PLANNING FOR A NEW HILL TOWN IN KANGRA REGION
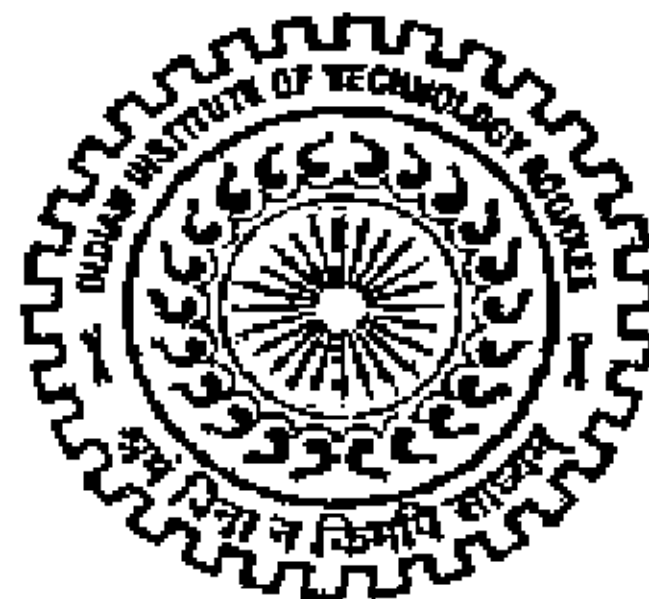
A DISSERTATION

Submitted in partial fulfilment of the requirements for the award of the degree of
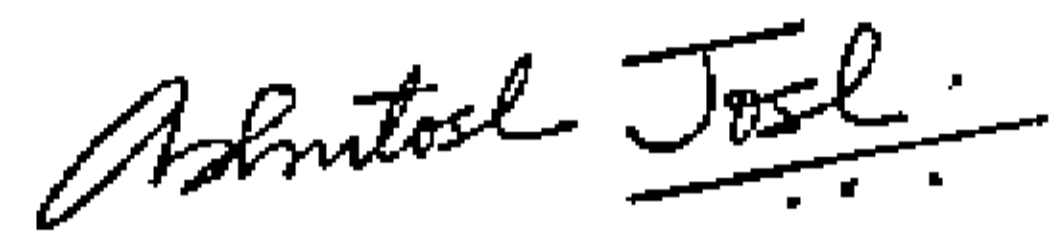
MASTER OF URBAN AND RURAL PLANNING

By

VANDNA SHARMA

DEPARTMENT OF ARCHITECTURE & PLANNING
INDIAN INSTITUTE OF TECHNOLOGY ROORKEE
ROORKEE -247 667 (INDIA)
JUNE, 2007

Certificate

Certified that this report titled "Planning for A New Hill Town in Kangra Region", which has been done by Ms. Vandna Sharma, in partial fulfillment of the requirements for the award of the post graduate degree in Master of Urban And Rural Planning, in the Department of Architecture And Planning, Indian Institute Of Technology Roorkee, Roorkee is the student's own work carried out by her under my supervision and guidance. The matter embodied in this dissertation has not been submitted for the award of any other degree.

Date: 18th June, 2007

Place: Roorkee

(Dr. Ashutosh Joshi)

Department of Architecture and Planning

Indian Institute of Technology, Roorkee

Roorkee-247667

India

Candidate's Declaration

I hereby certify that the work, which is presented in the dissertation , "Planning for A New Hill Town in Kangra Region", in partial fulfillment of the requirements for the award of the post graduate degree in Master of Urban And Rural Planning submitted to the Department of Architecture And Planning, Indian Institute of Technology Roorkee, Roorkee , is an authentic record of my own work carried out during the period from August 2006 to June 2007 under the supervision of Dr. Ashutosh Joshi, Department of Architecture And Planning, IIT Roorkee, Roorkee.

The matter embodied in this dissertation has not been submitted by me for the award of any other degree.

Date: June, 2007
Place: Roorkee

Ms. Vandna Sharma

This is to certify that the above statement made by the candidate Ms. Vandna Sharma is correct to the best of my knowledge.

Date: 18th June, 2007
Place: Roorkee

(Dr. Ashutosh Joshi)
Department Of Architecture and Planning
Indian Institute Of Technology, Roorkee
Roorkee-247667
India

Acknowledgement

Executive summary

The dissertation work deals with the finding of appropriate location for the new settlement in Kangra- Dharamsala region of Himachal Pradesh and giving up of a base line land use map along with detailing of facilities to be provided in the new town. The need of new town was first and foremost given by Government of Himachal Pradesh .The work ,therefore deals with carrying out first extensive surveys in the form of primary surveys , exhaustive group discussions with senior authorities of the area ,study of the regional scenarios, analysis of urbanization trends, population scenarios, effect of growth factors like incoming of industries, boost to Primary industry , distinguishing of Dharamsala as winter capital of the state, tourism potential to find more exhaustively the reasons for the need of establishment of new town in the region. Then locational analysis was done. It has been phased out in two parts .The first part deals with locational analysis for checking out of most appropriate zone for the new town and second phase deals with locational analysis for identification of most appropriate site in the established zone.

After identification of appropriate location, then population is projected for next 30 years and then required demands for different facilities −social infrastructure like schools, health facilities, physical infrastructure etc. is projected. Already existing rail network, nearby airport facility, national highway, state highway and thick network of link roads eliminates the need for further roads and transportation routes. Moreover in a hilly area and contoured site like Dharamsala region, laying of road is more costly affair than providing facilities and laying out of roads is carried out after extensive analysis and surveys, therefore this part has not been intervened upon for the already self sufficiency aspects.

After the projections for the population to be handled and facilities to be required for the population, once again the resources are being analyzed (after their first study in locational analysis).Then based on present and future resources (available), proposal are given to meet the requirements, providing and distribution of various facilities and finally a broad baseline land use map is given to conceptualize the theme of the proposals. The recommendations also include briefing up of byelaws and norms, regulations for the new town based on study of regulations of new town proposals for Shimla under the development plan for Shimla 2021 by TCP, Shimla.

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1

Introduction of the Project

1.1 Need of new town in Kangra region (Kangra district)

In the wake of increasing urbanization, population of Kangra district has arisen greatly to 13, 39,030 as per census of 2001 that is highest in whole state and floating population goes to even 3-5 lakhs on certain occasions thereby pressurizing infrastructure of the area.

Reasons in favour of satellite town in Kangra district:

a. Proposal by the government

Proposal for the development of new town was officially notified in sept.2000, under the policy of satellite towns in H.P, 2000, official website of Himachal Housing and Urban Development Authority HIMUDA (www.HIMUDA.com) or www.Himachal.nic.in has the proposals for satellite towns for: 1) Between Shimla and Solan (Waknaghat) 2) Between Shimla and Manali (Taddal) 3) Between Shimla and 'Rampur (Phagu) and 4) between Dharamsala and Palampur.

As per discussions with State Town Planner (Mr. A.R Sankhyan) and Senior Town Planner (Mr. A.N Gautam) of H.P and also official websites of HIMUDA (www.HIMUDA.com) and www.himachal.nic.in, the site for first three towns have been finalized and work for them have been started but in case of fourth site-between Dharamsala and Palampur, the site is yet to be finalized (since it is proposed to be undertaken in later stages after completion of first three satellite towns)

b. Headquarters of Tibetan government-in exile

Since Dalai Lama has settled in Mc Leod Ganj in upper Dharamsala, the area has become headquarter of head of Tibetan government in exile Tibetan people has established a number of Buddhist institutions for research and development of Buddhism in and around the town. Consequently the Mc Leod Ganj area; the hills have swollen un-proportionally.

c. Administration and education

Emergence as winter capital of the state has led to establishment of many state level offices and also trend has started of shifting of many state government offices from Shimla to Dharamsala for e.g. Office of Chief Engineer PWD (North Zone).

Vidhan Sabha sessions are executed there, herby important decisions are taken. Construction of Secretariat (state level) at Tapovan (peripheries of Dharamsala) has also increased flow of the people to the area. Provision of health facilities is very good and presence of zonal hospital with bed capacity of 500 caters to the needs of the not only nearby people but also nearby districts.

d. Construction of Pong Dam on Maharana Pratap Sagar

Due to the construction of dam, migration of people is took place- ousted families are settled in Dharamsala. Sports activities are developing in the lake (area-24000 Hectares) that attracts tourists .Lake/reservoir also contributes chiefly to fish production in the district. The reservoir gives direct employment to over 2,000 families -9000 persons

e. Vast Tourism potentials in Mc Leod Ganj, Triund, Dal Lake

Sports activities like paragliding, mountaineering, tourist spots like Mc Leod Ganj, Triund attract thousands of tourists and that too throughout the year due to more or less uniform climate.

f. Growth rate of tourists in Kangra

The growth rate of domesticate and international tourist coming to Kangra is shown in this table.

Table1.1: Growth rate of tourists in Kangra

Year	International	Domestic
2000	20683	158011
2001	23600	178268
2002	13966	182181
2003	17194	195292

Source: Tourism report of Himachal Pradesh, 2004

g. Pilgrimage places in Kangra district

Thousands of pilgrims from throughout India visit the famous Shri Chamunda Devi temple ,Nandikeshwar Dham, Brajeshwari Mata temple, Shri Jawalamukhi Temple, Bajnath temple, Shri Chintpurni Temple, Jain mandir and Bagala Mukhi temple.

h. Increasing employment opportunities

Better prospectus of job in emerging service sector due to high commercial land use (rise of hotels, lodges, restaurants, sports/tourist activities) for unskilled labour adds to employment in the area. Moreover climatic conditions are favorable to Sericulture, Tea gardens, Apiculture, Himalayan herbs providing additional employment opportunities that attract people from nearby districts (within the state and outside)

i. Better conditions than Shimla

The area offers better range of facilities in terms of land price (lesser than Shimla), less congestion, less traffic problems, better parking ,better road and rail linkages ,scenic beauty ,lesser pollution, lesser noise problems, comparatively better weather/climatic conditions

j. Construction of international Cricket Stadium

Construction of the stadium has added to demographic inflow to the area. Recent arrival of Pakistan cricket team and other routine cricket matches have both added to the inflow and income of the people.

k. Presence of cantonment

Presence of Yol Cantonment on the outer skirts of Dharamsala restricts its growth /spread but owing to increasing inflow of population the area is bound to expand and now settlements are developing at random without any planning.

l. International facility

Presence of airport at Gaggal and proposal to make it international has helped foreign and domestic tourists to visit Kangra district at ease. This is attracting inflow of people.

m. Scenarios of Palampur

It is emerging as an educational destination for agriculture research and development activities being more pronounced with H.P.K.V.V University. Therefore presence of National level agriculture university, Veterinary hospital etc. all adds to charisma of the area. Emerging state-of-art medical facilities like super specialty hospital (Vivekananda hospital), meditation centers etc. make for very good medical and health facilities. In case of trade and commerce, large tea gardens/tea estates contribute towards export of tea to other sates. Apart from Assam tea Kangra tea (Palampur) is considered very good for health being

herbs based tea. Therefore as per town planning authorities of the state, district and district planning officials & experts, there is need to plan for a new town either at Gaggal (midway between Palampur and Dharamsala and Kangra and situated at national highway having airport facility) or at Chamunda Devi Dham area or at Nagrota Bagwan (the industrial area).The study therefore involves choosing of appropriate site for the new town, check for the feasibility of the town (to be proposed) in the area and finally providing for the facilities in the area and enhance the existing ones.

1.2 Aim

To plan a new town for Kangra district to control haphazard development; upgrade infrastructure facilities and prevent environmental degradation in the areas.

1.3 Objectives

1. To study the urban growth pattern, socio-economic, demographic and physio-graphic profile of the area
2. To study the tourism trends in the area
3. To analyze the implications, and unearth the potential of the focused area.
4. To assess the suitability of locating a new town in the area
5. To prepare a brief plan for the proposed new township in terms of (basic outline) spatial plan and regulations for development of new town.

1.4 Scope of the Study

The scope of study includes:

1. Planning for optimum utilization of resources, including tourism development, institutional and administrative development with focus on architectural heritage.
2. Planning for the provision of better infrastructure facilities in the area.
3. Planning for the brief for the new town in terms of population size, functions, land use and other requirements.

1.5 Limitations

1. Time series data may not be available for certain parameters.
2. Limit of work extends up to preparation of conceptual plan for new town and not detailed spatial plan

1.6 Methodology

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┌──────────────┐  ┌──────────────┐  ┌──────────────┐  ┌──────────────┐
│ Govt. proposal│  │ Discuss. With │  │Data Collection│  │ Observations of│
│              │  │Planning       │  │              │  │ Regional       │
│              │  │authorities    │  │              │  │ scenario.      │
└──────────────┘  └──────────────┘  └──────────────┘  └──────────────┘
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Aim, Objectives, Scope & Limitations ← Need of Study

Chapter-1 → Methodology

Chapter-2 → Literature Study

Chapter-3 → Case Study ← Uttrakhand

Chapter-4 → Study & analysis ← General   Study and analysis of Region

Objective-1, 2

Chapter-5 → Projections   Identification of site   Existing &future scenarios

Objective-3, 4

Chapter-6 → Proposals: Recommendations ← Basic outline land use plan   Regulations

Objective -5

2

Literature study; the setting up of a new town

2.1 Efforts in the making of new town since 1980

The period around 1980's saw haphazard development of new urban settlements in the form of new towns especially after industrial revolution. The picture becomes more prominent on the world front since industrial revolution increased awareness for better and planned settlements. As a result there was spread of rapid epidemics like plague and break down of infrastructure facilities. Thereafter many new planning theories were put forward and also many urban planners presented their work regarding new planned towns & new settlements many of which were most suited to prevailing conditions of that period .Many of these theories and concepts were based on rational and scientific aspects like calculation of growth pattern of the city /town under given circumstances, growth with certain constraints and parameters, etc.

a. Indian scenario:

There was an increased level in urbanization in the Indian subcontinent during 1980's and a great stress was there on the physical and social infrastructure of prominent urban centers throughout the most populous countries of the region. India saw a great change during this period (decade) and need for new towns, development of smaller urban centers which would ease the pressure from the main central city was required.

b. New towns and urban trends in India

Initially to accommodate the displaced masses new townships were formed like Rajpura township (Punjab), Nilokheri (Haryana), Gandhidham (Gujarat), Ulhasnagar (Maharashtra), and Ashokenagar (West Bengal).Subsequently several new towns were built as part of various multipurpose projects and power generation schemes under the plans: Nangal township in Punjab, Gandhisagar in Madhya Pradesh, Hirakund in Orissa, Maithon in Bihar, and Srisailam in Andhra Pradesh are some examples.

Capitals for some of the states were built a new like Chandigarh, Bhubaneswar and Gandhinagar. But the largest number of newly built towns are industrial (including oil refineries) in nature. These include Bhilainagar, Bokaro, Brajrajnagar, Durgapur, Haldia, Muradnagar, Nepanagar, Rourkela, and Sindri among many others. Such towns are scattered all over. The number of newly built mining towns such as Rajhara, Bhuli, Jorapokhar, Tisra, and Neyveli is also huge. Most of the towns are confined to Bihar, Madhya Pradseh, and Tamil Naidu. Education and research have also given rise to newly built towns like Annamalainagar, Kalyani, and Khadakvasla.

2.2 Advancement/ studies in the field of establishing new towns since 1980

2.2.1 New- town planning: principles and practices [1]

It gives detailed concepts of planning of new towns and detailed procedure for setting up of new town starting from site identification criteria, involving various important studies (transportation planning, economic projections, social planning etc.).A new town is well planned settlement with definite proportions of built and opens spaces and has high degree of independence, economic self-sufficiency, and self-government to regulate and control developments.

a. Criterias for site selection

Six most important criteria required for identification of the site are Physical aspects, Social aspects, Economic aspects, Potential local resource aspects, Environmental and ecological aspects and Political aspects. While the physical criteria include considerations for the topography, climate, topology, geology, drainage, slope etc., economic and social criteria deals with social and economic fabric governing the future land use of the new town like accessibility of the land to highways, transportation networks urban centers, condition of the land ,its market value etc are some of the key factors to be taken care of .In case of resources criteria it is very important to assess the availability of the resources like availability of water ,presence of underneath minerals as potentials for future development. Environmental aspects deal with existing landscape and ecology of the area and its suitability for future new town development. Political aspects are related to the strategic importance of the site. Apart from physical planning, social and economic planning and planning for transport and communication are also very important. Various guidelines

related to these different aspects have been given by the author in detail pertaining to the development of new town that is discussed in chapter-4. Size of the town is also guided by certain parameters like transportation planning, achievement of economic stability through fulfillment of economic needs, providing and managing all amenities and services. Better management of municipal funds and expenditure of the concerned governing bodies plays biggest role in giving direction to the development of new town. Apart from it social situations that develop on later stages have also to be controlled efficiently like controlling over congestion in the city, providing safety and security to the citizens, maintenance of standards of hygiene etc.

Further details of the study and related recommendations are given in the chapter-4

2.2.2 Designing the New City-A Systematic Approach [2]

The author deals with the vital functions that a new town must cater to for smooth functioning .Size of the city/new town demarcates its functions ,with a larger city having more diverse and complex functions & a comparatively smaller city catering to lesser number of functions. Similar concept applies to the urban form of the new town but the parameter of size is replaced by other more important and rational parameters like accessibility, cost effectiveness, presence of growth potentials, & town potential and existing relation to the environment. Author has discussed a hierarchy of urban forms like dispersed form, sheet, ring, spider radial form etc. and merits & demerits of each particular form. While the ring & radial forms have benefits of energy conservation in the form of shorter distance to travel but unless properly planned for present and future scenarios, chaos would creep in. Similarly ribbon development has the disadvantage of higher infrastructure costs during development stages. Feeling of unity and neighbourhood prevails and dominates better in compact and concentrated forms like radial or grid pattern or even ring form & least in long dispersed forms.

Findings & Recommendations:

Various form & related positive and negative aspects would be taken care of associated with each form while deciding form for the new town.

2.3 Modern architects efforts in designing /proposing a new town [3]

Although the study is focused on planned development of new towns since 1980 but at the same time to understand the scene globally, in the second part of the chapter; study focuses on vision & theories of new town as proposed by the architects of modern times.

2.3.1 Le Corbusier

Plate-2.1: "la ville contemporaine"
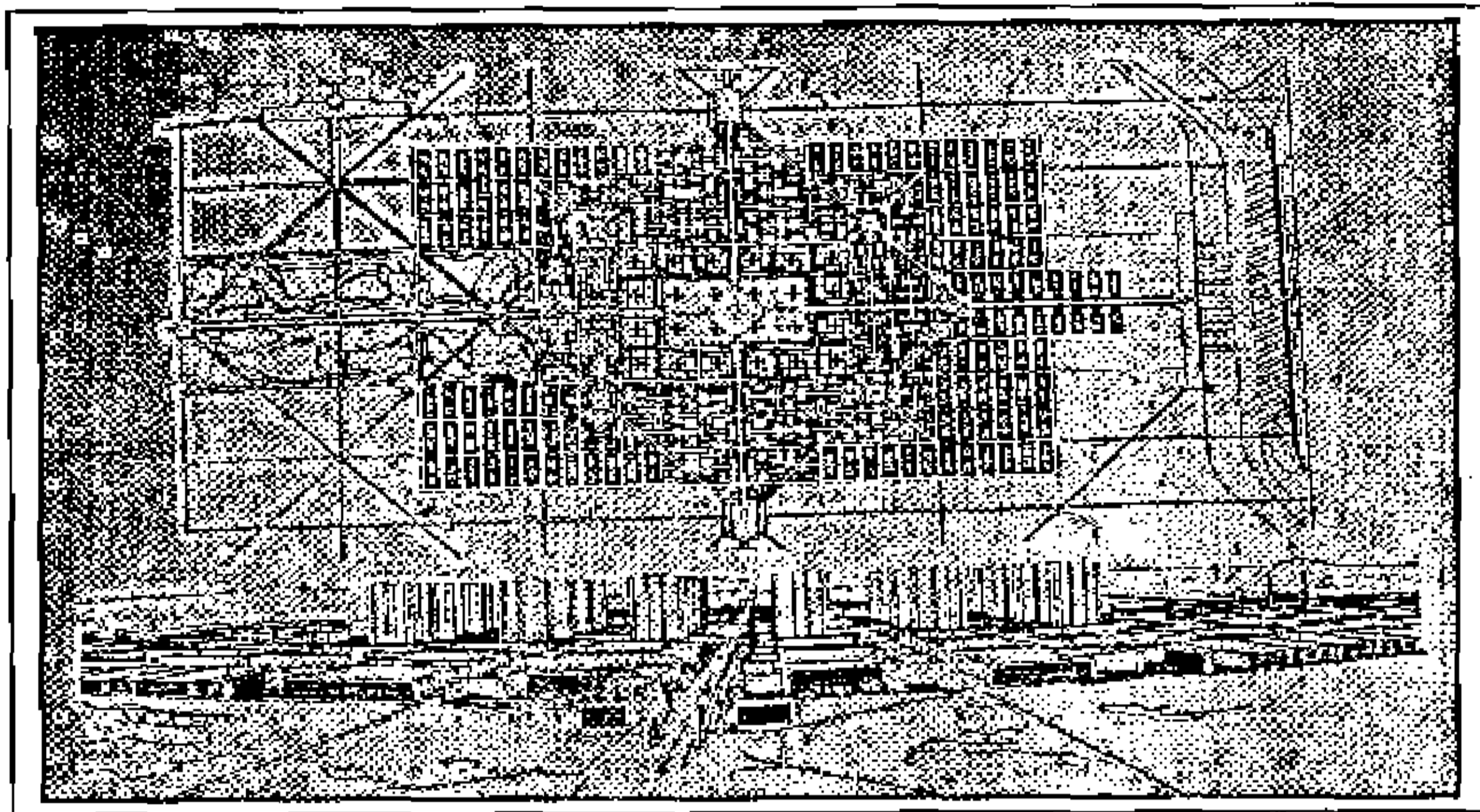
Source: Urban Pattern: City Planning &Design, Gallion, A.B

"La ville Contemporaine"

The city of tomorrow for 3,000,000 people was proposed by Le Corbusier in 1922. Sixty-story office buildings with a density of 1,200 persons per acre and covering only 5% of the ground area are set within landscaped open spaces. Eight story apartment buildings with a density of 120 persons per acre surround the office skyscrapers and the city comprises of single houses that occupy the outskirts of the city. The hub of the plan is the transportation center for motor and rail lines, the roof of which is the airfield.

"La ville Radieuse"

The plan was given in 1933 for replanning of Nedre Normalam in Stockholm. It was adaptation of continuous staggered rows of high buildings set upon piers within broad open spaces. This plan shows the distinction between types of roadways: The encircling "freeway"

raised above ground level, the secondary traffic ways uninterrupted by the building forms and the informal system of local traffic & pedestrian ways which likewise circulate beneath the buildings open at the ground level along with the existing or new proposed low buildings are key prominent features of the plan.

Plate-2.2: "La Ville Radieuse"
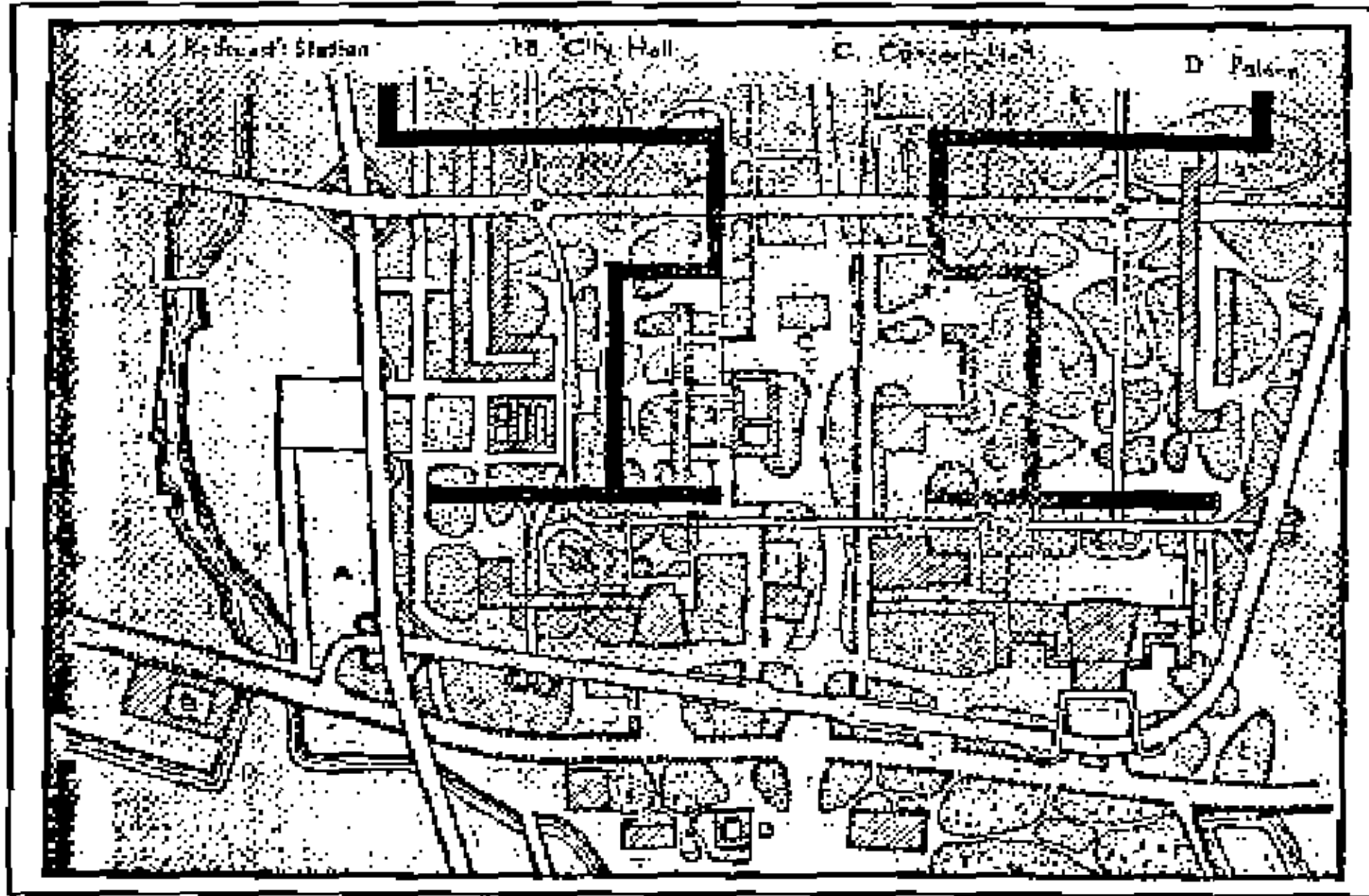
Source: Urban Pattern: City Planning &Design, Gallion, A.B

2.3.2 Frank Lloyd Wright: Broadacres

Essentially a linear city form, FLW's proposal distributes industry, commerce, housing, social facilities and agriculture along the railroad artery and has access to highways .The unit which dominates this plan is the minimum of one acre of land for each family rather than the neighborhood unit, although the various neighborhood facilities are provided.

2.3.3 Soria Y Marta: La Ciudad Linear

In 1882, Soria Y Marta proposed the linear city as a form of urban development with housing and industry growing along the highway between existing cities and contained by the continuous open space of the rural countryside.

Plate-2.3: La Ciudad Linear
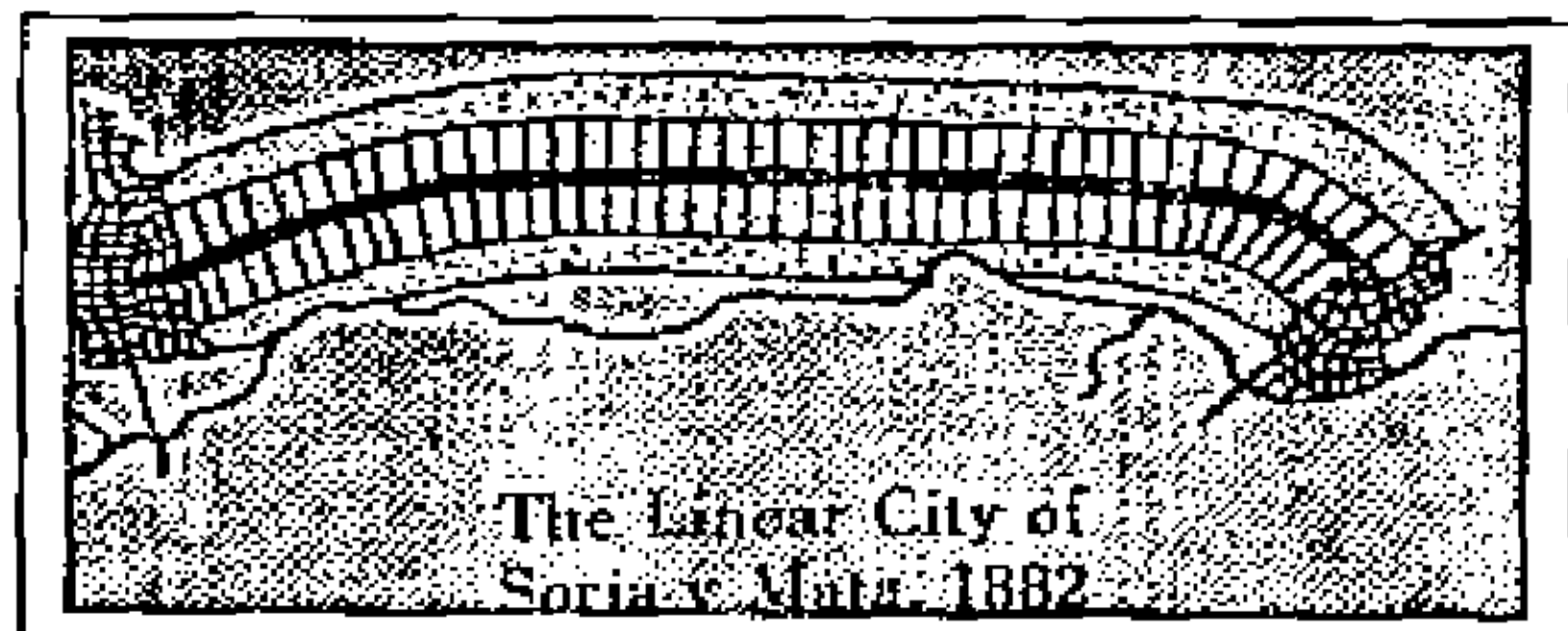
Source: Urban Pattern: City Planning &Design, Gallion, A.B

Plate-2.4: Broad Acres City
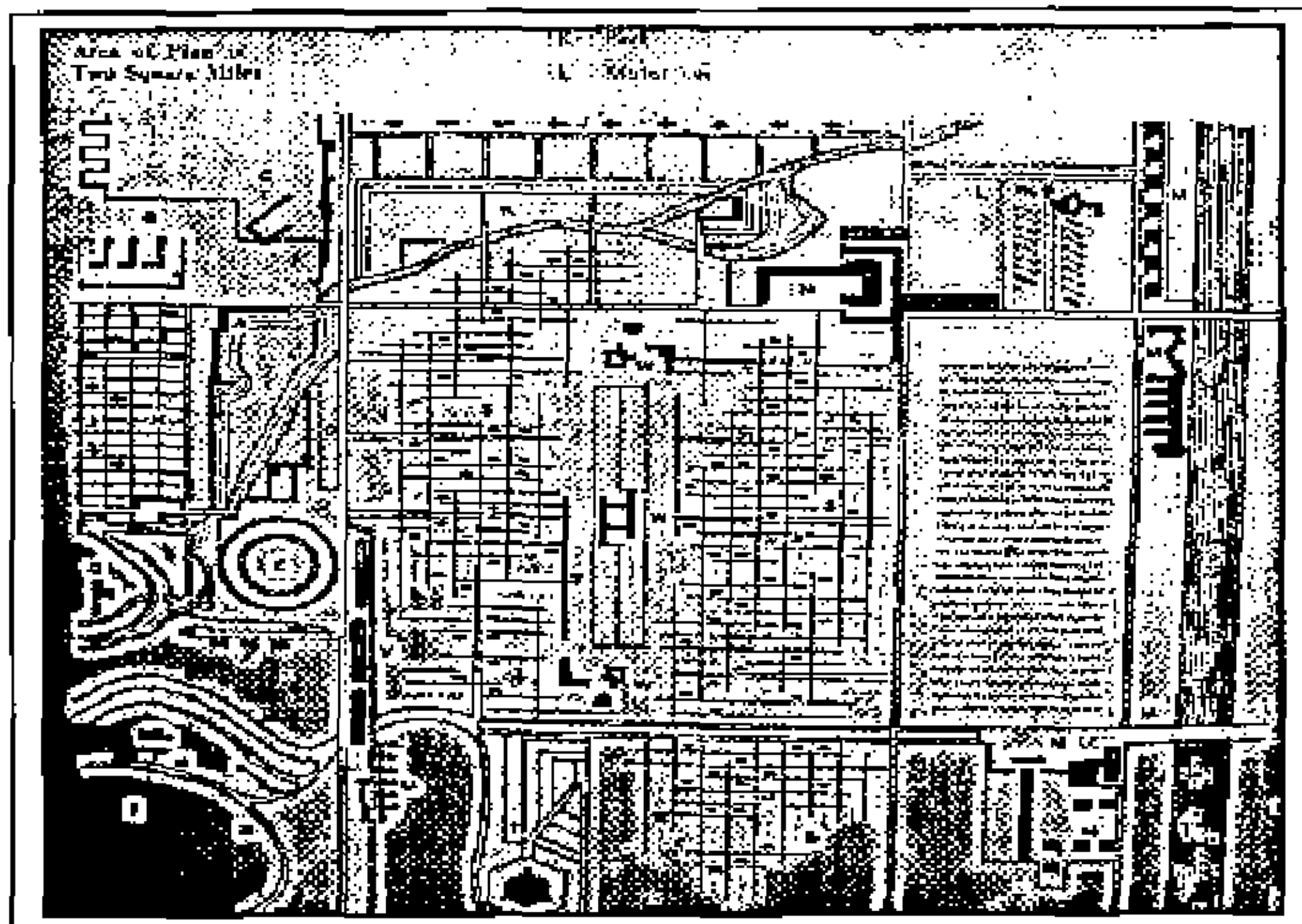
Source: Urban Pattern: City Planning &Design, Gallion, A.B

Findings and recommendations:

Various plan forms and associated features shall be taken care of (in context to the present site conditions of Kangra region) given in the study

2.4 New towns in Indian context

2.4.1 The Master Plan of Chandigarh [4]

Study on Chandigarh essentially an exercise of developing a new town in independent India, has been undertaken in third part of this study to understand the practical aspects underlining development and planning of new towns.

Table-2.1: Profile of Chandigarh

Area	114 sq kms
Longitude	760 47' 14E
Latitude	300 44' 14N
Altitude	304-365 meters above MSL
Annual Rainfall (average)	1110.7 mm, July-September
Temperature	Winter (Nov.-Jan, 2005) 30C-140C

	Summer (April-July, 2004) 31OC-44OC
Prevalent Winds	From North West to South East in Winter & reverse in Summer
Total Population (2001 census)	9,00,635 (Rural population-92120 (10.2%) (Urban population-808515 (89.8%)
Density of population/sq. km.	7,900
Literacy Rate	81.9%

Source: http-- www_architectureweek_com-2001-.htm

Le Corbusier conceived the master plan of Chandigarh as analogous to human body, with a clearly defined head (the Capitol Complex, Sector 1), heart (the City Centre Sector-17), lungs (the leisure valley, innumerable open spaces and sector greens), the intellect (the cultural and educational institutions), the circulatory system (the network of roads, the 7Vs) and the viscera (the Industrial Area). The concept of the city is based on four major functions: living, working, care of the body and spirit and circulation. Residential sectors constitute the living part whereas the Capitol Complex, City Centre, Educational Zone (Post Graduate Institute, Punjab Engineering College, Panjab University) and the Industrial Area constitute the working part. The Leisure Valley, Gardens, Sector Greens and Open Courtyards etc. are for the care of body and spirit. The circulation system comprises of 7 different types of roads known as 7Vs. Later on, a pathway for cyclists called V8 was added to this circulation system.One unique feature in the layout of Chandigarh is its roads, classified in accordance with their functions. An integrated system of seven roads was designed to ensure efficient traffic circulation. Corbusier referred to these as the 7'Vs. The city's vertical roads run northeast/southwest (the 'Paths'). Each 'Sector' or the neighboured unit, is quite similar to the traditional Indian 'mohalla', Typically, each sectors measures 800 metres by 1200 metres, covering 250 acres of area. Each Sector is surrounded by V-2 or V-3 roads, with no buildings opening on to them. Access from the surrounding roads is available only at 4 controlled points, which roughly mark the middle of each side. Typically a sector is divided in four parts by a V-4 road running from east to west & a V-5 road running from north to south. These four parts are easily identifiable as A, B, C and D corresponding to North, East, South and West sides. Each Sector is meant to be self-sufficient, with shopping & community facilities within reasonable walking distance. Though educational, cultural & medical facilities are spread all over city, however, major institutions are located in Sectors 10, 11, 12, 14 & 26.The Capital

complex comprises three architectural masterpieces: the "Secretariat", the "High Court" and the "Legislative Assembly", separated by large piazzas. The city centre (Sector 17) is the heart of Chandigarh's activities. It comprises the Inter-State Bus Terminus, Parade Ground, District Courts, etc. on one hand, and vast business and shopping center on the other. The 4-storey concrete buildings house banks and offices above and showrooms/shops at the ground level with wide pedestrian concourses. Sector 34 is another newly developed commercial sector. Ample areas have been provided in the master plan of the Capital for parks. Out of a total area of 20,000 acres acquired for the first phase, about 2000 acres are meant for development of parks. Leisure Valley, Rajendra Park, Bougainvillea Park, Zakir Rose Garden, Shanti Kunj, Hibiscus Garden, Garden of Fragrance, Botanical Garden, Smriti Upavan, Topiary garden and Terraced Garden are some of the famous parks of Chandigarh. Sukhna Lake, Rock Garden, Government Museum and Art Gallery are major tourist attractions

Plate-2.5: Master plan of Chandigarh

Source: http-- www_architectureweek_com-2001-.htm
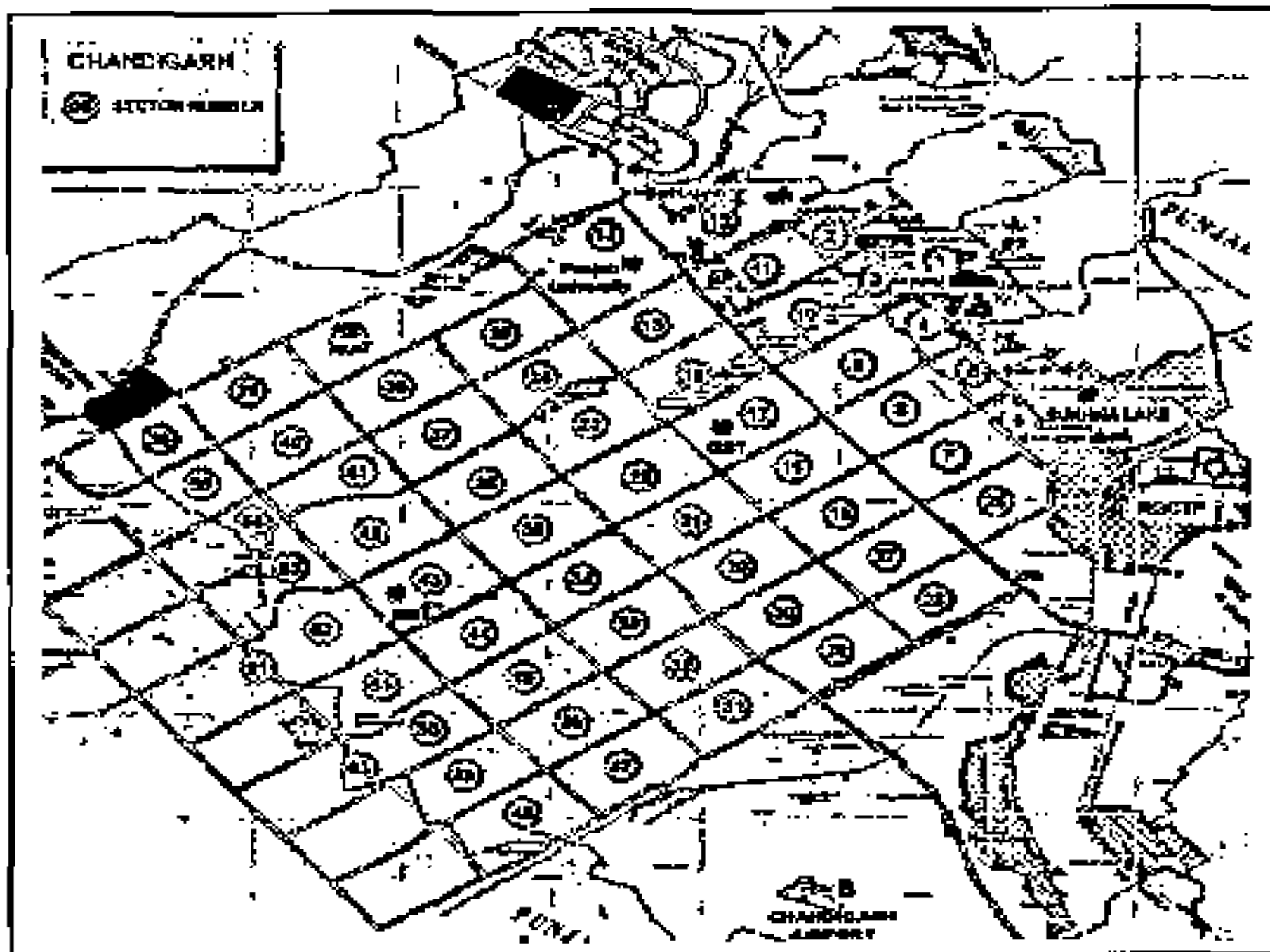
Findings and recommendations:

  a. The neighbourhood concept for providing services within walkable distance for the safety and convenience of the residents would be taken care of.

b. The concept of human analogy would be given due consideration with respect to the site conditions of the area (Kangra region)

c. Provision of community facilities and clustering of various landuses would be taken care of as per the study

Plate-2.6: Sector plan of Chandigarh

Source: http-- www_architectureweek_com-2001-.htm
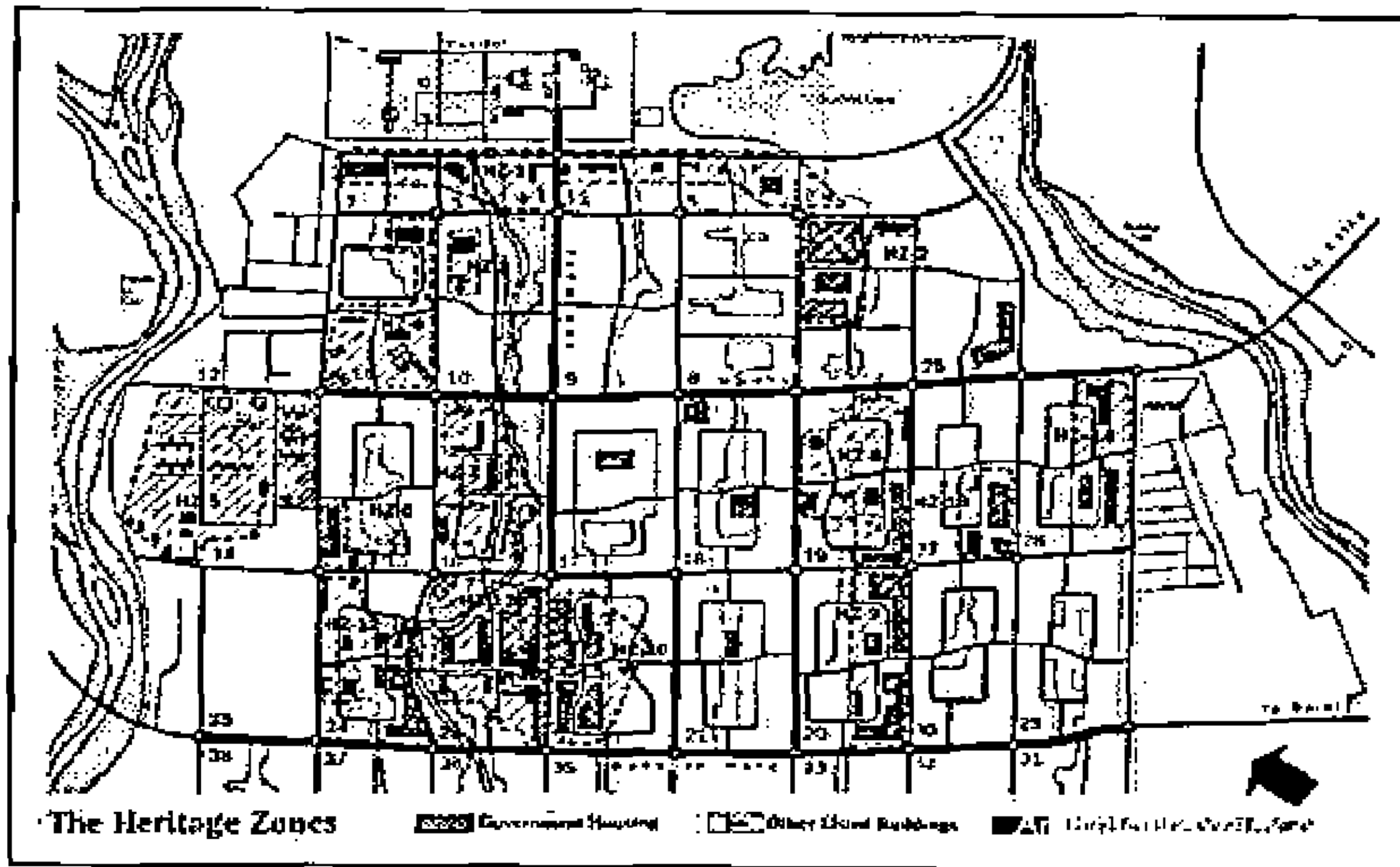
2.4.2 Case study of Chennai: Master plan for Chennai [5]

First master plan for the metropolis was made in 1976. Then Madras Urban Development project was made addressing the infrastructure needs of Chennai Metropolitan Area (then) and implemented as MUDP-I (1977-82), MUDP-II (1983-88) and TNUDP. Certain projects addressing individual needs and problems of the area were also made like Koyambedu Wholesale Market Complex, Madhavaram Bus and Truck Terminal, Sathangadu Iron and Steel Market, Manali urban node, MM Nagar New Town. Later, draft Second Master Plan 2011 for CMA was prepared and submitted to Government, and was returned to CMDA for incorporating further developments in February 2007

Structure Plan for CMA (1980)

Structure plan was prepared in CMDA in association with M/s Alan Turner and Associates in 1980 with the assistance of Overseas Development Agency of U.K. Earlier plans in Chennai Metropolitan Area were reviewed and recommendations made on various heads such as land development, financial resources, employment, shelter, transport, education and health, water management, water supply, drainage and sewerage which were incorporated in the master plan only.

Plate 2.7: Plan of Chennai
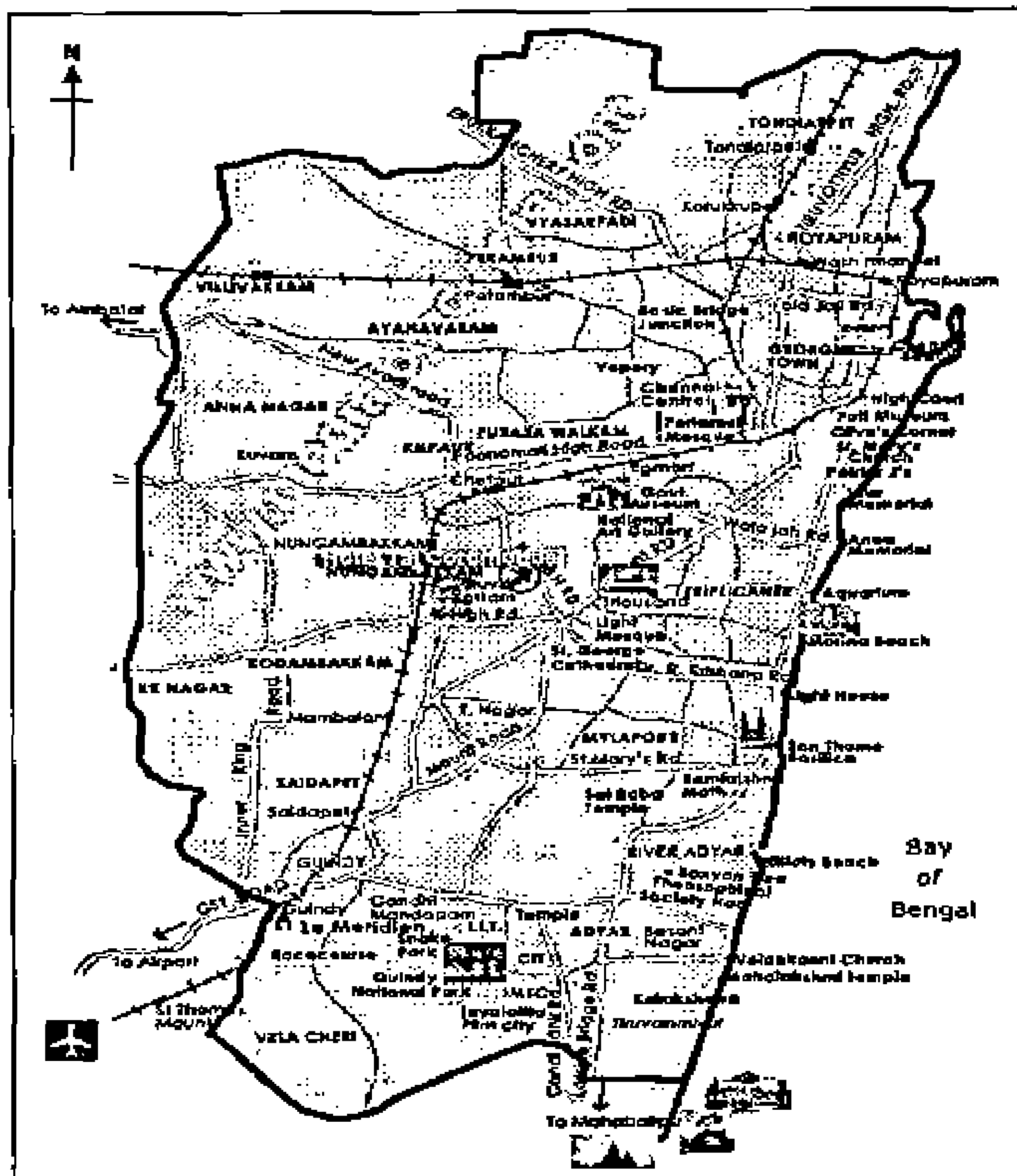
Source: www.mapsofindia.com

Brief review of master plan for Chennai:

Table -2.2: Social infrastructure for Chennai: strategies proposed

S.N.	Issue	Strategy to be adopted
1	Eradication of poverty	Through specific poverty eradication programs
2	Accelerate industrial growth	-Boost to small scale industries -Provision of incentives
3	Up gradation of infrastructure facilities in existing industrial estates	-Through essential infrastructure standards -Prevent commercial exploitation of these industries -Encouragement to labour intensive industries like it, tourism etc.
4	Development of unorganized sector	-Through education & vocational skills
5	SEZ concept to be promoted	-Through identification of new locations for SEZ & Promotion of SEZ at Ennore -Provision of necessary incentives
6.	Computer industry to be boosted	-Development of industrial estates of computer hardware and software at sholingenallur
7	Boost trade & commerce activities	-Existing trade centre at nandambakkam
8	Increase employment through private investment & service industry	-Hurdles in permission /licenses by private sectors to be addressed properly -Attention to be given to health, education, recreation facilities
9	Development of trade through sea route	-Development of Chennai ports
10	Promotion of film industry	-Development of required infrastructure
11	Education	-Periodical reviews to be made -Provision of necessary infrastructure
12	Health	-Detailed study on health , infrastructure in CMA present backlogs and future requirements to be made -Measures on health infrastructure investments
13	Telecommunication	-New policy framework attracting investment -creation of communication infrastructure

14	Recreation	-Maintenance of existing parks/playgrounds
		-Preparation of database on existing parks & playgrounds for new areas & maintenance of existing ones.
15	Planned development of CBD	-Decongestion to shift wholesale activities to planned locations
16	-Housing shortage	-Development by private owners ,real estate owners be encouraged
		-Encouragement to government agencies like TNHB for housing to MIG,LIG,EWS
	-Unapproved layout areas lacking basic services	-Framing of suitable regulations & permitting construction in these plots for their proper mergence with urban fabric
	-Speculation in land prices	-Large scale acquisition & neighborhood development by govt. agencies like TNHB
17	Slums	-Adequate shelter with all provisions of infrastructure facilities
		-Improvement of whole economic & social environment
		-Segregation of objectionable slums

Source: Draft Master Plan – II for Chennai Metropolitan Area

Table-2.3: Traffic and transportation: problems and reasons therein

S.N.	Problem	Reasons
1	Reduced capacity of roads	-Poor quality riding surface, inadequate pedestrians, poor lighting conditions, lack of properly designed intersections
2	Adverse effects on traffic condition like traffic congestion	-Establishment of multi-national car companies in vicinity of CMA, Tidel park, large number of IT companies
3	-Forced low travel speeds	-Growth of vehicles
	-Hold-ups in junctions	-Minimal increase in road space
		-Missing links in orbital direction
4	Inefficient use of roads	-Adhoc use of carriageways & footpaths for utilities

		-Poorly maintained drainage system
5	-Parking shortage in CBD area -Parking along major arterial roads	
6	Reduced safety and capacity	-Regular conflicts between fast moving vehicular ,bicycle & pedestrian traffic
7	Inadequate pedestrians	-Permanent & temporary encroachment of footpaths & carriageways
8	Increase in air pollution	CO, Suspended particulates in excess in air

Source: Draft Master Plan – II for Chennai Metropolitan Area

Table-2.4: Traffic and transportation: proposals for traffic problems

S.No.	Proposals
1	Development of Urban Rail network (MRTS)
2	Completion of projects like ongoing MRTS Ph.II, Gauge Conversion project, Northern segment of NH bypass, Missing link to Inner Ring Road(IRR)
3	Improvement of capacity of major arterial roads& transit ways along the median of the roads along-Anna Salai, Periyar EVR Salai, Jawaharlal Nehru Salai etc.
4	Improvement of road density in peri-urban areas
5	Removal of bottlenecks like road-rail crossings, narrow bridges, etc.
6	Increasing of transit option by development of bus way, metro-rail , monorail
7	Connecting Chennai Central & Chennai Egmore
8	Development of centralized goods
9	Construction of new railway line to decongest freight movement in CMA
10	Additional truck parking at Adayalampattu village

Source: Draft Master Plan – II for Chennai Metropolitan Area

Table-2.5: Physical infrastructure: Needs and strategies

S.N.		Strategy
1	Water supply	-New sources be identified & plans be prepared -To enlarge Metro Water Project in phased manner to whole CMA -Check dams, percolation ponds & rainwater harvesting measures be adopted -Recycling of wastewater for water conservation -Setting up of desalination plants

2	Sewerage	-Study adopting alternate technologies of waste water recycling by CMWSSB -Integration of urban sanitation with water supply program
3	Electricity	-Establishment of thermal station at North Madras with capacity 1000 MW -Provision of necessary infrastructure
4	Solid waste management	-Implementation of recommendations of study conducted engaging consultants M/s Environmental Resource Management, UK regarding collection & disposal -Data for amount of waste to be recycled be made.
5	Drainage system	-Structural & non-structural recommendations of MMFR/SWD be implemented -PWD be made responsible for maintaining of all lakes -Lakes/water bodies be protected from encroachments -Lakes be also developed for ground water recharge
6	Disaster Management	-Awareness generation, development of techno -legal regime, earthquake preparedness and response plans, training and capacity building should be done -Pre-disaster preparedness

Source: Draft Master Plan – II for Chennai Metropolitan Area

Table-2.6: Spatial strategy

S.No.	Strategy
1	-Optimum utilization of land
2	-strengthening of infrastructure facilities
3	-preservation & conservation of the ecologically sensitive areas in CMA
4	Increasing employment opportunities & economic development
5	-development of efficient transportation network
6	-incentives of location & physical development of IT parks /buildings
7	Land use zoning be done for proper land distribution for housing, commercial, institutional, industrial and recreational activities.
8	Development regulations to be improved.
9	In Aquifer Recharge area restricted housing development be allowed
10	Areas for chemicals & other hazardous industries be zoned out
11	Land, housing & infrastructure requirements of Mahindra Park SEZ be met

| 12 | In southern corridor, neighborhood schemes to be implemented |
| 13 | Amalgamation of local bodies into new corporation for efficient public services |

Source: Draft Master Plan – II for Chennai Metropolitan Area

Findings and Recommendations:

a. Strategies for countering problems of water supply, traffic and transportation, degradation of area in terms of housing problem, sewerage and sanitation problem and other infrastructure facilities etc. will be guiding factors to develop strategies for the new hill town.

b. Measures adopted to save upon open spaces, preservation of lakes and other water bodies will be adopted in developing strategies for new hill town

c. Zoning of areas to mark out specific land uses for optimum performance of related specific functions of the area and development therein will be adopted in planning for new hill town.

d. Proposals for strengthening of economic structure of Chennai area & employment generation programs will be considered for planning of new hill town.

2.5 Case Study of Himachal Pradesh

Finally case of Himachal Pradesh has been taken into consideration to visualize the urbanization trends in the state and subsequent development like development of new towns and reasons therein and aftereffects

2.5.1 Urbanization trends in Himachal Pradesh [6]

Overview of urbanization trends in Himachal Pradesh

Process of urbanization in the post independence era has increased at a faster rate .Total urban population of 3, 72,000 was added in the state during the entire period of nine decades from 1901 to 1991,the addition of 3,63,000 or 98% occurred between 1941-1991

Table-2.7: Overview of urbanization trends in Himachal Pradesh

Census year	Total population	Total urban population	%urban population
1901	1,920,294	77,332	4.03
1911	1,896,944	59,193	3.12
1921	1,928,206	66,518	3.45

1931	2,029,113	73,652	3.63
1941	2,263,245	86,099	3.8
1951	2,385,981	153,827	6.45
1961	2,812,463	178,275	6.34
1971	3,460,434	241,890	6.99
1981	4,280,818	325,971	7.61
1991	5,170,877	449.196	8.89
2001	6,077,248	594,881	9.79

Source: Report on urbanization in H.P, 2004, Priya (NGO)

Number of towns has grown to 56 from just 29 in 1961 and proportion of urban population has increased to 9.79 %(2001) from 6.34% in 1961.Highest percentage decadal increase of 78.66% in urban population was in 1941-51

Figure-2.1: Urbanization trends in H.P
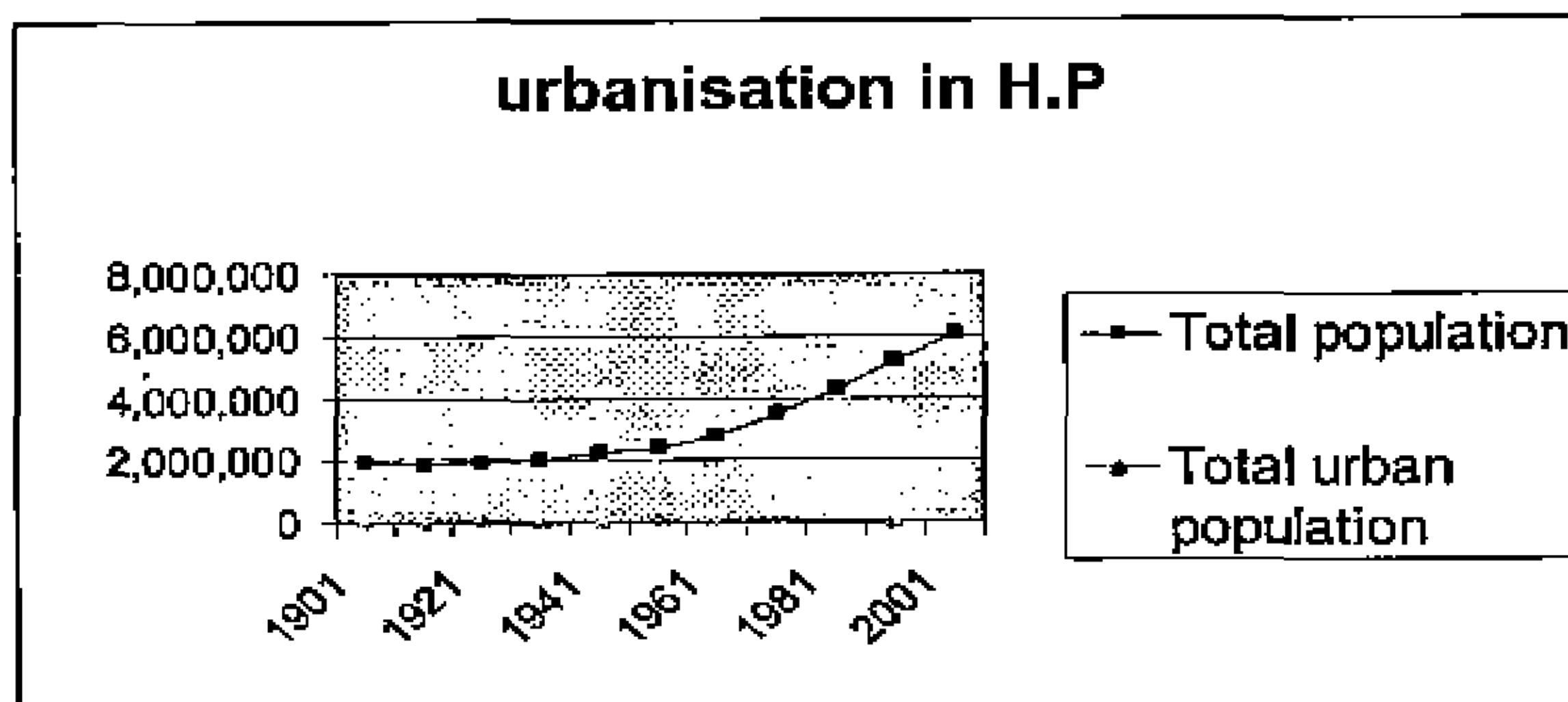
Source: Report on urbanization in H.P, 2004, Priya (NGO)

Growth of small and medium towns in the state

As per 1961, there were total 29 towns in the state out of which 17 were Class VI, 7 Class V, 4 Class IV, and 1 Class III towns. Maximum increase in the number of towns took place in the decade of 1971-1981.the reasons being giving of statehood to the state in 1971, which accelerated pace of development and urbanization. Period also saw development of industries that further increased urbanization.

Table-2.8: Growth of small and medium towns in the state

Year	Number	Class I	Class II	Class III	Class IV	Class V	Class VI
1901	20	-	-	-	1	5	14
1911	11	-	-	-	1	4	6
1921	12	-	-	1	-	3	8
1931	17	-	•	-	1	5	11
1941	20	-	-	-	1	5	14
1951	29	-	-	1	1	6	21
1961	29	-	-	1	4	7	17
1971	36	-	1	1	5	6	23
1981	46	-	1	2	5	9	29
1991	55	1	-	4	7	9	34
2001	56	1	-	6	7	16	26

Source: Report on urbanization in H.P,2004, Priya (NGO)

Table-2.9: Urban centers in H.P-2001

District	Total urban centers	Class-1	Class-2	Class-3	Class-4	Class-5	Class-6
Shimla	10	1	-	-	-	2	7
Solan	8			2		3	3
Sirmaur	3			1	1		1
Una	5				1	2	2
Kullu	4				1	1	2
Hamirpur	4				1	2	1
Bilaspur	4				1	1	2
Mandi	5			2		1	2
Chamba	5			1		1	3
Kangra	9				2	4	3
Kinnaur	0					-	
Total	56			6	7	16	26

Source: Report on urbanization in H.P,2004,Priya (NGO)

Statistics clearly indicate that until 2001, after Shimla (summer capital), the only district to have highest number of urban centers was Dharamsala (winter capital).Shimla has 10 urban centers out of which 7 urban centers are located in Class VI town,2 in Class V town and 1 in Class I town .Dharamsala is at better edge in this case with majority of urban centers (4) in class Vtown,3 in class VI and 2 in class IV town. The reason for growth is tourism, pilgrimage and growth of service sector. The urban centers are Kangra, Nagpur, Mant Khas, Nagrota Bagwan (class V), Palampur, Dera and Jawalamukhi (VI), Dharamsala and Yol (Class IV).Three districts of Shimla, Kangra and Mandi together share more than half of urban population in the state out of which Kangra being the biggest district.

Need of new towns in Himachal Pradesh

This growth is mostly seen in the form of corridors along main roads leading to the urban area. The growth is only of residential or commercial structures without any addition to basic infrastructure and basic amenities. As a result the pressure on facilities in the main urban area increases. There is thus a need for good planned new townships which are self contained in terms of basic amenities like water supply, basic education, medical facilities, recreational facilities etc. and have to depend to the nearest town only for special services like higher education and specialized medical treatment etc.

Findings and Recommendations:

  a. Different growth centers in Kangra region in the proximity to the proposed three sites have been identified. These growth centers would act as one of the determining criterias for identification of appropriate location for the new town.

  b. The relation that these various trends of urbanization in Kangra region have with the growth /potential for future development in three proposed or some other virgin site would be used for the identification of new town.

  c. Trends will help to identify the potential activities /resources that would generate maximum development and employment activity therein the location.

2.5.2 Un-notified master plan Dharamsala, 2005: TCPO Dharamsala [7]

The report includes many Statistics related to various parameters

Table-2.10: Population and growth rate of district Kangra during 1971-2001

Year	Population	Growth Rate
1971	8,00,863	21.85
1981	9,65,848	23.71%
1991	11,74,072	18.20%
2001	13.38.536	14.01%

Source: Un notified master plan Dharamsala

The table 2.10 indicates steady increase in demographic trends

Table-2.11: Trade and Commerce

Shop Type	no. of shops	%
Retail	1337	66.67
Wholesale	6	0.3
Seasonal	18	0.9
Service	347	17.26
Others	298	14.87
Total	2006	100

Source: Unnotified masterplan Dharamsala

Table-2.12: Water Resources

Water Resources:	Spring	Main River (dis.15.00lps)	stream(dis10.00lps)
Dharmsala	4	3	2
Kangra	6	6	6
Palampur	4	3	2
N. Bag.	2	0	4

Source: Unnotified masterplan Dharamsala

Table 2.11 clearly indicates the present scenario in terms of shops that is the commercial activity .Maximum of the retail activity is dominating in the region while the table 2.12 indicates the presence of water resources.

Table-2.13: Medical Institutions

Medical Institutions		Dasala	Kangra	N.Bagwan
Allopathic H.			1	1
Zonal Hospital		1	0	0
Ayurvedic Hospital		1	3	2
T.B Centre		1	0	0
Civil Dispensaries		2	2	1
Private M. Institutions		3	5	3
P.H.C		2	3	1
Veternary Hospital		1	1	0

Source: Un notified master plan Dharamsala

Table-2.14: Telecommunication services

Telecom Services		
Year	No. of connections	
1995-96	17533	206
1996-97	22801	536
1997-98	29930	934
1998-99	39353	1256
1999-2000	53913	1985
2000-01	67993	2500
2001-02	90535	2978
2002-03	94605	3400
2003-04	99700	4000

Source: Un notified master plan Dharamsala

Table-2.15: Banks

Number Of Banks(2003)	N.Bagwan	Kangra
P.N.B	3	4
S.B.I	2	1
U.C.O	1	1
C.B.I	1	2
U.T.I		2
H.G.B	2	6
S.B.P	2	1
COOP. B.	5	8

Source: Un-notified master plan Dharamsala

Table-2.16: Employment-Population scenario

Year	Total Pop.	Employment scenario-Population				Unemployed	Growth R. %
		Service sector	Trade & commerce	Tourism I, pilgrimage	Other industries		
1991	18105	3621	4526.25	5430	6987	724.2	19.9
2001	34682	6939.4	8670.5	10404.6	9143	1387.28	20.01

Source: Un- notified master plan Dharamsala

Table 2.13 indicates the presence of medical and health institutions in the area while table 2.14 shows the increase in telecommunication facilities .Table 2.15 deals with presence of social infrastructure facilities like banks in the area. Table 2.16 deals with the details of the existing employment scenario that up to 2001 out of total population of 34882, 6939 persons were employed in service sector, 8670 in trade and commerce activities and 10404 are in tourism.

Findings and recommendations:

a. Town is growing in leaps and bounds due to various reasons like: increasing urbanization, the area being winter capital of the state, shifting of some main administrative offices from Shimla to district Kangra, location of various pilgrimage and tourist spots thereby making it a potential promising tourist spot, an area enriched with super specialty medical facilities, better climate and environment and growing potential for small scale industries as well.

b. Statistics would help in choosing appropriate location based on Locational analysis.

c. Problems would give insight into the matters of provision, running and maintenance of various infrastructure facilities.

2.5.3 Development plan for Dharamsala [8]

Zoning and sub-division regulations, projections of the workforce in the area ,additional required urbanizable planning area, phasing of proposals, plot-size, coverage, setbacks and F.A.R for residential plots, commercial development, and industrial, open spaces etc. has been detailed out in the report. Some of the regulations to be considered are:

a. Maximum hill cut of 3.50 meter height shall be permissible

b. Areas zoned for public and semi-public open spaces shall not be built upon in any way or used for purpose other than parks, playgrounds and other recreations.

c. Natural nallahs (small streams) which pass through land involving subdivision shall be developed and maintained according to discharge of water.

d. If a plat is developed by cutting land, owner shall protect hill cut by retaining/breast wall/discharge wall in the structure so that cutting may not harm adjoining plots/properties.

e. No wall, fence and hedge along any yard shall exceed meters in height

Findings and Recommendations:

a. Byelaws and norms restrict the number of storeys as three owing to Locational factors and fragility of hills (and seismic activity in the area). This gives the idea of low density development in the new town .Idea of high density to conserve energy does not go very well in the area (Kangra region).

b. The norms regarding development of housing, commercial and industries regarding their location, plot size, setbacks, F.A.R give idea about the type of development to take place in the new proposed town.

2.5.4 New town policy [9]

The new towns (as per rules) should follow the basic principles of hill architecture including use of local building materials, slanting roofs, seismic bands in structures etc. so that they merge in cultural landscape of their regions. Population density for the new townships is proposed to be 100 to 150 persons per Hectare. Traveling time from nearest town to the new

township should be at least one hour / 20 Km. The new town should be self sufficient in infrastructure and its area should ideally not be less than 40 hectares. Provision of facilities for additional floating population should be made.

Land use Structure suggested for the township: Land Use Percentage of Developed Area Small Towns shall be: Residential 50%, Commercial 02%. Public & Semi Public 08%, Recreational 10%, Transport & Communication 20%, Ecological Parks and Green Areas 10%.

Water Supply:- Water requirement for the town should be 135 to 150 lpcd. Water requirement for institutional buildings should be worked out in accordance with the norms provided by the Central Public Health Engineering Environmental Organization, Government of India. The water needs of the town should be partially met by making provision of Rain Harvesting Structures in all the buildings.

Sewerage, Solid Waste and Hospital Waste Management:- Besides sewerage from households, water from industries also needs attention. The sewerage is to be estimated at the rate of 80% of the water supply in any area. Modern sewerage treatment plant and sewerage connection for all buildings should be ensured. Also provision would have to be made for disposal and management of solid waste including hospital waste in a scientific manner.

Drainage: - Natural drainage should not be disturbed. During planning and development of areas for residential, commercial, industrial, transportation and other purposes, proper integration of the drainage should be ensured.

Electricity:- The actual estimation of power requirements can be made based on the commercial development, domestic, institutional and other requirements. Provision of one electric sub-station of 11KV is recommended as a general standard for all categories of towns. Besides, all buildings should have built in provisions for Solar passive heating and maximum use of solar energy will be made through solar energy powered systems for heating and lighting purposes

Carriage-way:-

Table-2.17: Suggested norms for width of Roads

S.No.	Description	Width(metre)
1.	Single lane without kerbs	05.00
2.	2-lane without kerbs	08.80
3.	2-lane with kerbs	10.00
4.	3-lane with /without kerbs	13.00 / 11.80

Source: New town policy for Himachal Pradesh, TCPO, Shimla

Identification of site

The factors to be kept in view while identifying sites for new towns are following:-

a. There should not be any damage to the environment, therefore, such areas should be selected which are barren or grass land is available. Cultivable land can also be taken up but should be considered only if adequate barren land is not available.

b. Besides adequate developable land, proper vehicle accessibility should be there in order to avoid excessive development costs.

c. Providing potable water is very expensive in hill area, therefore, the site must have a water source near by.

d. Traveling time from nearest town to new township should be one hour/ 20 Km.

Land acquisition:-As far as possible, barren Govt. land should be used for urbanization. In case Government land is not available in area, least productive land be acquired through negotiations, thereafter, agricultural land be considered. Incentives like provision of developed plots to individuals, engagement of land owners in jobs in new townships etc. should be provided.

Findings and recommendations:

Norms, standards & regulations give idea about scope extent of development and limitations posed on it due to constraints.

2 5.5 Land value and land availability [10]

As per the report because of scarcity of developable land within the municipal boundaries that is core Dharamsala city, the development has stared coming up outside the area and this trend is bound to continue in future also due to continuous increment in population.

Table-2.18: Land rates in Kangra Region

Land rates	
McLeod Ganj	15-40 lac per kanal
Dharamsala	10-20 lac per kanal
Daadi	6-12 lac per kanal
Yol	8-10 lac per kanal
sakoh	6-12 lac per kanal
chari	3-4 lac per kanal
Areas adjoining Gaggal	6-15 lac per kanal
Areas adjoining Shri Chamunda Devi temple	8-20 lac per kanal

Source: land value report by NIT Hamirpur

Finding and recommendations:

a. The land rates prevalent in different areas of the region give an account of the location where the site can be proposed fro the new potential town. The rates are maximum in upper altitude like Mc Leod Ganj but not very high in areas near Chamunda Devi, Gaggal and Nagrota Bagwan.

b. Further report would help in comparative analysis of rates of three potential sites.

c. Therefore the report helps in Locational analysis involved in the identification of appropriate location for the new town.

2.5.6. Report on Tourism in H.P, 2004 [11]

Table-2.19: Growth rate of tourists in Kangra

Year	International	Domestic
2000	20683	158011
2001	23600	178268
2002	13966	182181
2003	17194	195292

Source: Tourism report of Himachal Pradesh, 2004

Table 2.5.6 details out the growth rate of tourism industry in the area that it is increasing at a steady rate

Purchases /shopping by sampled tourists: Maximum number of tourists purchased Himachali Shawls and caps; Wooden crafts articles, Kangra tea, Kangra Paintings

Tourist places:

Dharamsala-Mc Leod Ganj and Forsyth Ganj- areas retains flavour of colonial styles, while church of Lord Elgin, British Viceroy of India (1863), Chamunda Devi temple ,Kangra, Masroor, Maharana Pratap Sarovar, Pragpur, Palampur, Bajnath, Jawalamukhi.are some other toursit places.

Table-2.20: Purpose Wise Distribution of Tourists in Various Districts

Districts	Business	Pleasure	Sports	Pilgrimage	Health	Totals
Bilaspur	10	21	11	2	28	69
Chamba	12	104	5	2	3	141
Hamirpur	18	5	--	59	1	90
Kangra	19	149	12	79	5	281
Kinnaur	18	21	1	-	3	40
Kullu	14	392	11	22	2	476
Lahul-spiti	29	40	2	-	1	61
Mandi	15	23	2	13	2	73
Shimla	23	304	42	2	9	482
Sirmaur	76	14	-	2	1	114
Solan	31	33	7	-	7	77
Una	10	1	-	5	-	35
Total	273	1107	83	212	36	1939

Source: Tourism report of Himachal Pradesh, 2004

Table-2.21: Item wise (purchase by tourists) distribution of tourists

District	Place	Items				
		Caps	Shawals	Others	Total	G.Total
Bilaspur		3	3	1	7	7
Chamba		3	19	4	25	25
Hamirpur		5	15		20	20
Kangra	Dasala	6	12	18	36	82
	Kangra		3	2	15	
	Palampur	4	9	8	21	
	C. Devi	2	18		20	
Kinnaur		3	13	3	19	19
Kullu		12	33	9	54	54
Shimla		17	69	12	98	98

Solan		2	5	1	8	8
Una		3	9	4	16	16
Mandi		5	11	4	20	20

Source: Tourism report of Himachal Pradesh, 2004

Table 2.20 shows that after Shimla and Kullu, Kangra region has maximum tourism potential, while table 2.21 shows that item wise purchase of tourist goods is maximum for Shimla followed by Kangra region.

Table-2.22: Rating of places as per accommodation for tourists

	Hotel	HPTDC	Dharamsalas	Rest House	Others	Total
Dasala	53	15	2	5	50	125
Kangra	13		3	1	9	26
Palampur	25		5	1	9	40
Chamundadevi	11		5	1		13

Source: Tourism report, Himachal Pradesh, 2004

Table-2.23: Preference of places as per adventure activities

District	Place		
Bilaspur		33	33
Chamba		50	50
Hamirpur		12	12
Kangra	D'sala	72	147
	Kangra	14	
	Palampur	37	
	C. Devi	24	

Kinnaur		10	10
Kullu		100	100
Shimla		78	78
Solan			
Una		58	58
Mandi		7	7
Sirmaur		60	60

Source: Tourism report, Himachal Pradesh, 2004

As per the data from the tables 2.22 & 2.23, among the tourist places Dharamsala is the most favored destination of the tourists after Shimla in case of tourist facilities like availability of tourist accommodation, types of tourist facilities, number and variety of tourist spots ,tourist shopping areas, shopping sprees .

Fig 2.2: Preference for Adventure sports
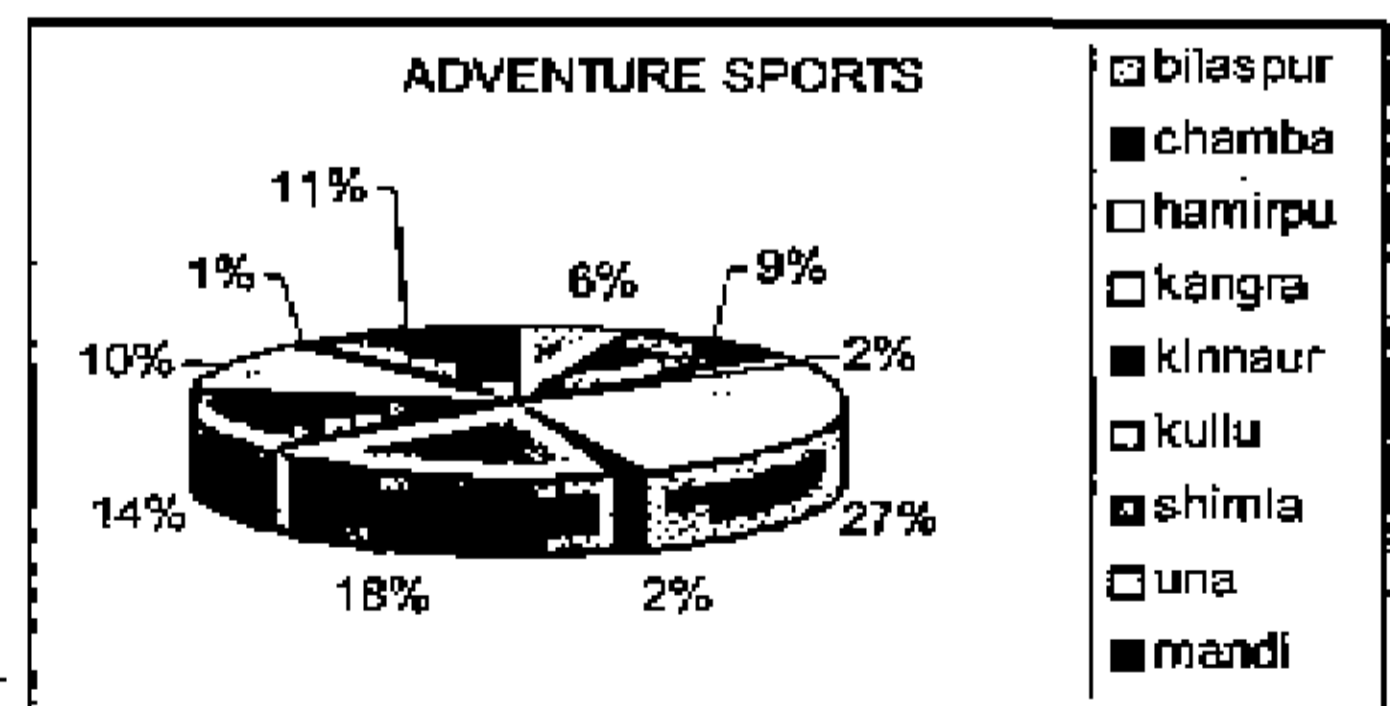
Source: Tourism report, Himachal Pradesh,

Findings and recommendations:

a. Dharamsala in some places follows and at other overtakes Shimla & Kullu in nearly all aspects of tourism. It surpasses Shimla in activities like tourists coming for adventurous sports, pilgrimage purposes, and follows it closely in areas of items purchased, number of tourist accommodations, number of tourist visiting, preference of tourists to visit again and for the reason of purpose of visit.

b. Particular areas excel in specific tourism aspects like areas near Kangra and Dharamsala in fields of Kangra paintings, Palampur belt for Nugel Cafe, and upper ranges of Dharamsala for paragliding, areas near Nagrota and Palampur for tea gardens, area between Dharamsala and Palampur that is Shri Chamunda Devi temple

c. The potential site would thereby serve very strong purpose of tourism destination for the arrivals and hence acting as a strong base foe economy of the area.

2.5.7 Haphazard Development In Towns of Himachal Pradesh Vis-a-Vis Privatization of Urban Infrastructure [12]

There has been sharp increase in development activities in areas like Kullu, Dharamsala on account of betterment of factors like: improved accessibility, better tourism facilities because of steps taken by the government to boost it, commercial sector development, and haphazard development of housing activities. Haphazard development on fringes of towns, ribbon development along roads, and unconcerned development over eco-fragile slopes is the prime area to be taken care of. Issues like unauthorized constructions, encroachments, massive ribbon development, and environmental degradation, increasing pollution, traffic bottlenecks and prevalence of non-conforming uses are leading to problems like overloading and breakdown of infrastructure facilities like roads, water supply, and sewerage, drainage, power supply and communication networks.

Finding and recommendations:

In order to control the degrading conditions of hill towns, it is foremost imperative to develop alternative potential sites for development, improve infrastructure facilities and mange well the running of various facilities/amenities.

2.5.8 Trends and Patterns of Urbanization and their Economic Implications [13]

Overview of Trends of urbanization

There has been massive increase in the percentage share of urban population in class I cities from 26.0 in 1901 to 68.7 in 2001 due to faster growth of large cities. Class I cities have experienced a distinctly higher growth rate than lower order towns except those in class VI. There were only 24 class I cities in 1901 that have gone up to 393 in 2001.
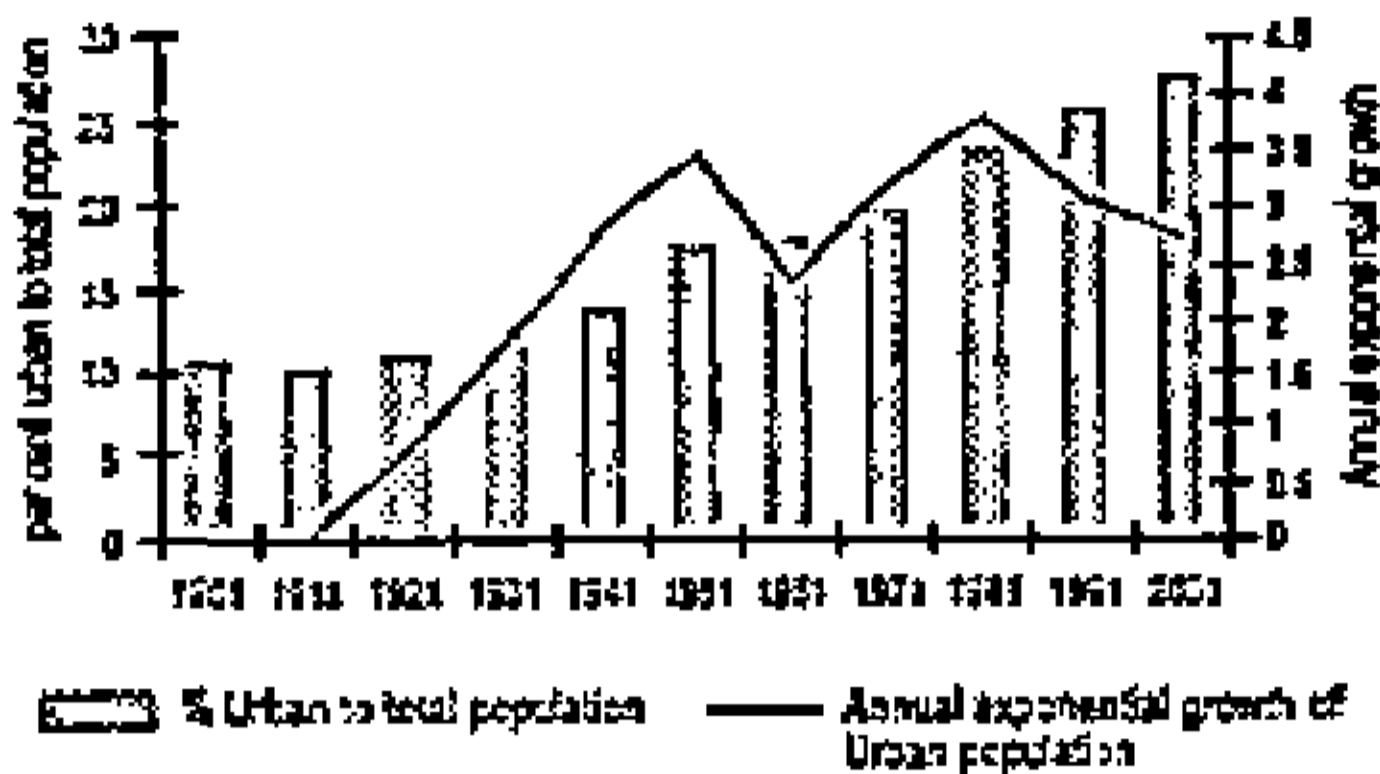
| Class I cities-100,000 or more |
| Class II cities-50,000 -99,999 |
| Class III cities- 20,000-49,000 |
| Class IVcities-10,000-19,999 |
| Class Vcities-5000-9999 |
| Class VI cities-below 5000 |

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

Fig.2.3   Percentage and Growth Rate of Urban Population since 1901

Class I Class II Class III Class IV Class V Class VI
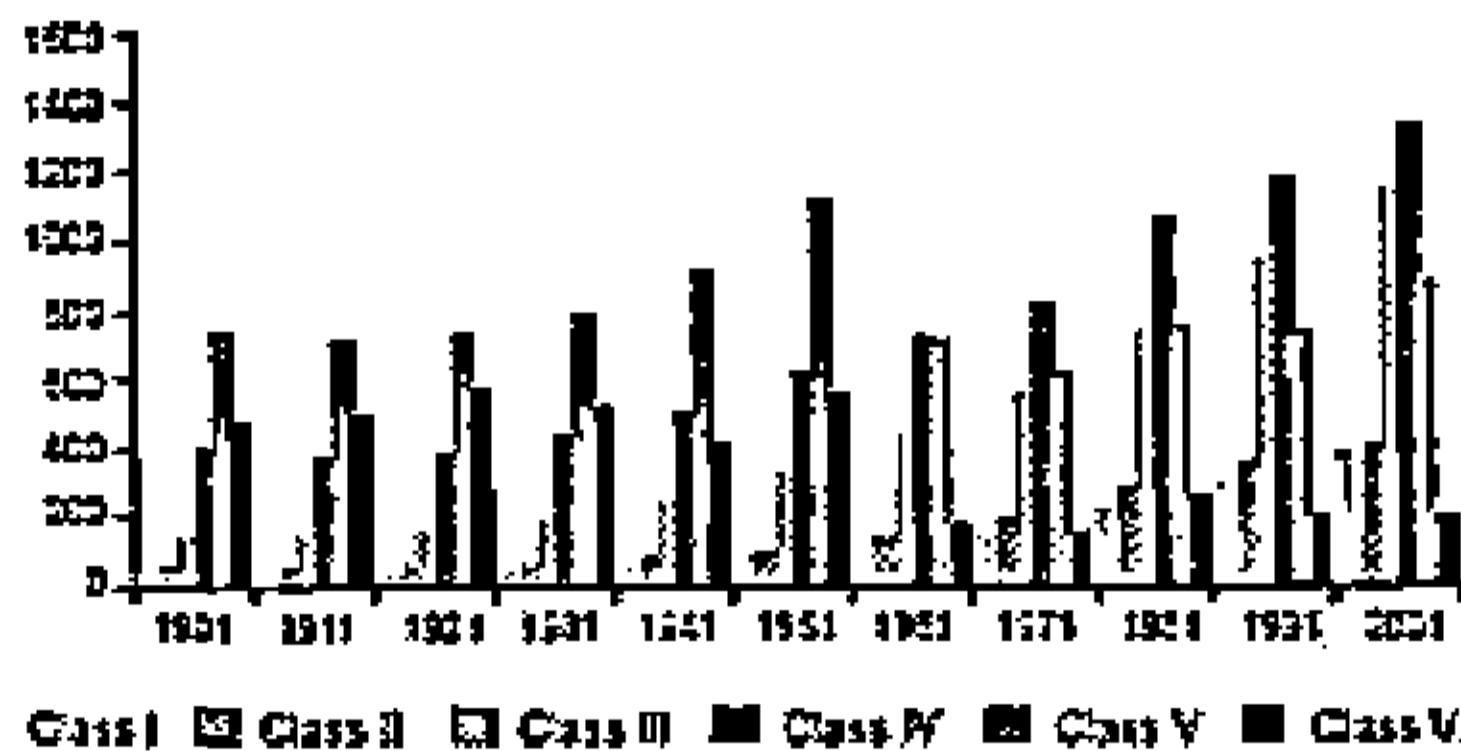
Fig 2.4   Number of Towns in Different Size Categories

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

Table-2.24: Scenario of urbanization in India

Year	Total population (million)	Urban population (million)	Percentage of urban population to total population
1951	361.1	62.4	17.3
1961	439.2	78.9	18.0
1971	548.2	109.1	19.9

1981	683.3	159.5	23.3
1991	946.3	217.9	25.7
2001	1027.0	285.4	27.8

Source: www. Planning commission .nic .in

Findings and recommendation:

It would help to understand the scenario in north Indian states and their effect on the development patterns and urbanization in state of Himachal Pradesh.

2.5.9 Plan Implementation for Eco-sensitive Areas [14]

As per the author following consideration shall be taken into account while deciding for suitable site for new urban settlements

Economic aspects:

   a.   High marketability

   b.   Lower land cost &Minimum infrastructure development cost

   c.   Freedom from development related issues

   d.   Land use in conformity with development plan

   e.   High degree of accessibility due to its location on major network of the city, state and the religion and Assured quality of life

Site to be avoided:

   a.   Low marketability & High land value

   b.   High development cost

   c.   Poor accessibility

   d.   Prone to flooding

   e.   Existence of numerous built up structures

   f.   Large number of small and marginal land owners

   g.   Close proximity to the classified defence installations

   h.   Area prohibited for development under any law

   i.   Closeness to industrial areas except the industrial project

   j.   Existence of sources of pollution within and outside the site

k. Area earlier used as landfills

l. Existence of high tension electrical lines

m. Existence of railways/major road network within the site.

Site evaluation parameters: These have been further subcategorized by author to give more accuracy in procedure of site selection.

Physical: Natural and man made factors

Slope:

- Site with gentle slopes are preferred for easy drainage
- Slopes with sharp gradients shall be avoided
- Also site requiring large amount of land filling or land cutting shall be avoided.

Soil characteristics:

- Soil shall have appropriate load bearing capacity
- Soil with high water absorption, low load bearing capacity or high ground water table shall be discarded
- Moreover agriculturally ideal soil shall also not be used

Water characteristics:

- Site must possess good quality and good quantity of water resources
- High water table areas shall be discarded for the damping of the built masses in future

High tension electric lines: Sites with high tension lines shall be avoided.

Location of railway lines: In case rail line pass through the site than it shall be avoided

Location of roadways: In case national highways, bus terminals etc, are in site, then it shall be also be given due consideration

Proximity of defence areas: Site falling within 900 metres of defence installations to be avoided.

Accessibility: More than one linkage is preferred; in addition to this, linkage by maximum number of modes is preferred like roads, rail, airport etc.

Social aspects: Land ownership pattern, size of land holdings, target groups for whom planning is undertaken and quality of development in the surroundings of the site are included in it.

Findings and recommendations:

Various criteria given in the study like the following, shall be used in determining of the site through site suitability analysis

- Physical aspects
- Social aspects
- Economic aspects
- Environmental aspects

2.6 Study area at a glance

Kangra is located in western part of Himachal Pradesh.

It is surrounded by districts –Chamba, Lahul -Spiti, Kullu, Mandi, Hamirpur and Una
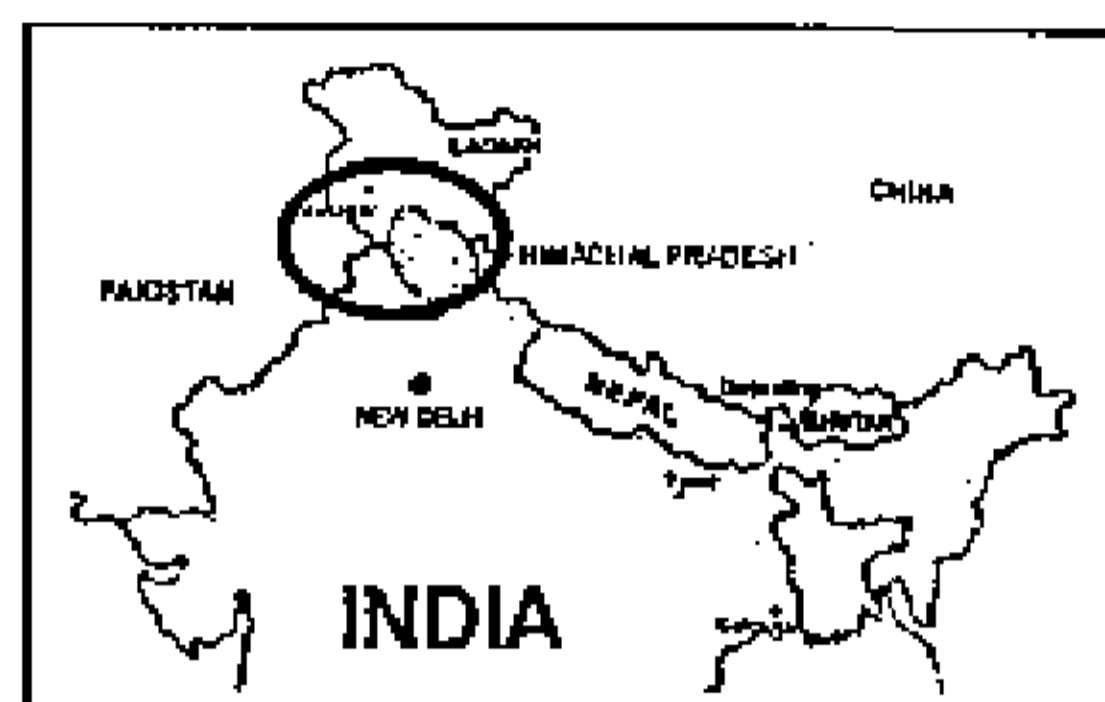
Table- 2.25: Fact file-Kangra district

Total Population As Per 2001 census 13,39,030		
Male Population	6,61,254	
Female Population	6,77,776	
Rural Population	12,66,745	
Urban Population	72,285	
Population(0-6)	164,566	
SC Population	279,540	20.9 %
ST Population	1597	0.1 %
Sex Ratio	1025	Females per 1000 males
Density of Population	233	
Birth/Death Rates	Per 1000 22.1 / 7.7	
Geographical Area 5739 Sq. km.		
Forest Area		2367 Sq. km.
Cultivated Area		1175 Sq. km.
Unusable Area		2197 Sq. km.
Altitude		1220 mtr. (Head Quarter)
Longitude	75 Degree 35' to 77 degree 4' (E)	75 Deg 35' 34"- 77 Deg. 04'46" (East)
Latitude	31 Degree 41' to 32 Degree 28' (N)	31Deg.45'0"-32 Deg.28'05"(North)
Major Rivers	Beas River	A seasonal river

Climate		
Rainy Season	From July to September	Temp. Approx. 32 degree C
Winter	October to February	Temp. Approx. 20-30 degree C
Rainfall	At Hqrs.	Max 2000mm Min 1000mm
Distances From Dharamshala		
Nearest Railway Station	Pathankot/Kangra	100 Kms / 20 Kms
Nearest Airport	Gaggal (Kangra)	13 Kms
People & Culture		
Major Religions	Hindus, Sikhs and a number of Muslims also.	
Languages Spoken	Pahari(Kangri), Punjabi, Hindi	
Culture	Traditional and Pahari	
Traditions	Religious	
Art Forms	Kangra paintings and Art Gallery of Shobha Singh	
Administrative Setup		
No. of Sub-Divisions	8	
No. of Tehsils	14	
No. of Sub-Tehsils	5	
Development Blocks	14	
Panchayats	760	
Villages	3868, Mant Khas village has been made Census Town.	
Census Town	1 (Mant Khas) As per Census 2001	

Source: http://hpkangra.gov.in/welcome.asp

2.7 Conclusion: Inferences from literature survey

In setting up of new towns most vital areas of focus have been site considerations especially in case of contoured , availability of natural resources to evaluate the carrying capacity of the town and the environmental aspects. Besides it, transportation would also be considered. Spatial location of key public buildings/housing shortage etc. will be the other important issues to be taken care of. Based upon literature survey and findings from various reports based on Himachal, especially Kangra region ,it is therefore imperative to plan for new town to avoid haphazard development taking place at its own in the region along different circulation spines.

3

Case Study

3.1 Uttrakhand

3.1.1 Profile [15]

1. Topography and climate
2. Demographic
3. Electricity and water supply
4. Transport and communication
5. Medical and health facilities
6. Education
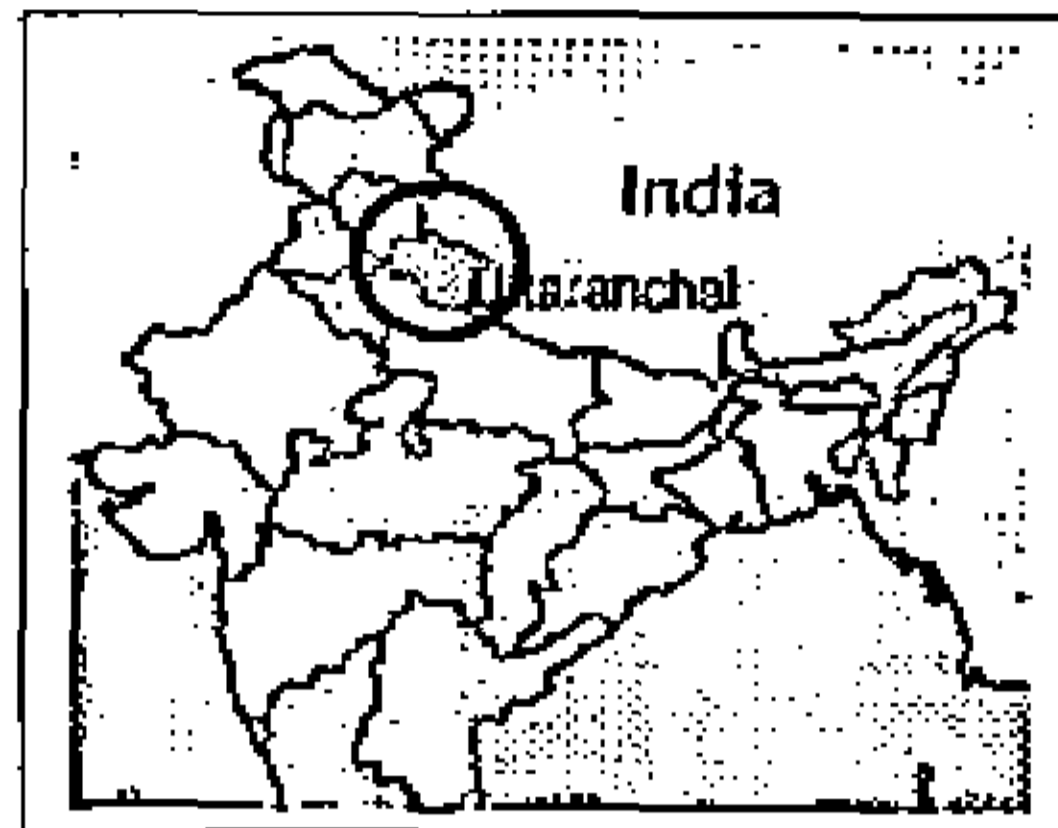
Source: www.mapsofindia.com

Table-3.1: Topography and climate

S. No.	Items	Year/ Period	Unit	Statistics
1.	Latitude		28°43' N to 31°27' N	
2.	Longitude		77°34' E to 81°02' E	
3.	Geographical Area	2005	Sq. Km.	53483
4.	Forest Area	2004	Sq. Km.	34651
(B)	Metrological Data			
1.	Average Rainfall	2004	m. ms.	1397.0
2.	Temperature			
	(i)Minimum (Mukteshwer)	2004	° C	-2.7
	(ii)Maximum (Dehradun)	2004	° C	41.5
(C)	Administrative Units			
1.	Divisions	2005	No.	02
2.	Districts	2005	No.	13
3.	Tehsils	2005	No.	78
4.	Development Blocks	2005	No.	95
5.	Nyaya *Panchayats*	2005	No.	670
6.	Gram *Panchayats*	2005	No.	7227
8.	Town/Urban Agglomeration			
	(i)Municipal Corporation	2005	No.	01
	(ii)NagarPalika Parishads	2005	No.	31
	(iv)Cantonment Boards	2005	No.	09
	(v)Census Towns	2001	No.	12

	(vi)Industrial Townships	2001	No.	02
9	Police Stations	2005	No.	104
	(i) Rural	2005	No.	43
	(ii) Urban	2005	No.	57
10.	Geographical Area	2005	Sq. Km.	53483

Source: census of India-2001

Table3.2: Demographic profile:

S. No.	Items	Year	Unit	Statistics
(A)	*Sex-wise Distribution*			
1.	Total Population	2001	Lakh	84.89
	(i) Male	2001	Lakh	43.26
	(ii) Female	2001	Lakh	41.63
	(iii) Decennial Growth Rate	1991-01	Percentage	19.34
2.	Rural Population	2001	Lakh	63.10
	(i) Male	2001	Lakh	31.44
	(ii) Female	2001	Lakh	31.66
(B)	*Literates (Age above 6 Years)*			
1.	Total	2001	Lakh	51.06
(C)	*Literacy Rate*			
1.	Total	2001	Percentage	71.6
	(i) Male	2001	Percentage	83.3
	(ii) Female	2001	Percentage	59.6
2.	Scheduled Caste Total	2001	Percentage	63.4
3.	Scheduled Tribes Total	2001	Percentage	63.2
(D)	*Sex-wise Labour Force (Main Worker)*			
1.	Total	2001	Lakh	31.34
2.	Rural	2001	Lakh	24.99
(E)	*Category-wise Labour Force*			
1.	Main Workers	2001	Lakh	23.22

	(i) Cultivator	2001	Lakh	10.67
	(ii) Agricultural Labourer	2001	Lakh	1.43
	(iii) Household Industry	2001	Lakh	0.49
	(iv) Other	2001	Lakh	10.63
2.	Marginal Workers	2001	Lakh	8.12
	(i) Cultivator	2001	Lakh	5.03
	(ii) Agricultural Labourer	2001	Lakh	1.17
	(iii) Household Industry	2001	Lakh	0.23
	(iv) Other	2001	Lakh	1.69
(I)	*CBR, CDR, IMR and TFR (S.R.S. Data)*			
1.	Crude Birth Rate	2003	Per '000 of Popu.	17.2
2.	Crude Death Rate	2003	Per '000 of Popu.	6.5
3.	Infant Mortality Rate	2003	Per '000 of Live Births	41

Source: census of India-2001

Table-3.3: Electricity and water supply

S. No.	Items	Year/ Period	Unit	Statistics
(A)	Installation Capacity	2004-2005	Th. KW.	998.85
(B)	Electricity Generated (Gross)	2004-2005	Th.KW.	3121.61
(C)	*Electricity Consumption*			
	(i) Domestic	2004-2005	M.U.WH.	1010.69
	(ii) Commercial	2004-2004	M.U.WH.	663.69
	(iii) Industrial	2004-2005	M.U.WH.	795.74
	(iv) Street Lighting	2004-2004	M.U.WH.	46.21
	(v) Agriculture	2004-2005	M.U.WH.	485.98
	(vi) Water Works/ Waste Disposal	2004-2004	M.U.WH.	156.44
(D)	*Rural Electrification*			
1.	Electrified Inhabited revenue Villages	2004-2005	No.	14430
2.	Energised Pump Set/ Tube Well	2004-2004	No.	17838

(E)	*Drinking Water Supply*			
1.	Inhabited revenue Villages Covered	2004-2005	No.	15533
2.	Population Covered	2004-2004	Lakh	61.23
3.	Scarcity Villages	2004-2005	No.	06

Source: census of India-2001

Table-3.4: Transport and communication

S. No.	Items	Year/ Period	Unit	Statistics
(A)	*Motor Roads Maintained by PWD*			
	(i)National Highways	2004-2005	Km.	1328.30
	(ii)State Highways	2004-2005	Km.	437.12
	(iii)Major District Roads	2004-2005	Km.	1368.92
	(iv)Other District Roads	2004-2005	Km.	6909.61
	(v)Rural Roads	2004-2005	Km.	5630.15
	(vi)L. V. Roads	2004-2005	Km.	2632.98
(E)	Postal and Communication Services			
	(i)Post Offices	2004-2005	No.	2722
	(ii)No ofTelephone Exchanges	2004-2005	No.	450
	(Ii) Telegraph Offices	2004-2005	No.	83
	(III)PCOs	2004-2005	No.	13133
	(Iv)Telephone Connections (including WLL) by BSNL	2004-2005	No.	389929
	(v) Mobile phone by BSNL	2004-2005	No.	131825

Source: census of India-2001

Table-3.4: Medical and health facilities

S. No.	Items	Year	Unit	Statistics
(A)	*State Allopathic Hospitals and Dispensary*			
	(i) District Level Hospital	2004-2005	No.	16
	(i) Base Hospital	2004-2005	No.	3
	(iii) P.H.C./Additional P.H.C.	2004-2005	No.	229

	(iv) Community Health Centre	2004-2005	No.	40
	(v) State Allopathic Hospitals	2004-2005	No.	324
	(ix) Tuberculosis Hospital/Clinic	2004-2005	No.	18
	(x) Leprosy	2004-2005	No.	3

Source: census of India-2001

Table-3.6: Education

S. No.	Items	Year/ Period	Unit	Statistics
(A)	*Basic/ Secondary Education*			
1.	No. of Schools/ Colleges	2004-2005	No.	20309
	(i) Junior Basic	2004-2005	No.	14663
	(ii) Senior Basic	2004-2005	No.	3861
	(iii) High School/ Intermediate	2004-2005	No.	1785
(B)	*Higher Education*			
1.	No. of Institutions	2004-2005	No.	92
	(i) Degree/Post Degree Colleges	2004-2005	No.	82
	(ii) Universities	2004-2005	No.	6
	(iii) Deemed Universities	2004-2005	No.	3
	(iv) Indian Institute of Technology	2004-2005	No.	1
(C)	*Vocational and Technical Education*			
1.	Industrial Training Institutes	2004-2005	No.	73
2.	Polytechnics	2004-2005	No.	25
3.	Distt. Instt. of Educ. Training	2004-2005	No.	9

Source: census of India-2001

3.1.2 New capital of Uttrakhand: identification of Locational criteria and their application [16]

For the location of new settlement (new capital) two criterias have been used:

1. Macro and
2. Micro criteria

Table-3.7: Criterias for identification of Locational analysis

Macro criteria (situation factors)	Micro criteria (site factors)
Centrality	Source of water
Geographic	Land availability
Population distribution	Land values
Nodality	Local faults
Connectivity	Topography and climate
Accessibility	Supply of electricity
Transport modes	Natural drainage
Physical feasibility	Availability of construction materials
Seismic zones	Historical associations
Faults/thrusts	Investment
Environmentally sensitive forest zones	
Topography	
Security	
Acceptability	

Source: Article by Arjita Bansal, Vol. 9 No.3 May-June2002, SDR

Macro and micro criteria vary from region to region and are endowments of a particular area. Their application henceforth also varies as per the area's conditions.

a. Case of Uttrakhand

Uttrakhand comprises of 13 districts. Various phases have been worked to identify the location of appropriate site out of various location for settlement of new capital for Uttrakhand and hence a new town in hills.

b. Phase I: identification of zone of location for state capital

1. *Centrality*

   In this case, the geographic centre have been located that lies in districts of Pauri-Garhwal and Chamoli. By distribution of population center of absolute population and population density lies in district Pauri-Garhwal

2. *Nodality*

Survey and analysis of connectivity links state that districts Haridwar, Pauri-Garhwal, Nainital, Almora, Udham Singh Nagar and Pithoragarh have good connectivity and are more accessible than other districts.

3. *Transport modes*

Southern parts of the state have better developed transport mode as road and rail links. NH 72, 73, 74 and 58 pass through these areas of the state. Districts Rishikesh, Kotwar, Dehradun, Kathgodam and Tanakpur are well linked through rail links. In addition to this Dehradun and Pantnagar are also connected through airport. Therefore the most suitable districts satisfying these criteria are Dehradun and Udham Singh Nagar followed by Haridwar and Pauri- Garhwal

4. *Physical feasibility*

Topographic and climatic considerations:

Ecologically sensitive zones with high altitudes and fragile environment of districts Uttarkashi, Chamoli, Pithoragarh and Bageshwar are not suitable for the site purposes. Areas lying in the parts of lesser Himalayas and Shiwaliks are most appropriate from these considerations.

Environmentally sensitive forest zones:

In view of conservation of reserved forests, only those areas or belts would be considered as suitable that have lesser percentage of space as forests (that is less than 53%). From this point of view, districts of Haridwar, Dehradun, Pauri-Garhwal, Almora, Pithoragarh and Udham Singh Nagar suits most to the criteria.

Seismic zones:

Zone IV and Zone V are the seismic zones in which whole of the Uttrakhand state lies. Out of these zones, Zone IV is considered as safer for location of the capital. In this zone districts of Pauri-Garhwal, Uttarkashi, Dehradun, Udham Singh Nagar, Nainital ,Haridwar, Teri Garhwal, Chmapawat & parts of Almora are considered for the purpose.

Availability of water:

Owing to location of many perennial rivers, Uttrakhand does not have severe water scarcity problems.

Security

Here those districts are important that do not have common boundaries with international line. In this regard therefore the districts Pauri-Garhwal, Dehradun, Teri - Garhwal, Rudraprayag, Almora Bageshwar and Nainital are most appropriate and therefore are more liable towards fulfilling security conditions.

Acceptability

It covers the aspects of general opinion of public about the most suitable location for the capital and the concerned reasons. Therefore in this case study an opinion survey of various professional groups was conducted (by the concerned authorities) to know the most appropriate site as favoured by the people and the basis of such selection. In this Dehradun received highest percentage (46%), Pauri-Garhwal (12%) .16% people gave preference for any central hill location.

Zone for capital location

Using macro criterias the location of the district for state capital was identified using two methods of selection

1. Criteria are given equal weights and districts are weighted against each criteria by ranking them on ordinal scale. Here most of the criterias are satisfied by Pauri-Garhwal and is considered to be most appropriate site for capital location

2. Criteria were given weights as per the priority and weight summation technique applied. Here districts that were situated in Zone IV and were more prone to seismic activities, were putout of the list .Results advocated the selection Pauri-Garhwal as most appropriate location on the basis of fulfillment of most of the criteria.

Table-3.8: Criteria weighting of the districts in Uttranchal

Criteria/District	1	II	III	IV	V	VI	VII	VIII	IX	X	XI	XII	XIII
Geographic centrality	0	0	2	2	0	2	2	0	0	0	0	1	0
Population centrality	1	0	2	1	1	1	1	0	0	0	1	1	0
Nodality, accessibility	0	0	2	0	1	0	1	1	1	1	2	2	1
Transport mode	3	0	2	0	2	1	1	0	0	1	1	1	2
Forest zones	2	0	2	0	2	0	0	0	2	2	0	0	2
Topography	2	0	2	2	2	0	0	1	0	2	2	2	2
Seismic Zone	2	1	2	2	2	0	0	0	0	0	2	2	2
Acceptability	2	0	1	0	0	0	1	0	0	0	1	1	0
Security	2	0	2	2	2	2	0	2	0	0	2	2	0

Source: Article by Arjita Bansal, Vol. 9 No.3 May-June2002, SDR

3, 2 =Criteria fully   2, 1 =Criteria partially applicable   0=Criteria not applicable

I: Dehradun II: Uttarkashi III: Pauri-Garhwal IV: Teri-Garhwal V: Haridwar

VI: Rudraprayag VII: Chamoli VIII: Bageshwar IX: Pithoragarh   X: Chmapawat

XI: Nainital XII: Udham Singh Nagar XIII: Almora

Therefore the district Pauri-Garhwal has been identified for capital location

c. Phase-II: Identification of settlement for the Capital Location

Eliminating various locations by appropriate methods adopted finally provide for three prominent settlements that can be further subjected to other criteria test to arrive at most appropriate location. The three locations are: Rishikesh in Dehradun district, Pauri and Srinagar in district Pauri- Garhwal. To achieve final outcome in the form of most appropriate location micro criteria has been applied .basic requirements of population and land requirement has also been estimated .Estimates show the population will be 147,000 with total land requirement of 2940 ha, assuming overall density of 50 ppHa.

Local faults: Since Rishikesh lies in the sensitive tri-junction ridge of Delhi-Haridwar-Harsil; therefore it is more prone to landslide thereby eliminated

Source of water supply:

Alaknanda River is the source for both the areas. But Srinagar has an added advantage over Pauri that vast altitude difference of over 900m in case of Pauri makes supply of water to it more difficult thereby employing extra pumping costs etc. Therefore from the point of view of cost incurred on infrastructure facilities and maintenance of infrastructure facilities, Srinagar stands as better option than Pauri-Garhwal

Land availability:

Land availability is not a constraint in case of both the areas .However cost of land acquisition is marginally high in Srinagar

Topography:

Due to location in river valley the area of Srinagar posses flat topography with gradient of 10-15% which is suitable for building activities while Pauri lies at altitude of 900m with gradient varying from 15% to even 30%. Therefore owing to topographical constraints Srinagar emerges as better location.

Natural Drainage:

Since drainage depends upon topography, therefore in hills there is no problem of drainage and hence both the areas satisfy the criteria

Availability of Construction materials:

Construction materials like Granite, Slates, Tiles and Limestone and quartzite are easily available in both cases .However in case of import of certain construction materials like bricks and other ornamental materials, plain location of Srinagar has advantage of proximity to the national highway as compared to Pauri.

Supply of electricity:

Uttrakhand having high potential of hydro-electricity has no constraints in terms of electricity.

Selected location for the capital

After the comparative analysis of various criterias, the proposed location for the capital of Uttrakhand was proposed to be in Pauri-Garhwal district near Srinagar.

d.   Phase III: Siting of the capital

As per the studies following three options existed for location:

1. Location within the existing town of Srinagar
2. Adjacent to the town
3. Virgin site near Srinagar town

Land costs were found to be comparatively high inside Srinagar and lower outside is and also in near vicinity if the settlement. Moreover it was felt that setting up of the new capital in the city would lead to loss of identity of both the places. Therefore of the capital on the virgin land but in close vicinity of Srinagar was advocated. It would therefore lie on the western side of Srinagar on flat gradient land available on the southern bank of river Alaknanda along NH73.

e.   Evaluation of selected location with respect to Dehradun

Advantages and disadvantages over Dehradun

Advantages:

1. Better accessibility and connectivity within the state
2. Better geographical and population centrality
3. Presence of perennial sources of water
4. Fulfills the hill identity of the people
5. Land costs are three times high in Dehradun as compared to Srinagar.

Disadvantages:

However the location suffers from absence of rail or air connectivity. But it is proposed to develop these transports over period of time. It has proposed by the author to extend rail from Rishikesh because of lesser contours to be confronted.

Net result:

Ultimately it will lead to generation of alternative growth center which would further speed up development in the area rather than concentrating the development in one particular area only and making it to decay over a period of time (because Dehradun being a hill town has many constraints).Moreover the developments that have come up are not very high and intense so it is not obligatory to establish capital town there

Plate 3.2: Most appropriate location for Capital of Uttranchal
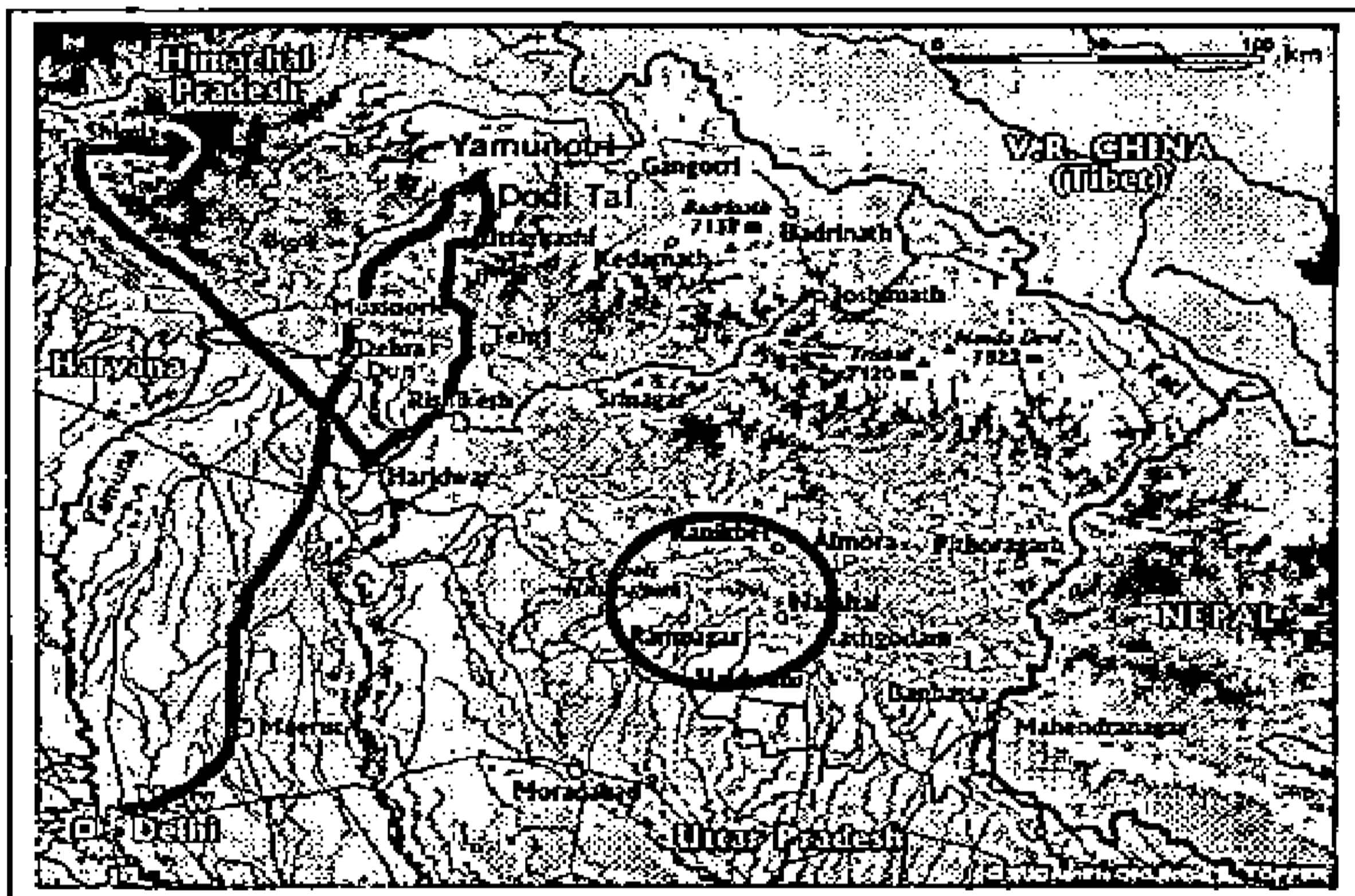
Source: www.Mapsofindia.com

f. Findings and recommendations:

1. Locational analysis that has been used by the author would be used for the identification of location for the new hill town in Kangra region

2. Better centrality of population, overview of topographical and political constraints would guide in identification of the location

Ordinal scale /comparative analysis would be used for three proposed locations and other potential site also to find most appropriate location.

4
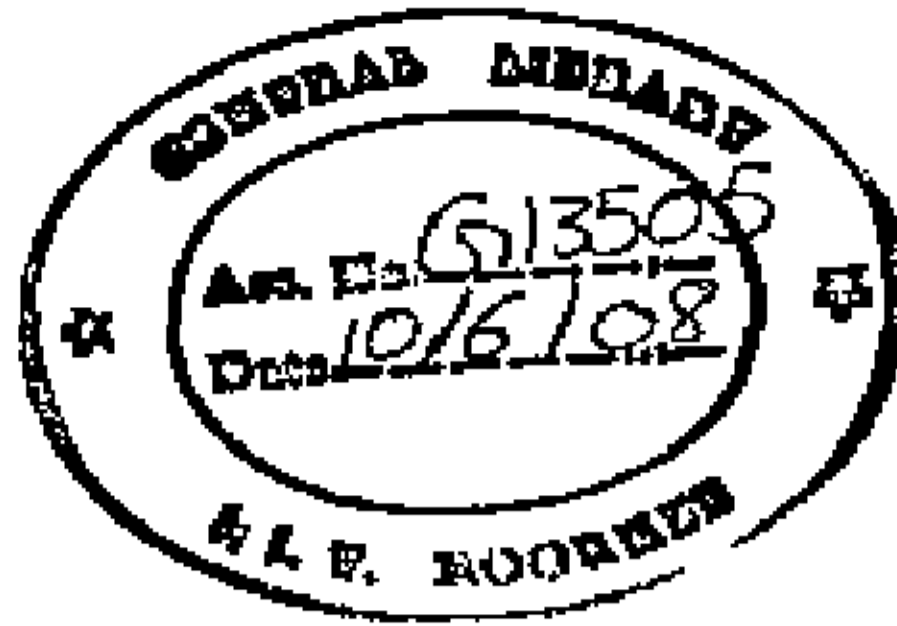
Study and Analysis

4.1 Study- General

4.1.1 New- town planning: principles and practices, G.Golnay [1]

a. Need for new towns

Population distribution or settlement is a function of availability of natural resources transportation, communication systems, intensity and quality of social interactions, market patterns and trends and environmental conditions prevailing there. In case of urban congestion, redistribution of population in accordance with the carrying capacity of the area becomes vital, provided with due considerations of transportation network more friendly social interactions and user-friendly environment, community management and optimum utilization of natural resources.

In case of new settlement formation, three main basic aspects need to be considered:

1. Issue of location of the settlement
2. Size of the settlement
3. Functions of the settlement

In a new town prime factors to be considered are:

1. Availability of job opportunities and their distribution
2. Flow and distribution of investments
3. Transportation networks
4. Various economic, social and cultural activities

Type and pattern of the settlement is largely dictated by the economy of the area. Economic self-containment classifies various settlement as type A: new town, new community, new city, company town, development town, regional growth centre, freestanding community ,accelerated growth centre, horizontal city, vertical city and type-B: satellite town, metro town, land sub division, new town —in town. Type-A settlements are independent economically and have physical identity .They are not dependent on any settlement or community and hence are not dormitory settlements. They are self-sufficient and self-contained that include wide variety of land uses serving various goals and purposes and not

only housing alone. While the type-B settlements are totally and completely economically dependent on the commuting settlements or the main town where its residents work and come to the place of stay at night. Therefore such towns are both physically and economically dependent to urban centers or the main town. Such towns are mainly dormitory towns comprising mainly of residences.

Table-4.1: Types of settlements

S. No.	Settlement type	Economy type	settlement
1	Type A	Self-dependent	new town, new community, new city
			company town, development town,
			regional growth centre,
2	Type B	Dependent	satellite town, metro town, land sub division

Source: *New- town planning: principles and practices, G.Golnay*

The philosophy of new towns can be explained in terms of five elements:

1. Degree of self-containment
2. Extent of balanced economy
3. Extent of self-governance
4. Its size
5. land-use patterns

b. Defining New towns

Therefore a new town is a new urban settlement formed with a specific purpose and with definite defined goals and criterias .New town is always developed on public or semipublic land to retain land use .It is marked by comparatively high degree of independence, economic self-sufficiency, and self-government to regulate and control developments. new settlement (new town)essentially caters to the social ,cultural, educational, commercial ,private and public services along with giving due considerations to environment and ecology at the same time. It also marks adequate transportation system to maintain the flow of services and movement of people/goods etc. in efficient manner.

c. Differentiating New Town and New Community

A new community is more or less a residential community like that of a satellite town. It caters mainly to the housing needs of the area unlike new town that also provides sound

economic base for its residents to survive in addition to the residential aspect. Therefore a new community is defined as planned settlement; but unlike a new town, it is an expansion and extension of the already existing one.

d. Differentiating New Town and Satellite town

Satellite town: is a settlement whose community is not economically independent but very much dependent on the commuting settlement or the main town/urban centre. Therefore its economic aspects are strongly influenced by larger city's economic aspects .Physically this settlement is essentially separate from it and connected by efficient modes of transport and communication. Satellite town since encompasses only housing aspects therefore it caters to a special pocket of people basically the middle income group that can afford to live inside the main town owing to high living costs but still can avail the benefits of the main town.

Table-4.2: Summary of characteristics of new urban settlements

S. N.	Characteristics	New town	New community	Regional growth centre	Horizontal city	Vertical city	Satellite town	Metro town
1	Public & semip land ownership	F	A	P	A	P	A	P
2	Confined green belt	F	F	F	P	F	A	F
3	Combine town and country	F	F	F	P	F	P	P
4	Intersecting open space	F	P	F	A	A	A	A
5	Defined and compact area	F	A	F	A	F	A	P
6	Limited population size	F	A	P	A	F	A	P
7	Balanced community	F	P	P	F	F	A	F
8	Neighbourhood units	F	F	F	P	F	P	P
9	Sound economic base	F	P	F	F	F	A	P

10	Proximate places of work and residences	F	A	F	A	F	A	P
11	Local provision of infrastruct.	F	P	F	P	F	P	F
12	Support industrial decentralization	F	P	F	P	F	A	F
13	Public as main enterpriser	F	A	F	A	P	A	A

A: Absence, P: Partial application, F: Full application

Source: New- town planning: principles and practices, G.Golnay

e. Site selection

First step in the setting up of a new town is the location of appropriate site for the purpose. The site selection involves consideration of a number of aspects like following:

1. Physical aspects,
2. Social aspects,
3. Economic aspects,
4. Potential local resource aspects,
5. Environmental and ecological aspects and
6. Political aspects.

f. Physical criteria:

Topography, landscape, water resources, climate, geology, precipitation, geography, geomorphology, slope, drainage etc. are important to be considered for cases of floods, erosion, limited availability of land and security problems, future expansion and extension needs etc. It helps in determining the type of land use pattern best suiting for the area .infrastructure facilities like sewerage, water supply, roads, electricity also are marked by physical characteristics of land. Type of land use (proposed) also differs with the location of the site .for e.g. in-case of hills, tops be reserved for public buildings or public use while strips in-between hilltop and bottom can be used for residential purposes. Apart from land and soil conditions ,climatic conditions equally affects selection of the site .for e.g. factors like temperature, exposure to sun, prevailing wind velocity and seasonal weather changes,

all are very important to be considered while selection of site. Access to various facilities determines housing demand.

g. Social and economic criteria

The important thing is to calculate the distance between the facility and site since it should not be too far away to obscure its use. In addition to these social criteria's of selection of site certain economic parameters shall also be considered like:

1. Marketing value of the site in present sense and future

2. Land condition

3. Accessibility of the land to highways, transportation networks urban centers etc. since nearer the land is to transportation lines higher is the value.

h. Local resource potential

Presence of natural resources like water availability, soil conditions for sewage disposal and appropriate site for solid waste disposal are very important criteria.

Chart 4.1: Scheme of new-town planning
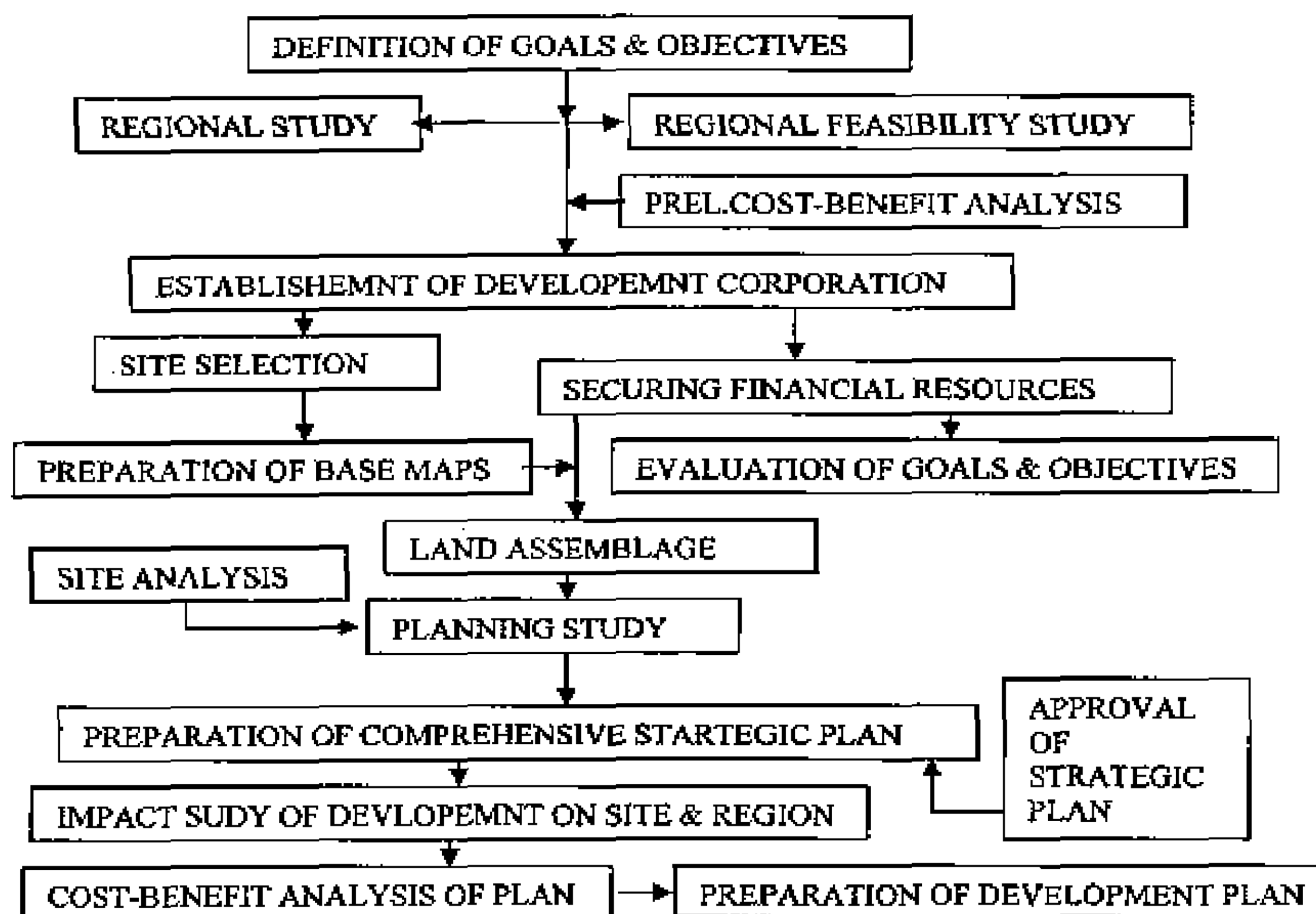
Source: Site Selection: Process, Criteria, And Method. New Town-Planning: Principles And Practices, by G.Golnay

i. Political aspects

Sometimes political relevance or importance is also connected with the site. The strategic importance of the site from the point of view of political development also effects the development of the site.

j. Economic planning:

Economic planning has strong implications on achievement of goals like transportation, governance, social characteristics and land use etc. in establishment of new town.

Self-containment concept not only implies self-containment in terms of employment but also in terms of provision of education, commerce ,social ,cultural and recreational services public utilities(like transport network) and amenities(water supply, electricity, sewerage etc.).However, no new town can be fully self-contained in initial/beginning stage it can be achieved over a definite period of time. New town with export trade will boost the economy of the town by more inflow of money

Chart 4.2: Process for planning a new town economic base

```
                          ┌─────────────────────────────────┐
                          │  NEW-TOWN GOALS & OBJECTIVES     │
                          └─────────────────────────────────┘
                                          │
┌──────────────────────┐    ┌─────────────────────────────────┐
│ SITE ECONOMIC DATA    │◄───│  NEW TOWN ECONOMIC GOALS         │
│ & ASSESSMENT          │    └─────────────────────────────────┘
└──────────────────────┘
┌──────────────────────────────────────┐
│ REGIONAL & SITE FEASIBILITY STUDY      │
└──────────────────────────────────────┘

┌──────────────────┐   ┌──────────────────┐   ┌──────────────────┐
│ FINANCIAL MODEL  │   │ LAND ASSEMBLAGE  │   │ ECONOMIC MODEL   │
└──────────────────┘   └──────────────────┘   └──────────────────┘
                                        ┌───────────────────────────────┐
                                        │ SITE POPUALTION COMPOSITION    │
                                        └───────────────────────────────┘
┌──────────────────────────┐                ┌──────────────────────────┐
│ COST-BENEFIT ANALYSIS     │                │ COMMUNITY TAX BASE        │
└──────────────────────────┘                └──────────────────────────┘
┌──────────────────────────┐   ┌──────────────────────────┐
│ PROGRAMMMING CASH          │   │ INVESTMENT STRATEGY       │
│ FLOW BY PHASES & TIME      │   └──────────────────────────┘
└──────────────────────────┘
┌──────────────────────────┐   ┌────────────────────────────────────────┐
│ LAND-USE OPTIMISATION      │   │ PLANNING OF COMMUNITY MANGEMENT         │
└──────────────────────────┘   └────────────────────────────────────────┘
┌────────────────────────────────────────┐
│ COMPREHENSIVE DEVELOPEMNT PLAN           │
└────────────────────────────────────────┘
```

Source: Economic Base of New Towns, New Town-Planning: Principles And Practices, by G.Golnay

Therefore a new town's economic base has following characteristics:

1. Diverse economic activities
2. Varied job opportunities for all economic strata
3. Mixed economy

Economy living standards those are affordable to all residents

k. Environment criteria

A uniquely developed landscaped area adds distinction to the site from rest of the area. Ecology shall be least harmed by the development processes.

l. Health

Provision of adequate heath facilities for all categories and age groups of people. Significant correlation between city size, health and population dispersion patterns and health is also important

m. Cost of services

It is total cost of municipal services divided by total number of population and differs widely for developed and undeveloped town/regions because of differences of standards of living, services costs related to scale and speed of services like transportation.

n. Social planning

Various aspects following the recreation demand are: per capita income, people's general behavior and thinking towards leisure and recreation, accessibility of facilities. Therefore the recreation facilities must possess the features of location in close vicinity of the town, affordable land value and sufficient availability of land, facilities as per the standards and living of people of new town. Social services like health, education, recreation, communication, shopping and other varying degrees of seasonal and lifetime demands are important to be given due consideration. Educational services like schools and colleges shall be located in proximity to residences. Social values also affect density patterns, residences layouts-size, form shapes quality, parking aspects ratio of built space to open space, land use.

Chart 4.3: Generalized actions and phases of selecting a site

```
┌──────────────────────────────────────┐
│ DEFINITION OF GOALS & OBJECTIVES OF   │
│ PROPOSED NEW TOWN                     │
└──────────────────────────────────────┘
                                          ┌──────────────────────────┐
                                          │ ESTABLISHMENT OF          │
      ┌──────────────────────────┐        │ DEVELOPMENT CORPORATION   │
      │ GENERAL REGIONAL STUDY   │◄───────└──────────────────────────┘
      └──────────────────────────┘

┌──────────────────────┐        ┌──────────────────────────────────┐
│ REGIONAL DATA        │        │ REGIONAL DATA ANALYSIS &          │
└──────────────────────┘        │ FEASIBILITY STUDIES               │
  ┌────────────────────┐        └──────────────────────────────────┘
  │ BASE MAP PREP.     │          ┌──────────────────────────────┐
  └────────────────────┘          │ STUDY OF LAND OWNERSHIP &     │
  ┌────────────────────┐          │ LANDVALUE                     │
  │ PHYSICAL & LAND    │          └──────────────────────────────┘
  │ USES               │          ┌──────────────────────────────┐
  └────────────────────┘          │ STUDY OF POTENTIAL HOUSING    │
  ┌────────────────────┐ ┌──────┐ └──────────────────────────────┘
  │ RESOURCES          │ │REGIONNAL│┌──────────────────────────────┐
  │ POTENTIAL, WATER,  │ │DATA    ││ RESOURCES POTENTIAL & E.I.A   │
  │ SEWAGE, ENERGY     │ │PROCESSING└──────────────────────────────┘
  └────────────────────┘ └──────┘ ┌──────────────────────────────┐
  ┌────────────────────┐          │ SOCIOECONOMIC STUDY           │
  │ TRANSPORATION      │          └──────────────────────────────┘
  │ NETWORK            │          ┌──────────────────────────────┐
  └────────────────────┘          │ POWER STRUCTURE STUDY         │
  ┌────────────────────┐          └──────────────────────────────┘
  │ ENVIRONMENT &      │          ┌──────────────────────────────┐
  │ ECOLOGY            │          │ SDY OF ZONING REGUL.          │
  └────────────────────┘          └──────────────────────────────┘
  ┌────────────────────┐          ┌──────────────────────────────┐
  │ SOCIAL STRUCTURE   │          │ PRELIMINARY COST-BENEFIT      │
  └────────────────────┘          │ ANALYSIS                      │
  ┌────────────────────┐          └──────────────────────────────┘
  │ ECONOMIC BASE      │          ┌──────────────────────────────┐
  └────────────────────┘          │ REDFINING GOALS &OBJECTIVES   │
  ┌────────────────────┐          └──────────────────────────────┘
  │ POLITCAL           │          ┌──────────────────────────────┐
  │ STRUCTRURE         │          │ SELECTION & EVALUATION OF     │
  └────────────────────┘          │ SITE SELECTION CRITERIA       │
                                  └──────────────────────────────┘

          ┌──────────────────────────────────────┐
          │ SELECTION OF ALTERNATIVE SITES        │
          └──────────────────────────────────────┘
       ┌──────────────────────────────────────────┐
       │ COMPARATIVE STUDY OF COST BENEFIT ANALYSIS │
       └──────────────────────────────────────────┘
          ┌──────────────────────────────────────┐
          │ SELECTION OF PREFERRED SITE           │
          └──────────────────────────────────────┘
                    ╭──────────────────╮
                    │    SITE STUDY    │
                    ╰──────────────────╯
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        ↓                                    ↓
┌──────────────────────────────┐    ┌────────────────────────┐
│ COMPREHENSIVE DATA GATHERING  │    │ SITE DATA ANALYSIS     │
└──────────────────────────────┘    │ & FEASIBILITY          │
                                     │ STUDIES                │
┌──────────────────────────────┐    └────────────────────────┘
│ TOPOGRAPHICAL BASE MAPS       │    ┌────────────────────────┐
└──────────────────────────────┘    │ SITE ANALYSIS          │
┌──────────────────────────────┐    └────────────────────────┘
│ PHYSICAL CHARACTREISTICS &    │    ┌────────────────────────┐
│ LAND USE PATTERN              │    │ LAND SUITABILITY       │
└──────────────────────────────┘    │ STUDY                  │
┌──────────────────────────────┐    └────────────────────────┘
│ LAND OWNERSHIP, VALUE &       │    ┌────────────────────────┐
│ MARKETING                     │    │ LAND OWNERSHIP         │
└──────────────────────────────┘    │ STUDY                  │
┌──────────────────────────────┐    └────────────────────────┘
│ POTENTIAL RESOURCES           │    ┌────────────────────────┐
└──────────────────────────────┘    │ LAND VALUE &           │
┌──────────────────────────────┐    │ MARKETING STUDY        │
│ TRANSPORTATION NETWORK        │    └────────────────────────┘
└──────────────────────────────┘    ┌────────────────────────┐
┌──────────────────────────────┐    │ HOUSING                │
│ ENVIRONMENT & ECOLOGY         │    │ MARKETING STUDY        │
└──────────────────────────────┘    └────────────────────────┘
┌──────────────────────────────┐    ┌────────────────────────┐
│ SOCIAL STRUCTURE              │    │ TRANSPORTATION         │
└──────────────────────────────┘    │ NETWORK STUDY          │
┌──────────────────────────────┐    └────────────────────────┘
│ ECONOMIC STRUCTURE            │    ┌────────────────────────┐
└──────────────────────────────┘    │ RESOURCES STUDY        │
┌──────────────────────────────┐    └────────────────────────┘
│ POLITICAL STRUCTURE           │    ┌────────────────────────┐
└──────────────────────────────┘    │ ENVIRONMENT            │
                                     │ IMPACT STUDY           │
SITE DATA PROCESSING                 └────────────────────────┘
                                     ┌────────────────────────┐
┌──────────────────────────────┐    │ SOCIAL &               │
│ COST-BENEFIT ANALYSIS OF SITE │    │ ECONOMIC STUDY         │
│ DEVLOPEMENT                   │    └────────────────────────┘
└──────────────────────────────┘    ┌────────────────────────┐
┌──────────────────────────────┐    │ POWER STRUCTURE        │
│ RE-EVALUATION OF NEW TOWNS    │    │ STUDY                  │
│ GOLAS & OBJECTIVES            │    └────────────────────────┘
└──────────────────────────────┘    ┌────────────────────────┐
┌──────────────────────────────┐    │ HISTORICAL VALUE S     │
│ SITE LAND ASSEMBLAGE          │    └────────────────────────┘
└──────────────────────────────┘
┌──────────────────────────────┐
│ BEGNING OF SITE PLANNING      │
└──────────────────────────────┘
```

Source: New Town-Planning: Principles And Practices, by G.Golnay

o. Transportation and communication

Following conceptual steps and methodology shall be adopted for planning transportation system in new towns:

1.   Stating of goals and objectives

2.   Site study

3.   Data collection and extensive survey

4.   Physical aspects:

a.   Land suitability, Soil hazards and limitations,

b.   Availability of indigenous building materials

c.   Land use information and schemes

5.   Social & economic aspects   & Existing and expected travel behavior of the population

6.   Potential local, regional and national markets

p. Pedestrians:

For the design of pedestrians following aspects shall be taken care of:

1.   Separation of vehicle from pedestrians & segregation of different types of traffic.

2.   Safe movement of children & elderly people to activity areas.

3.   Minimizing walking distance between various activity centers

q. Design features:

1.   Avoiding long straight line, introduction of zigzag lanes at some intervals

2.   Provision of rest areas with space for play of children

3.   Provision of shade stations along the set pedestrians /paths

r. Mass transit:

Development of mass transit system is very important with following aspects:

1.   Provision of mass transportation system that is cheap, speedy and efficient and it can be public or private

2.   Major advantage of mass transit systems are that it reduces traffic in peak hours ,reduces risks involved in the safety and security of the driver and travelers, reduces the use of private vehicles ;thereby reducing the congestion due to vehicles, reducing pollution

s. Parking:

Parking for shall be properly taken care of.

Chart 4.4: Correlation of Transportation, land use and opportunities of employment
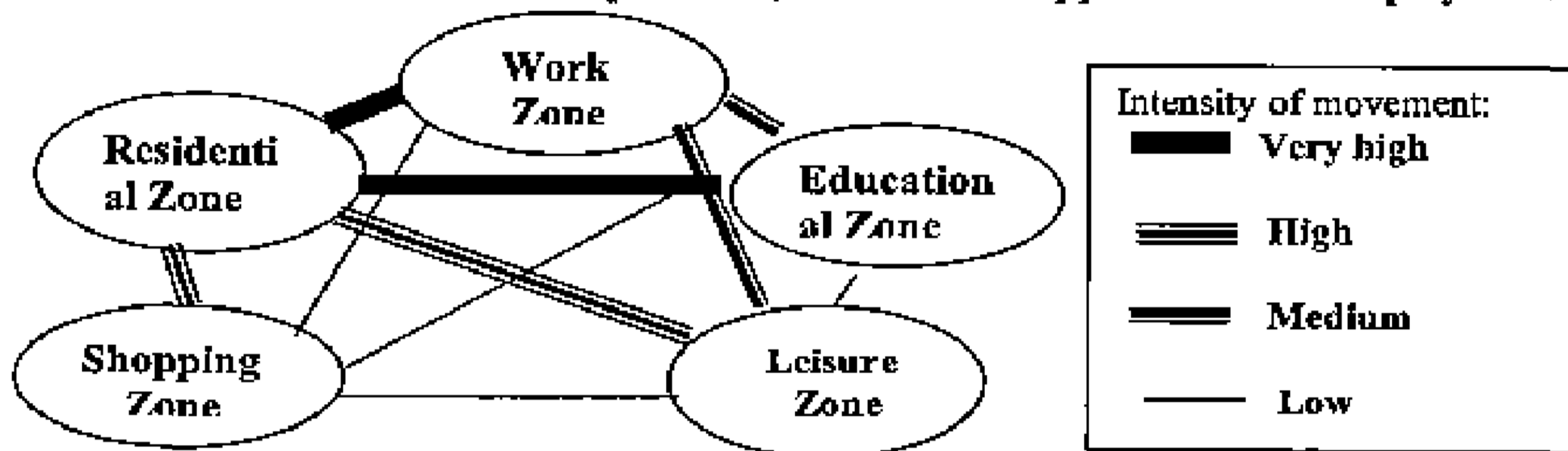
Source: *New Town-Planning: Principles And Practices, by G.Golnay*

t. Communication system

Modern technology based communication system propagates following:

1. Reduced need for transportation systems

2. Decentralization

3. Improved social services

4. Improved health services

5. Better and efficient governance and management

6. Advanced techniques for entertainment

7. Better and improved safety and security aspects

u. Optimum Town Size

There are two thoughts for it:

1. Maximalist-larger the town, more are job opportunities and greater number of services/facilities/amenities and ultimately higher is growth

2. Minimalist-small town allows for more interaction, social identity of inhabitants, provides better environment to live and work.

Optimal size is therefore required for efficient working of many aspects-

   i. Transportation network:

   a. Running

   b. Management and maintenance

   c. Financial backup

    ii. Achievement of economic needs

       a. Better employment opportunities

       b. Better trade and commerce

       c. Better economic stability/base

    iii. Better provision and management of services

       a. Water supply

       b. Electricity

       c. Sewerage

       d. Solid waste management

       e. Communication

       f. Education

       g. Health

    iv. Better management of municipal funds/control over expenditure over services

    v. Control of social situations

       a. Over congestion

       b. Security and safety

       c. Comfort and convenience & Hygiene

v. Findings and recommendations:

1. Basic concepts help in finding , establishment of sound economic base for the new town

2. The study helps to guide transportation issues to be addressed in more realistic way and in harmony with the natural surroundings

3. The study also highlights the importance of various hierarchies of roads ranging from national highway to pedestrians to be taken care of while planning for the new town.

4. The study gives basic criterias to undertake Locational analysis required to identify the most appropriate location.

5. The study would also help in establishing of more flexible and yet more comprehensive interlinkage of transportation network with residences, commerce trade industry, recreation ,shopping and leisure, medical ,educational and several others aspects for the new town.

6. Following criteria shall be used from this study in case of site selection & establishment of new town:

    6.1 **Physical criteria:** It includes considerations of following for identification and subsequent establishment of the new town:

    Natural resources

    1. Topography, Geology and geography, geomorphology, Altitude, latitude
    2. Climate, Rainfall, humidity, rainfall, temperature
    3. Ecosystem, ecology, natural flora and fauna
    4. Water resources, water bodies, Wind speed, wind direction
    5. Land and its resources, underground minerals

    Manmade resources:

    1. Demography, Social- education, health, communication cultural resources
    2. Physical- infrastructure facilities (water supply, electricity, sewerage, solid waste etc.)
    3. Transport and communication network
    4. Technical –research institutes, science and technology resources
    5. Ethical-culture, religion and lifestyle of people

    Energy resource:

    It includes presence and optimum exploitation of energy reserves of conventional, non-conventional, and other traditional type.

    6.2 **Social planning:** Social planning for the town would include following aspects:

    1. Adequate mass transportation system
    2. Better education system; as per needs of community
    3. Pleasing natural environment, Safety and security aspect satisfied
    4. Wide variety of employment opportunities & entertainment facilities

    6.3 **Economic planning:** Economic planning of new towns shall include following

    1. Self-containment and self-dependency
    2. Varied employment opportunities addressing needs of low-income groups
    3. Provide improved and better infrastructure facilities
    4. Optimize land for better uses for most productive results.

5. Strong economic structure based on varied economic activities like commerce, industry services, tourism etc.

6.4 Transportation:

Table-4.3: Transportation criteria

S.No.	Criteria	Details
1	Physical	Total network length compared with population size
		Driving being safe and visible
		Wide enough for all kinds of traffic
		Conform to standards/norms
		Clear and direct signage, traffic signals
		Easy access for police, emergency medical and fire fighting facilities, Rest and parking places
2	Environmental	Pollution , Noise generated, Aesthetics
		Impact on water resources & ecological factors
3	Pattern	Accessibility to other land uses
		Linking to all transportation systems
		Distinction (grade) between pedestrians and vehicles
		Circulation possibilities, Different functions
		Level of security and safety, Peak traffic flow
		Distances from residences, commercial ,work place
		Integration with social and economic goals
		Land use pattern, Adequate parking facilities
4	Development & maintenance	Low cost & convenient maintenance, Durable, All weather sustainability

Source: New Town-Planning: Principles And Practices, by G.Golnay

4.2. Study of the Region [17], [18]

4.2.1 Identification of zone

4.2.2 Identification of appropriate site for new town

Identification of location for the new town

The new town would have to be located at a place that has advantages of all infrastructures facilities: physical, social, economical, transportation and communication, sufficient degree and quality of economic activity for its economic base, sufficient space for future expansion,

ability to retain and develop its own identity, and environmentally and ecologically conscious approach. Therefore following two phases have been put forward in order to choose the most appropriate location for new town

4.2.1 Phase I: Identification of Zone (Macro Criterias)

Table-4.4: Matrix showing criteria weighting of various locations in Kangra region for new town

Criteria	I	II	III	IV
Population	2	2	2	2
Accessibility & connectivity	2	3	2	2
Transport modes	2	2	2	1
Forest zones	1	1	2	1
Topography	1	2	1	2
Acceptability	3	2	1	2
Economic activity	2	3	2	3
Drainage-Slopes	2	3	2	3
Total	15	21	14	16

Source: Complied by author from various sources

I: Dharmsala, II: Kangra, III: Palampur, IV: Nagrota Bagwan

3: criteria fully applicable, 2, 1: criteria partially applicable, 0: criteria not applicable

The matrix clearly indicates that Kangra followed by Nagrota Bagwan, further followed by Dharamsala are best zones for the site. Each of the criteria has been dealt with separately as shown in maps.
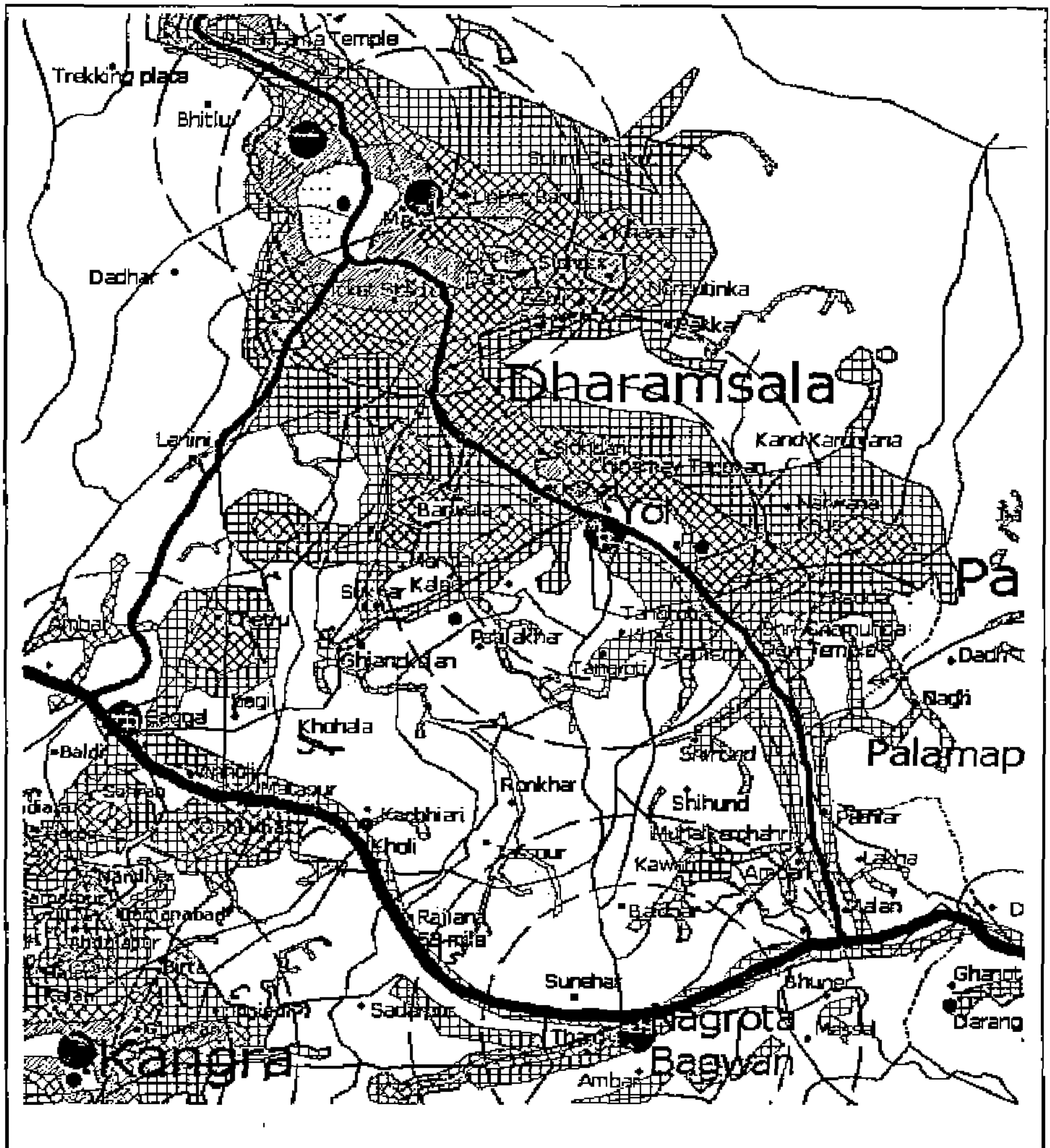
a. Growth pattern: (refer Map 1: Growth Pattern of the area)

Map clearly indicates that most of the growth has taken place around the old urban centers but nowadays trend has started for linear developments abutting roads (NH-20).
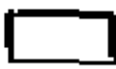
b. Population distribution: (refer Map 2: Demographic trends)

There are total 14 subdivisions in the region(Kangra region) out of which Kangra, Dharamsala, Nagrota Bagwan and Palampur are more densely populated and growth of population (as from the decadal growth of population),is highest in these areas as compared to others therefore the zone including the areas of Dharamsala ,Kangra ,Nagrota Bagwan and Palampur is selected for decongestion .This particular zone comprises of more than half of the population of the region .

Map 1: Growth Pattern of the area

Source: Compiled by author from various sources

| 1980-1990 | ☐ | 1990-2000 | ▨ | National Highway | ▬▬ |
| 1980-1991 | ▨ | 2005-Present | ▦ | State highway | ▬▬ |

Map 2: Demographic trends

Kutharna

Sokni-Da -Kot

Dharamsala

Upper Barol

Sudhed

Mant

Khaniara

Gharoh

Upper Dari

Sidhpur

Norbunika

Gabli Barol

Sakoh

Rakkar

Tharu

Chauri

Sarah

Lanjni

Passu

Sidhbari

Kand Kardiyana

Khaned

Barana

Yol

Narwana Khas

Kalara

Maned

Dhagwar

Jhool

Tang Narwana

Mandal

Dhaloon

Baidi

Chaitru

Sukkal

Khaled

Paddar

Rajol

Ambar

Patialkhar

Tangroti Khas

Shri Chamunda Devi

Dadh

Gagal

Bagil

Tangroti

Khohala

Sera thana

Ramorh

Baldi

Dugyian

Shihund

Sohran

Annoli

Matour

Kachhiari

Ronhkar

Bhadiara

Cihhi Khas

Kholi

Jassour

Kawari

Pathiar

Tlaran

Lakha

Nandher

Ambari Manda

Malan

Doran

Samarpur

Jamanabad

Rajiana 53mile

Baldhar

Hatwas

irpur

Abdulapur

kban

Ghanota

Haler Kalan

Birta

Sunehar

Bhuner

Massal

Joglpur

Nagrota

Ghurkari

Sadarpur

Tharu

AmbarBagwan

Kangra

irol

Samola

Mundla

Amrtar

Bagh Gulehar

Uly

Source: Compiled by author from various sources

Population	Symbol
0-600	O
600-1000	⊚
1000-2000	◎
2000-4000	◉◎
4000-6000	⊙
6000- Above	●

N

Table-4.5: Population distribution

Place	Households	Total Pop.	Rural Pop.	Urb.Pop.	Pop.(0-6)
Dasala-Rur.	24503	117463	82330	35153	13022
Dasala-Ur.	4342	19124	0	19124	1819
Mant	1300	5234	0	5234	421
Yol	2409	10,775	0	10775	1284
Kangra-Rur.	28910	146601	131788	14813	16840
Kangra-Ur.	1924	9156	0	9156	902
Nagrota Bagwan	1226	5657	0	5657	607
Gagal	278	1356	1356	0	161

Source: census of India 2001

Table 4.5 clearly indicates that Kangra- rural and Dharamsala –rural are the areas with majority of demographics closely followed by Yol .however these demographics spread over a wide area as compared to Kangra-urban, Dharamsala-urban and yol.

Table4.6: Detailed demographics

Place	2001	1991		Place	2001	1991
Dsala	19034	17493		Jhool	431	129
Kajlot	1014	7621		Jassour	856	390
Sudher Khas	125	25		Sadarpur	1937	504
Sakoh	485	149		Pathiar	335	109
Mant	5240	2320		Barwana	703	412
Barol	2559	398		Lakha Manda	191	0
Dari	3751	897		Kachhhiari	311	78
Dadh	2091	156		Annoli	682	267
Padar	1052	218		Kholi	1837	895
Sunehar	1030	215		Kaled	1048	768
Barana	269	0		Sohni-Da -Kot	1368	604
Jalot	326	121		Tang Narwana	764	396
Tiara	1385	598		Narwana Khas	724	401
Birta	2146	705		Tangroti Khas	511	308
Sameli	594	128		Bhunehr	1700	469
Jamanabad	166	0		Malan	862	39
Abdulpur	1179	598		Mataour	177	0
Mundla	921	89		Gagal	377	105
				Kangra	4450	2890
				Jia	228	0
				Rajiana 53 Mile	920	298
				Nagrota	4436	2598

Source: census of India 2001

c. Connectivity (refer Map3: Connectivity):

In whole 14 subdivisions this zone has best accessibility both qualitatively and quantatively .Since Kangra (Gaggal-near to Nagrota Bagwan and Dharamsala ,Palampur) has both the facility of railways and national airport .Moreover the area is crisscrossed meticulously by a well laid network of highways both national and state besides many like roads . These facilities connect not only this zone but also other subdivisions to other states. This area therefore has best connectivity

Accessibility:

Fig-4.1 : Accessibility ranking

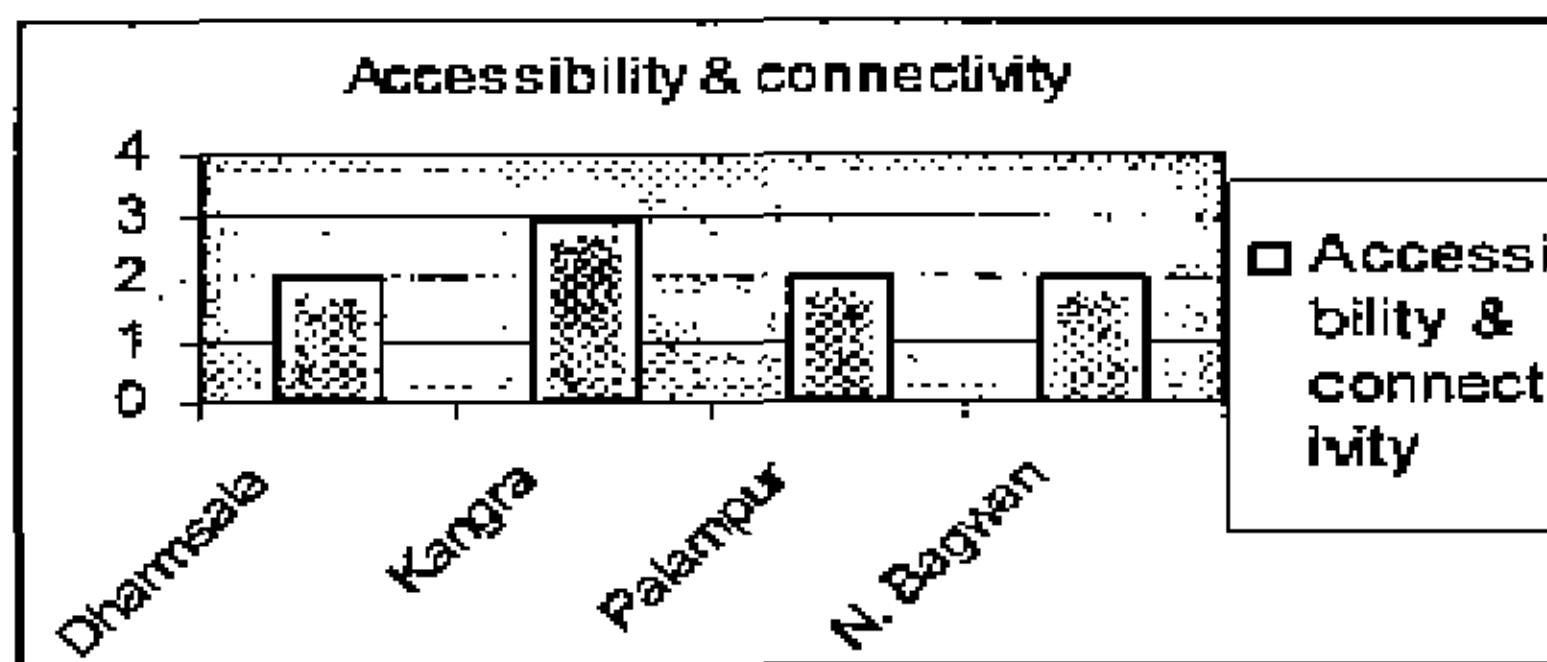

Source: Statistics of Kangra region-2001

Fig 4.1 shows that by view of better accessibility, this zone has an edge over other areas since it is best accessible (from criterias of time and distance and cost) not only from their states but also within the area to numerous infrastructure facilities.

Table-4.7: Accessibility

Distances From District Head Quarter(Dharamsala)			
Place	Distance	Place	Distance
Palampur	40	Mcleodganj	10
Yol	10	Kangra	19
Malan	21	Gagal	11
Chamunda Temple	15	Mataour	14
Pathiar	17	Tapovan	7

Source: Statistics of Kangra region-2001

Table 4.7 indicates that Malan-Pathiar -Chamunda Devi-Kangra belt falls in the optimum distance for new town with respect to existing major growth centers.

Map 3: Connectivity pattern
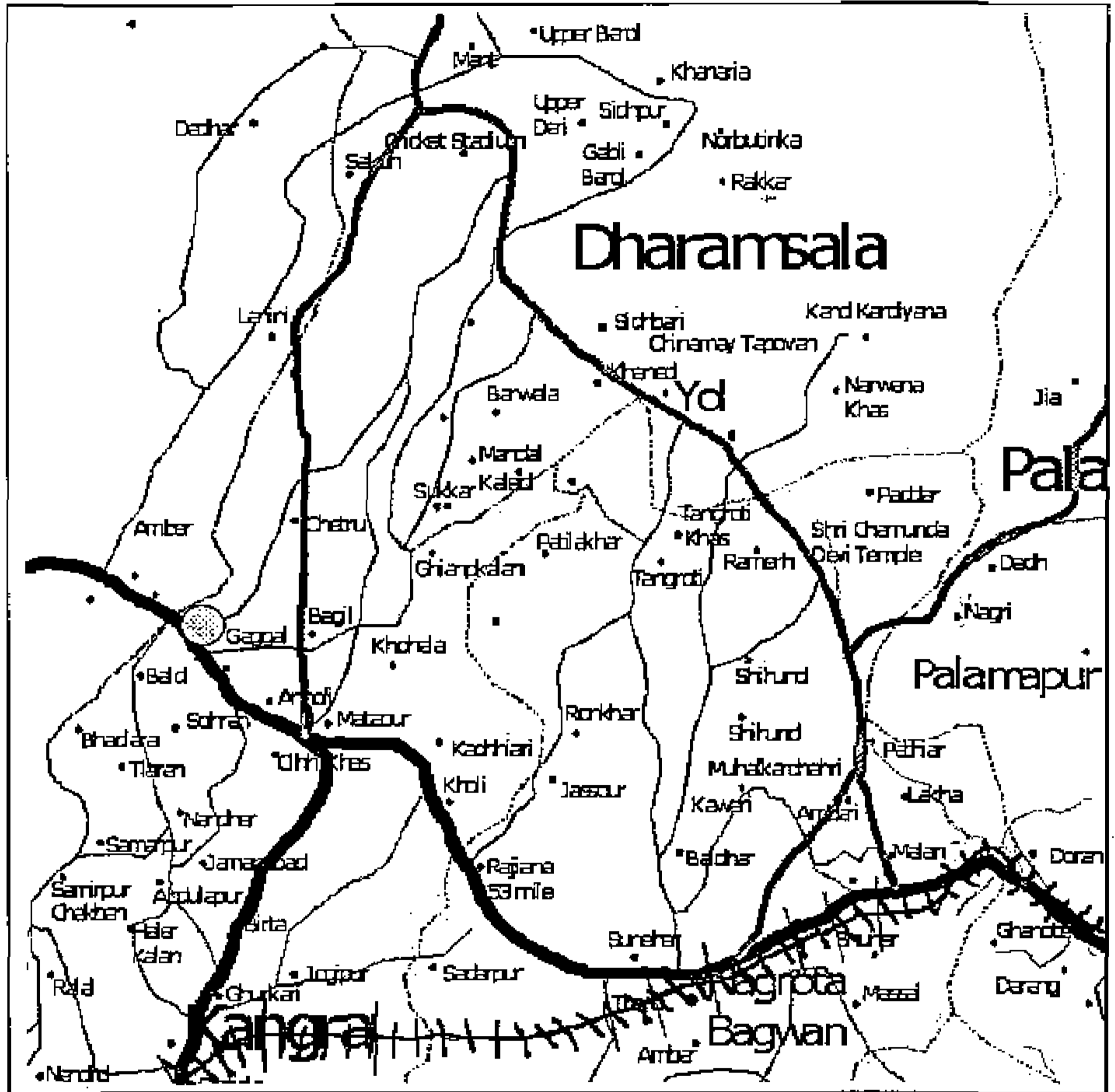
Source: Compiled by author from various sources

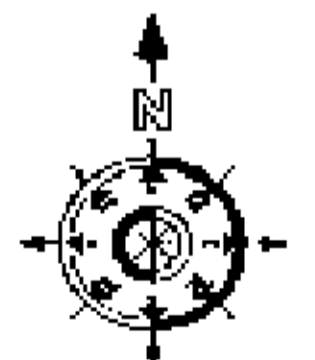|	
National Highway	▬▬▬
State highway	══
Link roads	───
Railways	┤┼┤┼
Airways	◯

d. Topography (Refer Map 4):

Topography of Kangra region)

From the topographic sheets and data it is clear that this zone has rather more or less flat topography with very gentle slopes at certain places. Gently sloped land /rather flat topography helps in development of settlement since land development costs will be less, no problems of drainage, less infrastructure development costs, better, economic and less time consuming transport etc. can be anticipated. Therefore this Zone comprising of some part of Kangra, Nagrota Bagwan, Palampur and Dharamsala is most ideal for the settlement of new town.

Fig-4.2: Topography of Kangra region
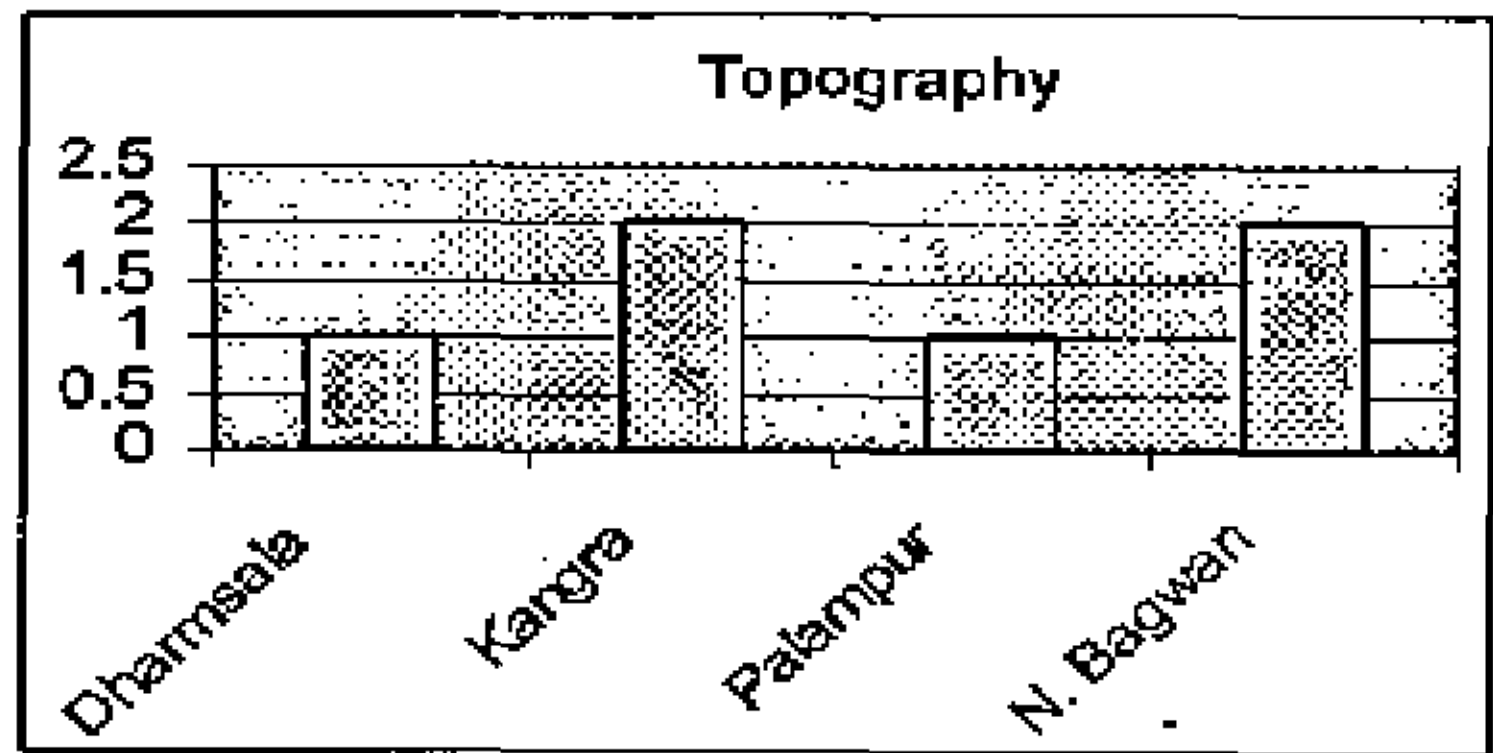
Source: *Statistics of Kangra region-2001*

Table-4.8: Topographic ranking

Altitude Difference From Mean Sea Level			
Dharamsala	1337	Palampur	1219
Mc Leod ganj	1737	Nagrota Bagwan	850
Dari	1220	Yol	1075

Source: *Statistics of Kangra region-2001*

Topography as per table 4.8 indicates that while Nagrota Bagwan is located at comparatively lowest altitude in the region, Yol, and Palampur are also favourable sites for location of new town.

Natural drainage:

The area has comparatively flat and at some place very gentle slope .This rules out problem in drainage in the area owing to its natural topography. Areas around Dharmsala are more sloping, less flat, having more river/stream basins and hence are discarded for new proposed settlement.

Map4: Topography of Kangra region
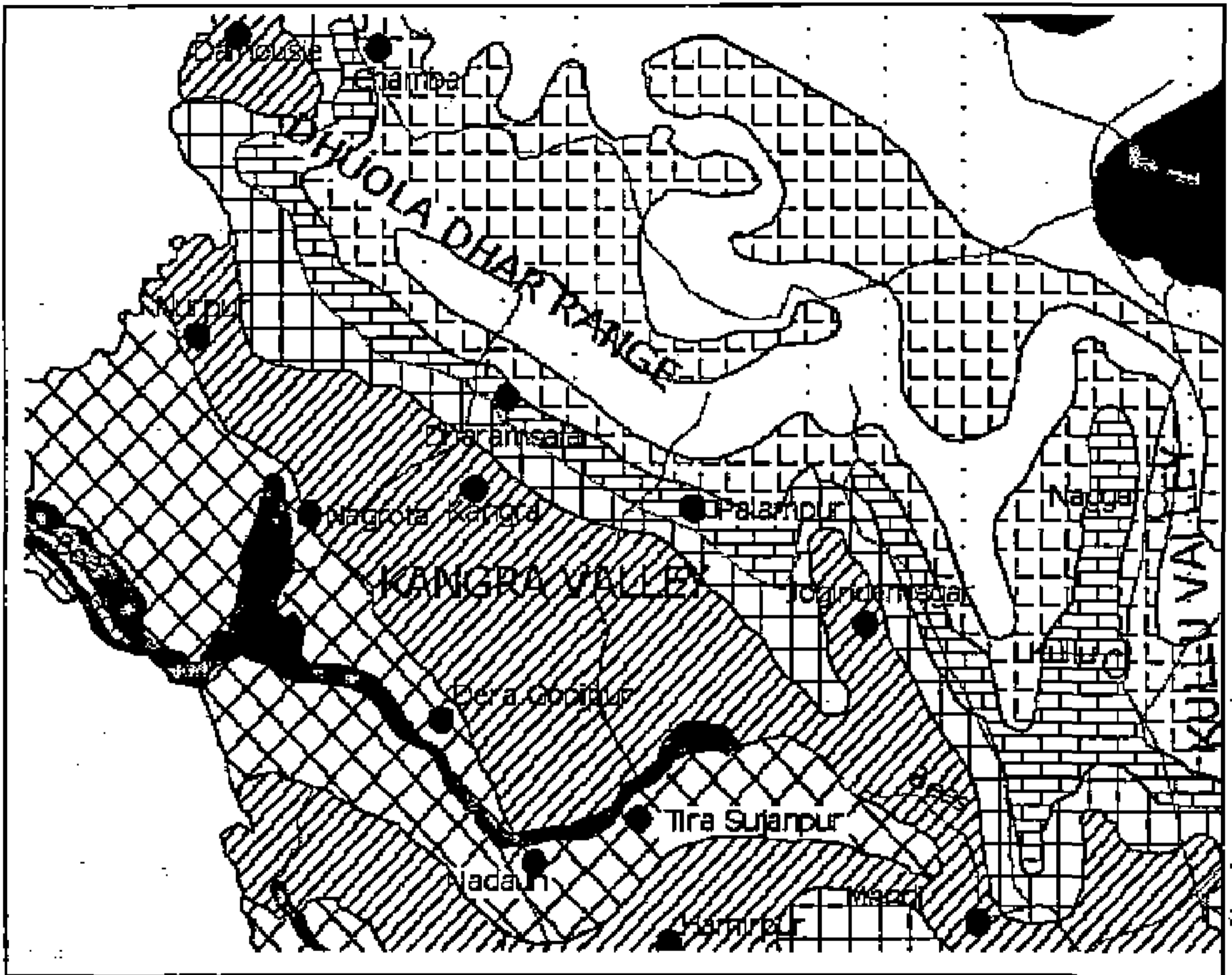
Source: Compiled by author from various sources

Altitudes

300-600	⟨XX⟩	1800-3000	
600-900	⟨///⟩	3000-4500	
900-1350		4500-Above	
1350-1800		Water bodies	
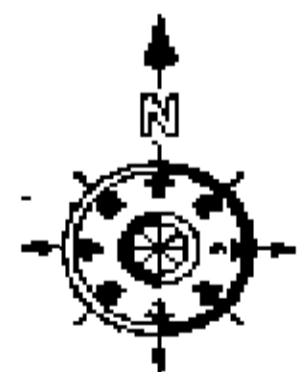
Map5: Drainage and slopes in Kangra region
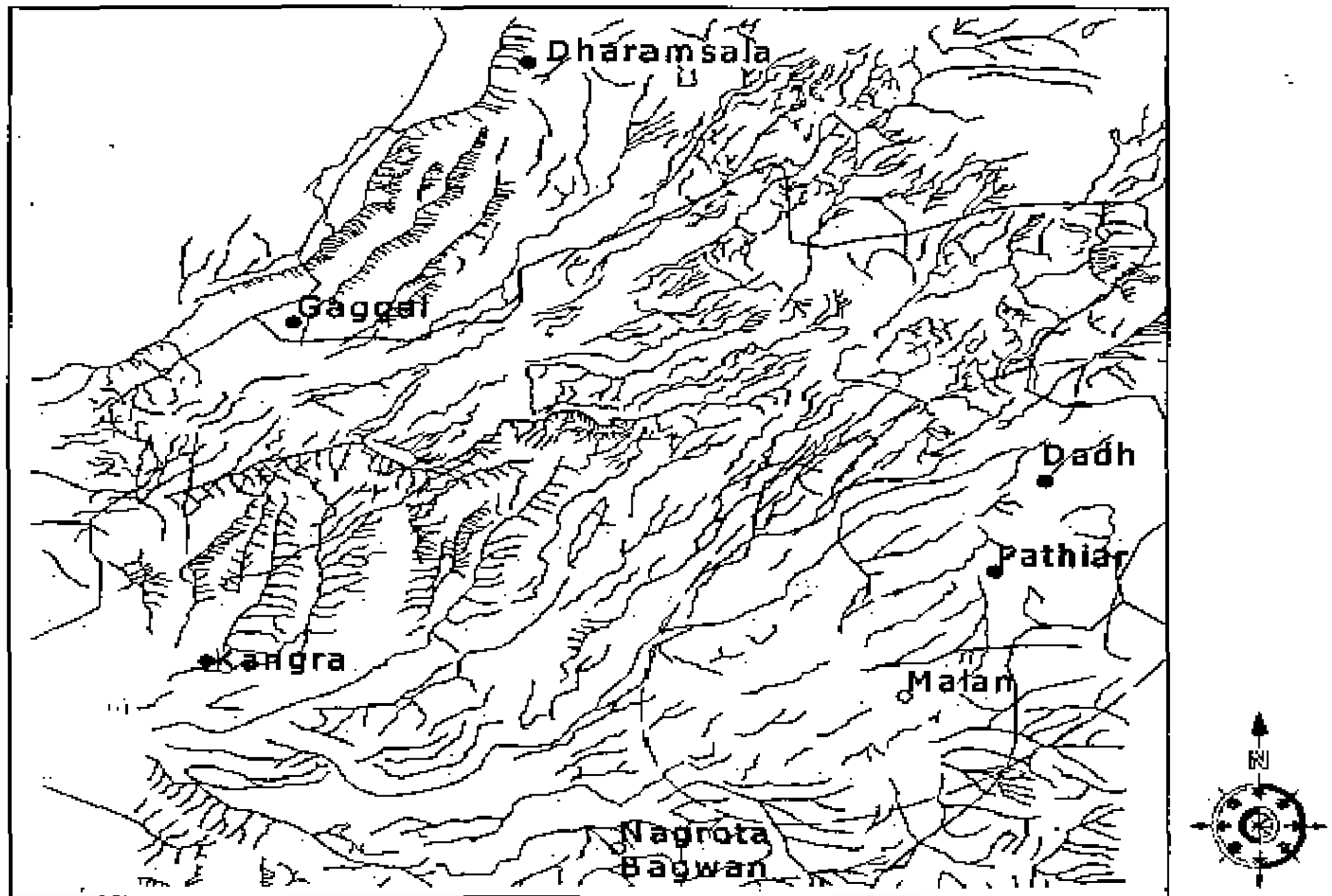
Source: Compiled by author from various sources

Map 5 shows that Malan, Pathiar, Dadh and Nagrota Bagwan are the areas with gentle slopes and comparatively flat topography while the areas of Kangra, Dharamsala and some parts of Gaggal are having steep slopes and are not ideal for new town.

Fig-4.3: Less slopes and better drainage
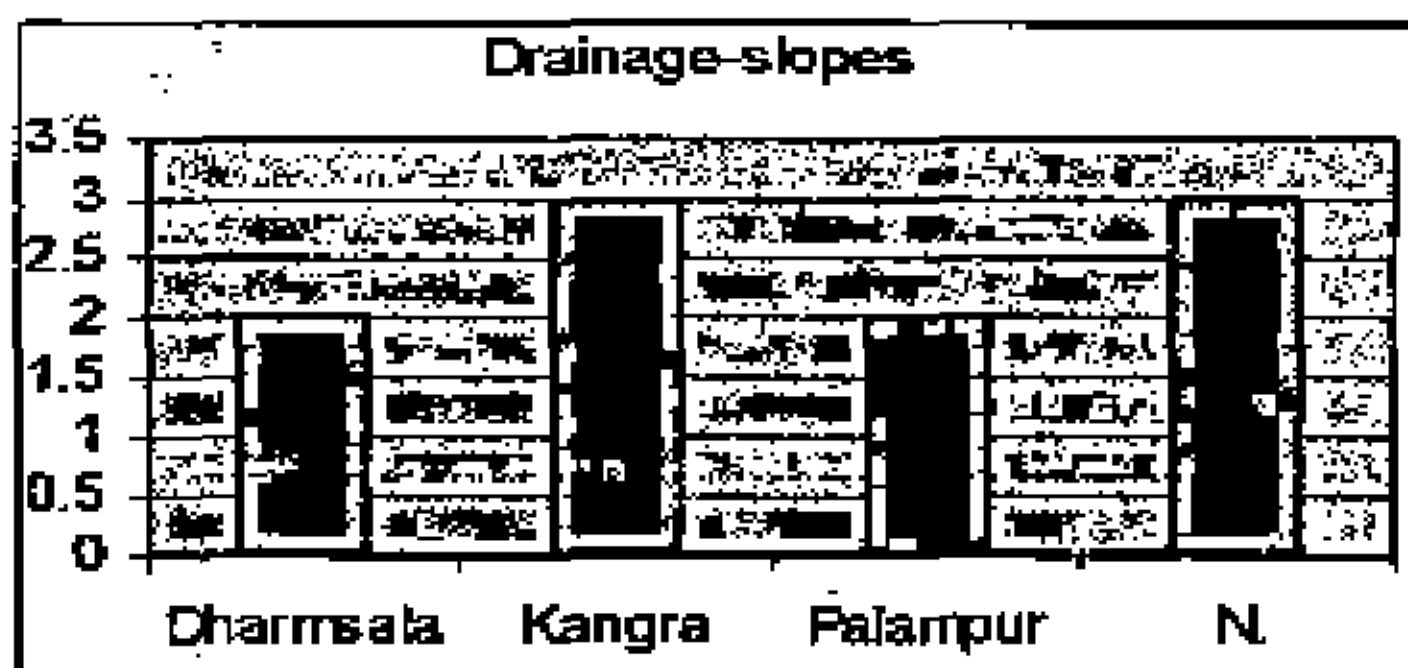
Source: Analysis by author from www.googleearth.com, statistics of Kangra region-2001

Fig 4.3 shows that Nagrota Bagwan and Kangra are most favourable sites with comparatively flat topography.

e. **Economic activity (refer Map 6: Economic activity in Kangra region):**

Map 6 shows the different types of economic activity ranging from tourism to industry, trade and commerce and even service sector .While tourism dominates Chamunda Devi, Dahramsala and Kangra region, trade and commerce is predominant at growth centers of Kangra, Dharamsala, Gaggal, Nagrota Bagwan and yol. The service activity is seen at Dharamsala mainly since it is the winter capital of the state Himachal but now thee activities are shifting outside Dahramsala core areas towards Chamunda Devi at Tapovan. Nagrota Bagwan is the prime industrial areas of the region, however now Dadh –Nagri is also fast developing as another industrial pocket by the state government for the availability of flat topography, infrastructure facilities and near location of potential market.

As per trade &commerce (including industries) is concerned this zone Nagrota Bagwan-Dadh-Nagri -Chamunda Devi edges out other subdivisions of the region. Since it is the only area with maximum number of industries in the region (Nagrota Bagwan & Dadh-Nagri), maximum retail and whole sale business (in Kangra), international goods market (in Dharamsala) and famous export based tea gardens (of Palampur). Nearness to market of other states (Pathankot (Punjab) to Kangra and Gaggal) makes this area not only self-sufficient in economic activity but also as centre for other subdivisions also.

Table–4.9: Development of industries

REGISTERED INDUSTRIES		
	Industries	Workers
1993	153	7343
1994	167	8073
1995	174	8198
1996	175	8246
1997	181	8375
1998	219	8749
1999	227	8992
2000	228	9098
2001	229	9143
2002	243	9313

Source: Statistics of Kangra region-2001

Map 6: Economic activity in Kangra region

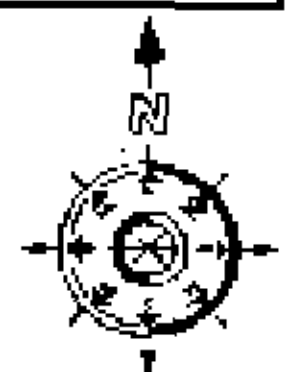|							
Industries	●	Commercial activity	●	Services	●	Reserved forest	●
Tourism	◌	Agriculture	◉	Residential	○		

Table 4.9 clearly shows that industries are growing in the area but at a very steady pace increasing from 153 in 1993 to 243 in 2002 and are providing employment to over 9000 people in 2002. This highlights the significant role played by industries in this area as economic activity.

Fig 4.4: Development of industries
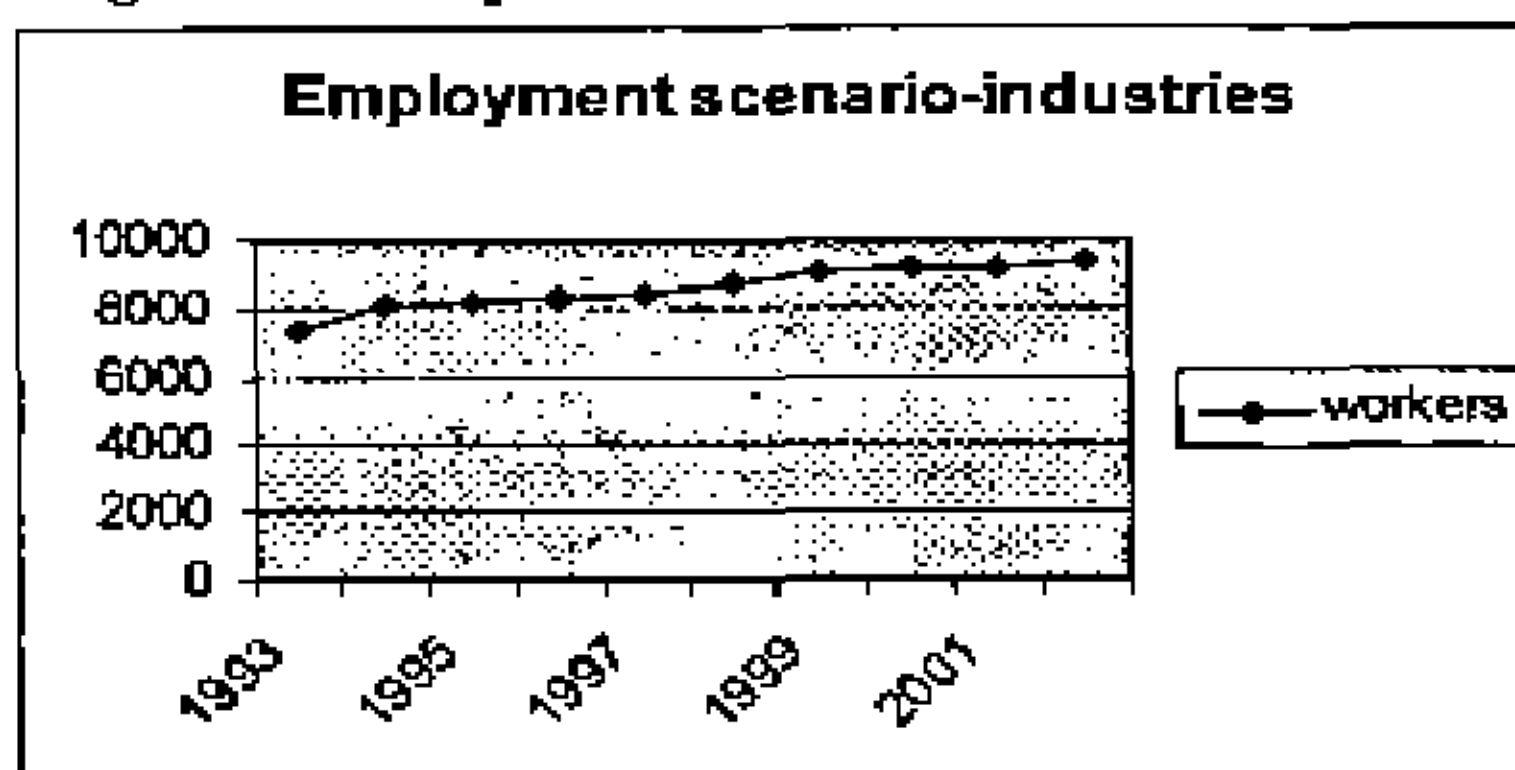
Source: *Statistics of Kangra region-2001*

f. Urban centers (Map 7: Economic activity & Growth Pattern):

Map 7 shows all the growth centers with their areas of impact .The areas under their influence are also now developing very fast. Urban centers of Kangra, Dharamsala and Nagrota Bagwan have led to development of settlements in near vicinities in an unplanned manner without any considerations for regulations and norms of the area.

This zone comprises of 5 out of total of 9 urban centers of the region. These urban centers act as growth pole for all aspects like population, economic activity, development activity etc. and from the past few decades these urban centers are showing tremendous development in all respects. Urban centers of this zone: Kangra, Nagpur, Mant Khas, Nagrota Bagwan (classV), Palampur, Dera and Jawalamukhi (VI), Dharamsala and Yol (Class IV)

g. Tourism potential: (Refer Map 8: Tourism potential of Kangra region)

Out of the 14 subdivisions this zone has maximum tourist potential in terms of maximum number of tourists visiting, most frequently visited locations by tourists, more number and better quality of tourist facilities, most preferred route by the pilgrims and tourists etc.

Map 7: Economic activity & Growth Pattern

Source: Compiled by author from various sources
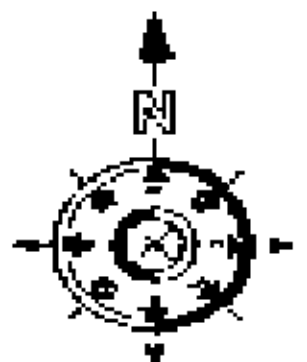
Industries	●	Commercial activity	Services ●	Reserved forest ◉	N
Tourism	◉	Agriculture ◉	Residential ○	Growth Centers ●	

Map 8: Tourism potential of Kangra region

Source: Compiled by author from various sources

Pilgrimage   Adventure ☆   Sightseeing ▭   N
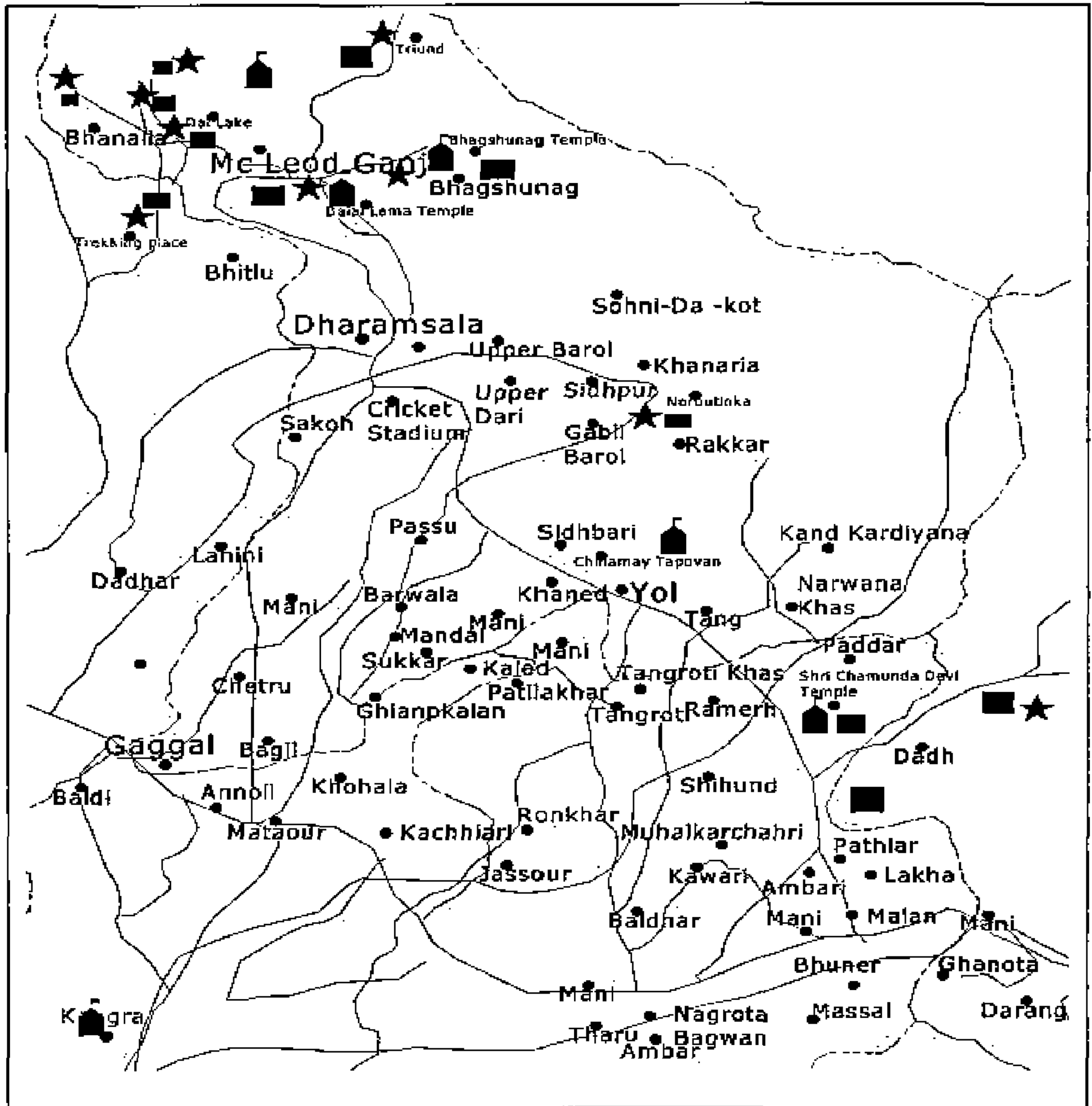
Table-4.10: Preference of items at tourist places

District	Place	Items				G.Total
		Caps	Shawls	Others	Total	(Per 100 Tourists)
Bilaspur		3	3	1	7	7
Chamba		3	19	4	25	25
Hamirpur		5	15		20	20
Kangra	Dasala	6	12	18	36	82
	Kangra		3	2	15	
	Palampur	4	9	8	21	
	Chamunda Devi	2	18		20	
Kinnaur		3	13	3	19	19
Kullu		12	33	9	54	54
Shimla		17	69	12	98	98
Solan		2	5	1	8	8
Una		3	9	4	16	16
Mandi		5	11	4	20	20

Source: Tourism report of Himachal Pradesh-2001

Fig-4.5: Preference of items by tourists
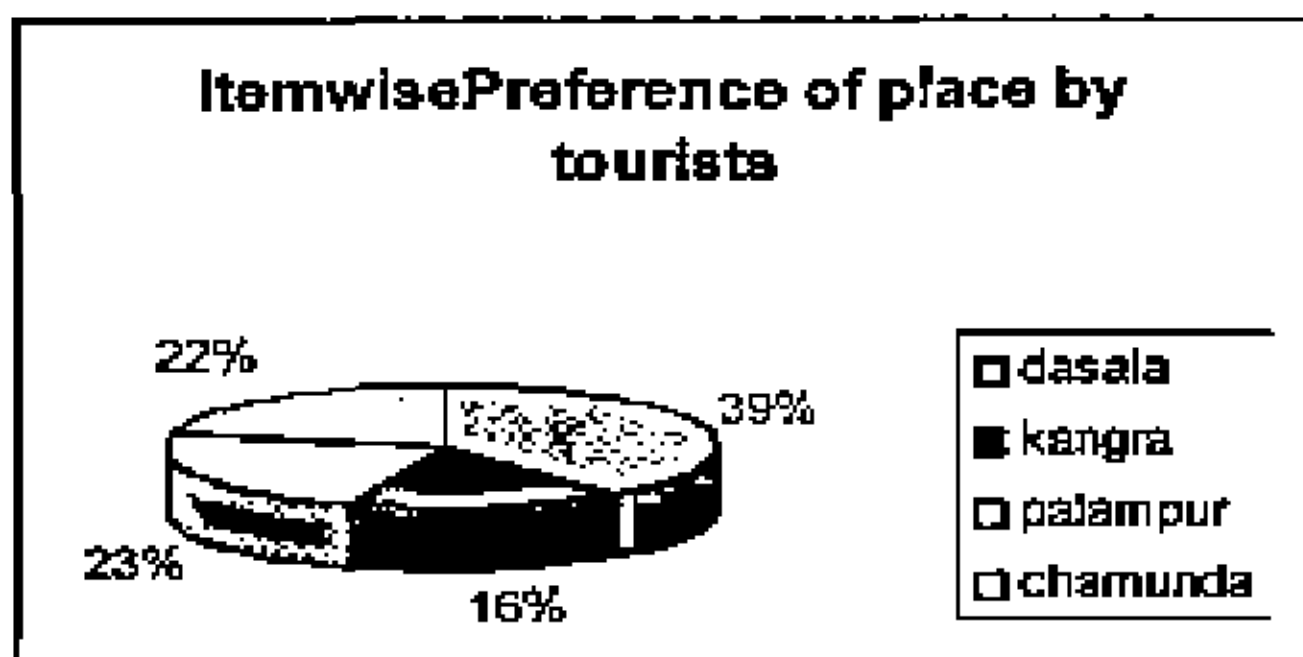
Source: Tourism report of H P-2004

Table-4.12: Preference of place as per visits of tourists

Tourist Preference Per No Of Visits		
		Visits
Kangra	Dasala	138
	Kangra	17
	Palampur	40
	Chamunda Devi	30

Source: Tourism report of H P-2004

Table-4.11: Preference of place by tourists by means of adventure activities

Preference For Adventure/Sports Activities			
District	Place		
Bilaspur		33	33
Chamba		50	50
Hamirpur		12	12
Kangra	Dasala	72	147
	Kangra	14	
	Palampur	37	
	Chamunda Devi	24	
Kinnaur		10	10
Kullu		100	100
Shimla		78	78
Solan			
Una		58	58
Mandi		7	7

Source: Tourism report of HP-2004

Fig-4.7: Preference of place as per visits of tourists
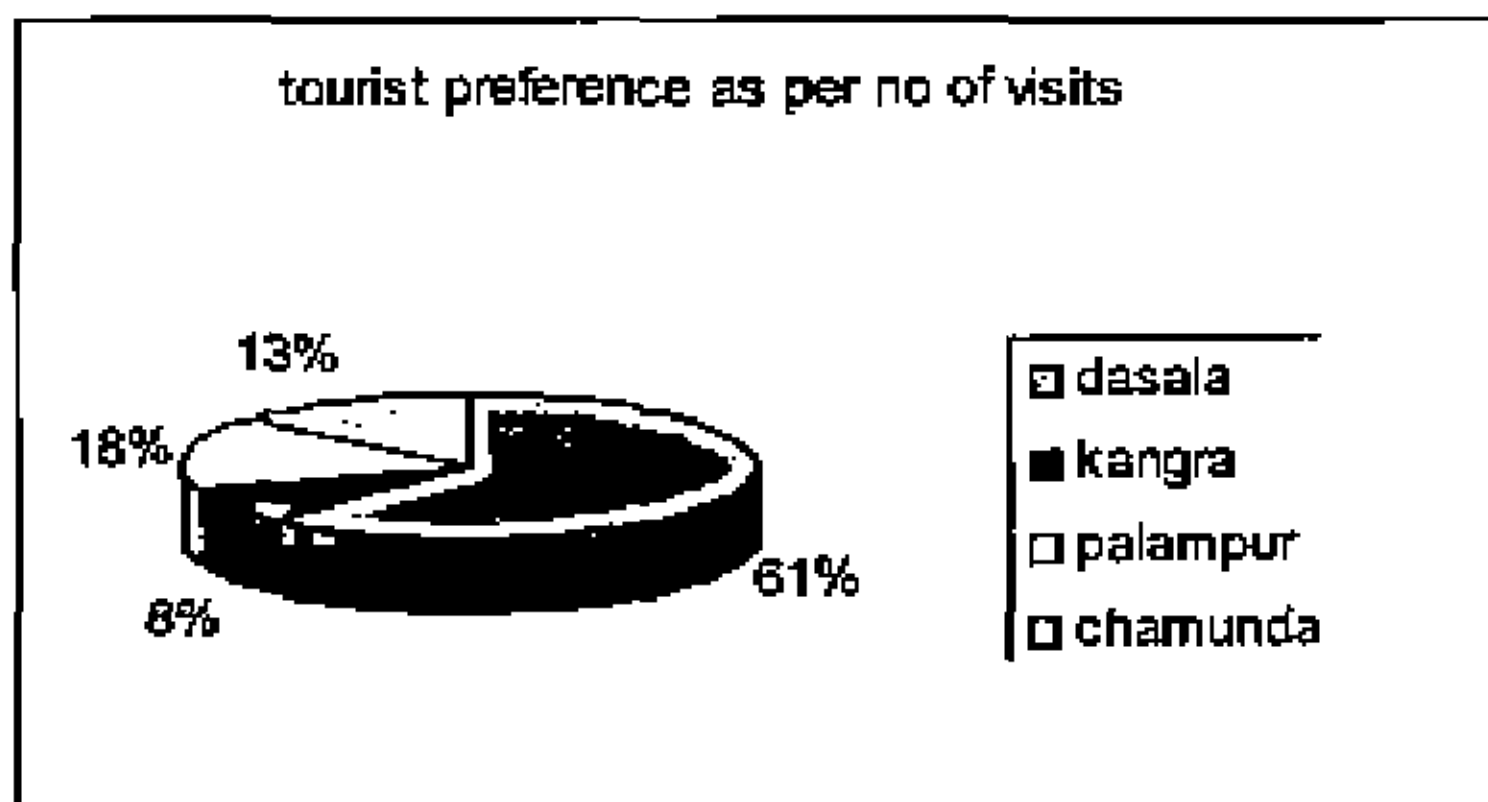
Source: Tourism report of HP-2004

Table 4.10 shows that item wise most favourable tourist destination is Kangra after Shimla and is preferred for the purchase of traditional articrafts like Kangra paintings, shawls etc. Table 4.11 shows the preference of place by choice of adventure activities and statistics show that tourists prefer adventure sports of Kangra than any other location and it is a significant aspect that attracts huge number of tourists.

In that also, Dharamsala is most favoured because of paragliding, rafting, mountaineering trekking etc.

Fig-4.6: Preference of place by tourists by adventure sports
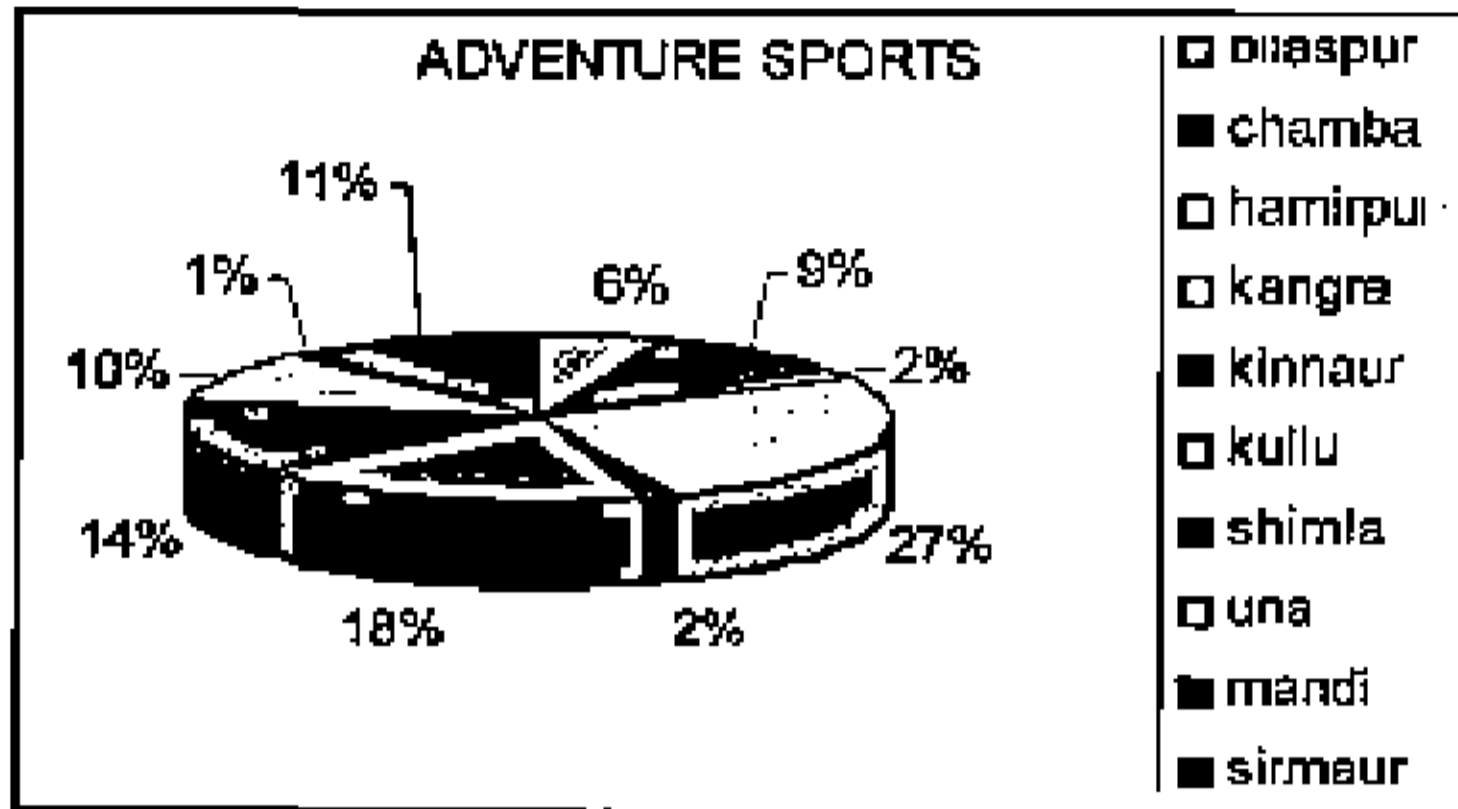
Fig-4.8: Distribution of tourists by means of transport

Source: Tourism report of HP-2004
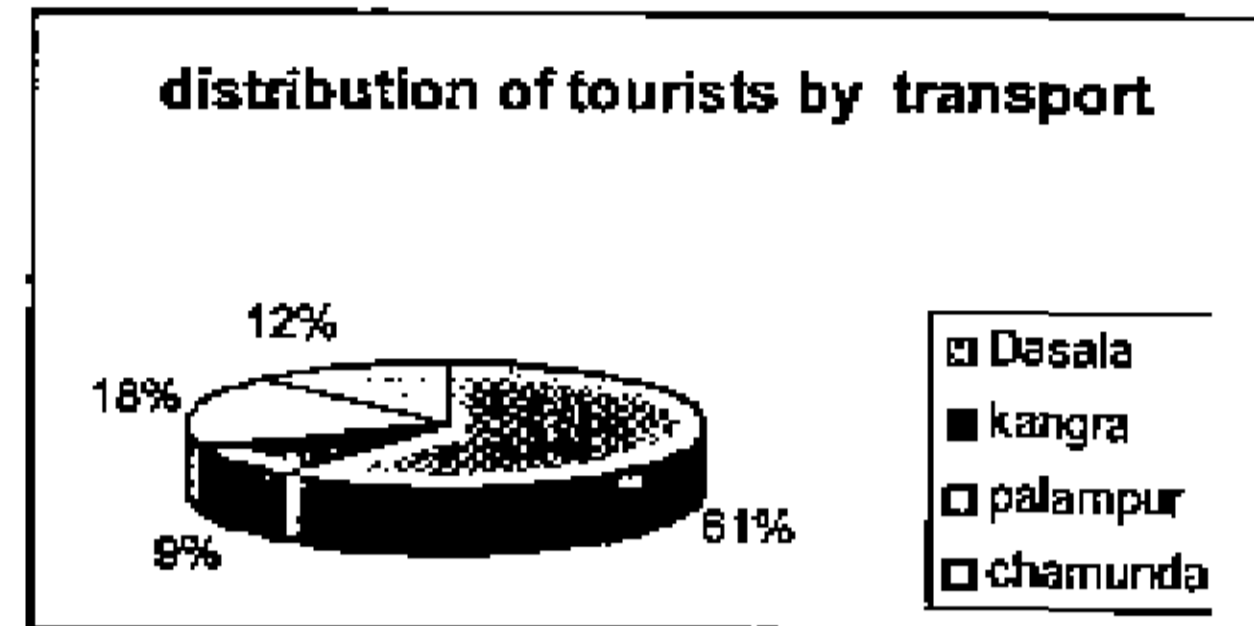
Source: Tourism report of HP-2004

Table-4.13: Distribution of tourists by means of transport

Distribution of tourists by means of transport						
		Air	Rail	Bus	Own	Total
Kangra	Dasala	4	70	59	4	137
	Kangra	0	4	8	8	20
	Palampur	1	2	35	2	40
	Chamunda Devi		2	2	24	28

Source: Tourism report of Himachal Pradesh-2001

Table 4.13 and fig 4.8 shows that people prefer Dharamsala over other places due to better means of transport (road, rail, and airport)

h. Schools-Social infrastructure :(Refer Map 9: Location of schools)

Fig-4.9: Percentage of schools
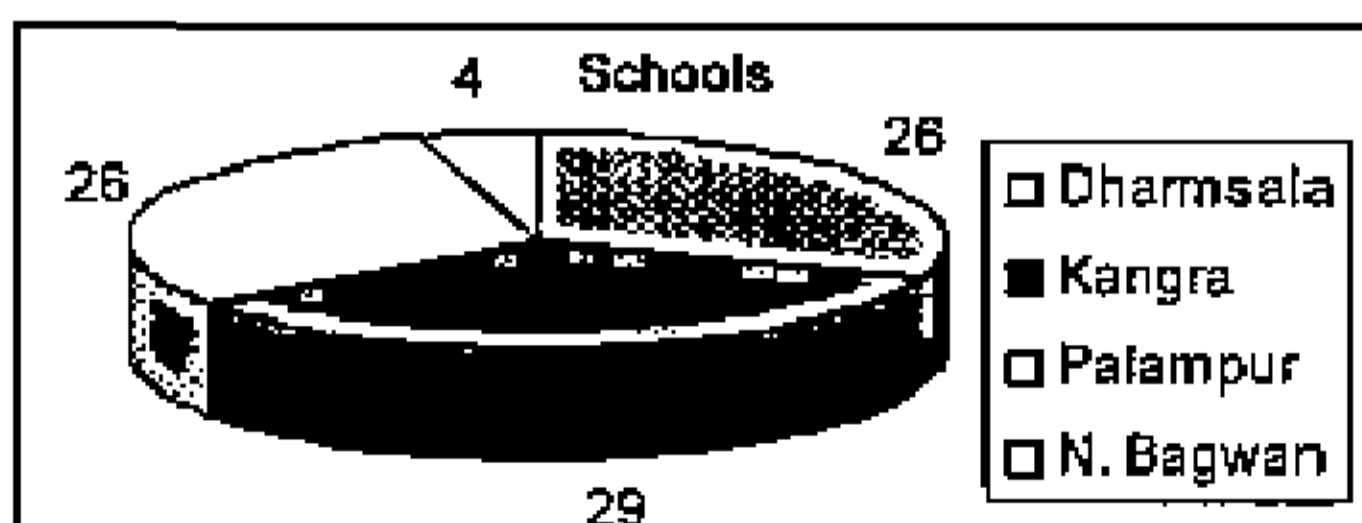
Source: Statistics of Kangra region-2001

Map 19 shows the distribution of various levels of schools in the region with more or less uniform distribution of the schools. Fig 4.9 shows that Kangra and Dharamsala closely followed by Palampur are areas excelling in field of education.

Map 9: Location of schools
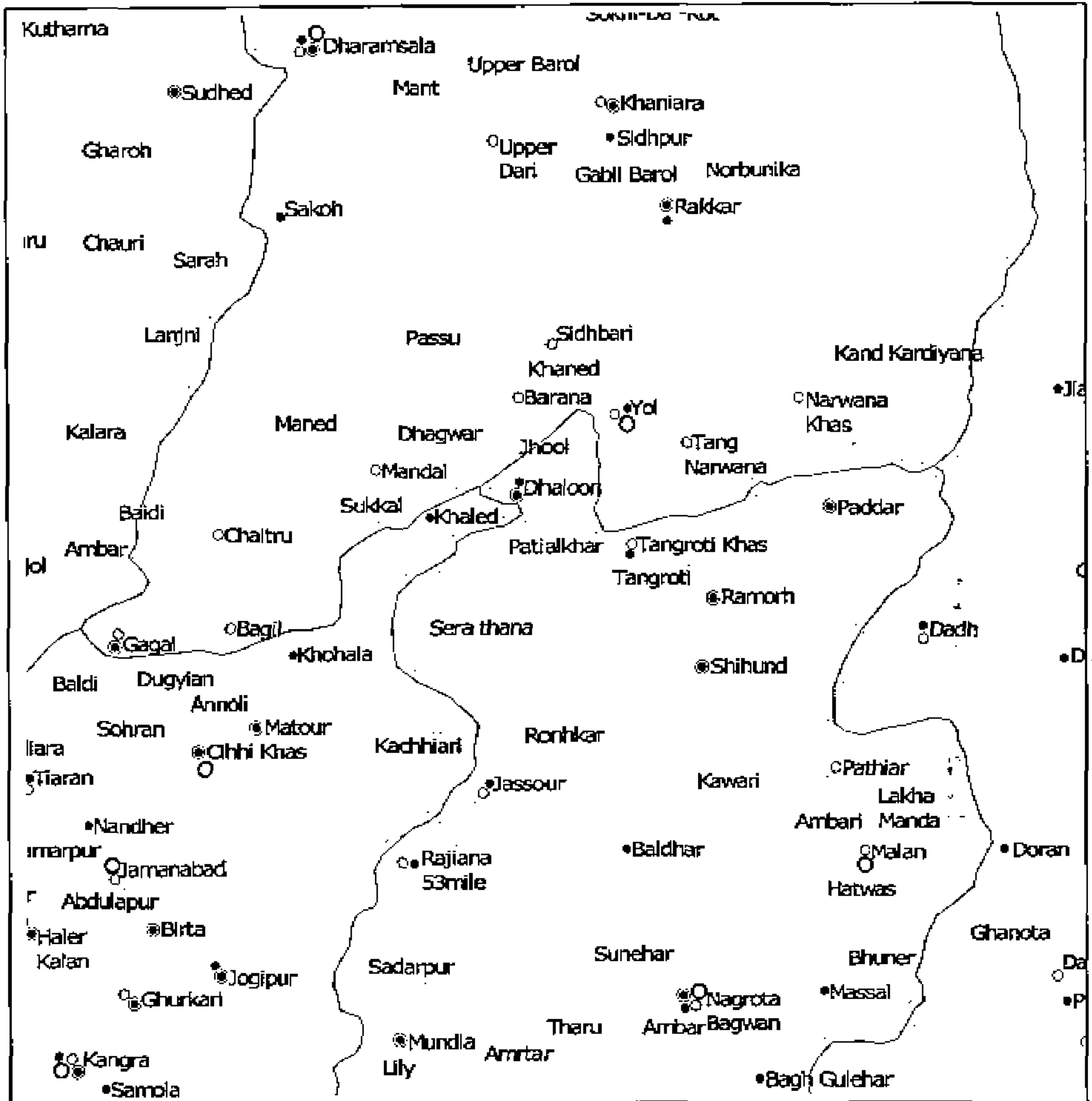
Source: Compiled by author from various sources

1-5   standard   ●   1-10   standard   ○

1-8   standard   ◉   1-12   standard   ◎
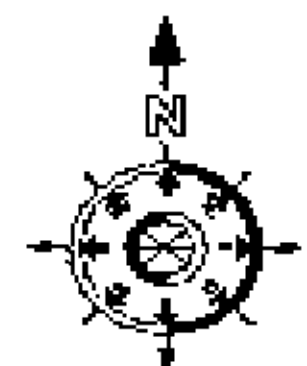
Education/research:

1. The area has high degree of facilities related to education like:
2. Presence of Tanda Medical College & Veterinary Hospital
3. Presence of primary and senior secondary schools (in Malan)
4. Presence of Rice Research Station (affiliated to H.P.K.V.V) in the area

Table-4.14: Description of educational institutes

Educational Institutes				Place & Number		
Description			Dasala	Palampur	Kangra	N. Bagwan
P.G Degree College			1	1	1	1
H.P.K.V.V			0	1	0	0
Vetenary C.			0	1	0	0
Rice Res. C.			0	0	0	1
Bed College			1	1	0	0
Law College			1	0	0	0
J.B.T School			1	1	1	0
Industrial Training Institute For Women	1	1	1	1		
Sr. Sec. School			5	6	6	2
High School			7	3	4	3
Middle School			5	2	4	5
Primary School			16	6	3	2
Nursery School			4	3	3	2

Source: Statistics of Kangra region-2001

Table-4.15: Distribution of Schools

Place	Population	Schools			
	2001	1-5 class	1-8 class	1-10 class.	1-12class
Dsala	19034	Present	Present	Present	Present
Kajlot	1014			Present	
Sudher Khas	125		Present		
Sakoh	485	Present			
Mant	5240				
Barol	2559				
Dari	3751			Present	
Dadh	2091	Present		Present	
Padar	1052	Present			
Sunehar	1030	Present			

Mundla	921	Present			
Kharar	558				
Tharu	725				
Nagrota	4436	Present	Present	Present	Present
Bhunehr	1700				
Hatwas	1103				
Darang	343			Present	
Malan	862			Present	Present
Mataour	177	Present			
Gagal	377		Present	Present	
Kangra	4450	Present	Present	Present	Present
Jia	228	Present			
Rajiana 53 Mile	920	Present		Present	
Jhool	431				
Jassour	856	Present		Present	
Sadarpur	1937				
Pathiar	335			Present	
Barwana	703		Present		
Lakha Manda	191				
Kholi	1837	Present			
Pasal	358				
Dhaloon	989				
Kaled	1048	Present	Present		
Norbubilinka	365				
Khaniara	156				
Sohni-Da -Kot	1368	Present	Present		
Tang Narwana	764		Present		
Narwana Khas	724			Present	
Tangroti Khas	511	Present			
Barana	269				
Jalot	326				
Tiara	1385	Present	Present	Present	
Birta	2146	Present		Present	
Sameli	594	Present			
Jamanabad	166	Present	Present		
Abdulpur	1179			Present	Present

Source: Statistics of Kangra region-2001

Table 4.14 and 4.15 show that Dharamsala, Kangra, and Nagrota Bagwan have all levels of educational institutions while some areas like Malan, Dadh and Yol have either senior secondary or secondary schools. Therefore the site in close vicinity of former three sites would be most suitable for the location of the new town.

i.   **Water supply**: (Refer Map 10: Water resources of Kangra region)

Map 10 clearly indicates that the whole area is endowed with sufficient water resources in the form of streams, springs .however a particular zone comprising of areas N.Bagwan-Chamunda devi-Malan is most appropriate for the new settlement.

Source of water:

1.   Water supply from Gia-Chamunda Devi *Khad* (small stream) that is all weather source and from here water supply can be conveniently given to the new town.

2.   No problem of Water lifting /transporting pipes

Fig-4.10: Ranking of areas as per availability of water resource
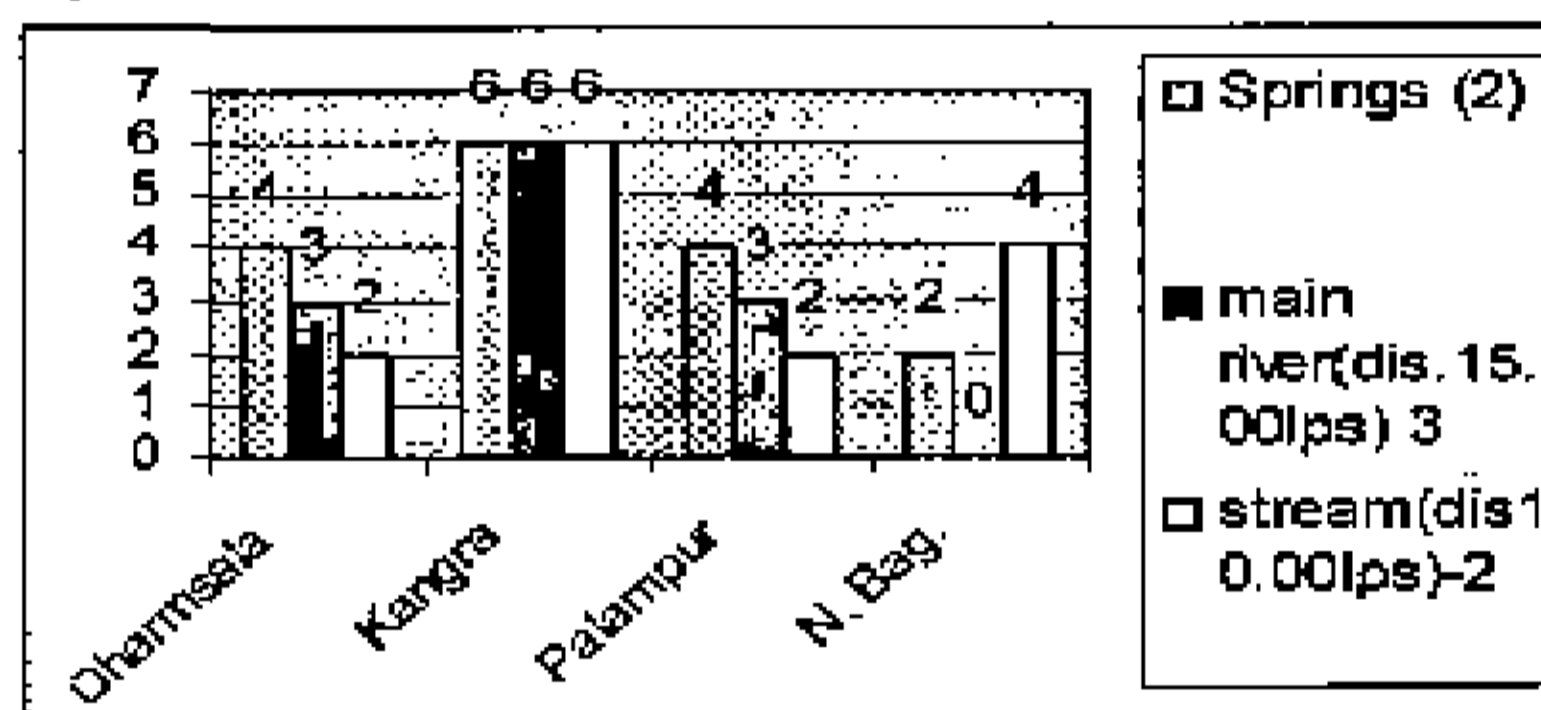
Source: Analysis by author (topographic sheet, SOI, Statistics of Kangra a region-2001)

Fig 4.10 clearly shows that Kangra is the best area because of presence of all three sources of water very closely followed by Chamunda Devi and Palampur.

j.   **Existing Land Use:** (refer Map 11: Existing land use of Kangra region)

Land use map 11 shows that mainly commercial development is abutting the NH-21 and the main core areas of Kangra and Dharamsala while service activity predominates the areas of Dharamsala enroute Yol and Chamunda Devi. Main industrial activity is along the main rail route from Kangra via Nagrota Bagwan to palampur and also in some partial form at Dadh and Nagri near Chamunda Devi .The residential use exists in unregulated form in the form of patches in between these various land uses. Vast tracks of open land

Map 11: Existing land use of Kangra region

Bhanalla
Mc Leod Ganj
Bhagshunag Temple
Bhagshunag
Dalai Lama Temple
Trekking place
Bhitlu
Dharamsala
Sohni-Da -kot
Upper Barol
Mant
Khanaria
Upper Dari
Sidhpur
Dadhar
Cricket Stadium
Sakoh
Gabli Barol
Norbutinka
Rakkar

Dharamsala

Lanini
Sidhbari
Chinamay Tapovan
Kand Kardiyana
Khaned
Barwala
Yol
Tang
Narwana Khas
Jia
Mandal
Kaled
Sukkar
Paddar
Ambar
Chetru
Tangroti Khas
Shri Chamunda
Ramerh
Devi Temple
Dadh
Patilakhar
Tangroti
Nagri
Ghianpkalan
Bagil
Gagga
Khohala
Shihund
Palamapur
Baldi
Annoli
Ronkhar
Shihund
Pathiar
Mataour
Muhalkarchahri
Lakha
Kachhiari
Jassour
Kawari
Ambari
Kholi
Baldhar
Malan
Doran
Rajiana
53 mile
Ghanota
Sunehari
Bhuner
Darang
Sadarpur
Nagrota
Tharu
Bagwan
Massal
Kangra
Ambar

Source: Compiled by author from various sources

Industries ●	Commercial ●	Services ●	Reserved forest ●
Highways ●	Tourism ●	Agriculture ●	Residential ●
Water body ●	Railway ●	Link Road ●	

Map 10: Water resources of Kangra region

Dharamsala

Upper Barol

Mani

Khanaria

Dadhar

Upper Dari   Sidhpur

Cricket Stadium   Gabli   Norbutinka

Sakoh   Barol   Rakkar

Lanini

Kand Kardiyana

Sidhbari

Chinamay Tapovan   Narwana   Jia

Khaned   Yol   Khas

Barwala   Tang

Mandal

Sukkar   Kaled   Tangroti   Paddar

Khas   Shri Chamunda

ibar   Chetru   Patilakhar   Devi Temple

Ghianpkalan   Tangroti   Ramerh

Bagil   Dadh

Gaggal   Khohala   Palamapı

aldi   Shihund

Annoli   Ronkhar   Pathiar

Mataour   Muhalkarchahri   Lakha

Kachhiari   Kawari   Ambari

Kholi   Jassour   Baldhar   Malan   Dc

Rajiana   Ghanota

53 mile   Sunehar   Bhuner   Darang

Sadarpur   Nagrota   Massal

Tharu   Bagwan

Ambar

Source: Compiled by author from various sources

Springs   ●   River /stream   ──────   N

are available at the site from Kangra enroute Chamunda Devi at Malan, Dadh and Jia with spots of agricultural land at certain places along the contours .reserved forests also exists but along Jawalamukhi to Kangra and Palampur to Malan.

k. Land Suitability: (refer Map 12: Land suitability in Kangra region)

Map12 shows that from the combination of the factors like vacant land, forest areas, economic activity, the potential site with best land availability is Nagrota Bagwan followed by other three.

Table-4.16: Ranking of site as per land suitability

Dharmsala I ,Kangra II, Palampur III, N. Bagwan IV			
Criteria	I	II	III	IV
vacant land	1	1	1	2
Forest zones(n.p)	1	0	1	0
Economic activity	2	3	2	3
land Suitability	4	4	4	5

Source: As per analysis by author

Fig-4.11: Ranking of site as per land suitability

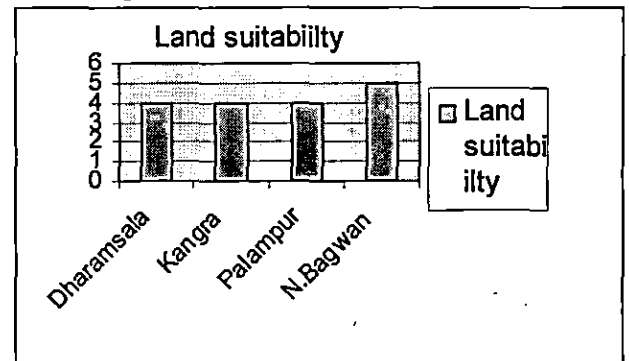*Source: As per analysis by author*

Table 4.16   shows that Nagrota Bagwan is the best site by criteria of land suitability while economic activity is best in both Kangra and Nagrota Bagwan.

Table-4.17: Land value

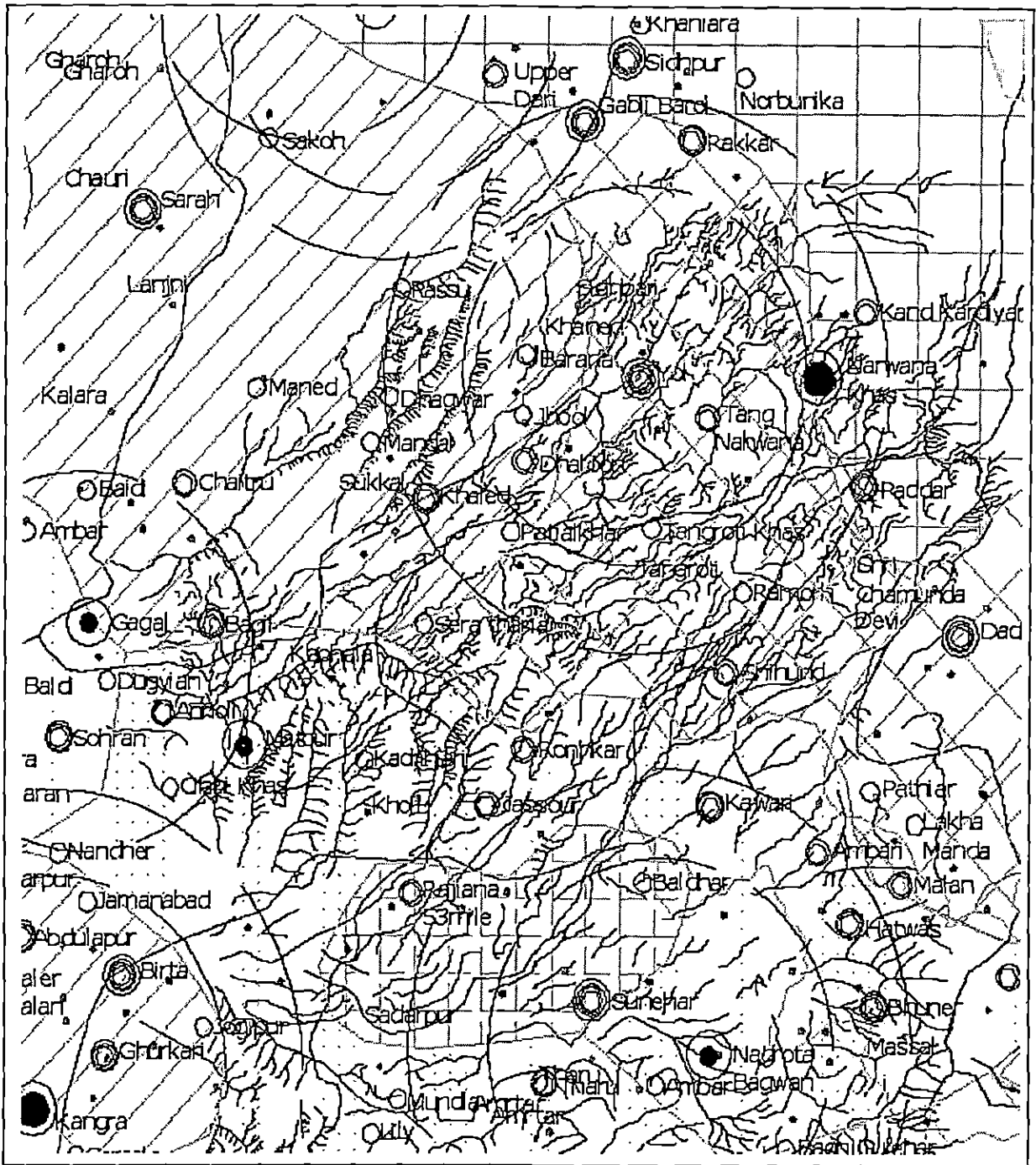| Land rates	
McLeod Ganj	40-15 lac per kanal
Dharamsala	20-10 lac per kanal
Daadi	12-6 lac per kanal
Yol	8-10 lac per kanal
Sakoh	12-6 lac per kanal
Areas adjoining Gaggal	15-6 lac per kanal
Areas adjoining Shri Chamunda Devi temple	14-8 lac per kanal

Source: Statistics of Kangra region-2001

Map 12: Land suitability in Kangra region

Source: Compiled by author from various sources

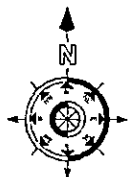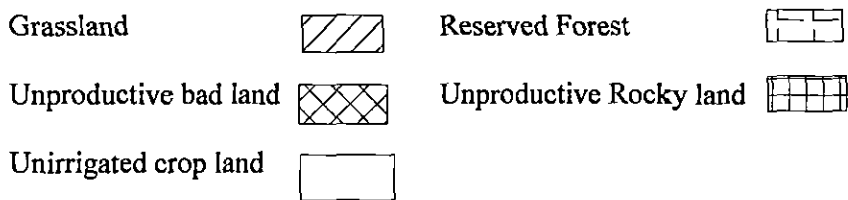|			
Grassland	[grassland symbol]	Reserved Forest	[reserved forest symbol]
Unproductive bad land	[bad land symbol]	Unproductive Rocky land	[rocky land symbol]
Unirrigated crop land	[crop land symbol]		

Table 4.17 shows that land value is high in proper Dahramsala and Mc Leod Ganj while it is comparatively lesser in areas near Chamunda Devi and Yol. Therefore the areas near the two sites are preferred.

Table 4.18: Availability of construction materials

Mineral Production			
Year	Stones(M.Ton)	Sand (M.Ton)	Aggregates(M.Ton)
1996-97	60100	54122	46550
1997-98	42325	32422	27330
1998-99	44000	41600	35400
1999-2000	47700	43350	40700
2000-01	74940	40650	25450 .
2001-02	270000	200000	239005
2002-03	145000	90372	47160
2003-04	306991	167845	313105

Source: Statistics of Kangra region-2001

Table 4.18 indicates that availability of construction materials has increased in Kangra region over past years owing to better transport facilities and accessibility .This would prove to be advantageous for the new town since lesser cost of development would be incurred.

Fig-4.12: Availability of construction materials
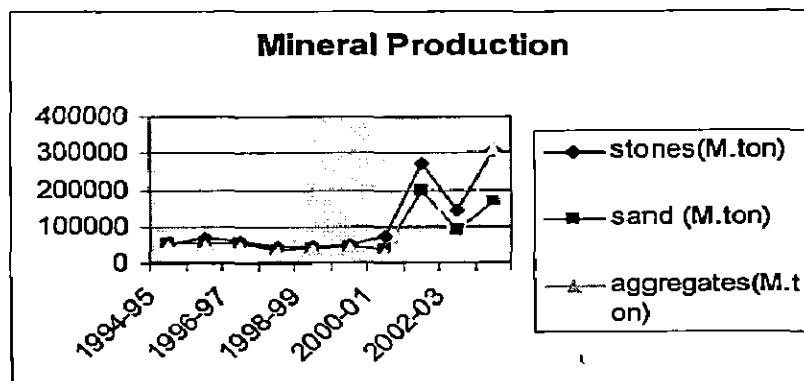
Source: Statistics of Kangra region-2001

l.   Inference

Although Dharmsala fulfills maximum criteria but is closely followed by Palampur and then by Kangra. Certain criteria's like connectivity are fulfilled better by Dharmsala but in certain cases it is at equal ratings with blocks Kangra, Palampur and Nagrota Bagwan for

e.g. in case of population and topography. However in certain criterias like economic activity blocks of Kangra and Nagrota Bagwan rates better than Dharmsala and Palampur. Therefore on the whole no one particular block is found most appropriate for development of new town. Moreover already development is taking place along the junction or common zone of all four blocks .Therefore the zone in proximity to all four growth centers and blocks is considered appropriate.

4.2.2 Phase II: Identification of site (Micro criterias)

Matrix showing the results of weighted summation applied to different potential locations of zone selected

I: Chamunda Devi, II: Jia, III: Dadh, IV: Malan, V: Sunehar, VI: Gaggal

Table-4.19: Identification of site

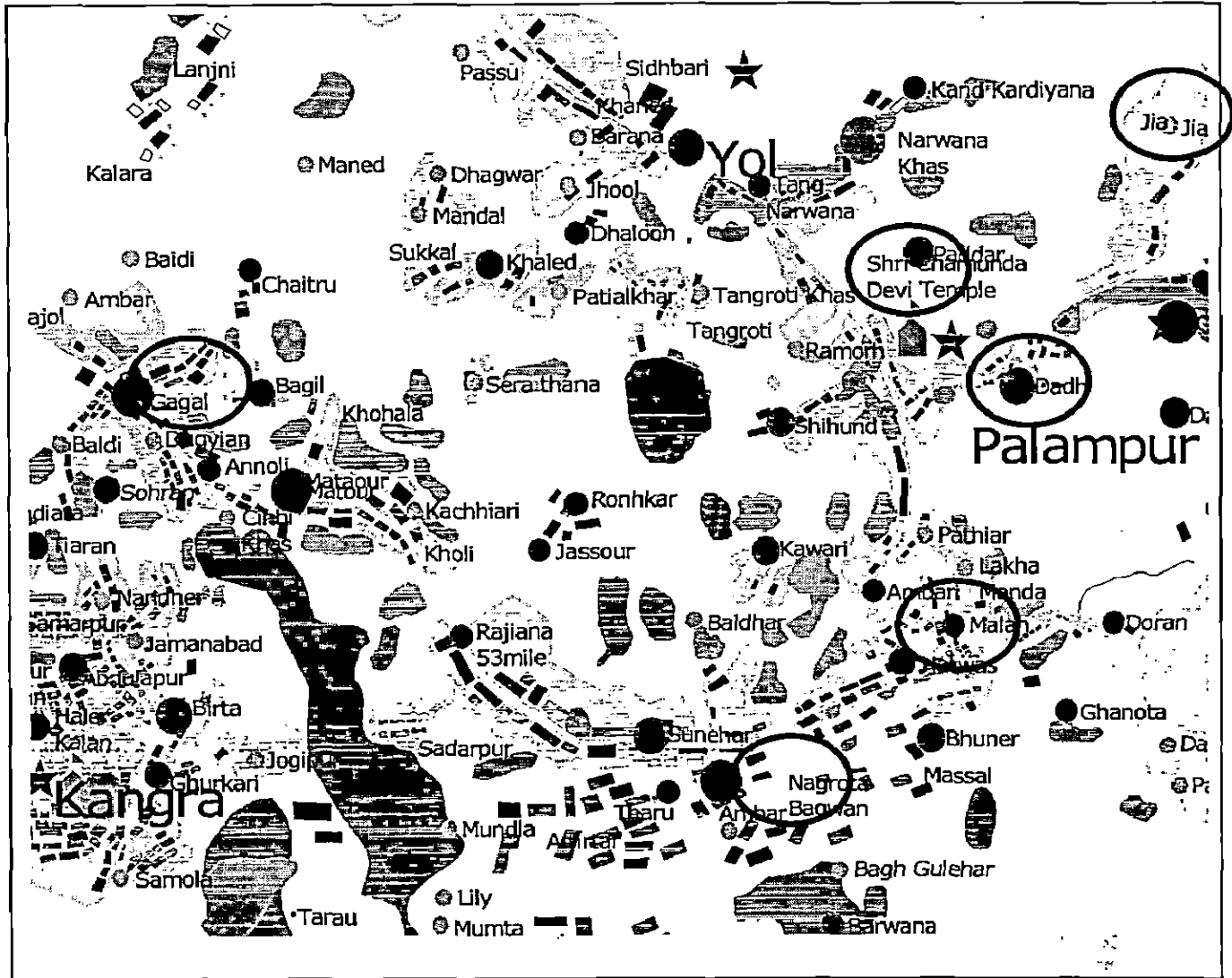| Weights	criteria	I	II	III	IV	V	VI
3	Economic activity	3	3	6	6	6	9
3	Connectivity	3	3	3	9	6	6
2	Topography	2	2	4	4	4	4
2	Land availability	2	6	6	6	4	0
2	Growth point	4	4	6	6	6	4
2	Population	4	4	4	6	4	2
2	Availability of local resources	6	2	2	4	2	2
1	Infrastructure	2	2	2	2	1	2
	Total(summation)	26	26	33	43	33	24

Source: Analysis by author

Table 4.19 shows that after analysis of given criterias, Malan is the best site while Dadh and Sunehar are potential sites that can also be considered for the new town.

a. Economic activity & Connectivity:

(Refer Map13: Most appropriate economic activity and connectivity)

Map13: Most appropriate economic activity and connectivity
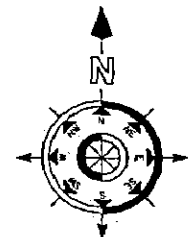

Source: Compiled by author from various sources

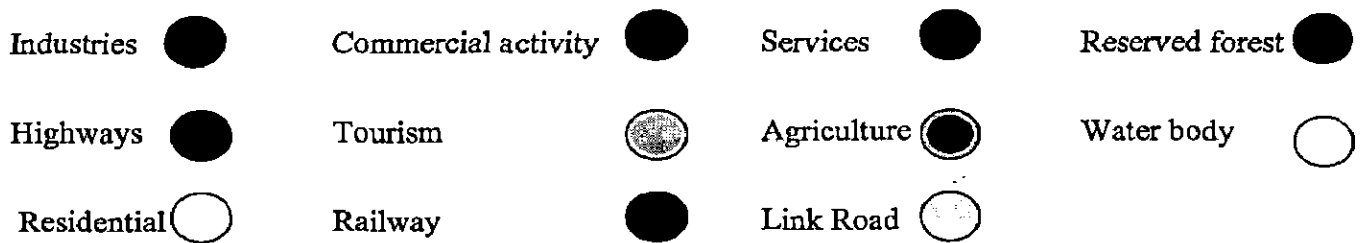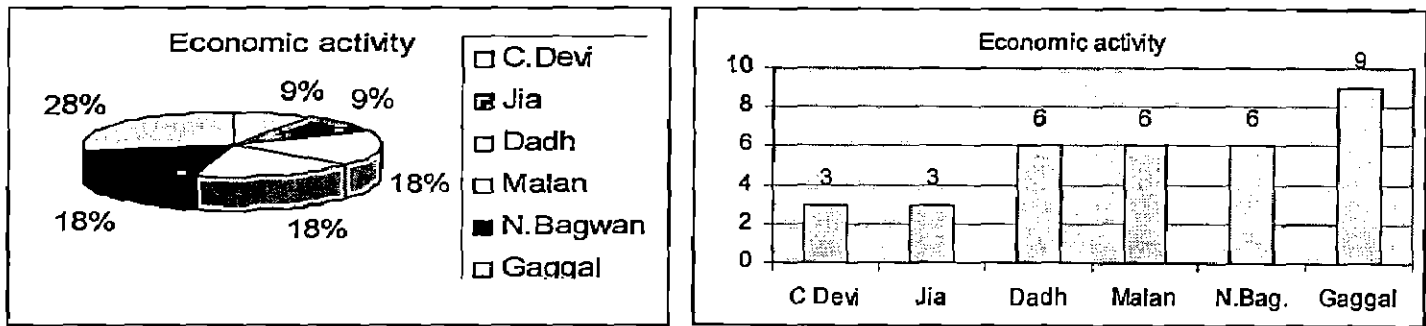|						
Industries ●	Commercial activity ●	Services ●	Reserved forest ●
Highways ●	Tourism ◉	Agriculture ◉	Water body ○
Residential ○	Railway ●	Link Road ○	

Fig-4.13 & 4.14: Most appropriate economic activity and connectivity

Source: Analysis by author

Fig 4.13 and 4.14 shows that Gaggal is the site with maximum economic activity while Malan-N.Bagwan-Dadh are the potential sites with strong economic activities picking up fast in the areas.

b. Economic activity & growth points (Refer Map 14: Economic activity & growth points):

Fig 4.15 shows that Gaggal is the best site by criterias of economic activity and growth pints while Malan-N.Bagwan and Dadh are second potential sites.

Fig-4.15: Economic activity and growth points
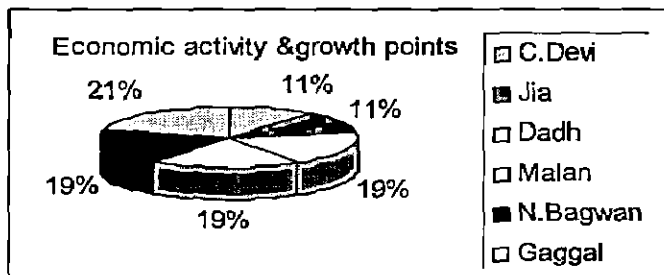
Source: Analysis by author

c. Topography, Drainage, Population, Water resources:

Fig-4.16: Site with best topography, drainage, water resources
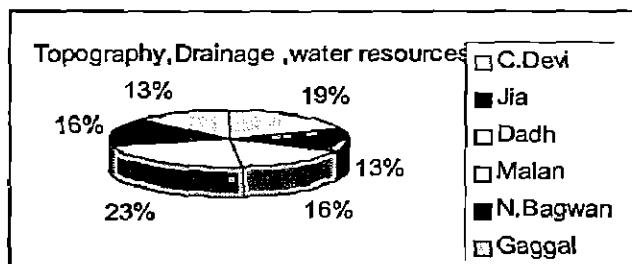
Source: Analysis by author

Map14: Economic activity & growth points
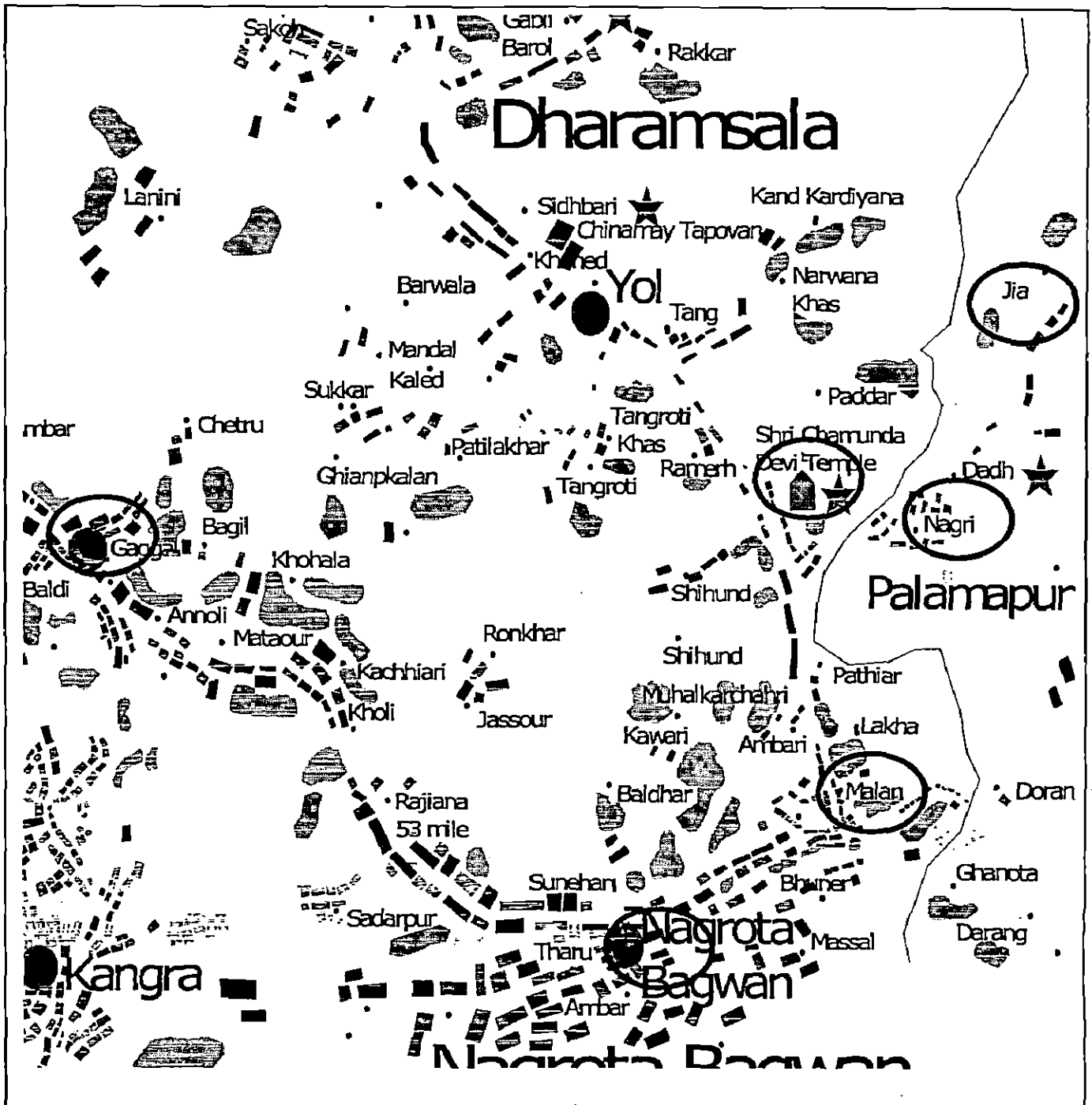
Source: Compiled by author from various sources

Industries	●	Commercial activity	●	Services	●	Reserved forest	●
Tourism	◉	Agriculture	◉	Residential	○	Growth Centers	●

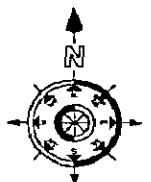Fig 4.16 shows that Malan is the best site from the combined criterias of Topography, Drainage, and water resources closely followed by Chamunda devi ,Dadh and Nagrota Bagwan.

Map15: Topography, Drainage, Population, Water resources
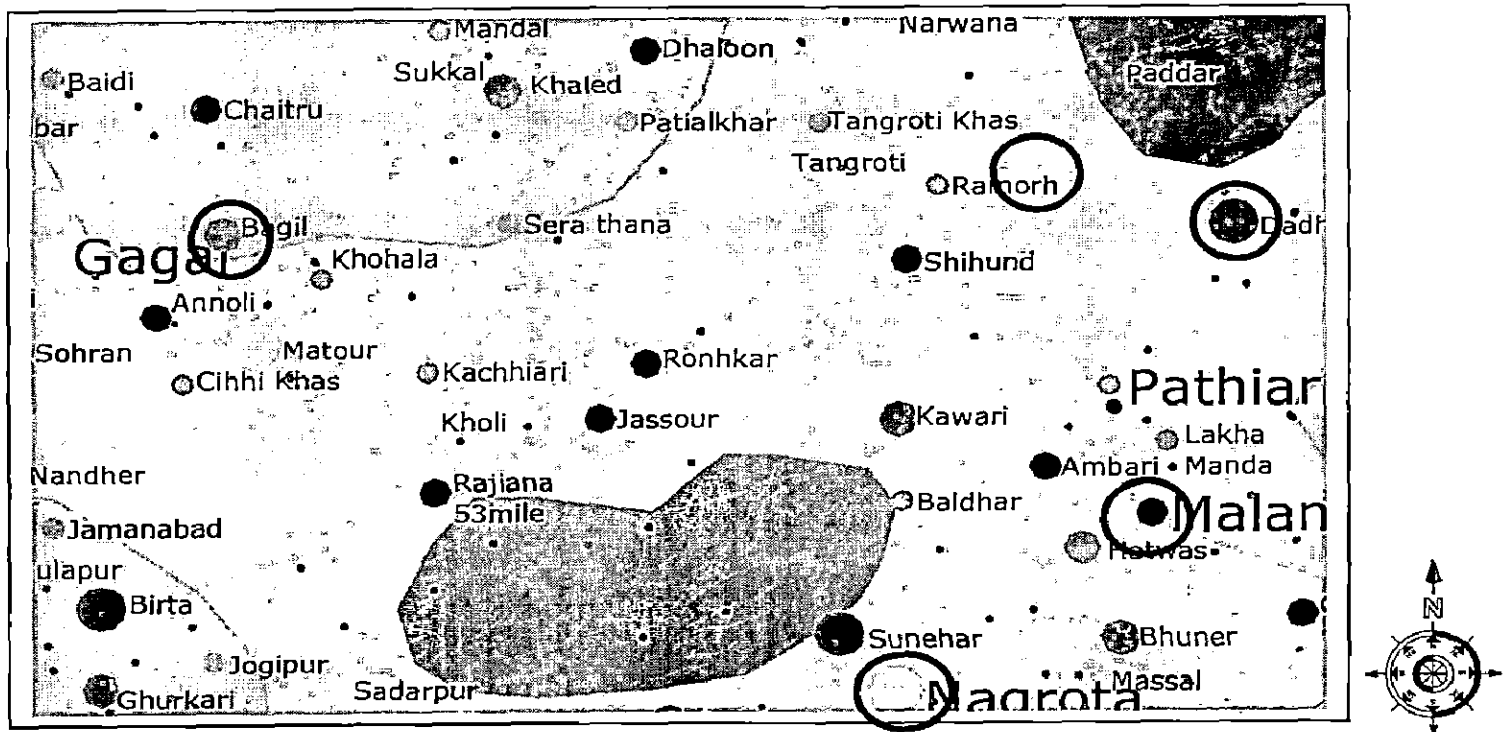
Source: Compiled by author from various sources

Grassland [ ]   Grazing land [ ]   Reserved Forest [▓]   Unirrigated crop land [ ]

Unproductive bad land [ ]   Unproductive snow field [ ]   Unproductive Rocky land [▓]

Unproductive Sandy land [ ]

Map 15 shows that while Gaggal lies in rather sloping and combination of grassland ,unirrigated crop land , Dharamsala lies in steeply sloping ,combination of grassland unproductive bad land and rocky land ,Nagrota lies in flat topography and predominantly unirrigated crop land with certain patches of reserved forest that would act as buffer for the industrial belt , Malan-Dadh -Pathiar-Chamunda ,lies in flat topography and combination of unirrigated crop land and unproductive bad land .This implies that belt comprising of areas of Nagrota-Malan-Chamunda-Dadh-Jai are best locations for the new town.

d. Land use, Economic activity, Water resources, Transport

Table-4.20: land suitability

Wts	Criteria	I	II	III	IV	V	VI
3	Economic activity	3	3	6	6	6	9
2	land availability	6	6	6	6	4	0
T	land suitability	9	9	12	12	10	9

I	C Devi
II	Jia
III	Dadh
IV	Malan
V	N.Bag.
VI	Gaggal

Source: Analysis by author

Table 4.20 and fig.4.17 show that Dadh and Malan are the most appropriate sites from criterias of economic activity, land suitability, and land availability while Nagrota Bagwan is the other potential site after the former two sites.

Fig-4.17: land suitability

Source: Analysis by author

e. Drainage, land Suitability, Population, Transportation, Water resources

Map-16: Drainage, land suitability transportation and water resources
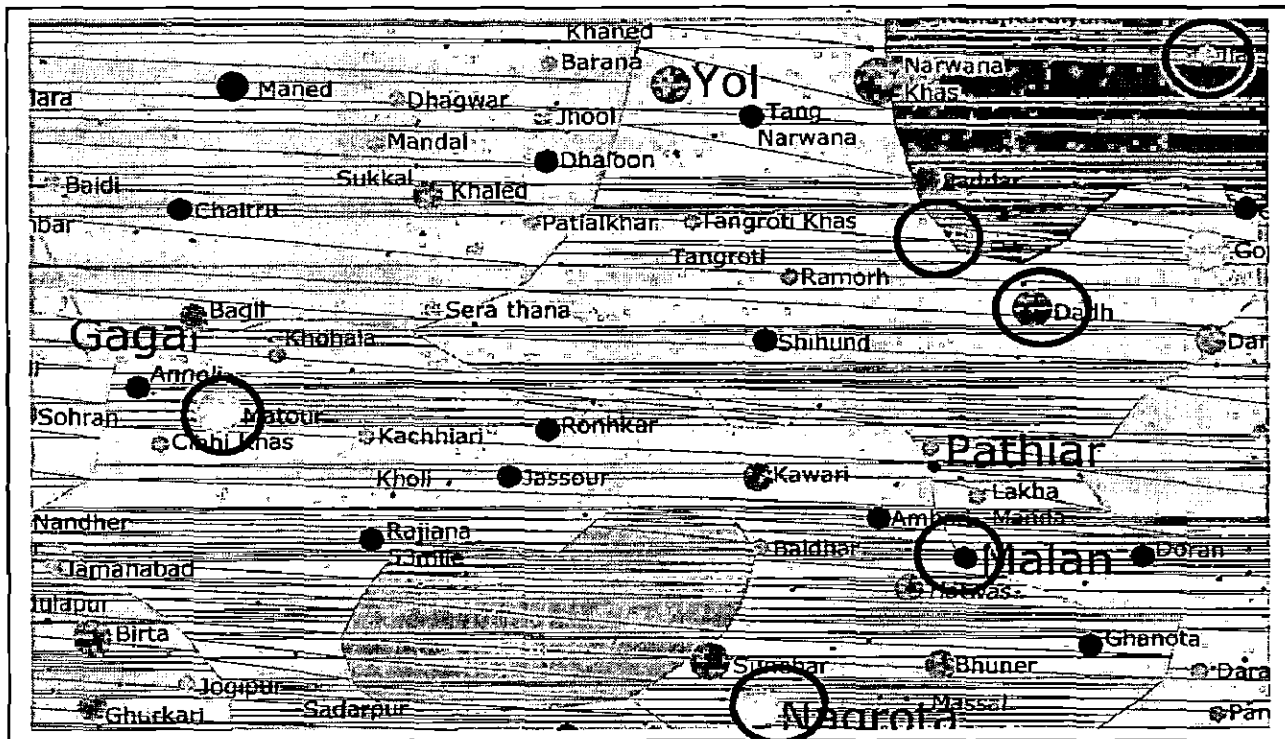
Source: Compiled by author from various sources

Grassland ☐   Grazing land ☐   Reserved Forest ▦   Unirrigated crop land ☐

Unproductive bad land ☐ Unproductive snow field ☐ Unproductive Rocky land ▦

Unproductive Sandy land ☐

Map-16 shows that areas of Malan -Nagrota Bagwan are the best locations for new town development since they are connected by rail network, national highway-21 state highways and number of link roads. Moreover these areas have comparatively flat topography, and plenty of water resources. Land suitability is also best for these are with less demographic profile at present comparatively other parts of the region .

Fig-4.18: Most appropriate site
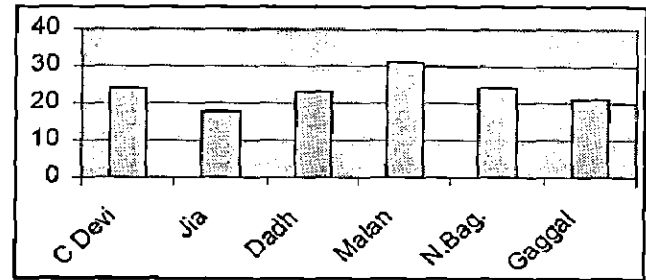
Source: Analysis by author

Fig 4.18 shows the ratings of the sites as per the criteria and Malan is the most preferred site closely followed by Nagrota Bagwan and Chamunda Devi.

f. Social infrastructure, Demography, Physical Infrastructure, Transport, Water

Map-17: Social infrastructure
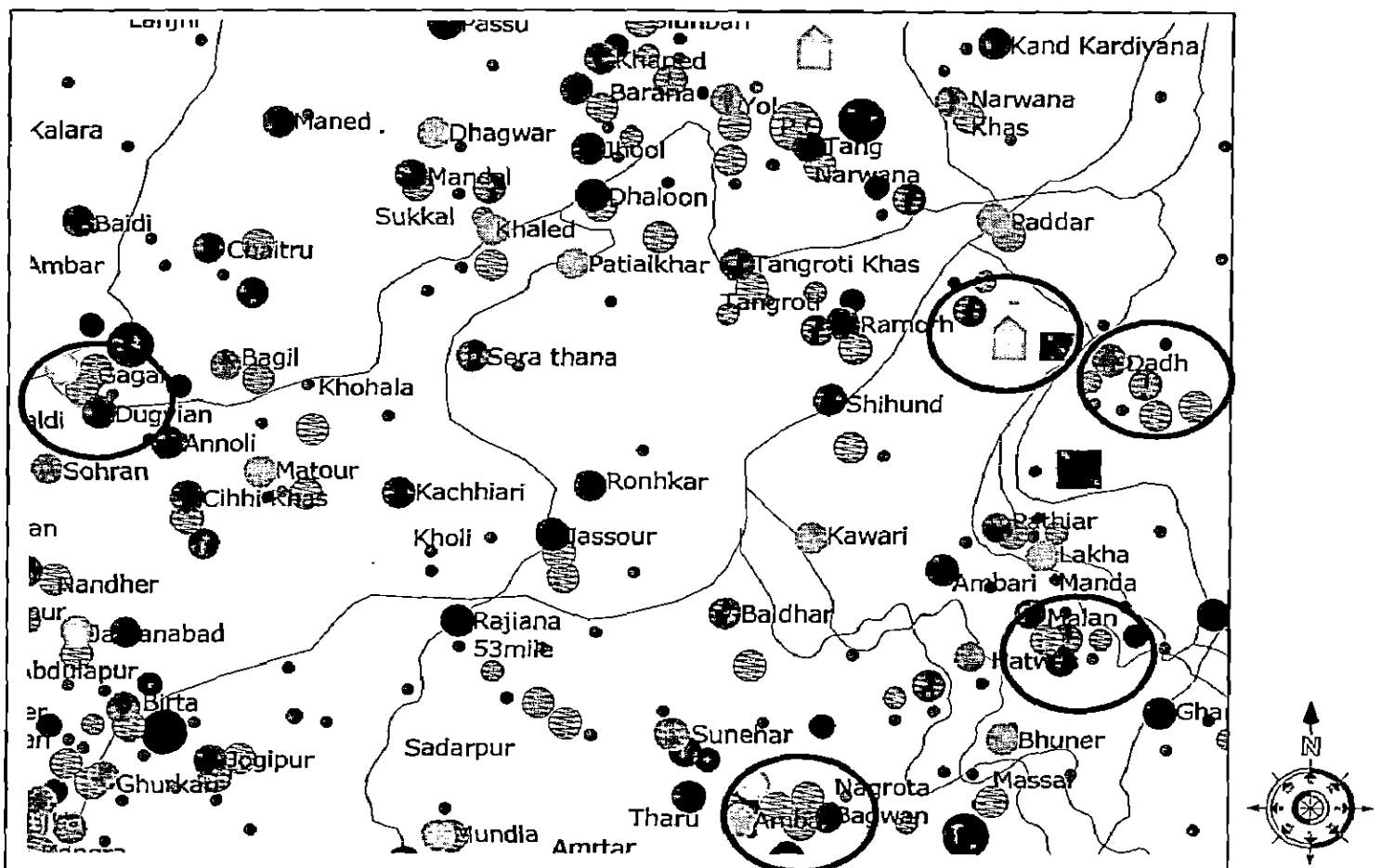
Source: Compiled by author from various sources

Medical facility ▆▆▆   Petrol pump ▆▆   Police station ▆▆▆   Post office ▆▆▆

Water resources ▒▒   National Highway ▆▆   State highway ▭

Schools: 1-5 standard ▭   1-10 standard ▭   1-8 standard ▭   1-12 standard ▆▆▆

Map 17 shows the distribution of various infrastructure facilities both social and physical. The map shows that while the facilities are sparsely distributed over the whole region but at certain areas they are more pronounced and concentrated as per the demography of the area. These areas with higher presence of infrastructure facilities are Nagrota Bagwan, Malan, Gaggal, Dadh, and Chamunda Devi while the areas in the near vicinity can be developed to avail the maximum benefits of the already existing facilities and also some higher level of facilities can be provided since it would prove to be economical. Therefore the new township can developed advantageously in the near vicinity of these areas.

Fig-4.19: Infrastructure
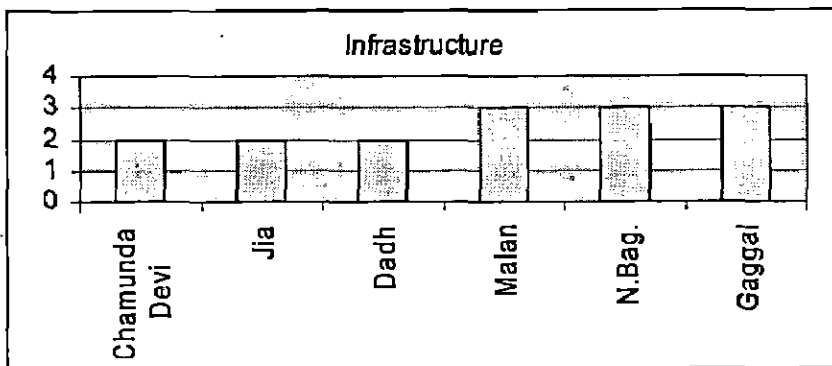
Source: Analysis by author

Fig 4.19 shows that Malan-Nagrota-Bagwan and Gaggal are most preferred sites.

g. Inference

Therefore site for development of new town identified as **Nagrota –Malan-Chamunda devi-Dadh** belt -can be extended up to Jia (as per future req.)

Proposed site

Plate 4.1 Flat topography & vast tracts of vacant land near Malan -Nagrota Bagwan & Dadh

Source: By author

Map18: Most appropriate site
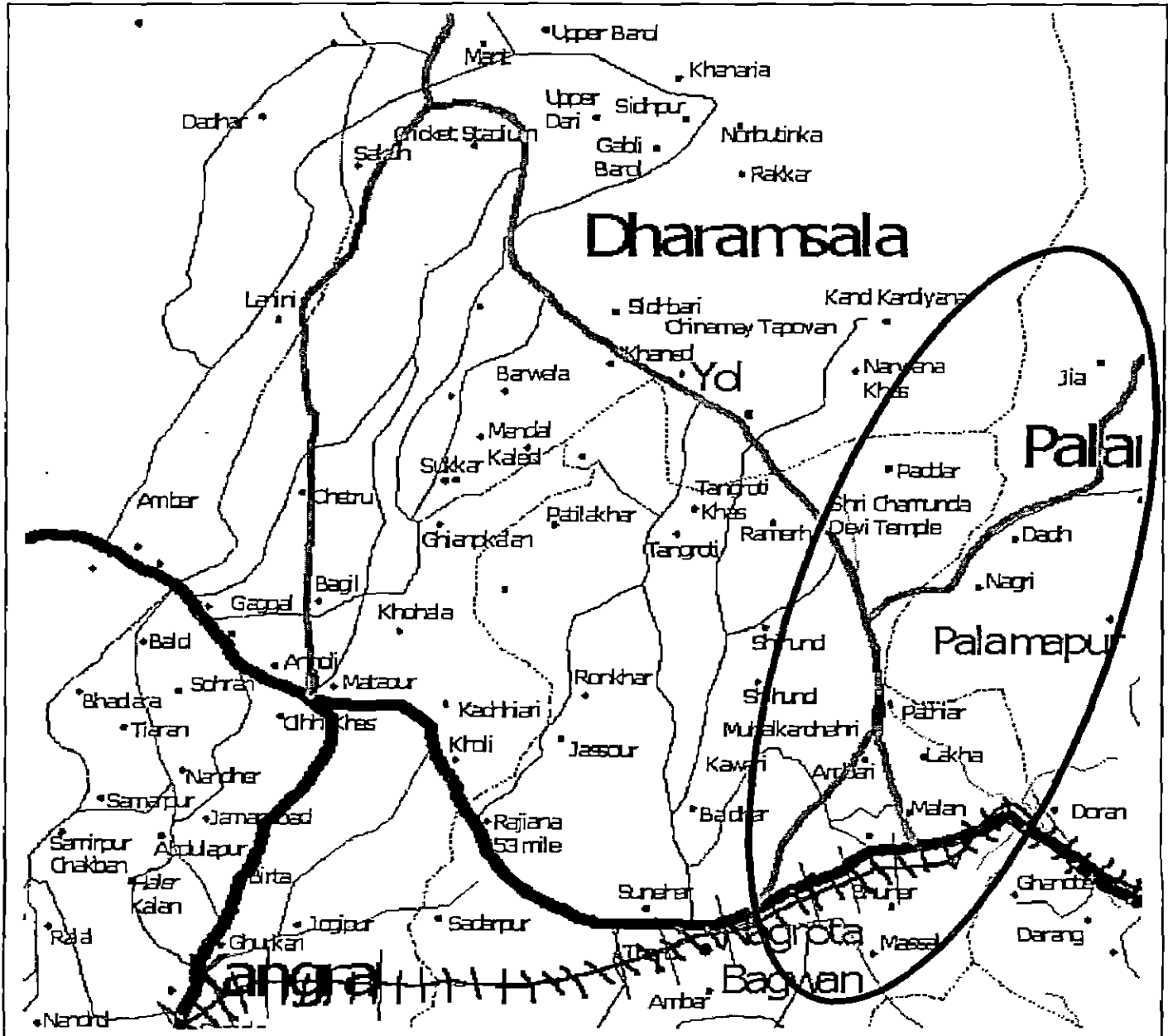
Source: Compiled by author from various sources

Map 18 shows the most appropriate site for the new settlement for the advantages of better topography (flat and gentle sloping), transportation facilities of rail, road and air connectivity , better availability of natural resources like natural steams and large number of natural springs to cater to water related needs of the demography of the proposed town.

Plate -4.2: flat topography of site between Nagrota Bagwan-Malan-Dadh-Jia

Plate-4.3: link roads to Malan- Dadh

Plate-4.4: link roads to Nagrota Bagwan-Malan- Dadh

5

Analysis and Projections for new town

5.1 Site Identification

Nagrota-Bagwan –Chamunda –Malan –Dadh planning area consists of historically old market town of Nagrota Bagwan, Chamunda famous tourist pilgrim centre of Kangra valley and Malan an emerging growth centre and Dadh emerging as new industrial hub of at Nagri, apart from vast rural tracts around them. the proposed planning area covers an approximate area of 4616 hectares and stretches over a length of about 6 k.m and varying width of about 4 k.m .the revenue hadbasts included in this planning area are 69 in number accommodating a total population of 34641 persons I 1991 that has gone up to   as per 2001 census.

Plate-5.1: Overall view of Malan-Nagri--Dadh

Source: By author

The planning area is traversed by the national highway no.20 and the Pathanhot- Jogindernagar Railway line which are considered life lines of the Kangra valley. The area also enjoys accessibility from Dharamsala - Palampur via Nagri state highway. The area starts from Dadh and tang

onwards which are approx. 11-14 k.m from Dharamsala. On account of excellent accessibility, plain topography, picturesque background of the Dhauladhar mountain range ample availability of water resources and above all close proximity to higher order urban areas of Dharamsala and Kangra. Therefore the proposed site for the new town includes areas of Nagrota –Bagwan –Malan –Chamunda –Dadh.

Plate-5.2: Flat topography of Nagrota-Malan-Dadh

Source: By author

Planning For A New Town In Kangra Region
Department of architecture and Planning, IIT Roorkee
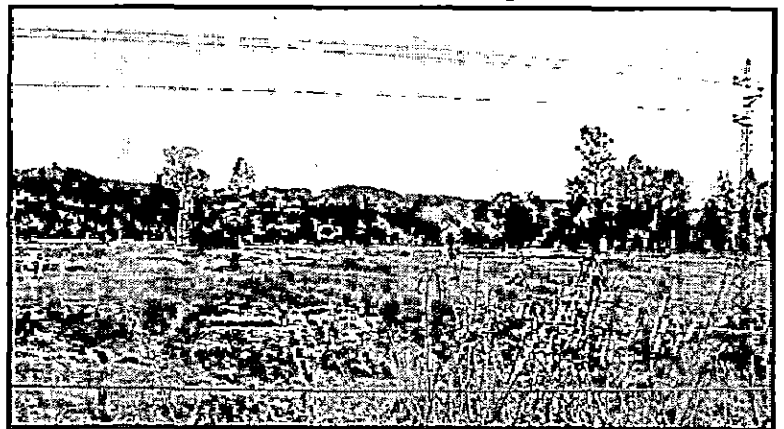
5.1.1 Nagrota Bagwan

Plate-5.3: Flat topography of Chamunda Devi-Malan

Source: By author

Population scenario: Nagrota Bagwan is classified urban area with a population size of 4,486 persons as per 1991 census and 5657 as per census of 2001 .It has a Nagar Panchayat to look after its civic affairs. The physical development is coming all along National Highway-20 and the narrow gauge railway line passing through the town in a linear fashion. It is a famous commercial center for retail business activities for the thickly populated rural tract all around and the biggest potato market of Kangra district with producing area Malan in close vicinity of 2-3 k.m
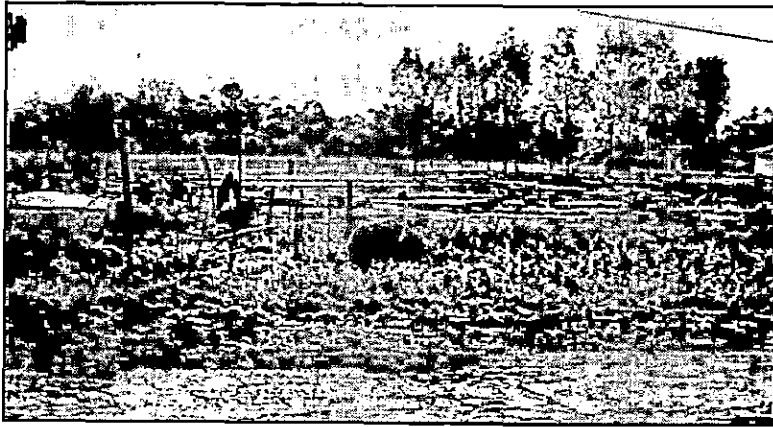
Plate-5.4: NH-21 connecting Chamunda Devi-Malan-Nagrota- Palampur with commercial development abutting roads sides

Source: By author

a. Topography:

Ample water throughout the year, variable scenery, salubrious climate, plain topography, excellent accessibility and above all central location admits rich agricultural hinterland give this town an edge over other urban areas of the Kangra valley in matter of physical development potential in days to come.

Plate-5.5: Gently sloping topography of Nagrota-Malan

Source: By author

b. Growth pattern:

As per official records Nagar Panchayat has an area extent just over 390 hectares of land which had fully saturated and the physical development during 1981-91 decade and for that matter development adds taken place outside the limit of Nagar Panchayat along Pathankopt-Chakki-Mandi Highway in a linear fashion both towards Malan and Sunehar

Plate-5.6: Informal market along Nagrota-Malan Road

Source: Bv author

c. Infrastructure:

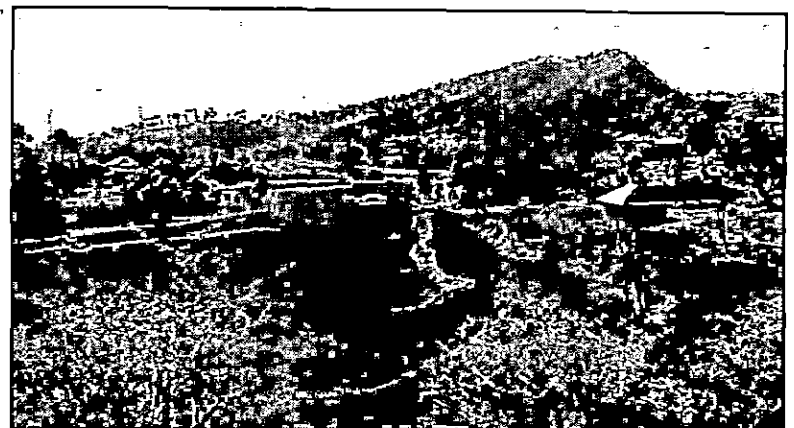The town also is socio-economic nerve centre of the area as it accommodates infrastructural facilities of education, health banking, transportation, trade and commerce, marketing etc. there are 1 rice research center, 1 industrial training institute for women, 2 senior secondary
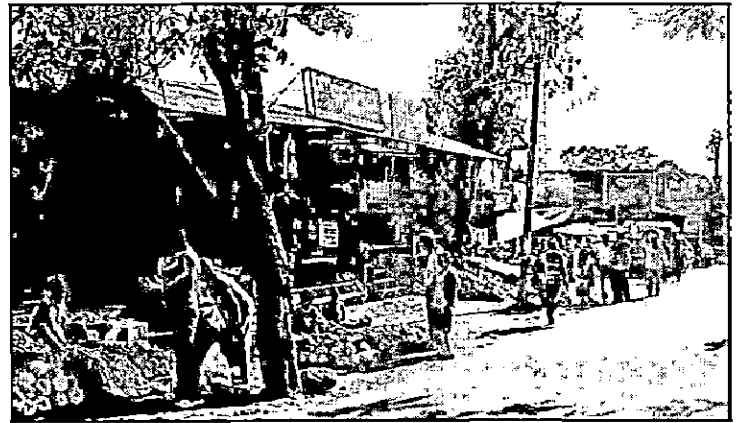
Plate-5.7: Bank at Nagrota

Source: Bv author

Plate-5.8: Electricity station at Malan

Source: By author

schools, 3 high schools, 5 middle schools, 2 primary schools, 1 primary health, 1 petrol pump, 1 bus stand, 2 police posts and numerous administrative offices or different development departments. Apart from administrative activities town has steel furniture industries, herbal units, pickle manufacturing, shawls, bakery, eatables, engineering based (manufacturing parts), medicines, chemical based detergent, bags industrial units, fruit canning and processing industry and potato markets.

Plate-5.9: Bus stand at Nagrota

Plate-5.10: Telecom office at Nagrota-Malan
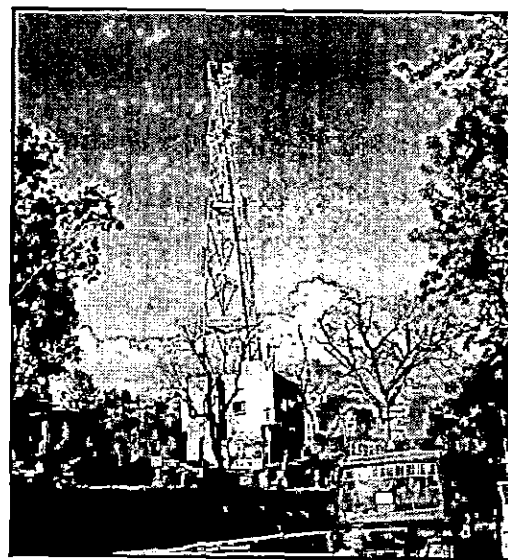
Source: By author

Source: By author

d. Tourism:

As per estimates of the managing committee of Shri Chamunda Devi mandir, about 5 lac people pay their obeisance in 10 days of Navratras only. At present very meager public facilities are there with total absence of water supply and sanitation. Generally the pilgrims have to seek refuge in the local houses charging heavy rents. The lure of easy money has further spurred the construction activities in all the adjoining areas in haphazard and unplanned manner. Influential people from outside also have crept in enormously raising unplanned structures. Construction coming up along the road from Chamunda to Malan and Nagrota is highly unplanned and unauthorized.

5.1.2 Malan

a. Location:

Malan falls on Pathankot-Chakki-Mandi National highway midway between Chamunda and Nagrota. All traffic to Chamunda bifurcates at this point. Railway line runs parallel to the road from this point onward upto Pathankot .Due to permanent rush of people, this town is acquiring commercial character and construction is coming up in an unplanned way.

b. Population scenario:

Population growth in the area has been tremendous due to natural increase in population, very high immigration of the people for settling purpose, rapid urbanization, impact of growth centers, fast picking up of industries in the area and better provision of facilities especially for tourists and especially after the declaration of Dharamsala as winter capital of the state (serving to many functions).Such a planned settlement would also take away population load of Dharamsala proper, Kangra district and also check unplanned and haphazard development along NH-20 from Chamunda Devi to Palampur and Nagrota Bagwan.

c. Trade & commerce and Tea gardens:

The area is growing potentially in terms of economic activities like potato market, industries (at Nagri Dadh), increasing retail market and also public and semi public services serving as economic base. Tea gardens of Palampur and Dharamsala provide employment to a large unskilled people of the area and would continue to do so in new town.

d. Tourism & Pilgrimage:

After Shimla Kangra region and particularly this zone has highest tourist potential .Tourist destinations at Dharamsala ,Kangra, Palampur provides employment opportunities in Malan related to tourism activities and would also act as .economic base for new town. Malan is located on the highway corridor to Shri Chamunda Devi Dham and Shri Brijashwari Dham .Therefore there is hectic and heavy activity all round the year especially in the event of navratras and other festive occasions when the pilgrims and tourists reach the mark of lacs. This at present accounts for a very good economic activity and would provide a very good economic base for new town.

e. Administration:

Large proportion of population of Malan at present is employed in the service sector .The administrative and other similar public and semipublic services engages considerable proportion of Malan. This would act as another economic base activity for the new town.

---

f. Pong Dam:

Fisheries and other similar activity that at present employs 2000 people of the whole region has considerable proportion of people of this area being its proximity to pong dam.

Table-5.1: Breakup of existing employment scenario

Service sector	20%
Trade and commerce	25%
Tourism industry and pilgrimage	30%
Other industries	21%
Unemployed	4%

Source: Analysis of primary survey and secondary data

Table 5.1 shows the breakup of the employment scenario of the area with tourism industry and pilgrimage dominating the economic activities followed by trade and commerce, small scale industrial sector and partially by service sector.

g. Land use:

Residential area will predominate along the road to Shri Chamunda Devi up to Pathiar, Lakha (due to availability of huge stretch of open land) along the state highway. While the commercial belt will lie along theNH-20 to Nagrota Bagwan and Kangra due to already developing and existing trade and commercial market and also proximity of industries (in Nagrota Bagwan) is along this corridor. This will facilitate trade and commerce and employment opportunities in the new town. However this will also include certain proportion of public and semipublic services

h. Official notification and land availability:

Land prices being very less and huge availability of open land; the new town therefore would have no problem in expansion (both for residential, commercial and services purpose).To ensure planned and regulated development of this area which is in real sense the heart of Kangra valley it has become inevitable to extend the Himachal Pradesh town and country planning act, 1977 to this area. An attempt has been made to include whole of potential areas in and around these, up to which development may reach ultimately while delineating this planning area. The following revenue hadbasts are included in this planning area.

Table-5.2: Demographic profile of Nagrota Bagwan-Malan-Dadh-Chamunda Devi

Location	Area(Hectares),	Population	Location	Area	Population
Dsala	839	19034	Mahal-Ka-Khas	60	22
Kajlot	128	1014	Triund	74	591
Sudher Khas	43	125	Bandehr	12	320
Sakoh	34	485	Kathwari	58	538
Mant	97	5240	Tharu	36	725
Barol	183	2559	Jalbimbi	54	122
Dari	277	3751	Matyari	27	112
Dadh	304	2091	Balla	52	244
Tamber	48	379	Ghura	26	357
Jatehr	180	213	Bheri	49	417
Patola	64	319	Jhikla Balla	37	306
Sakoli	42	210	Satrehr	41	300
Bella	67	504	Nagrota	390	4436
Padar	144	1052	Lallegar	103	304
Ghartholi	112	783	Majhethli Barali	63	671
Sunehar	113	1030	Gharyalkad	48	369
Mundla	144	921	Pandtehr	43	321
Baroi	33	380	Kasba	88	922
Kharar	55	558	Karyalkad	51	372
Trind	74	591	Jugleta	51	410
Bandehr	12	320	Dharamgiri	36	22
Kathwari	58	538	Lakrehr	10	125
Bagian	56	656	Kir Chamba	39	451
Hatwas	132	1103	Kuyari	12	720
Ambari Jhikla	69	907	Habibpura	35	104
Mbari Uprala	63	671	Bhunehr	11	100
Pandtehr	25	326	Chalari	83	1060
Trahara	19	418	Malan	166	862
Darang	34	343	Gujrehra	94	293
Haler	30	275	Sakrehr	27	362
Gadyara	25	300	Dholai	28	402
Dhurbkhol	22	363	Chahri	27	390
Natehr	64	450	Lahr	26	331
Lakha Mandal	61	500	Pankahar	31	233

Source: statistics of Kangra region-2001

i. Water source & Drainage:

Water would be taken from nearby Chamunda Devi -Gia Khad that is all year source of water with discharge of 12.00 as minimum and 14.00 liters per second as maximum discharge all around year. In addition to it presence of sufficient number of spring with water discharge as high as 13.00 and as low 10.00 liters per second all around the years Therefore there will be no scarcity of water for new town .Being located on a gentle slope the area will have easy drainage .But still natural drainage along south will be preferred for drainage services.

j. Electricity:

The area is 100% electrified at present and the near by power station is at Yol and near Chamunda Devi .Therefore the new town would have no problem in supply of electricity.

5. 2. Existing and future scenarios

The new town would be developed in three phases -2011, 2021 and 2031 and accordingly facilities would be provided. Detailed study and analysis and projections for the three phases is given as under:

a. Population

Table5.3: Population projections of Kangra region

Census Year	Population
1971	8,00,863
1981	9,65,848
1991	11,74,072
2001	13,38,536
2011	15,23,086
2021	17,33,087
2031	19,72,029

Source: Analysis by author

Table5.4 Population projections for the new town

Census Year	Population
1991	28002
2001	34682
2011	42955
2021	53202
2031	65894

Source: Analysis by author

Table 5.3 indicates that population of the whole Kangra district is expected to increase to over 19 lacks out of which 65894 would be of the new proposed town by 2031

Fig-5.1: Population projections for the new town
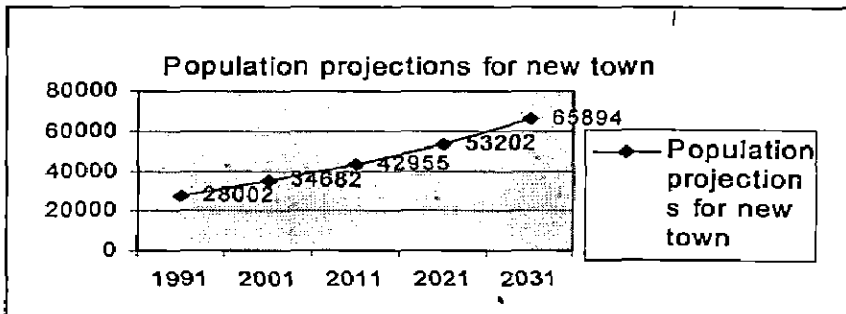
Source: Analysis by author

Table 5.5: Population projections of area under consideration

Area under consideration	(1991)	(2001)	(2011)	(2021)	(2031)
Dharamsala(R)	91,234	117,463	1,51,232	1,94,710	2,50,6888
Dharamsala(MC)	17,493	19,124	20,907	22,856	24,987
Mant Khas	3,089	5,234	8,868	15,026	25,461
Yol	8,264	10,775	14,048	18,317	23,883
Kangra(Rural)	12,9,870	1,46,601	1,65,487	1,86,806	2,10,873
Kangra (Urban)	6,998	9,156	11,979	15,673	20,506
Nagrota Bagwan	3,996	5,657	8,008	11,337	16,049
Gaggal	899	1,356	2,045	3,085	4,653
total	2,61,843	3,15,366	3,82,574	4,67,810	5,77,100

Source: Analysis by author

Table 5.5 shows the population projections for the area under consideration and maximum increment is expected in Kangra rural and Dahramsala –rural and these are the areas which are under the influence of the growth center s and urban centers of Kangra, Dharamsala, yol, Chamunda Devi and Nagrota Bagwan .Similar rural area in near vicinity of growth centers and urban centers would be developed for the new town.

b. Economic activity

Table 5.6: Distribution of population in varied activities

Service sector	20%
Trade and commerce	25%
Tourism industry, pilgrimage	30%
Other industries	21%
Unemployed	4%

Source: Statistics of Kangra region-2001

Fig 5.2: Population in varied activities
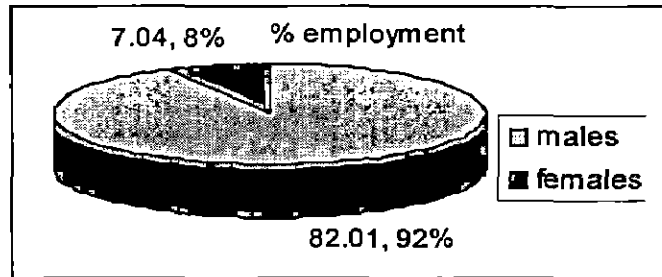
Source: Statistics of Kangra region-2001

The table 5.6 shows that based on present rate and distribution pattern, the main economic activity generator would be the tourism industry followed by trade and commerce, other small scale industries like herbs and food processing and then followed by service sector. Fig 5.2 shows that mainly males would be employed in the economic activities while a partial share would be of female workers as well.

Industry

Table 5.7: Industries and employment Scenario –existing and projected

	Total.Inds.	Total wrkrs
1991	145	5880
2001	229	7283
2011	414.5	9020
2021	750.25	11052
2031	1357.96	13837

Source: Analysis by author

Fig 5.3: Industries & employment Scenario
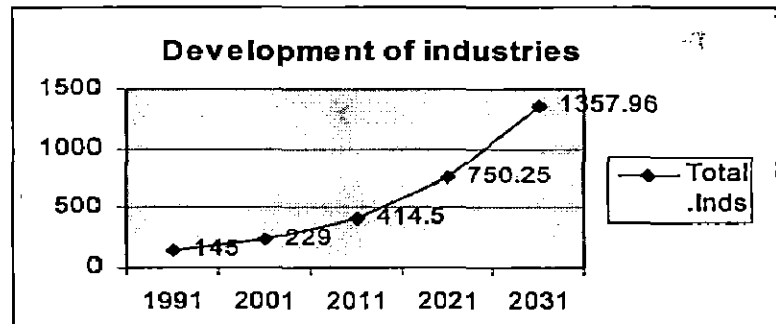
Source: Analysis by author

Table 5.7 shows that by 2031 industries would increase by 1357 and would provide employment to over 13000 people. The statistics show that industries would steadily increase up to 2031 in the area

Table 5.8: Employment scenario and population

Year	Total Pop.	Employment scenario-Population				
		Services	Trade & comm.	Tourism, pilgrim.	Other indstries	Unempl.
1991	28002	5600	7000	8400	5880	1120
2001	34682	6936	8670	10404	7283	1387
2011	42955	8591	10738	12886	9020	1718
2021	53202	11172	13300	15960	9072	2128
2031	65894	13178	16473	19768	13837	2635

Source: Analysis by author

Table 5.8 indicates the distribution of population in various activities as per increase in demographics by 2011, 2021 and 2031 and related projections, observations and findings for the new town are given in subsequent chapter.

6

Findings and Recommendations

6.1 Sketch/Bubble Diagram for the New Town

(Refer Map 19: Bubble diagram for new town)

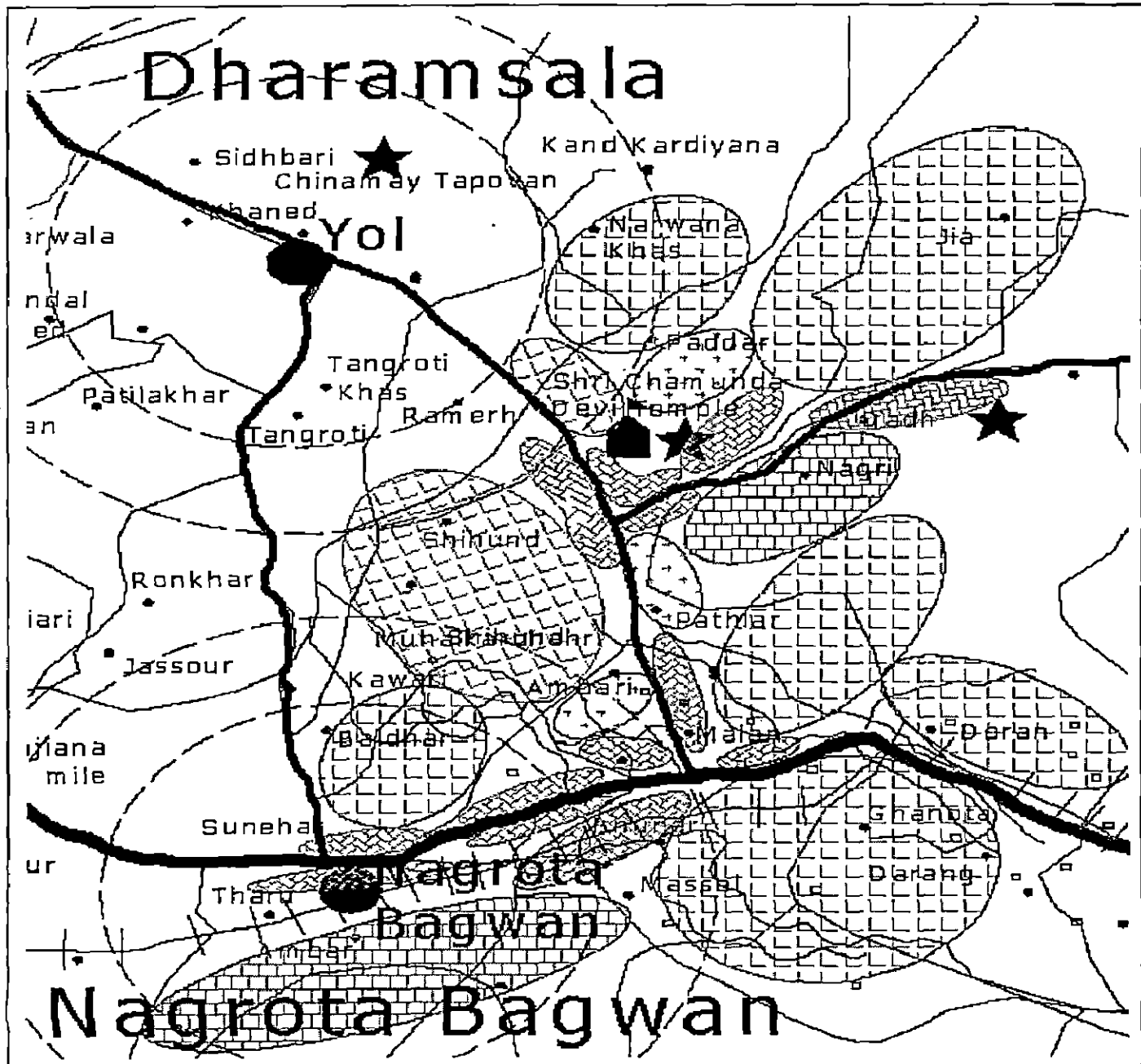### 6.1.1 Outline plan

Residential areas will predominate in areas Malan and Jia with combination of necessary services provided. The concept of neighborhood planning shall be adopted to provide minimum requirement based services in near vicinity of residences while some services that require certain distance to be maintained from residential areas shall be provided in areas in-between Malan –Chamunda Devi, Cham7unda devi-Jia and also Malan and Nagrota Bagwan. Commercial establishments would predominate road side along Nagrota Bagwan, Malan, Chamunda devi for easy access to market both for customers and as well as for loading and unloading of commodities. Along Nagrota Bagwan side shall be developed commercial centre for potato market, vegetable-fruits market, wheat market etc. keeping in view the ongoing trends of trade and commerce while commercial area along Chamunda devi shall be developed for tourism market because of high tourism potential and constructions of hotels and restaurants shall be undertaken in planned way to provide for both tourist facilities as well as to provide economic activity.

Industry shall be promoted in areas where it already exists in meager condition. Specified areas of Nagrota Bagwan and Dadh Nagri shall be developed for the very purpose with near vicinity of commercial establishments and services to provide in total all the infrastructure facilities to the industries. Residential areas for this population shall be at Malan and Dadh and Jia. Two industrial areas have been proposed, one at Nagrota Bagwan and other at Dadh –Nagri. Residential complexes for both the areas have been provided in the near vicinity. Detailed land use pattern is explained in succeeding pages.

6.2 Conceptual Land Use Plan for the New Town

(Refer Map 20: Conceptual land use plan for new town)

Map 19: Bubble diagram for new town

Source: analysis by author

Residential & Partial services   Services   Commercial use

Indusial use   Existing Railway   Existing water bodies

Existing National roads   Existing link roads

Existing State roads
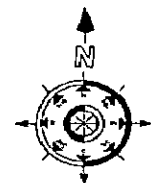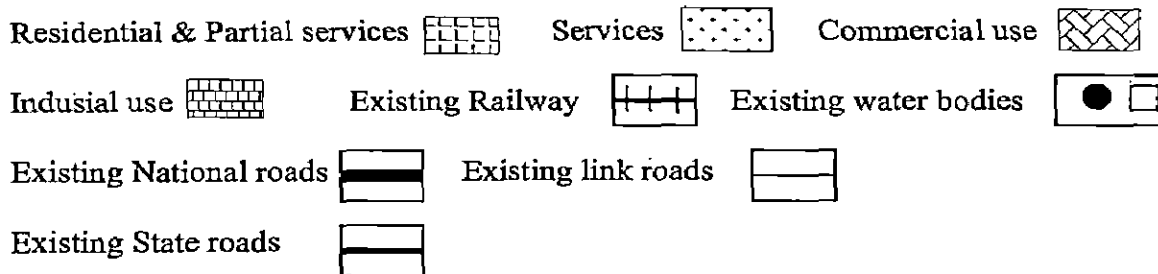
Map 20: Conceptual land use plan for new town
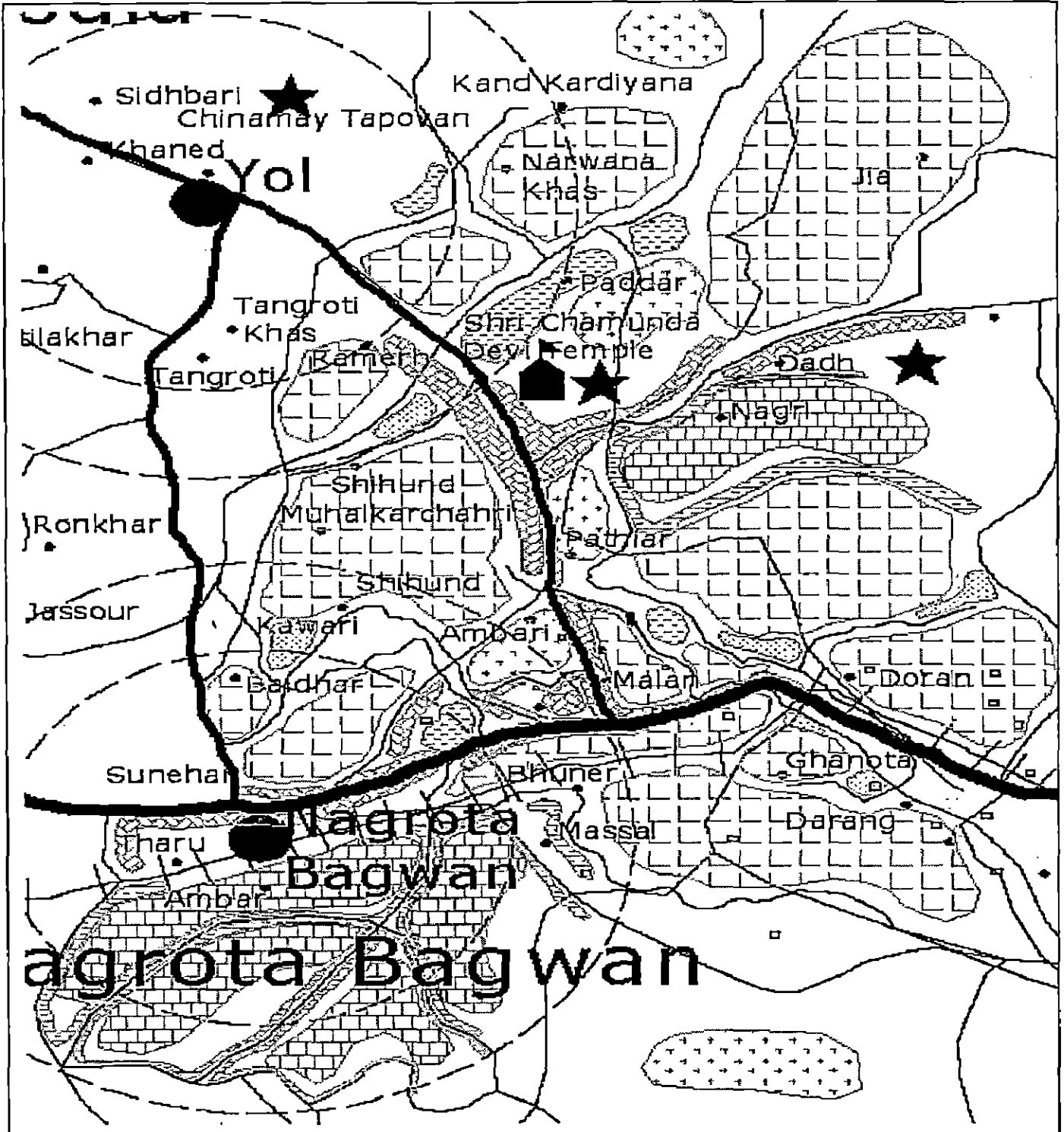
Source: Compiled by author form Analysis

Residential & Partial services   Services   Commercial use

Indusial use   Existing Railway   Existing water bodies

Existing National roads   Existing link roads   Existing State roads
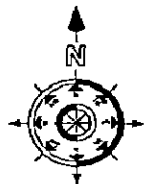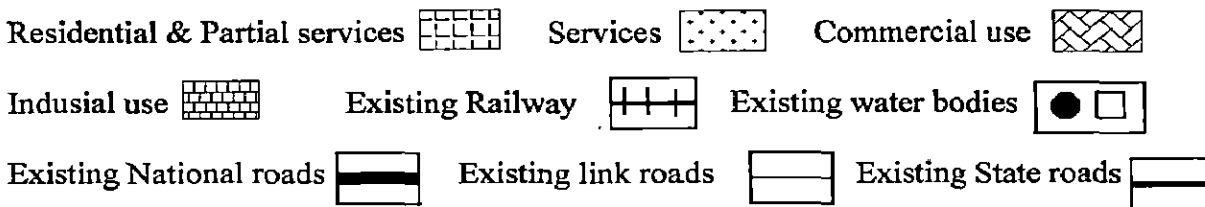
6.3 Projections & Demand forecasting

6.3.1 Demography

Table 6.1: Population projections for the new town

Census Year	Population
1991	28002
2001	34682
2011	42955
2021	53202
2031	65894

Source: Statistics of Kangra region-2001 & analysis by author

The town shall be developed in three phases:

Phase I: Town shall be developed for a population of 42955

Phase II: Development shall be extended for a population of 53202

Phase III: Development shall be extended for a population of 65894

6.3.2 Economic activity & employment: Further to the analysis in chapter-5, it is clear that in case of economic activities, tourism would continue to dominate as is shown by table 6.2

Table 6.2: Distribution of population in varied activities

Service sector	20%
Trade and commerce	25%
Tourism industry, pilgrimage	30%
Other industries	21%
Unemployed	4%

Source: Statistics of Kangra region-2001

Fig 6.1: Population in varied activities
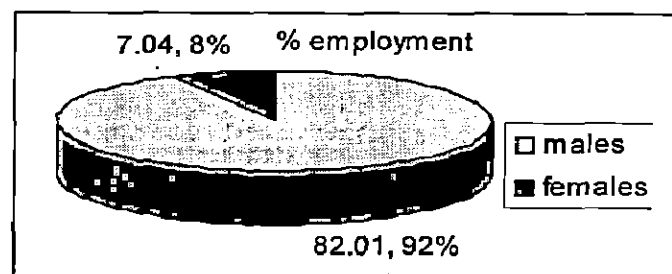
Source: Statistics of Kangra region-2001

Table 6.3: Employment scenario and population

		Employment scenario-Population				
Year	Total Pop.	Services	Trade & comm.	Tourism, Pilgrim.	Other indstries	Unempl.
2011	42955	8591	10738	12886	9020	1718
2021	53202	11172	13300	15960	9072	2128
2031	65894	13178	16473	19768	13837	2635

Source: analysis by author

As given employment scenario in table 6.3, out of total population of 65894, 19768 would be employed in tourism, 16473 in trade and commerce, 13837 in industrial sector and 13178 in service sector.

6.3.3 Physical infrastructure:

Table 6.4: Projected physical infrastructure

Physical Infrastructure				
Year	Population	Electricity subst11 kv		Solid waste (Kg)
2001	34682	2		8670
2011	42955	3		10738
2021	53202	3		13300
2031	65894	4		16473

Source: Analysis by author

Table6.5: Projected physical infrastructure (Sewage)

	Sewage	
Year	W.S(Lpcd.)	Sewg.Produced(L)
2001	4682070	3745656
2011	5798925	4639140
2021	7182270	5745816
2031	8895690	7116552

As per table 6.4 4 electricity substations would be required in 2031 and 3 in 2021 and 2011 and solid waste generated would increase to 16473 kg per day for which adequate and appropriate site for disposal and methods of recycling, converting biodegradable into humus and conversion of waste –to energy techniques shall be employed for successful solution for the solid waste disposal. As per table 6.5 ,as per the daily supply of 8895690 lpcd of water, 7116552 l of sewage would be generated and accordingly sewage treatment plant on optimum scale would be provide after choosing most appropriate location for it.

Table 6.6: Projected physical infrastructure (Water supply)

Water Supply					
Year	Req.(Lpcd)	Supply(Sec.)	Supplu(Hrs.)	Supply(Sec.)	Supply(Hrs.)
2001	4682070	53205	6	22509	2
2011	5798925	65896	7	27879	3
2021	7182270	81616	9	34530	4
2031	8895690	101087	11	42767	5
		(5s.+2 Str.)	Spring=12 Lpersec.		(15s+2str.)
		Supply=88 L	Stream=14 Lper Sec.		Supply=208l

Source: Analysis by Author

Table 6.6 indicates that by 2031 8895690 lpdc of water would be required and to meet this requirement , five hour supply of water through 15 springs with discharge of 14 litres per second and 2 streams with discharge of 12 litres per second would be used.

6.3.4 Social infrastructure

Schools

Table 6.7: Statistics of schools

	Education-Schools-Number(Area)			
Year	1st -5th cl.	1th -8th cl.	1th -12thc	college
2001(Existing)	1(X.08=.08h.)	0	1(X3.5=3.5h.)	0
2011(Projected)	2(X.08=.16 h.)	0	0	0
2021(Projected)	2 (X.08=.4 h.)	1(X1.6=3.2h.)	0	0
2031(Projected)	3 (X.08=.24h.)	1(X1.6=3.2h.)	1(X3.5=3.5h.)	0

Source: Analysis by author

As per table 6.7 by 2031, three primary schools, one middle school, and one secondary school would be provided as per the requirement in addition to the existing on primary and one senior secondary school.

Health

Table 6.8: Statistics of medical and health institutions

	Health-medical inst.x area				
Year	General H.	Intermed. H.	Polyclinic	Nursing H.	Dispensary
2001(Existing)	0	1(X.6=.6 h.)	1(X.2=.2h.)	0	2 (X.08=.16h.)
2011(Projected)	0	0	0	1 (X.2=.2h.)	3(X.08=.24h.)
2021(Projected)	0			1 (X.2=.2h.)	3 (X.08=.24h.)
2031(Projected)				2(X.2=.4h.)	4 (X.08=.32h.
General H.	500 -300 B	Intermed H.	80-150 b	Nursing H.	25-50 Beds

Source: Analysis by author

As per table 6.8, by 2031 two nursing homes and four dispensaries would be provided with area of .4 hectares and .32 hectares respectively.

6.3.5 Other facilities

Table 6.9: Statistics of other facilities (commercial)

	Community hall	Recreational c.	Spiritual c.	Milk booth
Year	X2000 sq.m=	X10,000sq.m	X5000sq.m=	1=5,000pop.
2001(Existing)	2(4000)	0	1	7
2011(Projected)	3 (=6,000)	0	0	8
2021(Projected)	3 (=6,000)	0	0	11
2031(Projected)	4 (=8,000)	0	0	13

Source: Analysis by author

Table 6..9 shows that by 2031, four community halls, and 13 milk booths would be required and provide therewith.

Table 6.10: Statistics of other facilities (services)

	LPG Godown	Police S.	P.Post	Fire Station	Tel. Exch.	P.O
Year	1=50 person	X1.5 ha.=	X.16 ha.=	1=2 lac per		1=15,000 per
2001(Exist.)	693	0	1(=.16 h)	0	0	2
2011(Proj.)	859	0	1 (=.16h)	0	0	3
2021(Proj.)	1064	0	1(=.16 h)	0	0	3
2031(Proj.)	1317	0	2 (=.32h)	1	0	4

Source: Analysis by author

Table 6.10 shows that by 2031 two post office, one fire station, 1317 lpg godowns and 4 post offices would be required and provided therewith.

Table 6.11: Statistics of other facilities

	Commercial Sector		
Year	Type - Comm.C	Arae	No. Of Shops
2001	C.C	17341	173
2011	C.C	21477	214
2021	D.C	26601	266
2031	D.C	32947	475

Source: Analysis by author

Table 6.12: Statistics of shops

Commercial Sector	
Type Of Shop	C.C
Formal	365
General Retail	295
Fruit & Veg.	40
Service & Rep	30
Informal	110
General	88
Service & Rep	9
Total	475

Source: Analysis by author

Table 6.11 indicates that by 2031, 475 shops would be required with an area of 32947 for the district center and table 6.12 shows the distribution of various shops by 2031.

6.4 Proposals for the New Town

6.4.1 Land use Plan

(For a total area of 1645 hectares out of total of 4616 hectares for 2031.rest of the area is left as green cover till the need for further expansion arrives in future)

Table 6.13: Proposed land use for new town

S.No.	Land Use	%land allocated	Area (land use)
1	Residential	40%	658
2	Commercial	10%	263.2
3	Industrial	10%	263.2
4	Tourism	5%	82.25
5	Facilities & Services	13%	213.85
6	Government & Semi Government offices	5%	82.25
7	Park & Open spaces	5%	82.25
8	Traffic & Transportation	12%	197.4
	Total	100%	1645

Source: Analysis by author

a. Residential Use:

In order to meet the requirements of residential use for population of 42955 (in 2011), 9545 dwellings shall be required based on 4.5 persons per family norm. .In 2021 based on same family norm, 11822 dwellings shall be required for a population of 53202 and 14643 dwellings shall be required in 2031 for a population of 65894.With present density of 100 persons per hectare (as prevalent in Dharmsala and Kangra) 429 hectares in 2011, 532 hectares in 2021, 658 hectares in 2031 of land shall be provided in the new town .Therefore residential use comprises of 40% of land under consideration for development for new town out of total available land of 4616 hectares.

b. Commercial:

In all, 263 hectares of land shall be used for development of commercial activities .commercial activity would comprise of formal –informal markets and hotels /restaurants /lodges etc. The town would be requiring a community center and facilties accordingly .nearly 241 shops in 2011, 266 shops in 2021, 475 shops in 2031 shall be provided to meet the requirements of the town. These shops shall be 365 Formal, 295 General Retail, 40 Fruit & Vegetable, 30 Service & Repair, 110 Informal, 88 General, 9 Service & Repair (general) with total of 475 shops for 2031.

c. Industrial:

A total of 263 hectares of land shall be used for industrial development .Industrial development shall focused basically at two places Nagrota Bagwan; already a industrial hub for majority of medium and small scale industries and Dadh-Nagri; emerging as another potential site for industries coming to Kangra region .Both places shall be in close proximity to services essential for industries like substation, and commercial market as well to be developed along Nagrota Bagwan -Malan and Chamunda devi-Jia. This would provide for easy and cheap disposal of finished products .moreover residences of workers shall also be provided in close proximity to ease out boarding and deboarding facilities & consequent traffic rush in the area.

In 2011; 414 industries would be in the area providing employment to 9020 workers of the new town, in 2021; 750 industrial units would be operational in the area providing employment to 11052 persons of the new town and in 2031; 1357 industrial units would be running in the area providing employment to 13837 persons of the area. Therefore industries would act as strong employment generator and economic activity in the area.

d. Tourism:

In all, 82.25 hectares of land shall be developed under tourism. This would include development of infrastructure facilities for already existing potential tourist spots like Chamunda Devi, and development of some new spots to attract tourist, at the sites with unexplored scenic beauty.

Development of tourist market at Chamunda Devi and on way to Malan and Palampur with exhibitions of local items of Himachal like Kangra painting, shawls, Chamba hanky, caps etc. shall be undertaken to promote local tourism and act as strong economic activity. Opening of heritage museum exhibiting all aspects of traditional life like accessories, food, artifacts etc. promoting the culture and heritage of the area shall also be undertaken. Special articrafts centers for pilgrims with all similar things on displays and purchase shall be provided either in the temple itself or outside it in near vicinity

e.   Facilities and services

A total of 213.85 hectares of land shall be used for development of public and semipublic services. Generally neighborhood planning shall be undertaken with inclusion of services in residential area only however some services like dumping of solid waste, electricity substation shall be provided with separate space. Separate spaces shall be provided between Chamunda Devi and Jia, Malan-Nagrota Bagwan and Malan-Chamunda Devi to serve to all the area .this includes provision of 3 electric substations in 2011 and 2021, 4 electric substations in 2031, 3hrs water supply in 2011, 4 hrs water supply in 2021 and 5 water supply in 2031 with use of 15 springs and 2 streams with discharge capacity of 12 Lper sec and 14 L per sec respt. A t present 1 primary and 1 senior secondary school are existing and in 2011; 1 primary school, 2021; 2 primary schools and 1high school while in 2031, 3 primary schools and 1 senior secondary schools shall be provided. In 2011 and 2021, 1 nursing home and 2 and 3 dispensaries respectively shall be provided and in 2031, 23 nursing homes and 4 dispensaries shall be provided. In 2011; 3 community halls, in 2021; 3 community halls and in 2031 4 community halls hall be provided. In 2011 ;859, in 2011; 1064 and in 2031; 1317 LPG Godown , 1Poice post in 2011, 1 police post in 2021,2 police post in 2031, 3 post office in 2011 and 2021 and 4 post office in 2031 and 1 fore station in 2031 shall be provided.

f.   Government & Semi Government offices:

In all, 82.25 hectares of land shall be provided to develop the required areas for the offices. This shall also acts as another economic activity.

g. Park & Open spaces:

A total of 82.25 hectares of land shall be provided to develop the open spaces like development of parks playground, recreational spaces etc.

h. Traffic & Transportation:

In all, 197.4 hectares is kept for development of traffic routes and roads while majority of roads have already been made in the area even before the proposal of new town. Most of the interior areas are also well connected through metalled roads so there would be no problem of accessibility in any part of the new town.

6.4.2 General regulations:

a. No building or other structure shall be created, re-erected or altered without proper permission of the concerned authority

b. Mixed land use shall not be prohibited unless otherwise a particular land use is hazardous in nature

c. Area zoned for public and semi-public open spaces shall not be built upon in anyway or used for purpose other than parks, playgrounds and other recreations.

d. No planning permission for development shall be granted unless plat/land boundaries are properly demarcated

e. No planning permission for development shall be granted on plot/land having slope more than 45 degrees

f. Natural nallahs which pass through land involving subdivion shall be developed and maintained according to discharge of water

g. If a plot is developed by cutting land, owner shall protect hill cut by providing retaining wall/breast wall/ diaphragm wall in the structure so that cutting may not harm adjoining plots/properties. Hill cut upto maximum 3.50 meters height shall be permissible

h. No wall or fence or hedge as the acse may be , along any yard shall exceed 1.50 meter in height

i. On a corner plot in any zone, nothing shall be erected, placed, planted or allowed to grow in such a manner so as to materially impede the vision.

j. No development shall be permissible on land having buildable width less than 5.00 meters

k. Maximum permissible height of plinth level shall be 4.00 meters

l. Minimum and maximum height of floor shall be 2.70 meters and 3.5 meters respt. 25% variation in floor heights if required for specific functional requirement of an activity shall be permissible with restriction of overall height of the structure

m. Sloping roof shall be with zero height at eaves & maximum 2.50 meters at center

n. 1/3rd area of the top floor shall be allowed as open terrace wherever sloping roof is provided

o. Construction in terraces shall be allowed to have a provision of storeys .Height of parking floor shall be 2.3meters.

p. Setbacks from highways/scheduled roads/municipal roads shall be as under:

    1. Minimum front setbacks from the line of controlled width of highway and other PWD scheduled roads falling within the planning area limits shall be 3.00 meters

    2. Minimum front setback from non-scheduled roads and municipal road shall be 3.00 meters

    3. No construction shall be permissible above vision line (1.50 meters) on valley sides of highways/major roads

    4. Maximum number of storeys permissible on vacant land and plot located in bazaar area shall be:

        4.1 Two on plots abutting up to 3.00 meters wide path

        4.2 Three on plats abutting 5.00 meters wised path and above.

    5. Minimum size of the booth/shop shall be 2.5x 3.5 meters /3.00x6.5 meters respt. & 25% of the area for development shall be kept for parking in planned commercial complexes

Table 6.14: Permissible area standards for different parts of a building

S.No.	Building component	Details	Area specified
1	Habitable room	Minimum floor area	9.50 square meters
		Minimum width	2.40 meters
2	Kitchen	Minimum floor area	4.50 meters
		Minimum width	1.80 meters
3	Bathroom	Minimum floor area	1.80 meters
		Minimum width	1.20 meters
4	w.c	Minimum floor area	1.10 meters
		Minimum width	.90 meters
5	Toilet	Minimum floor area	2.30 meters
		Minimum width	1.20 meters
6	Corridor	For residential use	1.00 meter wide minimum
		For other use	1.2 meters wide minimum
7	Stair	For residential use	1.0 meters wide minimum
		For hotel /flats / hostel/group housing.	1.5 meter wide minimum
		Hospital/theatre/cinema	2.0 meter wide minimum
8	Width of treads without nosing	For residential use	25 cms meter wide minimum
		For other uses	30 cms meter minimum for internal stair case
9	Height of riser	For residential use	19 cms (max 15 no. in flight)
		For other uses	15 cms(max 15 no. in a flight)
10	Spiral staircase	In commercial buildings of three storeys, provision of spiral stair case with not less than 1.5 meters dia with adequate head height shall be provided as fir escape	
11	Openings	For sufficient air and light , windows and ventilators provided should have minimum area equivalent to $1/6^{th}$ of floor area	

12	Balcony projection	1.2 meters wide balcony complete open at two sides with restriction of 50% of building frontage where minimum front setbacks is 3.00 meters shall be provided.

Source: Analysis by author from unnotified master plan for Dharmsala

6.4.3 Sub Division Regulation

The sub-division of land shall be permitted in accordance with natural profile of topography as shown on a contour map, drainage of the land, accessibility, road alignment, wind direction, local environmental imperatives and in accordance with prescribed land use of the Development Plan. Natural flora and fauna shall have to be preserved.Natural nallahs which pass through land involving sub-division shall be developed and maintained according to discharge of water during the peak rainy season.

The sub-division of land shall not be permitted in area where basic services like roads, drainage, water supply, sewerage disposal, electricity, street lighting etc. do not exist .While carving out plots, the orientation of the plots shall be made in such a manner, so as to be in conformity with the existing plots/infrastructure, wind direction, availability of Sun and Natural flow of surface drainage to allow unobstructed rain water discharge.

Minimum area for septic tank and soak pit etc. irrespective of number of plots shall be 5% of the scheme area.Provision for rain water harvesting for surface run off other than that of structures shall have to be ensured to ease the water supply problem.

Provision for decomposition of biodegradable waste shall have to be made in accordance with requirements of particular sub-division of land. Minimum area of a plot for a detached house shall not be less than 150 Sqm. In case of plots meant for semi-detached and row housing minimum area shall be 120 sq.m and 90 square meters respectively Provided that front, rear and side set back regulations are fulfilled.

References

1. Golnay Gideon , "New- town Planning: principles and practice", John Wiley & Sons, Inc., New York,1976

2. Gibson, J. B., "Introduction to city, designing the new city: a systemic approach", John Wiley & Sons, Inc., New York,1977

3. Gallian, Arthur B. & Eisner, Simon, "The Urban Pattern", D. Van Nostrand Company, Inc., New York, 1963.

4. *http-- www_architectureweek_com-2001-.htm*

5. Draft Master Plan–II for Chennai Metropolitan Area, CMDA, www.cmdachennai.org, 2007

6. Urbanization trends in Himachal Pradesh: Report on urbanization in H.P- 2004, Priya (NGO), H.P, 2004

7. UN notified Master Plan Dharamsala- 2005, TCPO Dharamsala (H.P),2005

8. Development plan for Dharamsala, Town and Country planning department; Government of Himachal Pradesh, Dharamsala (H.P),2000

9. New town policy for Himachal Pradesh ,Town and country planning organization, Shimla,2007

10. Report on land value and land availability ,Department of architecture , NIT Hamirpur (H.P), 2004

11. Report on Tourism in H.P- 2004, Department of Tourism ,Shimla (H.P) , 2004

12. Article by Sankhyan. A.R., " Haphazard Development in Towns of Himachal Pradesh Vis-a-Vis Privatization of Urban Infrastructure", Spatio-economic Developemnt Record,Vol.6,No.2, March -April,1999

13. Article by Kundu, Amitabh, "Trends and Patterns of Urbanization and their Economic Implications" , http : // planning commission .nic .in/reports/generep/bkpap2022/ 9_bg2020.doc

14. Article by Gupta & Bawa, "Plan Implementation For Ecosensitive Areas", Spatio Economic Development Record, Vol.11, No.3, May-June, 2004

15. www.census of india.com

16. Article by Arjita Bansal , "New Capital of Uttranchal: Identification of Locational Criteria and their Application to the case study area –as case study:, Vol. 9 No.3 May-

References

June,2002, SDR

17. Discussions with State Town Planner, H.P- Mr. A.R Sankhyan, Town Planner, H.P (Dharamsala, Hamirpur, Mandi, Bilaspur, Kullu, Chamba)- Mr. A.N Gautam, Town Planner, H.P (Dharamsala)-Retd.- Mr. P.P Raina, District planning officer, Dharamsala.

18. Primary survey based on questionarries