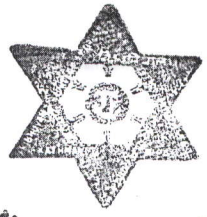

IMPACT OF PROPOSED OUTER RING ROAD ON TRADITIONAL SETTLEMENT OF KATHMANDU VALLEY - LUBHU:

AN ECONOMIC TRANSFORMATION

SUBMITTED BY:

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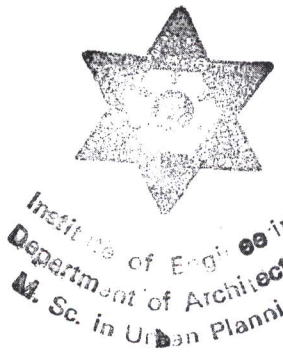
DECEMBER, 2005

CERTIFICATE

This is to certify that this thesis entitled "IMPACT OF PROPOSED OUTER RINGROAD ON TRADITIONAL SETTLEMENT OF KATHMANDU VALLEY - LUBHU: AN ECONOMIC TRANSFORMATION" submitted by GANESH BAHADUR ROKA has been examined and it has been declared successful for the fulfillment of the academic requirement towards the completion of the Master of Science course in Urban Planning.



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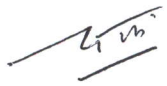
Mr. Kishore Thapa
Thesis Supervisor
Date: December 27, 2005

DECLARATION

I declare that this dissertation has not been previously accepted in substance for any degree and is not being concurrently submitted in candidature for any degree. I state that this dissertation is the result of my own independent work / investigation, if accepted, to be available for photocopying and understand that any reference to or quotation from my thesis will receive an acknowledgement.



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Ganesh Bahadur Roka

Date: December 27, 2005

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ABSTRACT

The Kathmandu metropolitan city (KMC) is the capital and largest city in Nepal. Almost 700,000 people live here amidst a swirl of business, industry, politics, old temples and colorful festivals. Kathmandu has expanded into a modern international metropolis while still preserving its ancient culture and architectural heritage. Similarly Kathmandu attracts people from different part of the country in search of various opportunities. Regardless of the various planning efforts initiated by different governmental or non-governmental agencies, the urban development has been creating urban sprawl in unplanned and haphazard fashion, thereby making difficulties in urban service provision.

Similarly, unplanned settlements and density of vehicles and pedestrians are increasing enormously at the periphery of existing ring road, which was constructed in the early seventies by the technical and financial assistance from China.

In this thesis report, the topic itself reflect the main theme of the study. Here basically the economic impact and hence the transformation possibility has been incorporated due to the proposed outer ring road. This thesis report tries to consider mainly the land use, housing pattern and the economic activities that are going to change due to concept outer ring road in the case of Lubhu. Since the outer ring road is still in conceptual stage, it is not sure that outer ring road would exist and the experiences that have been drawn from the case studies would cater the similar properties. Beside the major economic indicators, major part of the impact parameters have been considered. To fulfill the requirement to mitigate the economic transformation the similar case of impact of ring road in Balaju has been considered. The abstract of this thesis report stands with the view of change occur in particular place after the construction of the ring road. Since the study area here is Lubhu, which is traditional settlement of the Katmandu valley, the possible impacts have been assessed with careful scrutiny based on the primary as well as secondary data.

TABLE OF CONTENTS

LIST OF TABLES

LIST OF FIGURES

LIST OF PLATES (PHOTOS)

LIST OF ABBREVIATIONS

BC	Benefit Cost Ratio
BKT	Bhaktapur
CBO	Community Based Organization
CBS	Central Bureau of Statistics
DBST	Double Bituminous-Surface Treatment
DDC	District Development Committee
DOR	Department of Roads
DUDBC	Department of Urban Development and Building Construction
EIA	Environmental Impact Assessment
EPA	Environment Protection Act
EPR	Environment Protection Regulation
HMG/N	His Majesty's Government of Nepal
INGO	International Non- Governmental Organization
IOE	Institute of Engineering
IRR	Inner Ring Road
JICA	Japan International Cooperation Agency
KMC	Kathmandu Metropolitan City
KVDTC	Kathmandu Valley Town Development Committee
LSGA	Local Self Governance Act
MOPPW	Ministry of Physical Planning and Works
MWSBDL	Melamchi Water Supply Bulk Distribution Line
NEPECON	Nepal Engineering Consultancy Services Centre Ltd.
NGO	Non- Governmental Organization
ORR	Outer Ring Road Alignment
ORRDP	Outer Ring Road Development Project
ORRLDP	Outer Ring Road Land Development Project
PPP	Public Private Partnership
PPPUE	Public Private Partnership for Urban Environment
PSP	Private Sector Participation
UDLE	Urban Development through Local Effort
UNDP	United Nation Development Project
VDC	Village Development Committee

Chapter I: Introduction

1.1 Background of the Study

Kathmandu valley has been a center of various activities in Nepal. The valley at present is suffering a huge pressure of population migration and an increasing number of vehicles. The transportation network of Kathmandu valley starts from the city core and connects the various rural areas on the periphery. These dispersed roads are interlinked with each other by a 27 Kms long inner ring road. Except few major roads most of urban roads are narrow and commonly used for two lane vehicular movement.

The unplanned settlements and density of vehicles and pedestrians are increasing enormously at the periphery of existing Ring Road of Kathmandu Valley, constructed 30 years ago by Chinese assistance. Intersections of radial roads originating from Kathmandu city and the existing Ring Road are becoming more unsafe to the pedestrians and inconvenient to vehicles. In the context of increase in population in the old and new settlements outside the existing Ring Road, the necessity of alternative roads to join these settlements has been felt since the last one decade. Outer Ring Road (ORR) is also proposed to join Banepa - Bardibas highway and Kathmandu - Hetauda express way. With the initiative of department of roads, Nepal Engineering Consultancy Services (NEPECON) carried out a feasibility study of ORR in the year 2000 and proposed Outer Ring Road, having right of way 50 mts, is about 6500 ropanies (325 h) and the cost for the land is estimated to be about Rs. 3 billion.[1]

In the present scenario, the valley has a huge pressure of traffic congestion due to increasing number of vehicles and a large mass of pedestrian movement as well. So to minimize the pressure of the present urban transport network an alternative outer ring road connecting these urban is highly in need. It minimizes the traffic problems and provides easy access for peripheral growth of urban population.

Besides the policy made in vision 2020 the in migration as well as haphazard development of city is at alarming rate. This thesis topic concentrates to the study of economic transformation of the traditional settlement - Lubhu. In earlier days the agriculture was the major economic sector and in the present scenario textile industry is the main economic activity in this city. The infrastructure and services are not sufficient to meet the growing population in the valley. Hence it is time to take a study of Economical Consideration of the traditional city Lubhu when there will be construction of outer ring road.

1.2 Objective of the Study

The main objective of the study is to analyze the probable economic transformation in the traditional city – Lubhu after the construction of outer ring road.

- To analyze the present economic activities of the city – Lubhu.
- To analyze the economic transformations and its impacts of Outer Ring-Road on traditional city – Lubhu.

1.3 Scope of the Study:

The scope of the study is to analyze the economic transformation of traditional city, Lubhu after the construction of outer ring road. In economic transformation aspect land use, economic activities as well housing scenario are taken into consideration.

1.4 Limitation of the Study:

- The study is focused on "Impact of Outer Ring Road - An Economic Transformation of Traditional City – Lubhu."
- The conclusions drawn in this report may be unjustifiable because there will be only a research question about the economic transformation.
- Since the outer ring road is only in the conceptual stage, the analysis for the economic transformation of traditional city Lubhu will be based on the experience from case studies of other cities and from interactions with concerning people.

1.5 Research Question

Besides the major occupations of the people is agriculture and textile at present in Lubhu, the majority of the people will involve in the service sectors after the construction of the outer ring road. This means the people will shift from primary activities to secondary activities and later from secondary activities to tertiary activities. The research question here is to analyze the change in the activities and to forecast the way of economic transformation that occurs after the construction of outer ring road.

1.6 Research Methodology

The research methodology for this work includes various steps described below:

1.6.1 Review of Literatures

This is basically a theoretical approach for carrying out this study. In this documents, research papers, reports, books, journals, newspaper articles and other relevant reading materials have been referred. Here the similar case studies are taken as the guidelines for the economic transformation after construction of the road. The case studies of economic transformation that have occurred in the context of Nepalese cities as well as from abroad after the construction of roads are taken as the reference.

1.6.2 Visual Assessment and Discussions

After the thorough study of literatures about the Lubhu City and field visit of the city, a conceptual framework is prepared to define how the economic transformation occurs once the outer ring road is constructed. The conceptual framework is prepared based on the study of available existing reports and documents and also by the study of visual assessment of the existing site condition and discussion with the concern persons.

1.6.3 Data Collection

Required data and other information will be collected from the Outer Ring Project Office, DUDBC, Kathmandu Valley Town Development Committee office, VDC office of Lubhu VDC. Similarly the concept of outer ring road is also explored by consulting with the different personnel's. Feasibility reports on outer ring road i.e. report made by WELINK Consultants (P) Ltd for Outer Ring Road Land Development Project, Development Plan 2020 of the Kathmandu Valley, and thesis reports prepared by the previous students are also referred for the study as guidelines. The report made by JICA on title of "The study on Kathmandu Valley Urban Road Development is also taken as the reference for the study. The other literatures written about Lubhu are taken for the study of economic activities in Lubhu. Literature and reports has been the primary source of the information for writing the background information and overall development of the report. Meeting and discussion will be made to those concerned personal. Extensive search for the literature will be done through the websites and books. Besides this I will also use my professional experiences. Based on the available data and other required data schedule and future course of action would be streamlined.

The data will be collected from the primary as well as from the secondary sources. The existing data for land use, occupation and other commercial activities will be collected from the direct visit to the site.

Field Visit:

Before the site visit to Lubhu, a questionnaire will be prepared to know about the prevailing economic condition of the traditional city, Lubhu. Basically the study is concentrated to analyze the economic impact due to proposed outer ring road. Similarly frequent site visit will be made along the probable alignment of the outer ring road and the different traditional cities through which it will pass.

1.6.4 Data Processing and Analysis

The result derived from the survey data as well as information collected through literature review, observations, views from different persons will be taken and synthesized for deriving the scenario on different aspects. Thesis will be documented in the form of write-up, maps, and photographs. After its complete analysis, appropriate solution for the economic transfer formation will be given as the recommendation of the study. The detail analysis is done by the study of various case studies of different cities after the construction of the ring road with the help of internet. The available data are processed by the use of Microsoft Excel (Spreadsheet) Package.

1.6.5 Preparation and Presentation of the Report

a. Preparation of Draft Report:
   After the completion of the analysis part, the main report will be prepared and submitted to the supervisor.
b. Presentation of the Report:
   The report will be presented in different Steps in presence of juries, experts and supervisor. At least two mid term presentation and final presentation will be done.
c. Submission of the Report:
   The final thesis report will be submitted incorporating the comments from the juries, supervisor and the experts. The final report will be submitted to the M. Sc Urban Planning Program, Department of Architecture and Urban Planning.

Chapter II: Literature Review

2.1 Urbanizations Trend In Nepal

Nepal, a culturally rich Himalayan Kingdom is a small land locked country with an area of 147,181 square km, bordered by India in the east, south and west and People's Republic of China in the north. The population of Nepal was 18,491 million in 1991 with a growth rate of 2.08 percent between 1981-1991. The projected population was 21.127 million in 1996 with a growth rate of 2.6 percent. The population of Nepal was 32.83 million in 2001 at a growth rate of 2.41 percent annually (CBS, 1996). The urban population of Nepal was 1.758 million in 1991, i.e. about ten percent of total population. By the end of 1997, the urban population reached 2.284 million. The urban population will be expected to reach three million in 2001 (MHPP, 1994:3). Numerous studies and projections have shown that by 2010, 6.8 million people will live in urban areas with 70% of them living in Terai and inner Terai town of Nepal.[2]

Table 2.1: Indication of Urbanization of Nepal

Items/year	1961	1971	1981	1991	1997	2001
Total population in	9413	1155	1502	1849	21127	23832
National growth rate %	1.65	2.07	2.6	2.08	2.6	2.41
No. of towns	1.6	16	23	36	58	
Hilly Region	8	7	9	15	30	
Terai Region	8	9	14	21	28	
Urban Population (in 000)	336	462	956	1758	2335	6800
Urban Population (in % of total Population)	3.75	4.00	6.40	9.50	11.05	12.60
Urban Popl^{n}. Growth Rate %	4.53	3.23	7.55	5.89		

Source: CBS (1995); CBS (1996); Malla (1996); MHPP (1996)

2.2 Current Trend in Urbanization

Current urbanization rates in Third world cities are historically unique in the sense that they have resulted in global concern. Today, a mere 1% shift of the world's population from the traditional to the urban areas represents 44 million people. Estimates made by the United Nations suggest that during the period 1980-2000 there is 1.4 billion increases in population in urban centers worldwide of which 1.2 billion will be in the Third World. By the year 2000, the majority of the

world's urban population 66% is projected to reside in the Third World. Between 1950 and 2000, it is anticipated that the urban population of the Third World will grow by a factor of 7.7, which translates into a factor of 10.9 in Africa; 6.9 in Latin America; 7.2 in East Asia (excluding Japan); and 7.5 in South Asia. In comparison, the urban population of the more developed regions is expected to grow by a factor of only 2.4 during the same period. The anticipated growth in the global urban population between 1950 and 2000 is expected to yield a distribution of 74% in the Third World with a breakdown of 13% in Africa, 16% in Latin America, 18% in East Asia and 28% in South Asia.

Table 2.2: Total urban populations and proportion of the population living in urban areas by major areas and region 1960-2000 (millions and %)

Region Component		1960	1970	1980	1990	2000
World total	Total Urban	1012.10	1354.40	1806.80	2422.30	3208.00
	% living in urban	33.9	37.5	41.3	45.9	51.3
Less developed	Total Urban	439.4	651.5	972.4	1453.1	2115.6
	% living in urban	21.9	25.8	30.5	36.5	43.5
Africa	Total Urban	49.5	80.4	132.9	219.2	345.8
	% living in urban	18.2	22.9	28.9	35.7	42.5
Latin America	Total Urban	106.6	162.4	240.6	343.3	466.2
	% living in urban	49.5	57.4	64.7	70.7	75.2
Caribbean	Total Urban	7.7	11.1	15.7	21.6	28.8
	% living in urban	38.2	45.1	52.2	58.7	64.6
East Asia	Total Urban	194.7	265.2	359.5	479.5	622.4
	% living in urban	24.7	28.6	33.1	38.6	45.4
South Asia	Total Urban	146.9	217.3	329.8	515.7	790.7
	% Living in urban	17.8	20.5	24.0	29.1	36.1
Oceania	Total Urban	10.4	13.7	17.8	22.6	27.1
	% Living in urban	66.2	70.8	75.9	80.4	83.0

Source: United Nations, Patterns of Urban and Rural Population Growth, United Nations Populations Studies, New York, No. 68, 1980

2.3 Components Of Urbanization

The significant growth of the Third World's Urban Population is the direct result of two major factors: natural increase of the urban population and traditional urban migration.

- Natural population increase.
- Traditional urban migration.

2.4 Urban Transformation: Theory

2.4.1 . Brief Description

Urban Transformation is a changes/alterations-taking place in an area in a passage of time from predetermined traditional to urban activities. It is a multidisciplinary aspect and covers a wide range of determinants responsible for the transformation of major indicators of city such as its built form and its socio-economic structure. The individual is influenced, affected and transformed by these changes although often unaware of them in their true magnitude. Some may also see these changes although often unaware of them in their true magnitude. Some may also see these changes as part of their day-to-day life in the mundane and routine struggle for survival in the city.

According to the Symposium held in US, 2003 ***"To develop an enhanced consciousness of urban transformation & the massive changes taking place relating to our urban centers, the following four takes are to be answered. What defines our cities? What characterizes our urban environments? What are the predominant forces transforming the contemporary city? How does the relationship between local influences and global factors affect urban transformation?"***

This history of urban transformation requires an understanding of all the spatial activities taking place within the urban space. Although these spatial activities are individually initiated, underlying economic, social, cultural, political and administrative forces particular to that era and society. Urban Transformation can have both good and bad impact in the society. If transformation is satisfactory, then the society will have good impact of it, but if it is not, then its impact can be repulsive. In this regard, to see whether the transformation is satisfactory or not, Wackernagel, M. and Rees, W. (1996) states: ***The community needs to be surveyed with following questions like: What is the quality of environmental health/ Is it well serviced with public transport, schools, hospitals and parks? Do people have satisfying and enjoyable work? Is there religious and ethnic harmony? Do people feel that their voice is heard?***[3]

2.4.2 Stages of Transformation from Traditional to Urban Conversion

The process of transformation from traditional to urban can be broadly divided into following stages:

Traditional stage: Predominantly agricultural land use.

Transitional Stage:

Pre-transitional – Gradual change starts in traditional character.

Transition – It can be categorized under urban extension.

Post transition – Becomes almost part and parcel of urban area.

Urban Stage:

It is characterized by change in occupation from primary to secondary/tertiary activities. It becomes a complete parcel of urban area. However, along with the urbanization, the periphery of fast growing cities causes many sensitive land use issues related to housing, infrastructure services, loss of prime agricultural land etc., which can be categorized as:

- Unplanned development.
- Protection of environmental and ecological quality at the peripheries.
- Provision of infrastructure facilities.
- Legal problem.

2.4.3 Urbanization Process in Kathmandu Valley and Urban Transformation

Brief Historical Sketch

While the early history of the Valley is uncertain, popularly accepted mythological tales as well as geological evidence point to a time in the primeval history of the Valley when it was a huge circular lake. Legend refers to Manjushree who drained the waters of the lake by cutting the ridge at Chobhar, then established town halfway between the Swayambhu hill and Guheswari and peopled it with his disciples. Ever since then the valley has been inhabited by various settlements under different dynastic in different periods of time. In broad terms, the historical evolution and the growth of cities and villages in Kathmandu valley can be classified and studied under the following periods:

- Kirati period (700 B.C.- 200 A.D.)
- Lichhavi period (300 A.D. – 1200 A.D.)
- Malla period (1300 A.D. – 1800 A.D)
- Shah period (1768 A.D. onwards)

In the historical period, the valley was earlier ruled by Kirat dynasty followed by golden period of Lichhavi dynasty. After, the Lichhavi period came the dark period of Thakuri dynasty. Only

later on after 13th century A.D. , Kathmandu developed as a cultural oasis under the Malla dynasty. The three independent valley kingdoms namely- Kathmandu, Bhaktapur and Patan were rich in it's culture, and architecture. The rivalry between these kingdoms uplifts its standard in every field. Later in 1768 A.D. Prithvi Narayan Shah, the king of the Gorkha, united whole kingdom and made Kathmandu as a capital of the modern Nepal.

2.4.4 General Characteristic of Malla Town Planning Framework

Ideally, Malla towns were located in tar/elevated land surrounded by agricultural fields. "The settlements in compact form were established through closely spaced houses with narrow streets and small courtyards. Aside from the historic necessity for defense and the need for proximity to cultivated fields, the compact form of vertically oriented living is motivated by a strong concern for preserving the rich agricultural land and avoiding its inefficient use' (The Physical Development Plan for Kathmandu Valley, 1969, Pg- 53).

Canonization of forms has always been uppermost in a Hindu mind and whether the priest-architect was designing a temple or a settlement it would have been sacrilegious to tamper with the basic cosmic form. The physical space was philosophically' of temples and deities in the valley settlements, with specific boundary deities as the outer markers. These boundary deities, either the ASTAMATRIKAS (eight Goddesses) or CHARNARAYAN (four gods) were considered as the guardians of the Malla Towns. Anything beyond the boundary was regarded unsuspicious. This not only restricted the spread of town but also protected the agricultural land – the major source of livelihood. The nucleus of the town was usually the place or a religious landmark or a major temple. Wealthy high caste families settled around the nucleus and the lower class settled, in almost concentric circles around them.

The grid systems of street patterns were superimposed on old concentric street patterns causing the evolution of characteristic, Malla towns. The mastery of urban design, space and the fine craftsmanship of the sophisticated monuments reveal an artistic imagination and a social understanding that are found only in the Malla towns of Kathmandu Valley.

2.4.5 Urban and Traditional Settlements of Kathmandu Valley

The settlements during Mallla period were of two types.

Urban Settlements:

Kantipur (Kathmandu), Lalit-Patan (Lalitpur) and Bhadgaon (Bahaktapur) were three major urban settlements.

Traditional settlements:

In the western part of the valley Thankot, Balambu, Satungal, Kirtipur and Panga: in the northern part, Darmasthali and Tokha; in the eastern part Chabahil, Sankhu, Thimi, Sanu Thimi, Bode and Dadikot and in the southern part of the Valley, Khokana, Chapagaon, Bungmati, Badegaon, Sunakothi, Harisiddhi, Thaiba, Thecho and Lubhu were the prominent traditional settlements. Agriculture plays a vital role in the lives of most villages, many settlement contain certain specific nonagricultural roles within the community of the whole valley. Khokana has, since early times, had a concentration of oil pressing industries; Kirtipur its handlooms and masons; Thimi its potteries; Chapagaon, Sankhu and Thankot among others were marketing centers for an extended hinterland. Such Varying activities set within the valley's topographic diversities have created within a common framework a multitude of differing solutions for the physical nature of settlements.

While the three main urban areas can be clearly distinguished in terms of size and their historically evolved character, they provide evidence of the basic continuities between the traditional and urban variations of compact Newar settlements. Besides agriculture, the political, religious, literacy and craft activities have flourished in the urban centers through the concentration and interaction of elites and specialists within the cities of the valley. An added element in this process was the advantageous trade position of the valley. As a connecting link between the plains of the south and the heights of the North with china beyond, the Valley was able to develop highly profitable concentrations of transport and communications activities within its urban centers. The royal cities variously allied or at odds with one another, served both as dominating centers of control over their traditional hinterlands and as foci of interaction within their own religion and with distant urban centers.[4]

2.4.6 Transformation Process of Kathmandu Valley

After the unification of the whole kingdoms of Nepal by Prithvi Narayan Shahdev, Kathmandu became the capital of Nepal. Since then the people from different parts of the country started to migrate to the capital city. However during the Rana rule, the valley was kept in isolation restricting entry from the hinterland.

Kathmandu valley till Rana reign was not open to the outside world, so the cultural integrative was intact. But at the Ranas were overthrown, this cultural continuity also broke up. Then open or entry to the hinterland also open to commercialization and external influence. An insulated civilization was soon influenced by the modernized outside world and the transformation began immediately. Due to unprecedented traditional to urban migration to the capital city in last few

decades, Kathmandu valley is urbanizing at a very fast pace, which are leading to rapid transformation processes resulting in haphazard development of Kathmandu valley.

Numerous factors contributed to the breakdown of the religious and cultural framework and the spatial structure that had prospered for more than 1,500 years. Exposure to the outside world made single-unit houses and the suburban life-style attractive for those who could afford it. Many Newar families abandoned their ancestral dwellings and life of the Gallis (lanes) and Bahals (courtyards) of Patan and Kathmandu, and moved outside the perimeter of the old towns into detached bungalows or brick and cement.

Particularly, as the roles of many settlements have altered radically in the last twenty years, physical indications and impressions are often misleading clues to the explication of the current nature and level of activity. This situation is typified by settlements such as Kirtipur and Sankhu, both large settlements whose traditional activity patterns have been adversely affected by developments in their surrounding regions.

The government takeover of properties of the traditional religious trusts in the 1960's affected the core of the ancient traditional settlement management system, sapping the will of communities to maintain and preserve Temples, Patis, Hitis, and other public spaces and monuments.

The growth in the tourism sector began after King Mahendra's coronation in 1956. This accelerated the pace of transformation in Kathmandu valley. The central highway (Rajpath) linking Kathmandu with the plains was completed in 1956, which made the valley suddenly more accessible to people, goods and services from all over. Kathmandu came within reach of the plains market as well.

As the areas immediately around the old traditional towns were inhabited, there was a need to push further out into the periphery. The construction of the Ring road around Kathmandu and Patan, which was completed in 1975, helped make this possible, and the urban octopus steadily appropriated the agricultural lands. Agricultural lands were acquired to establish various administrative and educational institutes. Similarly large tracts of pastoral lands of Pashupatinath Temple (Gauchar area) was appropriated for an airport. Also slowly, those who had money and power privatize many ponds and fields that were part of public domain.

This process of urbanization was accelerated in 1980's as Kathmandu acted as a magnet for migrants. These migrants were no longer well to do, rather the poor people who were drawn to the valley in search of low paid jobs mostly in the form of labor or to fulfill growing demands of tourism and carpet industries, which had flourished by then. Moreover, the residential building

spree continued over the years, gradually consuming agricultural lands. Also the fertile river basins of holy rivers, Bishnumati and Bagmati were gradually eaten up by urban development.

The traditional building practices employing use of bricks in mud mortar was gradually abandoned to give way for cement and concrete. As a result, many historic buildings, mainly residential ones started disappearing. Interestingly however, the medieval historic spatial fabric has been very resistant to change, thank to the cultural significance of public open spaces.
However, what needs to be noted is that most of such developments have beēn haphazard, without any proper urban and infrastructure planning. Although Kathmandu valley saw five master plans for planned development – in 1963, 1969, 1976, 1984 and 1991 – there was no implementation. His Majesty's government of Nepal with support from UNESCO prepared 'The Master Plan for conservation of cultural properties Nepal' in 1978. However, it is yet to be implemented by the Government.

2.4.7 Population Growth of Kathmandu Valley and Its Impact

There has been a phenomenal rate of growth in the Kathmandu Valley's population with in-migration playing a significant role. Besides, Kathmandu has an estimated mobile population of 50,000. The population of Kathmandu Municipality was recorded at 10,78,909 during the 1991 census registering a growth rate of 3.83 percent between 198-91. The population is expected to reach more than two million in 2011. The total Population of the five Municipalities, which constituted about 61 percent of the total valley population growth and urbanization are allowed to continue unchecked, almost 80 percent of the population will be living in the urban area by 2031 creating a huge pressure on the metropolitan city (Kathmandu Valley's Long Term Plan, 2002). The Kathmandu Metropolitan city (KMC) currently has no legal mandate to control developments beyond its borders or restrict developments in the flood plains and rich agriculture lands.

2.5 Urban Fringe; Concept

There is little agreement between academics and planners over definitions or the appropriate terminology to describe the variety of environments that have evolved within the countryside. 'Fringe' is used sometimes interchangeably to describe ' countryside'. 'Fringe' is used sometimes interchangeably to describe 'countryside'. A consensus exists to use the different terms such as 'fringe', inner fringe, rural-urban fringe', "urban shadow", "exurban zone", "urban fringe" over the broad conceptual notion underlying the immediate countryside of the city (Bryant etc. Al., 1982). Many scholars from different disciplines have discussed fringe, but there is no precise definition

for it. Subjective definitions based on individual areas of study are not adequate as these definitions are not always universally applicable and do satisfy only a particular region.

The term urban fringe was first used by T.S. Smith to describe the built up area just outside the corporation limits of the city. Wehrwin (1942, cf. Sinha, 1980) defined fringe as the area of transition between well-organized urban land uses and the area devoted to agriculture carried out in more or less modified form. Andreus (1942, cf. Sinha, 1980) defines urban fringe as the adjacent peripheral zone of the urban fringe... as the intermingling zone of characteristically agricultural and characteristically urban land use structures obtained in the area. Grainier and Chabot (1967, cf. Sinha, 1980) consider it suburbs, which begin where the continuous built-up towns end. "First there is the built up area of houses with small gardens, forming dormitory, communities from which more than the half of the active population works in the town." Dickinson (1976, cf. Sinha, 1980) takes it to mean a "rural area into which residential development is intruding and new industrial site and other urban uses are in process of development is intruding and new industrial site and other urban uses are in process o9f development along its main lines of communication, after being clustered around existing villages and small towns. Pryor (1968, cf. Sinha, 1980) opines that fringe is a zone of transition in land use, social and demographic characteristics, lying between (a) the continuously built up urban and suburban areas of central city and (b) the rural hinterland, characterized by the almost complete absence of non farm agriculture dwellings, occupations and land use, and of urban and rural social orientations; and incomplete range and penetration of urban utility services; uncoordinated zoning or planning regulations, area extension beyond although contiguous with political boundary of the central city and an actual and potential increase in population density, with the current density above that of surrounding rural districts, but lower than the central city. The urban fringe is really an extension of the city itself. The urban fringe is a narrow zone with varying width outside the political boundaries of an urban unit, which is neither urban nor rural in character. It actually acts as a bridge, which connects the two. It is the continuation of the declining tendency of urban characteristics towards the rural in character. It actually acts as a bridge, which connects the two. It is the continuation of the declining tendency of urban characteristics towards the rural area or the declining tendency of urban characteristics towards the rural area or the declining tendency of rural land towards the urban unit. The roles and position of the fringe and the city have varied from time to time and place to place.

The inner fringe is characterized by land in the advanced stages of transition from rural to urban uses – land under construction, land where there is little doubt over much of its area about its urban orientated functions and ultimate conversion to urban uses. The outer fringe, together with

inner fringe, form urban fringe. It is an area where although rural land uses dominate the landscape, the infiltration of urban oriented elements is clear, both inner and outer fringes are point of attraction to the urban dwellers because of its cheaper land costs. Urban shadow is an area where physical evidence of urban influences on the landscape is minimal; finally it merges into the rural hinterland.

2.5.1 Urbanization Process in Urban Fringe Area

The fringe area is always thought of as a green belt that differentiates rural area from urban area. The concept of Garden city developed by Ebenezer Howard advised a town of 100 acres would be surrounded by 5000 acres of agricultural land. In his opinion, the agricultural land not only support agricultural produce but also acts as a green belt, preventing the town from spilling into adjacent rural areas (Breheny 1996 cf. Subba, 2003). The rapid urbanization in developing countries has always remained haphazard because urbanization occurred there without sufficient economic growth (Subba, 2003). This is the main reason for causing sprawl in the urban fringe. Sprawl may occur to varying degrees in cities of both the developed and developing world, Sprawling causes specific land use problem and in turn causes social and economic implications. The urban sprawl broadly categorized as planned sprawl and unplanned sprawl depending upon whether development carried out coordinated land development or individual land owners carried out random land development process. Planned sprawl area has necessary community infrastructure services before the residential construction takes place. Unplanned sprawl is directed by market led spontaneous growth of urban area. The sprawl tends to affect natural resources such as agricultural land in various manners. The rapid depletion of agricultural land is one of the prime externalities of sprawl. Besides direct conversion, the urban spill over also reduce the productivity of agricultural land by setting the 'speculative tendency ' in which farmers see a limited or no future of their agriculture land in the face of urbanization. As a result, the disinvestments on the land sets in to cause underutilize or idling of agricultural land near or between urban areas causing fall in agricultural income (Nelson, 1992 cf. Subba, 2003). The sprawl also transforms the rural community into bedroom suburbs in a long run. In some cases, there may be the possibility of displacement of the original inhabitants of the location due to the urbanizing pressure.

2.5.2 The Fringe Area, the City and Urbanization

Fringe area has had special relationship with urban area. In Canadian Prairies, agricultural development fostered the development of many small service centers whose prime function was to provide goods and services to a dispersed agricultural population (Zimmerman and Moneo

1972 cf. Bryant et al 1982). In medieval Europe under the feudal system, the fringe area played a more subservient role to the town and city (Bryant et al 1982). The roles and position of the fringe and city vis-à-vis each other have varied from time to time and place to place.

Despite having varying relationship, one point is clear that the city and fringe are integral parts of the same social and economic system. Thus changes in city and countryside are interdependent. After Second World War, pace of change in the fringe in western society quickened enormously. Economic development in agricultural sector experienced a far-reaching revolution in terms of technological development and forms of economic production. Farming is still a major land use around most of the cities; impact of the changes in the landscape has been considerable. Since the fringe area is connected with the process of economic development, growth has been another major force that has brought marked change to the area i.e. due to rapid urbanization. It is probably no longer appropriate to measure level of urbanization. It is probably no longer appropriate to measure level of urbanization simply by the proportion of the population in urban areas. According to Lewis and Maund (1976, cf. Bryant et al. 1982), several factors have contributed to the spread of essentially urban oriented population in to the urban fringe area. An appropriate measure of urbanization might be the proportion of the population living in urban peripheral areas i.e. urban fringe area. Bryant et al. (1982) explain that urbanization is the process of infiltration of the countryside by non-farm elements and it is more than simply a demand for additional land in urban use. Thus, urbanization can be understood to be creating a range of pressure that can effect change in the countryside.

2.5.3 Physical Perspective

Agricultural development affects urbanization, but urban growth is equally basic to agricultural development. Bryant et al (1982) identify the effects of urban development on agriculture to be categorized as direct and indirect. By direct impact it refers to the actual removal of land from its agricultural production functions and it is a negative impact. Indirect impact refers to interactions between urban development and the continuing agricultural structure, which may result in modifications to the agricultural systems. These indirect impacts may be either positive or negative for agriculture. One of the most important factors affecting agriculture is the location structure of urban areas in relation to the agricultural land resource. The relation between urban population and high quality agricultural land resource. The relation between urban population and high quality agricultural land resources depend upon the configuration of land resources and the city distribution. High land values in the urban field arise naturally from market forces and that may push agricultural land beyond the search of many framers while increasing cost of land for other urban uses such as housing.

The expansion of Paris, France was into some of the most fertile agricultural lands of Western European. The same thing happened in Canada, where the climate places severe restrictions on the potential of the agricultural land resource (Bryant et al, 1982). The fact that the agricultural land around the cities are of higher quality should not be a great surprise since many cities developed in the richest agricultural areas. The history of agriculture and urban growth is considerably longer and urbanization always requires a large amount of prime agricultural land for urban use. It has always been an issue of debate that the prime quality of land is lost to urban development. Agricultural land is a renewable resource, i.e. with appropriate management; the productivity of the resource can be maintained in long term. On the other hand, when land is built over, it is regarded as an irreversible change in terms of normal planning horizon (Bryant et al, 1982). Here the writers want to establish relationship between land quality and agricultural productivity. Agricultural land is a productive resource and it is incorporated into the socioeconomic system of production.

2.5.4 Physical Transformation in Urban Fringe

Due to the ongoing urbanization in the urban fringe, its effect on physical form i.e. in the land can be easily visible . Greater number of different land uses occurs in the urban fringe than anywhere else. Cities spread out into the countryside like an advancing wave on a beach, land in the inner fringe, be it farmland, grassland or forest, is converted to urban use (Bryant et al. 1982) m, in some locations, irregular patches of urban and urban associated ribbon development. Ribbon development usually takes place in a linear manner mostly along transportation link. This phenomenon can be seen in the early stages of development of the city form towards the fringe areas. Settlements are advancing along the highways and roads leading out from the cities. The ribbon and scattered development labeled "urban sprawl" by Bryant et al (1982).

Dominant agricultural land starts to convert into other land uses. In North America after Second World War, haphazard ribbon development and sprawling effect was observed (Bryant et al. 1982). This type of development reflected a situation where landowners possessed the maximum freedom to do with their property as they wished; such developments are greatest in those metropolises that are unprepared for the rapid urban growth emanating from the nearby city.

Land use conflict may arise in the community due to the effect of urbanization and land use activity on the property affects other people on neighborhood or nearby property. The various land use conflicts categorized by Bryant et al (1982) as individual versus societal, present versus future uses and economic versus non economic. Some land use conflicts are not immutable and

notions of sequential land use and multiple land use are of significance for the urban fringe as a means of reducing conflict and making better use of land.

2.5.5 Social transformation in urban fringe

Urban fringe area is the region where rural-urban convergence takes place. In such place, rural and urban demarcation is not clear. With the diffusion of urban culture to the rural areas, the extreme differences between rural and urban cultures diminished. The availability of urban infrastructures such as transportation, communication networks, education accessibility, commercial facilities in the rural areas have changed the attitude and outlook of the rural people.

Rural area is attributed with social homogeneity, dominance of primary relations, informal social control, predominantly agricultural occupation, strong neighborhood while urban are is attributed with social heterogeneity, secondary relations, secondary control, large scale division of labor and specialization, social mobility, individuation, spatial segregation, unstable family.

The process of urbanization can affect both positive and negative impacts on farm structure. "Urbanization has created a market of non farm job opportunities which has attracted agricultural labor to move from farm employment into urban employment. This has often released land and made it available for remaining farmers to expand their land base, known as 'farm consolidation' in North America and 'farm amalgamation" in Western Europe"" (Bryant el al. 1982).

The rapid growth of cities has several effects on agriculture especially in the developing counties. Firs of all, the growth of the cities provides a market for the agricultural products while earlier farmers produced primarily for their own consumption. In many countries as much as 7 percent or more of total agricultural output does not leave the village where it is produced (Clawson, M., Weitz, R., 1971 cf. Bryant et al 1983). As the cities grow, the increased populations require food and other agricultural commodities, which must be supplied either from the country's hinterland or from abroad. A cash market for agricultural commodities gross up, expanding at least as fast as city population grows. This development of a large market, as cities grow, has numerous impacts on the nature of agriculture. It begins a process of commercialization of agriculture. The farmers now produce more for cash sale instead of primarily for family consumption. They are now more concerned with prices of saleable commodities and with costs of needed inputs than they were previously. The whole nature of agriculture changes under the impact of a growing urban market for farm output. In the areas where farmers consider urban development likely, there will be a disincentive to maintain investment in agriculture. "As the urbanized area is approached from a distance, the degree of anticipation of urbanization increases. As this happens, the relation of urban to rural land values increases.

2.5.6 Land Fragmentation and Its Impact on Urban Fringe

Underlying many changes in economic and cultural activities in the urban fringe are changes in land ownership patterns (Bryant et al 1982). Changes in land ownership usually take place in advance of land use change and he spread of the city. Land ownership is a complex concept with economic, legal, political and cultural dimensions. A study carried out by Subba (2003) in urban fringe of Katmandu and he identifies two factors that promote land fragmentation. One is internal force, that comes from within a family that owns land and another is external force –associated with land demand and market activities. Generally, the internal force acts as a principle factor in land fragmentation. It tends to cause a property division including division of land among the family members. The internal force induces change on land regardless of the presence or absence of external force. The incidence of internal force and pressure on land appears to be more intense among low-income farmers. The early marriage of boys in the family and generally a large family size means pressure on land from the internal force tends to come relatively quicker and in a greater intensity. The pressure on land also increases in these low income households because these households because these households have relatively few alternative sources of income apart from acquiring labor jobs due to their poor education and skill.[5] Property inheritance recurs in a long period of time and its incidence is gradual. The fragmentation thus initiated by the entitlement pushes the farmers to phase out the newly fragmented land parcel into sale inheritance.

Due to urbanization pressure, increased demand and value of land have implications for behavior of farmers and landowners on the supply side. The increased value of land hastens forces of disintegration on agricultural land. The land fragmentation process starts right from the separation of dual ownership among landowner and tenant and inheritance property distribution among lawful heirs in a family. There are different reasons which act as impetus to both a landowner and a farmer for land fragmentation. Landowners have decreased relationship with their agricultural land due to changing family values resulting from children's improved access to education, profession and differing interests. Landowners have relationship with land in outlying areas mainly maintained through tenant farmers (Subba, 2003). In other side, a tenant farmer also gets affected due to increased economic vulnerability in farmer's household caused by growing family size and lack of education or other occupational skill to supplement agricultural income. In this situation tenant farmers have tendency to separate from landowners so that they have full right on their land even to sale to meet their economic requirements. Separation of landownership between landowner and tenant farmer results in initial fragmentation of agricultural land.

2.6 Urban Economics

Urban economics is the study of the location choices of firms and households. Other branches of economics ignore spatial aspects of decision making, adopting the convenient but unrealistic assumption that all production and consumption take place at a single point. In contrast, urban economics examines the where of economic activities. In urban economics, a household chooses where to work and where to live. Similarly, a firm chooses where to locate its factory, office, or retail outlet.

Urban economics explores the spatial aspects of urban problems and public policy. Urban problems such as poverty, segregation, urban decay, crime, congestion, and pollution are intertwined with the location decisions of households and firms: location decisions contribute to urban problems, and urban problems influence location decisions. For example, the sub urbanization of employment opportunities contributes to central-city poverty, which causes further sub-urbanization as wealthy households flee the fiscal problems of the central city. An informed discussion of alternative policy options must take these spatial effects into account.

If urban economics is the study of location choices, why isn't it called location economics or spatial economics? There are three reasons for the urban in urban economics. First, most location decisions involve an urban choice: over three-fourths of the U.S. workforce lives in cities, meaning that much of location analysis involves urban areas. Second, urban economics is also concerned with location choices within cities. Finally, the most important problems caused by location choices occur in urban areas.

Urban economics can be divided into four related areas that correspond to the four parts of this book. These are (1) market forces in the development of cities, (2) land rent and land use within cities, (3) spatial aspects of poverty and housing, and (4) local government expenditures and taxes.

2.7 Transportation System in Nepal

A road, as defined by the World Book Encyclopedia, and endorsed by the Federal Highway Administration, is a "strip of land that provides routes for travel by automobiles an other wheeled vehicles. Roads usually connect urban areas with each other and rural areas with urban areas. Roads are an integral part of the framework of our cities, providing a means of transportation for residents, commerce and industry. The largest road in our cities today is the Interstate, and being the largest, the interstate has an enormous impact on the city and the life lived therein.

The problems and difficulties associated with moving about within the towns and cities of the world are readily apparent and publicized and feature daily in the lives of urban dwellers. The transportation system is depending on the population growth of the city and the vehicle ownership and usage, which is creating problems in the transportation management. So, the transport and land use planners have come to realize the importance and potentiality of the transport to shape the urban environment by providing the accessibility of the locations within the urban area. It is intended not only that the recommended transportation system should provide convenience and economy of travel, but also that its influence on the development of the area should tend toward facilitating a desired pattern of regional development.

The term "system" may connote a higher degree of organization and integration than is intended and should be viewed as referring simply to the total array of opportunities for the movement of persons and goods between points in urban region. The urban transportation system should be assigned this crucial role in a model whose purpose is to tell us something about the distribution of persons and the value of land in the urban region is certainly consistent with what we know about the impact of transportation innovation on the spatial organization of the city.

2.7.1 Road Network Planning

The network planning involves the development of transport networks for the selected land-use area to serve the whole area under examination, and networks for both public transport and the motor vehicle.

Road networks should form an interconnected network of radials, circumferential and down town distributaries, linking residential, commercial and industrial areas and should be continuous in character, capacity, and design, freeways should be planned designed and operated as an integrated system taking into account other complimentary elements.

In 1993 "The study on Kathmandu Valley Urban Road development" has been carried out by the His Majesty's Government of Nepal, under the financial assistance from the Japan International Cooperation Agency (JICA) referring the "Kathmandu Valley Urban Development Plans and Programs" with aim to prepare various road projects and master plan.

2.7.2 Road Classification

According to the NRS roads in Nepal are classified as follows:

1. National Highways
2. Feeder Roads
    a. Major Feeder Roads

b. Minor Feeder Roads

3. District Roads

4. Urban Roads

But the road classification system in India is slightly different from Nepal, which is as follows:

1. Urban Roads

2. Non-urban roads

    a. National Highways

    b. State Highways

    c. District Roads

        i. Major District Roads

        ii. Other District Roads

        iii. Village Roads

a. National Highways

National Highways are main highways connecting East to West and North to South of the Nation. The roads connecting national highways to regional headquarters shall also be classified as National Highways. These serve directly the grater portion of the longer distance travel, provide consistently higher level of service in terms of travel speeds, and bear the inter-community mobility/ regional interest. These roads shall be the main arterial routes passing through the length and breadth of the country as a whole.

b. Feeder Roads

Feeder roads are important roads of localized nature. These were the community's wide interest and connect District Headquarters and/or zonal headquarters to national highways.

c. District Roads

This class of roads consisting of all roads not defined as National Highways or Feeder Roads, serves primarily by providing access to abutting land carrying little or no through movement. These roads should give access to one or more villages to the nearest market or to higher types or roads. Moderate travel speeds are typical on such roads.

d. Urban Roads (City Roads and Streets)

These include roads within the urban limits except for the above classes, passing through the city. These provide access to abutting residential, business or industrial properties.

2.7.3 Urban Economic Development

The more powerful the urban sector is, the greater will be volume of resources available for poverty alleviation (Harris 1991). It generates the stream of resources contributing to the development of the whole economy. Cities and towns are the engines of economic growth. The more accessible rural areas of today turn into towns tomorrow. Towns and cities grow out of villages.

Urbanization is good or evil depending on the ability of the local economy is self-reliant, strong and powerful, the benefits of urbanization can be reaped for furthering development. If the local system is weak, then local resources will be drained to boost up the capital.[6]

In transitional societies like in Nepal, it is easier to raise productivity in urban areas. A urban management is poor, the task of rural development has become more difficult. We should understand that urbanization is a symptom of economic growth. The process involves rapid use of natural resources. It should be managed and shaped to achieve regional equity and alleviate poverty. The neglect of the urban sector could have the following effects at different levels.

At the national level, economic activities decline as cities cease to be optimum points of production. Their capacity of holding more people, creating jobs and attracting industries will sharply decline. The negative effects of urban growth could be pollution, infrastructure breakdowns and growth of illegal settlements. These will seriously affect environment as well as industry.

At the regional level, cities and towns are allowed to consume resources very rapidly as the rural economy has little access to such resources. Future towns will have serious problems of basic infrastructure and services, as resources would have been used up by the more promising settlements.

At the urban level, the town administration may not have a clear understanding of its role in the overall national development process. If that were the case, urban development will take place in isolation. Pricing policy is often based on immediate financial returns. Towns and cities use natural resources cheaply as sufficient demand might not be created. Access of the poor, especially the rural workers and migrants, to all the sectors of economy and services is limited with gross injustice. Rural areas suffer also because the transfer income is made unfairly low.

At the village and rural level, the future of smaller settlements is left completely in the dark. These settlements stagnate due to lack of linkage with the market.

Urbanization has influenced human life in many ways not only in urban areas but also in the entire region. Today, almost all the aspects of development respond to new demands created through it. It should of development respond to new demands created through it. It should focus on creating viable urban centers. It should be managed at the regional level.

2.7.4 Rural -Urban Linkage

Thē distinction between rural and urban is a relative concept. Rural areas change to urban form as their economy relies less and less on agriculture. One way of checking imbalances between urban and rural areas is to stop the supply of rural resources at low costs to urban areas.

There are diverging views. The anti-urban view idealizes the rural image and regrets its disappearance. It pleads for checking urbanization by controlling migration. It does not accept migration as something inevitable. It encourages the development of rural areas in isolation. According to it, realization of the urban areas should be the objective. Urbanization is considered to be an evil, which leads to a breakdown of social cohesion. It is harmful. Rural-urban dichotomy and rural-urban divide are prominent features of this view. Cities and towns have failed to provide adequate jobs and infrastructures. This has led to a visible of urban poverty with an increase in crimes, diseases and pollution. According to this, investments in rural and urban areas are seen as mutually exclusive and competing. Investments in rural areas are justified as they may reduce rural to urban migration. Likewise, urban investments are sometimes seen as an urban bias.

On the country, pro-urban view is the belief that urban centers are engines of growth., Economic progress and social change are all due to the positive and dominant role of the cities. Cities and towns are the centers of knowledge, culture and vitality. They have brought about scientific innovations and new technologies. They are seen as agents of innovation, diffusion and socio-economic transformation. One of the most significant manifestations of most of the ancient civilization was believed to be cities. The history of towns and cities is intrinsically linked with the human civilization. It has made positive impacts on demography, particularly in developing counties. Urbanization is a progressive process.

2.8 Foreign Practice

Ring Roads of Beijing, China[7]

China is the neighborhood country of Nepal. The pace of infrastructure development is quite high in China. There are many metropolitan as well as the mega cities. The migration of people from

rural to urban here is rapid and the urbanization trend also seems much. Even-though there are many radial roads in Beijing, these are not able to cater the demand of road here. We can observe the many ring roads constructed in the capital city of China which are as listed below;

- 1st Ring Road
- 2nd Ring Road
- 3rd Ring Road
- 4th Ring Road
- 5th Ring Road
- 6th Ring Road
- 7th Ring Road
- 8 Further Ring Roads?
- Inter-ring road connection routes

1st Ring Road

Oddly enough, there is the lack of a 1st Ring Road. This may have referred to a rectangle of roads around the intersections at Dongdan, Xidan, Dongsi, and Xisi; it may also be a mapmaker's fiction, and nonexistent. Maps in Beijing do not actually show the 1st Ring Road as such; only very few maps give a faint yellow highlight of a possible variant of it.

2nd Ring Road

Actually Beijing's *first* ring road, the 2nd Ring Road was built in the 1980s and expanded in the 1990s. It now forms a rectangular loop around central Beijing. Its four sections begin at Xizhimen, Dongzhimen, Caihuying and Zuo'anmen.

The 2nd Ring Road passes through very central parts of Beijing, and is close to the Beijing Railway Station. Prices of real estate inside the ring road are considerably higher than other parts of town (for very obvious reasons!).

The 2nd Ring Road of today is part of an extended ring road which takes the southern route through Zuo'anmen and Caihuying instead of Qianmen Road, just south of Tian'anmen.

3rd Ring Road

The 3rd Ring Road was built in the 1980s and completed in the 1990s. It also is central, as it passes through Beijing's CBD and diplomatic communities. It is the ring road closest to the city

to be directly interlinked with expressways -- the Airport Expressway, the Jingcheng Expressway (link under construction), the Badaling Expressway, the Jingshi Expressway, the Jingkai Expressway, and the Jingjintang Expressway.

4th Ring Road

The 4th Ring Road was completed in 2001. It connects the less central parts of Beijing and navigates through Zhongguancun technology hub, western Beijing, Fengtai District, and eastern Beijing. The Jingshen Expressway and the Jingtong Expressway (as of Dawangqiao) begin from the 4th Ring Road.

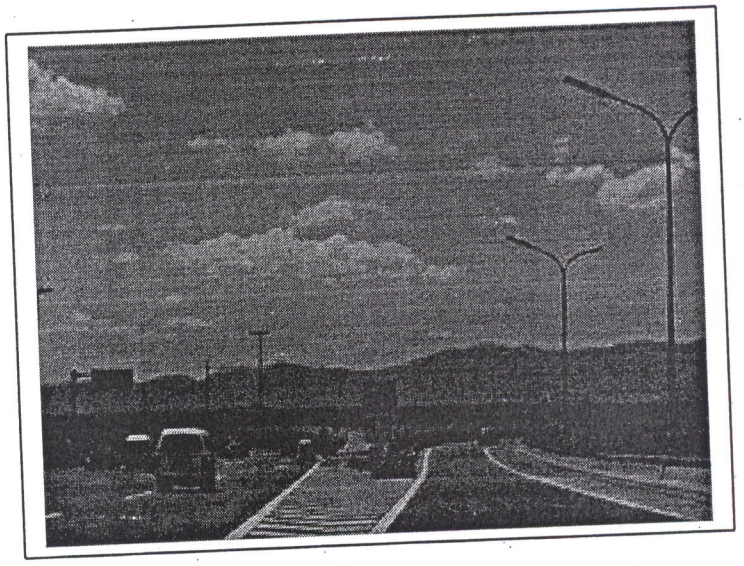

Plate 2.1. Fourth Ring Road of Beijing

The 4th Ring Road, along with other ring roads, now have a few locations where "fake" police lights (red and blue in colour) light up at night. Drivers are too easily fooled into thinking that the police is out in force. Indirectly, this forces drivers to slow down, while also scaring the daylights out of drivers. The "fake" lights are always after a speed trap. The best way to avoid falling into this trap altogether is to drive according to the speed limits - not faster, not slower.

5th Ring Road

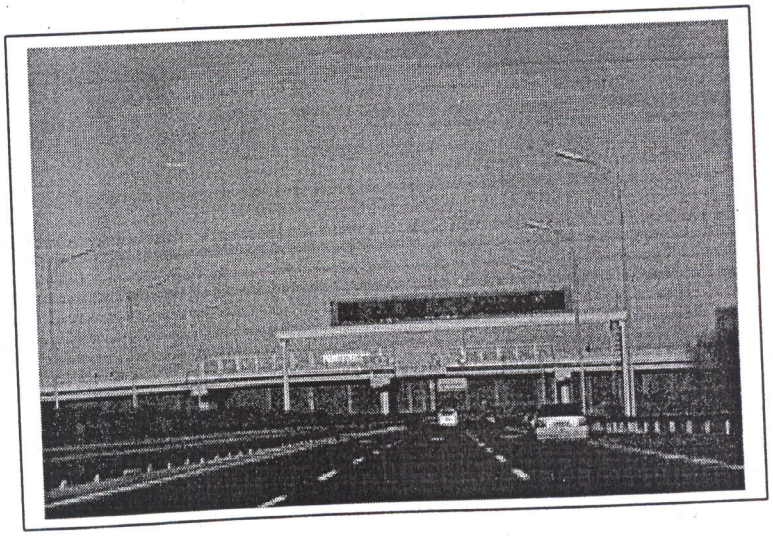

Plate 2.2: Fifth Ring Road

This ring road is further distant from central Beijing, and links the suburbian areas of Huantie, Shigezhuang, Dingfuzhuang and Ciqu. It also passes through the Beijing Development Area. It navigates through very barren land in the south before heading west toward the Fragrant Hills.

Due to its proximity to future Olympic venues, it has been nicknamed the "Olympic Avenue".

6th Ring Road

At present the most remote ring road from central Beijing, the 6th Ring Road was built in the 2000s and has just recently been completed. 130 km of expressway between the interchanges with Badaling Expressway and Jingshi Expressway, running clockwise, are open to the general motoring traffic. It is the only ring road to be interlinked with the equally remote Jingha Expressway.

This toll expressway ring road links Beijing with Shunyi District, Tongzhou District, Changping District and Daxing District.

7th Ring Road

At present only present in the minds of urban projectors, it is likely that Beijing's 7th Ring Road will be built as the city's first expressway ring road which transcends beyond the boundaries of Beijing municipality.

The size of such a 7th Ring Road, exceeding the city limits of Beijing, would actually link *very* distant districts and townships *and* expand into the neighbouring provinces and cities. In essence, this wouldn't be *Beijing's* 7th Ring Road, but the *region's* "7th Ring Road".

Sources say that, with the creation of a 7th Ring Road, a *second airport* for Beijing won't be too far away.

Further Ring Roads?

The ring-like spreading out of Beijing has many prompting whether or not an 8th Ring Road or even 9th Ring Road will be built. At current, no such plans are on the drawing board.

Views are mixed on the potential construction of such ring roads, with some voices coming out against. Many fear that the incessant "ringing" of Beijing won't actually solve Beijing's population (and traffic) problems, and advocate a satellite-town method instead.

Chapter III: Existing Physical, Social and Economic Condition of Lubhu

Introduction

Unlike other Malla towns of Kathmandu Valley, Lubhu is also a rural Newari compact settlement situated at about 7 kilometers east from Lalitpur district downtown. Lubhu Bazar exhibits the same type of urban character as it is found in other main cities of Kathmandu valley e.g. Kathmandu, Patan, Bhaktapur, Kirtipur and Pharping.

Plate 3.1: Entrance Gate of Core Area of Lubhu

It is situated at tar land and is surrounded by three rivers (Adol River in north, Godavari River in west and Gomati in the east). The settlement yet represents strong historical and cultural characteristics. Lubhu appear to have assumed different names during different ruling period. According to archeological "Tamrapatra" available, the oldest reference dates back to the year NS 417,774 and 847; when it used to be called LUN MHU and LUM BHOO. During Kirata Period it was called LUN BUN (meaning gold producing field) and in 1600 BS, Malla period it was known as LUN BHOO (meaning Golden Plate). Other names commonly called by people are LUM, BHU, LU BU, LU BHU etc. Lubhu passed through many prosperous stages and declines. During the Lichchavi period, settlement gained the status of Dranga (independent state). And its name was Hansgrihdrang as Bhaktapur and Lalitpur were called Makhoprindrang and Yupagramdrang respectively. A shortest route linking Patan and Panauti (Kabhre) passes through Lubhu and it also has served as a market center for its hinterland. This route was very busy till

Araniko highway construction. From past history, it was understood that almost cent percent households in Lubhu had traditional handloom for textile production. Weaving was the primary occupation of residents of Lubhu town in Malla period, therefore this town was also known as Textile Town. The secondary occupation was agriculture as the hinterland as well as fringe area of Lubhu was very fertile for agricultural activities.

The social and cultural characteristics of Lubhu, unlike other Newar towns, are reflected in the ordering of spaces in town layout. Temple square has been considered as a focal point of the settlement. Higher castes (Shrestha) are settled at prime location then the outward spaces followed by other lower groups in castes hierarchy. The scheduled caste (Kasai, Butcher class) remained in town fringe area. It is culturally rich with religion-cultural Jatras, dances, and feasts. Traditional Guthi system was maintained and institutionalized for the maintenance of religious and cultural edifices. The settlement was sustainable economically as they had food sufficiency and also they had exported goods produced by subsidiary economic activities.[8]

3.1 Physical Aspect

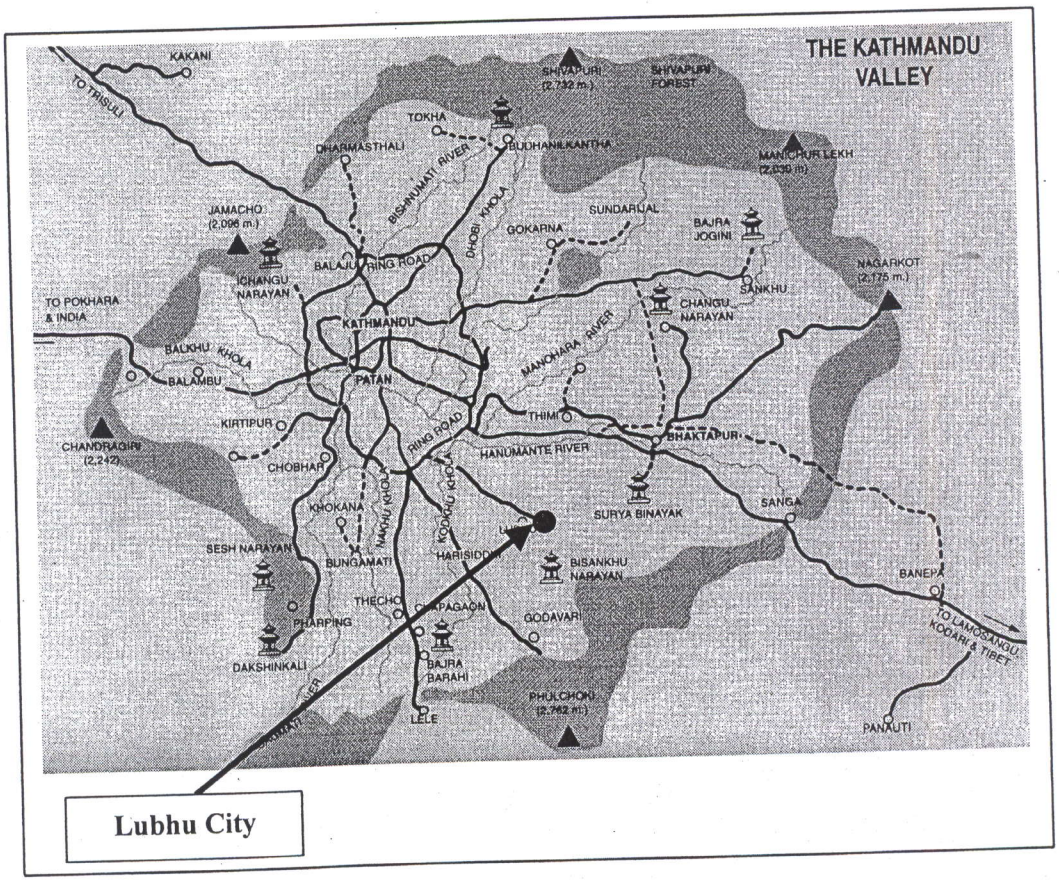

Fig 3.1: Location Map

Lubhu is a traditional Newar settlement lies about 6 Kms east of Mangal Bazar, Patan and is on the Southern part of the Kathmandu Valley. This VDC is lying on the Southern foothill of the valley with an area of 7.45 Sq. Lubhu also lies along the corridor from the Gwarko to Lamatar. The Lubhu VDC has the boundaries comprising Lamatar VDC in East, Siruta VDC in North, Godamchour and Shiddhipur VDCs in West. Similarly Dhunge Khola in South, Godawari Khola in the West, Sisneri Khola in the East and Adol Khola in the North are the physical demarcations of this VDC. Lubhu VDC lies along the traditional route from Lalitpur to Panauti and it is considered to be the shortest route to Panauti. The Lamatar VDC in the east is growing fast as a tourism center and there has been a rapid urbanization in this VDC as well. This VDC was famous for the weaving industries and was serving the textiles to the valley. Lubhu is the weaving industrial areas which can be realized from the fact that around 75% of the house has in the core area of Lubhu have the weaving as their cottage industries.

3.1.1 Land Use of Lubhu VDC

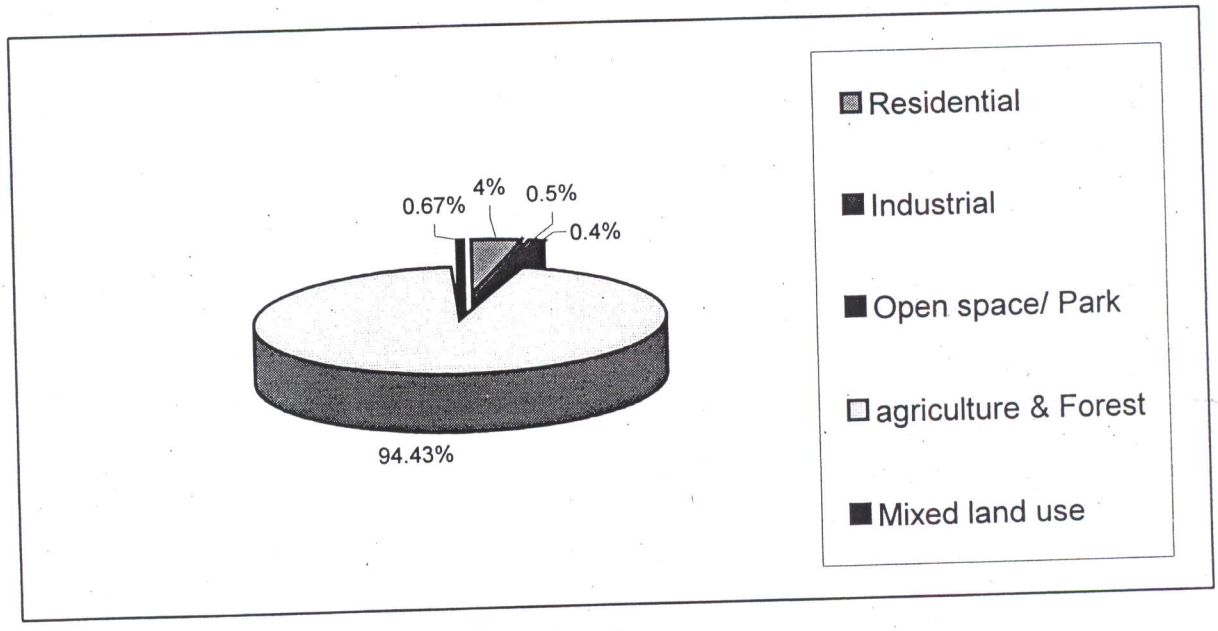

Fig 3.2: Land Use Pattern

Source: VDC MAP of Lubhu and field verification

About 95% of the land within the Lubhu VDC is agriculture whereas residence is about 4%. The rest of the land consists of industrial, open space, park, forest and mixed land use. From the land use pattern, we can forecast that the main occupation of the dwellers in Lubhu VDC is still in agro-industry. But if we look into the core (dense) area there we find many economic activities existing. The urban sprawl in fringe areas is causing the depletion of agricultural land day by day. In this city the solid waste and sewage disposal site is not identified yet. There is also the lack of transport and land use linkages; especially Ward 8 is isolated from core area. In Lubhu there is

not provision of building regulation and zoning ordinances. Textile factories are disturbing the neighboring residence especially in core area. The value of land is escalating day by day by the land broker.

Location Advantages

Phulchowki, Godavari, Lamatar, Lele, Gundu and Panauti Regeneration: Handicrafts, Industries Preservation & Conservation of cultural heritages (Temples, Pati, Hitis, Jatras, Folk Dances) providing viewing tower at various locations at highest points to view the Kathmandu Valley.

Lubhu V.D.C is measured as an oldest industrial town and since past peoples were involved in cottage industries and even in 21st century they had not been changed the profession and the equipments. Hence the income generation remains constant and the situation of poverty upgraded as per the needs.

3.1.2 Roads/Drainages

The major access to Lubhu from Gwarko is blacked topped. Though the road serves the area, it is a bit narrow for two-way traffic. So it is essential to widen the road. The right of way of the existing road should be marked on the ground and if land is insufficient, then the land for road should be acquired with the assistance from DDC. This work should be done giving it the first priority.

The main road passes through the center of the town. The right of way is not distinctly marked hence the roadway width id different at different section. There is no provision of road marking and road signals in the main road. This road leads to Lamatar VDC. The existing traffic is heavy and the road is not sufficient to cater this traffic, especially within city.

Rajkulo, the main canal flows along the main road, which is used as drain when it flows along the town. The streets with in the town are brick paved with side drain (storm drainage). The street condition is very poor due to absence of maintenance and negligence of the use of drainage properly.

The main road from Sana Gaon – Bishundol – Sankhadevi is all weather gravel track. This road is mostly by the people from ward no.8 of Lubhu and Godamchaur VDC and Bishankhu area. Most of the roads in Lubhu VDC are not in good condition.

Lubhu City is also considered as a major part of the Satellite town. Though many narrow roads have been connecting to this city, but it is still inconvenient to reach Lubhu through these roads. Following are some of the routes that pass through Lubhu city.

- Accessed by one lane - 6 Km Metal road from the Guarko-Ring road and prolonged to Lamatar.
- Connected by 1.5 Km metal and 4.5 Km gravel road from the Kausaltar - Arniko Highway
- Connected by 6 Km gravel road from the Madhyapur Thimi via Balkot
- Connected by 5.4 Km gravel road from the Thimi bus stop - Arniko Highway

Present condition of roads

- The brick paved path of the core area is not maintained
- Access to villages/ward through the foot trails are also in appalling condition
- Most of the roads within the VDC are earthen
- There is lack of road side drains
- Bridge over Sisneri Khola to join the Bishundole is not in good condition
- There is lack culverts on Rajkulos at different points
- Right of way of all roads are not clearly maintained

3.1.3 Water supply

The main source of water supply of Lubhu Bazaar is Chapakharka and Dhobhan. The people are using Dobhan water for washing, bathing and cleaning utensils. For drinking purpose they use Chapakharka water. The Chapakharka w/s project was initiated during 1980. The source is about 15 Km from the Lubhu Bazar. There are 37 tap posts from Chapakharka source. The supply hour of Chapakhra water is two hours in the morning and two hours in the evening. There are 4 taps in Bishundole from Chapakharka source but the pressure is very low and water cannot reach even in the tap stand. The no of tap stands from Dobhan water source is twenty-nine. Most of the tap stands have no faucet. The people are breaking the line under the tap stand for water because most of the taps stand has no enough pressure for water.

3.1.4 Sanitation

Lubhu is one of the ancient settlements. In the past the major portion of waste generated in the city were utilized inside the core area and remaining was utilized in nearby agriculture field. In the past days the major portion of solid waste was kitchen waste which was collected in Sagas & used as compost fertilizer. Likewise, wastewater generated was directly used in near by

agricultural land. People used open land as toilet & feacal sludge was composted in the area & was used as fertilizer for agriculture. As a whole, system was balanced & a type of closed system was created. But with time, as urbanization begin to increase & modernization commenced, the system was no more capable of managing the waste. With modernization, new type of waste like plastic, textile begins to generate which blocked the path of drain & created nuisance in the city. With increase in population the volume of Kitchen wastage generate also increased which made Saga incapable of composting waste in short time & people began to dump it on open land and road side. Likewise, no more open land was vacant as previously thus making people compelled to construct personnel toilet. Still there was the problem of disposing the feacal sludge from the septic tank.

- In the past, waste generated was managed within the system.
- Kitchen wastes collected in sagas,
- Liquid wastes applied in agriculture.
- Nowadays, Waste generated about 1.5 kg per household per day.
- No solid waste management system in this area.
- Use of excessive volume of Plastics is clogging drains.
- Few years back, people of Lamatar used to collect wastes from every shop for composting.
- Likewise, they also had the program of collecting wastage and disposing it in Near by 6 Ropani land.
- But the system is no more functioning.
- People are disposing wastages in Sagas and Nani (Chowks).

Though people are using the technique of composting, but it's not hygienic.

Analysis of Physical Conditions

The degeneration and decay of Lubhu town is most visible in its existing physical conditions. The poor housing condition marred with substandard sanitation conditions and the lack of awareness among the inhabitants are enough to cause the decay catch its momentum.

Average Plinth area		380 Sq. Ft.
Average storey		3.13
Traditional building		82%
Modern Building		18%
Building Construction (Year in B.S.)	Before 1990	24%
	1991-2025	36%
	After 2026	40%
Building condition	Well maintained	19%
	Average maintained	45%
	Poor condition	35%

Source: Master Thesis, IOE

As for the sanitation condition, only 39% area is served by drainage network and is substandard in quality with perennial clogging problems. Open-air defecation is prevalent as only 60% households have access to private toilet. 37% households are still using their traditional system of solid waste disposal. They collect the wastage in a place called Saga, after decomposition of the wastage; they use it in agriculture field as manure. 34% households use street as a solid waste-dumping place.

Main source	Public pipe water tap	100%
Secondary Sources	Traditional Well	84%
	Traditional Hiti	13%
	River	3%

Source: Master Thesis, IOE

The analysis of physical condition indicates that there is dearth of good sanitation, public water supply and the average poor housing. The cultural and religious edifices are in dilapidated conditions mainly due to the lack of maintenance and repair works. The analysis has thus helped to realize the causes of degeneration which are summarized as pointed below:

Loss of Identity: Lubhu has lost its original role of textile producing town. As people have adopted the weaving profession as a subsidiary profession after agriculture. 31% houses have been found with unused looms.

Construction of Araniko Highway: After construction of Araniko highway, the shortest route considered to link Patan and Kabhre through Lubhu was not used for trading purposes. This route was also served as a trade route to Tibet. Service center role of town diminished: As other alternative roads were constructed, the surrounding settlements do not have to depend on this town for goods servicing center. Decline in economic base like agricultural and weaving: People are living in subsistence level (78% expenditure on food) and do not have surplus quantity of production to export. Higher percentage (77%) of population is in below saving level. The town does not have strong economic support base on which cultural prosperity flourishes. Inadequacy of traditional services and lack of modern infrastructures: Acute shortage of water supply (181 lpcd). 40% houses without having toilet and 34% of waste remaining on street. Thus, the situation of inner core seems to be in slum condition.

Low status of education qualification: Only 22% people have education qualification more than middle school level. Declining status of traditional private houses, patis, sattals, temples etc.: 18% new modern houses have already replaced the traditional sloped roof houses. Modern construction materials also renovate some sattals and patis.

3.2 Socio-cultural aspect

Cultural and Religious Aspects

Hinduism and Buddhism are prominent in this city. All national festivals observed by people besides their own local festivals. Bhagbati Lachhi is the central place and full of cultural elements and activities. Mahalaxmi temple is important for Cultural and Religious Aspects, and the other temples are: Bhagbati temple, Narayan temple etc. Other elements of this area are ponds, historical gates, hitis, patis etc.

The main cultural event is the Jatra of Mahalaxmi and Mahabhairav, celebrated in Bhaishak Cultural linkage with the famous Macchendra Nath Jatra of Patan. Similarly the other Jatras are Khadga, Mahadev, and Krishna Jatras. This type of activities is to provide equal religious access to all groups and helps in integration of the whole town. During the festival the people are contributing in the following way:

- 66% labor contribution,
- 14% in terms of material
- 20% in terms of cash.

3.2.1 Population

Table 3.1: Household Numbers and Population in Ward wise

Ward Number	Household Number	Male	Female	Total
1	76	219	219	438
2	122	308	310	618
3	76	192	181	373
4	302	787	783	1570
5	90	265	281	546
6	64	167	157	324
7	149	440	409	849
8	467	1172	1209	2381
9	93	260	251	511
Total	1439	3810	3800	7610

Population by 5 Years of Age Group and Sex

Age Group	Male	Female	Both sexes
0-4 Yrs	264	255	519
5-9 Yrs	362	343	705
10-14 Yrs	404	398	802
15-19 Yrs	447	449	896
20-24 Yrs	452	454	906
25-29 Yrs	331	359	690
30-34 Yrs	309	310	619
35-39 Yrs	272	243	515
40-44 Yrs	219	237	456
45-49 Yrs	184	163	347
50-54 Yrs	164	126	290
55-59 Yrs	99	121	220
60-64 Yrs	89	114	203
65-69 Yrs	88	101	189
70-74 Yrs	56	60	116
75 & Over	70	67	137
Total	3810	3800	7610

Source: CBS Data of Lubhu V.D.C, 2001

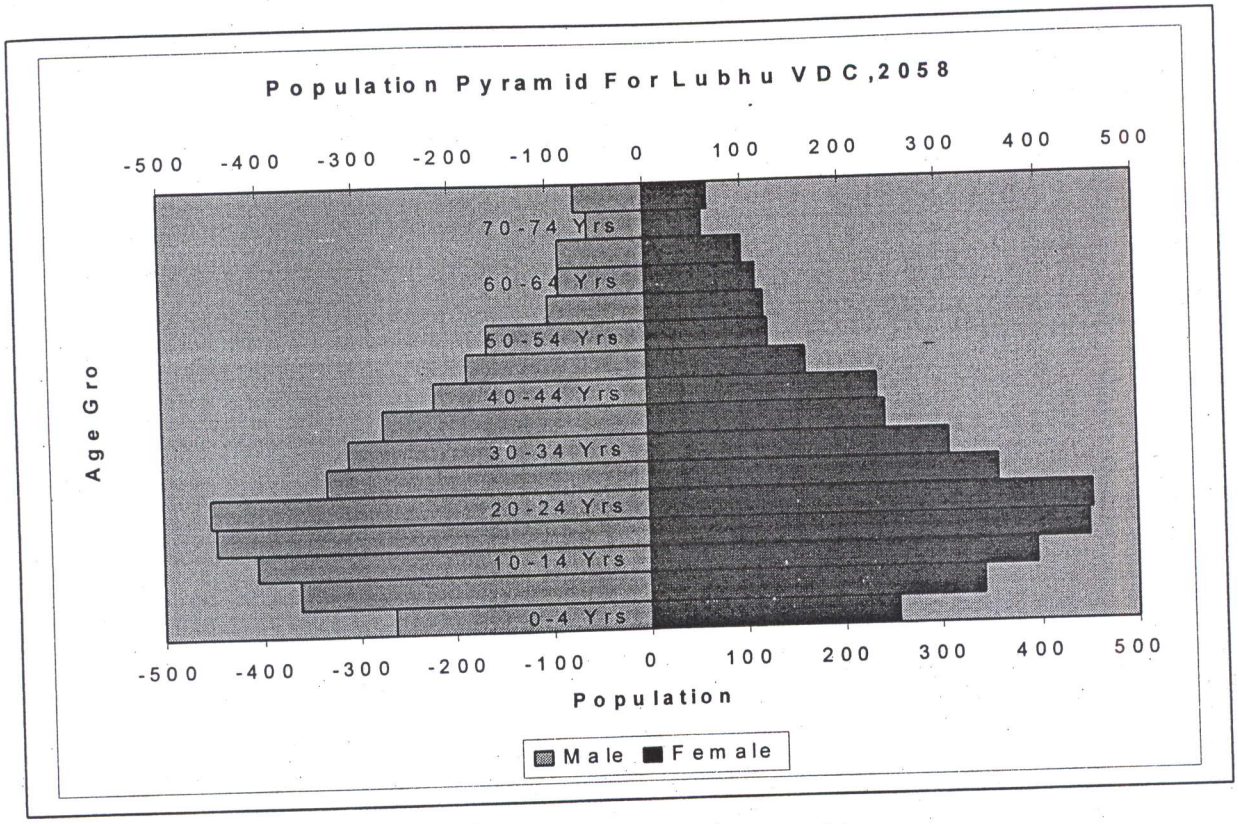

Fig 3.3: Population Pyramid

3.2.2 Caste:

Lubhu today looks to be the remains of its glorious past. The core area has 50% of the total population 8344 (050/051 BS) of Lubhu VDC1. It has dense population distribution (307person/hectare). The settlement still has retained its population by not loosing them in terms of migration. The core town is inhibited by Newar caste only. The following table shows. From the data it is understood that higher caste Shrestha has dominated the cast system in Lubhu.

Table 3.2: Caste Distribution

S. N.	Caste	%	S.N.	Caste	%
1	Shrestha	59%	4	Napit	3%
2	Maharjan	21%	5	Kasai	3%
3	Rajthala	6%	6	Others	8%

Source: Masters Thesis, IOE

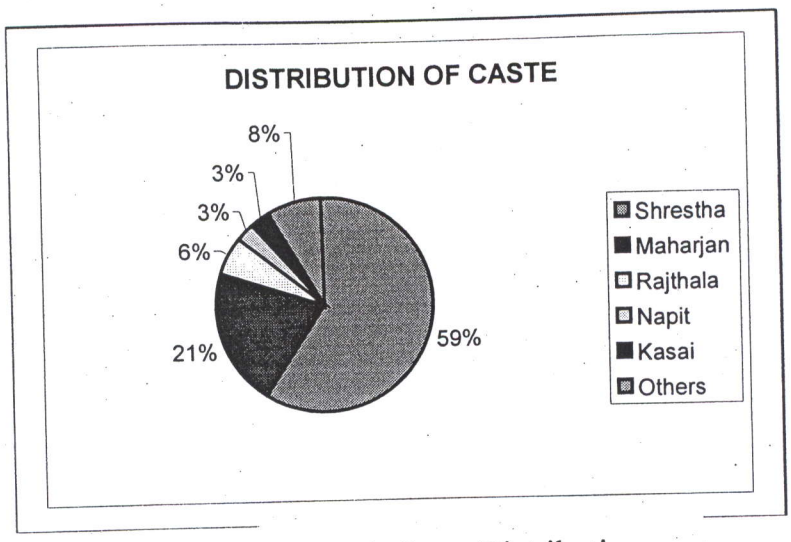

Fig 3.4: Caste Distribution

3.2.3 Shrines/Temples:

S. No.	Description	Location	S. No	Desription	Location
1	Mahalaxmi Maha Bhairav	Devisthan Chaur	2	Chundevi Temple	
3	Narayan Temple	Ghapal	4	Gorakhnath Temple	Ghaphal
5	Akash Bhairav		6	Ganesh temple	
7	Govratesjwor	Wd. No.2	8	Saraswati Temple	
9	Narayan Temple (2046)		10	Phan ThiguGanedyo	
11	Pin gah dyo	Wd. No.4, Piga tarwa	12	Chi Bha Dyo	Wd. No.5, wakunani
13	Nasa Dyo	Wd. No.6, Nasal	14	Chi Bha Dyo	Wd. No.5, Nasal
15	Pin gah dyo	Wd. No.6, Nasal	16	luku Maha Dyo	Wd. No.1, TU jhaun
17	Chhatrapal Bhel Dyo	Wd. No.1, Daiva nani	18	Hamo Chhava Dyo	Wd. No..6

19	Chi Bha Dyo	Wd. No.8, Chi Bha Tawa	20	Gane Dyo	Dabu Chhen
21	Loka Maha Dyo	Wd. No.7, Kwe Lachhi	22	Naran Dyo	Wd. No.7, Kwe Lachhi
23	Nasa Dyo	Wd. No.7, Kwe Lachhi	24	Gane Dyo	Wd. No.7, Kwe Lachhi
25	Chiva Dyo	Wd. No.7, Kwe Lachhi	26	Surya Vinayak	Wd. No.7, Kwe Lachhi
27	Naran Dyo	Wd. No.7, Kwe Lachhi	28	Saraswati Degh	East of amrit dhara.
29	Chhatrapal Bhairab	Wd. No.9, kayo gah chhen	30	Mahalaxmi Maha Bhairav	Lachhi
31	Gane Dyo	In front of Mahalaxmi temple	32	Bhidyo	Bhagvati Lachhi
33	Bhagbati Dyo	Bhagvati Lachhi	34	Chiva Dyo	Bhagvati Lachhi
35	Mahadyo	Bhagvati Lachhi	36	Naran Dyo	Bhagvati Lachhi
37	Chiva Dyo	Wd.No.4, Chwerga chhen	38	Wah Taleju Temple	Ita Jhau

Hiti /Ponds/Well/Kulos:

Traditional Spouts (Hiti)	**Traditional Wells**
1. Chway Hiti 2. Lachhi Hiti 3. Kwane Hiti (Amrit Dhara) 4. Ja Ru Hiti (Nyatha) **Ponds (Pukhus)** ▪ 3 Pukhus (Khasi, Nyadha, Devisthan chaur) completely filled up ▪ Other Pukhus in existence are Dapha, Bagaincha, Naya, Silegu, Dhaiwa and Pillan Khyo	1. Lachhi Tun 2. Kwane Tun (Kwane Tole) 3. Chibha Tun (Chiva Nani) 4. Ta Kha Chhen Tun (Takha Tole) 5. Ta Ga Tun (Taga tun) 6. About 25 wells are in use within the town. **Kulos** De Dha (Raj Kulo)/ Jha Dha/ Chhyon Madu Dha/ Sera Dha/ Mulpani Kulo/ Gasi Dha/ Tho Gasi Dha/ Tho Dha (sitikhadol Kulo)

Sattal / Patis:

S. No.	Sattals (Phalacha)	Location	S. No.	Sattals (Phalacha)	Location
1	Basyu Guthi	Devisthan Chaur	11	Nyatha	W.n.7, Nyatha
2	Dyo Khyo	Built by Budhdhilal	12	Kwane	East of Amrit Dhara
3	Dyo Khyo	Built by Mahila Jyapu	13	Kwaya lachhi	Kwaya Lachhi
4	Gha Pha	Ghaphal (Narayan Temple)	14	Keaga Gha	Kwaya Gah
5	Yanha Punhi	Ghaphal Hiti	15	Machagu	Machah

	Guthi			Dhokha	Dhokha
6	Narayan Satsangh	Built by Narayannanda	16	Chwaga	Built by Ratnalal
7	Satal Ch hen	Built by Subedar Bahun	17	Bhagvati lachhi	Bhagvati Lachhi
8	Sattal	Mahadev Mandir			
9	Pahul	Built by Ram Rajthala			
10	Nasah	Wd. No.7, Nasal Twa			

Historical Gates (Dhoka):

S. No.	Dhokas	Location
1	Chwaya Dhoka	Existing Bus Park (East)
2	Kwane Dhoka	Chautara, West
3	Nyath Dhikha	South
4	Machagu	In between Chwayga and Chwayaga, North

3.2.4 Education

Though history of education in Lubhu started, as early as in 1958 BS but school education status of people of Lubhu is not satisfactory. Even being a hinterland of Katmandu and Lalitpur cities, only 24.6% people have above middle class qualification. Though, there are about 15 schools operating under government and private ownership, but low productivity may be due to the high dropout rate of school going children, because as the town is predominant of manual workmanship. The names of schools and college in this VDC are listed as follows;

Table 3.3: Education pattern

Education Attainment:	Sex of Respondent:	
	Male	Female
Illiterate	20.60 %	37.3 %
literate including Primary	20.60 %	21.40 %
Lower Secondary	11.60 %	10.00 %
some Secondary	22.70 %	15.60 %
SLC	9.20 %	6.40 %
Intermediate and Above	15.30 %	9.30 %
Total	100.00%	100.00%
Total Number of survey	490	518

Source: M.Sc. Urban Planning - Local Area Plan

Government Schools

S.No.	Name of schools	Location	Established on (B.S)
1	Lubhu Ma. Vidyalaya	Wd.n.6, Nasal	1958
2	Mahalaxmi Ma. Vidyalaya	Wd.n.2, Govrateshwar	2004
3	Mahendragram low.Sec.School	Wd.n.8, Sankhadevi	2037
4	Bisandol P. School	Wd. No.8, Bisandol	2038
5	Viswamitra Ganesh P. School	Wd. No.4, Chasidol	2044
6	Gyanjoti P. Vidyalaya	Wd.No.9, Bhagavatilahi	2045
7	Srvarna Chhatrapur P. Vidyalaya		

Private Schools

S. No.	**Name of Schools**	**Location**	**Established on (B.S)**
1	Balkunja Boarding School (secondary)	Wd.No.4	2041
2	Lighthouse International Boarding School (low. Sec. School)	Wd.No.5	2053
3	Namuna English B. School (Primary)	w.n.2	2038
4	Lighthouse B. School (Primary)	Wd.No.4	2052

5	Shandhadevi E. School (Primary)	Wd.No.8	2052
6	Tarapunja E. School (Primary)	Wd.No.8	2054
7	Mery ward School (Primary)	Wd.No.3	2053

Campus

1.	Mahalaxmi Campus

Table 3.4: Overall Education Pattern

Education Status			
Child	7%	Class VI-X	22%
Illiterate	29%	SLC	6%
Literate	17%	Certificate	7%
Up to Class V	10%	Bachelors	2%

3.2.5 Household Composition

The information on household composition is useful for several reasons. Female-headed households are often found to be poorer than male-headed households. Males predominantly head households in Lubhu VDC and only one fourth of the households are found to be headed by female.

Table 3.5: Distribution of Households according to Gender (No. of survey 200)

Sex of the Household Head	**Percent**
Male	84.00
Female	16.00
Total	100.00

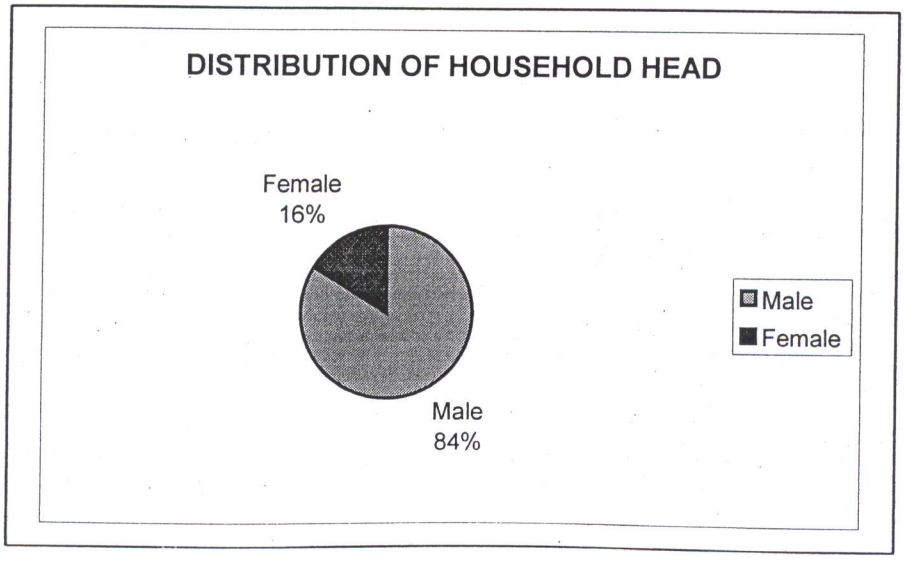

Fig 3.5. Distribution of HH Head

3.2.5 Jatras / Festivals / Rituals

Jatras			Festivals		
S.No	Jatras	Day	S.No	Jatras	Day
1	Shree mahalaxmi Mahabhairab jatra	Baishakha, Akssaya Tritiya, 8 days(April/may)	1 -	Teej Parwa	August/Sept
2	Budhdha jatra	Baishakha Purnima(Apr/May)	2	Tihar	October
3	Gai Jatra (Gunhu Punhi)	Next day of janai Purnima (July/Aug)	3	Sithi Nakha	July/August
4	Krishna jatra	Krishnasthami (July/August)	4	Maghe Sankranti (Ghya Chaku Sanlu)	1st Magh (mid jan)
5	Khadga jatra	Bada Dashain (Sept/Oct)	5	Shiva Ratri	Feb/march
6	Govrateshwor Mahadev jatra	Yomari Punhi			

Rituals			
1	E (Bel Biwah)	4	Kyatapuja (Bratabandha)
2	Barha Tayagu (Gufa for girls)	5	Janku (Bhimaratharohan) At the age of 77 Yrs 7 months 7 hours and seven palas
3	Bunsa Khayagu		

3.2.7 Guthis - Operating Festivals

S. No.	Guthis	S. No.	Guthis
1	Shree Mahalazmi Guthi (Depuja Guthi)	2	Mahadev Guthi
3	Basewa Guthi	4	Dapa Guthi
5	Jugi Chuka Bigu	6	Swan Khundyo Guthi
7	Dyolas Guthi	8	Salhu (sankranti Guthi)
9	Changu Narayan Guthi	10	Krishnasthami Guthi
11	Suryavinayak Guthi	12	Ganesh Guthi
13	Narayan Guthi	14	Shorhashraddha Guthi
15	Ramnavami Guthi	16	Shree panchami Guthi
17	Dhime Guthi	18	Pukhu Guthi
19	Chaudha Bhajan Guthi	20	Chibaha Guthi

Details of Major Guthis

S. No.	Name of Guthi	Related caste	Tole	No. of Guthi participants (HH)		Remarks
				Present	Before	
1	Deupuja Guthi	Shrestha		50	+100	
2	Mahadev Guthi	Shrestha		14	14	
3	Wa Sews Guthi	Shrestha		8	8	
4	Sna Guthi	Shrestha		53	+100	Estd. 2014
5	Mrityu Sanskar Guthi	Shrestha		44	-	
6	Sna Guthi	Maharjan	Nasal	69	-	
7	Sna Guthi	Maharjan	Dhokasi	35	-	
8	Shree Panchami Guthi	Shrestha	Devnani	17	-	
9	Taleju Guthi	Rajthala	Gachhen	17	21	
10	Marpa Guthi	Rajthala	Gachhen	28	-	
11	Murda Guthi	Shahi	Naya Ga	30	-	
12	Murda Guthi	Kusale	Ghaphal	12	-	
13	Murda Guthi	Napit				
14	Murda Guthi	Putwar				
15	Murda Guthi	Guruju				Guthi for each caste
16	Salhu Guthi (Sankranti)					

3.3 Economic Activities

3.3.1 Agriculture

Lubhu, at present, has lost its role as service center to its surrounding districts. The construction of Araniko Highway has profoundly affected to its economic growth. The town today is on the verge of dereliction in terms of social cultural living and economic activities. An analysis of occupation pattern indicates that there has been significant decrease in weaving industry for which once the town was famous for. Regarding tourism activities is concerned; we can see there are no any progressive steps regarding tourism promotion. However as per past Lubhu is the oldest industrial town and also the trade route of Tibet and India so the touristy approach had been already formulated since past.

As tourism is the main source of income we must systematize the available land uses and to give the proper access to the town with full flage developed infrastructures.

Table 3.6: Occupation Distribution

Primary Occupation		**Secondary Occupation**	
Agriculture	33%	Agriculture	45%
Business	9%	Business	17%
Service Holder	6%	Weaving	23%
Weaving (Textile)	3%	Industry	1%
Housewife	9%	Others	14%
Skilled worker	1%		
Industry	1%		
Students	30%		
Child	7%		

Source: Master Thesis, IOE

The income and expenditure pattern has been dictated by occupation distribution pattern, agriculture being the major source of income averaging about (53% of total) followed by business (17%), service (11%), weaving (11%), skilled worker (5%) and others (3%). Similarly, the expense on food is the main expenditure (78%) followed by clothing (5%) education (5%), health care (4%) and socio-culture events (8%).

This income expenditure pattern indicates that there is dearth of social development, income from secondary and tertiary economic activities and very little share of expense going to education, health that is significant indicators of overall human development.

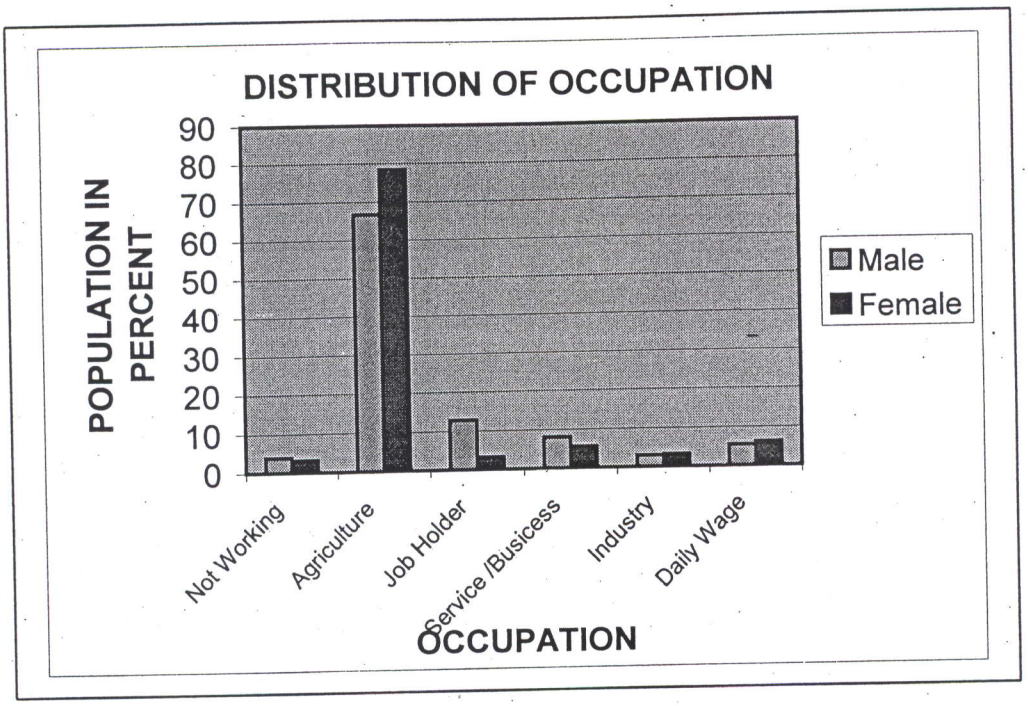

Fig 3.6: Bar Chart

3.3.2 Textiles

People of Lubhu are not only depending on the agriculture but they are also having small, medium and large textile industries. The main regular income generating source here we find is textile. As per the information gathered by Chairman of Textile Industry in Lubhu, Mr. Purna Narayan Shrestha, some 300 people are depending on textile part. There are almost 840 no. of looms. One person is required for the operation of 4 no. of looms.

3.3.3 General

In general economic activities people are depending on various professions like shops, carpentry, education, art/painting, construction works, service sector etc. The general economic activities play the most important role in which most of the people are depending on. There we can observe very nominal no. of tourists visiting. But if the monument/shrines/temples are preserved well then we can expect more number of visitors from outside which will one and the important economic activities.

Chapter IV: Outer Ring Road - Introduction

4.1 Outer Ring Road - Need of ORR in Kathmandu Valley

The eager & curiosity of the people of Kathmandu Valley was raised when there was the contract between Nepal and neighboring country to construct the ORR.

What will be the alignment of the ORR?

Where and by which procedure it will be constructed?

Will the landowner eliminated?

Will that ring road be helpful in well-planned urbanization or additional environment destructive?

Although Kathmandu valley is a single unit naturally, it is divided into 12 constituency, 3 administrative districts, 95 village development committees and 5 municipalities. 85% land of both Bhaktapur & Kathmandu and 50% land of Lalitpur belongs to valley. Natural resources are common property of valley people. Out flowing of the water of 665 sq. km area takes through Katuwal pond. If the narrow strip (Galchhi) of Chobhar will be blocked then all the land part of 3 districts will be dipped under water.

The utility condition of the land of the valley is also interesting. 32% of forest area, 40$ is agriculture and 28% is residential area. The rate of population increase of valley is 5% or double of national increase rate. Population is estimated to be 25 Lakhs after 16 years. One third of the increasing population will be settled inside the present ring road and rest 7 lakhs is to settle using agriculture land.[9]

Issues related to Urbanization:

5% urbanization each year is due to internal population increase and population transfer. The increase of thin residential area and mismanaged and uncontrolled construction of houses in village area are the challenges of urban development here. If there are low populated areas in municipality the frongjump spreading of residential areas cannot be accepted technically & economically. The developed land is not satisfactorily utilized due to unavailability of sufficient land inside the present ring road. The management of town prerequisites is expensive. It causes negative effect in sensitive agriculture areas in terms of environment. The challenge to save agriculture areas from uncontrolled urbanization is also present there.

There are some positive aspects of valley urbanization. About 5000 families are added each year due to the increase of economic opportunities. Economic activities and living standard have been increased. Even it is able to live environmentally. Cities are lively due to compound utility of the

land. Different groups of people have lived their life according to their own standard. A greater change is brought in agriculture and farmers are attracted to food grains, cash crops and nursery. The living standard of the village people have improved together with urbanization as an indicator of development. The government has accepted the long-term development concept after broad interaction with the town planners, geologists, politicians and other specialists.

4.2 Proposed alignment details

Based on social service criterion and the study of existing road and trial network and traffic flow, following village development committees of Kathmandu, Lalitpur, Bhaktapur districts are considered to be within the influence area of the proposed road.

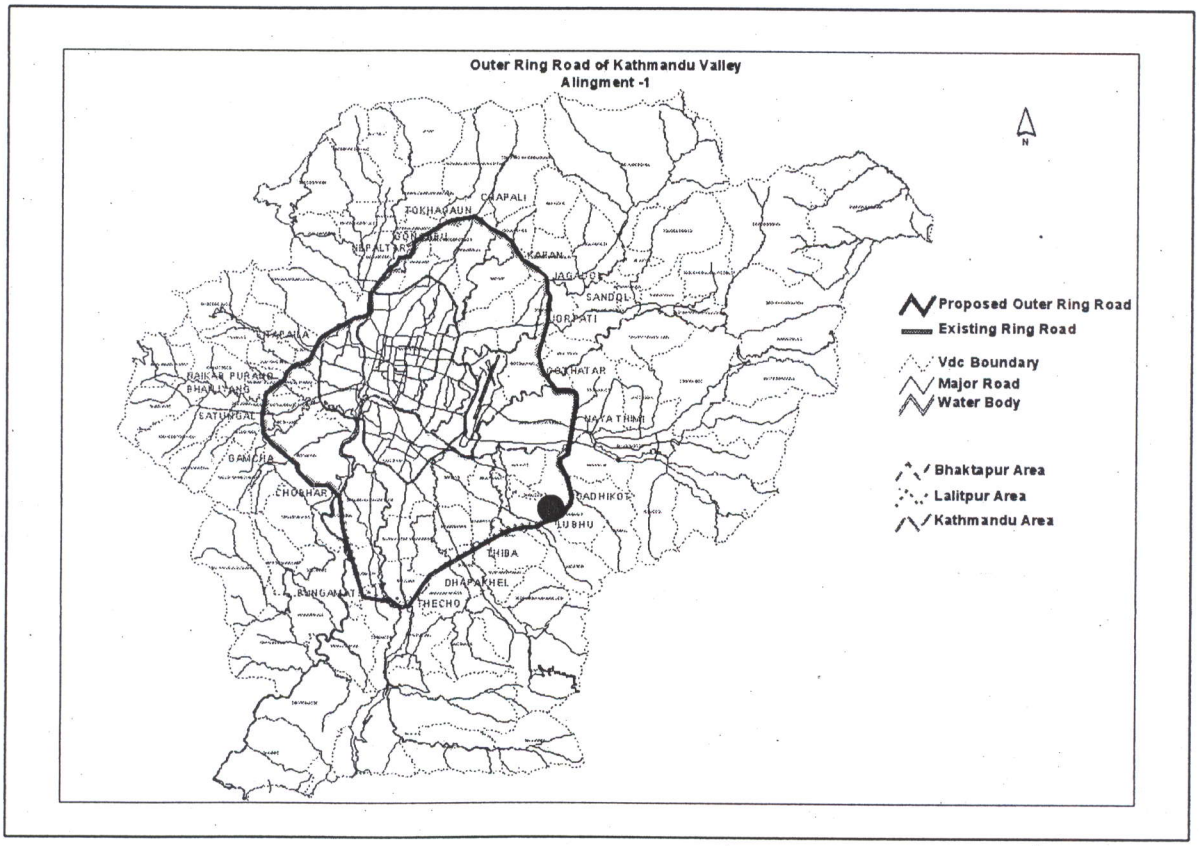

Fig. 4.1: Outer Ring Road Of Kathmandu Valley – Alignment 1

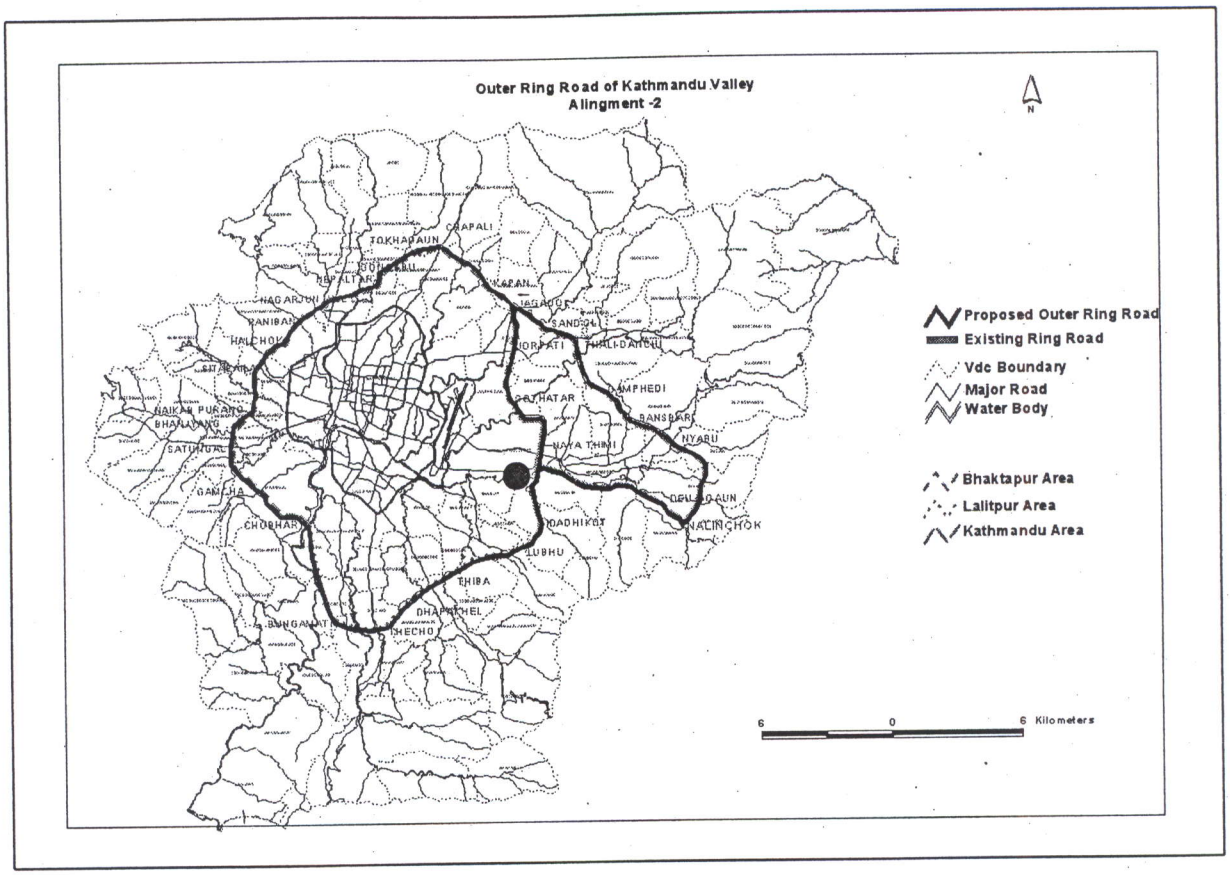

Fig.4.2: Outer Ring Road Of Kathmandu Valley – Alignment 2

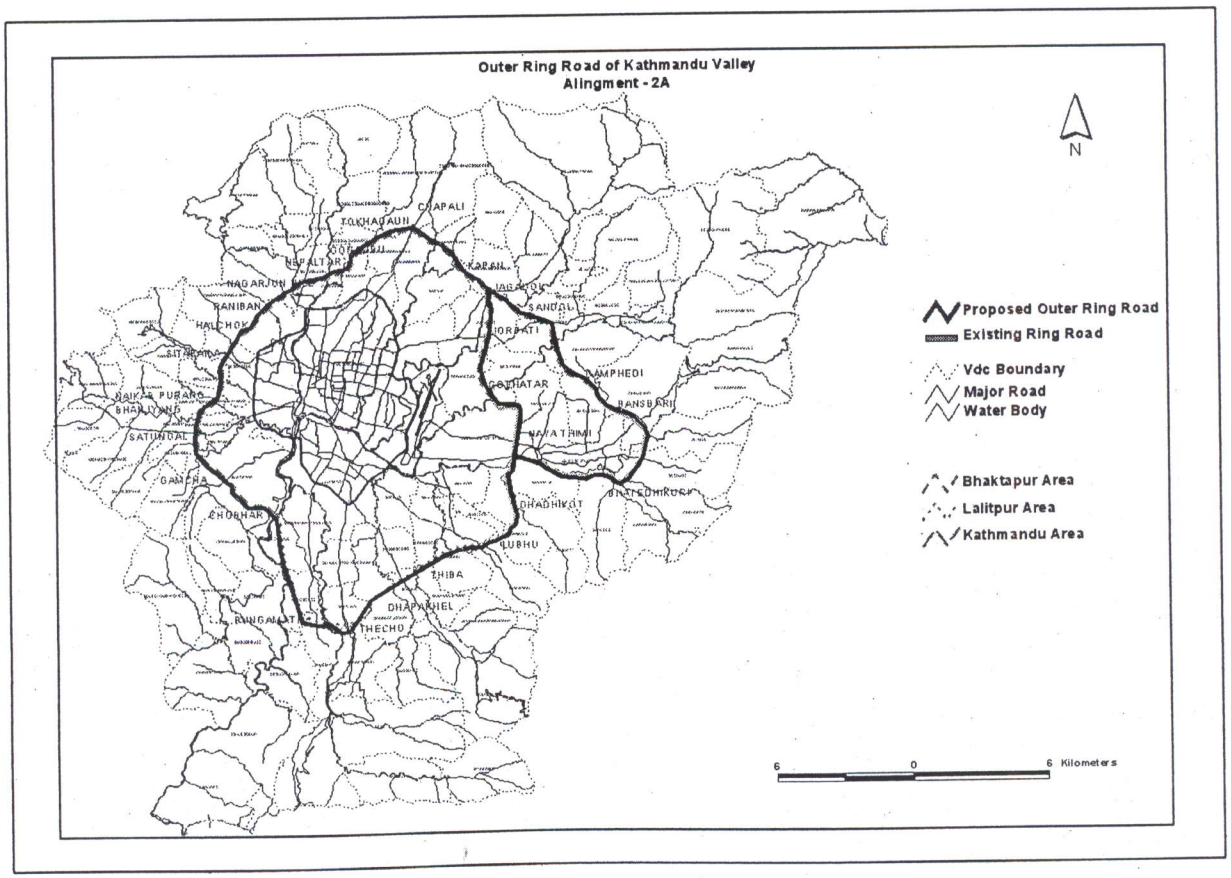

Fig.4.3: Outer Ring Road of Kathmandu Valley – Alignment 2A

Fig.4.4: OUTER RING ROAD

Kathmandu District

Alapot	Ichangu	Chalnakhel	Kapan	Baluwa	Sitapaila
Chobhar	Balambu	Sankhuwa Suntol		Ramkot	Budhanilkantha
Thankot	Sundarijal	Syuchatar		Kaurasthali	Tokha
					Chandeshwor
Indrayani	Naikap	Dharmasthali		Tokha Sarashwoti	Gokarna
Chapali	Satungal	Jhor Mahabal		Panga Bishnudevi	
Gopalphedi	Champadevi	Sangla		Pukhulachi	
Machhegaun	Mulpani	Nayapati		Panga Balkumari	

Bhaktapur District

Katunje	Chaling	Bageshwori	Nuwakot
Dadhikot	Chitpol	Tathali	Bode
Sirutar	Sudal	Nagarkot	Changu

Lalitpur District

Lubhu	Thaiba	Jhaleshwori	Champi
Lamatar	Chapagaun	Bungmati	

Source: NEPECON Report

Economically Active Population

There are 103080 economically active people in the influence area (16 years of age and above). These people are engaged in different professions. Following Table shows the composition of economically active people in the area.

Profession	% of Population
Agriculture	63.00
Business	2.00
Service	10.00
Labor	25.00
Total	100.00

Source: Field Survey, January 1997

Economic Activities and Employment

The involvement of majority of people (63%) in agriculture indicates that agriculture is the major economic activity in the influence area. About 10% of population is engaged in service while about 2% of population is engaged in trade and commerce. Similarly 25% of population is laborers seeing job outside the area. Out of Total population of valley towns, 43.1% population is economically active. Out of the population of 10 years and above, 57.37% population is economically active.[10]

Education

It is estimated that of the total population of 6 years of age and above about 60% are literate (i.e. can read and write). The share of women literate population is only about 30%. The number of schools in the influence area is very high in comparison to other parts of the country. One to two High School are found in every village development committee and one primary school between two wards. There are 95 secondary schools and 175 primary schools in the area. The student enrollment per school are 75 students in secondary, schools and 35 students in primary schools. About 1800 teachers are engaged in the school.

Land Use Pattern

The total area of the influence area is estimated at 40000 hectares. The land use pattern of the area is as shown in table below. The table shows about 51.95% of total land area of the influence area is occupied by agricultural land, followed by forest land 29.62%, pasture and grassland (5.65%), others (11.03%) and settlements (1.75%) respectively.

Land use of the Area

Land use	% of total area
Agriculture	41.95
Forest	29.62
Pasture/Grass land	5.65
Others (road, stream, river, rocks etc.)	21.03
Settlements	1.75
Total	100.00

Source: Field survey, January 1997

Irrigation Services

The influence area enjoys both seasonal and regular irrigation facility. The area under regular irrigation facility is estimated at 15000 hectare, which is about 58% of the total cultivated land. About 5000 hectare of cultivated land is served by seasonal irrigation facility other remainder land are rain fed.

Electricity

The influence area of the road is well served by electricity. About 98% of total households of the area are connected with electricity supply. 95% of total population of the influence area are served by piped drinking water. The remaining people depend on well, spring etc. for water supply.

Transportation and Communication

The area is well served by Highways and arterial roads. Following roads connect the area with the main city of Kathmandu, Lalitpur and Bhaktapur.

Name of Roads

1. Tribhuvan Highway
2. Ishwari Highway

3. Chakrapath – Tikabhairab road
4. Satdobatto-Godawari
5. Chakrapath-Lubhu
6. Arniko Highway
7. Kausaltar – Dadhikot – Lubhu
8. Arniko Highway – Suryabinayak – Lubhu
9. Bhaktapur – Nala
10. Bhaktapur – Nagarkot
11. Bhaktapur – Changu Narayan
12. Jorpati – Sankhu
13. Baudha – Sundarijal

Post offices and telephone lines provide the communication services in the area. There is one additional post office in every village development committee of the area. There are 12 VHF telephone lines and 1 PCO line in 12 village development committee offices. In the area about 4000 households are getting telephone facility.

Administrative Facilities

There are several national and district level offices of governmental and non-governmental organizations. There are 12 branches of Commercial Banks in the area. Similarly, there are three Army Barracks in the influence area.

4.3 Construction Methodology

Model Land Readjustment Plan for Outer Ring Road (ORR)

Kathmandu, being capital of Nepal, attracts people from different part of the country in search of various opportunities. If the current rate of population in the valley continues unabated, the total population will double in less than 19 years. This implies the demand of developed land for town expansion in the near future. Regardless of the various planning efforts initiated by different governmental or non-governmental agencies, the urban development activity could not be achieved in desired scale. Due to various reasons, the urban expansion has been creating urban sprawl in unplanned and haphazard fashion, thereby making difficulties in urban service provision. Unplanned and haphazard fashion, thereby making difficulties in urban service provision. Unplanned growth of urban settlement is one of the major problems foreseen in Kathmandu valley and scenario in the past development in Kathmandu valley has created so many problems in daily needs of people living in the unplanned areas it has been strongly recommended to have a well-planned settlement in the periphery of the Kathmandu Valley.

Similarly, unplanned settlements and density of vehicles and pedestrians are increasing enormously at the periphery of existing ring road, which was constructed in the early seventies by the technical and financial assistance from China. Intersections of radial roads originating from Kathmandu City and the existing ring road are becoming more unsafe to the pedestrians and inconvenient to the vehicles. In the context of increase in population in the old and new settlements outside the existing ring road, the necessity of alternative roads to join these settlements has been felt since last one decade. With the initiative of Department of Roads, Nepal Engineering Consultancy Services (NEPECON) carried out a feasibility study of the outer ring road in the year 2000 and proposed a road alignment of 66.1 km, including a loop encompassing Bhaktapur. It was known that the Chinese government has shown interest to provide technical and financial assistance to construct the Outer Ring Road (ORR), as proposed by the NEPECON, subject to the availability of land. The land of about 6500 ropanies would be required for the road having the right of way of 50 mts, which would cost more than Rs. 3.0 billion at current market price. The HMG/N therefore may not be able to invest so much of money on the acquisition of land. The land acquisition is not only costly and time consuming but is also not quite often supported by the people due to the displacement of landowners and tenants.

The ORR is therefore proposed for two components:

a) Construction of road having 50 mts right of way

b) Development of 250m land on either side of the road through the concept of Land pooling.

The total width in consideration would therefore be 550mts. HMG/N has recently established outer ring road land development project (ORRLDP) to undertake the construction of road and land development, under Department of Urban Development and Building Construction (DUDBC). The detailed engineering survey and the design works is planned to be initiated within few months. In its first phase, the ORRLDP intends to build road connecting Harisiddhi, Thimi, Bode, Gokarna, Sundarijal, Budhanilakantha, Balaju, Sitapaila, Dhapakhel, Thaiba area of Kathmandu Valley, which will have the length of 48 km. These areas are situated in Kathmandu, Lalitpur and Bhaktapur Districts. The total influence area encompasses 51 VDCs and 5 municipalities. As the project covers the wide influence area and has the long-term impact on the urban development of the valley, it is obvious that large segment of the population will have direct or indirect impact from the project. In recent days, the project has attracted enormous responses from various organizations, experts, intellectuals, landowners, local politicians, media people and other stakeholders. A wide debate on various issues of the project is still going on.[11]

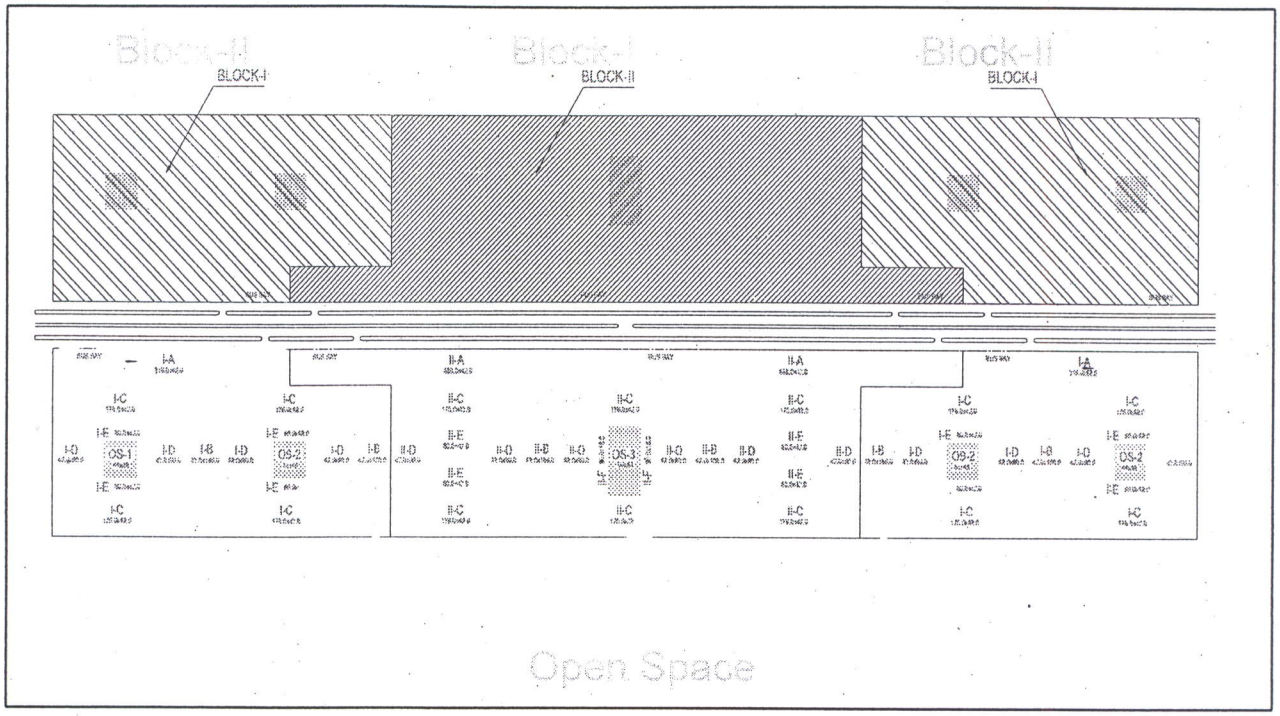

Fig. 4.5: Land Readjustment Plan

Through the concept of land pooling there is plan for land readjustment and hence the land development so that increasing the price of land on either side also can minimize the cost of the project.

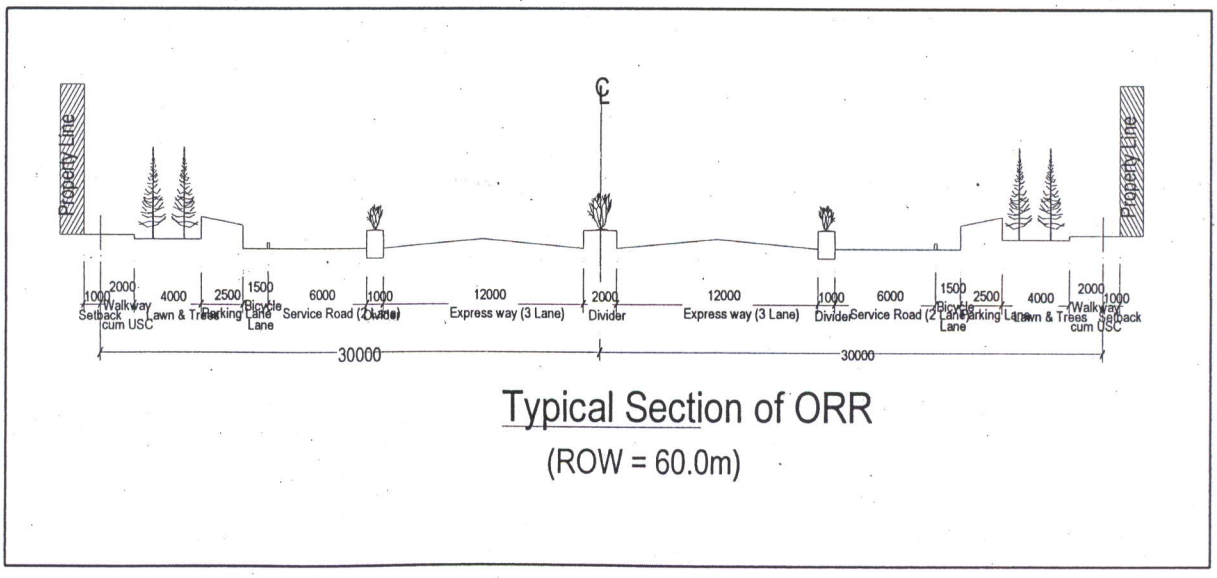

Fig. 4.6: Typical Section of ORR

In the Fig. 4.6, the typical section of the proposed outer ring road has shown. Here the right of way is 60 mts. that is 30 mts. from center.

Chapter V: Impact Assessment - Case Study and Analysis

5.1 Impact of Highway on the Traditional City: A Case of Banepa

Township development of Banepa started over a long period whereas official establishment of municipality was in 1981. After the establishment of Araniko Highway in 2024 B.S., Banepa became the first town to join Tibet directly. Banepa Municipality was formed on 1981 A.D. by the combination of Chandeswori Village Panchayat, Banepa Village Panchayat, Dachchhutol Village Panchayat, ward no. - 5 and Budol of Shrikhandapur Village Panchayat of the time (Development Profile of Banepa, 1993). Because of the good geographical location, favorable climatic condition, infrastructure facilities, migration from various places to the town is continuing. The total population of the municipality in 1991 was 12,622. The population in 2001 was 16,934 out of which 50.26% were made. The projected population for 2011, 2021 and 2031 are 22, 719, 30, 480 respectively at the present growth rate of 2.98% in the Banepa Municipality. The traditional Banepa settlement is given in the figure below:

Plate 5.1: Traditional Compact Settlement of Banepa

In the past, Banepa was the trade center for the people of Kavre, Ramechhap, Sindhuli, Sindhupalchowk etc. People used to come by walk for purchasing and selling of goods for their daily needs. Buspark was also located at Pul Bazar previously before the construction of Araniko Highway and when there was construction of Highway there was drastic change in activities as

well as in land use and the bus park also shifted in the existing area. If we look into the caste distribution in Banepa we find Pradhan, Bade, Pote, Ranjit Kayastha, Vaidya, Musyaju, Shrestha, Manandhar etc. As in the case of Kathmandu valley it is believed that Maharjans are the typically farmer the in traditional period but here in Banepa we can't find those of Maharjans and Suwal. Tribhuvan's statue has been erected in the Chaubato on the highway after the construction of highway only. It is believed that the traditional settlement was located on the way to Nala, which is 2 kms from present highway core area, and later this shifted to the Sumankal where there are mainly three toles, which are Tindhara, Okutole, and Dachhutole. Nowadays Sumankal is considered as dense populated urban area in Banepa. The ADB has started the urban environment improvement project in Banepa alongwith the other satellite towns like Bharatpur, Ratnanagar, Hetauda, Dhulikhel, Panauti, Dhading Besi, Bidur Municipality.

Table 5.1: Banepa Municipality: Area, existing population and projected population

Ward No.	Area in Sq. Km	Area in ha	Population 2001			Projected population		
			Male	Female	Total	2011	2021	2031
1	0.55	55.00	800	780	1580	2120	2844	3815
2	0.36	36.00	417	426	843	1131	1517	2036
3	0.42	42.00	753	812	1565	2100	2817	3779
4	0.89	89.00	859	877	1736	2329	3125	4192
5	0.46	46.00	947	841	1788	2399	3218	4318
6	0.25	25.00	1257	1180	2437	3270	4386	5885
7	0.01	1.00	445	452	897	1203	1615	2166
8	0.02	2.00	434	459	893	1198	1607	2156
9	0.01	1.00	294	279	573	769	1031	1384
10	1.00	100.00	1124	1162	2286	3067	4115	5520
11	2.64	264.00	1181	1155	2336	3134	4205	5641
Total	6.61	661.00	8511	8423	16934	22719	30480	40893

Sources: Toposheet, Aerial Photographs and CBS 2001

5.1.1 Occupation Structure

Though agriculture is the major occupation of the Municipality, most of the people are employed in business and services.

Table 5.2: Occupation Structure

	Ward No.	1	2	3	4	5	6	7	8	9	10	11
Occupation	Agriculture	57.4	44.1	49.3	60.0	56.0	65.9	55.9	47.4	54.3	15.5	72.1
	Business	23.9	28.7	17.3	12.6	16.0	22.9	23.1	30.5	35.9	69.0	5.0
	Service	13.9	11.2	9.8	13.0	16.0	3.9	2.8	7.8	8.7	8.2	11.2
	Cottage Industries	0.4	0.0	0.4	2.6	0.8	1.8	2.1	1.9	0.0	0.4	0.3
	Consultancy	0.0	0.0	0.0	0.4	0.0	0.0	0.0	0.0	0.0	0.4	0.3
	Transport	0.4	2.1	4.4	2.6	0.8	0.0	3.5	1.3	0.0	4.5	0.9
	Labors	2.56	7.0	6.7	0.4	2.4	1.8	3.5	4.5	0.0	1.6	5.0
	Others	1.3	7.0	6.7	0.4	2.4	1.8	3.5	4.5	0.0	1.6	5.0
	Total	100	100	100	100	100	100	100	100	100	100	100

Source: Development Profile of Banepa Municipality, 1993

5.1.2 Transformation of Banepa after the construction of Araniko Highway

Banepa was the major market centre for the eastern part of Bagmati Zone as well as for some district of Janakpur and Sagarmatha Zone. Especially it was the market centre for Kabhre district itself, Sindhupalchowk, Ramechhap, Dolakha, Sindhuli and for Okhaldhunga also. It used to serve the people as the mid commercial centre to the capital city, Kathmandu. It means it was the gateway for the people for the eastern and mid eastern part of the country.

According to the filed study it is found that it is the ancient newari compact settlement. The settlement was famous for different commercial activities and it was taken as the local market centre also. After the construction of HW, many institutions like Banepa Polytechnic School (Chinese Aid), I.T. Park, the Municipality Building etc have been constructed.

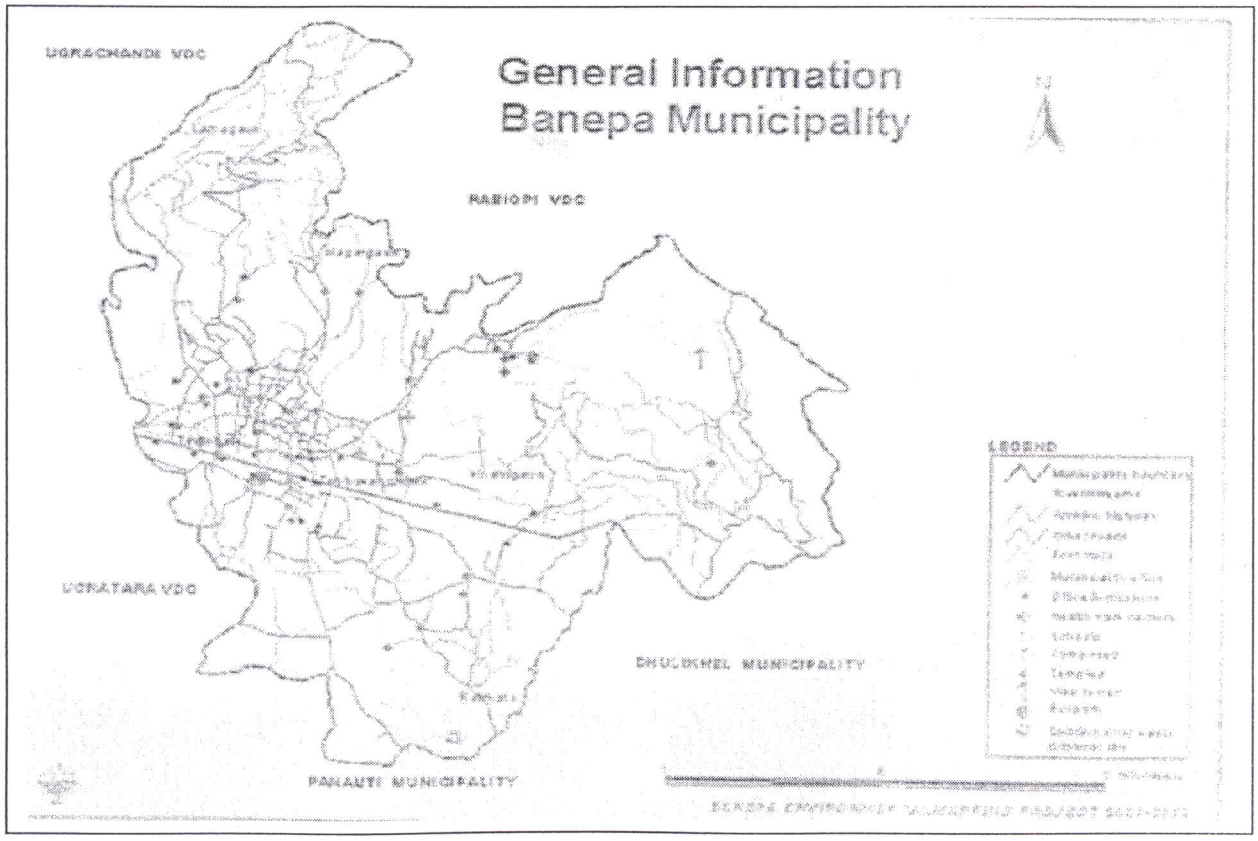

Fig. General Information - Banepa Municipality

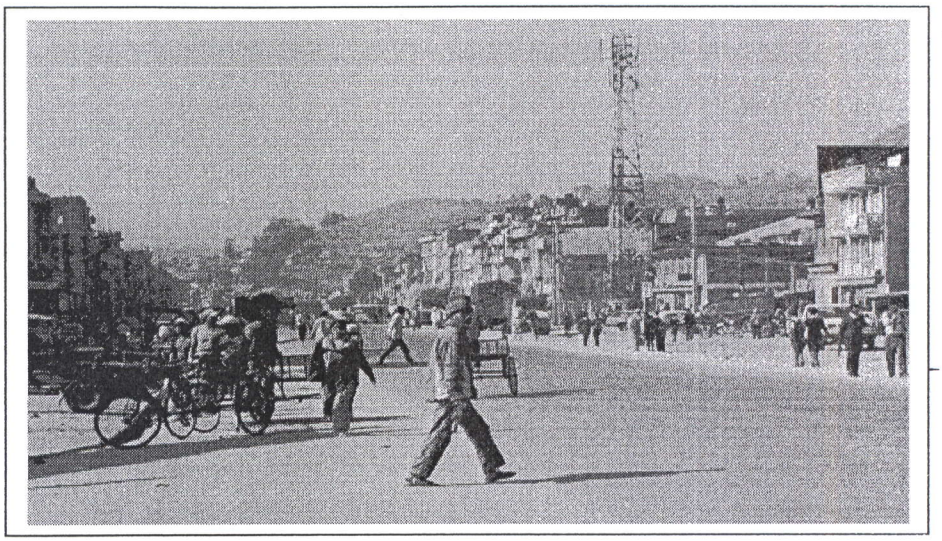

Plate 5.2 : Araniko Highway in Banepa

Plates 5.3: Existing condition of Banepa

5.1.3 Land Use

Land use of Banepa Municipality mainly consists of urban, agricultural, forest and other lands.

Table 5.3: Land Use

S. No.	Land Use Types	Occupied Area in ha	Percentage of Total Land Use
1	Urban Land	119.76	18.10
2	Agriculture land	416.72	63.00
3	Forest Land	119.00	18.00
4	Others	6.18	0.90
		661.66	100.00

Source: Toposheet, Aerial Photographs and Field Observation, July 2002

Urban Land Use

About 23% of total land is occupied by urban land in the municipality. The urban land can be further categorized in following types.

Table 5.4: Urban Land Use

S. No.	Urban Land Use	Occupied Area (ha)	Percentage of Total Urban Land Use
1	Residential	27.60	23.00
2	Old settlement	10.00	8.40
3	Special area (Religious and cultural)	1.00	0.80
4	Commercial	20.16	16.80
5	Institutional	10.50	8.80
6	Recreation	1.50	1.30
7	Transportation	49.00	40.90
Total		119.76	100.00

Source: Toposheet, Aerial Photograph and Field Observation, July 2002

Current urban development efforts in the municipality are concentrated in a core area. Mainly the residential area is expanded around the core area. Still there is no provision of separate recreational, institutional and industrial areas. The commercial area is expanded along the Araniko Highway, other major roads. The present report has proposed some recreational, Industrial and areas for other public facilities in its proposed land use plan.

Existing Land Use

The land-use pattern of Banepa is diverse in nature, although there is a growing tendency of functions to be concentrated in particular zones with similar nature and characteristics. The Municipality covers a total area of 661 hectare. Majority of the area is occupied by agriculture land and forest. Out of this about 120 ha (18%) land falls under the developed area categories (residential, commercial, industrial, institutional, religious and cultural, transportation, nursery and parks) and rest of the landfalls under the agriculture and forestland.

Table 5.5: Existing Land Use Pattern

S. No.	Land Use Category	Area in ha	Percentage of Total Area
1	Agricultural	416.72	62.98%
2	Forest	119.00	17.99%
3	Water body (religious and pond)	6.18	0.93%
4	Residential	27.60	4.17%
5	Old settlement	10.00	1.51%
6	Special area (religious and cultural)	1.00	0.15%
7	Commercial	20.16	3.05%
8	Institutional	10.50	1.59%
9	Recreational (nursery, park and sports)	1.50	0.23
10	Transportation	49.00	7.41%
Total		661.66	100.00%

Source: Planning and Technical Section of Banepa Municipality, Toposheet, Aerial photograph, and Field Survey, July 2002

Possible Land Use

The possible land-use pattern for Banepa Municipality was prepared for the projected population growth by 2031. In this land-use pattern; the existing residential areas are identified to accommodate this increase in population by 2031. Infrastructure development, environmental condition and geological and natural hazards were also studied to propose this land-use. To reduce the skyrocketing density in the core area, other existing infrastructures and Araniko Highway. Nursery and Park are proposed in vacant land. Proposed highway is recommended to manage he width, to construct two separate double lanes for highway vehicles, lane divider greenery between these lanes, services roads on both sides, greenery between the service road and highway lanes, and a separate provision for pedestrians. These are shown in detail in proposed road network. By keeping in view to the opening of Banepa-Bardibash Road, a separate Truck Yard with food storage is proposed in the eastern part, south of Araniko Highway. Similarly sewerage treatment plant, compost plant and water treatment plant are proposed. Moreover sport grounds and recreational areas are also recommended.

Table 5.6: Proposed Land - Use

S. No.	Land Use Category	Area in Ha.	Percentage of Total Area
1	Agricultural	214.60	32.43%
2	Forest	119.00	17.99%
3	Water body (river and pond)	6.18	0.93%
4	Existing Residential	27.60	4.17%
5	Old Settlement	10.00	1.51%
6	Special area (religious and cultural)	1.00	0.15%
7	Proposed Residential	143.50	21.69%
8	Mixed Commercial	21.02	3.18%
9	Institutional	10.50	1.59%
10	Industrial	10.07	1.52%
11	Recreational (nursery, park and sports)	4.30	0.65%
12	Proposed Bus Park and Truck Yard	14.98	2.26%
13	Public Utilities (solid waste compost plant, sewerage treatment plant, water treatment plant, electrical sub station)	9.91	1.50%
14	Transportation	69.00	10.43%
	Total Area	661.66	100.00%

Source: Planning and Technical Section of Banepa Municipality and Field Survey, July 2002

5.2 Impact of Ring Road on the settlement of Balaju

The Kathmandu metropolitan city (KMC) is the capital and largest city in Nepal. Almond 700,000 people live here amidst a swirl of business, industry politics, old temples and colorful festivals. Kathmandu has expanded into a modern international metropolis while still preserving

its ancient culture and architectural heritage. The city thus presents a delightful blend of the old and the new, the charm of the past and the energy of the present.

Located in the northwest of metropolitan Kathmandu, Ward No. 16 is the largest among the 35 wards. Its population in 2001 was 45,450. One of Nepal's attractions, the celebrated 22 water spouts of Balaju, and the largest industrial estate in the country are both located in the ward.

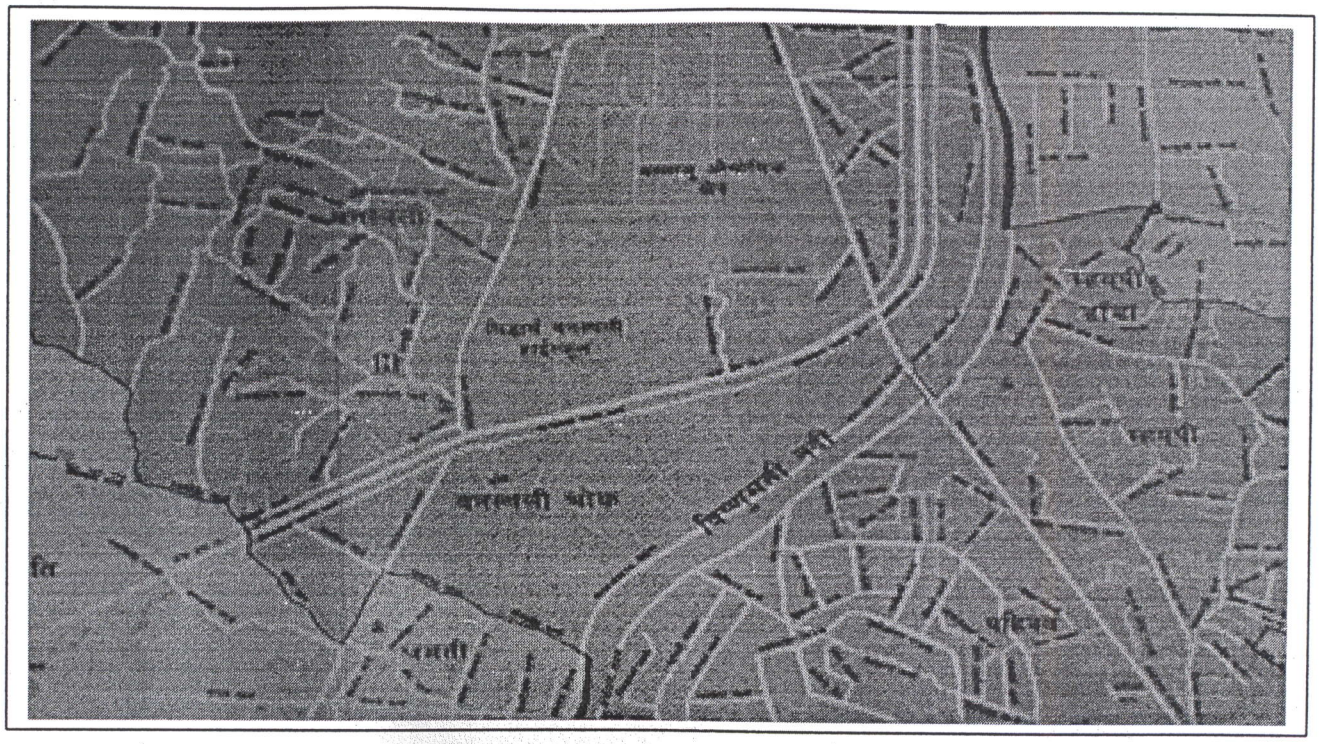

Fig 5.2: Ring Road in Balaju Sector

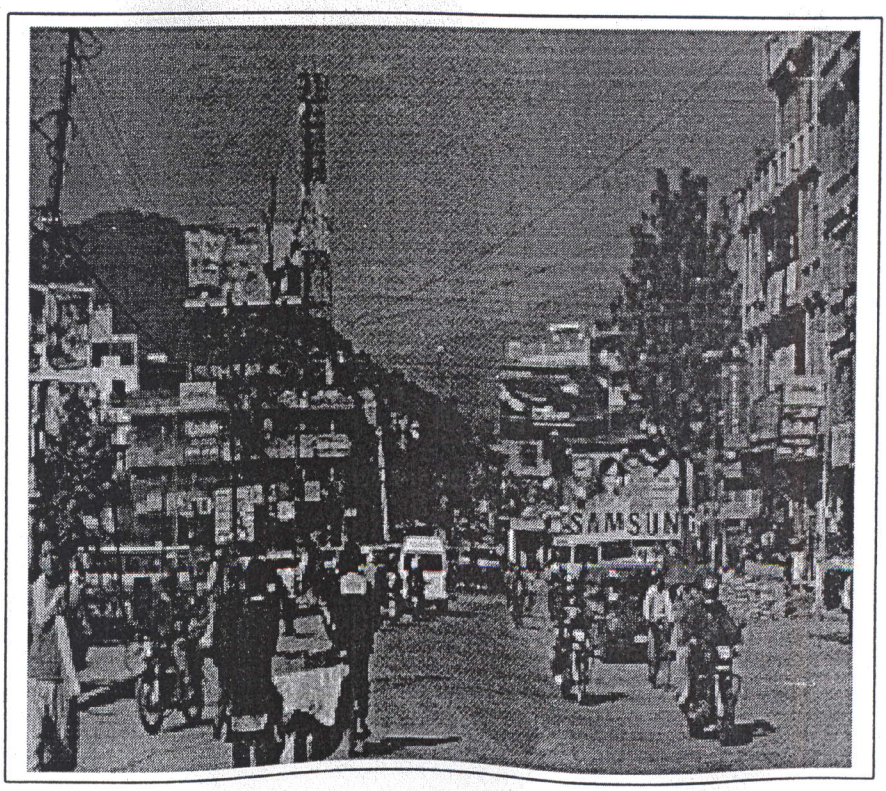

Plate 5.3: A Radial Road from Sorhakhutte to Balaju Chowk

Before the construction of Ring Road there was this radial road. When the Ring Road was completed the development part increased. There is haphazard growth and high demand of land. Balaju area is assumed as traditional settlement. According to the survey there was also old settlement in the Bohoratar and people they just shifted for searching the employment opportunities along the ringroad. And still there are more employment opportunities due to more concentration of the people along the road.

Plate 5.4: Vehicles Kept on Either Side of Ring Road

Plate 5.5: New Bus Park after the Construction of Ring Road

We can find many feasible economic activities going on the either side of the ring road. The land value according to the survey is some 22 lakhs per anna on the main ringroad alignment and for the secondary track it is some 10 to 15 lakhs per anna. Survey data reflect that one person is having some 18 buildings nearby ringroad and that person was having only the agriculture land

before this inner ringroad. We can happily say that the road has made the people success on their achievement. Shops like hardware, retail shops, stationary etc are prevailing there. Also many other activities like education institutions, training institutions, financial institutions exist. In Balaju area the Balaju industrial area is quite famous and is providing jobs to many manpowers. According to the snap of the mini tata vehicles keeping along the either side of the ring road, are expecting that people would rent those vehicles so that there will become economic relations.

5.2.1 Impact Study

From the economy point of view, the impact study in the Balaju area has been generalized based on the survey data. After the construction of the ring road in Balaju sector many economic activities have been boomed up. The impact study has been considered from Balaju Chowk to the Banasthali Chowk. Here basically the impact is analyzed based on the primary data. In this impact study the time frame of some 10 years has been considered. Asking the question like, how was the economic situation before 10 years focused the questionnaire? The questionnaire focused only for some of the parameter of the economic activities e.g. land use, occupation and other economic activities. The survey was concentrated along either side of the existing ring road for the longitudinal distance of some one-kilometer and transverse distance of some 50 mts on either side of the ring road from green line (right of way edge). According to the survey record following feature of data have been collected.

Table 5.7 Impact Study

S. No.	Content	Ten years before	Existing Condition
1	Agriculture land (In Ropanis)	390	117
2	No. of traditional buildings	10	3
3	Modern buildings	25	150
4	No. of hardware shops	5	23
5	No. of schools (Govt. and Pvt.)	3	7
6	No. of financial institutions	1	6
7	No. of retail shops	19	64
8	No. of medical shops	2	6
9	No. of furniture showroom	1	8
10	No. of training institutes	1	7
11	No. of hotels (lodge)	4	17

Source: Primary Data

In this Balaju area, we can see that there is obstruction for land fragmentation due to the more area coverage by the Balaju industrial area. There was also high possibility of getting drastic

change along the roadside of the ring road. According to the survey data, the impact in various aspects can be generalized based on the change in condition of the corresponding aspect. The survey study declares that there is high effect of the radial road from inner core area to the Balaju Chowk. And the rapid construction can be seen way from Balaju to Banasthali. There is high population concentration near Balaju chowk and also in the Banasthali chowk. In Balaju chowk the concentration of the people is for getting different kind of job opportunities since there exist many income-generating activities. Similarly in Banasthali Chowk there is also high concentration of people due the Siddhartha Banasthali High School. Here near both the chowks there is no vacant land at all and in the intermediate zone also there is still some vacant land. The land price also quite high near the periphery of chowks and slightly low in between the junctions.

5.3 Economic Transformation of Lubhu

It is obvious that due to the construction of outer ring road more the population agglomeration more will be the economic activities and hence there will be economic transformation. According to the tentative road alignment of the ORR, the road passes way from commercial business district (core area). There is chance of increment of land value rapidly. People shift their activities from agriculture to commercial and commercial to industrialization.

5.4 Area of Impact and the Transformation

Impact In	Transformation (Change)
Land transaction	Land development, land sub-division, buy, sell.
Land use	Agriculture to residential and residential to commercial.
Infrastructure	Investment in infrastructure increases.
Trade/Commerce	Business activities increase along the road.
Education	Due to increase in population, the demand for investment in educational institutions increases.
Population	There is population agglomeration along the either side of outer ring road.
Culture	Possibility of adaptation of modern cultural activities.
Demographic	Demographic change may also occur which

	may also change in ethnic composition.
Community Development	More commercial activities and more economic activities.
Health	Environment degradation may occur and more investment in health activities.
Building Construction	More construction activities and employment generation will be more in number and the new and modern buildings typology will be initiated.
Employment	More employment opportunities due to increase in commercial activities and more secondary and tertiary activities.
Agriculture	At present agriculture is the main occupation. of the people in Lubhu and after the construction of ORR the present land use will be changed at faster rate to the built form and there will be the employment opportunities in other sector. Heavy investment will be for the physical facilities that are in the development related activities.

Chapter VI: Conclusion and Recommendation

6.1 Conclusion

The study on the impact of proposed outer ring road on the traditional settlement of Kathmandu valley is the very interesting aspect of the study in the present scenario. The selection of the topic for the fulfillment of academic career was not only to cater the academic achievement but there was quite essential going through the need of Outer Ring Road Development Project. In my study I had covered only limited economic parameters due to time as well as resource constraints. During the preparation of the report I had gone through various literatures and case studies existing in the nation and abroad. To find the real impact parameters I had to study about in detail of the case study area. The history about existence of the Ring Road was also dug out from the professional individuals who were lively concerned with the planning of the projects. From the acquired data the analysis has been made by using computer and manually to identify the impact assessment due to the ring road. Here in this report the main case study adopted for the case study is impact of ring road on the settlement of Balaju. Based on this case study the probable economic transformation has made to the Lubhu which is the study area of this thesis report. It is conclude that there are many factors that effect the transformation due to the ring road. Here only the major changes in land use, occupation and economic activities have been incorporated in the study area, Lubhu.

6.2 Recommendation

It is very much important and most essential to know the information about the proposed outer ring road to everyone. Though the ORRDP is in conceptual stage, but feasibility study among many studies have been performed already. It is clear that this ORRDP is very huge project and without the donor agencies it is difficult to initiate this. After the whole study regarding the impact of proposed outer ring road there is definitely the development scenario in practice to the particular place where ring road has been constructed. From the case study of impact of ring road in Balaju sector it can be forecasted that there is also the probability of getting swift in various economic aspect. Even though the concept of outer ring road was started with the concept of preparation of alignment for Melamchi Bulk Distribution Pipe Line, this is getting so much of fame and vigorous stage. Ultimately, the similar type of transformation can be expected also in the study area Lubhu. At last, the recommendation can be drawn as of being real construction of the outer ring road so that there could be development phase in the periphery of the Kathmandu valley.

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[7] Internet access

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CASE STUDY AREA BALAU

N

SCALE :- 1:2000

Meters 40 20 0 40 80 120 160 200 Meters

CONTOUR INTERVAL:- 2 METERS / 10 METERS

LEGEND

District Boundary		Metalled Road With Bridge or Culvert	
Municipal / VDC Boundary		Unmetalled Road With Bridge or Culvert	
Ward Boundary		Track	
Settlement		High Tension Line	
Police Station	P.S.	Temple, Church	
Educational Building	S	Stupa, Mosque	
Hospital or Healthpost		Crematory	
Other Public Building	P.B.	River, Stream	
Historical Monuments	M	Pond	Pond
Proposed road network		Momument area	
Festival route		Trees, Park	

BASE MAP OF BALAJU SECTOR
IMPACT OF PROPOSED OUTER RINGROAD

Institute of Engineering
Department of Architecture and Urban Planning
Pulchowk Campus, Lalitpur

December 2005

Prepared by
Ganesh Bahadur Roka

Map Source: Department of Housing and Urban Development

Map 4

IMPACT ASSESSD

CONTOUR INTERVAL:- 2 METERS / 10 METERS

PROPOSEDRR PASSING AWAY FROM CORE AREA OF LUBHU

BASE MAP OF LUBHU CITY
IMPACT OF PROPOSED OUTER RINGROAD
Institute of Engineering Department of Architecture and Urban Planning Pulchowk Campus, Lalitpur December 2005
Prepared by Ganesh Bahadur Roka
Map Source: Department of Housing and Urban Development

Map 3

LUBHU - EXISTING SITUAION

LUBHU - CORE AREA

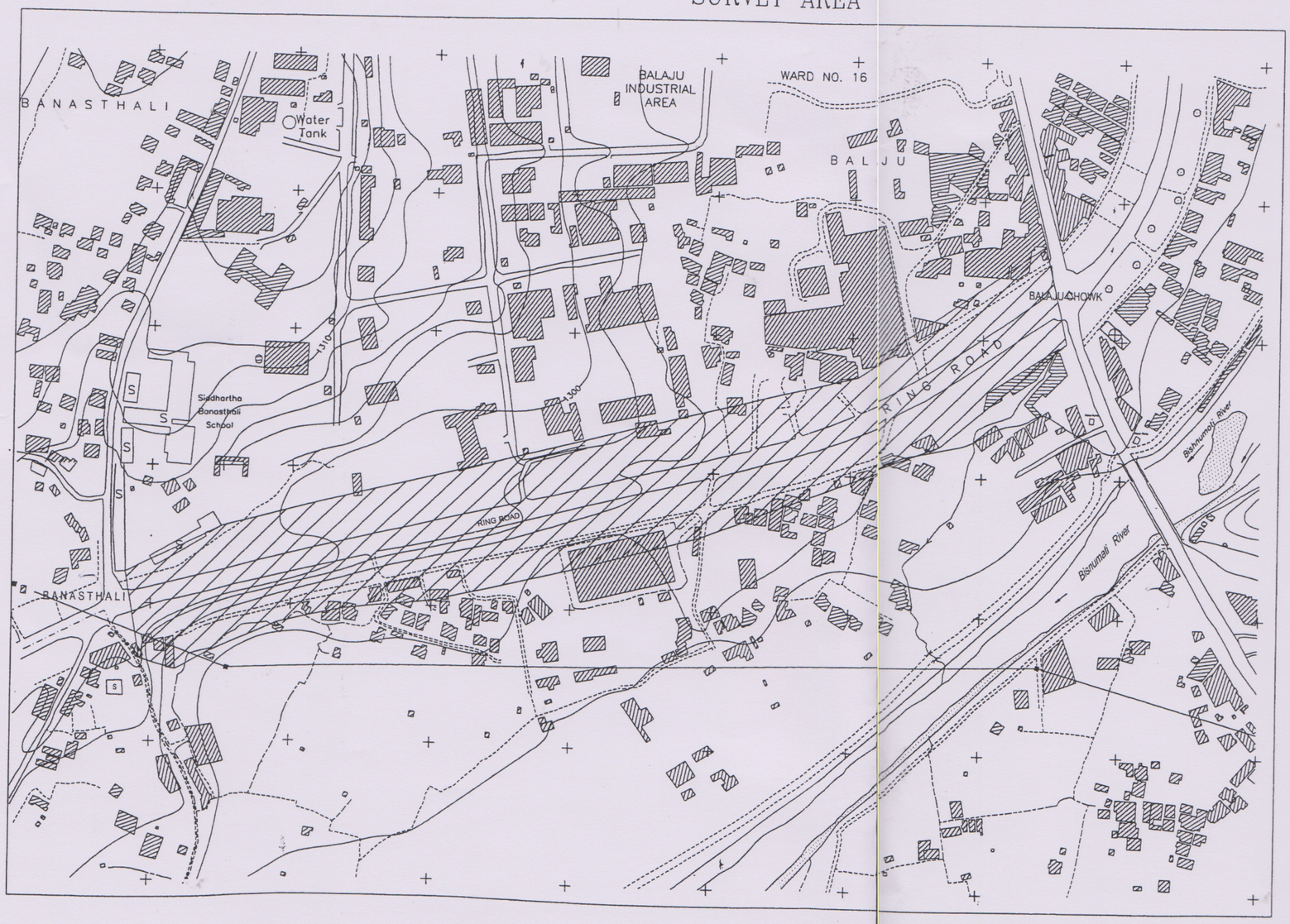
LEGEND

District Boundary		Metalled Road With Bridge or Culvert	
Municipal / VDC Boundary		Unmetalled Road With Bridge or Culvert	
Ward Boundary		Track	
Settlement		High Tension Line	
Police Station	P.S.	Temple, Church	
Educational Building	S	Stupa, Mosque	
Hospital or Healthpost		Crematory	
Other Public Building	P.B.	River, Stream	
Historical Monuments	M	Pond	Pond
Proposed road network		Momument area	
Festival route		Trees, Park	P

CONTOUR INTERVAL:- 2 METERS / 10 METERS

BASE MAP OF LUBHU CITY
IMPACT OF PROPOSED OUTER RINGROAD
Institute of Engineering Department of Architecture and Urban Planning Pulchowk Campus, Lalitpur December 2005
Prepared by Ganesh Bahadur Roka
Map Source: Department of Housing and Urban Development

SURVEY AREA



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SCALE :- 1:2000

Meters 40 20 0 40 80 120 160 200 Meters

CONTOUR INTERVAL:- 2 METERS / 10 METERS

LEGEND

District Boundary		Metalled Road With Bridge or Culvert	
Municipal / VDC Boundary		Unmetalled Road With Bridge or Culvert	
Ward Boundary		Track	
Settlement		High Tension Line	
Police Station	P.S.	Temple, Church	
Educational Building	S	Stupa, Mosque	
Hospital or Healthpost		Crematory	
Other Public Building	P.B.	River, Stream	
Historical Monuments	M	Pond	Pond
Proposed road network		Momument area	
Festival route		Trees, Park	P
Area considered for analysis		Forest, Garden	

BASE MAP OF BALAJU SECTOR

IMPACT OF PROPOSED OUTER RINGROAD

Institute of Engineering
Department of Architecture and Urban Planning
Pulchowk Campus, Lalitpur

December 2005

Prepared by
Ganesh Bahadur Roka

Map Source: Department of Housing and Urban Development