2011.

Note: Road widening will be done proportionate on both sides.

8.9.5 R.O.B's and Flyovers

In order to ensure the smooth flow of regional and local traffic over the road network of LPA Khanna two R O.B's and three Flyovers are proposed. The list of R.O.B's and Flyovers is given as below:

Table No.119: Proposed R.O.B's and Flyovers

R.O.B.	On proposed Ring Road
R.O.B.	Bhadla Uchha Road
Flyover	Samrala road
Flyover	Amloh road
Flyover	Lalheri road

8.9.6 Bus Stand

The Existing Bus stand measuring an area of 1.7 hectare falls in the center of the city. It is located on N.H.-1. About 8000 passenger use the bus terminal daily. Buses move in all the directions on intercity and intra city roads.There is problem of parking in bus stand which lead to on street parking. The future needs may be catered in the area reserved for logistics along with whole sale site along the proposed ring road.

8.9.7 Public & Semi-public

As it has already been discussed in earlier part of the report, there are several categories of designated areas such as Public & Semi-public uses like water works, Electric Grid stations, Garbage Disposal site, Water Treatment plant etc existing in the Khanna city and LPA Khanna. All these designated areas have been proposed to be retained as such. At this stage no areas are earmarked for this purpose except one solid waste dumping/ Sanitary landfill is proposed in L.P.A. Khanna as proposed by Municipal Council,

Khanna. However, the future demands will be met by various projects/colonies coming up as per required norms.

8.9.8 Parks and open spaces

Parks and open spaces are the part of approved residential colonies/projects. So it is to be provided as per norms and standards from time to time as applicable in PUDA/GLADA approved colonies and other govt. approved projects.

8.10 Heritage Conservation

8.10.1 Sarai Lashkari Khan

Sarai Lashkari khan comprising an area 14 kanal, 16 Marla is declared protected monument of Punjab under "The Punjab Ancient and Historical Monuments and Archaeology Sites and Remains Act, 1964" notified vide notification no.11/23/08-4TC/616, dated: 16/03/2009 under by Department of Cultural Affairs, Archaeology & Museums, Punjab, Chandigarh. Notification of Sarai Lashkari Khan is attached at annexure no.7.

Sarai Lashkari Khan is situated at a distance of about 26 Kilometers from Ludhiana on G.T. road towards khanna. On the basis of an inscription on a marble slab on the front main gate the sarai was built by Lashkari khan, a general of emperor Aurangjeb in 1078 A.H. (1667 A.D.). The Central Government declared the area upto 100 meters from the protected limits and further beyond it upto 200 meters near or adjoining protected monument to be prohibited and regulated respectively for purposes of both mining and construction under the provisions of rule 32 of the Ancient Monuments and Archaeological sites and Remains Rules, 1959.

Sarai Lashkari khan is an impressive building with the four walls still intact. The structure however appears to have been neglected since long. The vast enclosure about

100 yards on each side gives some idea of its magnificent structure and exceptional size. The interior of the saria has been allotted to an agriculturist and is under cultivation.

The sarai has 4 gates on four sides and 120 hujras (small rooms). Of the two wells, one adjoining the mosque in the centre of the courtyard is broken and in disuse. The other is used for irrigation. A small contingent of soldiers could easily be deployed in the sarai for safety of the inmates as is evident from the construction pattern of gates.

In order to maintain its past glory and fame and its status in the region, it is very necessary that this lavish building may be conserved and preserved in a proper way. It is therefore proposed that the area up to 100 meters from the protected site may be kept free from any type of construction and further the areas up to 200 meters may be kept as regulated areas no, high rise building should be allowed so that the dominance of this building may be maintained.

8.10.2 Fort In Payal

Maharaja Amar Singh got built a fort in Payal city with the co-operation of Mughals in 1771. Quilla at Paytal declared protected monument of Punjab under "The Punjab Ancient and Historical Monuments and Archaeology Sites and Remains Act, 1964" notified by notification no.:10/12/2008-4TC/601,dated: 16/03/2009. Area of quilla is 13704 Sq.yds. At present, Govt.Girls High School is being run in this fort. Notification of Fort in Payal is attached at annexure no.7.

8.11 Zoning Regulations: Khanna

Chapter XI of The Punjab Regional and Town Planning and Development Act, 1995 (Amendment) Act, 2006 provides for 'Control of Development and Use of Land in the area 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 or feature 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 any land. The Zoning Regulation for Local Planning Area Khanna describes the detail of various activities permissible in different landuse zones and other related regulation to permit such activities. These zoning regulations shall be in addition to Punjab Regional and Town Planning Development (General) Rules, 1995.

It would have normally been expected that a Master Plan includes regulations dealing with all facets of "development". However since formal Master Plans were not available, Government has instituted many regulations on state-wide basis to govern key facets of development such as sub-division and layout of land under PAPRA, FAR, ground coverage, parking, building design and construction etc. It is therefore proposed to retain these regulations along with Zoning Regulations. The Zoning Regulation shall apply within the boundaries of Local Planning Area Khanna.The zoning regulations proposed under this Master Plan are primarily concerned with of the land use. The proposed land use plan includes following land use zone:

- Residential
- Commercial
- Mixed land use along Road front
- Wholesale and Logistic Park
- Public and Semi Public facilities
- Industrial

- Recreational
- Agricultural and water bodies

In addition specifies designation use have been shown in respect of proposed traffic transportation, utilities, governmental and Public and Semi- Public facility.

As explained earlier since sub-division of land, design and construction of buildings is being controlled through well established building byelaws/regulations by the concerned authorities. These zoning regulations under the Master plan are seen as the guiding parameters for these agencies to ensure that the development permitted by the them is in conformity with the Master Plan.

1(A) **Use and Development of land to be in conformity with Master Plan:** As provided under Section 79 of the Punjab Regional and Town Planning and Development (Amendment) Act 2006, after coming in –to operation of this Master Plan, no person shall use or permit to be used land or carry out any development in any area otherwise than in conformity with this Master Plan.

Provided that competent Authority may allow continuance of any use of any land, for a period not exceeding ten years. Upon such terms and conditions as may nbe 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 Mater Plan came into Operation.

Chief Town Planner, Punjab being the Planning agency designed under section 57 of the Punjab Regional and Town Planning and Development (Amendment) Act, 2006 for the Local Panning Area declare under section 56 of the said Act, following 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 the Local Planning Area.

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) **“Atta Chakki”:** Atta Chakki is categorized as service industry where:

- Grinding of only food grains is carried out through the process of crushing under the load rotational movement of two plates or blocks.
- The maximum electric load does not exceed 20 kW.
- The Atta Chakki shall be used for grinding food grains supplied by the consumers only and no sale/ purchase of food grains/ flour be carried out by the Atta Chakki owner at commercial level.

3) The Atta Chakki shall only be permitted on roads having minimum 13.5 m Row.

4) **Building Rules:** Building rules shall mean The PUDA Building Rules 1996 outside the M.C limits and also for sites within the purview of GLADA within M.C limits. However these shall mean Municipal Bye Laws within other Municipal areas. These rules shall be applicable as amended from time to time.

5) **"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.

6) **Competent Authority:** Competent authority shall mean any person or authority appointed by the state govt., by notification to exercise and perform all or any of the powers and functions of the competent authority as per section 2(m) of The Punjab Regional and Town Planning and Development Act, 1995 (Amendment) Act, 2006.

7) **"Existing Land Use Plan"** Means the Plan showing the different land uses existing at the time of preparation of the Existing Land Use Plan of Local Planning Area, Khanna and as indicated on Drawing No. DTP (L) 42/2009 dated 24-12-2009.

8) **"Farm House**" Farm house means a building sub serviant to agriculture allowed on a holding of minimum 2.5 acre.

9) **"Government"** Means the Government of the State of Punjab.

10) **"Knowledge Park":** means such zone shall have activities based on knowledge or other **such** activities which are absolutely non –polluting, non hazardous, Environment friendly, free from noise & vibrations, whatsoever.

11) **"Local Planning Area"** means the Local Planning Area declared under section 56(1`) of the Punjab Regional and Town Planning and Development 1995 (Amendment) Act 2006 vide notification No 12/3/2008-4HGI/417 dated 15-1-2008 under section 56(1) of "The Punjab Regional and Town Planning and Development Act 1995 (Amendment), 2006" (list attached at annexure I) however as per satellite imaginary data, the Local Planning Area boundary needs

rectification and in view of above, the boundaries of Local Planning Area have been revised, the total area proposed for Local Planning Area is substituted as 24967 hectares which comprises of Khanna M.C., Payal M.C. and adjoining 80 villages within the meaning of section 56(7) of "The Punjab Regional and Town Planning and Development Act 1995 (Amendment), 2006" vide notification no 12/3/2008-4HGI/1413 dated 20/5/2010,(list attached at annexure no. II).

12) **"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 Khanna.
13) **"Mixed land use"** means the area where multiple use of land is allowed to co-exists as per Zoning Regulations.
14) **"Non- Conforming Building or use"** means use in respect of any land or building in the Local Planning Area, the existing use of which land or building is contrary to the prescribed land use in the Master Plan.
15) **"Proposed Landuse Plan"** means the plan showing the proposed permissible uses of different areas in the Local Planning Area, Khanna and as indicated on Drawing No. DTP (L) 1/2011 dated 03.01.2011.
16) **Public and Semi Public activities:** Public and semi public activities means governmental/ semi governmental offices, educational, medical intuitions, cultural and religious institutions etc.
17) "**Zoning Plan"** means the plan of area or part thereof or supplementary layout plan approval by the Chief Town Planner 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 respects of each plot, permitted land use, building lands, height, coverage and restrictions with regard to the use and development of each plot in addition to such other condition as laid down in these regulations hereafter.

3. LAND USE ZONES

The proposed land use plan of Master Plan of Khanna describes the following land use zones

3.1. Residential
3.2. Commercial
3.3. Industrial
3.4. Mixed Land Use along road front
3.5. Wholesale and Logistic Park
3.6. Public and Semi Public Facilities
3.7. Rural and Agricultural

3.1 Residential:

Residential density for Master Plan Khanna: Inner Core Area is: 300 persons /gross acre and for Outer Core Area is 200 persons /gross acre.

Permissible uses

- Plotted housing, Group Housing, Old age homes Orphanages, Hostels, Service apartments, Guest House, Jails, Asylums, Reformatories and the like.

- Retail trade and service repair shops, Atta Chakki, restaurants, Professional services such as those provided by lawyers, accountants, architects etc. and etc, Rehri Market, Department stores, Shopping Malls/Multiplex, Personal community services like laundry, Filling Station/Petrol Pump, Gas distribution(without storage of cylinders), Kerosene depot (on only independent plot).

- Green Industry as categorized by PPCB only in RD2

- Warehousing and godowns only in RD2.

- Education – schools, coaching centers, colleges, universities, technical, professional and research institutions. Health Care – Clinics, health centers, dispensaries, nursing homes, hospitals, Art, entertainment, religious and cultural activities such as libraries, museums, sports activities including parks, gardens, playgrounds, swimming pools, gymnasium stadium, golf courses , amusement parks, cinemas, auditoriums ,theatre., Public utilities and services – Fire station, police stations, post office, etc. Bus Station, Auto Rickshaw / Taxi stand, Telecom and Transmission towers, Plant nurseries and green houses related to nurseries, floriculture, Cemeteries / Cremation ground

3.2 Commercial: Permissible uses

- Retail trade, business show rooms and service repair shops, Atta Chakki, restaurants, Rehri Market, Super markets Department stores, shopping malls, Multiplex, Multimedia centers, Trade fare and exhibition centres and convention centers, Filling stations, Gas distribution (without storage of cylinders),Printing press.

- Service apartments, Hotels, Motels, lodging houses, Guest House, Residences on upper floors only, all types of offices,
- Education _ Coaching centers, Health Care – Clinics, health centers, dispensaries, nursing homes, hospitals, Art, entertainment, libraries, museums, marriage palaces, cinemas, auditoriums , Media centre, Public utilities and services – Fire station, police stations, post office, etc. Bus Stand, Auto Rickshaw / Taxi stand, Telecom and Transmission towers.
- Green Industry as categorized by PPCB.

3.3 Industrial: Permissible uses

Industrial Zone: In this Zone all type of industry including Red Industries* and Orange industries** classified by the Punjab Pollution Control Board from time to time, Induction/ Arc/ Cupola Furnace/ Forging Units, marriage palaces, waste processing and disposal shall be permissible.

Note: For setting up of Induction/ Arc/ Cupola Furnace/ Forging Units within this Zone shall adhere to the Punjab Government instructions, guidelines issued from time to time and as per guidelines issued by Department of Science and Technology.

Public utilities, public buildings, Warehouses and covered storages for industries, residences for watch & ward staff, Warehouses, godowns, Rice Mill, workshops/garages, loading and unloading yards, truck terminals, tempo/taxi stands, bus que shelters, institutions, multi media centre, hotel, hospital, dispensaries, Restaurants, Petrol Filling/service Stations*, Police beat box, financial institutions, helipads, medical centres, religious buildings, gas works, farming/quarrying /commercial minimum 80' wide shall be permissible.

Industrial mix: Residential (Plotted/ Group Housing/ Cluster Housing) Commercial and green industries and orange category industries as classified by PPCB, Marriage palaces, waste processing and disposal Public utilities, public buildings, Warehouses and covered storages for industries, residences for watch & ward staff, Warehouses, godowns, Rice Mill, workshops/garages, loading and unloading yards, truck terminals, tempo/taxi stands, bus que shelters, institutions, multi media centre, hotel, hospital, dispensaries, Restaurants, Petrol Filling/service Stations*, Police beat box, financial institutions, helipads, medical centres, religious buildings, gas works, farming/quarrying will be allowed in this zone.

*List of Red Category Industry attached at Annexure no. IX

** List of Orange Category Industry attached at Annexure no. X

3.4 Mixed Land Use along road front Zone: Permissible uses: In this zone Residential flatted,/group housing/ Plotted /Cluster housing, regional level commercial/ retail Shopping uses and green industries as defined by the Punjab Pollution Control Board from time to time shall be permissible.

3.5 Wholesale and Logistic Park

In this zone all type of storage/ go downs, wholesale, railway yards, truck terminal etc. shall be permissible. In other words it is an integrated facility to serve as a business hub for storage and distribution purposes for the trading of manufactured products.

3.6 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.

3.7 Rural and Agricultural Zone: Permissible Uses

This zone is sub-divided into two zones viz. Village Abadis including 200 mt. around Phirni and Rest of the Area outside abadi.

All agro based industry including its processing shall be permissible in rural / agriculture zone including Agricultural, Horticulture, Dairy, Piggery, Fishing, Poultry Farming, Milk Collection Centres, Chilling Stations and Pasteurization plants, Green Category industry, marriage palaces, Rice Shellers, spinning mills, Brick Kiln, Lime Kiln, Charcoal Kiln, Processing of farm products, Cold storage, Farm houses(minimum area 2.5 acres), storage of fuel oils, LPG storage godowns, warehouse and godowns, cement/ sand and concrete mixing plants, Retail shops, service industry, places of worship, Railway stations, sliding, Bus stop and parking area, Mela grounds and Camping grounds, Public building and utilities including Electric sub- stations, transmission and telephone lines and poles, telecommunication towers ,surface drainage, water bodies including irrigation canals, waste processing and disposal, Afforestation including orchards, gardens and Commercial timber, Land preservation and conservation measures such as Storage, Check dams, Taming of rivulets and hill streams and other water harvesting measures Social infrastructure like schools, Dispensaries, Panchayat ghars, Dharamshalas and any other project of Central and State Govt. agencies/Deptt/ Undertaking/ Local Bodies.

<u>Permissible uses in Village Abadis and area upto 100 m of Phirni</u>.

- 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. and service industry
- Public utilities and services including communication towers.
- Rice Sheller's subject to the condition of fulfillment of PPCB guidelines.

4 DESIGNATED AREAS

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

1. Utilities
2. Protected Monuments/Conservation Sites
3. Other Special Areas
4. Prohibited Areas
5. Forest Areas

Following uses are permissible in the designated areas mentioned in 4 above.

4.1 Utilities: Permissible uses

Water supply, drainage, storm water, electricity, communication systems and related installations etc.

4.2 Protected/ Conservation Sites: Permissible uses

Only protected monument/ Heritage Building or conservation sites as notified by the concerned authority and the related activities are allowed. All other uses are prohibited

4.3 Others Special Areas: 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.

4.4 Prohibited Areas: Permissible uses

The areas around the Protected Monument of Khanna and Payal up to the distance of 100 meters from the protected limits as described in the notification no. S.O.1764 Dated 16thJune, 1992 issued by the Department of Culture, Archaeological Survey of India and guidelines issued by Government from time to time are to be prohibited areas and beyond it up to 200 meters regulated areas for the purposes of both mining operation and construction.

4.5 Forest Areas: Permissible uses

This area indicates all Reserved Forests as notified by the Forest Department. No activity other then Forest is permitted in this area unless expressly allowed by the Forest Department

5 EXCEPTIONS

Any use not listed above under a specific zone will not be permissible in the respective zone.

5.1 In case of any ambiguity in interpretation of any regulation the decision of government/ Punjab Regional and Town Planning and Development Board or any competent authority authorized by Government shall be final.

5.2 Notwithstanding the above, the uses specifically provided for in the Sector Zoning Plans shall be permissible or as may be allowed by the Chief Town Planner, Punjab after special appeal where Sector Zoning Plan is not prepared.

5.3 Uses determined by the Chief Town Planner, Punjab as compatible with uses permissible shall be allowed in respective zones.

5.4 Uses of land covered under Optimum Utilization of Vacant Government Land (OUVGL) Scheme of the State Government shall be determined by the Government at any appropriate time notwithstanding the provisions of these Regulations.

5.5 Developments approved prior to coming into force of these Regulations shall be deemed to be in compliance with these Regulations.

5.6 The mixed landuse along road fronts shall be permissible maximum depth upto 200 meters.

5.7 The other controls like size, frontage, road width etc. of a particular activity shall be as per govt. instructions, Guidelines from time to time.

6 DEVELOPMENT CONTROLS: Khanna

The development in all the uses shall be permissible as per the instructions issued by the Govt. from time to time and within M.C. Limits as per the policy of Local Government Department.

(A) Residential (plotted)

1. Maximum area under residential and commercial - 55% subject to the condition that commercial shall not exceed 5% of total area.
2. Minimum area under institutional / public buildings - 10% of total area.
3. Minimum area under parks/open spaces, roads & parking lot - 35% of total area

Note: -F.A.R., height and ground coverage for individual residential plots within municipal areas, building byelaws of Municipal Council shall be applicable and outside municipal council limit, the building bye-laws of respective Development Authority shall apply. However saleable area (residential and commercial) shall not exceed 55%. However the other requirements regarding circulation, facilities etc shall be applicable as per the PAPRA 1995/PUDA rules or Government instructions from time to time and within M.C. limits as per the policy of Local Government Department. However no residential road should be less than 12 meters. If the existing road is less than 12 meters then it shall be widened to 12 meters proportionately on both side within and outside M.C. Limits.

(B)Group Housing

Controls regarding Group Housing(subject to any further instructions/ norms to be notified in future then those norms shall apply.)

1	Minimum area required	5 acres (outside M.C. limits) – For EWS 2.5 acres
2	Maximum ground coverage	40%
3	Maximum F.A.R	1:1.75
4	Basement	Multi level basement will be allowed beneath the building in the zoned area except in set backs provided it is proposed for parking purposes and allied services only and shall not be allowed for habitable purposes and satisfy the public health and structural requirements.
5	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 building etc. however, structural safety and fire safety requirements as per N.B.C. shall be compulsory.
6	Stilts	Stilts under the building will be allowed to enhance up to 3 meters beyond the building block except in the setbacks, provided it is used for parking only. No construction shall be allowed on the extended portion of the stilts. Stilts used for parking shall not be counted towards F.A.R.
7	Minimum Frontage	20 meters
8	Open spaces and organized parks	Minimum 30% of the area of the site shall be used for landscaping. The organized park area shall be 15%.
9	Parking	For group housing residential developments, the requisite parking provision is 1.5 ECS per 100 sq m of covered area. The maximum provision allowable for group housing projects is 3 ECS per dwelling unit.
10	Dwelling Density	40-80 units/acre However, for social housing, the dwelling density may be increased up to 120 units per acre.
11	Community facilities	Area for community facilities such as community centre, reception hall, crèche, library, maintenance store etc shall not be less than 2.5%.
12	Fire Safety	As per BIS norms.
13	Lift and Stair cases	As per the rules of Development Authority.
14	Structural stability	Building shall be made structurally safe to withstand any natural disaster and shall be designed by a qualified structural engineer as per the provision of N.B.C.

Note**: For group housing stand alone projects, minimum width of approach road shall be 60' but the promoter shall leave space from his own land for widening it to 80 feet and the space so left shall be public space. In the planned colony, group housing shall not be on a road less than 60’ wide within and outside M.C. limits. Within existing MC limits building rules of MC shall be applicable**

- To encourage flatted development in order to save agricultural land, 60 dwelling units per acre shall be permissible for stand alone group housing projects and proposed residential area , irrespective of the residential density in that zone.

- No separate zonal Development Plans will be prepared as detailed network and other facilities have always been proposed.

(C) Farm House

Development controls for Farm Houses

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

Note:

In case of farm houses, an independent access from a "Revenue Rasta" or a public road shall suffice.

(D) Commercial

(a) Development of Commercial colonies (outside M.C. limits)

Criteria for development of commercial colonies outside M.C. Limits

S. No.	**Items**	**Prescribed Norms**
1.	Minimum size of development site	1000 Sq. mt
2.	Minimum frontage	66 ft (20m)
3.	Minimum width of approach road	80ft (24m)
4.	Maximum Ground Coverage	40%
5.	Maximum Height	There shall be no restrictions on the height of building subject to clearance from Air Force Authority, if applicable in future and fulfillment of other rules such as setbacks, distance between buildings etc, if applicable. However, structural safety and fire safety requirements as per N.B.C. shall be compulsory.
6.	Maximum F.A.R.	1:1.75

Within M.C. Limits Single storeyed commercial on 60 feet wide road shall be permissible or commercial on ground floor on 60 feet road within M.C. and residential on upper floors.

Note:

The statuary provisions of Punjab Apartment Property Regulated Act-1995 and Rules thereof as well as the regulatory measure of Government of Punjab and the concerned departments issued in this regard, shall be applicable for such development. The roads already notified as commercial with in existing M.C limits by the local government shall be honored.

(b) Additional criteria for stand alone projects out side M.C limits: - In addition to the parameters covered above (except minimum area requirement) shall be as given below.

Additional criteria for stand alone projects

S. No.	Parameter	Criteria
1.	Minimum area requirement	1000 sqm for Malls, Mega marts, Super Markets & Hyper marketing. 4000 sqm for Multiplex
2.	Landscaping	If the site area is one acre or more minimum 15% of the total area is to be reserved for landscaping purposes.
3.	Parking	For projects with no multiplexes, the minimum parking shall be 2 ECS per 100 sq m of covered area (including circulation area) For projects with multiplexes/ cinemas/ theatres, the minimum parking shall be align these points under the multiplex point. 3 ECS per 100 sq m of covered area, in respect of the covered area of the multiplex component + 30% of the total covered area of that component and 2 ECS per 100 sq m of covered area, in respect of balance commercial component and circulation area
4.	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.
5.	Movement of fire tender	The minimum setback distance is to comply with the existing norms and standards.

Note:

- *For the parameters not covered above, norms/guidelines regarding these activities of concerned departments shall have to be comply with.*
- *Total parking requirements shall be provided in the compulsory front set back and within the development site boundary or in the basement.*

(c) Commercial at Local Level:-

These commercial facilities are intended to serve the needs of local residents only. So, there will be provision for small scale, single storey commercial facilities at local level.

Minimum road width for development of this of commercial activity is 60’ (18m).

- Minimum 20’ (6m) set back from road shall be left for parking.
- For other parameters, the byelaws of concerned activities shall be applicable.
- Within Existing M.C limits norms and building bye laws of the local government shall be applicable.

(E) Logistic Park Development Regulations

The development of activities given in the area proposed for logistic park shall be take place under following regulations.

(a) Minimum area for the use is 1 acre

(a.b) The following Overall design considerations are to be kept while developing the side.

- Efficient movement of goods and traffic flow
- Ample storage space in clean environment
- Fire protected safe and secured
- Efficient module sizes
- Sufficient amenities and open spaces
- Land scaped open spaces
- Well ventilated and generous internal space.

(b) Usage: - main usage is warehouse space for both fast turnover storage and distribution as well as for bulk and long term storage centre. There can be business centre located at main entrance to each of the logistic block to serve as a business hub with offices and adequate amenities catering to the logistic industry.

(c) FAR: - FAR for logistic park is 0.6, calculation of which shall exclude the land set aside for future extension.

(d) Building coverage and Height Control:- Building coverage for logistic park shall not exceed 50%. Floor to ceiling height for a single storey logistic use is 7m.

(e) Minimum road width: - The recommended minimum carriage way for local road within an area is 10m (30') with a 3m (10') of side walk on either side of carriageway.

(f) Loading Facilities: - Loading facilities for the terrace form of warehouses could be located at either front or rear of building but not the sides to avoid traffic congestion between buildings.

- Individual warehouses on plots which are customized to suit will have the loading facilities at the side and rear.
- Loading facilities shall be offset from driveway opening.

(g) Building Setbacks:-

- Separation is recommended to separate the business centre and pure logistic areas.
- To keep minimum set back from the plot boundary of the front, rear and sides of buildings in this zones is 5m.

(h) Other Development Controls for commercial activity:

Minimum width of access road for warehousing uses shall be 80'.

Note: Wholesale activity is also permissible as described in Proposed Landuse Plan at page no.171.

(F) Development Controls applicable for Industrial Development

(i) Criteria for Industrial Development

Within the permissible zones, the industrial activities D1 to D32, shall be developed under the following controls.

Controls for the development of Industrial activity

S. No.	Item		Prescribed norms
1.	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
2.	FAR	For IT component	1:2
		Industry	1:1.0
		Institutional	1:1
		Residential	As per building byelaws
		Group	1:1.75
3.	Height:		There shall be no restrictions on height of building subject to clearance from Air Force Authority, if applicable if future and fulfillment of other rules such as set backs, distance between building etc. However, structural safety and fire safety requirements as per N.B.C. shall be compulsory.
4.	Floor to floor Height		In industrial development should not exceed 20' (6m).
			However, this control can be varied due to operational needs of industrial machinery.
			1st storey of industrial development can be raised by 40' (12m) for loading and un loading purpose.
5.	Road width		The minimum road width for industrial unit shall be 40' (12m).
6.	Parking Guidelines		For parking guidelines under industrial use 1 car parking lot is to be provided per 100 sqm of gross floor area, 1 lorry lot is to be provided per 1000 sqm and minimum car lot is to be provided per factory.
7.	Maximum 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.
9.	Quantum of use		Predominant industrial use quantum shall be at least 60% of FAR and ancillary use within entire development must not exceed 40%. The ancillary uses can be

		a. Show rooms Meeting rooms Toilets Mechanical and electrical services Sick bay rooms/1st aid room Child care centre Independent media activities.

Note:

The statuary provisions of Punjab Apartment Property Regulated Act-1995 and Rules thereof, wherever applicable as well as the regulatory measure of Government of Punjab and the concerned departments issued in this regard, shall be applicable for such development.

(G) Institutional/Hotel/Hospital/Multi-media center:

Components	**Institutional**	**Hotel**	**Multi media**	**Hospital**
Minimum plot size.	5000 square meters	5000 square meters	5000 square meters	5000 square meters
Minimum frontage	200 feet	200 feet	200 feet	200 feet
Minimum width of approach road	40 feet	80 feet	80 feet	80 feet
Maximum F.A.R.	1:1	1:3	1:1	1:1
Maximum ground covered	40%	50%	40%	40%
Parking	1 ECS per 100 square meters of the covered area if the project is covered under notification no. 17/171/5-Hg2/311 dated 11-01-08, otherwise the parking norms meant for commercial uses i.e., 3 ECS / 100 square meters covered area shall apply.			

All above activities if not covered under notification dated 11/1/08 shall be treated as commercial.

Note:

- The institutes other than specified in the above table shall be dealt as per the PUDA building rules 1995 and as amended from time to time or any notification issued from time to time.
- For any other activity other than above shall be dealt as per Zoning Plan/ building byelaws of the concerned agency or as per the Government instructions issued from time to time.
- The Above development control shall be applicable as amended from time to time.
- The construction activity along scheduled roads and bypasses passing through Local Planning Area shall be subject to the provisions of Section 143 of the Punjab Regional and Town Planning and Development (Amendment) Act 2006 and if any amendments made from time to time. However "No Construction Zone" of 5 meters shall be proposed within Local Planning Area.
- Projects approved / C.L.U. granted by Housing and Urban Development department prior to the notification of Master Plan shall stand adjusted in the Master Plan irrespective of their landings shown on the Proposed Landuse Plan provided that such projects fulfill the terms and conditions of Approval/ C.L.U.
- The guidelines for various activity by Government instructions/ guidelines will be followed.
- H.T. wires will be governed by Electricity rules 1956.

General Note:

1) The development control and size of Colony/ Group housing/Industrial/ Institutional/ Hotel/ Multiplex or any other project and any other Development Control will be followed as per the Government instructions issued/ amended from time to time.