REGENERATION OF THE OLD TOWN, BHUBANESWAR: TOWARDS A SUSTAINABLE APPROACH

A DISSERTATION

Submitted in partial fulfillment of the requirements for the award of the degree of

MASTER OF URBAN AND RURAL PLANNING

By

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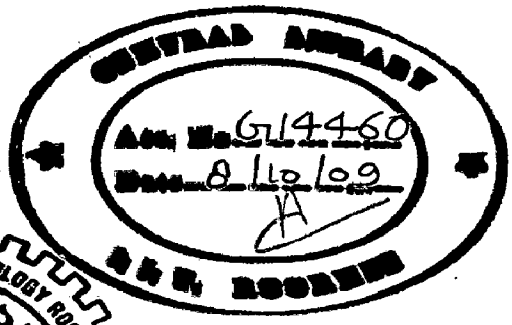

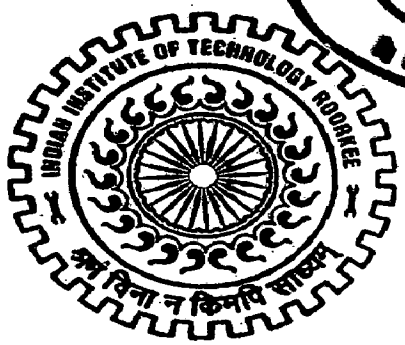

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CANDIDATE'S DECLARATION

I hereby certify that the work which is being presented in the dissertation entitled – **"Regeneration of the Old Town, Bhubaneswar: Towards a Sustainable Approach"** , in partial fulfillment of the requirements for the award of the Degree of **Master Of Urban And Rural Planning**, submitted in the Department of Architecture and Planning, Indian Institute Of Technology Roorkee, is an authentic record of my own work carried out for a period of about one year from June 2008 to June 2009, under the supervision of Prof. Rajesh Chandra and Dr. Ashutosh Joshi, Department of Architecture and Planning, Indian Institute Of Technology Roorkee, Roorkee.

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

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ABSTRACT

Cities offer a platform for cultural, social, physical and economic co-existence and conflict. Many traditional cities in India, during course of time got transformed into complex, fragmentary patterns of urban development due to their failure to support continuous population pressure and new trends of urbanization. One of these cities, Old Town, Bhubaneswar, stands out as one of the perfect examples. The old Bhubaneswar city has earlier witnessed several historic periods, and later chosen to be the administrative capital of Orissa, which gradually generated endless problems due to the pressure of development and needs of modern capital city in the proximity of the historic town.

The concept of regeneration was evolved in 1990s, which aims at sustainable development of an area and proceeds on the basis of certain parameters. It is concerned with improving the economic, social and environmental vitality of the city. In this present investigation, an attempt is made to prepare a blueprint for Old Town, Bhubaneswar, for sustainable growth through plausible recommendations and proposals based on regeneration principles.

At the outset, literature pertaining to regeneration and relevant case studies were collected and reviewed thoroughly, followed by the characteristics of the study area, studied meticulously to be aware of the problems and prospects of the system. Subsequently a household survey was carried out and the available data were analysed thoroughly for understanding urgent conditions of the city. The findings were presented in a matrix form which provides the basis to determine the most relevant strategic approach for development of the study area.

The basic goals for regeneration programme in the study area are set. The study conclude with a set of plausible recommendations in the form of broad policy frame work, detail proposals and their plan implementation for six broad areas i.e. Tourism, Environment, Housing, Physical infrastructure, Traffic and transportation and Socio-economic condition.

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LIST OF ABBREVIATIONS

ASI	**Archeological Survey of India**
BDA	**Bhubaneswar Development Authority**
BMC	**Bhubaneswar Municipal Corporation**
CDP	**Comprehensive Development Plan**
CESCO	**Central Electricity Supply Company of Orissa**
DDA	**Delhi Development Authority**
ORG	**Operation Research Group**
OTDC	**Orissa Tourism Development Corporation**
PHED	**Public Health Engineering Department**
PWD	**Public Works Department**

CHAPTER 1

INTRODUCTION

1.1. Introduction

Towns and cities can be considered as complex and dynamic systems. They keep on changing over a certain period of time. These changes may be physical, social, economic or environmental. Such kinds of changes are complimentary to each other because one type of change occurred in a city can act as a prime generator to another type of change. So these changes are interlinked and they influence each other. Urban regeneration is an outcome of this interrelation of these sources of influence. It evolves strategies which can be built on taking advantage of the opportunities and to meet the challenges that are presented by the generation of a particular city at a particular period of time.

"Regeneration can be defined in broad terms as 'a comprehensive and integrated vision and action which leads to the resolution of (urban) problems and which seeks to bring about a lasting improvement in the economic, physical, social and environmental condition of an area that has been subject to change." [1]

1.2. Need for Study

Bhubaneswar, the present capital of the state of Orissa, with its rich history going back to about 2500 years, is historically acclaimed to be a significant centre of cultural resurgence. It is said that there were about 7000 temples in this place, which earned it the title 'The Temple City of India'. The old Bhubaneswar city has witnessed several historic periods, which is proved by the well documented chronicles of the temples, different edifices and relicts. During the rule of different dynasties, establishment of a remarkable continuity of cultural activities prospered within the Ekamrakshetra[2]. Conglomeration of a large number of temples, monuments, mandapas, ponds, caves, edicts etc. are observed at one place, which itself is a unique character of this area.

However, the pressure of development and needs of modern capital city in the proximity of the historic town has been responsible for the change in character of the old historic city. Due to the process of change, in terms of both decay and growth, many problems have aroused in this area like emergence of high rise buildings/apartments dwarfing the once dominating temples in the skyline, reduction in water recharge areas, lack of concern for cultural protection, congestion etc. and are currently threatening to engulf the rich cultural background of the temple town.

[1] Roberts, Sykes, Urban Regeneration- A Handbook, Pg 17
[2] Ekamrakshetra was the old name of Bhubaneswar

1.3. Objectives

1. To recognize the themes and topics that defines "Regeneration".
2. To study the major schemes of Regeneration of historic cities in the global context.
3. To study the examples of Regeneration of historic cities in the Indian scenario.
4. To study the old city plan of Bhubaneswar along with its evolution and list the present state of affairs including the social aspects.
5. To identify the major portions of the city, which needs immediate attention. To clearly focus on the physical indicators and analyse the collected data.
6. To prepare a blueprint for the "Old City" of Bhubaneswar for sustainable growth, keeping in mind the QOL of the inhabitants.

1.4. Scope

a) This thesis seeks to study certain issues like how to regenerate the cultural practices, the economic standards and the social fabric in connection with the sustainable development of all physical aspects prevailing in the old city core of Bhubaneswar.

b) The approach will be the regeneration of the heritage zone of the city – looking not just at conservation of Heritage buildings – but how to encourage economic trading, create new public spaces and encourage pedestrian flows - with resulting benefits for not only local residents and businesses but becoming attractive to tourists.

1.5. Limitations

a) The study will be limited only to the old city core of Bhubaneswar.

1.6. Methodology

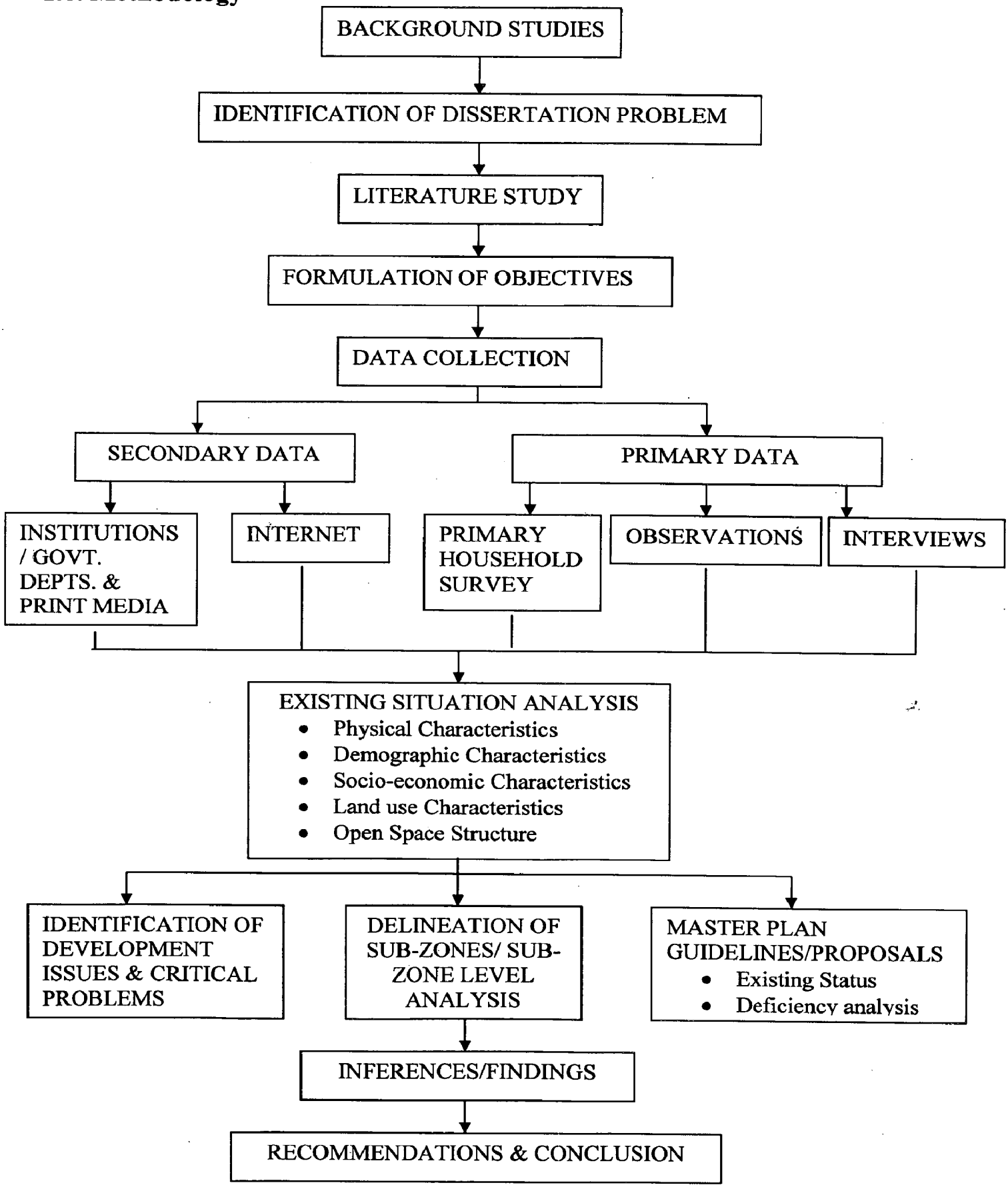


Fig.1.1: Methodology
Source: Author

CHAPTER 2

LITERATURE STUDY

2.1. INTRODUCTION

The aims, objectives and principles of regeneration process and its principal methods of approach have been briefly highlighted in this chapter as these provide a firm ground to clearly understand the regeneration process. Since the study area has a rich cultural history, it is important to study the causes and consequences of transformation in historic cities; both in global context and in Indian scenario, which has been covered in the later part of this chapter.

2.2. PREFACE

Regeneration has a clear goal – improving quality of life for all. In order to achieve this goal, it involves the participation of public, private, community and voluntary sectors. To achieve real and lasting changes in our towns and cities, we must make best use of all the resources we have – human and financial. [1]

Urban regeneration is a continuous process. It aims at sustainable development of an area. So, it involves a long term cycle of activity.

2.3. THE BASIS FOR URBAN REGENERATION

Towns and cities evolve and change over time. This process of change is inevitable owing to the new demands generated due to socio-politico-economic systems and cultural practices of the region. Hence they should be perceived positively as they benefit the society and masses by creating new opportunities to improve and develop the condition of urban areas.

2.4. THE CONTEXT FOR URBAN REGENERATION

Urban regeneration is a widely experienced but little understood phenomenon. Although different institutions and organizations are involved in this process, no definite source is available. The cause behind this can be the problems, challenges and the opportunities vary from place to place even though the basic purpose and principles of regeneration remain the same.

[1] Roberts and Sykes, 2000

The basic 'building block' themes and topics that are fundamental to an understanding of the urban regeneration processes are:

1. Economic and financial issues;
2. Physical and environment aspects of regeneration;
3. Social and community issues;
4. Employment, education and training;
5. Housing issues.[1]

2.5. WHAT IS URBAN REGENERATION

In order to help to construct a working definition of urban regeneration it is also necessary to identify emerging areas of concern and likely future challenges. Hence, apart from the 5 major 'building blocks', another important aspect of urban regeneration is that it proceeds on the basis of the principles of sustainable development. These six themes- five from the past and one representing the dominant policy issue of the present and future- provide the basis for an initial definition of urban regeneration as:

"Comprehensive and integrated vision and action which leads to the resolution of urban problems and which seeks to bring about a lasting improvement in the economic, physical, social and environmental condition of an area that has been subject to change." [2]

Regeneration is concerned with improving the economic, social and environmental vitality of the city. Urban regeneration moves beyond the aims, aspirations and achievements of urban renewal, which is seen by Couch as ' a process of essentially physical change', urban development (or redevelopment) with its general mission and less well-defined purpose, and urban revitalization (or rehabilitation) which, whilst suggesting the need for action, fails to specify a precise method of approach. In addition, urban regeneration implies the approach for tackling the problems encountered in towns and cities should be constructed with a longer-term, more strategic, purpose in mind.

[1] Roberts, Sykes, Urban Regeneration- A Handbook, Pg 4
[2] Roberts, Sykes, Urban Regeneration- A Handbook, Pg 17

2.6. THE EVOLUTION OF URBAN REGENERATION

Table2.1. The Evolution of Urban Regeneration

Period Policy type	*1950s Reconstruction*	*1960s Revitalization*	*1970s Renewal*	*1980s Redevelop-ment*	*1990s Regeneration*
Major strategy and orientation	Reconstruction and extension of older areas of towns and cities often based on a 'master plan'; suburban growth.	Continuation of 1950s theme; suburban and peripheral growth; some early attempts at rehabilitation	Focus on in-situ renewal and neighborhood scheme; still development at periphery.	Many major schemes of development and redevelopment; flagship projects; of town projects	Many towards a more comprehensive form of policy and practice; more emphasis on integrated treatments
Key actors and stock-holders	National and local; government private sector developers and contractors	Move towards a greater balance between public and private sectors.	Growing role of private sector and development centralization in local govt.	Emphasis on private sector and special agencies; growth of partnerships.	Partnership the dominant approach
Spatial level of activity	Emphasis on local and site levels	Regional level of activity emerged	Regional and local levels initially; later more local emphasis	In early 1980s focus on site; later emphasis on local level	Reintroduction of strategic perspective; growth of regional activity
Economic focus	Public sector investment with some private sector involvement	Continuing from 1950s with growing influence of private investment	Resource constraints in public sector and growth of private investment	Private sector dominant with selective public funds	Greater balance between public, private and voluntary funding
Social content	Improvement of housing and living standards	Social and welfare improvement	Community based action and greater empowerment	Community self-help with very selective state support	Emphasis on the role of community
Physical emphasis	Replacement of inner areas and peripheral development	Some continuation from 1950s with parallel rehabilitation of existing areas	More extensive renewal of older urban areas	Major schemes of replacement and new development;' flagship schemes'	More modest than 1980s; heritage and retention
Environ-mental approach	Landscaping and some greening	Selective improvements	Environmenta l improvement with some innovations	Growth of concern for wider approach to environment	Introduction of broader idea of environmental sustainability

Source: Alter Stohr (1989) and Lichfield (1992)

2.7. URBAN REGENERATION PROCESS

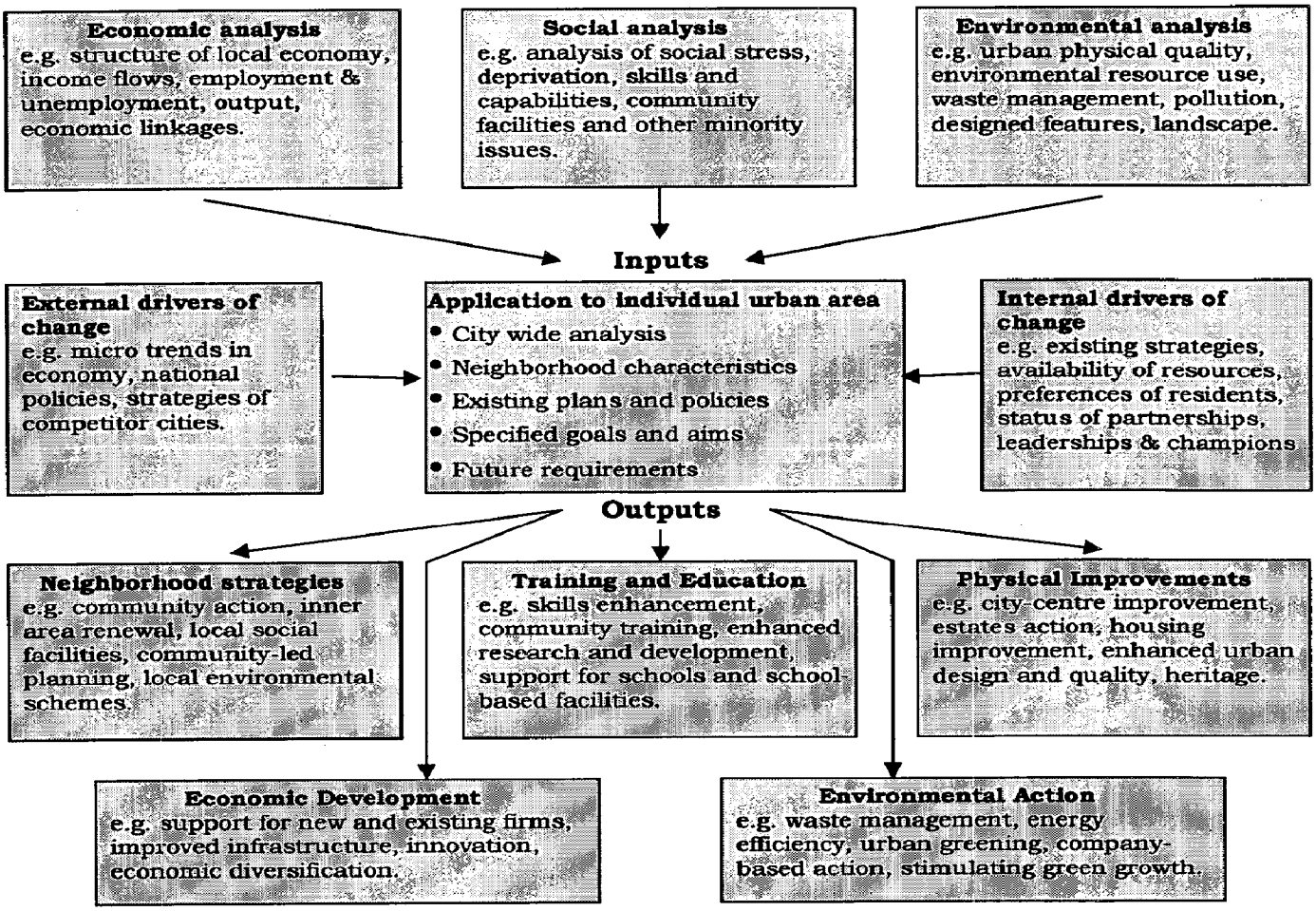


Fig.2.1: Urban Regeneration Process
Source: Roberts and Sykes, Urban Regeneration- A Handbook

Urban regeneration strategies are implemented in one sector and induce positive effects elsewhere. The main objectives of urban regeneration may be:

a) **Economic**: to attract investors, create employment, renew the urban economy;
b) **Social**: to enlarge the supply of urban housing and develop local infrastructure;
c) **Environmental**: to improve living conditions, combat pollution (Agenda 21),while taking into account the values and preferences of society and each social group;
d) **Cultural**: to enhance architectural heritage (historic core) and urban tourism, or to attract research and academic institutions.

[1]Galdini, Urban regeneration process: the case of Genoa, an example of integrated urban development approach

2.8. PRINCIPLES OF URBAN REGENERATION

1. A detailed study of the concerned area is required.
2. The physical, social, economic and environmental aspects of the area must be simultaneously accessed.
3. All of these aspects must be given equal importance for evolving a comprehensive and integrated strategy for regeneration.
4. This strategy should also aim at sustainable development, in order to meet the future challenges.
5. They should also be flexible enough so that they can be revised in line with future challenges to occur.
6. The available resources (i.e. natural, human, cultural and economic) must be utilized properly.
7. Public-private partnership should be the dominant approach.
8. Regular supervision, monitoring and revision of the ongoing regeneration process are very much necessary.

2.9. KEY ISSUES AND ACTIONS

Some key elements are present to trigger the urban regeneration process.[1] They are:

i. **A long-term perspective**. Since urban change takes a long time, long term goals must be set in order to guide the urban regeneration process.

ii. **Political will and commitment**. Political support is very much necessary to facilitate regeneration process because it has the power to congregate human resources who will act as key stakeholders of the process. Again, it can help triggering the process by providing financial assistance.

iii. **Multi-actor/stakeholder participation.** Regeneration being a complex and long term process includes a number of macro and micro level objectives which must be satisfied in order to achieve a broad goal. Hence, participation of multiple actors is necessary for fulfillment of the detailed objectives. Each actor contributes to a limited portion of the work process, according to his role and capacity.

iv. **Organisational Framework**. It is a very important element which structures the key actors in a hierarchical manner as per the priority of responsibilities given to each of them. In this way, it helps to make them work in a balanced and integrated manner.

[1]Galdini, Urban regeneration process: the case of Genoa, an example of integrated urban development approach

v. **Financing.** Such complex interventions like regeneration often requires huge amount of investment as it includes many macro and micro level programmes.

vi. **Maintaining the process.** It gives proper direction to the urban regeneration activity by structuring all the above factors. The key element in maintaining the process is a system of monitoring and evaluation.

As a cyclical process, urban regeneration requires a gradual development along the following steps without implying straight from one to the next.

- It is essential to set a context for any proposed regeneration action- this context should consider the historic evolution of an area and the outcomes of previous policies.
- All towns, cities and regions display a particular set of problems and potentials, which are the result of both external influences and internal characteristics. The style of approach to regeneration must depend on these problems and potentials, which are unique to the particular city.
- The regeneration of urban areas can be seen as an important element of regional and national success.
- Urban regeneration is a comprehensive and integrated vision and action which leads to the resolution of urban problems and which seeks to bring about a lasting change in the economic, physical, social and environmental condition of an area that has been subject to change.

2.10. THE CAUSES AND CONSEQUENCES OF URBAN CHANGE

Before entering into a more detailed discussion on the key elements of urban change, it is important to distinguish between the problem of the inner cities and the broader urban problems, and to emphasis the importance of balancing urban problems against potentials.

Four major aspects of urban change are:

2. Economic transition and employment change;
3. Social and community issues;
4. Physical obsolescence and new land and property requirements;

5. Environmental quality and sustainable development

2.11. GLOBAL TRENDS OF TRANSFORMATION AND RELATED ISSUES IN HISTORIC CITIES

2.11.1 Natural conditions and processes

- Weathering: cold, heat, ground water, salts etc.
- Natural decay of materials, corrosion
- Insects, vegetation overgrowth or fungal infestation
- Erosion, changes in the river beds, shore lines dunes etc.
- Structural settling
- Natural and manmade hazards like earthquake, floods, cyclones, heavy rains and fire

2.11.2. Development induced

a) Economic pressure

- Inappropriate change in land use
- Accelerated obsolescence of heritage buildings induced by new construction
- Global market economy (impact on cultural diversity, local traditions, crafts, identity.)
- Redevelopment of heritage landscapes

b) Unmanaged Tourism

- Accelerated physical abuse of heritage places
- Impacts of related facilities (on-site facilities, parking and souvenir shops, hotels, roads.)
- Intrusive or excessive presentation and related works, including inappropriate reconstruction

2.11.3. Social and collective behaviours

- Large human migrations (refugees, displacement etc.)
- Organised crime/ corruption (theft, excavations, démolition, arson etc.)
- Religious, inter-ethnic, economic tensions, violence
- Sharing power amongst authorities, public interest versus owners' rights
- Responsibility and capacity of the property owners
- Consumerism (appeal of the new due to short-term view)
- Global culture replacing deep cultural diversity
- Demography (housing and survival needs; lack of resources)

2.12. FACTORS RESPONSIBLE FOR TRANSFORMATION OF A CITY

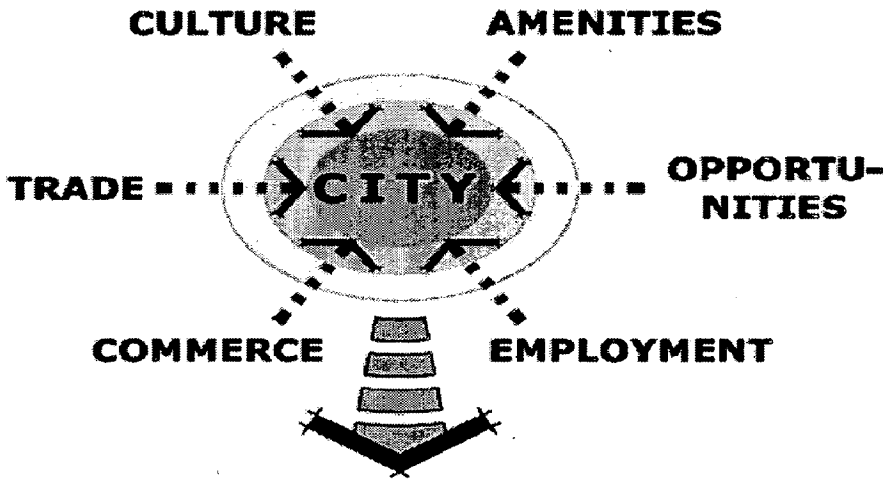


Fig.2.2: Factors responsible for transformation of a city
Source: Dissertation report of Jnananjan Panda, SPA, New Delhi

2.12.1. Old Indian cities during last 60 years

- Rapid "Urbanisation"
- Growth of trade, commerce, industry and loss of historic character & uniqueness
- Commercialisation of inner cities and marginalization of original living environment
- In-migration demanded shelters, infrastructure, employment opportunities
- Occupational and land-use patterns (did not reflect the historicity)
- Planning and development without considering religious-cultural associations and expressions
- Transportation system could not cope with the intensity of activities (several times higher than such areas were meant for)

2.13. CONCLUSION

Considering the existing literature regarding regeneration and related issues, we can conclude that successful regeneration work must build upon the principles of sustainable development. It initiates lasting improvements in economic, social and physical aspects of cities, which will benefit not only existing but future generations. In order to achieve the aims of regeneration, there are various conclusions and directions which can be taken from existing good practice and literature. Hence, some of the good examples of urban regeneration have been studied in the next chapter.

CHAPTER 3

CASE STUDIES

3.1. INTRODUCTION

According to the urban regeneration principles, we must learn from both the success and failure of existing regeneration practices. In this chapter, some relevant case studies are discussed and inferences are taken from them for successful implementation of regeneration process in the study area. At the outset, a good example of regeneration of a historic port city i.e. Genoa, Italy is studied. In order to have a better understanding of regeneration efforts in Indian context, two different kinds of old Indian cities were chosen. As the study area serves as a capital city as well as famous as a old temple town, so walled city of Shahjahanabad (City core of New Delhi) is chosen as the first case and the second one is Ujjain, an ancient city of central India, better known as the city of temples.

This chapter seeks to investigate the transformation process, causes and consequences of such transformation, problems associated within the core areas and initiatives taken for development in case of all the three study areas.

CASE STUDY I

3.2. THE CASE OF GENOA, ITALY

3.2.1. Location and Demography

- The city of Genoa, is situated in the North- Italian region of Liguria.
- Genoa is the capital of the region that lies on a natural bay.
- Genoa is built on a narrow strip of land 9 km across and 22 km long, between the sea and the mountains.
- The city position between the sea and the mountains, limited the expansion in the growth phase of urban development.
- It is a populous port town of 605,000 residents in Genoa, with a population density of 2,515 inhabitants per kmsq over the municipality territory.

3.2.2. Major Portions of the City

Genoa is the largest port on the Mediterranean and one of the most important Italian cities. Genoa is also an important centre for shipbuilding, mechanical engineering, and iron and steel industries.

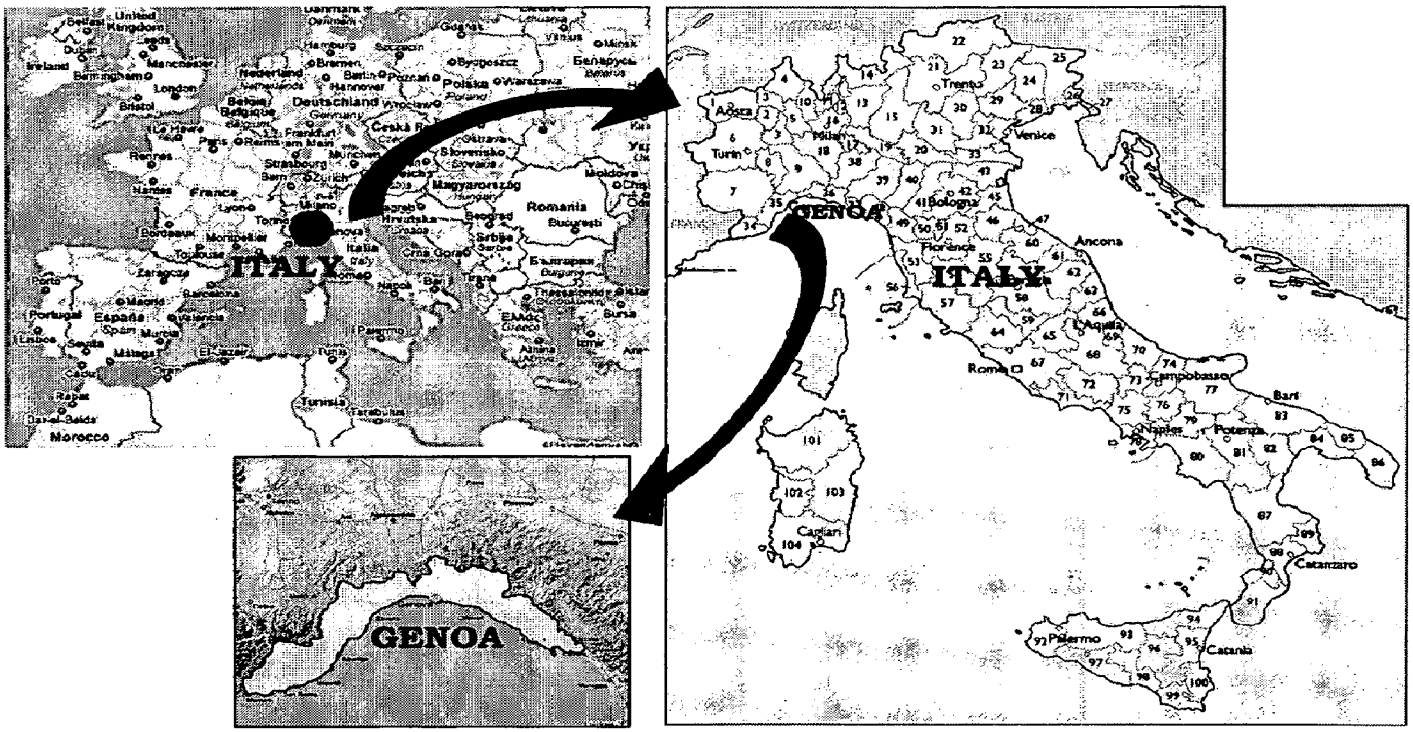


Fig.3.1. Location map of Genoa
Source: http://www.centrostoricogenova.com ; Compiled by author

The city can be divided into three parts:

- Central Part
- The Western Part
- The Eastern Part

In the centre, a concentration of cultural and historical heritage, are established the principal services activities and public offices. The western part is the location of industrial activities and the eastern part has predominantly a residential function.

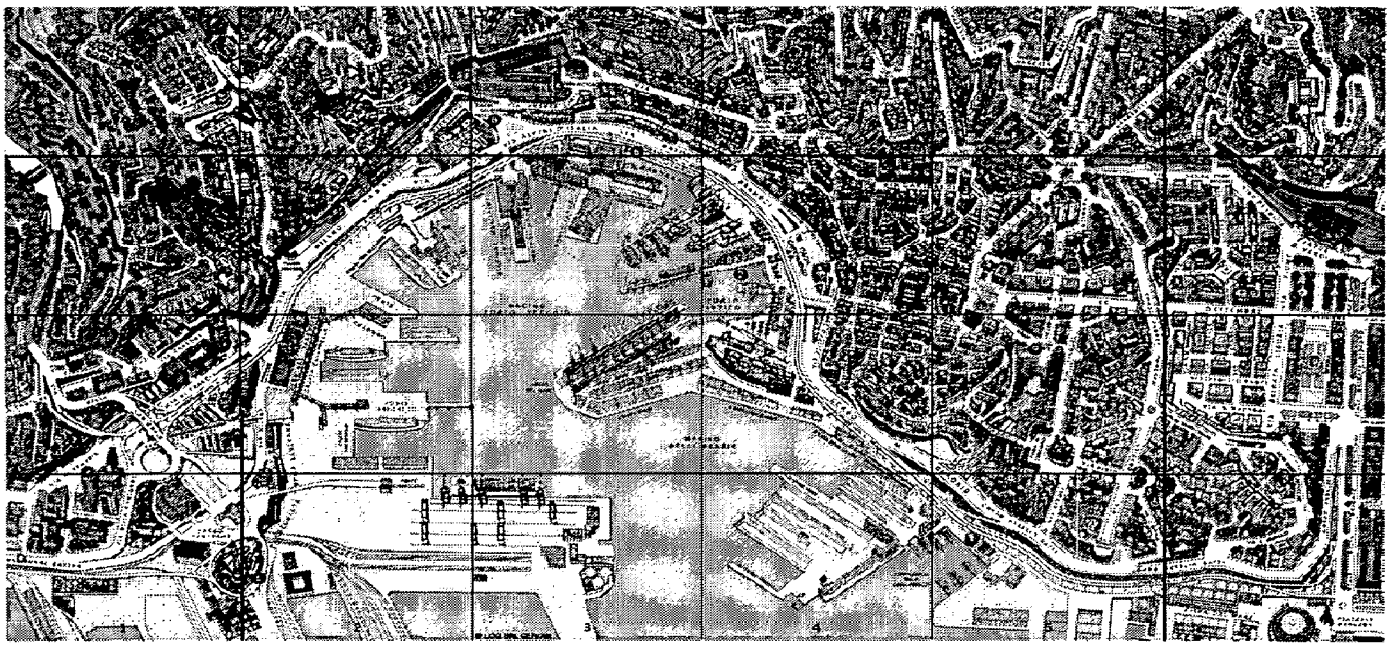


Fig.3.2. Major city parts of Genoa
Source: rickyblurblog.wordpress.com

3.2.3. The Context

The natural configuration of Genoa and the insistent presence of the south-west wind did not allow the establishment of a typical, well defined pre-roman settlement. Instead Genoa began to form its own urban identity. The territory developed according to roman design: starting from the market place at the centre, the settlement (forum) of S Giorgio was divided using the measure of circa 1480 meters (the military distance) and urban territories were separated from rustic ones (suburbium).This type of division in semicircular concentric areas was the basic plan for future medieval settlements. Gradually, the city's population grew rapidly due to successful merchandise overseas.

Over the past few years, a radical transformation process due to the industrial crisis in the area took place in the town (Galdini, 2005). In 1970s and 1980s, the port town has suffered a continuous loss of residents. The decline of population followed the crisis in the Genoese economy. The number of job opportunities, the traditional industry, the petrochemical industry, the mechanical industry and the harbour, declined steeply. Many companies emigrated.

3.2.4. Problems observed in the city

1. In the last decades, the old city has registered a general decay with strong effects on commercial activities.
2. There is difficulty in accessing the centre of the town due to the narrowness of the streets and the high urban density provides little scope for the development of any larger activities.
3. Currently two thirds of the businesses located in Genoa are small to medium sized enterprises.
4. During the 20th century, the historical centre gradually became isolated from the newer parts of the city and an elevated highway was built which forms a noisy and visual barrier between the old city and the sea.
5. Growing traffic, insufficient street lighting and garbage dumped in the streets all add to the problems of the historical centre.

3.2.5. Urban Regeneration Process in Genoa

The actions promoted in the regeneration process of Genoa are related to the fact that the historic area has a large number of churches and beautiful buildings together with many other remains of great historic and architectural value. At the same time, the historic city centre is right next to the port. The main aim of regeneration process was "**stop decay**" and "**promote positive actions**".

The major objectives were:

1. To fight physical, social and economic decay of the area..
2. To preserve the valuable and unique buildings of the selected areas of old town, that has a rich historic and architectural value.
3. To promote rehabilitation of complex urban structures.
4. To improve the environment, as well as the quality of life of inhabitants and city .
5. To revitalise places both economically and socially by restructuring economic activities located in the urban areas.
6. To integrate actions and projects those at the same time affect physical, social and economic conditions.

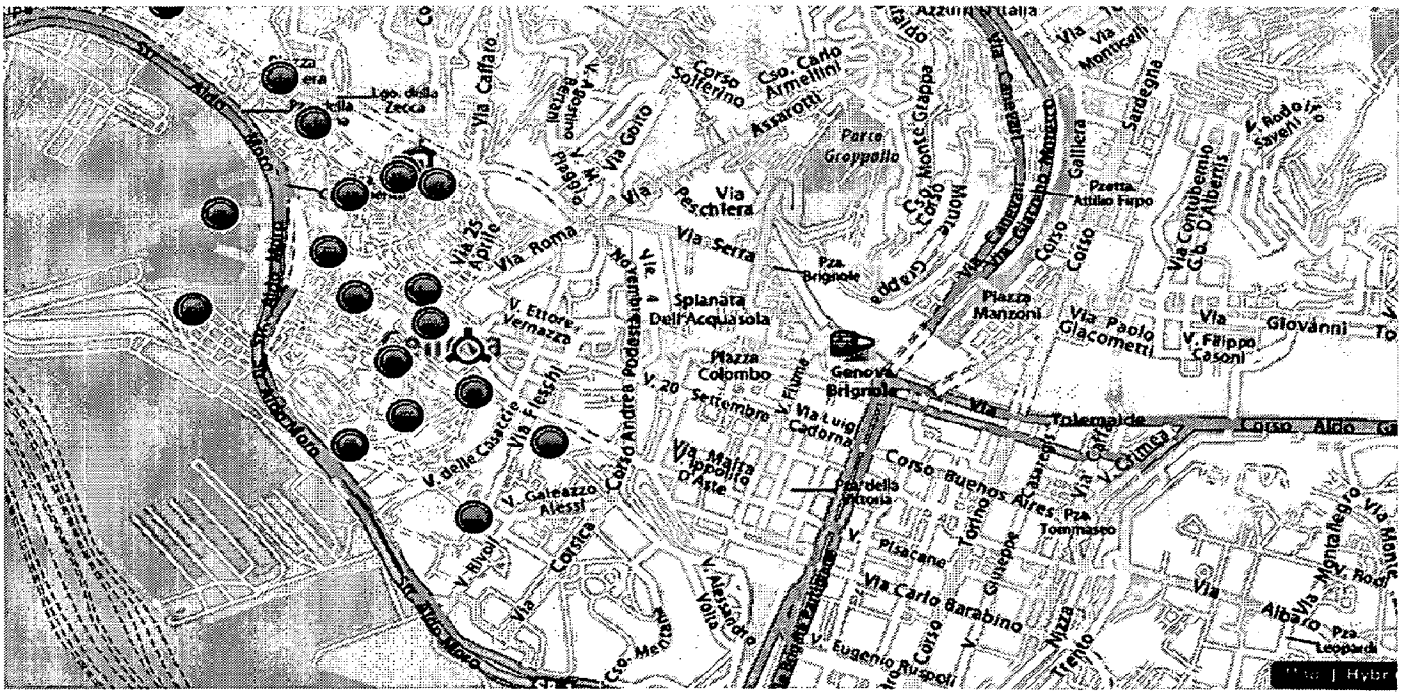


Fig.3.3. Map showing places of historic & cultural importance in Genoa
Source: twibo.twinroom.com

A. Main actions based on physical aspects:

1. Waterfront redevelopment
2. Connectivity between the port area and the city core
3. Pedestrianization of major parts of the old town
4. Providing new parking areas as well as good public transport

B. Major actions in the social field:

1. Safety Plan
2. Plans for more residential help and for reception centres.

C. Main actions based on economic aspects:

1. Improving small businesses and craft industries
2. Encouraging and supporting new businesses, particularly in the hearth of the old centre of Genova, Centro Storico

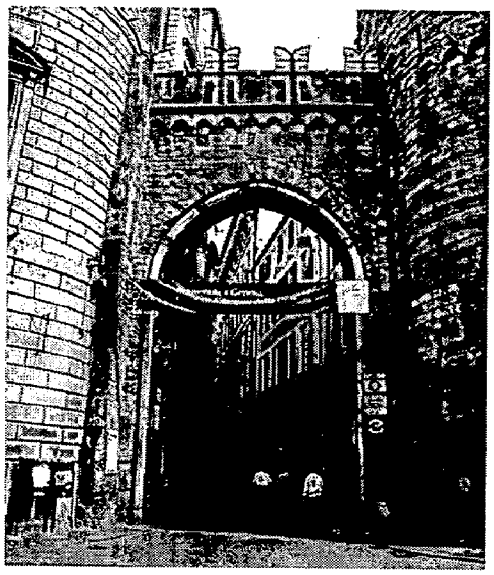


Fig.3.4. One of the heritage gates at Genoa
Source: goitaly.about.com

3.2.5.1. Strategy:

1. During the regeneration process, the micro level works were carried out with the help of public interventions whereas the macro level work was under control of Municipal Corporation.
2. Detailed revitalization was done by residents and private owners.
3. The municipal programmes included more broad objectives i.e. pedestrianization of the core area, implementation of new parking areas and public transport, waterfront redevelopment, implementation of efficient services etc.
4. The port area (Porto Antico) was renovated, which reconnected the city and the sea.
5. The central core area (Centro Storico) was revitalized.

Fig 3.5. The city core, pedestrianised pathways in the old town and the port area
Source: goitaly.about.com

3.2.5.2. The Porto Antico

The famous architect Renzo Piano was associated with the waterfront development of Genoa, which was one of the important aspect of the regeneration of the port town. The different projects associated with Porto Antico included the following:

- The removal of custom barriers,
- The renovation and pedestrianisation of the Porto Antico and
- The refurbishment of a series of ancient buildings
- Reconnecting the city with its waterfront area (Ponte Parodi project)

Due to a series of renovation projects, the Porto Antico has become one of the main attractions for both tourist and locals with restaurants, bars, cinemas and public gardens transforming the area into an important public space.

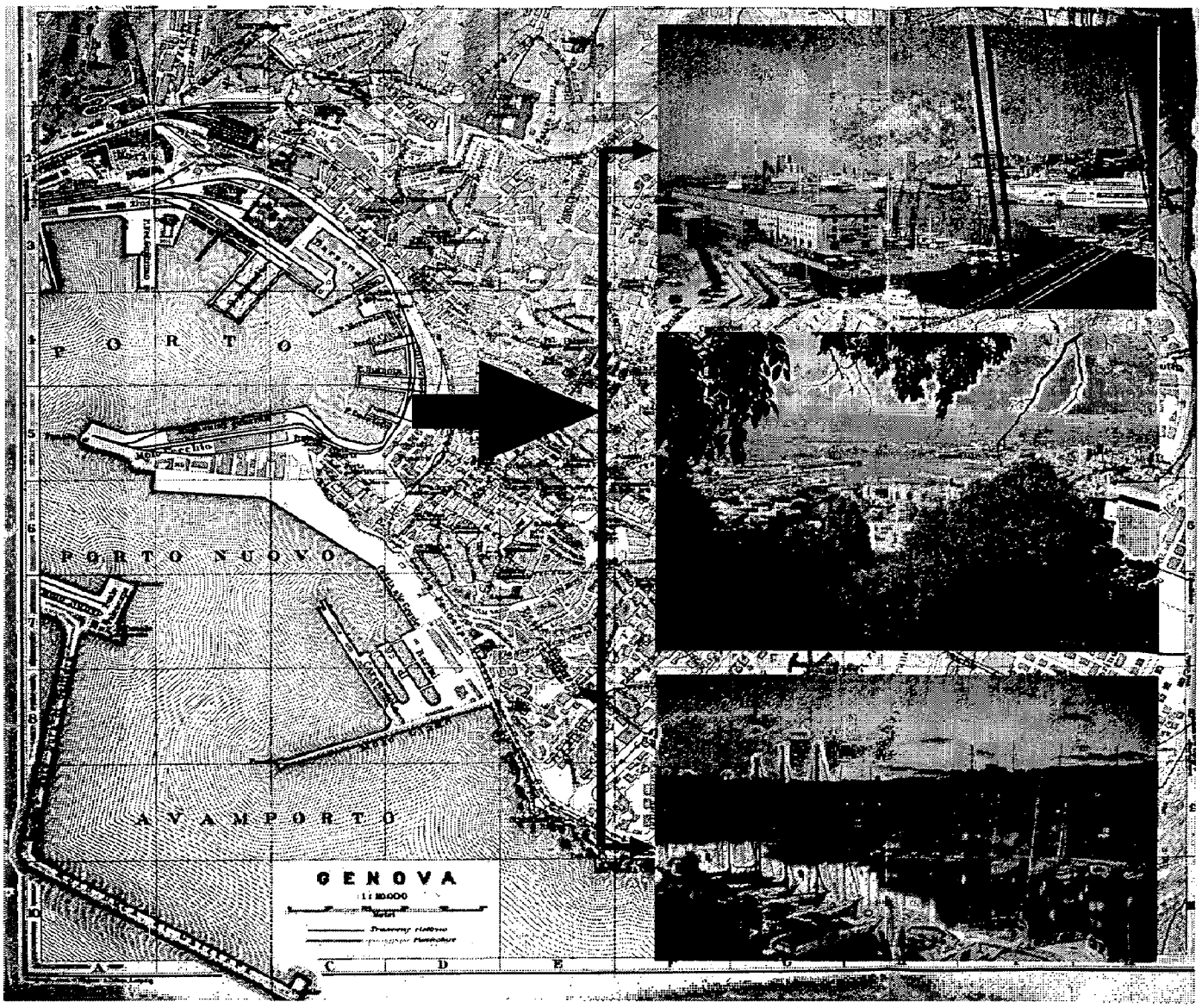


Fig 3.6. Map and photographs of Porto Antico, the port area after regeneration
Source: www.vintage-views.com/eshop, goitaly.about.com; Compiled by Author

3.2.5.3. The Centro Storico:

Apart from the physical infrastucture development, the other projects associated with the city core area are:

a. To improve the economic conditions and public safety
b. To facilitate social interaction and improve service provision
c. To combat the marginalisation of the elderly, immigrant communities and the youth.

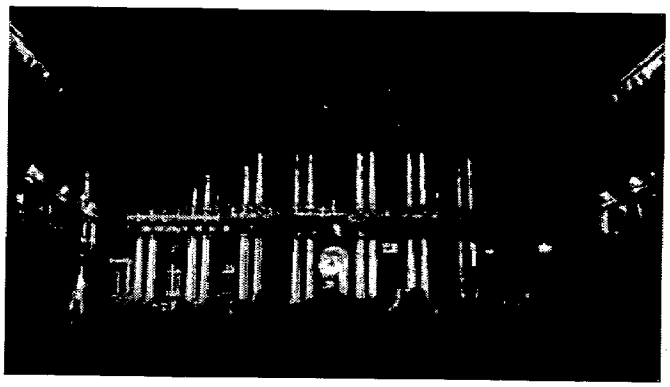


Fig 3.7. The city core area (Centro Storico)
Source: goitaly.about.com

3.2.6. A New Dimension for the City

After a long economic crisis today the city has a different image, still based on the traditional pillars of its economy such as the commerce, the port and the industry, but with an expanding advanced technology sector and a promising tourist trade. The city has also changed in social terms. It is becoming an evermore multicultural and multiethnic city. After regeneration, now Genoa has established itself as a first class logistical base for both land and sea traffic and as an attractive area for investors.

Fig 3.8. A narrow lane in Centro Storico, before and after regeneration
Source: www.panoramio.com

3.2.7. Inferences

1. The renovation process in Genoa is the result of a democratic process.
2. Strong government leadership resulted in a "overall" approach to the regeneration of this historic neighbourhood by encouraging economic trading, creating new public spaces and encouraging pedestrian flows; with resulting benefits for not only local residents and businesses but becoming attractive to tourists.
3. The participation of the private sector was very important, specially for the revitalization process of the historic core.
4. It is therefore important to increase the participation of local residents, workers, interest groups and businesses in the regeneration process.
5. Hence, overall social awareness and the institutional settings, as well as strategy and leadership are the major factors in the process of any regeneration project.

CASE STUDY II

3.3. THE CASE OF SHAHJAHANABAD, INDIA

3.3.1. Location and Demography

- Shahjahanabad is located at the heart of New Delhi, the present capital of India.
- It was built in 17th century as the capital of Mughal emperor Shahjahan for a population of 60,000 persons covering an area of about 569ha.
- The triangular site sandwitched between the Delhi ridge and river Yamuna.

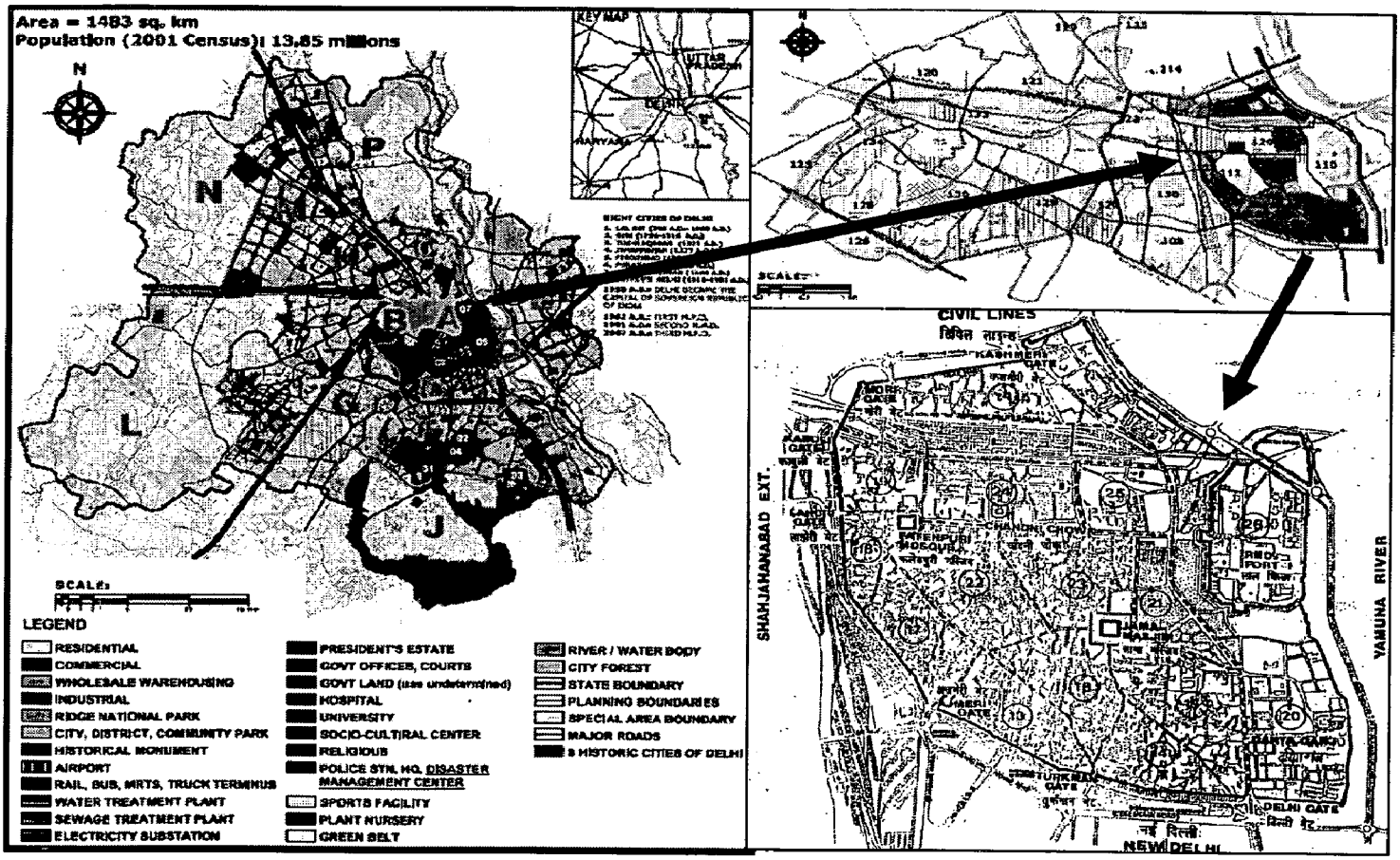


Fig 3.9. Location map of Shahjahanabad
Source: DDA Zonal Development Plan and Panda, J. "Planning for a Historic Urban Area, Case Study: Shahjahanabad", Master in Urban Planning Thesis, SPA, 2008; Compiled by Author

3.3.2. The Context

The walled city of Shahjahanabad was built during 1639-48 as an abode for emperor Shahjahan after he decided to move his capital from Agra to Delhi. The new capital included Red Fort as the focal point, Jama Masjid as the praying center, and the fascinating Chandni Chowk market as its commercial zone. The city was developed in typical Mughal style, densely built with organic street pattern.[1]

[1] Singh, A. "Confrontation, Compromise and Reconstruction of The Walled City of Shahjahanabad", Master of Science in Architecture Studies Thesis, MIT, 2006.

Immensely rich in cultural heritage, Shahjahanabad with its palaces, mosques, bazaars, gilded domes, havelis, katras and a maze of lanes and bye lanes had been one of the most beautiful cities of the Orient.

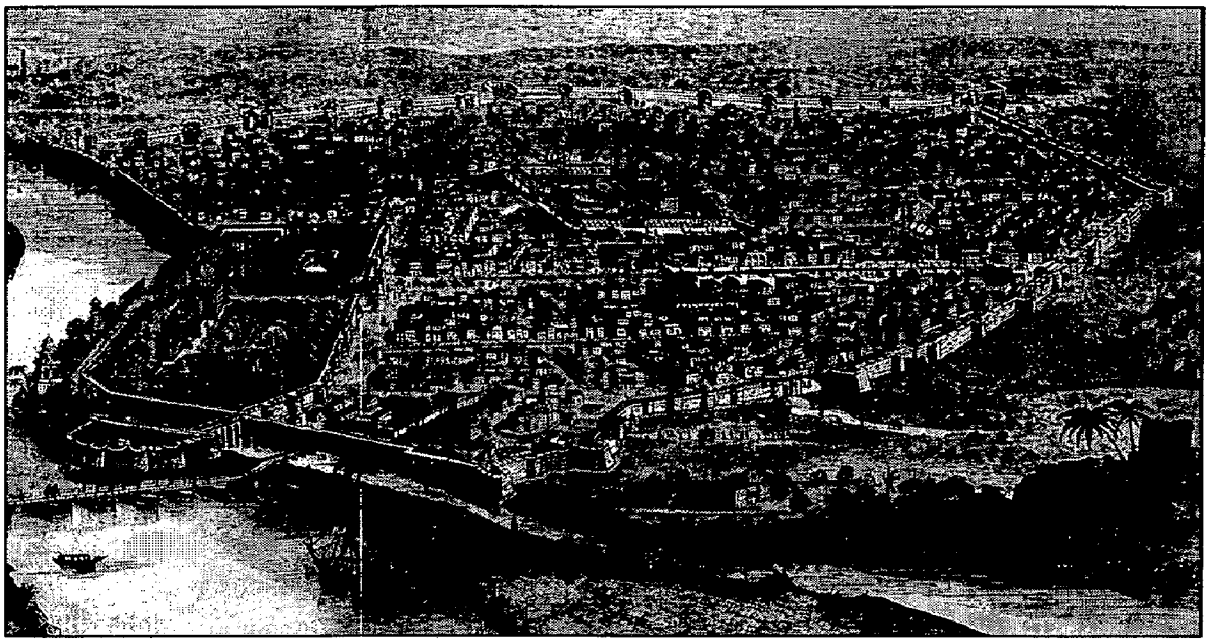


Fig 3.10. Image of Shahjahanabad in mid-nineteenth century
Source: The Illustrated London News,16th January 1858

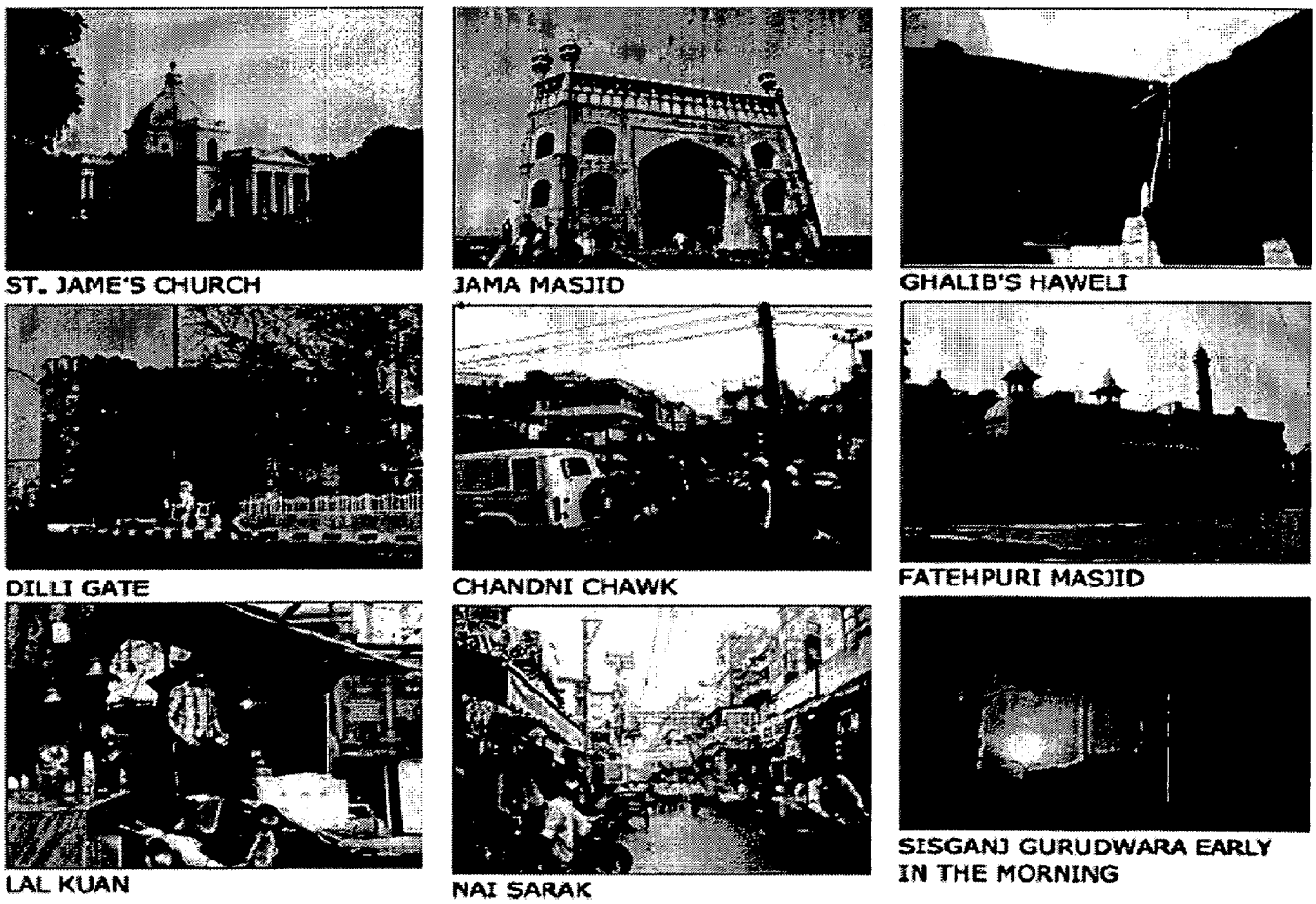


Fig.3.11. Important places of Shahjahanabad
Source: Panda, J. "Planning for a Historic Urban Area, Case Study: Shahjahanabad", Master in Urban Planning Thesis, SPA, 2008; Compiled by Author

Since its initial inception, Shahjahanabad has undergone a series of changes. In 1920's it became the part of the powerful imperial capital of Delhi. Finally, after 1947, the area turned in to a congested, commercial and chaotic hub of the democratic capital.

3.3.3. Major Transformations in the Area

Once a beautiful city, new presents a chaotic picture. It has become a core of vast extended metropolis accommodating a part of the business district. The politics of urban development has played a vital role in the degeneration of socio-economic conditions of Shahjahanabad. The population increased here to its saturation up to the year 1961 (Fig. 3.12) but since then there is large scale infill by commercial use replacing residential use.

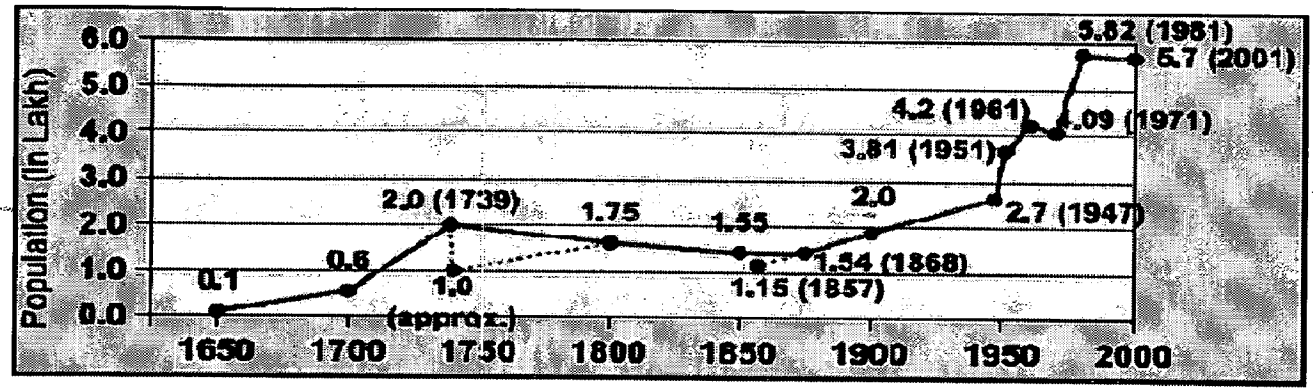


Fig.3.12. Growth of population in Shahjahanabad
Source: Panda, J. "Planning for a Historic Urban Area, Case Study: Shahjahanabad", Master in Urban Planning Thesis, SPA, 2008

- The establishment of railway infrastructure in the year 1880 led to a dramatic growth in the overall structure of Shahjahanabad. The new road and rail connections accompanied the proliferation of industries, which in turn motivated migration of people from the country side.
- As New Delhi was getting popular as the new administrative capital, Shahjahanabad on the other hand suffered continuous degradation due to overcrowding, which was turning the city core into a "slum like" condition.
- After partition of India, the walled city saw a sudden influx of 1,500,000 people just in four months, out of which 500,000 were listed to be refugees. The refugee population settled into the walled city had no other means to earn living, so trading was an immediate option.
- Establishment of inter state bus terminus and increase in the supporting infrastructure like transportation, banks, rest houses etc gave further impetus to the growth of trade and commerce activity in the area.

- Currently, just about 3% of the population go outside to work, 20% of the women are engaged in home based occupation and about 20% of the children are permanent workers.

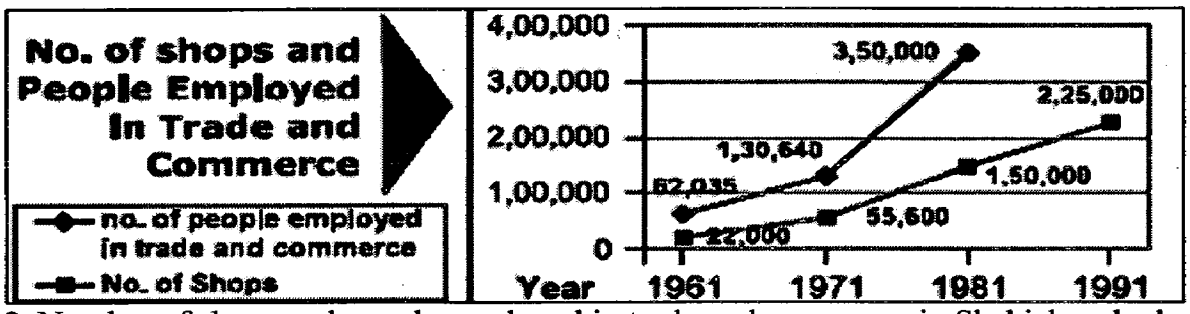


Fig.3.13. Number of shops and people employed in trade and commerce in Shahjahanabad
Source: Panda, J. "Planning for a Historic Urban Area, Case Study: Shahjahanabad", Master in Urban Planning Thesis, SPA, 2008

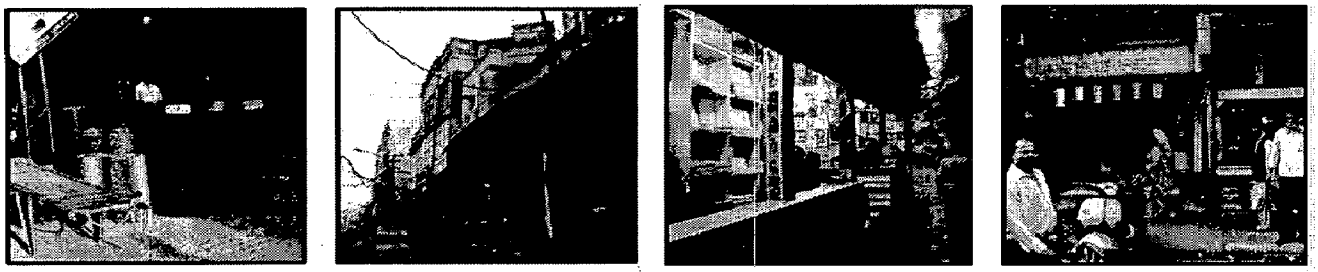


Fig.3.14. Commercial pockets in Shahjahanabad
Source: Panda, J. "Planning for a Historic Urban Area, Case Study: Shahjahanabad", Master in Urban Planning Thesis, SPA, 2008

3.3.4. Problems and Issues observed in Shahjahanabad

Shahjahanabad, which was initially designed for a population of 60,000 people spread over the area of 569 hectare, today faces a population pressure of half a million with its residential areas reduced to 180 hectares. [1] Excess commercialization in this area gave rise to problems like:

- Overcrowding
- Deterioration of the housing stock
- Increasing rents
- Ownership issue
- Property transfer and subdivision
- Traffic congestion
- Environmental degradation

[1] Singh, A. "Confrontation, Compromise and Reconstruction of The Walled City of Shahjahanabad", Master of Science in Architecture Studies Thesis, MIT, 2006.

Table 3.1. Factors responsible for degradation in social and physical conditions of Shahjahanabad

Factors responsible for	
1. Deterioration of the living conditions	**2. Poor maintenance of the building**
• Migration to the city • Very high density of population • Negligible physical and social infrastructure • Area highly commercialised	• Effect of Rent Control Act (fairly low rent paid by the tenants) resulting negligence of the individual owners • 'Pugree system' of property transfer • Sub-division of ownership rights • Building-use transformation from residential to commercial/warehousing.

Source: Author

3.3.5. Initiatives taken for development

- The **MPD-1962** adopted redevelopment, rehabilitation and conservation strategy for the walled city area.
- **Redevelopment of Jama Masjid area** was taken up by the DDA during 1975-77.
- In 1976, urban renewal proposal was given for an area of 2600 ha., known as **'Special Area'**. This has been divided into 4 Urban Renewal Areas, namely (i) Walled City (ii) Karol Bagh (iii) other Urban renewal Areas and (iv) Specific use zone areas.
- Walled city of delhi with concentration of historical buildings has been designated as **"controlled conservation area"**.

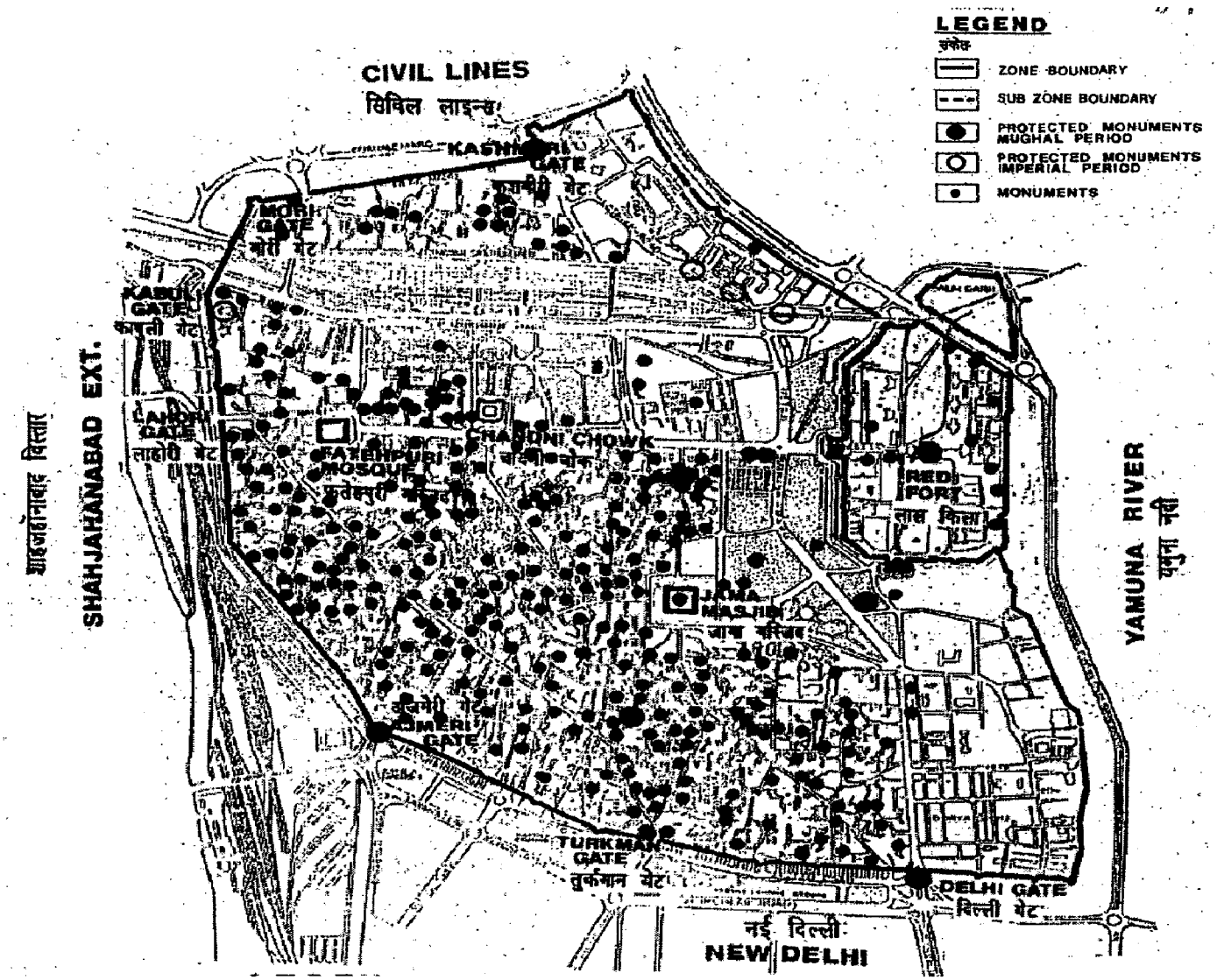
3.3.5.1. Conservation Strategies

1. Shifting and delimitation of non-residential activity
2. Upgrading physical and social infrastructure
3. Traffic and transportation management and regulation
4. Conservation and restoration of historical buildings
5. Revitalisation of residential areas

Master Plan has proposed Special Area Regulations for Walled City.

Areas of Conservation:

As per the Archaeological Survey of India in 1914 there were 1321 historical monuments in Delhi of which 1208 still exist. Out of these, 411 are in the Old City of which 41 monuments fall under the category of protected monuments (Map 3.1).



Map 3.1. Location of monuments in Walled city of Shahjahanabad as identified by ASI Survey
Source: DDA Zonal Development Plan

3.3.5.2. Redevelopment and Renewal Strategies

According to the guidelines for Master Plan for Delhi 2021, issued by the Ministry of Urban Development and Poverty Alleviation (July 2003), a major theme of the new Master Plan is redevelopment of old and degraded areas (while taking care that buildings of heritage value are protected and conserved).

1. The existing legal and procedural barriers to redevelopment, are to be reviewed and positive incentives (such as higher FAR in the old city and the "special area") are considered.
2. The integrated renewal scheme are to be initiated by the property owners, local associations/co-operatives or authorised developer, which will be submitted for planning approval of the DDA/local body.
3. This way the process of area by area renewal and redevelopment would start and will trigger a process of

- decongestion and conservation,
- releasing heavily built up area for open space/greenery,
- up gradation of social-physical infrastructure and
- shifting out of hazardous, inflammable and noxious activities from the Old City.

4. The incentive of additional FAR, along with other measures like liberalisation of land use, time bound approvals etc, would motivate the owners and residents to adopt the route of planned development.

3.3.5.3. Renewal of Chandni Chowk Boulevard

As a pilot project, the local body is taking up the renewal of the **Chandni Chowk Boulevard** involving the following steps.[1]

1. Improving road conditions, tree plantation, development of tourist facilities.
2. Improvement of street lighting and lighting of building facades.
3. Running free coaches/trolley buses between Red Fort and Fatehpuri Mosque.
4. Restricting informal shops and vendors up to the lanes perpendicular to Chandni Chowk and developing a vendor market near the Lala Lajpat Rai Market.
5. Giving easy loans to the house owners to refurnish their buildings without changing the traditional character.
6. The modernisation of traditional activities like: development of Paranthe Wali Gali and Maliwara as a modern food plaza with traditional music and dance programmes in the evening.
7. Declaring Chandni Chowk area as no hoarding, no horn and no beggar zone, to create a tourist/people friendly environment.
8. Complete pedestrianisation of the whole area with development of new parking areas various points adjacent to the entry of Chandni Chowk.
9. Creating awareness among the residents, property owners and other stakeholders and attracting private investments through FAR and tax incentives, thus making the process a self-starting and participatory activity.

[1] Jain, A.K. "A Strategic approach for renewal and regeneration of the inner city of Delhi", Online Posting, http://www.ashahabitat.com/knowledgebase/pdf/strategicinnercityrenewal.pdf.

3.3.6. Inferences

1. In the development process of the walled city of Shahjahanabad, the main aim was to create places that people love to live, work or visit.
2. Initiatives have been taken in the "Renewal of Chandni Chowk Boulevard Project" to enrich the existing character and history that makes the building or space unique from others. Hence, in a heritage led regeneration programme, a respectful approach should be pursued emphasizing the importance of a place with due regard for local identity, distinctiveness and character.
3. Variety in the built environment adds interest and supports diversity in other areas and diversity is a key element of sustainability. So an attempt has been taken to bring some variations in the existing land use pattern of Shahjahanabad, which mainly supports commercial and residential use.
4. Shared approaches to problem solving need clear rules and procedures to involve the local community and interested stakeholders.

CASE STUDY III

3.4. THE CASE OF UJJAIN – THE CITY OF TEMPLES

3.4.1. Location and Demography

- Ujjain is an ancient city of central India, in the Malwa region of Madhya Pradesh.
- It is situated on the western bank of the Kshipra River.
- It is situated at $23^0 10'$N latitude and $75^0 51'$E longitudes at about 510 m above sea level.

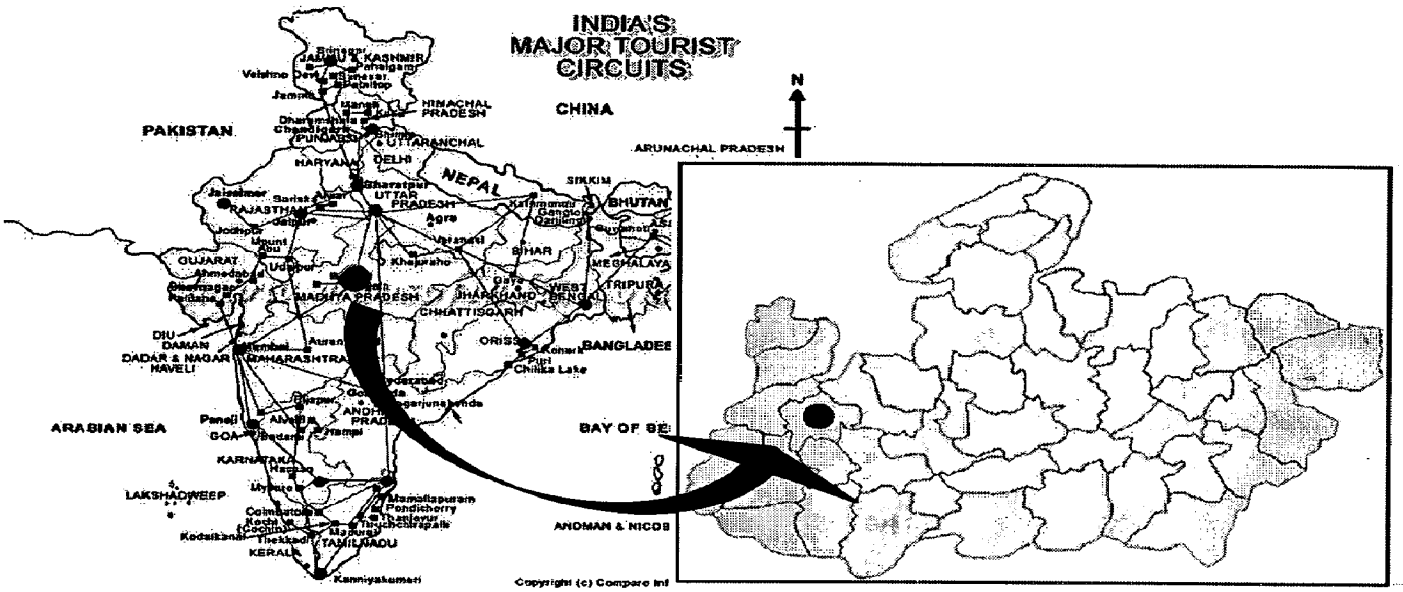


Fig.3.15. Location map of Ujjain
Source: CDP, Ujjain

- Ujjain is 183 kms away from Bhopal, capital of Madhya Pradesh and 50 kms away from Indore city.

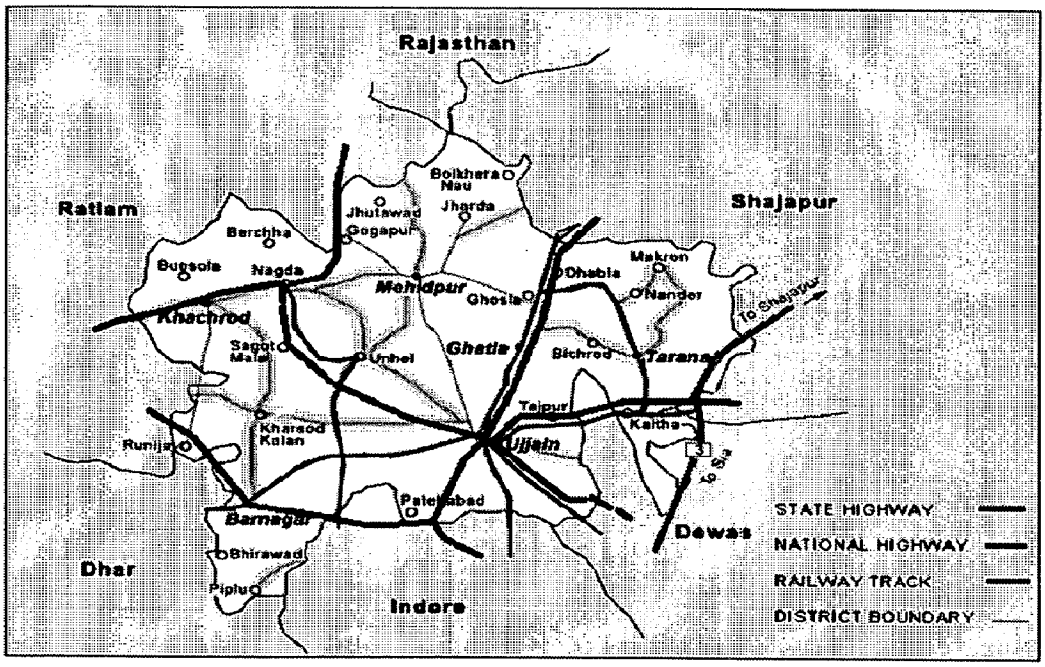


Fig.3.16. Regional linkages of Ujjain
Source: CDP, Ujjain

- Current population - 4.3 lakhs (2001 census)
- Area - 92.68 sq. km.
- Population Density – 4644

3.4.2. The Context

It is one of the seven sacred cities of the Hindus, and the Kumbh Mela religious festival is held here every twelve years. Along with regular visitors, (about 200,000 – 300,000 per year), during this time, there is a flood of devotees to the city (5 million in 2004). The city has nearly 2000 temples. Ujjain, the city of Mahakal has been a seat of learning where all disciplines of knowledge have flourished since time immemorial.

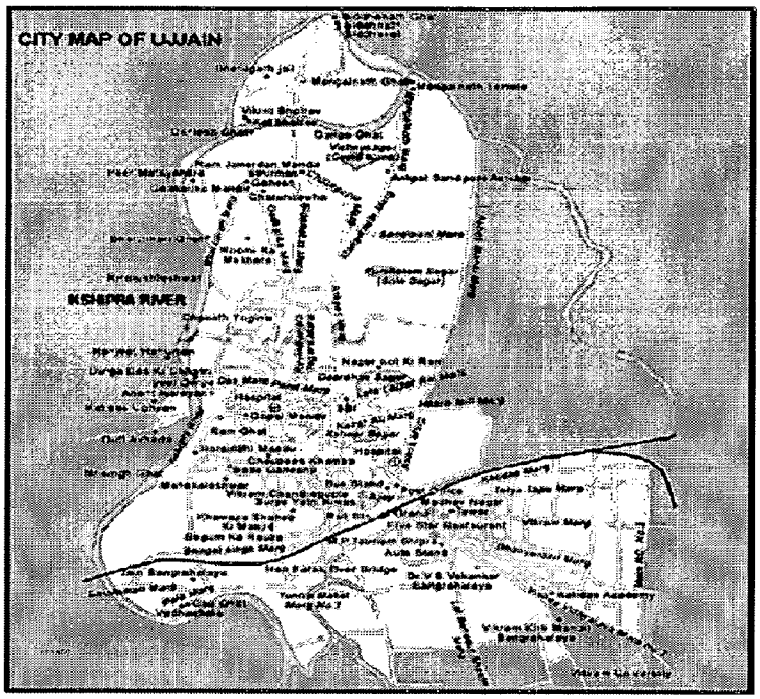


Fig.3.17. City map of Ujjain
Source: CDP, Ujjain

In the pre independence era, Ujjain witnessed the scenes of socio cultural rejuvenation, industrial and commercial growth on modern pattern and the struggle for freedom. Presently, Ujjain is a Commissionary and districts headquarters in the state of Madhya Pradesh.

3.4.3. Core Area

The area mainly covered under core city can be roughly delineated as Chardham to Har Sidhi temple road on west, Ramghat road on north, Hariphatak bridge road on east and Jaisingh pura road on the south.

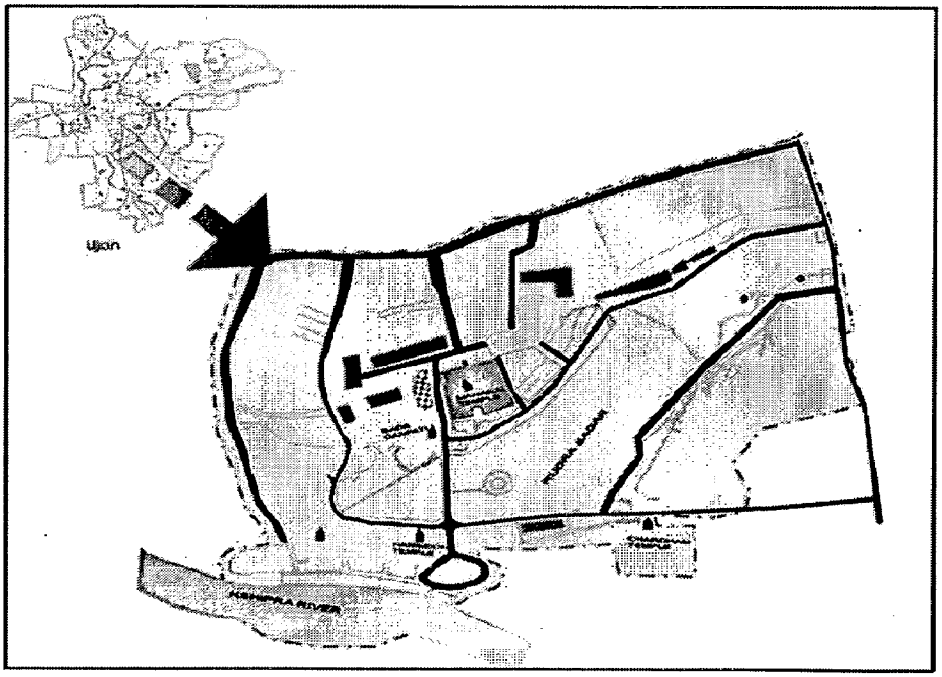


Fig.3.18. Map of the core area
Source: CDP, Ujjain

Area of the core:
About 2 sq.km.

Existing population:
About 15000

Floating population:
10000 to 15,00,000 (during festivals)

3.4.4. Major Transformations Occurred in the City

3.4.4.1. Socio economic changes

The city, once important for cotton manufacture has suffered considerable decline during the 60's. The city of Ujjain has seen an average growth rate of 31.8% in the last four decades. The growth rate has decreased from 44.7% (1971-81) to 18.69% (1991-2001). [1]

Main reasons behind this were:

1. Economic stagnancy
2. Closing down of industries
3. Decreased birth rate

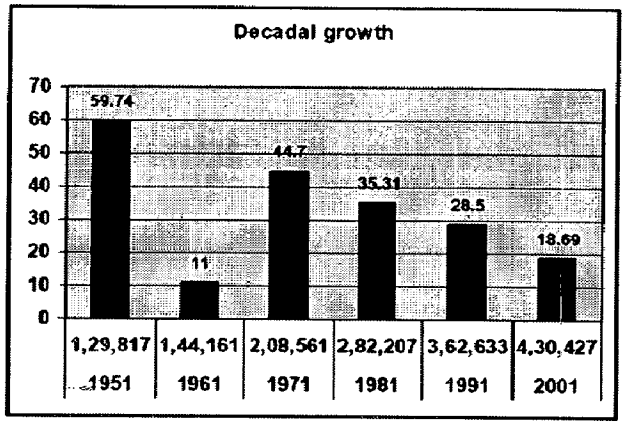


Fig.3.19. Decadal population growth
Source: CDP, Ujjain

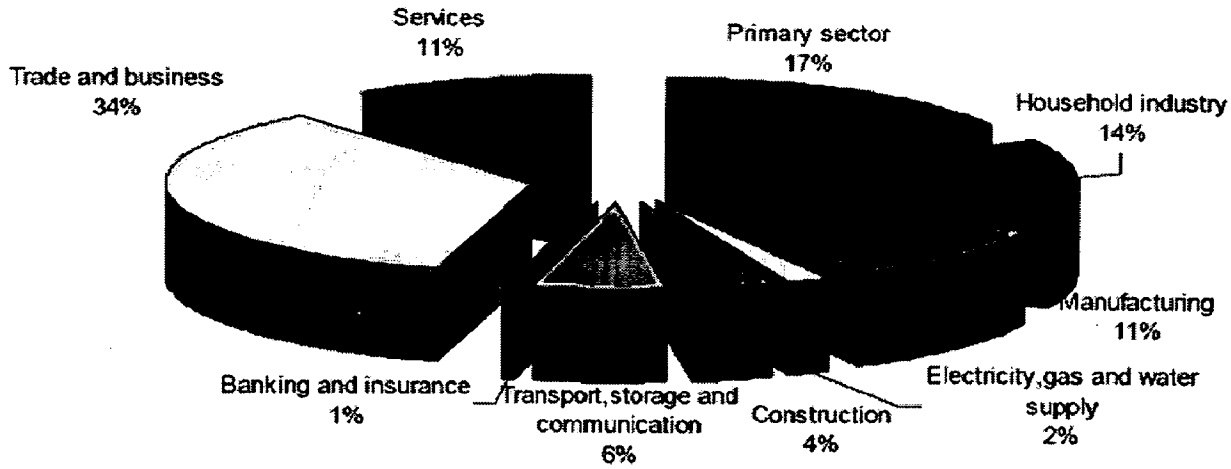


Fig.3.20. Occupational break up
Source: CDP, Ujjain

Today, religious tourism, services for the local population & some small scale industries are the mainstays of the city's economy.

[1] Ujjain City Development Plan for JNNURM scheme

3.4.4.2. Physical changes

Ujjain is a direct result of its topography, its temples, processional routes, public institutions and the river. The ghats are approached by a number of streets that run across the city. As one approaches the ghats, the street is lined with both small and large temples, shrines, a number of shops and push cart vendors selling merchandize related to the religious activities.

Gradually, decline of the waterfront environment, historic fabric and surviving artifacts was evident in the city.

Recent years have seen an explosion of privately owned vehicles, especially two-wheelers unsuited for the traffic, that congest the narrow thoroughfares.

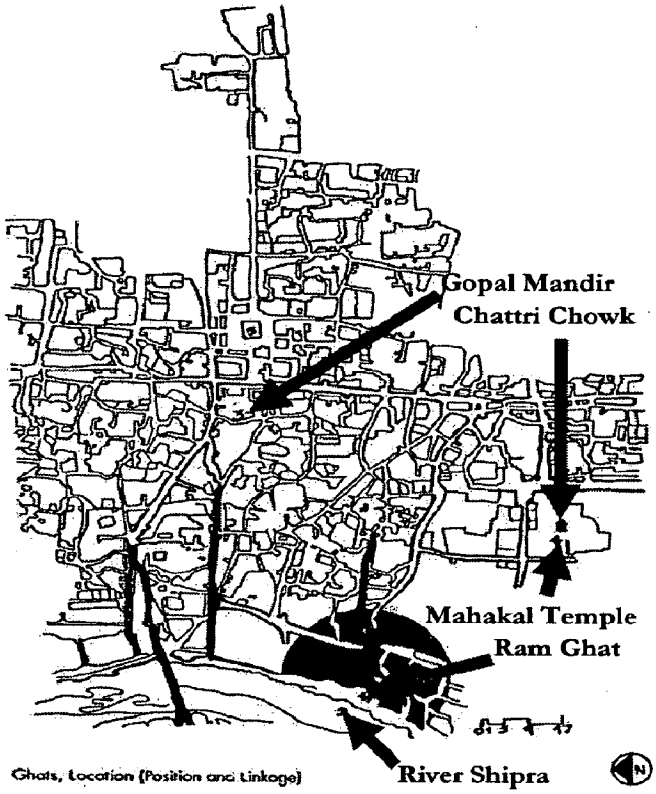


Fig.3.21. Plan showing approach routes to the ghat area
Source: Samant, S. "Manifestation of the urban public realm at the water edges in India— a case studyof the ghats in Ujjain", Elsevier Ltd., Great Britain, 2004

Main Causes:

- Continued dereliction,
- Abuse and decay,
- Lack of awareness amongst the local community and pilgrims,
- Tremendous developmental pressures,
- Inappropriate management of intense religious and traditional domestic practices.

Fig.3.22. Various temples and activities surrounding the ghat area
Source: Samant, S. "Manifestation of the urban public realm at the water edges in India— a Case study of the ghats in Ujjain", Elsevier Ltd., Great Britain, 2004

3.4.5. Problems Observed in the City

With respect to the present traffic & transportation system, following problems are analysed in the core area:

- Congested approach roads
- Inadequate drainage, poor lighting & encroachment on approach roads
- Improper zigzag shape on turnings causes hindrance to traffic flow
- Unorganized insufficient parking spaces
- Lacking signage system, leads to accidents
- Need of new roads to cater increased traffic demands

Ujjain suffers from marginal inward investment resulting in lack of amenities, poor infrastructure, inadequate and highly unhygienic utility services and absence of an appropriate disposal system.

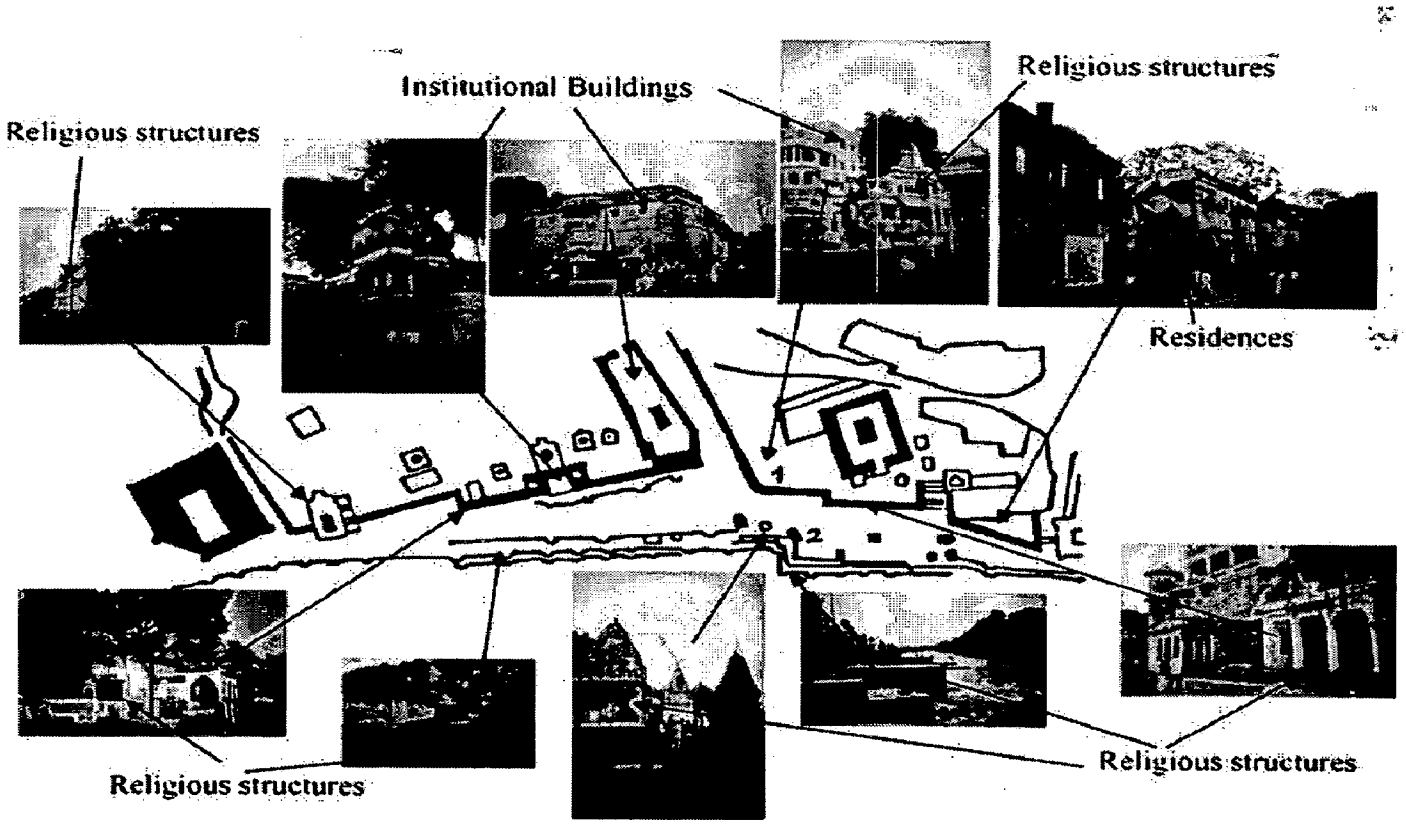


Fig.3.23. Land use plan of the ghat area showing residential, religious and institutional structures
Source: Author

Ghats are further congested with the growing number of tourists, stray animals, and encroachments of shopkeepers and hawkers.

Ujjain faces serious environmental problems of dry water bodies, degradation of water quality due to discharge of soaps, detergents and pollutants from washing and bathing.

When performing religious ceremonies and over exuberant festivities flowers, fruits, ashes of dead bodies, and other ritual items are thrown into the water, which decay over a period of time and contaminate the water.

3.4.5.1. Key Issues

a. **Pressure on existing infrastructure**

   During the religious occasions, there is a tremendous pressure on the existing infrastructure. The town has many narrow and unasphalted roads, especially within the central area. Encroachments in the main city area reduce the road width, which leads to congestion and pollution.

b. **No urban growth in Mela ground area**

c. **Underutilised industrial areas**

d. **Concentration of illegal colonies**

e. **Concentration of slums**

3.4.6. Initiatives taken for development

Conservation & restoration strategies for monuments/temples and ghats have been adopted in Ujjain along with the riverfront development of the northern side of the ghats. The main objectives for these strategies were:

1. To market image of Ujjain with spiritualism for high end tourism potential
2. Sustainable development with minimum damage to the environment.

Some of the important strategies mentioned in the Comprehensive Development Plan of Ujjain are:

a. Augmentation and Asset Rehabilitation
b. Widening and Strengthening of Road structures and removal of encroachments
c. Traffic streamlining at intersections
d. Improvement of parking and pedestrian facilities
e. Comprehensive study on traffic and transportation

Summary of important strategies proposed for Ujjain is given in the following table.

Table 3.2. Summary of important strategies proposed for Ujjain

Strategies	Conservation	Planning	Adaptive reuse	Infrastructure
Implementation	Listing, grading, documentation, action-oriented conservation and restoration plans, redevelopment strategy	Site, infrastructure and structural studies, engineering appraisals, incremental urban planning, design guidelines and regulations	Positive planning policies to (1) accommodate new uses that complement existing occupations, embrace tourists and local community, (2) re-integrate city with the waterfront and (3) boost economic growth	Strict environmental controls, short-term ameliorative measures, long-term restorative and maintenance strategy, integrated transport network, ecological restorations, drainage and garbage disposal system, public awareness initiatives
Funding	Public and private sector funding, donors	Public sector funding	Private sector funding, donors	Public–private sector funding
Responsibility	Local authority, conservation bodies, INTACH, multi disciplinary design teams	Local authority, urban planners, INTACH, local community, multi-disciplinary design teams	Local authority, local community INTACH, public–private partnerships' multidisciplinary design teams	Local authority, national government, INTACH, local community, environmental engineers, multi-disciplinary design teams
Advantages	Use of local craftsmanship to salvage historic buildings	Improve attractiveness of the city	Attract investments, encourage economic prosperity	Improve quality of life, encourage economic prosperity
Disadvantages	Costs	Time and continued commitment	Reliance on private sector funding	Reliance on awareness amongst users
Examples	Conservation that assimilates change— Amsterdam, Havana	Progressive planning— Vancouver	Controversial mix of new and old— Butler's Wharf, London	Clean up operation— Surat, India

Source: Samant, S. "Manifestation of the urban public realm at the water edges in India— a Case study of the ghats in Ujjain", Elsevier Ltd., Great Britain, 2004

3.4.7. Inferences:

1. It is difficult to put a stop to environmentally damaging religious practices because they are intermingled with the socio-cultural practices and economy of a sacred city like Ujjain that is hugely reliant in economic terms on the tourist industry. So, public awareness is very much necessary in order to improve their quality of life and economy of the city through tourism and other cultural practices.

2. At the same time, the main vision of the regeneration programme in the city is to decongest the central area as well as to relieve the pressure on it during the festive seasons without disturbing its character.
3. The idea is to involve local workforce, timeless skills and technologies that are abundant in India, in order to execute this entire project successfully.
4. For any regeneration programme to take root in India, proposals developed must respect the constraint of financial shortage and therefore, funds from public and private donors would have to be attracted.

3.5. CONCLUSION

In Indian context, urban regeneration is a little understood phenomenon. Hence, there is no single prescribed form of urban regeneration practice and no single authorities' source of information though many public and private organizations have been involved in such ventures. There is a need of integration among the different organizations who are involved in regeneration process of an area. Again, in case of Indian cities, social participation should be encouraged and the local people must be aware of the positive impacts of regeneration process. The challenge lies in further improving the planning, management and conservation practices, make it more people centric, to reduce the existing and new aberrations in future.

In Indian cities, the problems are different than that of foreign countries. The next chapter deals with a detail study of the Bhubaneswar region in order to get an idea of the historical importance, regional setting and individuality of the old city core in comparison with the other parts of the capital city.

CHAPTER 4

REGIONAL PROFILE OF BHUBANESWAR

4.1. INTRODUCTION

The study area chosen in this thesis lies in the Capital of the state of Orissa, Bhubaneswar. Hence, in the following chapter, the investigator has studied the regional linkages, physical characteristics, population growth pattern and land use distribution of the region in detail to understand the function prior to conduct the thorough investigation in the old town area. Hand in hand, the historical background and planning process of the city has been studied in order to know the transformations occurred in the city from its time of evolution till recent periods and the impact of these transformations on the old city core.

4.2. THE CONTEXT

Bhubaneswar, the heavenly city on the east coast of India in the Khurda district of Orissa state, is at heart a Hindu town, with its warrens of markets, temples, and sacred water tanks. Bhubaneswar is the name which has been given to an area covering 91.9414 square kilometres. It covers 28 villages or rather mouzas which are revenue units. Among all these mouzas, the mouza Bhubaneswar (now commonly called Old town) has been known as such for many centuries. The place has evidently derived its name from its principal deity Tri-Bhubaneswar or Bhubaneswar. Bhubaneswar has two distinct divisions, viz., the Old Town and the New Capital. The temple town rose and fell in importance during the course of time and finally became the capital of Orissa in 1948. After that, gradually the city witnessed a rapid expansion, increased trade opportunities, good infrastructure facility coupled with high population growth rate accelerated due to migration from rural areas. Now, Bhubaneswar city, being the capital of the state, is a major centre of administration. It is also an important tourist centre because of its location at the apex of the "Golden Triangle" of tourism.

4.3. LOCATION

1. Geographically, Bhubaneswar is situated in the eastern coastal plains of Orissa and south-west of the river Mahanadi, whose tributaries like Kuakhai, Bhargavi and Daya wash the fingers of this city.
2. Bhubaneswar is situated between 21° 15' North Latitude 85° 15' Longitude and at an altitude of 45 meters above sea level.
3. The city covers an area of about **468 sq km**.

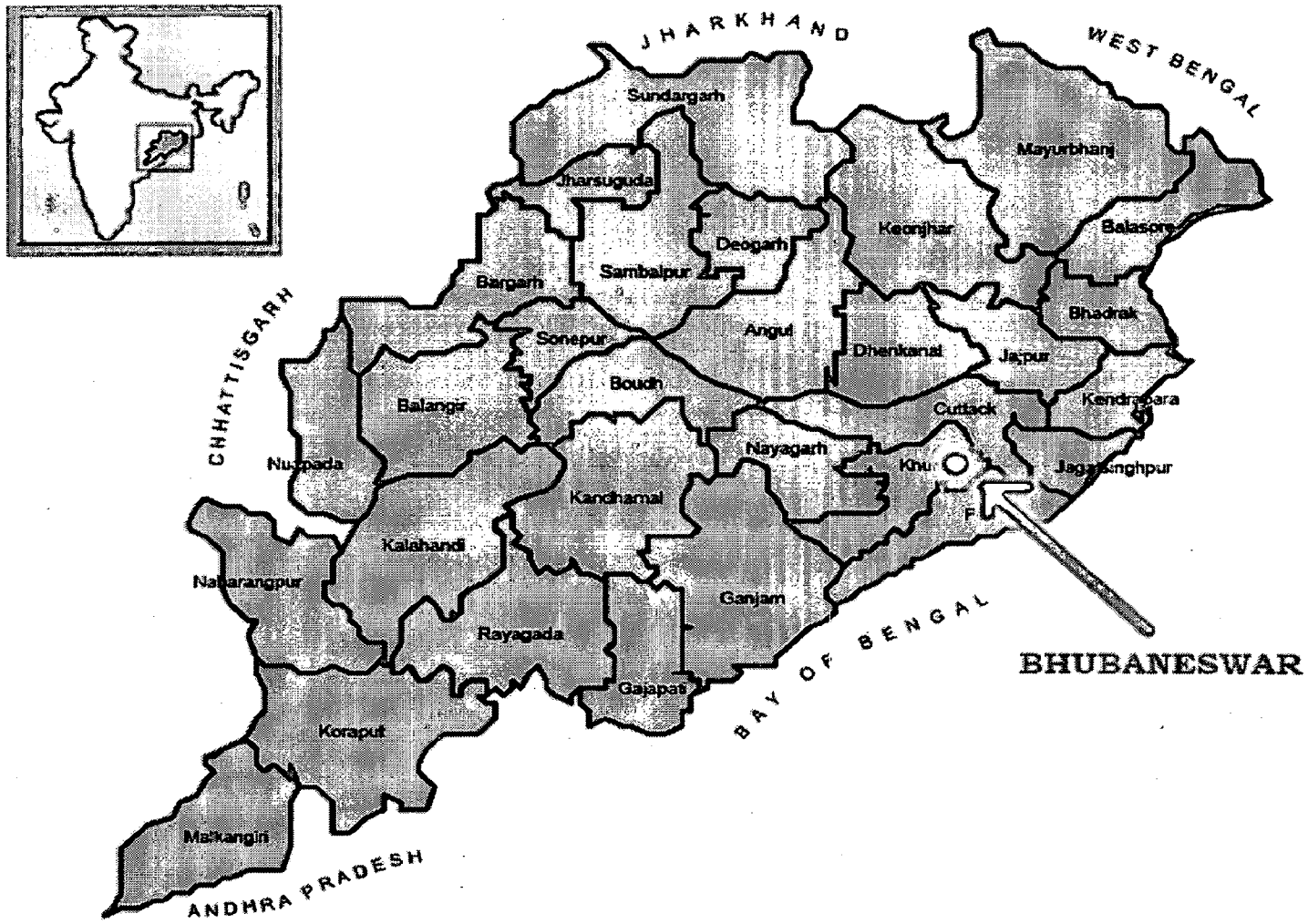


Fig.4.1. Location map of Bhubaneswar
Source: Human Development Report 2004, Govt. of Orissa

4.4. THE REGION

Bhubaneswar along with Cuttack, the previous state capital, forms an urban complex. In and around Bhubaneswar- Cuttack urban complex, few Class II and Class III towns have flourished having strategic importance in the functioning of the region, namely Khurda, Jatani and Choudwar. The total planning region stretches over an area of 720 sq. km. with a total population of 1.58 million (Census, 2001).

The city is administered by the BMC (Bhubaneswar Municipal Corporation) and the administrative jurisdiction of BMC extends over an area of 135 sq.km. The capital sub-region can be said to extend from Khurda, Jatni in the south and up to Choudwar in the north. It is bounded by River Daya and River Kuakhai in the east and north-east respectively. Nandan Kanan, a famous wild life sanctuary is located in the north of the city, whereas Chandaka reserve forests lie on the west.

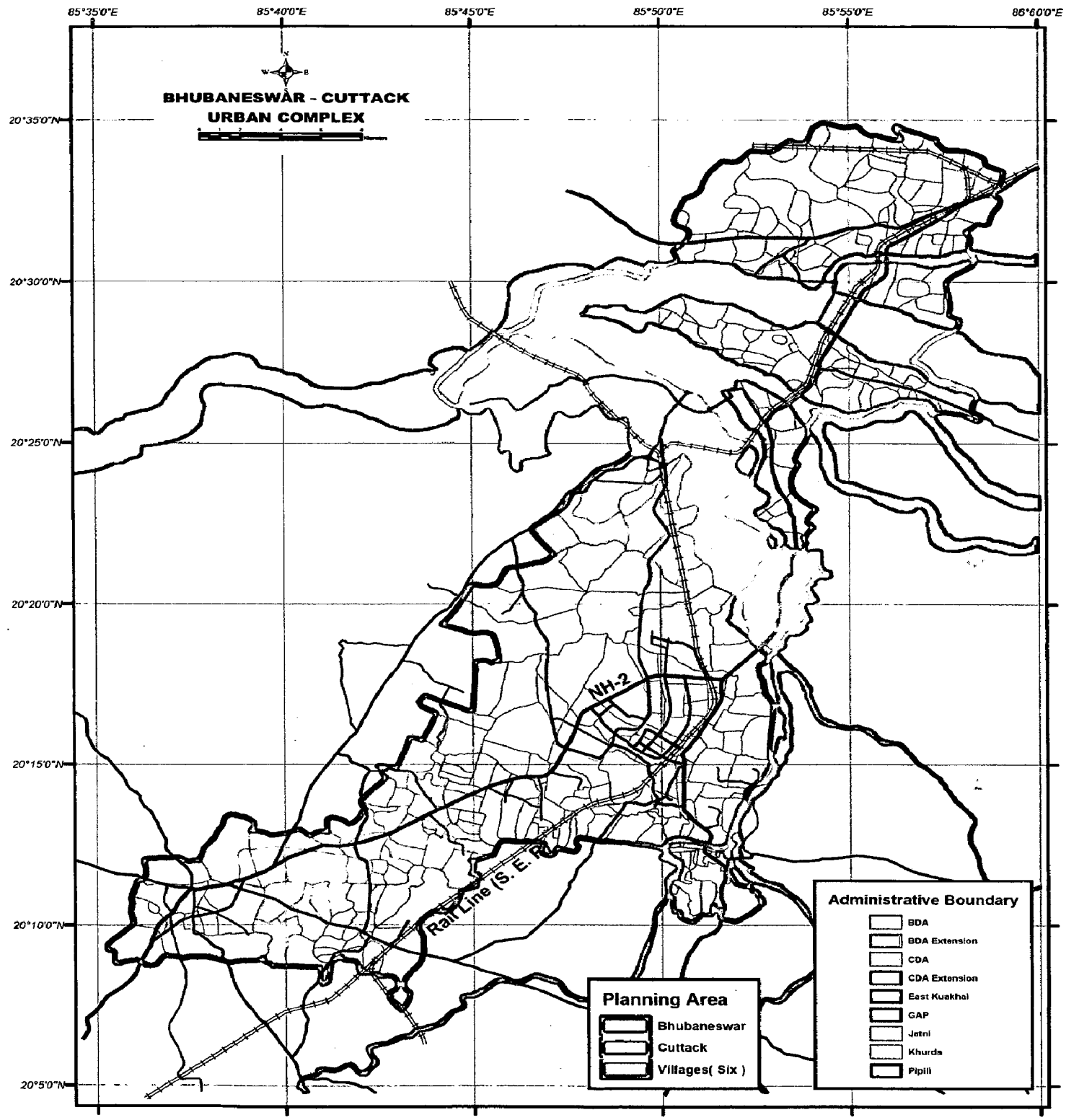


Fig.4.2. Cuttack- Bhubaneswar urban complex showing the surrounding towns
Source: CDP,Bhubaneswar

Bhubaneswar has tremendous potential to act as a complimentary growth center to Kolkata in the Eastern Region for trade and commerce. Moreover, the ancient temples and religious monuments dating from 3rd century B.C. to 15th century A.D. as well as the proximity to the historical cities of Puri and Konark offers tremendous opportunity to

develop Bhubaneswar – Cuttack Urban Complex as a strategic node for tourist destinations. The emergence of new academic and other institutional activities, corporate functions will further add to this growth momentum. In 2001, the population of Bhubaneswar was 0.74 million, housing nearly 11 percent of the urban population in the State.

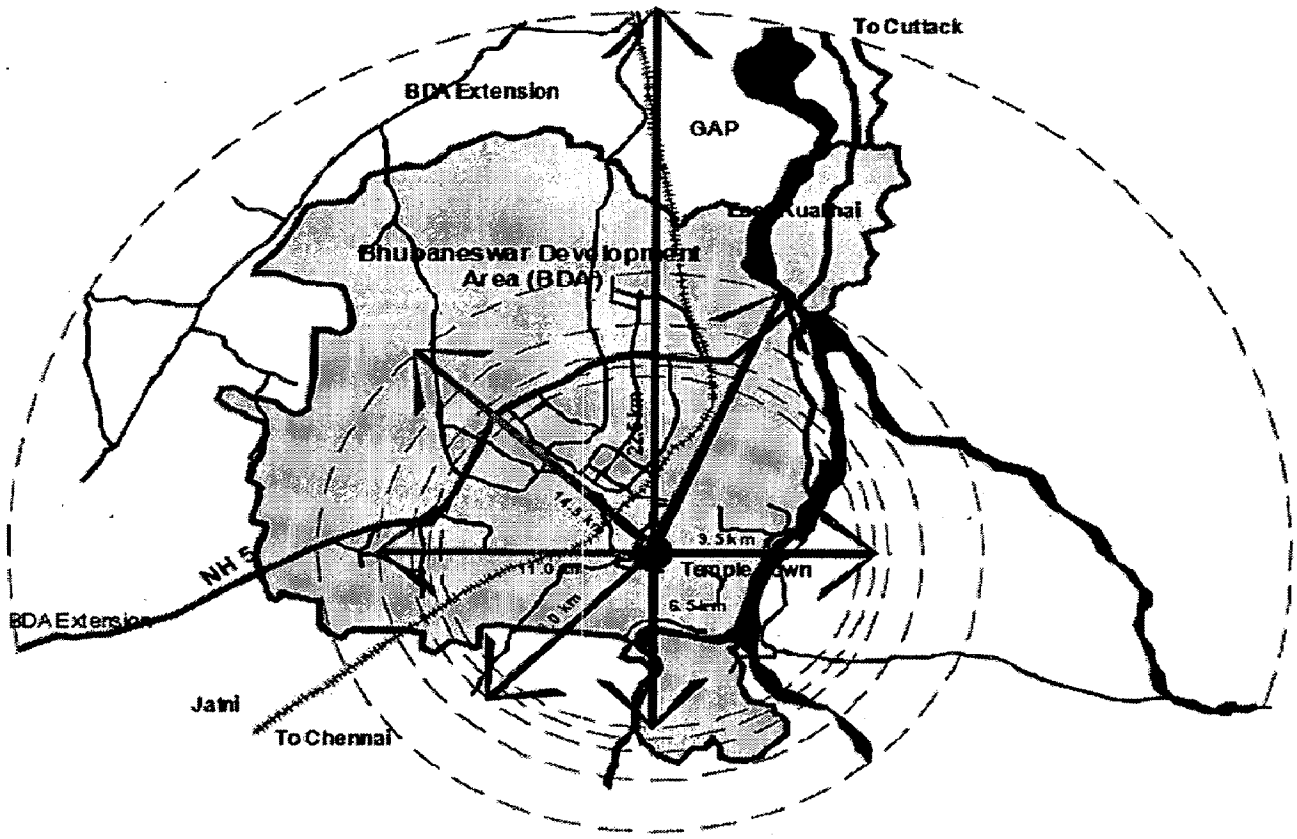


Fig.4.3. Current Growth Directions of the city & Extent of City Growth
Source: CDP,Bhubaneswar

4.5. REGIONAL LINKAGES

Bhubaneswar is well connected by a road and railway network to the urban centres in the state and neighbouring states. Inter state bus services operate daily to Kolkata, Raipur (Chattisgarh) and Tatanagar (Jharkhand). Bhubaneswar is directly connected by rail with Kolkata, Puri, Chennai, Delhi, Mumbai, Bangalore, Guwahati, Hyderabad, Tirupati, Thiruvanthapuram, and Tiruchirapalli. The city is also connected by air with New Delhi, Mumbai, Kolkata, Chennai, Vishakhapatnam, Hyderabad and Raipur.

NH-5 (Kolkata- Chennai) and NH-203 (Bhubaneswar- Puri) traverse the city. Bhubaneswar is well connected with the city of Cuttack (30 kms) and Puri, the abode of Lord Jagannath through rail and road linkages. It is located at a distance of about 64km from Puri, forming the apex of the 'Golden Triangle' with Konark and Puri as the other two points.

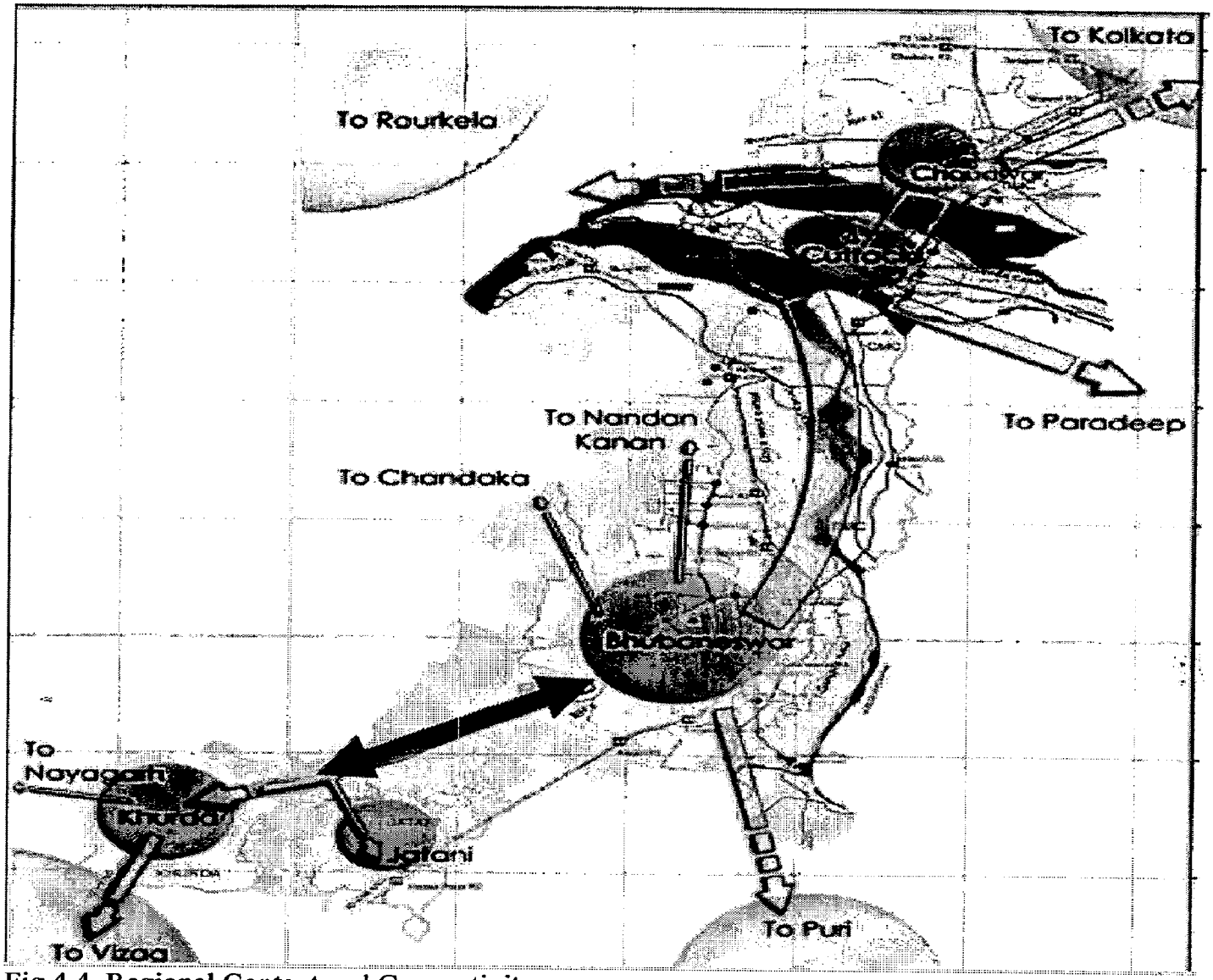


Fig.4.4. Regional Context and Connectivity
Source: BCUC report, IITK

4.6. CONSTITUENTS OF BHUBANESWAR

Bhubaneswar is bounded on the north by the villages Patia, Rokat and Mancheswar; on the east by the villages Koradakanta, Keshura, Bankual, Basuaghai, Mahabhoi Sasan, and Raghunathpur; on the south by the villages Kukudaghai, Orakala, Ebaranga, and Bahadalpur; and on the west by the villages Jadupur, Begunia, Dumuduma, Jokalandi, Andharua and Jagannathprasad.

It covers 28 villages or mouzas which are revenue units. These mauzas are Purba Badagada, Paschima Badagada, Bhubaneswar, Kapileswar, Haripur Patna, Lakshmisagar, Lakshmisagarpatna, Bhimpur, Siripur, Rampur, Bomikhal, Govindaprasad, Kalaraput, Sudarpada, Kapilprasad, Pokhariput, Berna, Nayapalli, Barmunda, Jagamara, Jharapada, Charbatia, Nuagaon, Gada Gopinathprasad, Pandara, Garkan, Chandrasekharpur and Damana.

4.7. PHYSICAL CHARACTERISTICS

4.7.1. Climate

1. It has a moderately humid tropical climate with a maximum and minimum temperature of 31.0 degree celcius and 16.0 degree celcius during winter, and 43.0 degree celcius and 27.0 degree celcius during summer respectively.
2. The average rainfall in a year is 152.4 centimetres (60 inches).
3. The mean maximum humidity ranges from 71 percent to 83 percent and the mean minimum from 41 percent to 81 percent.
4. The prevailing wind direction is southwest while the monsoon wind blows from south and southwest.
5. The period from October to April is considered to be the best season of the place.

4.7.2. Topography

1. Bhubaneswar lies on the western fringe of the mid-coastal plain of Orissa with an average elevation of 45 metres above mean sea level.
2. It is located on a low laterite plateau and continuous erosion has shaped the topography into valleys and ridges.
3. Geologically this region belongs to the Gondwana landmass, one of the oldest and most stable landmasses in the world.

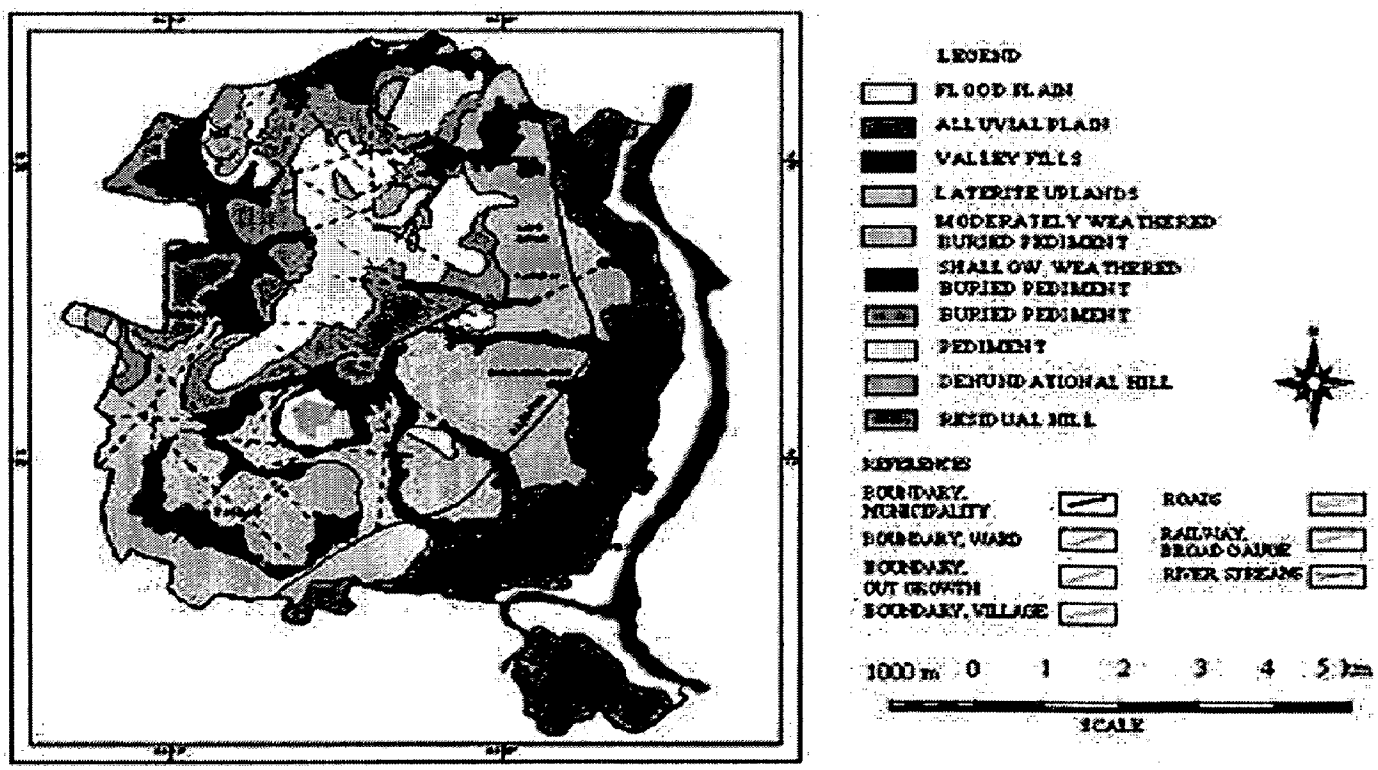


Fig.4.5. Hydrogeological map of Bhubaneswar
Source: Mishra, P. "Water Resource Mapping Using Remote Sensing and GIS: A Case Study of Bhubaneswar, Orissa", 2004

The major part of the area is covered with the quaternary alluvium and lateritic soil (Fig.4.5).

4. Topographically, the city can be divided into two major parts namely western upland and eastern lowland with the South-Eastern Railway forming the main divide between these two broad units.
5. With the ground sloping from west to east, the city has a natural advantage for drainage. It has an undulating ridge and valley topology covered by number of natural drainage channels.
6. The drainage is controlled by the River Kuakhai on the north and River Daya in the south.
7. There are 12 major drainage channels along with a number of open drains running west to east crisscross the city, out of which 10 are identified as drainage zones on planning document. Most of these finally join to form Gangua Nallah that meets River Daya.

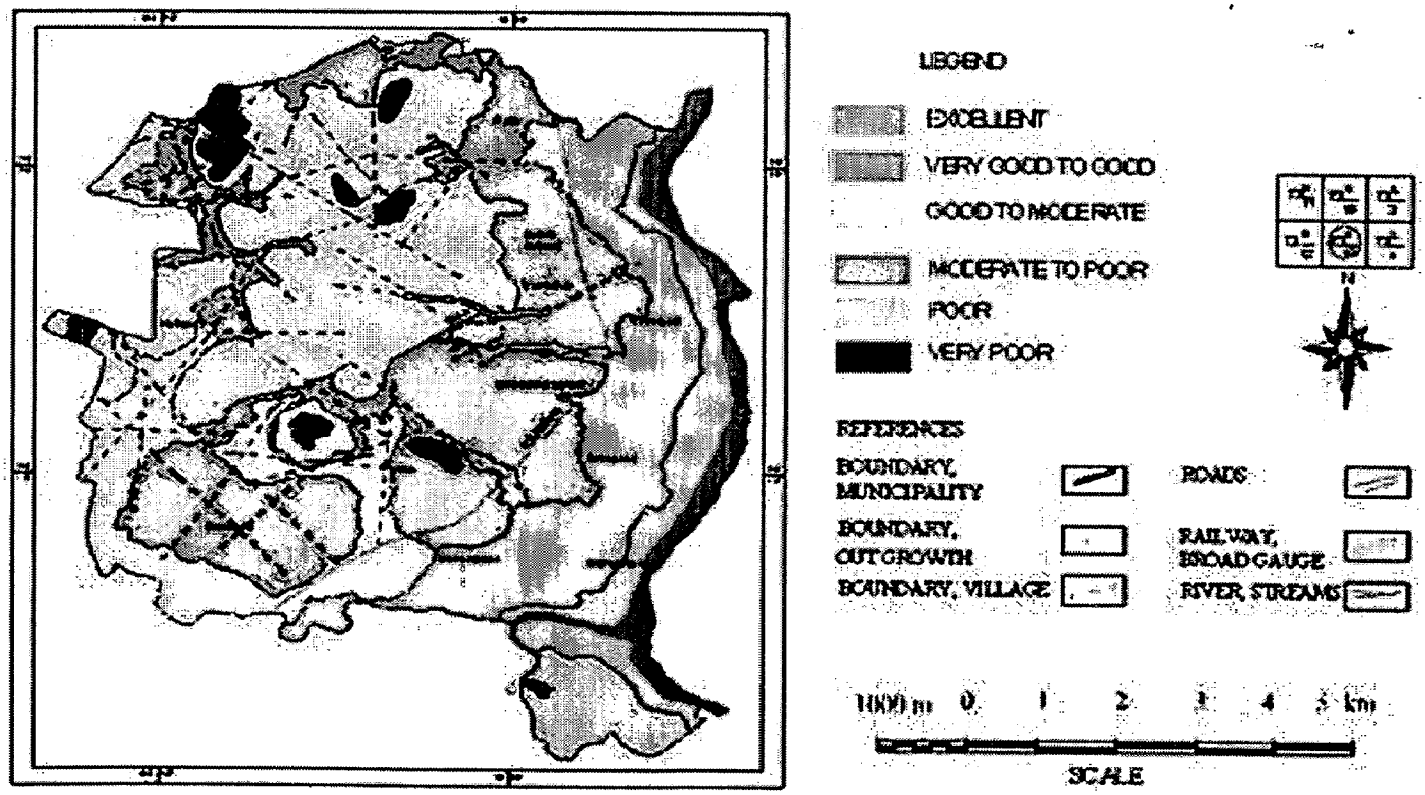


Fig.4.6. Ground water potential map of Bhubaneswar
Source: Mishra, P. "Water Resource Mapping Using Remote Sensing and GIS: A Case Study of Bhubaneswar, Orissa", 2004

4.7.3. Water Resources

The city is bounded by River Daya and River Kuakhai in the south and west respectively. The Bhubaneswar sub-division of Khurda district is mainly covered by the following rivers (Fig.4.7).

i. Kuakhai

ii. Budunai

iii. Daya

iv. Bhargavi

(i) KUAKHAI:

River Kuakhai originating as a branch of Mahanadi enters Bhubaneswar Block area from the north near Jhinkardiha and Marichia village of Dadha G.P. and flow touching the eastern boundaries of Kalyanpur, Barimunda, Basuaghai and Sisupal G.P. and passes amidst Mancheswar. This river submerges many of these areas during flood.

(ii) BUDUNAI:

It originates from the forest and hilly tracks of Chandaka and flows through Daruthenga G.P. near Alasua, Raghunathpur, Kalarahanga and Barimunda G.Ps. and finally merges into river Kuakhai near Jaripatna.

(iii) DAYA:

The river Daya takes off from river Kuakhai at Saradeipur and runs towards a few miles and then makes a sharp turn West ward for four miles and after that continues its course outwards; the rest of the length emptying itself into the north eastern corner of the Chilika lake, 37 miles from its take off place.

(iv) BHARGAVI:

The River Bhargavi passes through some village of Balianta Block. The river affects a part of Balianta and Balipatna blocks during flood.

4.7.4. Forest Resources

Enormous hillock and forests are spread across the northern, western and southern part of Bhubaneswar. Nandan Kanan, a famous wild life sanctuary is located in the north of the city, whereas reserve forests lie on the west. Growth of the city is restricted by the Chandaka- Damapara reserve forest in the north western part where as Barunei reserve forest lies to the south west of the city (Fig.4.7).

The area of the green belt including the protected forest and reserve forest is 65.16 sq.km. as per the Comprehensive Development Plan 1988-2001. This area covers 28.27 percentage of the total landuse of the city.

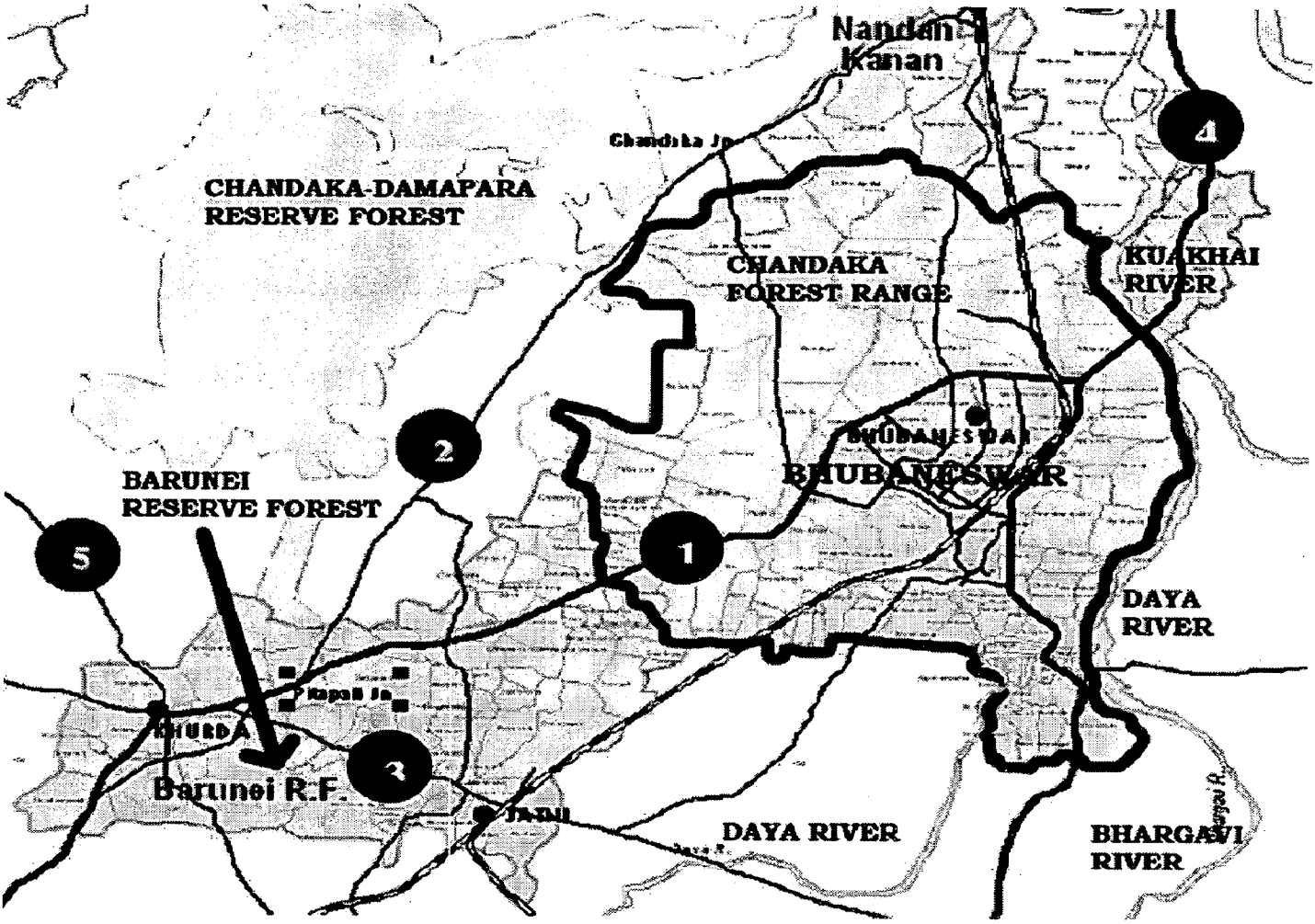


Fig.4.7. Water and forest resources of Bhubaneswar
Source of base map: CDP, Bhubaneswar, Compiled by Author

4.8. HISTORICAL BACKGROUND

The historical reference of the city dates back to the 6th Century BC. The area was ruled by several dynasties such as the Guptas, Mauryas & Suryas. Over a span of time, the city has been known by different names such as Kalinga Nagar, Tribhubaneswar, Temple City, Ekamra Kshetra and finally as Bhubaneswar.

Old Bhubaneswar, as a Hindu cultural and religious center, included an area much wider than the one occupied by the present temple town. *Swarnnadri-Mahodaya*, a topographical manual for the pilgrims, defines Bhubaneswar as lying between the modern Khandagiri on the west and the temple of Vahirangeswara situated on the top of Dhauligiri on the south. The entire area lying between these two prominent points, stretching approximately twelve miles, constituted the extent of old Bhubaneswar, and much of the remains of the earliest habitations and monuments have been discovered in the precincts of the present temple city. [1]

[1] Official portal of Government of Orissa, Online posting, http://orissagov.nic.in/portal/ViewDetails.asp?vchglinkid=GL012&vchplinkid=PL048

Bhubaneswar derives its name from the temple city's chief deity, the Lingaraja: the Lord of the Three Worlds, Tribhubaneswara. Bhubaneswar first witnessed the creative activity of temple building in the seventh century A.D. After that, it experienced several changes in its earlier physical form, its ethnic composition, its religious character, and its role as a sub continental socioreligious center from century to century or decade to decade. The city's character alternated with Buddhism, Jainism, Shaivism, and Vaishnavism, religions which found a home in Bhubaneswar with the changing dynasties of Kalinga, the ancient name for Orissa. The presence of all these religions gave Bhubaneswar, its sacred character, blending art with religion.[1]

4.8.1. Maurya Dyansty

The excavations at Sisupalgarh[2], take the origin of the old city back to the 4th or 3rd century B.C., strengthening the belief that the city of Toshali, the regional administrative capital of Ashoka, might have been situated in the neighborhood of Dhauligiri. The Gandhavati river (modern Gangua) served as the city's natural moat on the western and northern sides and a few archaeological relics from the site have been linked to the Mauryan period. The rock inscriptions at the Dhauligiri depict that the Great Kalinga War was fought near the river Daya resulting in the transformation of Emperor Ashoka from Chanda-Ashoka to Dharma-Ashoka leading him to embrace Buddhism.[3]

4.8.2. Chedi Dynasty

Political events in Orissa, after the close of Mauryan empire became diffuse, involving different dynasties and eras and people. Then, probably in the 1st century B.C., Orissa was reigned by the King Kharavela, the Chedi king of Mahameghavahana family. A devout Jain, Kharavela's reign witnessed the rise of Jainism and the Udayagiri and Khandagiri hills became strong Jain centres. On Kharavela's death, however, Kalinga and Bhubaneswar were to fall into nearly 800 years of stillness.[3]

4.8.3. The Guptas

A controversy remains as to whether the Guptas (A.D. 320 – 550) occupied Orissa or not. But the discovery of sculptures at Bhubaneswar bearing Gupta characteristics point to the presence of Gupta cultural influence in Orissa.[3]

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[1] Kalia, R. "Bhubaneswar: From a Temple Town to a Capital City", Southern Illinois University Press, 1994.

[2] A fort excavated five kilometers to the southeast of Bhubaneswar

[3] Official portal of Government of Orissa, Online posting, http://orissagov.nic.in/portal/ViewDetails.asp?vchglinkid=GL012&vchplinkid=PL048

4.8.4. The Bhaumakaras

Different chronicles credit the Bhaumakaras, who succeeded the Sailodbhavas, for building many temples in Bhubaneswar. Bhauma king Unmattasimha *alias* Sivakaradeva I started the Bhauma era in 736 A.D. He was a devout Buddhist. Subhakara I was succeeded by his son Sivakaradeva II who was also a Buddhist ruler. His queen Mohini Devi probably built the Mohini temple at Bhubaneswar The Bhauma rulers after Subhakara V were all women. His wife Gouri Mahadevi succeeded him and ruled for a brief period. She probably built the Gouri temple at Bhubaneswar. For nearly a hundred years after the end of Bhaumakara rule, believed to be about A.D. 830, Bhubaneswar underwent yet another period of political uncertainty.

4.8.5. The Somavamsis

Not until the rise of the Somavansi Kings, popularly known as the Keshari Kings, in the first half of the tenth century does stability return to Bhubaneswar. The Keshari line was Brahmanical rather than Buddhist from the beginning, and under its patronage Shiva worship was to prosper for over 2 centuries. Three of the Keshari kings, Jajati, Ananta and Lalatendu are credited for committing royal resources to the completion of the monumental Lingaraja temple at Bhubaneswar. Jajati Keshari's wife Kolavati is known to have built the temple of Brahmeshwar at Bhubaneswar. Puranjaya was the last Somavamsi ruler of Utkal.

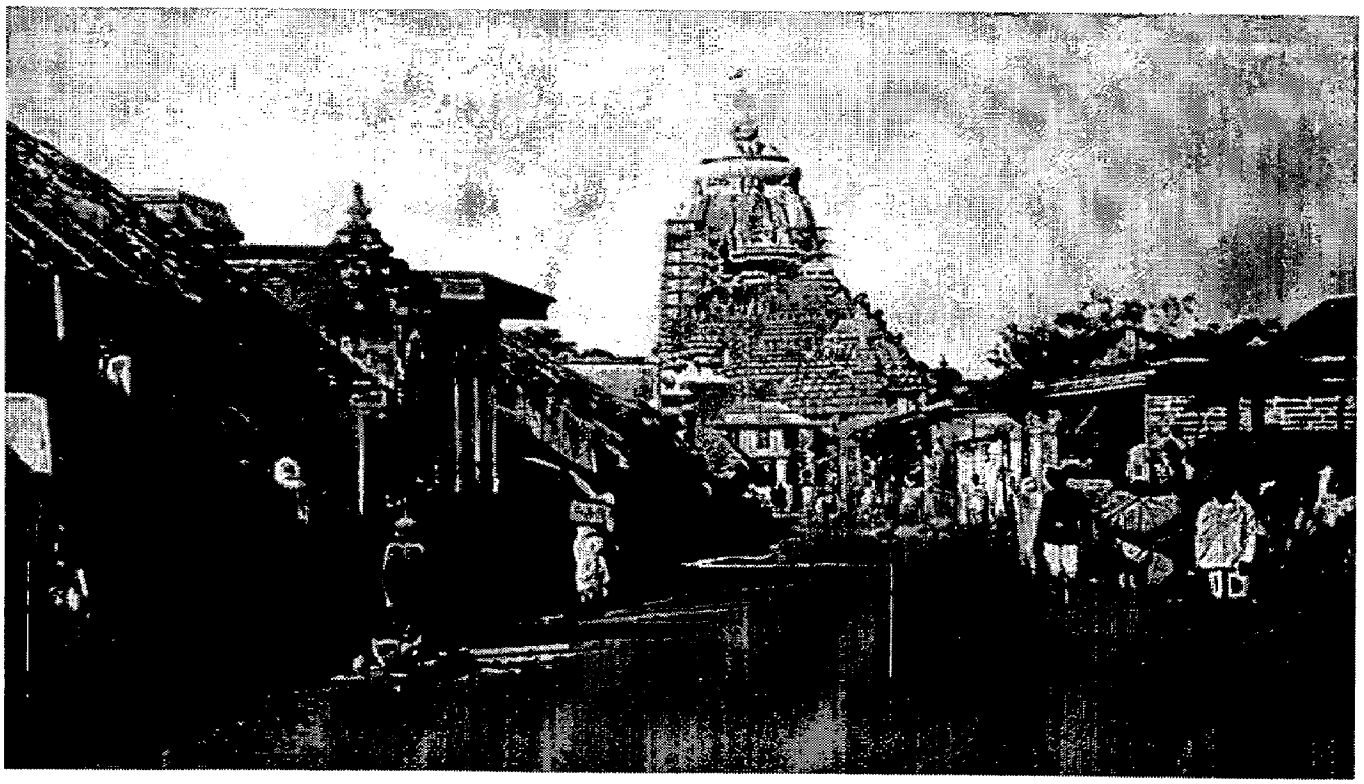


Fig.4.8. Lingaraj temple, Old Bhubaneswar
Source: ogimages.bl.uk

4.8.6. The Gangas

The vacuum created by the lapse of the Kesharis was finally filled by the Gangas, who introduced Vaishnavism into Orissa. During their reign, Shaivism and Vaishnavism, the two great traditions of Hinduism, coexisted in divine harmony – to which the later day Oriyas were to aspire. Even the Lingaraj temple at Bhubaneswar came under the influence of ***Harihara,*** representing both Shiva and Vishnu.

4.8.7. End of Hindu rule

Due to Islamic invasions from North, a reduced Orissa remained under Hindu rule until the middle of the sixteenth century. Then it yielded first to the Mughals, then to the Marathas, and finally to the British in the beginning of the nineteenth century. The end of Hindu rule in Orissa also brought an end to the period of temple building in Bhubaneswar.

4.8.8. The New Province

Ever since the occupation of Orissa by the British in 1804, the Oriya speaking tracts were scattered in the neighbouring administrative units of Bengal, Madras and the Central provinces. Having thus lost its political unity, Orissa languished in official neglect, and the city of Bhubaneswar, once populous and pulsating with pilgrims, fell into a long period of darkness. After much hardship of the Oriyas to make a separate province on a linguistic basis, the new province of Orissa was created on April 1, 1936, under the section 298 (i) (b) of the Government of India Act of 1935, with Cuttack as the capital city.

Due to the congested character of Cuttack and some other constraints, the assembly approved Bhubaneswar to become the new capital by the end of September 1946.

4.9. PLANNING OF THE CITY

Consequent to the decision to shift the capital from Cuttack to Bhubaneswar, the original plan of the capital city was drawn up in 1948.

4.9.1. The Architect

The modern city of Bhubaneswar was designed by the German Architect Otto H. Koenigsberger. The city was designed for a population of 40,000 based on 'neighbourhood principles' with administration being the primary function.

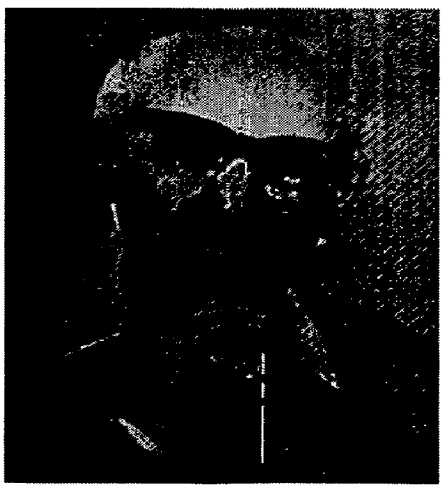


Fig.4.9. Dr. Otto H. Koenigsberger
Source: Kalia, R. "Bhubaneswar: From a Temple Town to a Capital City", Southern Illinois University Press, 1994.

From the beginning, Koenigsberger and the Orissa Government had conflicting views. The Government wanted Bhubaneswar to be designed traditionally, with the architecture borrowed from the temple town. But according to Koenigsberger, the planning of the capital city was to be separate from the temple town so as to prevent the temple town from getting absorbed by the capital city. The new city was to have its own character, conditioned by the locality and the needs of modern administration.[1]

Koenigsberger designed Bhubaneswar based on the simple device of one main traffic artery to which the neighbourhood units were attached like the branch of a tree. The neighbourhood unit was to be used in achieving flexibility in the master plan, which meant that new units could be added to the master plan as the population of the city grew in size. To break down the monotony of uniformity, each unit was to be designed separately, thus providing the residents with a feeling of civic pride and personal attachment to their particular neighbourhood. Koenigsberger designed 7 different types of roads for different types of users and different functions. They were:

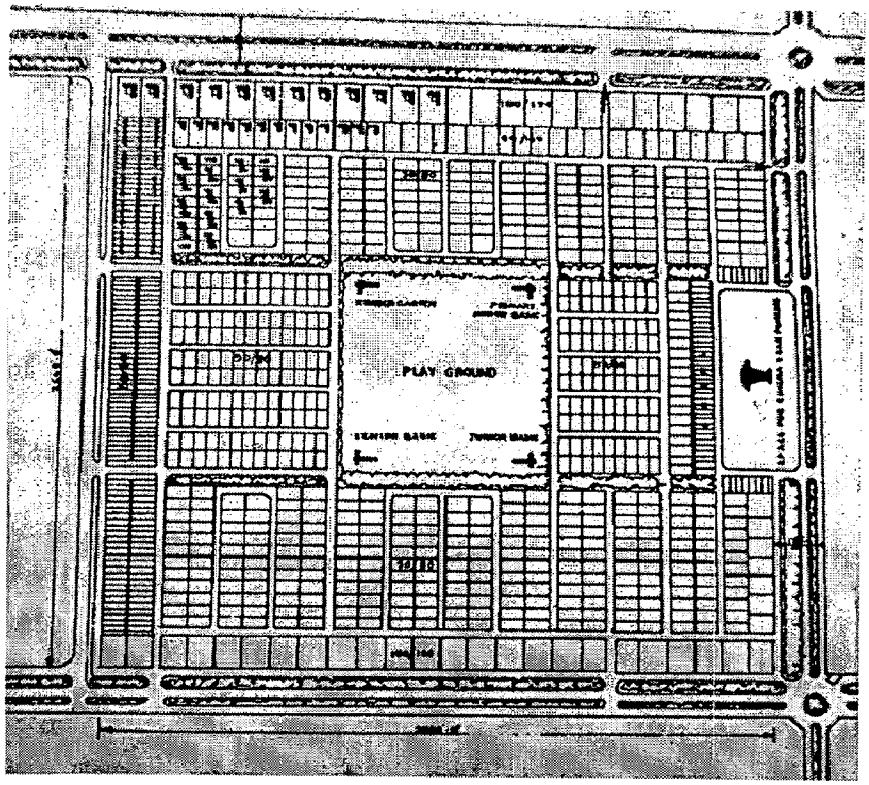


Fig.4.10. Koenigsberger's design for a standard neighbourhood unit
Source: Kalia, R. "Bhubaneswar: From a Temple Town to a Capital City", Southern Illinois University Press, 1994.

1. Side walks (for pedestrian traffic)
2. Parkways (laid out informally in recreation areas)
3. Bicycle paths (to connect residences with work places)
4. Minor housing streets (to interconnect houses without allowing vehicular traffic)
5. Major housing streets (accommodating vehicular traffic)
6. Main roads (for smooth flow of fast traffic between neighbourhoods and workplaces)
7. Main arteries (for fast traffic with additional lanes to accommodate slower traffic)

[1] Kalia, R. "Bhubaneswar: From a Temple Town to a Capital City", Southern Illinois University Press, 1994.

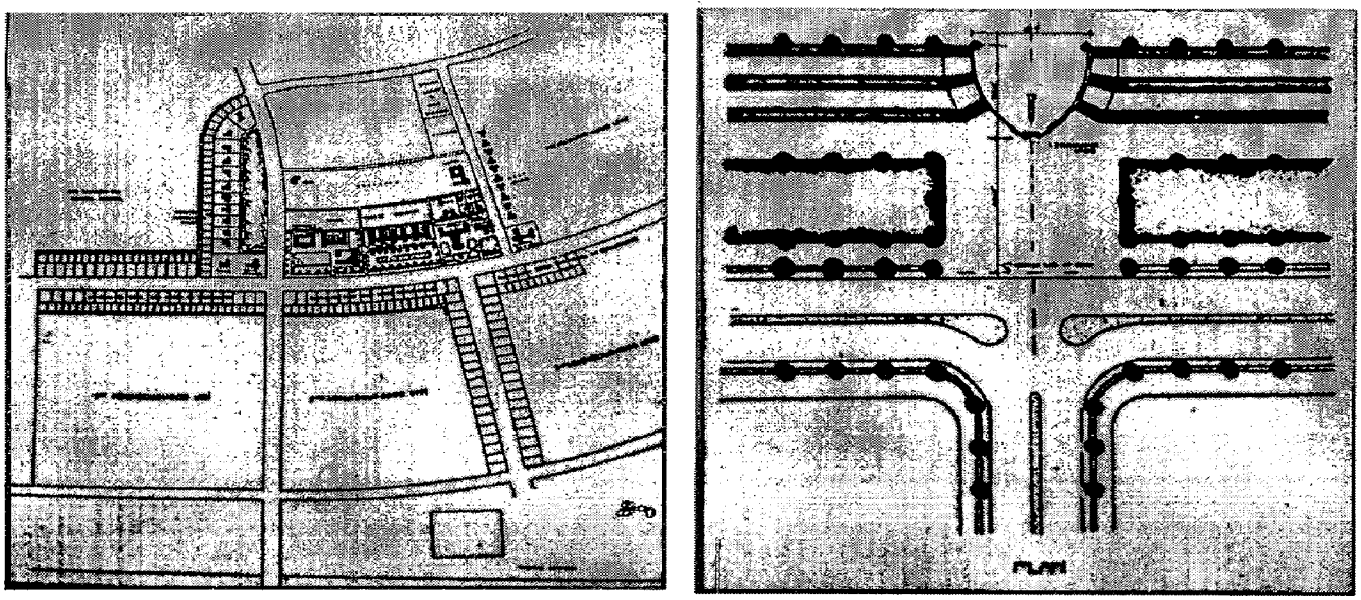


Fig.4.11. Plans of administrative center and road as proposed by Koenigsberger
Source: Kalia, R. "Bhubaneswar: From a Temple Town to a Capital City", Southern Illinois University Press, 1994

When Koenigsberger left for Great Britain in 1951, the design of Bhubaneswar was mix up with the traditional ideas of the Government people and the design proposed by Koenigsberger was not followed properly.

During the 50 years since its planning in 1948, the city has undergone various stages of transformation. Broadly, these transformations can be categorized under the following stages:

- Old Temple Town (till year 1956)
- New Capital City (year 1956-1976)
- Major city transformations (year 1976 onwards)
- Present Bhubaneswar City (year 2008)

Though the planning efforts were initiated during the year 1948 with the laying of the foundation stone by the then Prime Minister of India, Pandit Jawaharlal Nehru, the city actually started functioning as capital city after the completion of Secretariat building during 1956.

4.9.2. New Capital City

As stated earlier, the Master Plan was prepared on the basis of the neighbourhood concept. It comprised 6 units, viz. Unit I to Unit VI. Unit-V has been earmarked for administrative functions (Fig.4.11) while other units were planned as residential neighbourhoods with emphasis on horizontal rather than vertical growth.

The city was built between 1948 and 1961 at a respectful distance from the temple town and no conscious steps were taken to preserve the individual identities of the temples. After 1956, government departments were shifted from Cuttack to Bhubaneswar. Gradually, it was observed that the inter-relationship between the major city functions were not considered. Much larger areas have been allotted to some of the institutions than was necessary. In 1968, Government of Orissa has created a special Planning Authority for the Bhubaneswar city. The directorate of Town Planning of the Government of Orissa has prepared a draft master plan for the city (known as First Master Plan).

4.9.3. Major City Transformations

The city has undergone major transformations, led by the developments in organized sector since 1976. BDA (Bhubaneswar Development Authority) was established in 1983. Shortage of Government land and economy of scale contributed to many multistoried buildings. This phase also witnessed construction of a number of market complexes. The Government of Orissa approved the first master plan for the Bhubaneswar city and the same Master Plan was treated as an interim development plan for Bhubaneswar. Comprehensive Development Plan for Bhubaneswar (1988-2001) was prepared by BDA.

Residential development in the private sector to a considerable extent led to commercial activities in the city. All this contributed to a rapidly increasing trend of migration of people from the hinterland, which to some extent covers the entire state. The intervening areas between the temple town and the new capital were filled up quickly. The new capital presented a sharp contrast with distinct areas earmarked for residential, commercial, institutional and such other uses. Since the planning process was not followed properly, the amenities of Bhubaneswar had served to encourage unauthorized urban developments in the region.

4.9.4. Bhubaneswar City Today

The city which was planned originally for 40,000 people with an area of 1684 hectares is now accommodating about 10 lakhs population in an area of about 135 sq.km. The present city illustrates signs of development of the city on a vast unutilized undulating plateau. The city has extended in seven different directions during the last few decades by engulfing the fringe villages. This extension has varied length and dimensions from the core of the original temple town.

4.10. STATISTICAL ANALYSIS

1. There has been steady growth of population in Bhubaneswar city except for the first two decades when there was a drop in the population. This was mainly due to epidemics like cholera, plague etc.
2. There has been sudden rise since 1941. The sudden rise in population was due to the migration of the people from all over Orissa to Bhubaneswar.
3. The city experienced the highest growth rate in 1961-1971 (Fig.4.12). This was the highest growth (176.07%) rate experienced by any other capital cities in the country. This was due to expansion of the administrative, institutional and industrial activities.
4. Later on the city experiencing a fall in the population growth rate. The reduced population growth during 1981 to 1991 could be due to closure of industries and restricted industrial development.

Table 4.1: Population Details and Growth Trends in Population of Bhubaneswar

Census Year	Population	Sex Ratio	Decadal Growth (%)	Area (sq.km)	Density per sq.km
1951	16,512	-	-	25.90	638
1961	38,211	-	131.41	50.25	760
1971	1,05,491	-	176.07	65.03	1622
1981	2,19,211	756	107.80	92.91	2359
1991	4,11,542	752	87.74	124.74	3299
2001	6,58,220	798	59.94	135.00	4800
2011	13,13,000 (Projected)	-	-	-	-

Source: Various census reports of Govt. of India: 1951-2001; Compiled by Author

5. The increase in population from 1991 to 2001 at the normal rate is the normal urbanization trend as is happening in other cities of the country. From this, it should be noted that the restrictions on the polluting industries are not leading to negative growth.
6. The expected population of Bhubaneswar by 2011 is **13.13 lakhs** according to the draft report of CDP. These projections are based on the normal growth rate of population.
7. The central part of the city covering the areas of Unit-28, Unit-7 and Unit-14 areas are having high population density having a population density in the range of 601-

750 persons per hectare. The high density in these areas may be attributed to the trade & commerce and industrial activities, which are in existence since the migrant refugees who settled in the central part of the city soon after the independence.

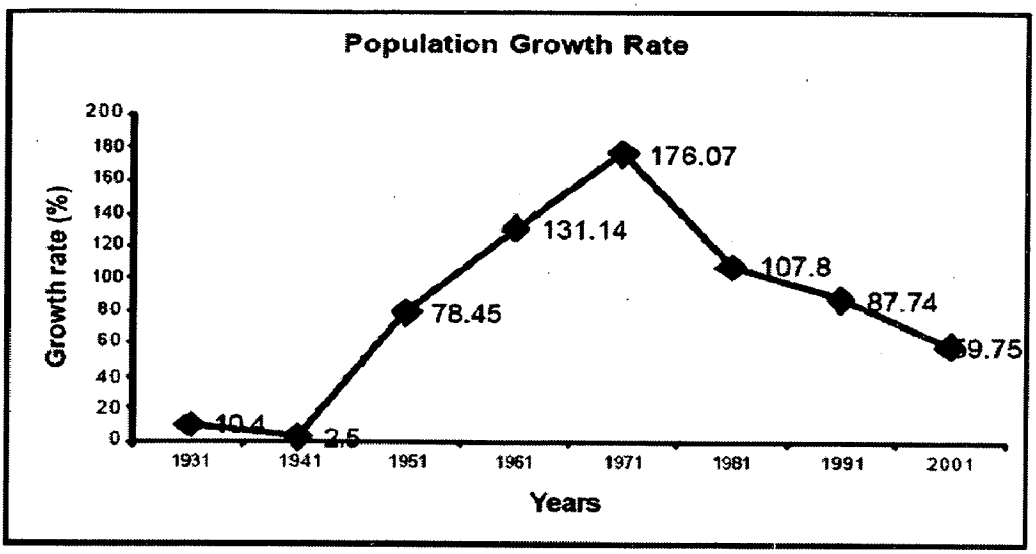


Fig.4.12. Population Growth rate in Bhubaneswar
Source: Draft report of CDP, Bhubaneswar

4.11. LAND USE DISTRIBUTION

The comprehensive development plan (CDP) was prepared by the BDA during June 1993, after the completion of the plan period of the First Master Plan (year 1988). This plan covers an area of 230.47 sq. km. comprising 93 revenue villages with a population of 2,57,352 in 1981. This CDP for Bhubaneswar was prepared with the horizon year of 2001. The proposed landuse pattern in the CDP is given in the table 4.2 (Fig. 4.13).

Table 4.2: Proposed landuse pattern of the CDP 1988-2001

Landuse	Area in sq. km	Percentage to Total Area
Residential	75.40	32.72
Commercial	4.94	2.14
Industrial	5.86	2.54
Institutional & Utilities	7.12	3.09
Administrative	2.90	1.26
Open Space	13.77	5.98
Transport & Communication	18.91	8.21
Water Bodies	33.82	14.67
Drainage Channel	2.59	1.12
Green Belt Including Protected Forest and Reserve Forest	65.16	28.27
Total	**230.47**	**100.00**

Source: Comprehensive Development Plan, 1988-2001; Bhubaneswar Development Authority

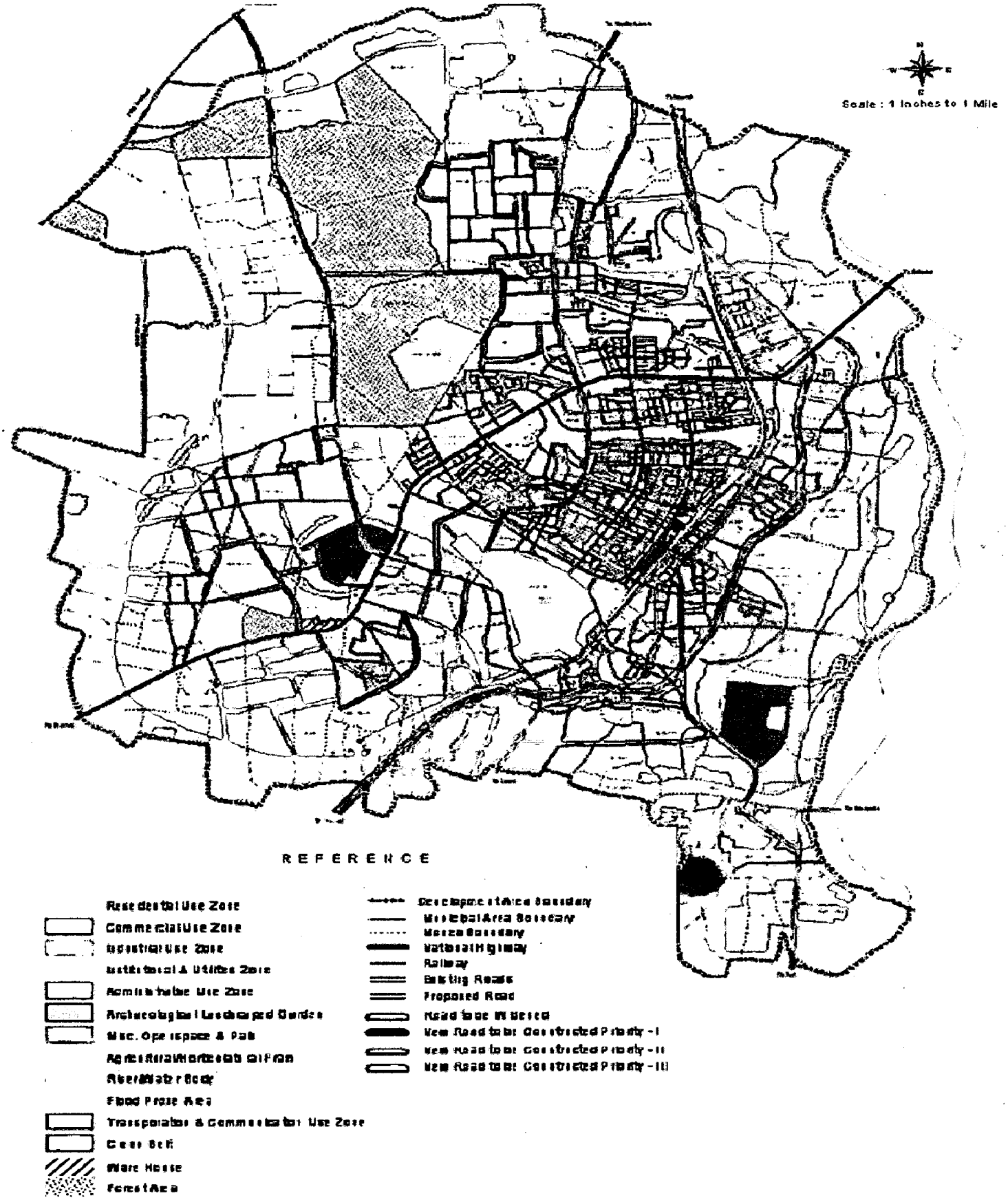


Fig. 4.13.: Land use as proposed by the CDP, Bhubaneswar
Source: CDP, Bhubaneswar

4.12. CONCLUSION

From the above information we get to know that Bhubaneswar, having a rich cultural history, has witnessed rule of many Kings and undergone many socio-cultural transformations. These transformations had brought about many changes in the central core of the city as well. This process ultimately resulted in emergence of many historic structures at different periods of time representing the typical Orissan art and architecture which has inevitably added to the heritage value of the area, maximizing its attraction to tourists. The next chapter covers the character, unique features, problems and prospects of the study area in detail.

CHAPTER 5

STUDY AREA PROFILE

5.1. INTRODUCTION

Investigation of the study area is very essential to understand the characteristics, prospects & problems of the system. The character of the old town area, Bhubaneswar has been studied thoroughly under the following headings and presented below.

5.2. THE CONTEXT

Bhubaneswar, with its rich history going back to about 2500 years, is historically acclaimed to be a significant centre of cultural resurgence. The Old Town is characterised by mixed land-use which is a usual phenomenon with all ancient towns and cities of India. It contains splendid specimens of Kalinga architecture, depicting the grace, the joy and the rhythm of life in all its wondrous variety.

It is said that there were about 7000 temples in this place, which earned it the title **'The Temple City of India'**. Even today, hundreds of temples stand in mute majestic testimony of its glorious past. Most of these temples are situated in the old town area comprising majorly of the Lingaraj Temple & around 100 other small and large temples. In addition to these, there are several heritage lakes, monuments, mandapas, ponds, caves and edicts that exist in this inner part of the city. Historically, this old city is regarded as Ekamrakshetra.

Due to the pressure of development and needs of a modern capital city in the proximity of the historic town, the old city area of Bhubaneswar is loosing its charm and charisma. It is getting degenerated and its rich heritage is dying. Due to rapid urban growth, there is also environmental degradation. Initially, the old city had 1000 temples and at present, the total temples are limited to 320. As per INTACH report, majority of the existing temples are deteriorating rapidly and the precious stone carvings are also getting damaged. In order to revive the situation to every possible context, a serious effort must be made not only to restore the elements of value, but also to revitalize the place environmentally, socially and economically.

5.3. LOCATION

1. Old town has a semicircular shape and it enjoys a central location between the planned capital city and the newly developing extension areas (Fig.5.1).
2. Old town area is bounded by Daya West Canal and Cuttack Puri Road in the south/south east, Calcutta-Chennai railway line on the north and north west and Bhubaneswar Marg from Museum Chhak to the road over Bridge near Mausima temple on the north east (Map 5.1).

3. The climatic condition of the area is same as that of the Bhubaneswar city (Ref. 4.7.1).

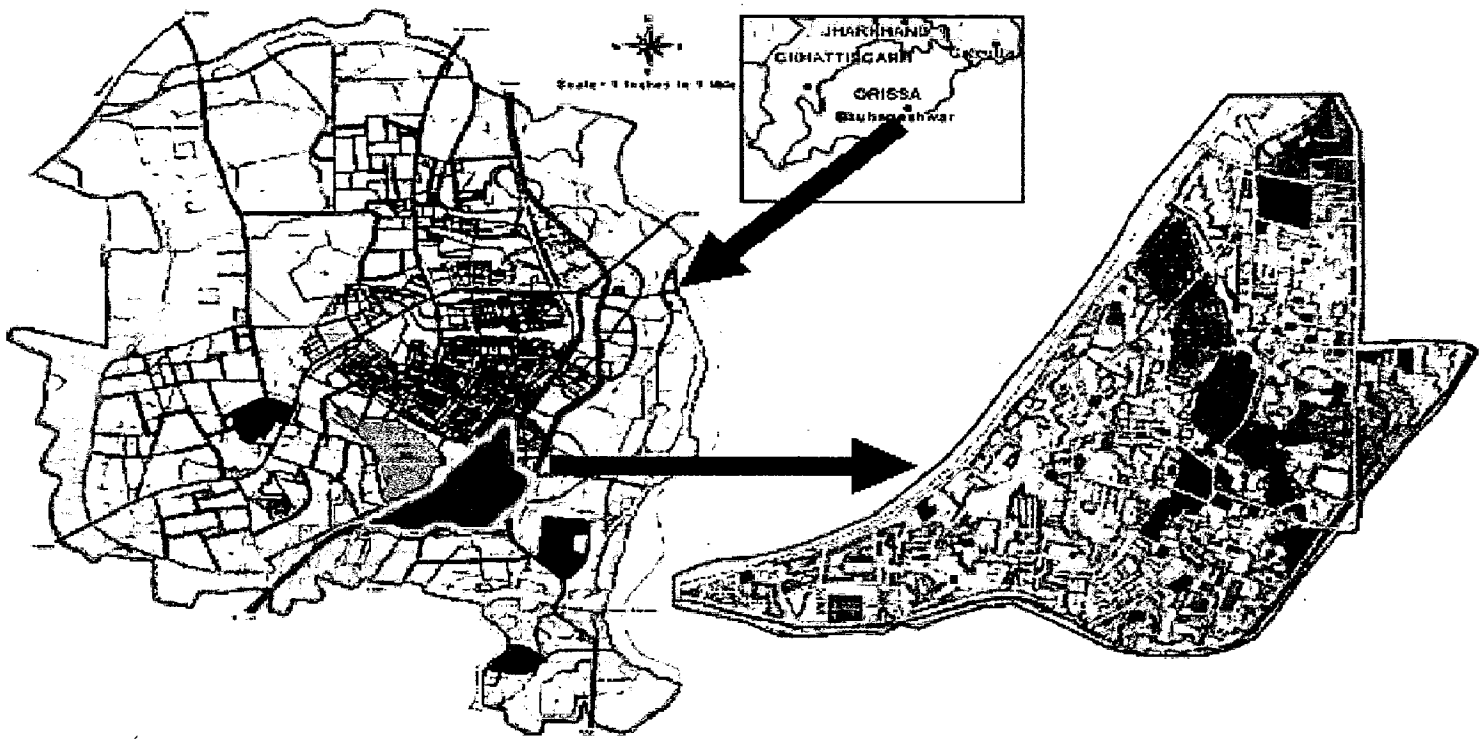


Fig.5.1. Location map of Old Town, Bhubaneswar
Source of maps: CDP & Human Development Report 2004, Govt. of Orissa; Compiled by Author

5.4. AREA

1. The first master plan for Bhubaneswar identified 14 planning zones & the Old Town area was put under planning zone-1.
2. The old town spreads over an area or 510 ha. and comprises of 4 villages/planning units namely Kapilprasad, Old city core of Bhubaneswar, Gautam Nagar and Rajarani.
3. Among these planning units, the old Bhubaneswar area spreading on an area of 114.80 ha., records the highest population density in the zone with 107 persons/ha. It has three times the gross density of Bhubaneswar city which is only 32 persons/ha.
4. Kapilprasad area (121.08 ha.) has the least density in the zone i.e. 31 persons/ha. and is characterized by large vacant pockets.
5. The recent developments have taken place in well laid colonies in the Gautam Nagar (249.23 ha.) and Rajarani area (25.16 ha.).

5.5. PHYSICAL CHARACTERISTICS

1. Topographically, the old town falls under the eastern lowland area of Bhubaneswar which mainly consists of alluvial plains with some patches of laterite upland in between.
2. There is a natural drainage facility since the ground is sloping from west to east. The major drainage channels of the area fall in Gangua Nallah that meets River Daya.
3. The earliest developments within the zone were focussed around the Bindusagar and Lingaraj temple.
4. The later developments picked up as spot developments for religious activities around major arterials, followed by ingression into the low-lying peripheral areas.
5. The continuity of development is hindered by large tracts of low lying/swampy areas and Laterite quarry areas at a number of places in Kapil prasad.
6. The physical expansion, however, has been so far governed by the Chennai-Calcutta railway line, Daya West Canal and major arterial roads like Cuttack - puri Road, Vivekananda Marg etc.
7. The area is 5 km away from both the airport and railway station.

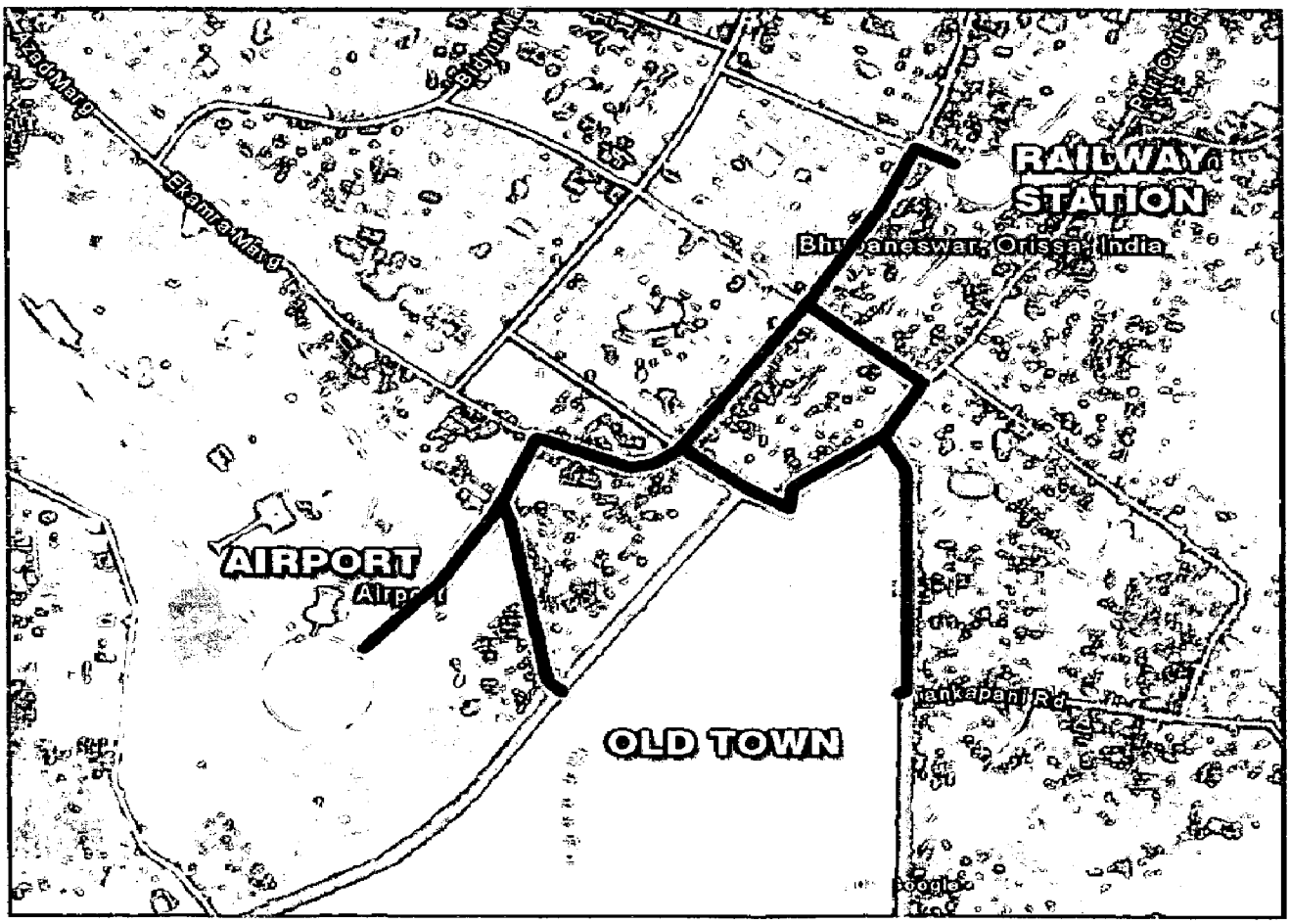
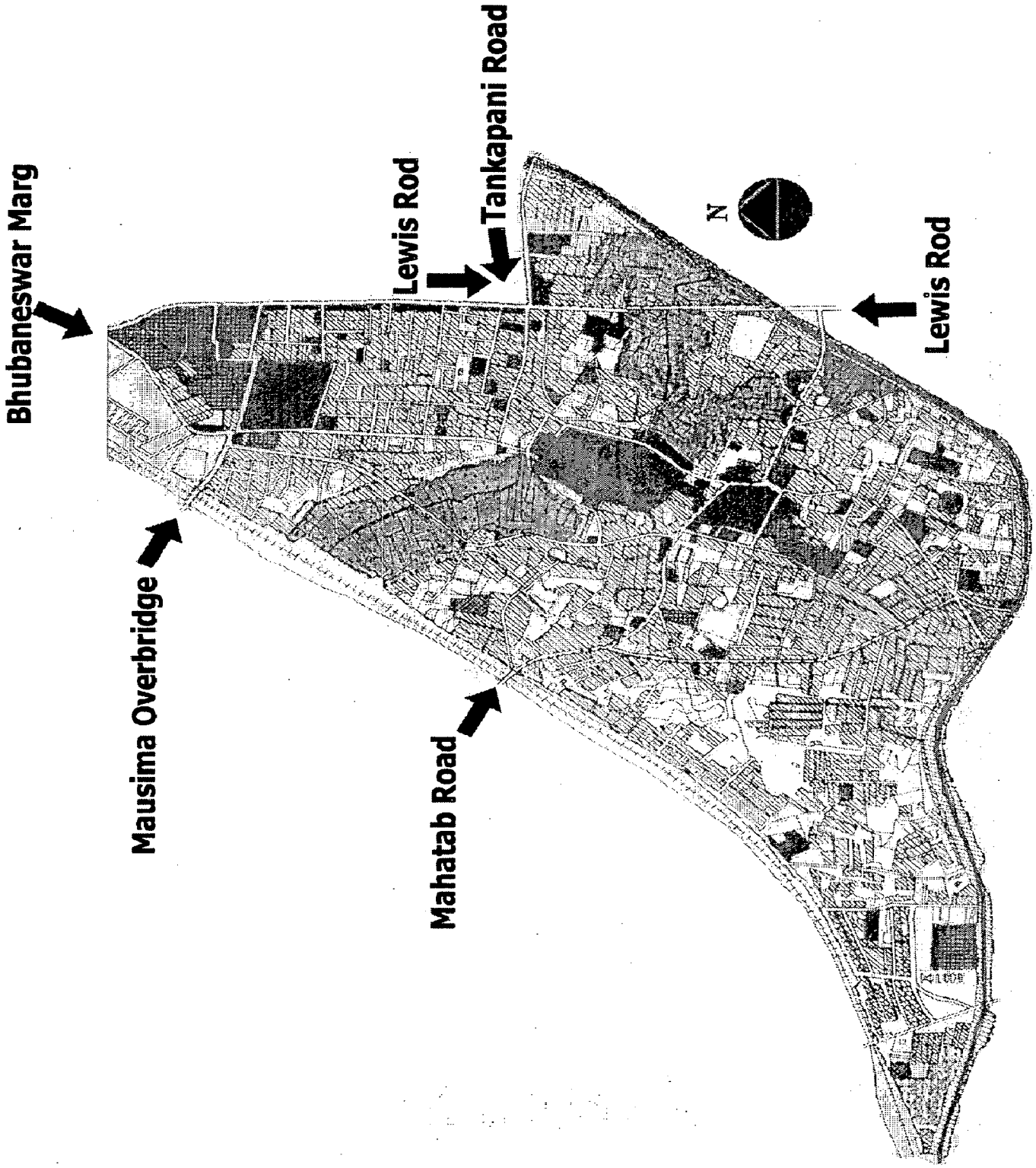


Fig.5.2. Showing the connectivity of Old Town with airport and railway station
Source of base map: Google Earth; Drawn by Author



Map.5.1. Map showing approaches to the Old Town area, Bhubaneswar
Source of base map: Zonal Development Plan, BDA; Drawn by Author

5.6. DEMOGRAPHIC CHARACTERISTICS

The population of this area is **64,617** (as per 2001 census) and net population density is 98 persons per hectare. The sex ratio is 829 females every 1000 males.

In 1979, when the Bhubaneswar Notified Area Council was declared as Municipality, Bhubaneswar city was divided into 30 wards. At that time, old town area comprised of only 3 wards, i.e. ward no. 27, 28 and 29. At a later period, the number of wards was increased to 47 and now it has been increased to 60. Now, the old town area consists of 6 wards (Table 5.1).

Table 5.1: Population of different wards under old town area (as per census 2001)[1]

Ward No.	Four side boundary of the wards	Total population of		Total Population
		Male	Female	
52 (full)	N: Ward No. 48 S: Ward No. 54 E: NH-203 W: Ward No. 53	5573	4540	10113
53 (full)	N: Ward No. 48 S: Ward No. 55 E: Ward No. 52 W: Railway line	6360	5328	11688
54 (partly)	N: Ward No. 51 S: BMC Boundary E: BMC Boundary W: Ward No. 52	5888	4475	10363
55 (full)	N: Ward No. 53 S: Ward No. 56 E: Ward No. 56 W: Ward No. 58	5743	4956	10699
57 (partly)	N: Ward No. 56 S: BMC Boundary E: BMC Boundary W: BMC Boundary	5733	4832	10565
58 (full)	N: Ward No. 47 S: Ward No. 56 E: Ward No. 55 W: Railway line	6028	5161	11189
Total		**35325**	**29292**	**64617**

Source: Bhubaneswar Municipal Corporation

[1] The figures for the heritage zone has been estimated by applying the prorate share of the ward area falling within the zone to the respective population figure of the census ward.

Comparing the various demographic characteristics between heritage zone and other areas within Bhubaneswar Municipal limits, denser development is found in the old town area as compared to other developed areas which is witnessed by congested and closely built plots (Table 5.2).

Table 5.2: Comparative analysis of Demographic characteristics

Characterstics	Heritage zone		Bhubaneswar Municipal limits excluding Heritage zone	
	Census 1991	Census 2001	Census 1991	Census 2001
Population	23962	50000	387542	608220
Gross population density (persons/ha.)	50	98	31	49
Percentage of residents to the total population of BMC	5.82	8.22	94.18	91.78
Sex ratio	795	829	750	798
No. of occupied houses (excluding jhuggijhopdi)	4029	-	79262	-
Literacy rate (%)	54.3	-	70.92	78.02
Percentage of main workers	31.76	-	32.62	33.34

Source: Various census reports of Govt. of India: 1991-2001; Compiled by Author

From the above table, we can find out the following facts:

1. The gross population density of the Old town area (98 pph) is considerably higher than the gross population density of Bhubaneswar town (49 pph).
2. Sex ratio is higher in the old town as compared to the city as a whole.
3. Literacy rate is lesser in this area in comparison to the other parts of the city. So, education facility provided in this area is not very good.
4. About six percent of the total main workers of Bhubaneswar city are from the Old town area.

As per the household survey carried out by ORG (Operation Research Group) in January 1998, it was observed that around 64.5% of the households are having 4 to 6 members and 5.5% of the households have more than 8 members.

Table 5.3: Distribution of Households by their size

Household size	No. of Households	Percentage
1	6	3
2-3	49	24.5
4-6	129	64.5
7-10	11	5.5
>10	5	2.5
Total	200	100

Source: Zonal Development Plan, BDA

As per the survey, 63.5% are found to be staying in zone for more than 10 years whereas only 4.5% of the total households are residents of the zone for less than one year.

Table 5.4: Distribution of Households by period of stay

Period of stay (in years)	No. of Households	Percentage
<1	9	4.5
1-5	26	13.0
5-10	38	19.0
>10	127	63.5
Total	200	100

Source: Zonal Development Plan, BDA

5.7. LAND USE DISTRIBUTION

Like most old/ancient towns in India, the core area of heritage zone presents a mixed land use pattern with a mix of residential, commercial, public and semipublic uses in a single building.

The zone covers an area of 510 hectares of which 296.48 ha.(i.e. 58.13%) is developed and the rest is undeveloped. Of the undeveloped area, vacant land constitutes 72.11 % and land under agricultural uses is 14.71%, while the water logged/swampy areas constitute about 13 percent.

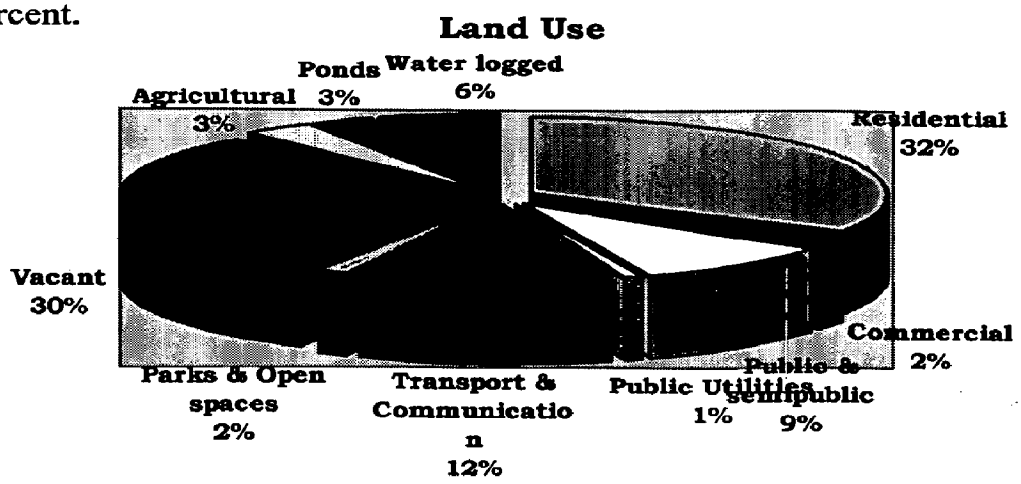
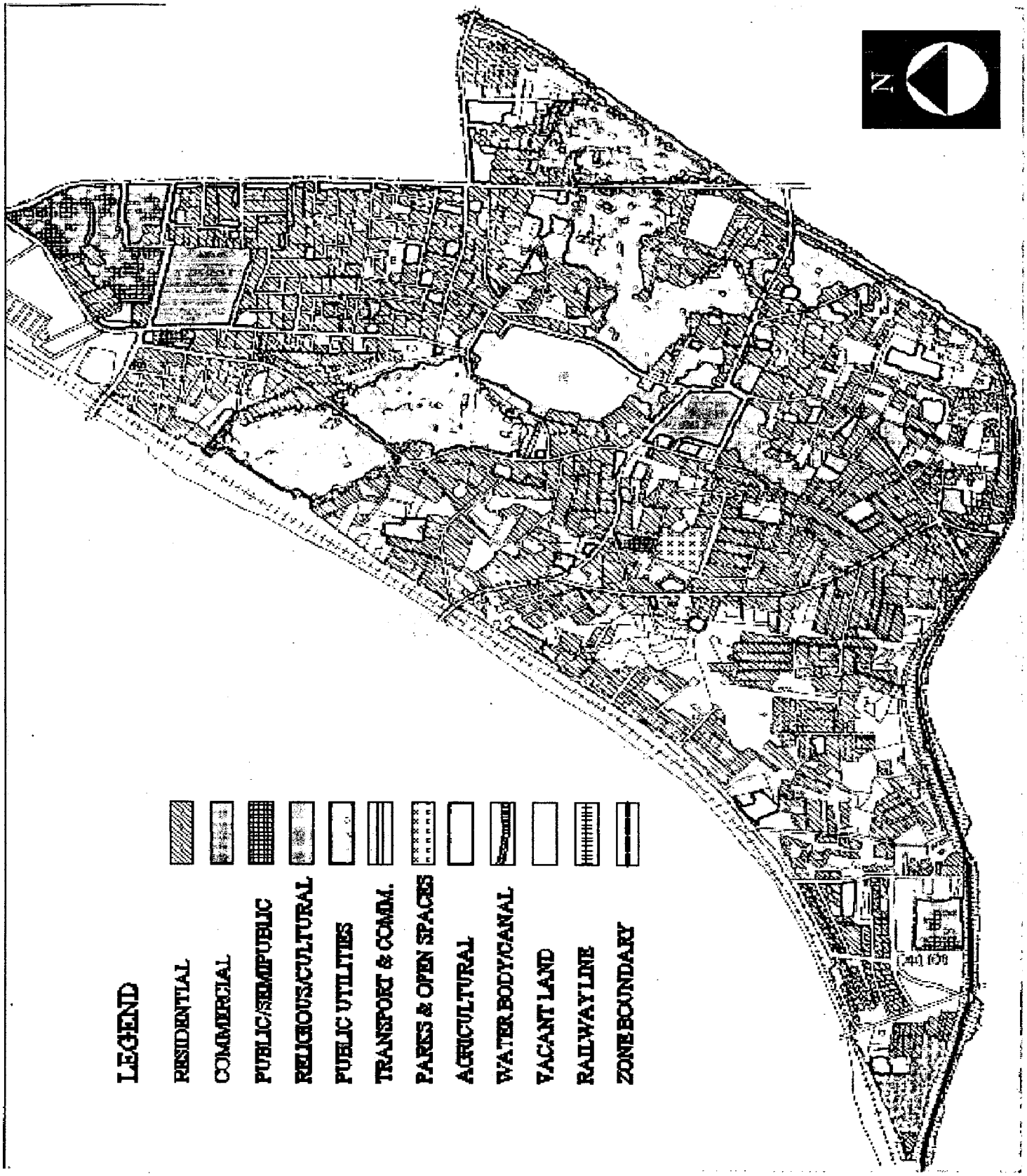


Fig.5.3. Land use percentage of Old Town, Bhubaneswar
Source: Author



Map.5.2. Land use Map of the Old Town area, Bhubaneswar
Source: Zonal Development Plan, BDA

Table 5.5: Area under various land uses within heritage zone (1998)

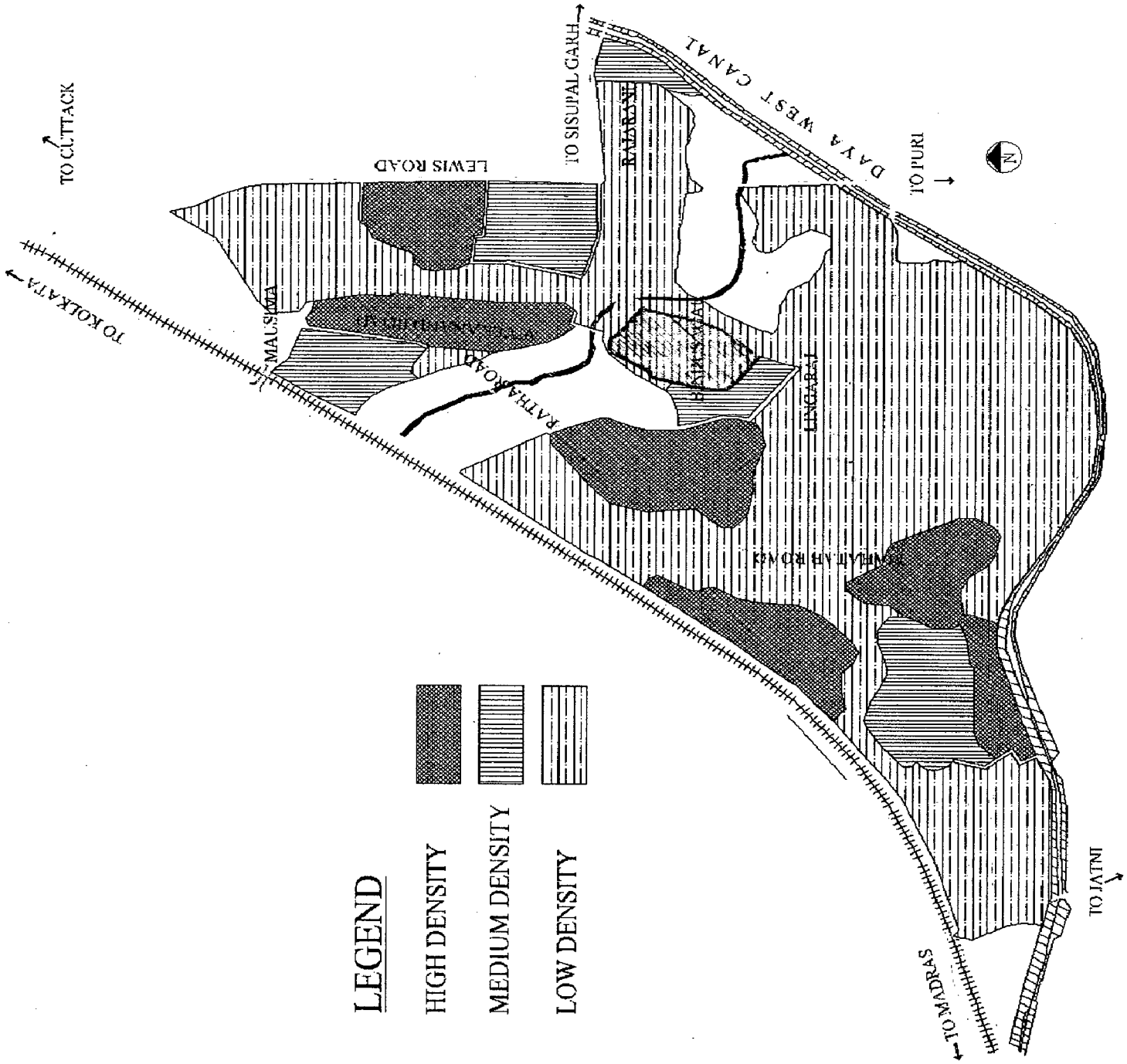
Land use	Area (in Ha.)	% of developed area	% of total area
Residential	168.01	56.67	32.94
Commercial	10.48	3.53	2.05
Public & Semi public	47.45	16.01	9.30
i) Temples	25.14	8.48	4.93
ii) Institutional	22.31	7.53	4.37
Public utilities	4.23	1.43	0.83
Transport & communication	58.67	19.79	11.51
Parks & open spaces	7.64	2.57	1.50
Total developed Area	296.48	100.00	58.13
Vacant	153.97		30.19
Agricultural	17.38		3.41
Ponds	14.02		2.75
Water logged	28.15		5.52
Total	510.00		100.00

Source: Survey conducted by Operation Research Group in 1998

Area under public and semipublic activities amounts to 47.45 ha., of which around 25 hectares is under various temples/monuments, religious ponds and mandapas, while the rest 22.31 ha are under institutional uses. The commercial activities have been mostly in the form of retail trade in informal/unorganized temple related activities.

5.7.1. Residential

The old town area mainly functions as the residential zone for the city. About eight percent of the total population of the Bhubaneswar city resides in this area. This area has a very high density of population, especially in the areas lying to the west side of Bindusagar lake i.e. Kunjapatana sahi, Barik sahi, Mishra sahi, Pujapanda sahi, Mangala sahi, Behera sahi, Chemedi Bhoi sahi, Harachandi sahi etc. and some areas of Gautam Nagar and Nageswar Tangi, the population density even goes above 100 persons/ha. (Map 5.3).

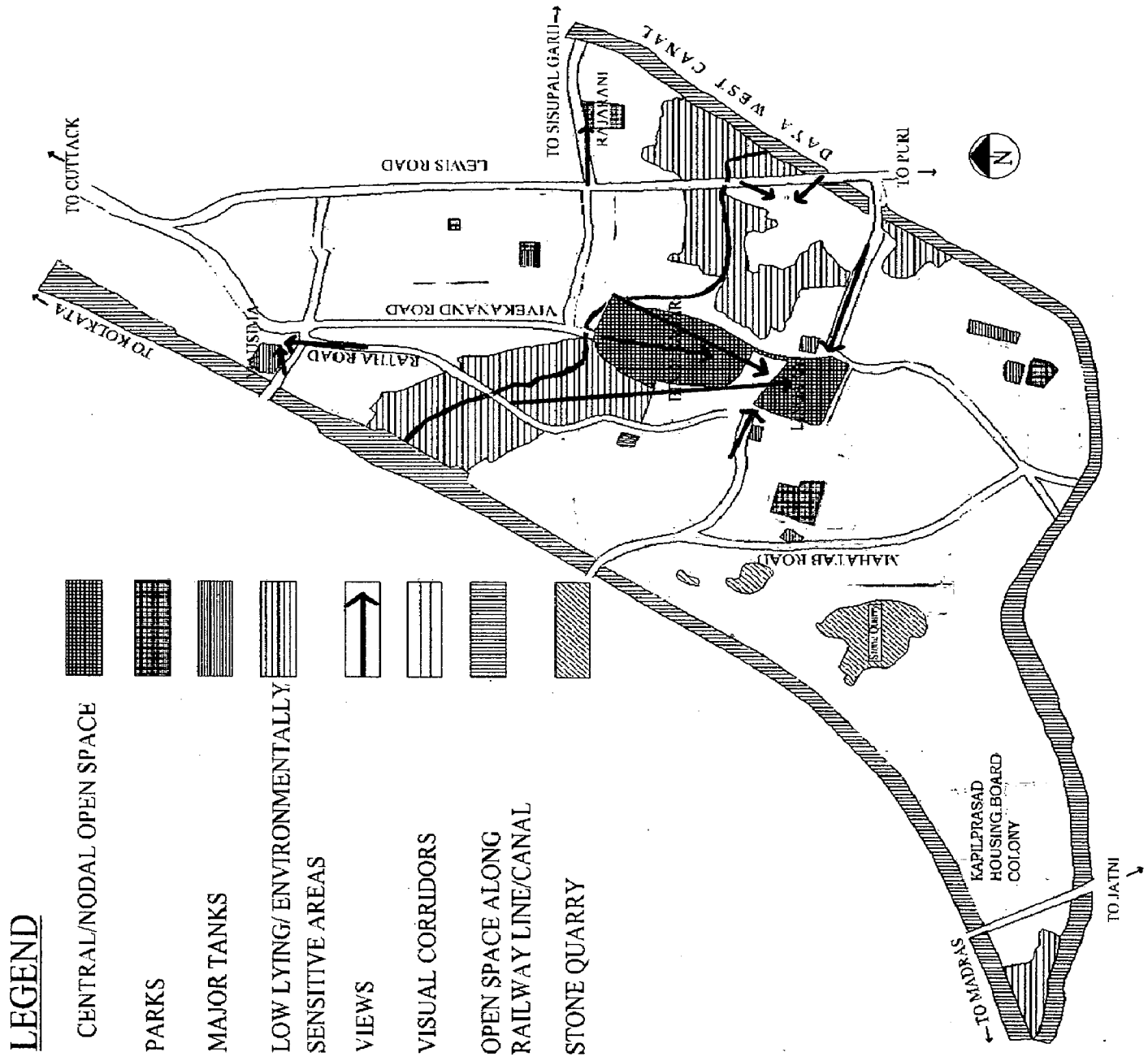


Map 5.3. Density Distribution in the Old Town area, Bhubaneswar
Source of base map: Zonal Development Plan, BDA; Drawn by Author

5.7.2. Open Space Structure

The main elements of the open space structure in this area are:

1. Nodal Central open space (Bindusagar and Lingaraj environs)
2. Tanks and Water Bodies
3. Incidental Open Spaces
4. Low lying marshy/agricultural land
5. Abandoned quarry areas.



Map.5.4. Open space structure of the Old Town area, Bhubaneswar
Source of Base map: Zonal Development Plan, BDA; Drawn by Author

The Bindusagar tank together with the Lingaraj temple complex constitutes the nodal public open space of the old town serving the needs of both the local as well as tourist population.

Local open spaces are very few in number. Small parks and childrens' play area have been created within newly developed residential colonies but they are insufficient to fulfill the need of the people.

A major part of the open space structure of old town area is characterized by the presence of large consolidated areas of marshy and agricultural land which form a

wide linear corridor passing through the- middle of the zone. Incidentally, these areas have a vital Ecological role to play as they act as natural ground water recharge areas. In the recent days, the pressure of rapid population growth has forced residential developments on these low-lying areas, thus, reducing the valuable water recharge areas.

Fig.5.4. Low lying marshy areas covering a large area of the Old Town area, Bhubaneswar
Source: Author

Besides the natural open spaces the area also has a large number of abandoned quarries which are significant landscape features. Recently, these area are gradually being engulfed by residential use.

Historic Tanks and water bodies are other important open space elements of the zone. Next to temples, the objects most deserving of notice in Bhubaneswar are its tanks. The major waterbodies of this area have been discussed in detail and presented below.

5.7.2.1. Bindusagar

The biggest is the Bindusagar tank. The size of this tank is 1300' (396.24 metres) x 700' (213.36 metres) and the depth of the tank is 10' (3.04 metres). It is embanked with stone forming magnificent flights of steps. It covers an area of 8 ha. In the centre is an island 100' (33.52 metres) x 110' (33.52 metres) protected by stone revetment, with a small temple in its north-east corner. Around the tank there are some high and small temples. Pilgrims as well as local residents bathe in it. Once a year the Lingaraj temple deity is brought out for the ritual bath in the centre of the tank and it is believed a dip in the holy tank at Bindusagar washes away all the sins.[1]

The 'Bindusagar lake conservation project' has been approved under NLCP (National Lake Conservation Plan) by a sanction of 3.5 crore rupees for improving the water quality of the lake.

[1] http://www.whereincity.com/india/orissa/khordha.php

Objectives of the 'Bindusagar lake conservation project' project are:

i) Prevention of pollution from point sources by intercepting, diverting and treating the pollution loads entering the lake.

ii) In situ measures of lake cleaning such as desilting, deweeding, bioremediation, depending upon the site conditions.

iii) Catchment area treatment and lake front Eco-development which may include bonding, fencing, shore line development, creation of facilities for public recreation and entertainment (children park, boating etc.) and public area.

iv) Public awareness and public participation.

v) Other activities depending upon location specific conditions including the interface with human population.

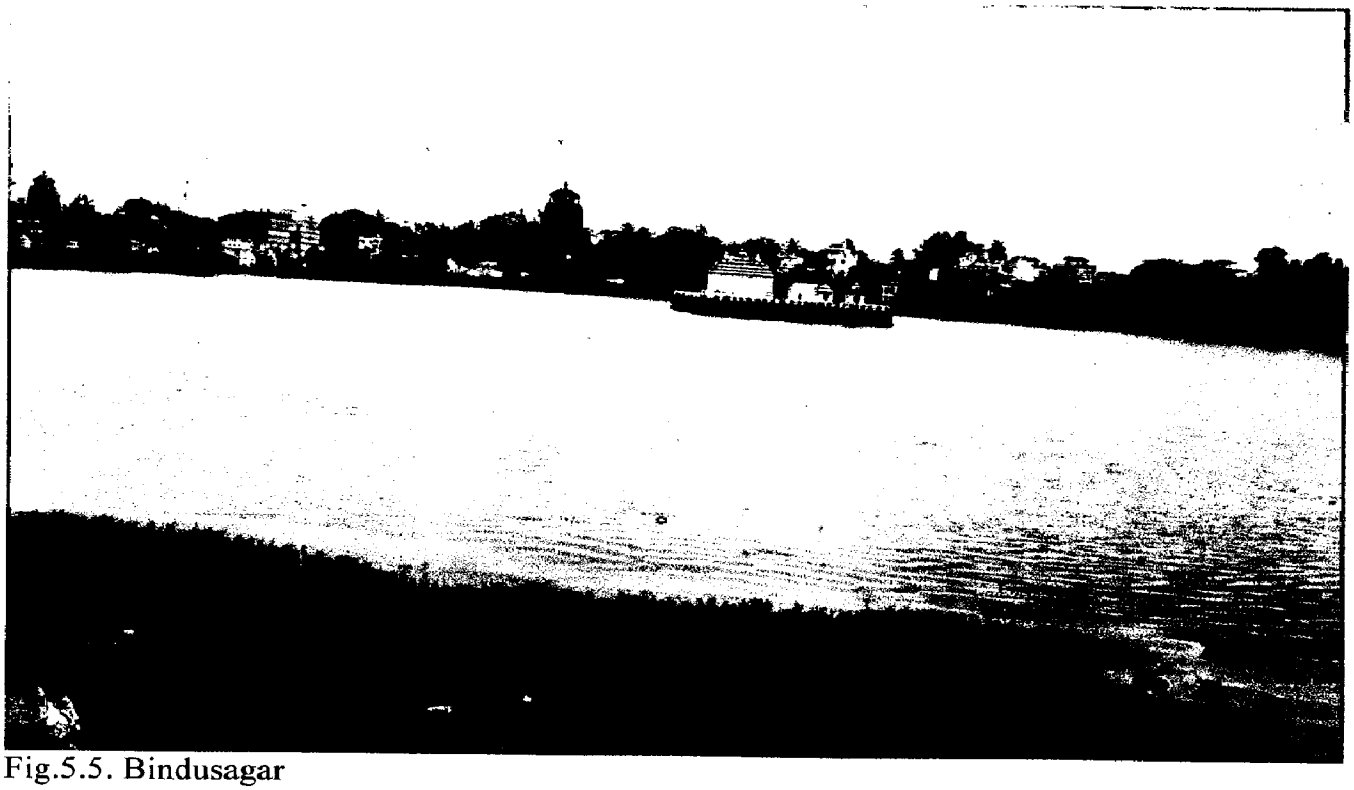


Fig.5.5. Bindusagar
Source: Author

5.7.2.2. Kotitirtheswara Tank

Behind the temple of Kotitirtheswara there is a tank lined with stones, and having a flight of steps on the west side. It is believed that this is the repository of the waters of ten million sacred pools, and pilgrims bathe in it to wash off their accumulated sins.

5.7.2.3. Brahma Kunda

To the west of the temple Brahmeswara, close by its terrace, there is a large tank called Brahma Kunda, and its sin-rinsing merits are lauded in high terms by the Ekamra Purana, but being situated far away from the town, few pilgrims visit it.

5.7.2.4. Sahasra Linga Tank

Fig.5.6. Sahasra linga Kunda
Source: Author

On the eastern side of the Lingaraja temple there is a tank called Saharsa linga sara or 'tank of a thousand Lingas'. Originally, there were a number of small temples ranged round the tank. Each had in its centre a Linga. At present, there are 77 miniature temples in good condition. The area around these temples serves as a kitchen garden for the Lingaraja temple.

5.7.2.5. Mukteswara Kunda

Fig.5.7. Mukteswara Kunda
Source: Author

Close behind the temple of Mukteswara there is an oblong tank 100 feet (30.48 metres) x 25 feet (7.62 metres), lined with stone revetments on three sides, and having a flight of steps on the fourth. There area a number of small fish playing about in the water of this tank.

5.7.2.6. Gauri Kunda

Immediately to the south of the Mukteswara temple, within a distance of about thirty feet (9.14 metres) the Gauri Kunda is located. It is to the east of Gouri's temple. The pool is 70 feet (21.33 metres) long, and 28 feet (8.53 metres) broad, and has a depth of 16 feet (4.87 metres). Its sides are perpendicular, being lined by stone revetments.

5.7.2.7. Dudha Kunda & Kedara Kunda

To the west of the Kedareswar temple there is a well called Dudha Kunda. It has a perennial and natural spring and the water is said to have medicinal properties. The water of this spring is recommended by some for dyspepsia. To the east of Kedareswara temple there is a small pool called Kedara Kunda.

5.7.2.8. Asoka Jhara

Close by the temple of Rameswara, there is a tank of moderate size. It is called Asoka Jhara. Around and about this tank there are some small as well as big temples.

5.7.2.9. Gosahasreswara Hrada

Close by the temple of Gosagareswara there is a tank called the Gosahasra Hrada.

5.7.2.10. Papanasini Kunda

Close by the Someswara temple there is a large tank linked with laterite blocks. This tank, on the whole, is in excellent state of preservation. It bears the name of Papanasini, "the destroyer of sin", and to it the proxy of Lord Bhubaneswara is brought every year to celebrate the festival of Prathamastami.

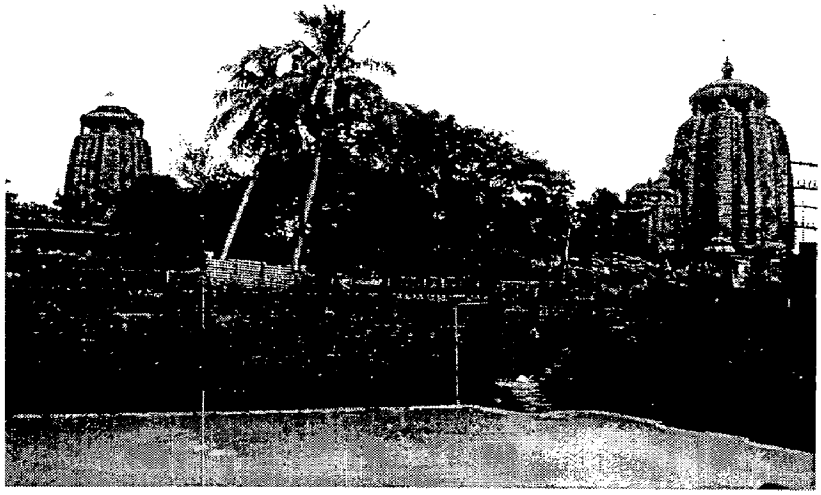


Fig.5.8. Papanasini Kunda
Source: Author

5.7.2.11. Kapileswara Tank

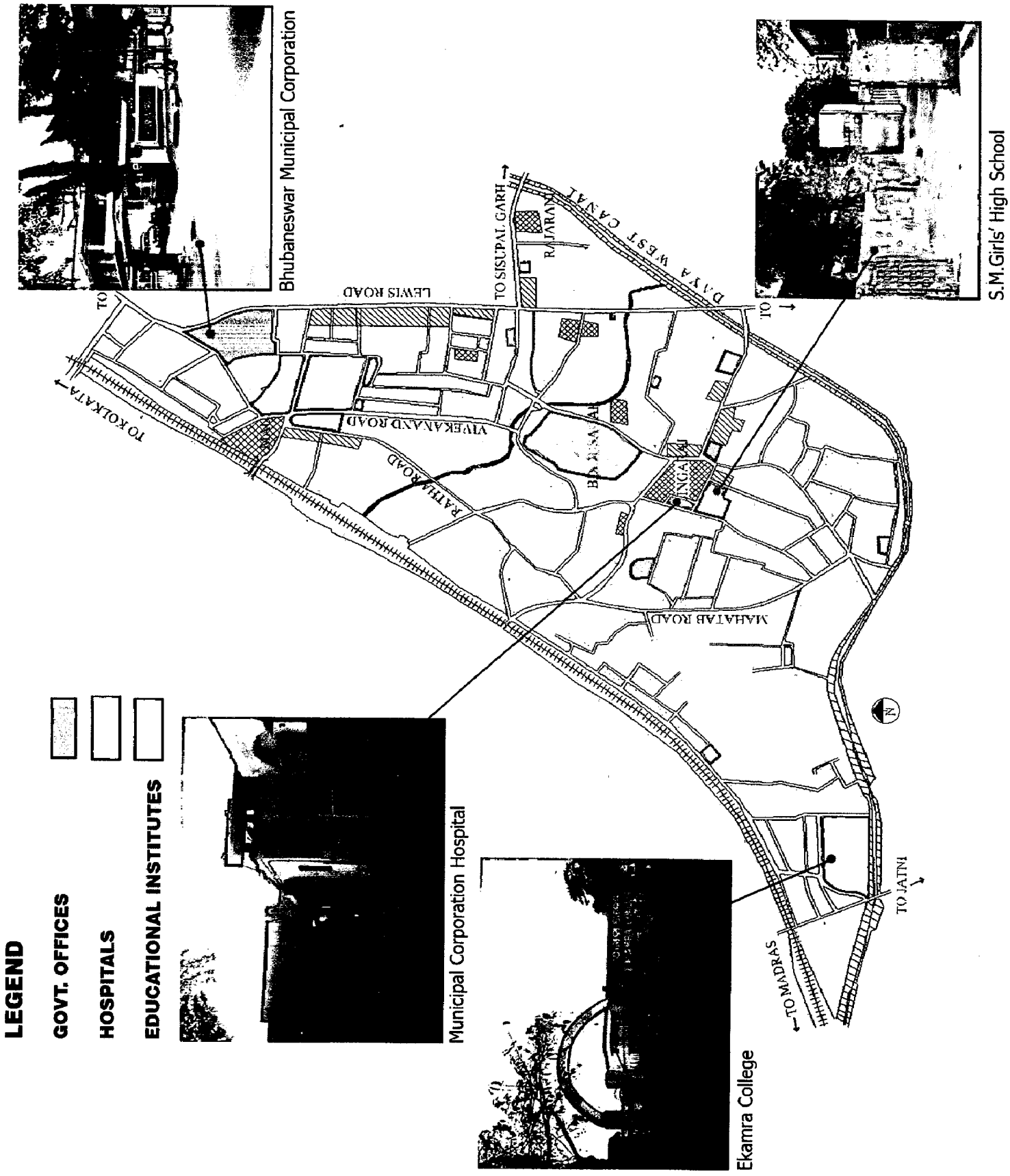
Near the Kapileswara temple there is a large tank 220 feet (67.05metres) x 164 feet (48.98 metres) with an average depth of 16 feet (4.87 metres). Its sides are lined with flags of sandstone and it has an excellent Ghat formed of a flight of stone steps. The tank is fed from its bottom by a perennial spring.

5.7.2.12. Megheswara Kunda

The Megheswara Kunda is a small one situated on the northern side of the Megheswara temple. The water is used for the worship of Lord Megheswara.

5.7.3. Institutional

The institutional buildings present within the study area mainly comprises of educational institutes, hospitals, clinics, primary health centres and office buildings like Bhubaneswar Municipal Corporation, Khordha district court, Tahsil office, Panchayat office, Police station etc.



Map.5.5. Institutional use of the Old Town area, Bhubaneswar
Source of Base map: Zonal Development Plan, BDA; Drawn by Author
Source of photographs: Author; Compiled by Author

5.7.3.1. Educational Facilities

The educational facilities in the old town are provided through State Govt. owned/aided and private institutions. At present 5 technical institutes and 5 general colleges are present within the area. Besides these, the zone is also served by 4 nursery schools, 6 primary/upper primary schools and 9 high schools/higher secondary schools (Map.5.5).

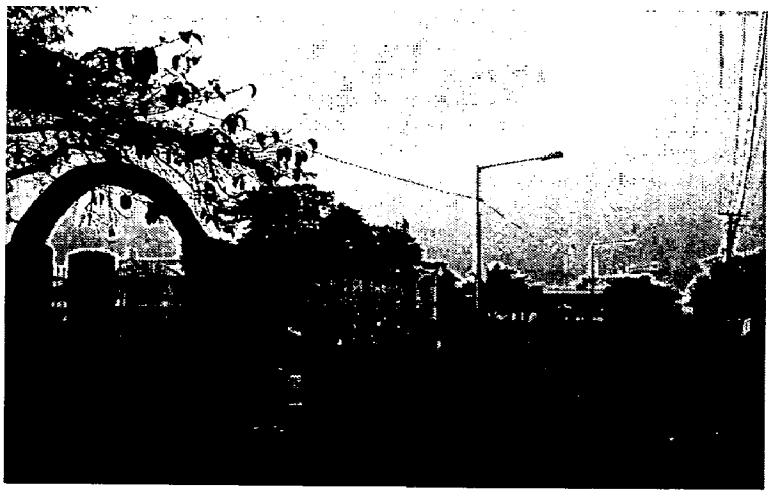


Fig.5.9. Ekamra College
Source: Author

Table 5.6: Educational Institutions within Heritage zone

Sl.no.	Types of Institution	Nos.
School Education		
1	Nursery Schools	4
2	Primary/Upper Primary school	6
3	High schools	7
4	Higher Secondary Schools	2
a)	**Sub-total**	**19**
Collegiate Education		
5.	Arts and science colleges	5
b)	**Sub-Total**	**5**
Technical Education		
6	Engineering College	1
7	ITIs	1
8	Other Training Institutes	3
C)	**Sub-total**	**5**
	Total (A+B+C)	**29**

Source: Zonal Development Plan, Bhubaneswar

5.7.3.2. Health Facilities

The health care facilities within the zone are catered by Government as well as private sector hospitals dispensaries (Map 5.5). The list of major hospitals are presented in the Table 5.7. Besides these, there are many private clinics present within the area.

Table 5.7:Health care establishment within the Heritage zone

Sl.no.	Category	Name of establishment	Ownership	No. of beds
1	Hospital	Govt. Ayurvedic Hospital	State Govt.	50
2	Hospital	Muncipal Hospital	BMC	94
3	Hospital	Kapil PrasadMunicipal Hospital	BMC	NA
4	Hospital	Annapurna Memorial Hospital	Pvt.	21
5	Hospital	Ramkrishna chartiable Dispensary	R.K. Matha	-
		Total		**165**

Source: Zonal Development Plan, Bhubaneswar

5.7.3. Commercial

1. Commercial establishments are very less in the study area, which about 2.05% of the total area. The people of old town mainly depend on two weekly markets i.e. Lingaraj Haat and Ravi talkies Haat for vegetables and other eatables. Another small weekly market is towards the south-east, inside the Bhimtangi housing board colony.
2. Major commercial establishments like big showrooms and craft shops etc are found along the Lewis Road. Along both the sides of Ravi Talkies road, two market complexes and other shops are found.
3. There are 32 unauthorised shops along the road towards Lingaraj from Bindusagar. Along Lingaraj temple, there are 85 shops and to the opposite of the temple, 21 shops are there, which add to congestion in the area. Most of these shops deal with Bhoga[1] items, garlands, Pan shops etc.[2]

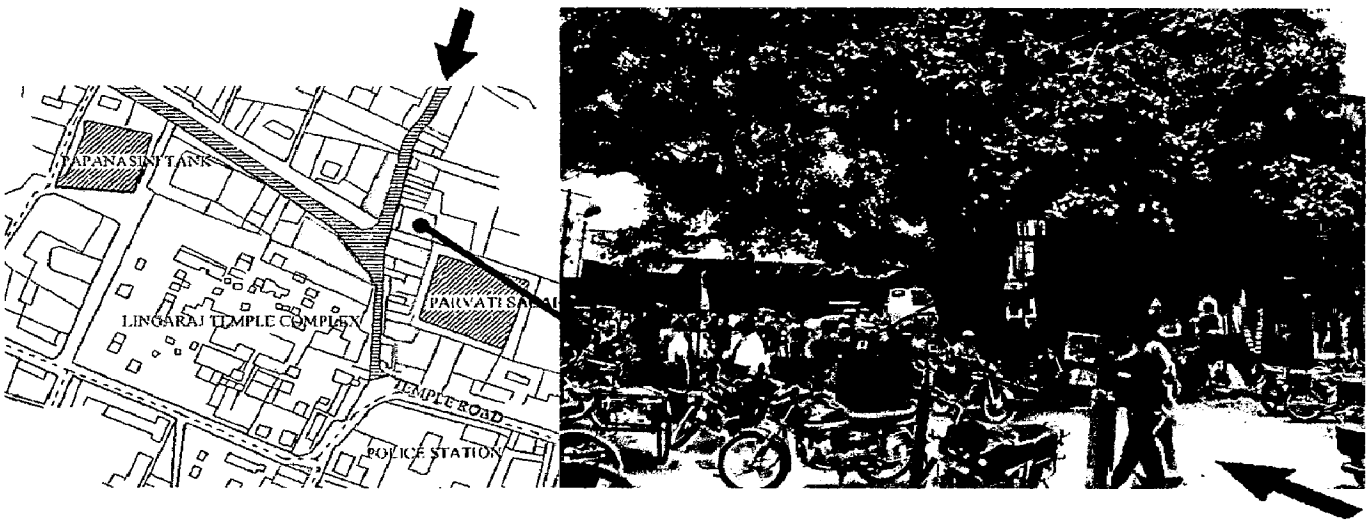
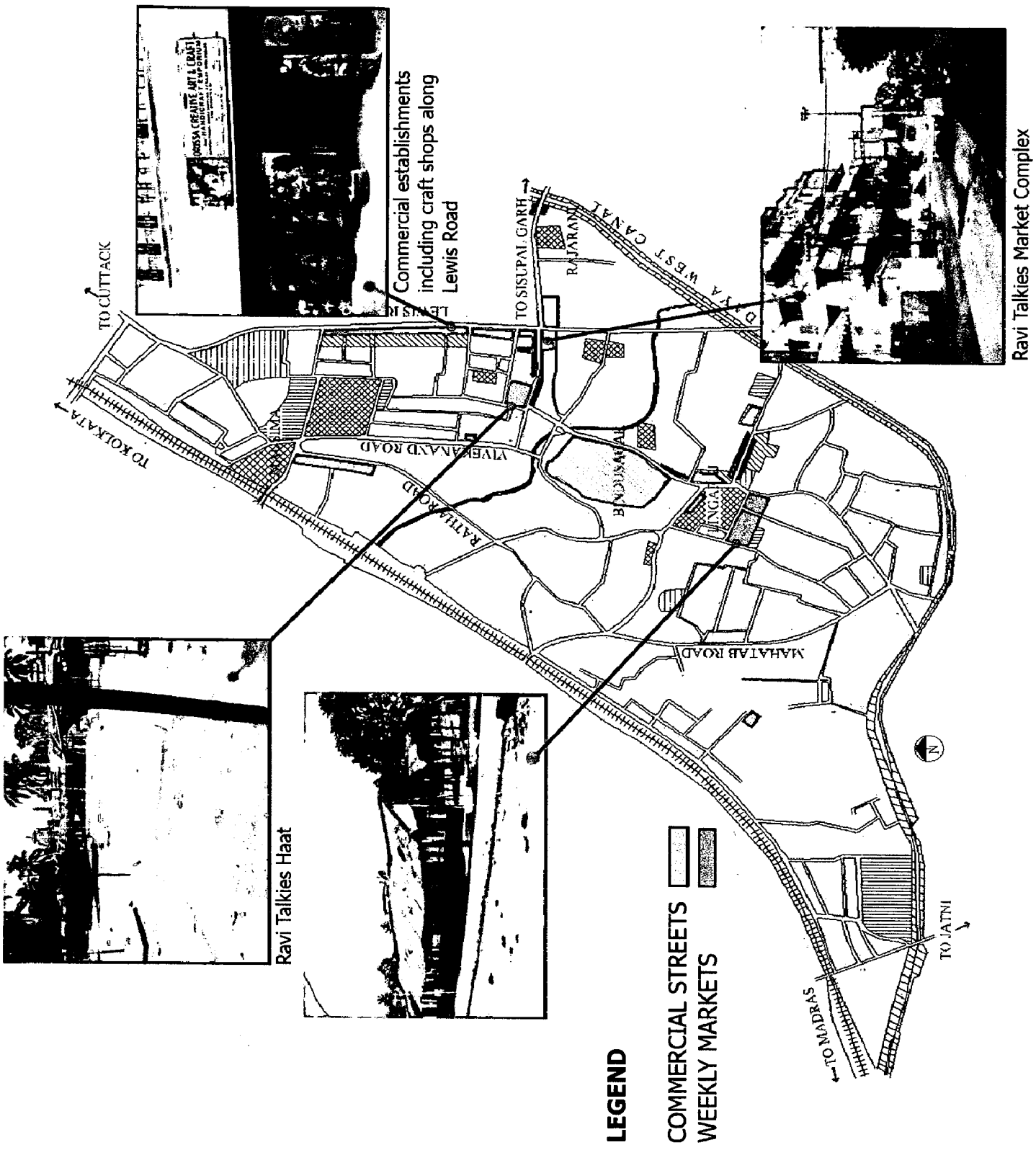


Fig.5.10. Shops along Lingaraj Temple
Source: Author

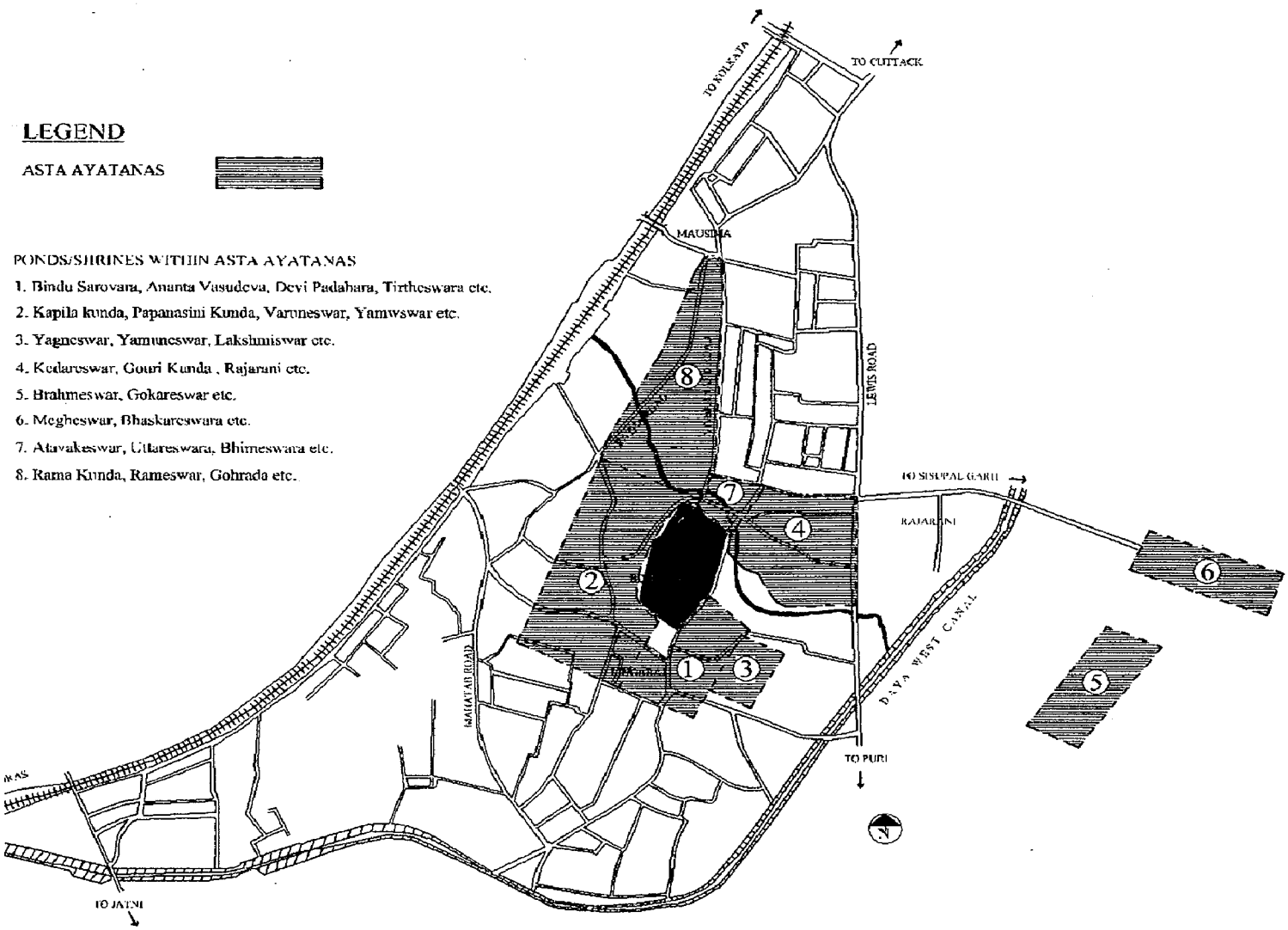
[1] Offerings given to the Deity
[2] Zonal Development Plan, BDA, 1999.



Map.5.6. Commercial use of the Old Town area, Bhubaneswar
Source of Base map: Zonal Development Plan, BDA; Drawn by Author
Source of photographs: Author; Compiled by Author

5.8. THE ASTA AYATANAS OF EKAMRA KSHETRA

The Ekamra Puran and other chronicles like Ekamra Chandrika and Svarnadri Mahodaya etc describe eight sacred complexes or Asta-Ayatana Kshetras located at Ekamra Kshetra (Map 5.5). The Asta-Ayatana comprises **54** monuments (Table 5.8).



Map.5.7. Map showing Asta- Ayatanas of the Old Town area, Bhubaneswar
Source: Zonal Development Plan, BDA; Redrawn by Author

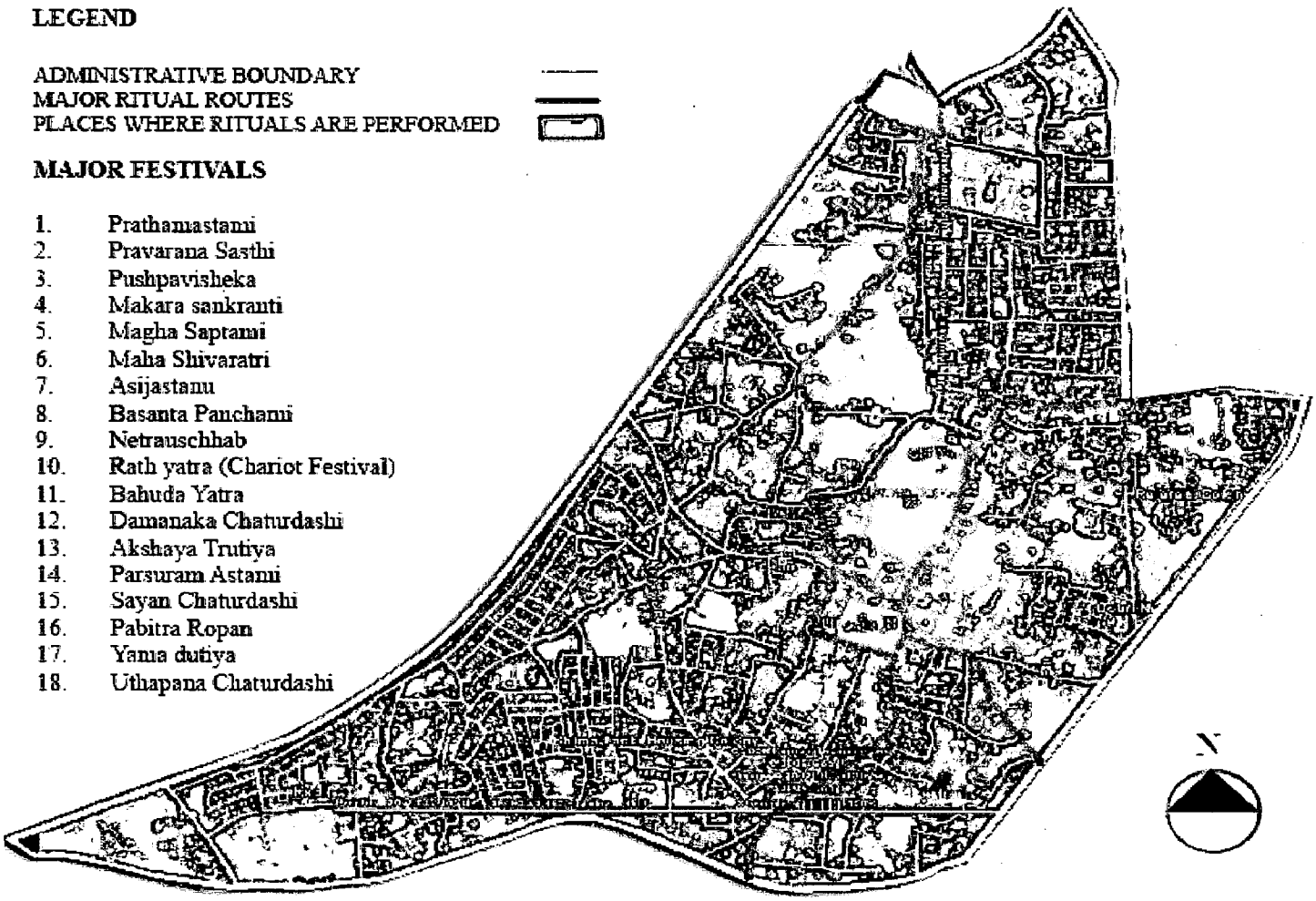
The pilgrim routes for 'Pradakshina' (to circumbent) of the Asta-Ayatanas[1] pass inside the Ekamra Kshetra[2] (Map 5.8). Among these eight sacred complexes, six lie within the old town area. Even today Lingaraja temple has ritualistic connections with some of the monuments described in the Asta-Ayatana which are of importance to the contemporary spatial development of Ekemra Kshetra. These relationships form the genesis of order and coherence of physical and socio-religious development of Ekamra Kshetra and are the cardinals of evolving any functional land use pattern for the heritage zone and giving the place its identity.[3]

[1] Eight complexes each comprising of clusters of sacred shrines and ponds
[2] Old name of Bhubaneswar
[3] Zonal Development Plan, BDA, 1999

Table 5.8: Major Shrines and Ponds within the Asta-Ayatanas

Ayatana	Major Shrines	Ponds
1	Ananta Vasudeva, Tirtheswara	Bindu Sarovara, Devi Padahara
2	Varuneswar, Yameswar, Maitreswara, Venu-Kichaka, Isaneswara, Punarisana	Kapila kunda, Papanasini Kunda
3	Yagneswar, Yamuneswar, Lakshmiswar, Gangeswara, Devipada, Kotiswara, Swarnajaleswara, SampurnaJaleswara, Sureswara, Siddheswara, Mukteswara	Ganga Yamuna kunda, Kotitirtha Sarovara, Siddha Kunda
4	Kedareswar, Gouri Devi, Indreswara (Rajarani Complex), Shanta Shiva, Daityeswara, Pisiswari Devi	Gouri Kunda, Kedara Kunda,
5	Brahmeswar, Gokareswar,	
6	Megheswar, Bhaskareswara	
7	Atavakeswar, Uttareswara, Bhimeswara, Atavu Tirtha	
8	Rameswar, Lakshmaneswara, Bharateswara, Satrughneswara, Gosagareswara, Paradareswara, Gohrada	Rama Kunda

Source: Zonal Development Plan, BDA



Map 5.8. Ritual Routes of Old Town, Bhubaneswar
Source of base map: Google Earth; Drawn by Author

5.9. THE CHARACTER OF THE STUDY AREA

5.9. THE CHARACTER OF THE STUDY AREA

The character of the study area is studied on the basis of the five elements as suggested by Kevin Lynch in his book "Image of the City". He defined those five elements as follows:

1. Paths: Familiar routes followed- "Are the channels along which the observer customarily, occasionally, or potentially moves."

E.g.- streets, walkways, transit lines, canals, railroads etc.

2. Edges: Dividing lines between districts- "are the linear elements not used or considered as paths by the observer. They are boundaries between two phases, linear breaks in continuity."

E.g.- shores, railroad cuts, edges of development, walls etc.

3. Districts: Areas with perceived internal homogeneity- "are medium-to-large sections of the city, conceived of as having two-dimensional extent, which the observer mentally enters 'inside of,' and which are recognizable as having some common identifying character"

E.g.- center, midtown, its in-town residential areas, organized industrial areas, train yards, suburbs, college campuses etc.

4. Landmarks: Point of reference- "Are another type of point-reference, but in this case the observer does not enter within them, they are external. They are usually a rather simply defined physical object which makes one orient oneself.

E.g.- building, sign, store, or mountain etc.

5. Nodes: City into which an observer can enter. The nodes may be simply concentrations, which gain their importance from being the condensation of some use or physical character, as a street-corner hangout or an enclosed square."

E.g.- primary junctions, places of a break in transportation, a crossing or convergence of paths, moments of shift from one structure to another.

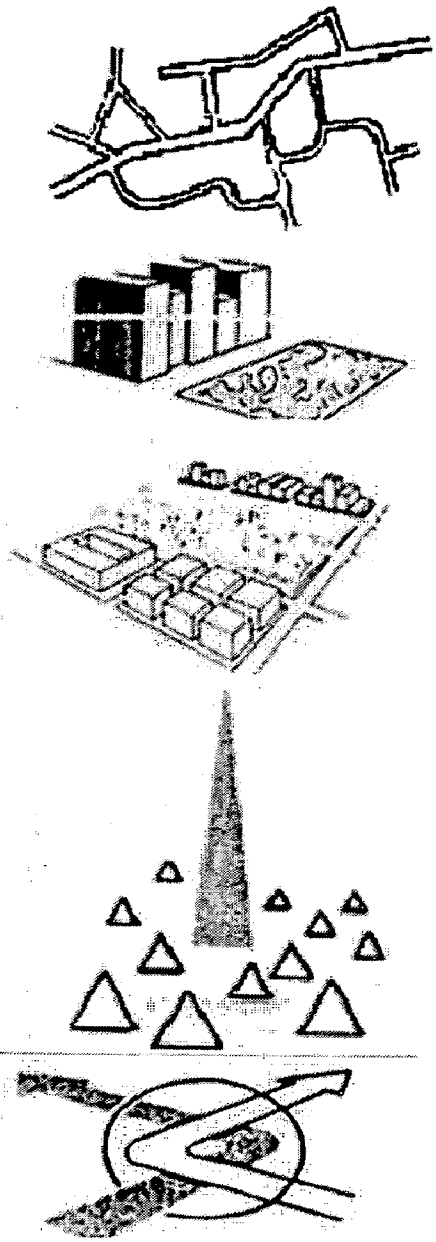
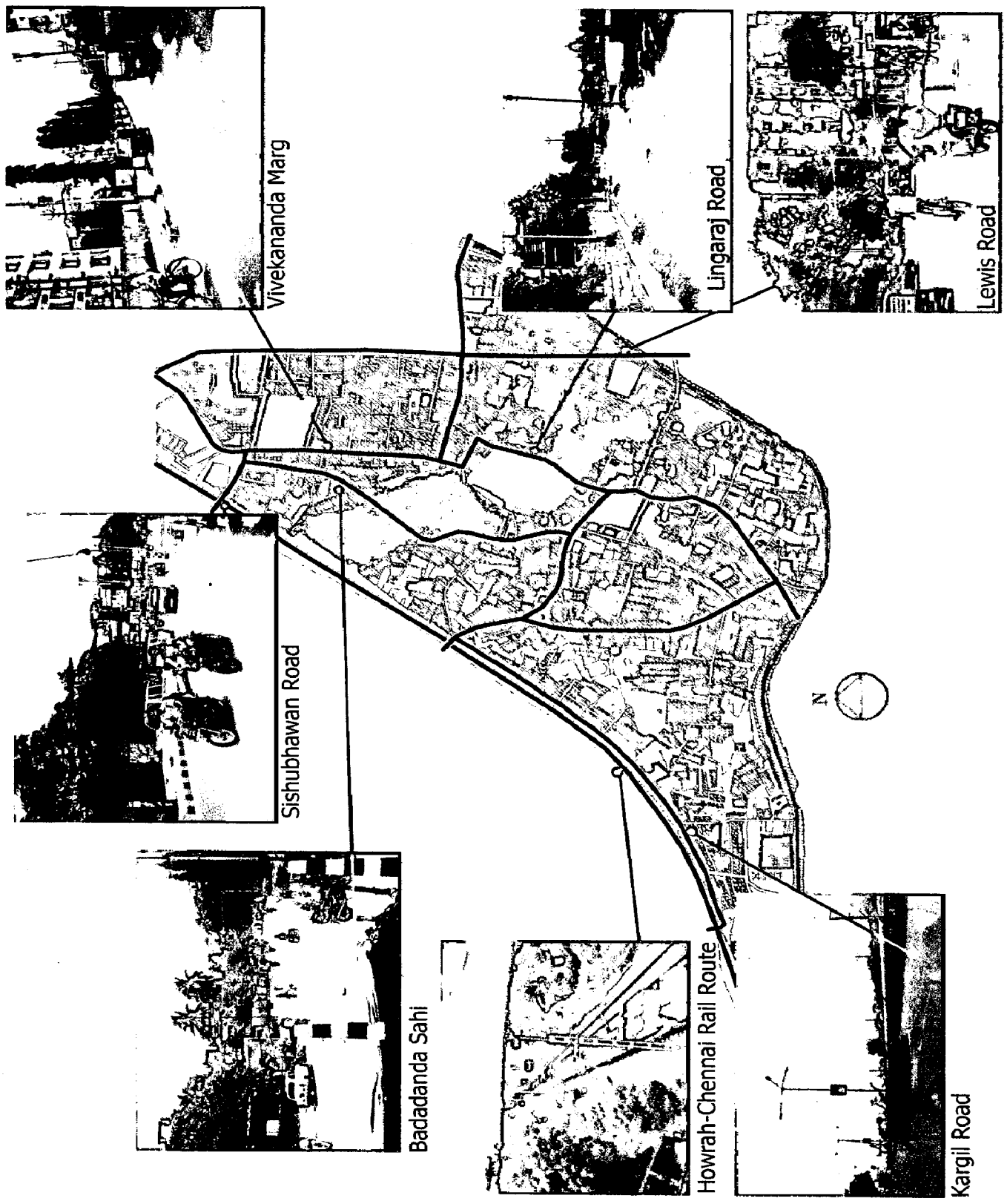


Fig.5.11. Five elements defining imagibility of the city
Source: Lynch, K "Image of the city"

The major movement corridors are identified in the Map 5.9 .



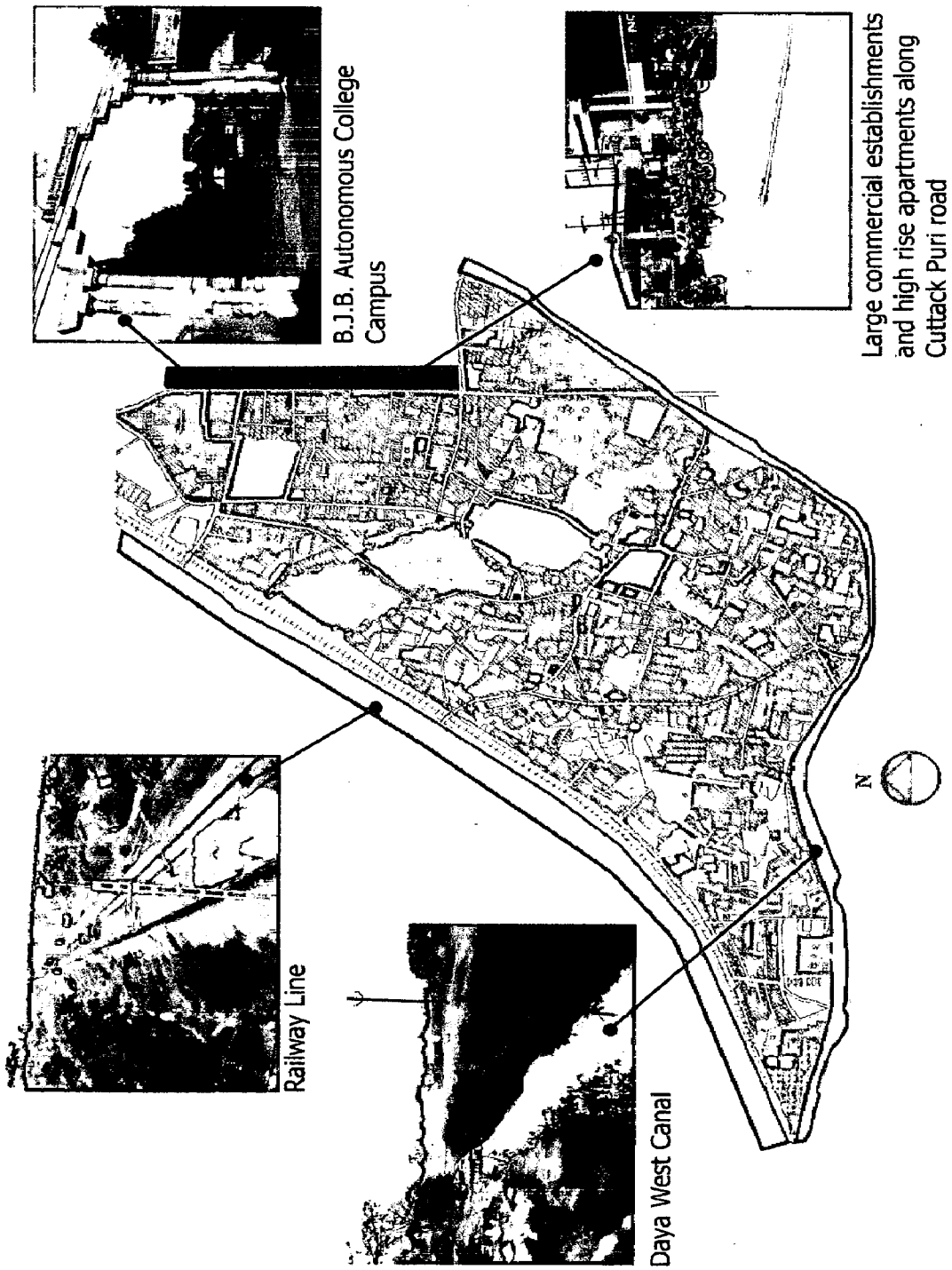
Map.5.9. Map showing the major Paths in Old Town area, Bhubaneswar
Source of base map: Zonal Development Plan, BDA; Drawn by Author
Source of photographs: Author; Compiled by Author

The Howrah-Chennai rail route borders the west side of the study area. Among the major paths within the old city core, Badadanda Sahi and Lingaraj Road have acquired importance as they connect the major temples present in the area.

Sishubhawan Road is another important route because it joins the old town area with the new capital city. Kargil Road, Lewis Road, Mahatab Road and Vivekananda Marg are well developed roads and are major streets joining variety important squares. These roads majorly pass through residential areas.

5.9.2. Edges

The old core manifests different types of edge condition.



Map.5.10. Map showing the Edges of Old Town area, Bhubaneswar
Source of base map: Zonal Development Plan, BDA; Drawn by Author
Source of photographs: Author; Compiled by Author

The area is bounded by Howrah-Chennai rail route on the entire western side and by Daya West canal on the south and south-east. To the east, the old town settlement ceases by the large campus of B.J.B. autonomous college, large commercial establishments and high-rise apartments developed along Lewis Road (Cuttack-Puri Road).

5.9.3. Districts

There are 5 recognizable districts (Large two-dimensional areas) within the old town area (Map 5.11).

1. The Nageswar Tangi area and Bhimtangi housing board colony are the areas which are distinguished being the well developed new residential colonies.
2. The low lying/ marshy areas consist of a large tract of low land, which serve as a natural ground water recharge zone. In this area, arbitrary patches of residences are found in between.
3. The Lingaraj temple and Bindusagar lake form the most important district as its surrounding areas possess a specific traditional character, let it be the age old residential stock, the artistic temples or the heritage tanks and waterbodies, in every way, it represents the own unique character of the old Bhubaneswar.
4. Similar image is found in the surrounding areas Rajarani temple, but of a different quality.

5.9.4. Landmarks

The various old temple structures due to their height and grandeur form the visual landmarks in the study area. These temples due to their religious importance, act as points of references for the local public. However, among all these old structures, Lingaraj temple forms the major landmark as it stands majestically in the central core of the area and is visible from various streets forming good views and vistas (Map 5.4).

Apart from these, other buildings like Ramakrushna Math, Khordha Judicial Court, Bhubaneswar Municipal Corporation, Municipal Capital Hospital and Ekamra college form landmarks in their respective localities. The cinema theater like Ravi talkies, which gives the name of the square also acts as a landmark (Map5.12).

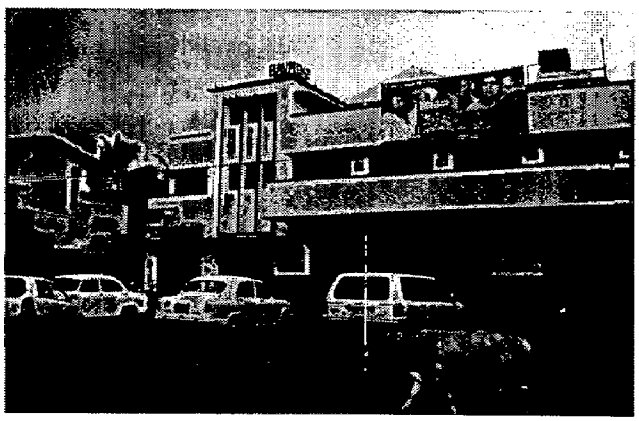
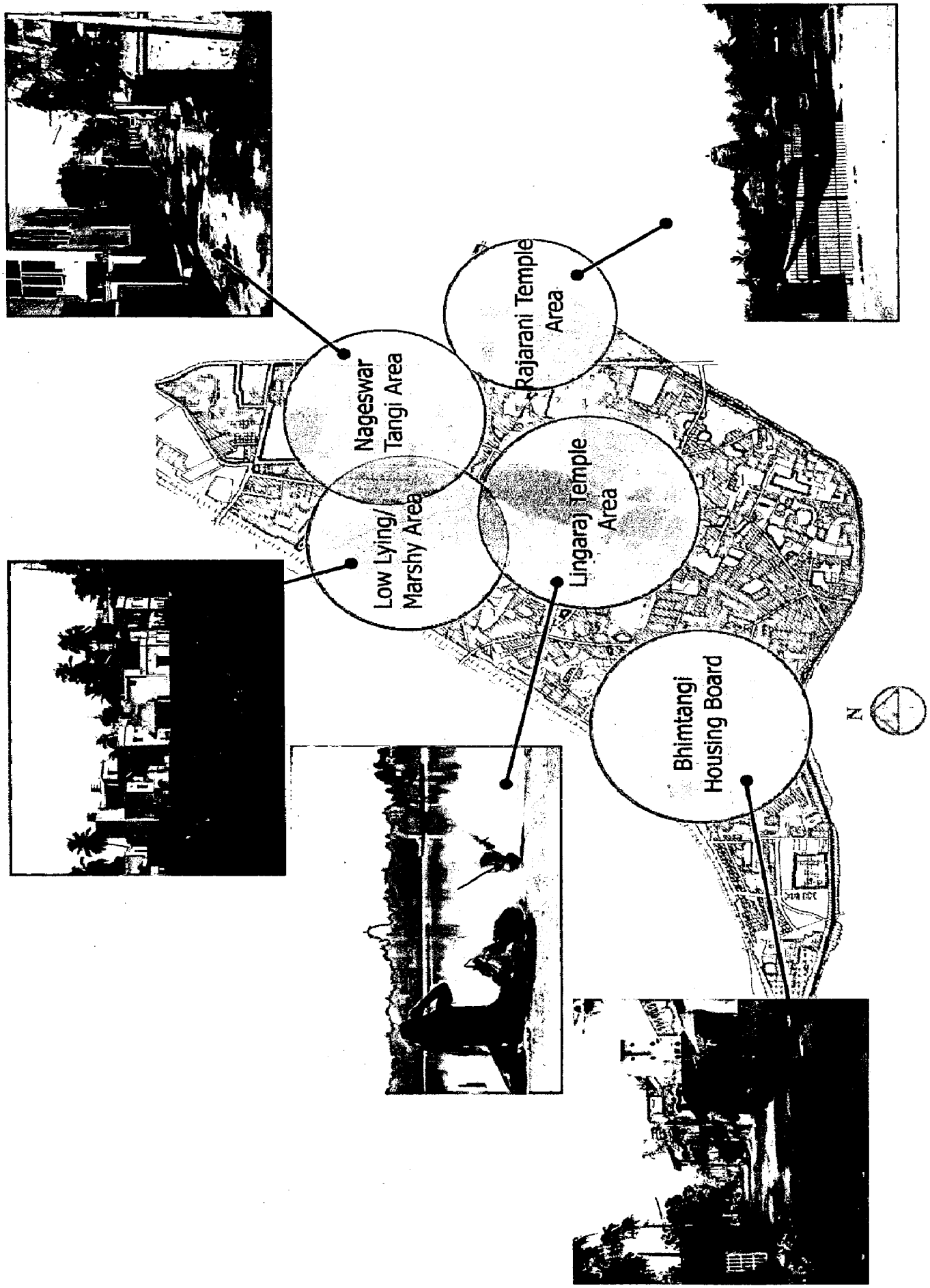
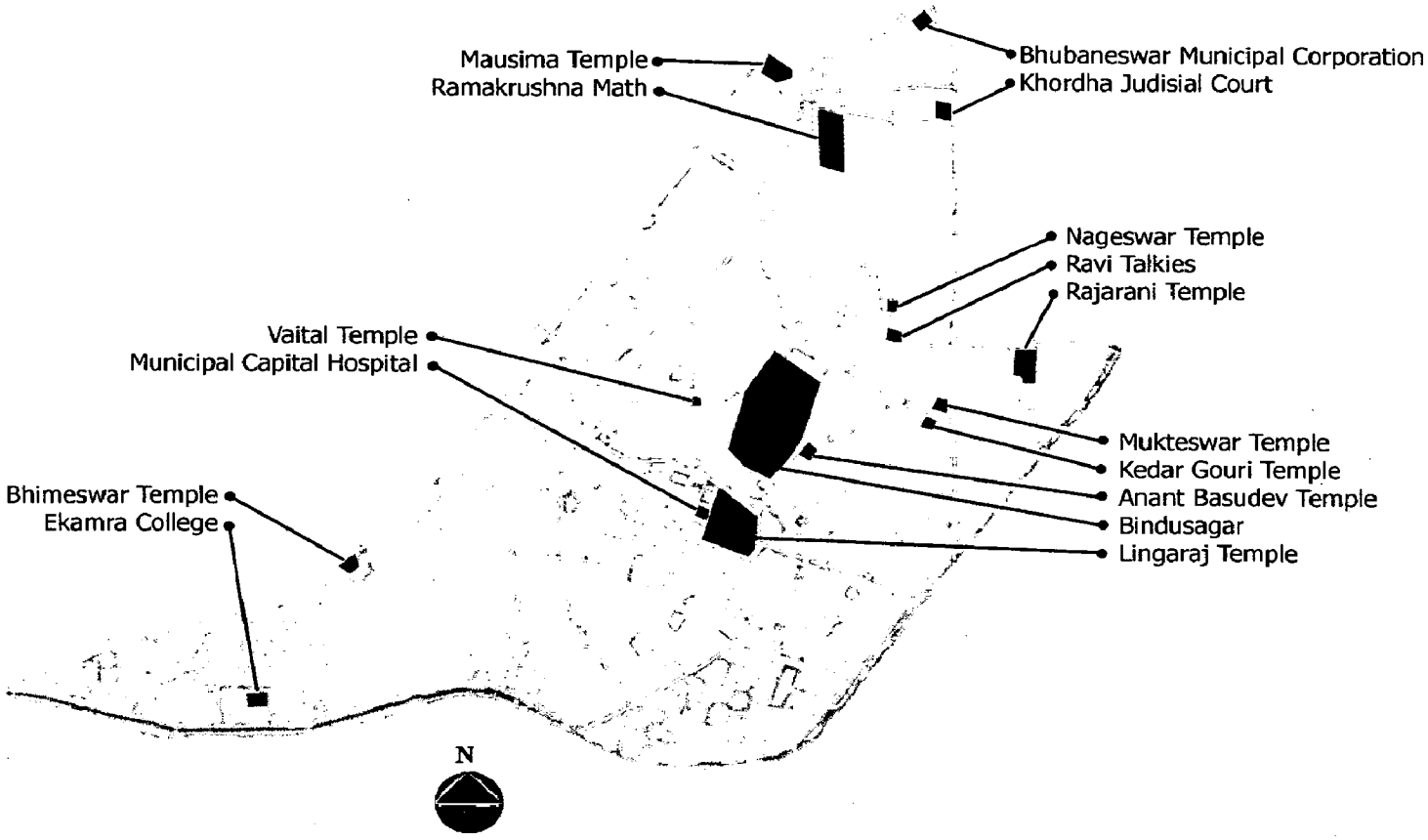


Fig.5.12. Ravi Talkies
Source: Author

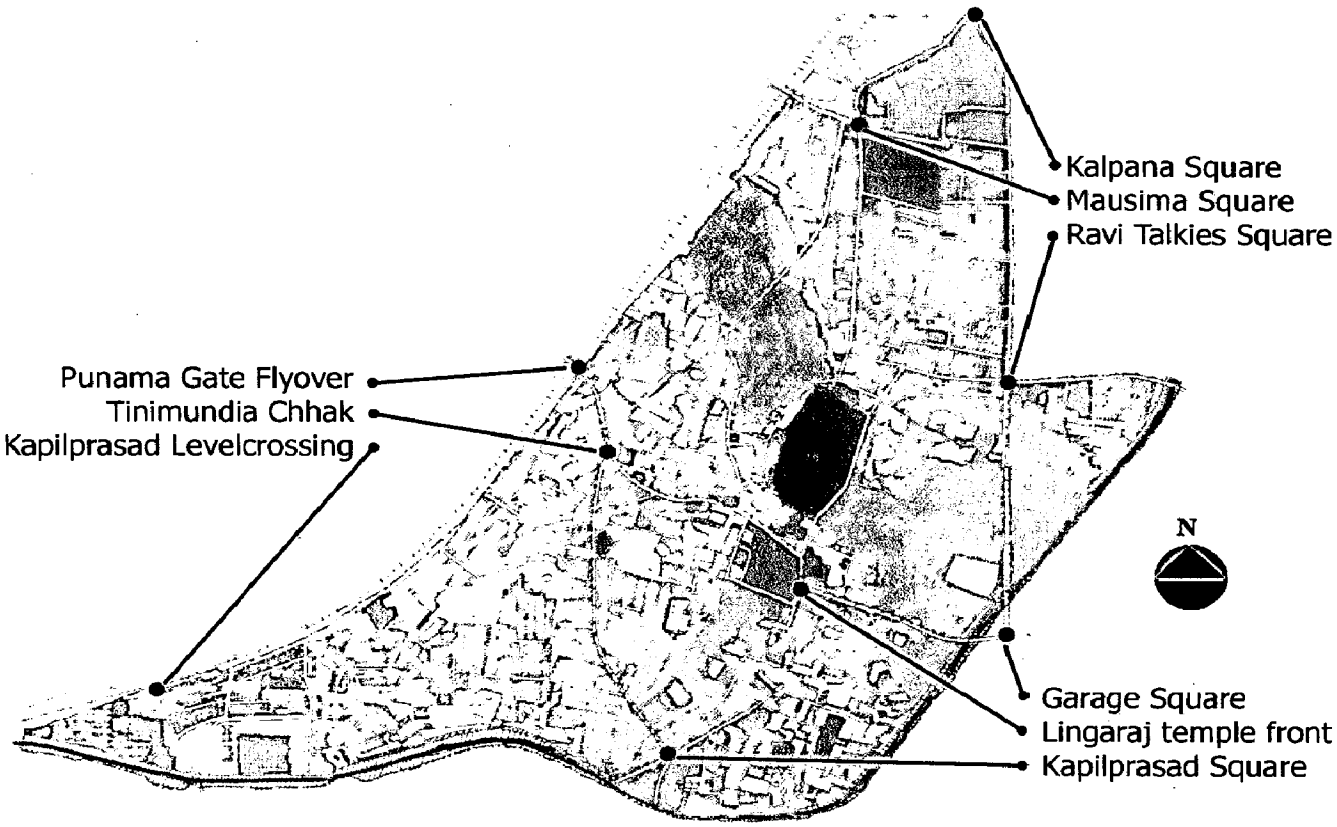


Map 5.11. Map showing the major Districts of Old Town area, Bhubaneswar
Source of base map: Zonal Development Plan, BDA; Drawn by Author
Source of photographs: Author; Compiled by Author



Map 5.12. Map showing the Landmarks of Old Town area, Bhubaneswar
Source of base map: Zonal Development Plan, BDA; Drawn by Author

5.9.5. Nodes



Map 5.13. Map showing the Nodes of Old Town area, Bhubaneswar
Source of base map: Zonal Development Plan, BDA; Drawn by Author

1. Major activity nodes Mausima flyover, Punama gate flyover and Kapilprasad levelcrossing as they are the places of a break in transportation.
2. Major traffic junctions like Kalpana square, Garage square, Kapilprasad square, Tinimundia square act as nodes as these are the points to decide the direction of movements. People perceive the nearby elements to major traffic junctions for their decision-making.
3. Cinema theatre like Ravi talkies acts as a linear commercial node giving name to its nearby square.
4. Apart from these, the Lingaraj temples precincts formed important node with varying intensity (Map 5.13).

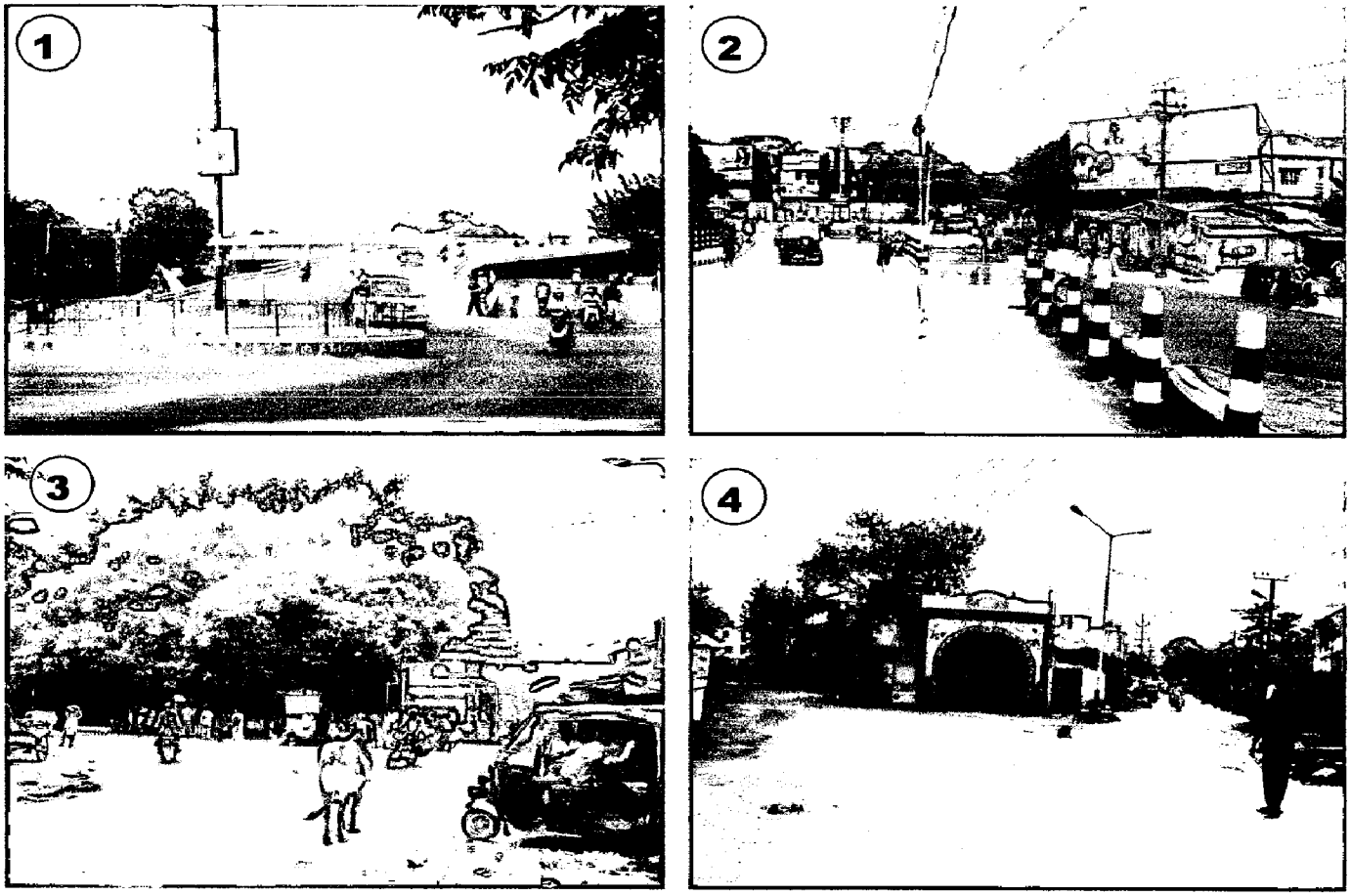


Fig.5.13: Major nodes of the study area.
1. Punama Gate fly over, 2. Mausima square, 3. Lingaraj Temple front, 4. Kapil prasad square
Source: Author

5.10. ARCHITECTURAL CHARACTER

The Old Town contains splendid specimens of Kalinga architecture spanning some twenty-five centuries of history, depicting the grace, the joy and the rhytm of life in all its wondrous variety. The study area is characterized by low density sprawl. As per the survey carried out by ORG (Jan. 1998), it was observed that 5289 residential structures exist within the heritage zone. On the basis of different building typology

as observed in the study area, the architectural character of the structures has been discussed under the following headings.

5.10.1. Residences

1. The central core of the area has a very high density. In the core area, about 360 traditional residences are present, which possess a distinct architectural character of their own.
2. Larger and more prosperous families have homes that are 2 or 3 stories high with stucco walls and cement floors rather than mud walls and dirt floors. Their homes also have reinforced cement ceilings rather than thatch roofs.
3. Comparatively low income families have houses with stucco walls but with a thatched roof on it.
4. No proper frontage is available to the buildings, as a result the houses abut the roads and there is no visual -physical barrier between houses and road.

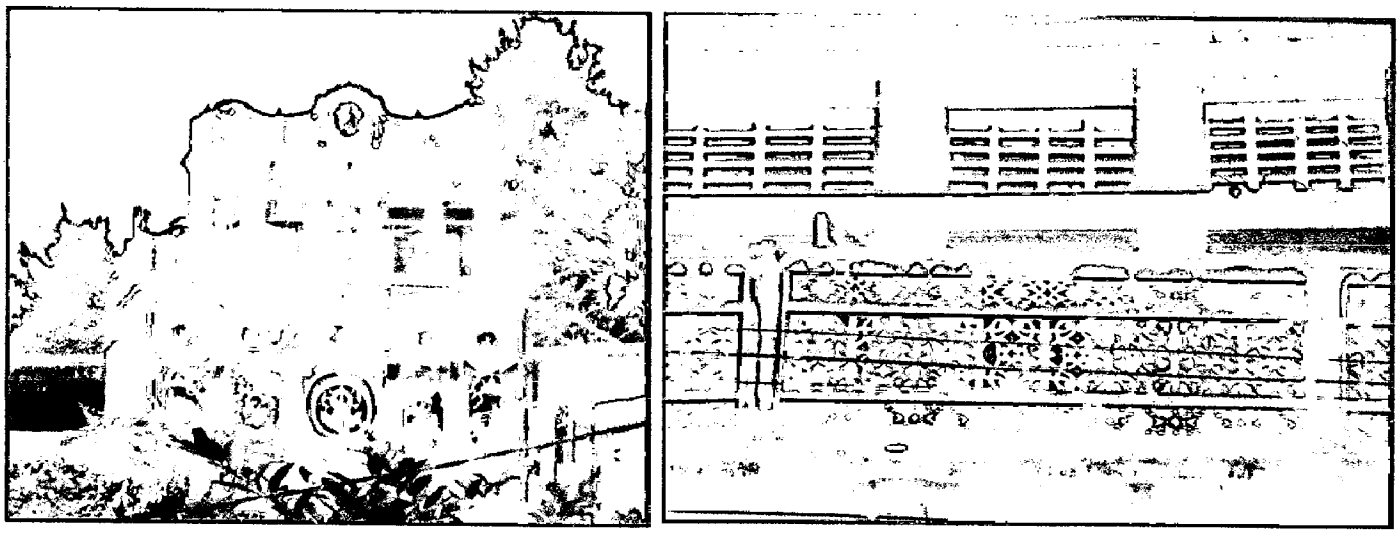


Fig.5.14. Old residential buildings in the central core with fine carvings/jalliwork on the parapets and openings
Source: Author

Fig.5.15. New residences come up in the area
Source: Author

5. Modern buildings including apartments which have come up in the areas like Nageswar Tangi and Bhimtangi housing board colony have facades with plain continuous parapets of balconies; stand in contrast to the traditional buildings.
6. There is no continuity from past to the present in architectural style. Control in facade of this area is an important issue.

Table 5.9:Residential building characteristics

Type of Structures		**No. of structures**	**Percentage**
Pucca (71%)	Ground	2642	50
	G+1	985	18.57
	G+2	118	2.23
	G+3	03	0.05
	G+4 & above	08	0.15
Temporary (29%)	AC sheet roof	585	11
	Jhuggi jhopdi	948	18
Total		**5289**	100

Source: Zonal Development Plan, BDA

The residential structures present within old town consist of 71% pucca and 29% temporary structures. Of the total temporary structures, 38% are having roofs of A.C.Sheets and 62% are Jhuggi and Jhopdis. The average building height within the old town is 4.0 meters.

5.10.2. Temples

The old town area is dotted with hundreds of magnificent temples spread around a central lake called ***Bindu Sarovar*** or the nucleus of the universe. The earliest temple dates to the seventh century, but the history of this region dates back even farther than the Christian era. Amongst the 100s of the temples and monuments, some of the major temples are:

- Lingaraja Temple (11th century)
- Rajarani Temple (11th century)
- Mukteshwara Temple (late 10th century)
- Vaital Deul Temple (8th century)
- Parashurameshvara Temple (7th century)
- Kedar gouri Temple (11th century)
- Anant Basudev Temple (13th century)

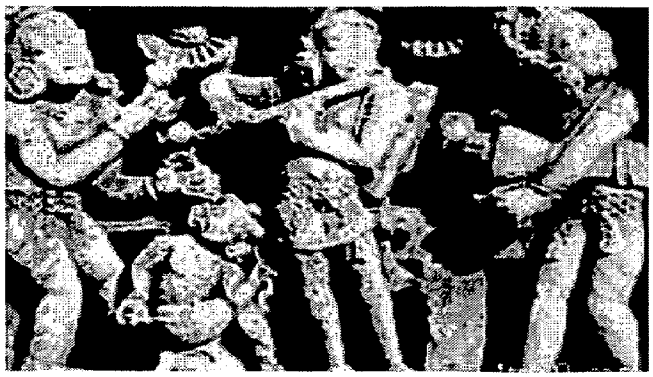
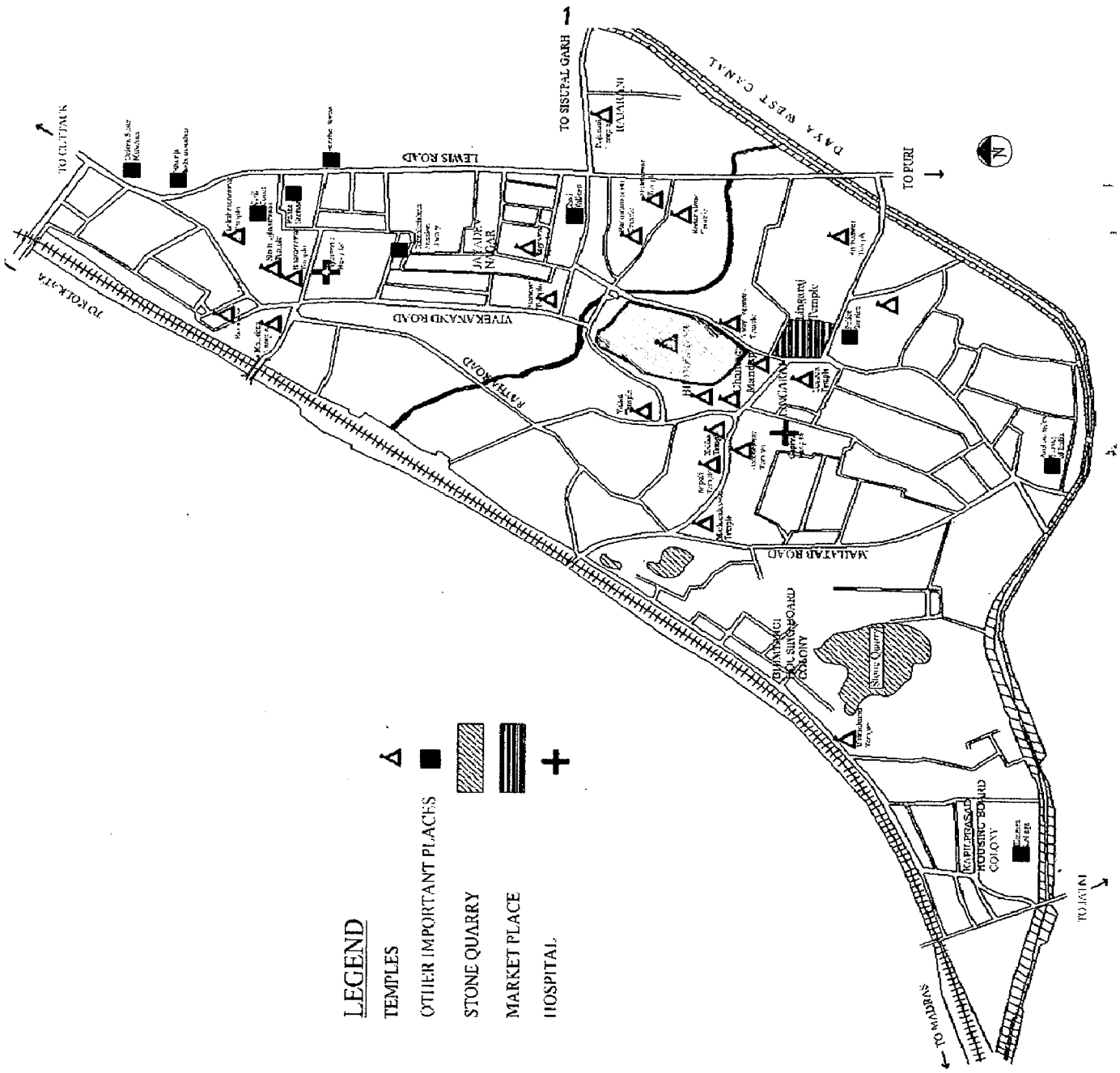


Fig.5.16 Stone carvings on the walls of the temples
Source: 4to40.com

- Kapileswar Temple
-
- Megheswar Temple (12th century)
- Brahmeswar Temple (13th century)
- Bhaskareswar Temple (7th century)

Two heritage trails connect all the temples together and act as two major roads along which ribbon type development is found. Along these trails different rituals are being performed during festivals.

Fig.5.17 Stone carvings on the walls of the temples
Source: 4to40.com



Map 5.14. Map showing the the location of temples in the Old Town area, Bhubaneswar
Source of base map: Zonal Development Plan, BDA; Drawn by Author

There are numerous temples in the Old Town built from the 6th century A.D. to the 15th century A.D. Many of these are covered from top to bottom with exquisite relief carvings with delicate floral and geometric designs, figures of gods and goddesses, nymphs and dryads of the woods, and couples. These temples are briefly discussed below in the order of their period of construction.[1]

5.10.2.1. Lakshmaneswara And Shatrughneswara Temple

These two temples, commonly known as Lakshmaneswara and Shatrughneswara, standing in a row by the side of the road leading to the Lingaraj temple have generally been regarded as the earliest temples. The period of the Satrughneswara and Lakshmaneswara temples is assigned to the close of the sixth century A.D. The Satrughneswara represents a sikhara temple. The sculptures of this temple are marked by the vigour and exuberance of the designs recalling the best characteristics of the post-Gupta art.

5.10.2.2. Parasurameswara,Bharateswara & Swarnajaleswara Temple

The date of the Parasurameswara temple has been assigned to 650 A.D. Two other temples, such as, the Bharateswara and the Swarnajaleswara temple can be recognised to be constructed during the same period as of the Parasurameswara. The conservation work of the temple Swarnajaleswara has been undertaken by the Archaeology Department, Government of Orissa. The Parasurameswara temple is a small but lavishly decorated temple. Enclosed within a compound wall, the temple facing west, is a small compact shrine with thick-set gandi, while the Jagamohan, instead of being stepped pyramid as in the typical Orissan temples, is a rectangular structure with a terraced roof.

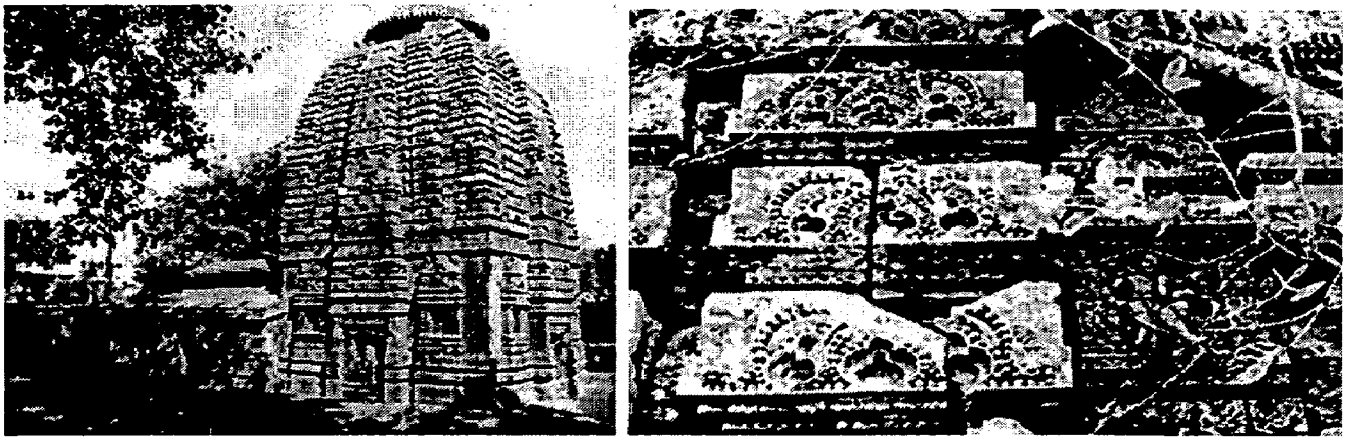


Fig.5.18. Parasurameswar Temple and art motifs of Swarnajaleswar Temple
Source: http://www.indianetzone.com/23/sculpture_orissa.htm

[1]http://www.whereincity.com/india/orissa/khordha1.php;
http://www.vaisnava.cz/fotky/bhuvanesvar

5.10.2.3. Markandeswara, Taleswara, Vaital, Mohini & Uttareswara Temples

The Markandeswara, the Taleswara, the Vaital, the Sisireswara, the Mohini and the Uttareswara are characterised by the Pancha-Ratha plan unlike the Tri-Ratha plan of temples of the earlier group. The Jagamohans are of the same type with one door but no window and pillars inside. A Buddhist inspiration had influenced the iconography and execution of a few images which may be traced to the influence of the Bhaumas. The Vaital temple is remarkable for its uncommonly barrel shaped double-storied tower.

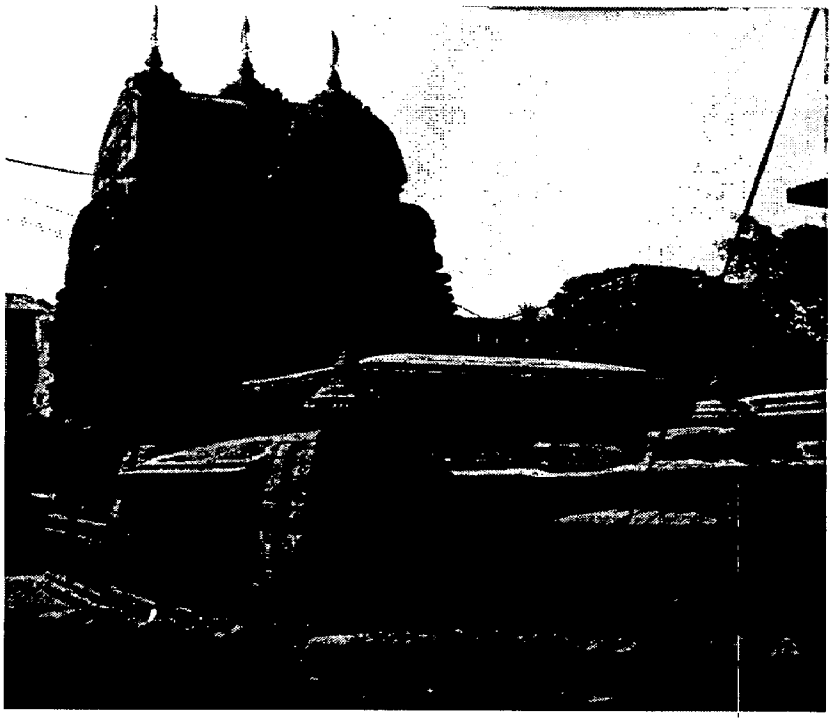


Fig.5.19. Vaital Deul
Source: Author

5.10.2.4. Mukteswara, Sisireswara & Brahmeswara Temples

The Mukteswara is one of the most beautiful temples of India and has been described as a dream realised in sandstone. Elegantly decorated from top to bottom, it stands within a gracefully laid out low compound wall with a beautiful torana in front. Its beautiful sculptures eloquently speak of the sense of proportion and perspective of the sculptures and their extraordinary skill, which represents features from both the early architectural tradition as well as new architectural designs (Fig.5.21).

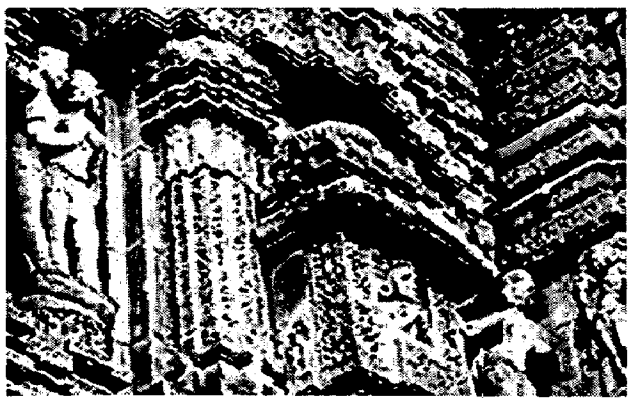


Fig.5.20. Carvings on the walls of Sisireswar temple
Source:http://www.indianetzone.com/23/sculpture_orissa.htm

The date of the temple is assigned somewhere between the temples of Sisireswara (800 A.D.) and the Brahmeswara (1060 A.D.). There are two other temples at Bhubaneswar which may be regarded as close contemporaries of the Mukteswara. One of them is the Sureswara, a very small structure, which stands near the Kotitirtheswara temple and the other is the Gauri temple situated in the compound of the Kedareswara.

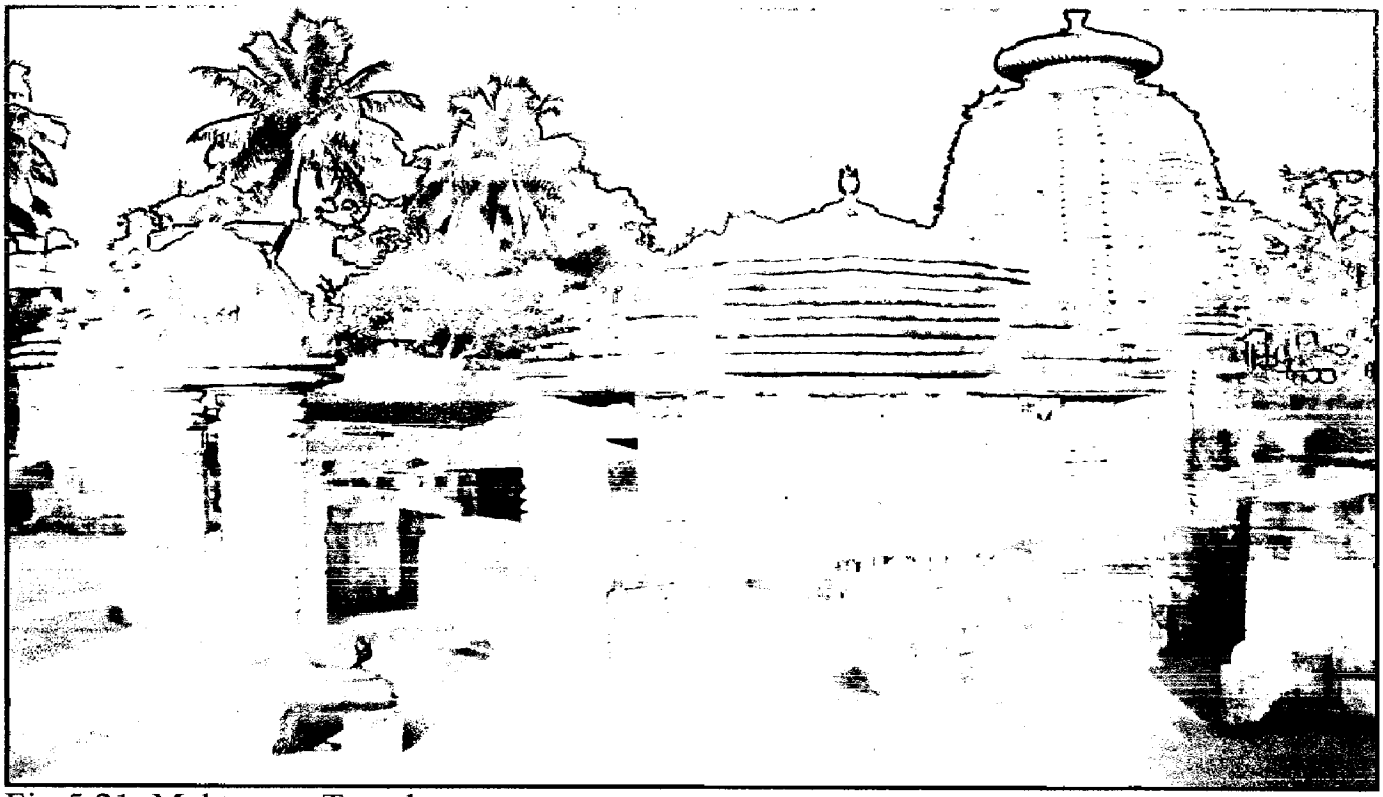


Fig.5.21. Mukteswar Temple
Source: Author

5.10.2.5. The Rajarani Temple

The superb temple of Rajarani bears certain architectural features rare in their occurrence in the other temples at Bhubaneswar. In spite of such features, which seem to lend it a somewhat exotic appearance, the temple has a distinct relation with the evolution of the Orissan temple form. The figures are so beautiful that stealing still goes on. About the time of the last Govinda Dwadashi a head was broken and stolen. During last few years another head has been stolen. The figure of a damsel playing with a bat and a ball had its head a few years ago. Now it is without one. All this is happening inspite of watchman being appointed. A visit to the interior of the temple makes two points clear:

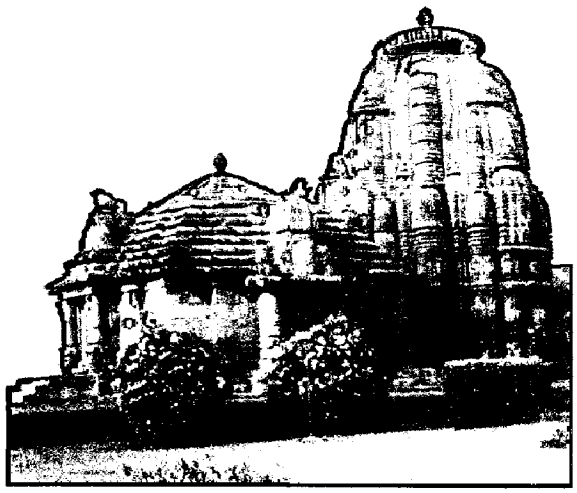


Fig.5.22. Rajarani Temple
Source: Author

(a) There never was a deity in the temple,

(b) When Rajarani was built, multiple storeyed building and use of iron beams had come into style.

5.10.2.6. Brahmeswara Temple

The next dated temple is the Brahmeswara, which supplies some well-marked features and characteristics that became distinctive of the Orissan temple type in the later ages. The

Orissan temple form as one sees in the Brahmeswar is grandly exemplified in the majestic Lingaraja. This is the second temple at Bhubaneswar with internal embellishments in the Jagamohan, the first being the Mukteswara.

5.10.2.7. The Lingaraj Temple

The temple of Lingaraja is the most notable temple not only of Bhubaneswar, but also of Orissa; and according to expert opinions is also one of the best archaeological monuments of the East.

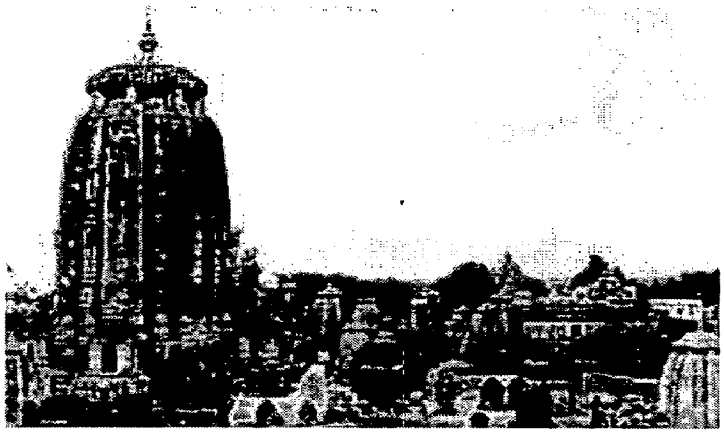


Fig.5.23. Lingaraj Temple
Source:http://www.vaisnava.cz/fotky/bhuvanesvar

Rising to a height of about **180 feet** (54.86 metres) and dominating the entire landscape within an area of about fifteen kilometers, this great temple represents the quintessence of the Kalinga type of architecture. It stands in the midst of a number of smaller temples within a spacious compound of laterite measuring 520 feet (158.49 metres) in length and 465 feet (141.73 metres) in breadth and having gates on the east, north and south.

The Lingaraja temple is a combination of four structures, all in the same axial alignment, viz., **deul, jagamohan, natamandira and bhogamandapa**, the last two being subsequent additions. The grandeur of the temple chiefly lies in its towering gandi. The effect of its great height is accentuated by the deeply incised curved vertical lines which sour upwards to its top. The temple of Lingaraja was built in the 11th century A.D. In the compound of the Lingaraja temple alone there are about a dozen temples which bear some of the Ganga characteristics. Some of the important features of the Lingaraj Temple are:

1. **Approach:** The temple is situated on the south-east of the Grand Lingaraja within the complex in Old Town, Bhubaneswar.
2. **Property Type:** Temple (The temple, locally called as Chitresvara is of rekha order of Kalingan style.)
3. **Property Use:** Living temple, the presiding deity is a Sivalinga within a circular yonipitha.
4. **Age:** Suryavamsi Gajapati rule in 11th Century A.D.
5. **Subsequent changes:** The temple is buried up to the jangha portion and it was renovated and conserved by Archaeological Survey of India.

6. **Ownership / Level of Protection:** Protected monument of Archaeological Survey of India. Lingaraja Temple Trust Board maintains the rituals of the temple.
7. **Architectural style:** The temple is pancharatha on plan and triangabada in elevation.
8. **Construction Technology**

- Structural System: Rekha vimana of Kalingan order.
- Building Techniques: Ashlar dry masonry
- Material of Construction: Sandstone is used for the construction of the temple.

9. **Condition:** Good
10. **Threats to the property:** Urban Pressure

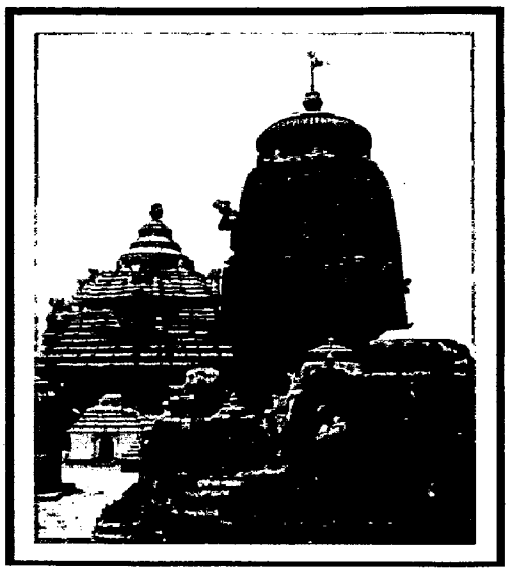


Fig.5.23. Lingaraj Temple
Source:http://www.vaisnava.cz/fotky/bhuvanesvar

5.10.2.8. Kedareswara, Rameswara, Alayukeswara And Siddheswara Temples

The next dated temple is the Kedareswara. The inscription in the Kedareswara temple proves that it was built before 1142 A.D. Three other temples of this time are the Rameswara, the Alayukeswara and the Siddheswara. These temples represent a period when some of the most ancient shrines were renovated or reconstructed. All these temples are of Pancha-Ratha type.

5.10.2.9. The Megheswara & Ananta Basudeva Temples

Fig.5.24. Anant Basudev Temple
Source:http://www.vaisnava.cz/fotky/bhuvanesvar

The Megheswara (1195 A.D.) and the Ananta Basudeva (1278 A.D.) temples were built definitely during the Ganga period. The Megheswara, the earliest of the Ganga temples at Bhubaneswar, shows the beginning of a Sapta-Ratha plan.

During this period, in all the important structures, the front portion consisted of three chambers known as the Jagamohan (audience hall), the Natamandira (dancing hall) and the Bhogamandapa (offering hall). The other important monuments belonging to this period are the Bhaskareswara, the Yameswara, the Mitreswara, the Varuneswara, the Chitreswara, the

Sari temple, the temple of Parvati inside the Lingaraja temple and the Vakeswara. The Vakeswara is important in having a Naba-Ratha plan, the only monument of this plan at Bhubaneswar.

5.10.3. Mathas

In course of time, several Mathas[1], Ashramas and branches of certain reputed Mathas of India were established in Bhubaneswar.[2]

5.10.3.1. Kapali Matha

The Kapali Matha is one of the oldest Mathas situated to the north-west of the Lingaraja temple. The Matha is now in a dilapidated condition.

5.10.3.2. Ramakrishna Matha

Among the existing well-known Mathas, a branch of the Ramakrishna Matha and Mission at Bhubaneswar established in 1919, is well known. The Matha is located in the Gautam Nagar area of the Old Town. The organisation is maintaining a charitable dispensary, a Middle English School, an Upper Primary School, a Public Library and a reading room.

5.10.3.3. Jagannath Matha

The Jagannath Matha, a branch of the Sundar Gauranga Matha at Puri, was established in 1941 in the Old Town.

Besides, there are a few other Mathas, e.g., Sivatirtha Matha, the Sadabarta Matha and the Bharati Matha located in the Old Town area.

[1]An institution made by group of people following a same religious leader
[2]http://www.whereincity.com/india/orissa/khordha1.php

5.11. SOCIO ECONOMIC PROFILE

Bhubaneswar being the capital of Orissa state has gradually emerged as nerve centre for the state as well as the district level social, cultural and educational activities. The old town gained popularity and fame as Saiva Centre and developed into a city of temples and ultimately became a great pilgrim centre - it remains even so today. The capital of Orissa state was shifted from Cuttack to Bhubaneswar in the late forties. This resulted in establishment of Government offices, educational institutions and other basic necessities of a capital town, which subsequently transformed the socio economic characteristics of the residents.

As per the survey carried out by ORG (Operation Research Group) in 1998, the distribution of main workers within old town area is as follows:

Table 5.10: Distribution of main workers within Heritage zone

Type of workers	Number	Percentage
Primary	120	1.58
Secondary	613	8.05
Tertiary	6877	90.37
Total	7610	100.00

Source: Zonal Development Plan, BDA

From this table, we find that the functional base of the old town is service activities. Out of the total workers, the participation in the tertiary sector is around 90%, mostly working outside old town.

1. The old temple town of Bhubaneswar is mainly a residential community surrounding the 11^{th}-12^{th} century Hindu temple of Lingaraj.
2. Due to the conglomeration of temples in this area, many temple related activities and rituals are observed here.
3. Traditionally around 360 households perform services of the deity in day to day and annual rituals.
4. In daily rituals, 36 persons are involved from 25 different categories of servants of which 30 are known as ***Sevayats*** and rest ***Kalabethias.*** These activities mainly include worship of the deity

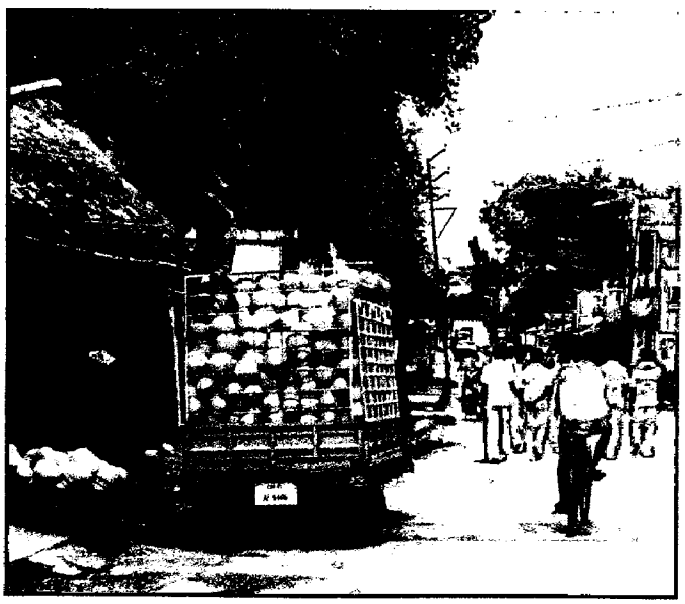


Fig.5.25. Potters taking the pots to the temple for storing the daily offerings in them.
Source:Author

(priests), preparation of offerings (Prasad) used in temples, making of earthen pots to keep the offerings (potters), flower business & stone carving etc.

5. These people live in small villages near the temples that are known as ***sahis*** or streets.
6. The caste distribution is made according to the occupation and separate ***sahis*** are created for people of separate occupations.
7. This arrangement was part of the temple administration and the daily routine is based on the 1863 Orissa Hindu Endowment Act with its amended version of 1939.
8. Women are generally associated with works like making of garlands, incense sticks and earthen lamps used for worship etc.
9. Generally women in this area are very much orthodox and they sincerely perform all the religious acts for the well being of their family.

Fig.5.26. 1. A babaji (holy man) sitting on the verandah of his small dwelling in old town;
2. Hindu widows offering prayers at the Lingaraj Temple to mark the end of a month long festival of Kartik Purnima
Source: Author

By studying the socio-economic structure of the old town area, it is found that the people having a high economic status generally work as Temple servants (sevayats), Elementary school teacher, Contractor, Doctor, Architect and people continuing with their traditional business. Under the middle income group category, generally come the Barber, Cow herder, Fishermen, Bricklayer, Carpenter and Stone carvers. The washermen, labourer etc come under the low income group category.

5.12. ROLE OF CONTROLLING BODIES

Bhubaneswar Development Authority (BDA), is the nodal agency responsible for development of the town. Apart from BDA other agencies responsible for development and monitoring of physical and environmental developments within Bhubaneswar include Bhubaneswar Municipal Corporation, State Housing Board, Public Works Department, State Pollution Control Board, Public Health Engineering Department, Archeological Survey of India, State Archeological Department, etc. The major temples are looked after by temple administration.[1]

Table5.11:Role of various state Government Department /Agencies

Department/Agency	Role/Responsibility
Bhubaneswar Development Authority	Planned Urban Development. Also involved in development of housing and commercial complexes
Bhubaneswar Municipal corporation	Development of physical, social and economic infrastructure
Public works department	Construction and maintenance of roads
Housing Boards	Development of Housing complexes and associates infrastructural facilities.
State pollution control Board	Monitoring of pollution and environmental improvements
Archeological survey of India	Conservation/preservation/maintenance of Historical monuments
State archeological department	Conservation/preservation/maintenance of Historical monuments
Police	Traffic management and enforcement of traffic regulations.
Public health engineering department	Planning /design and implementation of water supply and sanitation schemes
Temple administration.	Temple management and maintenance.

Source: Zonal Development Plan, BDA

5.12.1. Management and Administration of Temples in Core Area

Lingaraj Temple Trust Board, founded in 1936, subsequently took over the management and administration of temples (Temple act 1952) which are under Lingaraj Complex Commissioner. The board nominates 9 (nine) trustees for a term of two years. Trustees include the representatives from Revenue Department, Police Department, ASI, and representative of three sampradayas (viz. Brahmins, Puja-pandas and Sewadi Samiti). Decisions regarding management and administration of these temples are taken by the representatives of the board and executed by the Executive Officer and Assistant Executive Officers who are employees of the State

[1] Zonal Development Plan, BDA,1998

Government, after approval from Commissioner Endowment. There are no permanent employees in the board office and the staffs receive their monthly salaries through the income of the temples.

The trust mainly depends upon endowments received through public donations, government grants and ground rent collections. The Trust also generate funds through ground rent collected by disposal of temple land for commercial purposes. Temporary shops and cabins near temples pay monthly charge (Tora), which also contributes towards the income generation.

The temples own lands, which are traditionally devoted to run temple rituals. About **61 hectares** were owned by the temples. They are mainly of three types:
(1) Nonabadi - area not under residential or agricultural purpose
(2) Prajdakhal - areas given away to sevaks (during preindependence period)
(3) The land surrounding the Lingaraj temple is also property of the temple.

Most part of the Old Bhubaneswar and Bhimtangi and some other nearby areas were under Temple property, some of which are presently occupied by sevaks and mathas. In the year 1974 there was major change in the temple property when most of the nonabadi lands were taken into Government possession and finally handed over to the Revenue Department. With request from Temple Administration only **8 Hectares** were given back to the Trust Board. Bhimtangi area was finally given to NAAI (National Airport Authority of India) and Housing Board for construction of Airport and Bhimtangi Housing Board projects respectively.

Good patches of lands were offered to sevayats for the purpose of residence and cultivation under the assumption that sevayats would pay basic rent of the leased land to Trust office and part of cultivation to the temple but the lands were illegally sold out. In absence of original ownership record, it has become difficult to establish the track of Temple Trust Board property.

5.13. CONCLUSION

The Old town area, Bhubaneswar, with its rich culture and heritage has large potential to grow on the basis of tourism as well as on religious grounds. In the next chapter, the associated problems have been analysed in detail prior to build up a framework for overall development of the area.

CHAPTER 6

PROBLEM ANALYSIS OF THE STUDY AREA

6.1. INTRODUCTION

It deals with analyzing the problems of the study area on the basis of seven important parameters. Understanding the issues associated within the area, one can come to know about the plausible solutions to overcome the difficulties by using knowledge and can develop variety of alternative proposals. The different parameters considered here for study are tourism, environment, housing, physical infrastructure, traffic and transportation and socio-economic conditions.

6.2. TOURISM

Bhubaneswar, being a part of the famous "Golden Triangle" has high tourist potential. Bhubaneswar today attracts about 1.7 million tourists per year. It has high potential to attract more tourists local, domestic and international.

Only the old town area attracts **9-10 lakh** domestic and foreign tourists and pilgrims every year. On a lean day about 500 devotees come for worship and during festivals, the numbers shoot up to around 25,000 per day.[1]

Fig.6.1. Devotees near the entrance of Lingaraj temple
Source: Author

Lingaraja, Kapileswar, Rajarani, Anant Vasudev, Mukteswar, Kedargauri and Bindusagar are major focus of pilgrim/ tourist attractions and centers of religious activity. During festive seasons, crowd in a large number gathers in these places. The ASI has taken over 27 of the city's temples while another 15 are under the State Archaeology Department.

To cater the tourists' lodging requirements, only one hotel i.e. Panthanivas, maintained by OTDC & two dharmashalas[2] namely Dalmia and Doodhwala are present within the zone. Besides these there are a few small hotels opposite to Kedar-Gauri temple along Cuttack-Puri Road are also present within the zone. Most of the tourists prefer to stay in Puri, which is very close to Bhubaneswar.

[1] Orissa Tourism Development Corporation
[2] Dharmashalas are traditional accomodations

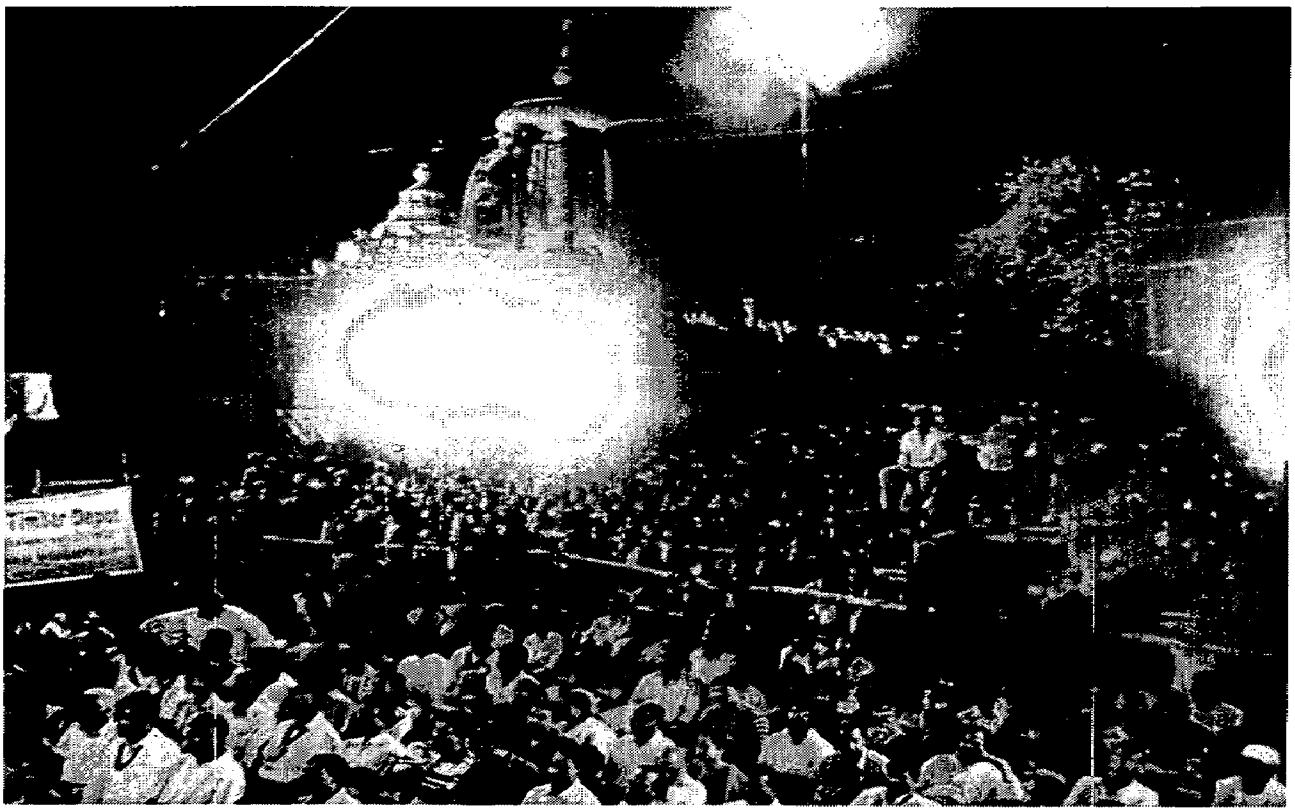


Fig.6.2. Gathering near the Lingaraj temple on Mahashivaratri to see the Mahadeepa
Source: http://orissadiary.com/Movies/Maha_Sibaratri/lingaraj-temple-night-view.jpg

6.2.1. Problems

6.2.1.1. Tourist Accomodation:

In spite of such large numbers of tourist influx, the current facilities and amenities available can best be termed as below average. Most of the tourist's facilities especially the up market facilities are located outside this zone.

6.2.1.2. Accessibility to the Temples:

1. The main pilgrim/tourist attractions of the old town are Lingaraja, Kapileswar, Anant Vasudev, Mukteswar, Kedargauri and Bindusagar because of their visual prominence, associated festivals and attributed values. Pilgrims/tourists hardly Visit the other temples and therefore they have lost their significance.
2. Tourist/pilgrim movement routes/corridors are not defined resulting in conflict with local traffic.
3. Encroachments along footpaths and along the boundary of Lingaraj temple, vehicular movement and absence of parking space have resulted in congestion of approach roads to the temple complex thereby hampering tourist/pilgrims movement.

6.2.1.3. Lack of Tourist Infrastructure:

Lack of tourist infrastructure and facilities is another major issue. Basic

infrastructures like public toilets, drinking water facility, information kiosks, solid waste disposal bins, signage etc are lacking.

6.2.1.4. Conservation Efforts of the Temples:

1. Overshadowed by the splendour of the famous 11th century Lingaraj temple, lesser-known but equally old structures are kept hidden from the public eye.[1]
2. The **Eshno temple**, overshadowed by the splendour of the famous 11th century Lingaraj temple. Standing alone in a bare field, without even a boundary wall, the temple serves as a garbage dump for the local municipal hospital adjacent to it. Most of its carvings have disappeared, children play hide and seek inside it.
3. On the road leading to the Lingaraj temple is another structure known as the **"Traffic Mahadev"**. Having been rebuilt and replastered haphazardly, the 400-year-old temple now stands uncomplainingly as a road divider.

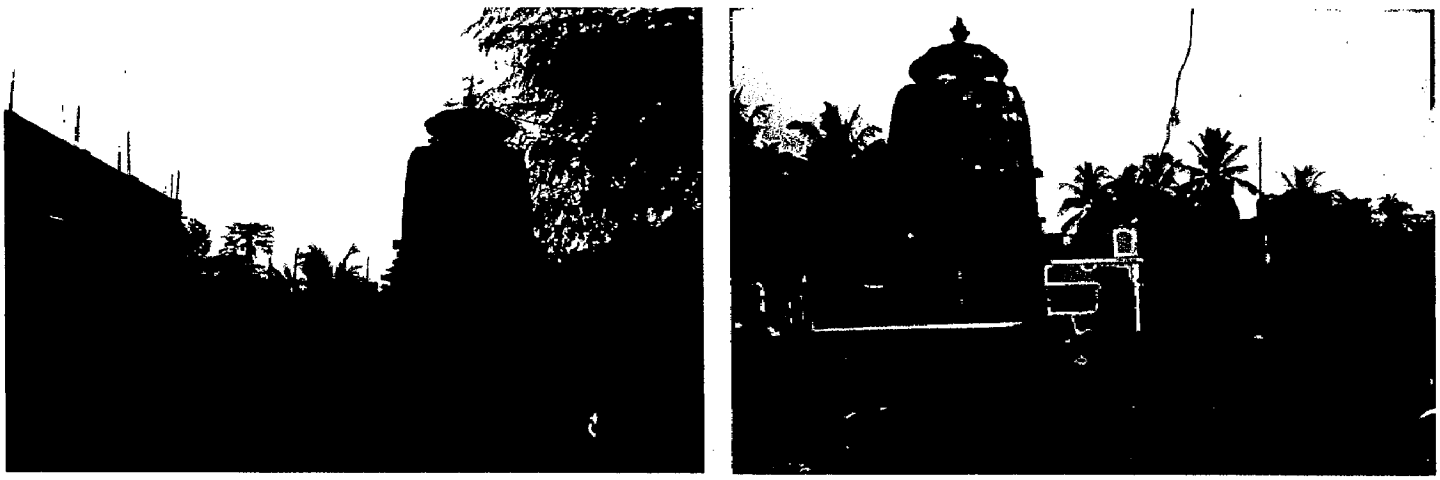


Fig.6.3. A. Eshno Temple, B. An unknown temple near Gouri Nagar standing alone without even a boundary
Source: Author

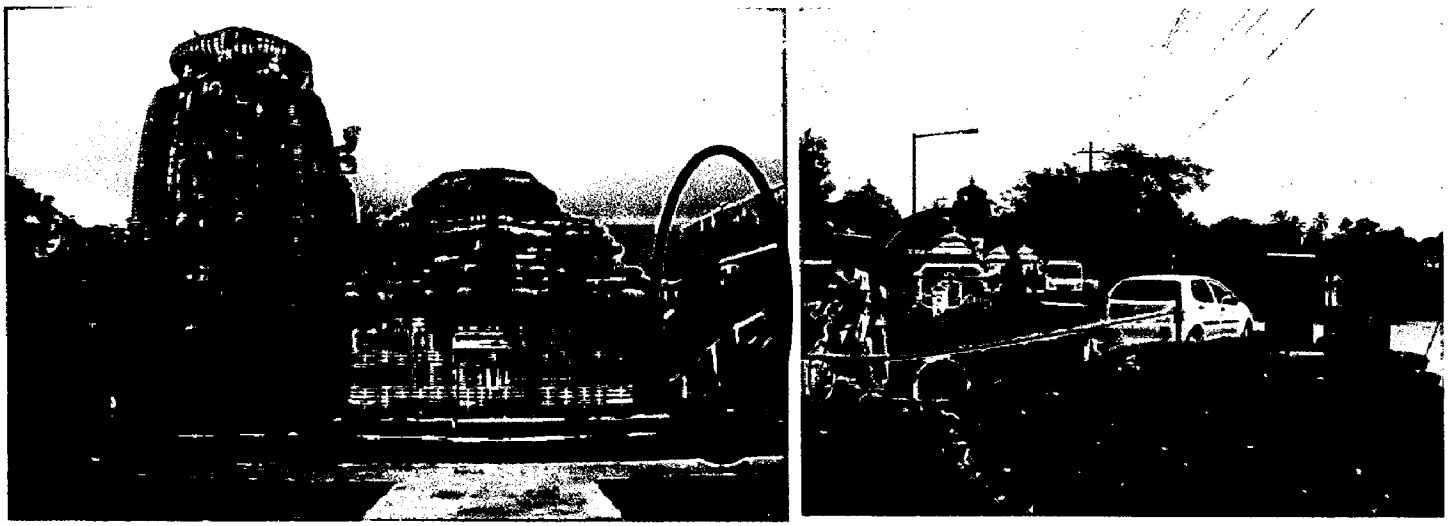
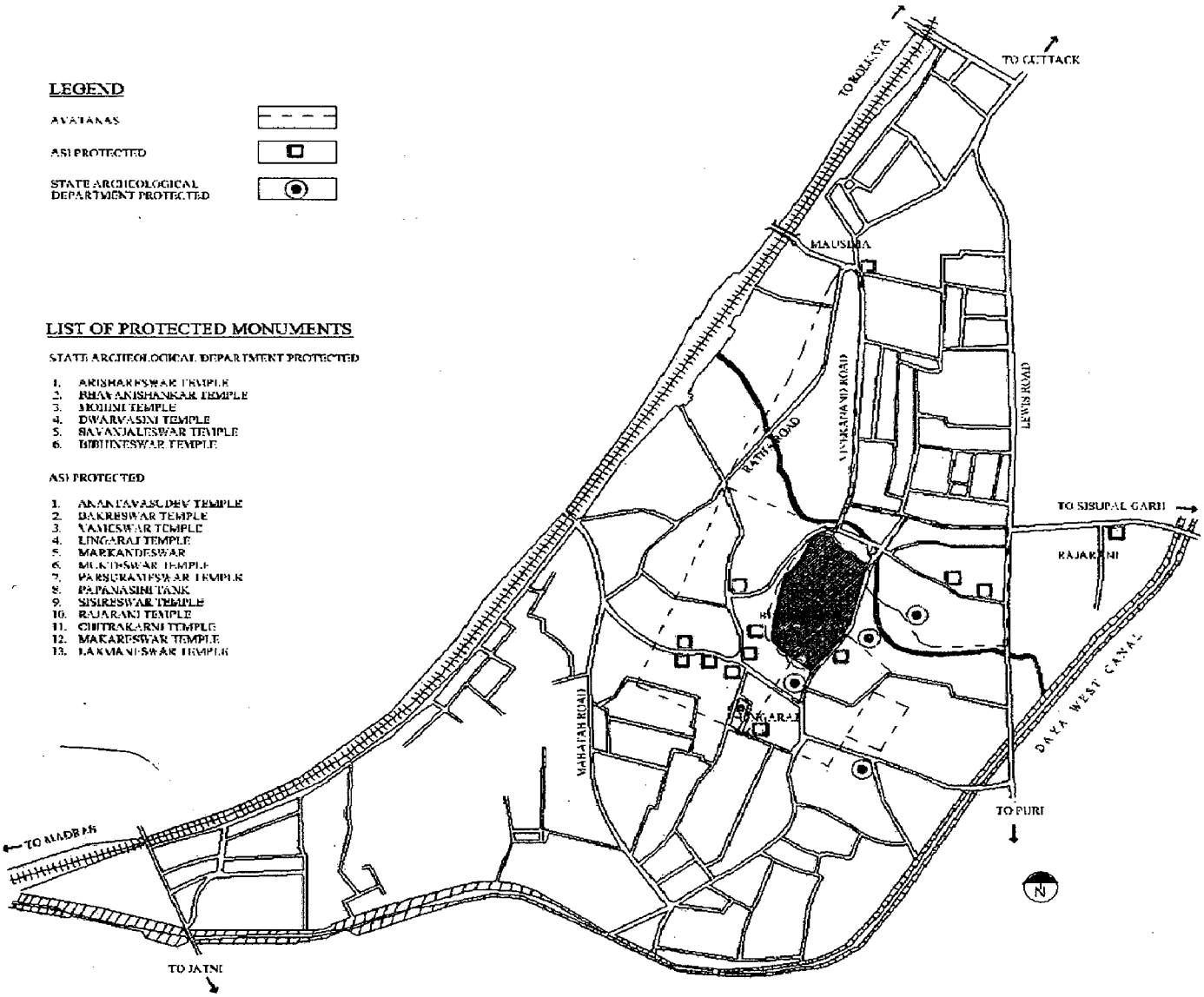


Fig.6.4. A. Staircase of a half-constructed house leading to the Markandeswar Temple (ASI Protected), B. Traffic Mahadev Temple now being used as a mere road divider.
Source: Author

[1] Banerjee R. "Temples of Doom", Online Posting

4. Monuments under the protected list of ASI and State Archaeology Department are also not properly taken care of. Bhubaneswar, over 2000 years old, reputedly had 999 temples and countless shivalingas. Today, there are around 325.



Map 6.1. Map showing protected monuments of the Old Town area, Bhubaneswar
Source: Zonal Development Plan, BDA; Redrawn by self

5. **Ananta Basudev**, a 13th century temple on the way to the Lingaraj temple, though having a status as a protected shrine has not prevented sevayats from cooking bhog (prasad) inside the temple. Some time ago, a fire that emerged from the huge chullahs severely damaged the monument.
6. The 9th century **Taleswara temple** in Kedar Gowri Chowk, for instance, bears the ignominy of a neighbourhood club's signboard.
7. An encroacher has built a house around the **Markandeshwar temple**.

6.3. ENVIRONMENT

The present day city of Bhubaneswar is located at a place which was once under forest area - sizable chunks of area under Reserved/Protected Forest within and adjacent to Bhubaneswar Development Area are the witness of once dense forests in the region. Cutting down of a number of trees and large-scale developments for the need of a modern capital city have already disturbed the ecological balance of the area to a great extent. Only 1.5% of the total area within the Heritage zone is under parks and open spaces

6.3.1. Water pollution

The study area is endowed with many low lying/marshy areas which act as recharge areas for the innumerable ponds, tanks etc., which are connected to perennial springs and some of them even have medicinal properties. Over the years the ponds/tanks have been used for religious rituals like thread ceremony, as well as bathing needs of the inhabitants in the adjoining areas.

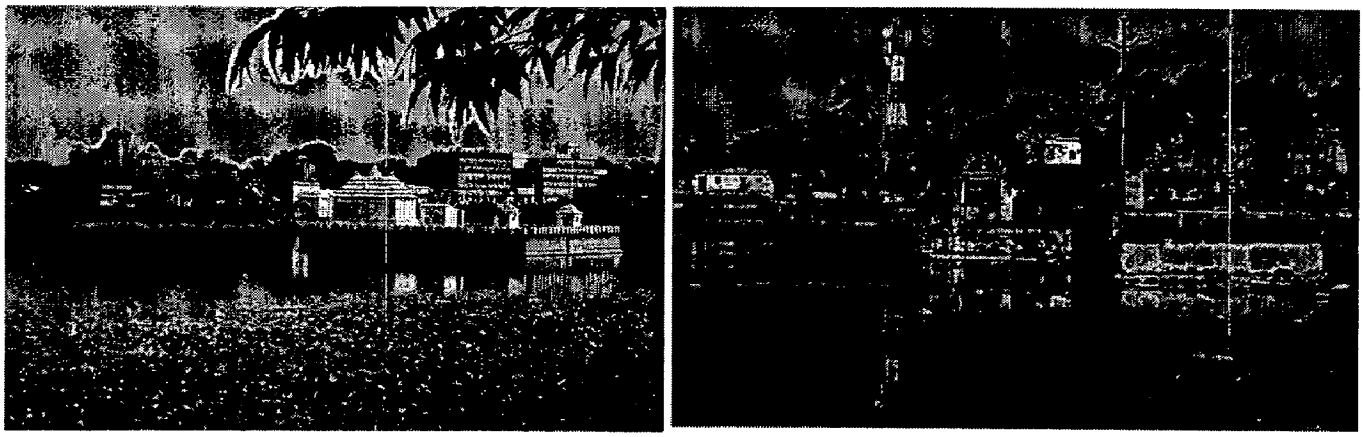


Fig.6.5. Bindusagar is being polluted day by day due to various religious rituals and bathing requirements of people.
Source: Author

In case of Gauri Kunda, which is adjoined to Gauri temple, the water is perpetually turbid giving it milky appearance (it is also known as 'Dudha' Kunda). The water of the pond is considered as sacred and often used by devotees for drinking. However, the presence of coliform bacteria has made it unfit as a source of drinking.

The lakes and the drains are being used as dhobighats, vehicle washing, fishing and open defecations. This is leading to growth algal bloom and eutrophication. Also, indiscriminate dumping of garbage, other solid waste materials and construction rubbles have added to the pollution and siltation problems in the lakes. Most of the lakes and the water bodies are located adjacent to the valley areas and the drainage area. The wastewater from the residential areas are reaching to the lakes and the ponds and polluting the water bodies.

Also, due to the lack of sewerage system, the sewage is allowed to the roadside drains which ultimately reach the water bodies. In absence of sewerage system, people are using septic tanks and soak pits. In most of the places sewage is discharged in to open drains without any treatment, which ultimately discharge to Gangua Nallah.

Fig.6.6. One of the bathing ghats of Bindusagar at older times
Source: Seymour S.C. "Women, family, and child care in India", Online Posting; http://books.google.com/books?id=jOwFG7Dj7RkC &source=gbs_summary_s&cad=0

The State Pollution Control Board has undertaken detailed investigations to assess the impact of mass bathing on the water quality of the ponds in terms of physio-chemical and bacteriological parameters to assess the possible threats to the users due to the poor water quality. It was observed that despite flushing of fresh water to the ponds by PHED, the water quality still remained unfit for bathing. In this connection the SPCB recommended a number of measures which is given below.

6.3.1.1. SPCB Recommendations for Improving Water Quality in Ponds/Tanks[1]

The most and ideal and effective solution to the problem of pollution would perhaps be to pump out the water, desilt and clean the bottom debris. Other affordable measures that may seriously be considered are:

1. Continuous flushing of fresh water with arrangements for outlet of the existing dirty water. This practice should be followed for all major tanks of Bhubaneswar (Bindusagar, Papanasini, Hadi tank, Parbati Sagar etc.) The attempt, though may be commendable, may not be able to fully achieve the objectives because of inadequate flushing rate. This method may be extended to other ponds.

[1] Zonal Development Plan, BDA

2. Public toilets should be constructed at a distance and defecation on the banks or within this distance should be strictly dealt with.

3. Offerings inside the ponds should be discouraged. Arrangements should be made for disposal of materials concerned with religious rites, e.g., placing garbage bins, construction of well at the corner of ponds etc.

4. Attempts should be made to clear the algal boom with algaecide. The quality and quantity of algaecide should, however, be carefully chosen not to give rise to secondary environmental problems.

5. Some varieties of fish are tortoise are known to act as scavengers for many pollutants. Hence unless unacceptable on religious grounds, attempts could be made to employ this method to improve the water quality of the ponds. When this method is followed, care must however be taken to strictly control the dose of chlorinated bleaching agents (viz. bleaching powder) during disinfection, so that the concentration of free chlorine in water does not exceed 10 micrograms/ litre at any point of time.

6. Although the municipal corporation has a statutory responsibility in the maintenance of ponds within their boundaries, the actual work of public water supply, maintenance of drains, sewer and other water discharge channels are carried out by the Public Health Engineering Department of the State. Therefore both the organizations should be aware of the actual condition of the ponds and take necessary remedial measures.

7. People should be educated about the potential hazards of polluted water. They should be made aware that unless they conduct themselves properly the ponds which are held to be so sacred by them will become dangerously polluted, turn utrophic and die a premature death.

6.3.2. Air pollution

1. In the old town area , the major contributor to air pollution are the vehicular and the DG (Diesel Generator) sets other than domestic, commercial sources.
2. The old town area also comes under the air pollution impact areas caused due to the DG set emissions with a distance of 150m to the commercial establishments, hospitals, institutions and very densely populated areas.
3. People living in slums mostly live in *bastis, juggis and jhopris* and they use kerosene, coal and wood for cooking purposes which creates pollution.

Table 6.1: Major air pollution impact areas due to domestic sources from usage of coal, wood and cow dung

Level of Impact	Distance	Prominent Locations
Impact Area I (High)	200 m to the population using wood and cow dung	Sikharachandi, Patia Hadi Sahi, Patia Bhoi Sahi, Radhakrushna Lane (Near Patia), Rasulgarh Bhoi Sahi, Sabarsahi, Sameigadia, Chakeisiani Tangi Sahi, Pandara, Brahmeswar Patna Bhoi Sahi, Jambeswar Patna (Behera Sahi and Bharati Matha Bhoi Sahi), Kapilaprasad Bhoi Sahi, Nuagaon Khuruda Sahi, Nuagaon Jena Sahi, Kapileswar Bhoi Sahi, Nuagaon Upper Sahi, Pokhariput Bhoi Sahi, Jadupur (A & B), Jadupur Begunia, Puruna Sahi, Odia Sahi, Aiginia Bhoi Sahi, Dumuduma Raghunath Nagar and Bhoi Sahi

Source: orissagov.nic.in/forest&environment/pdf/Chap_10.pdf

6.3.3. Built/Visual Environment

Although the ASI and the State Archaeological Department are active in protection and conservation of the major archeological sites, the condition of many of the century old monuments / temples is miserable needing immediate protection (Ref.6.2.1.4).

Fig.6.7. Visibility of temples is lost due to modern construction.
Source: Author

The Ancient Monuments and Archaeological Sites and Remains Act strictly prohibits any construction within 300 m of protected monuments. But close to the Mukteswara temple an upmarket residential apartment called Metro Towers has come up. A new highrise dwarfs the 11th century Rajarani temple, while the Nabakishore temple stands under the shadows of Prabhat Apartment, all well within the 300m zone.[1]

6.3.4. Problems

1. The major ponds, tanks are gradually loosing their charm due to poor maintenance.
2. The water quality within the ponds is fast deteriorating with growth of algae, coliform and fecal bacteria, increase in suspended particulate matters, turbidity, BOD. PH, etc. and decrease in dissolved oxygen content.
3. Moreover, the carrying capacity of the ponds/tanks is decreasing due to eutrophication and siltation.

[1] Banerjee R. "Temples of Doom", Online Posting

4. Air pollution in the area is increasing day by day with increasing volume of vehicular traffic, use of DG sets and kerosene, coal and wood for cooking purposes.
5. Defying existing guidelines and development control norms, the overall visual character and skyline of the heritage zone once dominated by Shikharas of temples and traditional architectural features is in danger of being gradually replaced by modern constructions.
6. Visual pollution can be seen throughout due to advertisement banners, hoardings and electrical poles on the roads. Sometimes posters are painted on heritage buildings also.

Fig.6.8. Advertisement posters painted on walls of heritage buildings and winding electric wires create visual pollution in the area.
Source: Author

7. Even after appointing a watchman, some good examples of sculprures and cult images have been stolen from some of the age old temples (e.g. Rajarani)
8. Commercial encroachments along the footpaths and temple spoil the overall visual character and add to congestion. There is an urgent need to improve the overall environmental quality of the zone.

6.4. HOUSING

The study area is characterised by low-density sprawl. Though the CDP for Bhubaneswar envisaged planning of residential areas in the form of self contained neighborhoods, most of the residential areas/neighborhoods in the zone do not fulfill this criterion.

Bhubaneswar is experiencing huge migration over last two decades. The CDP states that the migrant population constitutes 68.34% of the total population in 1981. This coupled with the natural increase in the population is exerting tremendous demand for housing requirements.

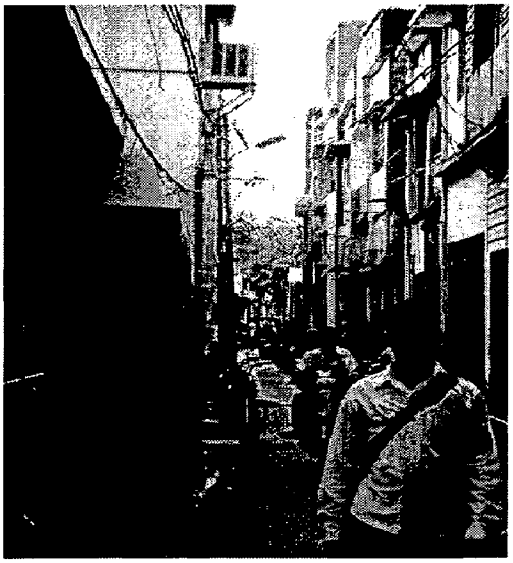


Fig.6.9. An old residential colony
Source: Author

As we have studied the architectural character of the study area in the previous chapter (Ref.5.10.1), the central core of the area has a very high density. This area consists of many heritage buildings with a unique architectural style of their own. The consecutive houses sharing a single wall between them stand on both sides of the streets. The different streets (sahis) emerge like cycle spokes with Bindusagar lake as the focus of the circle. In these sahis, space is scarce and the only way to expand is upward. Many of these buildings have come up to 2-3 stories in height.

These buildings are more than 50 years old and in a very poor condition now. Like most of the old and ancient towns in India, the core area of the heritage zone of Bhubaneswar presents a mixed land use pattern with a mix of residential, commercial, public and semi-public uses in a single building.

6.4.1. Slums and Squatter Settlements

The development pressure has also resulted in upsurge of unauthorised constructions/encroachments/slums. Slum pockets have emerged in Kapil Prasad along the railway line, north of Ekamara College, near Daya West canal, at Pandara and in front of Rajarani Service Station. These slums generally consist of lower economic groups specially belonging to the labour classes who came to Bhubaneswar in quest of new opportunities and employment facilities.

Fig.6.10. Slums have emerged along the railway track
Source: Author

Table 6.2: List of authorized slum pockets in old town,Bhubaneswar

Sl No.	Name of the Slums	Location	Total Slum families identified by BMC
1	Kancha Bhoisahi	Near Bindusagar	33
2	Huda Bhoisahi	Near Bindusagar	86
3	Jayadev Nagar	At Lewis Road	62
4	Brahmeswar Patna Bhoisahi	Near Brahmeswar Patna High School	55
5	Mati Bhoisahi	Near Poonama Railway Crossing	35
6	Jambeswar Patna Beherasahi and Bharati Matha Bhoisahi	At Jambeswar patna near Gosagareswar Temple	31
	Total		**302**

Source: BDA

Table 6.3:List of unauthorized slum pockets in old town, Bhubaneswar

Sl No.	Name of the Slums	Location	Total Slum families identified by BMC	Approximate area encroach (in Acres)
1	Gautamnagar	Adjacent to railway line	235	3.0
2	Bhimpur Bhoi sahi	Infront of palaspalli housing scheme near punama gate	134	2.0
3	Bhimtangi Beherasahi	Near Bhimakunda, Kapilaprasad housing board colony	30	1.0
4	Noliasahi, Muslimbasti, Kapilaprasad	Adjacent to Daya west canal	64	4.0
5	Rameswar patna	Near Mausima railway colony	166	2.5
6	Lingaraj Leprosy colony	Near Kukuteswar mandir, Bhimpur	30	0.4
7	Maa Bhagabati Basti	Near Bhimkund, Kapilaprasad	58	2.5
8	Khandual Sahi, Bhimtangi	Near Ekamra College	124	1.2
9	Nolia Sahi, Jugeswarpatna	Near Canal	81	1.4
	Total		**922**	**18**

Source: BDA

There are 6 authorized slums with 302 families in this area, in case of which the ownership of the land lies with the inhabitants. Apart from this, number of unauthorized slums is 9 covering an area of about 18 acres, which contains 922 families. Some of the squatter settlements are also found in the core area of the Old town.

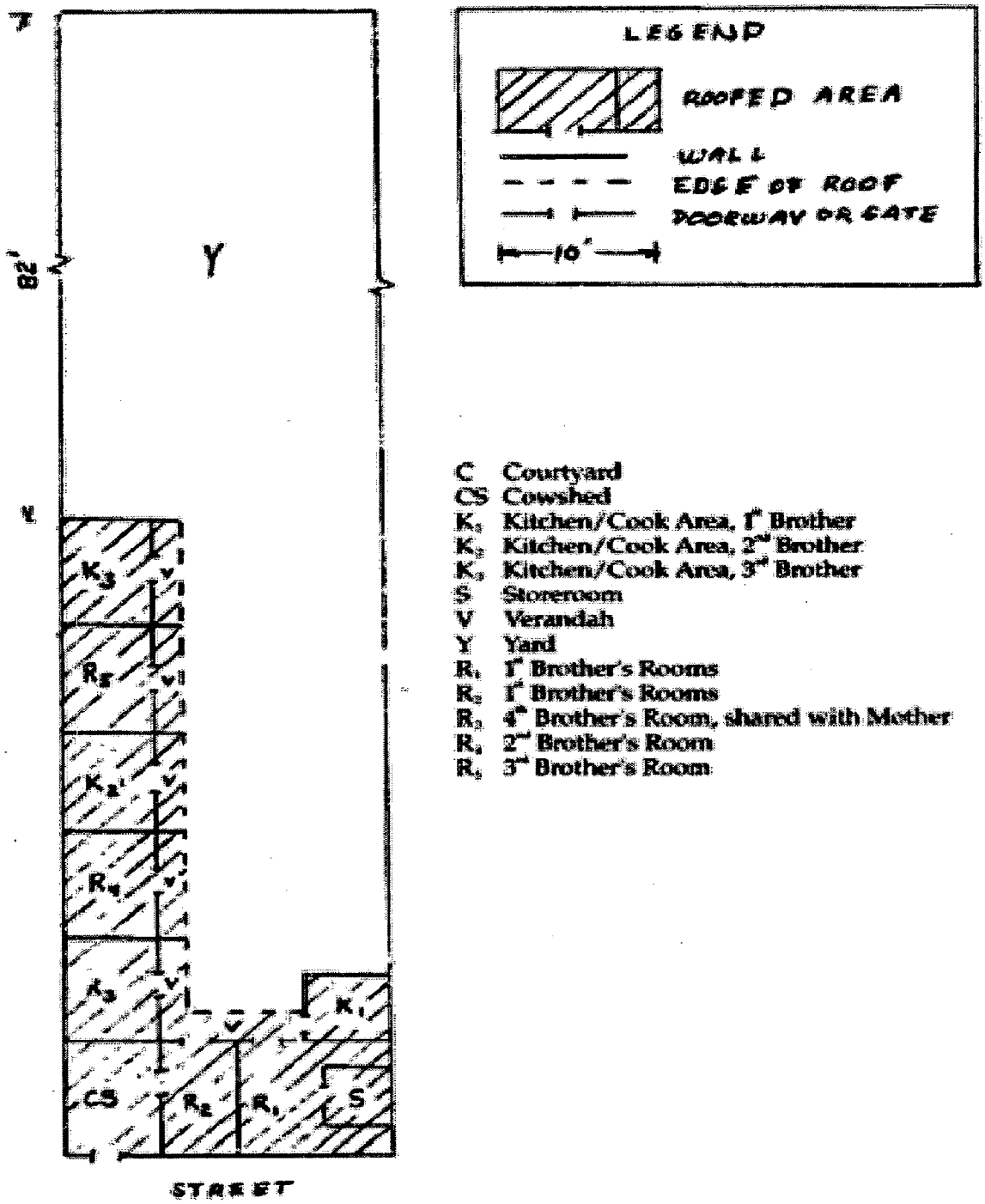


Fig.6.11. Plan of a house in the old town Bauri Settlement
Source: Seymour S.C. "Women, Family and Child care in India", Cambridge University Press; Online Posting, http://books.google.com/books

These settlements consist of a row of mud-walled, thatched-roofed houses inhabited by Bauris, an outscape group thought to be of tribal origin. In the Old town, they are the squatters for they do not own the land on which their houses sit. These people have no electricity, running water, or latrines. They go to a public well for their water and to field for defecation. They do, however, have a reasonably spacious courtyard and backyard area where most of the household activities take place (Fig.6.11). Thus, although they are not economically a joint family, they spend most of their time at home in shared space.

6.4.2. Problems

1. The agencies involved in providing housing are unable to cope up with the rising demand for housing and hence the gap between demand and supply is widening day by day.
2. The condition of the old housing stock is deteriorating day by day due to development pressure.
3. Many building are lying vacant due to their obsolete character.
4. The skyline once dominated by temple Shikharas is in danger of being soon replaced by modern constructions as a few multistoried buildings have come up in close proximity to the temples and monuments.
5. The development pressure has also resulted in upsurge of unauthorised constructions/encroachments/slums.

6.5. PHYSICAL INFRASTRUCTURE

6.5.1. Water Supply

The main source of water supply for Bhubaneswar is River Daya and Kuakhai. Within the Old Town, Bhubaneswar Municipal Corporation supplies the piped water. However, the present level of average water supplied (i.e. 100 Ipcd) is not adequate to meet the requirements and hence wells, tube wells, deep bore wells are extensively used to supplement the potable water requirements.

The ground water table within the heritage zone is considerably high and potable water is available at around 6 to 7 feet in the areas of Gautam Nagar and Rajarani and at a depth of around 30 feet in Kapilaprasad and the core area.[1]

Area : Old Town, Bhubaneswar
Source of water : Daya River
Mode of Extraction : Surface Water
Location of Treatment plant : Bhuasuni water works
Treatment Plant Capacity (In Mld) : 13.64

[1] orissagov.nic.in/infrastructure/pdf/Chap_5.pdf

The water quality of the piped drinking water provided at old town is as follows:

Table 6.4: Water quality of drinking water

Location	Parameters								
	pH	DO (mg/l)	TC MPN/100 ml	FC MPN/100 ml	SO_4 (mg/l)	Cl^{-2} (mg/l)	PO_4 (mg/l)	NO_3	IRON (mg/l)
Old Town	6.9	7.5	<2	<2	82	52	ND	2.7	0.04

Source: orissagov.nic.in/infrastructure/pdf/Chap_5.pdf

6.5.2. Sewerage

The Old town area doesn't have a centralized sewerage network. A few newly developed areas like Nageswar Tangi and Bhimtangi Housing Board Colonies have the sewerage system, which drains into the low-lying areas. Most of the houses have individual/combined septic tanks/soak pits. Most of the septic tanks are mainly connected to the near by open drains which finds their way to Gangua nallah. The Gangua Nallah is ultimately flowing Daya River that finally meets Chilka lake after traversing a distance of 15 kms.

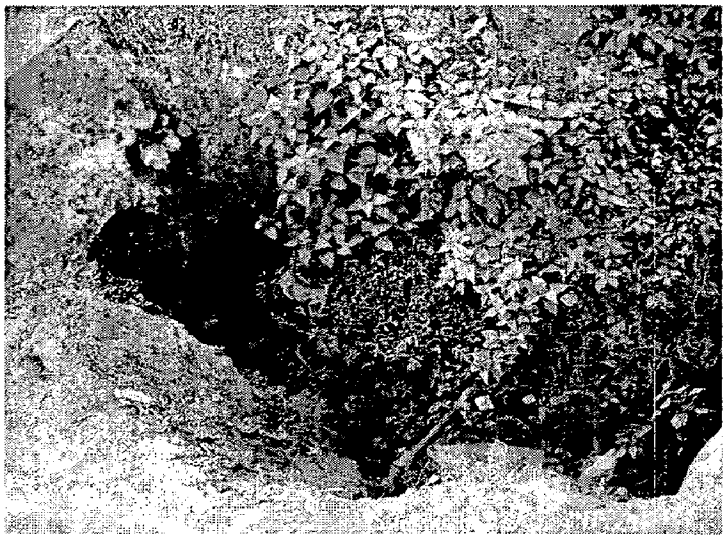


Fig.6.12. One of the sewer pipe opening to the low lying area.
Source: Author

Fig.6.13. Overflow of sewage into roads creates bad sanitary conditions.
Source: Author

The Heritage zone slopes from West to East towards river Daya and drainage channel no. 7 traverses through it on the north of Bindusagar. Some of the religious ponds/ tanks are connected to perennial springs having medicinal properties.

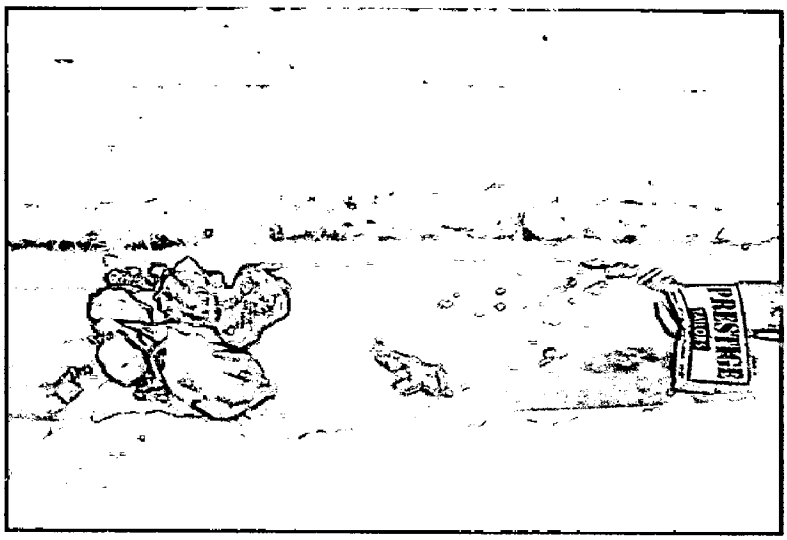


Fig.6.14. Dumping of solid waste in the drains creates water-clogging.
Source: Author

The wetlands and the natural drains are facing maximum conversion and encroachments. Large scale construction (especially for housing, roads and slums), is being carried on the drainage area. These natural drains and the wetlands are natural recharge zones which maintain the Ground- Water Table of the area.

6.5.4. Solid Waste Management

Solid Waste management in Bhubaneswar is looked after by the Municipal Corporation. As per the estimates about 9 to 10 tonnes of solid waste is generated per day from the Old Town, which is collected and dumped at trenching ground near Khandagiri.

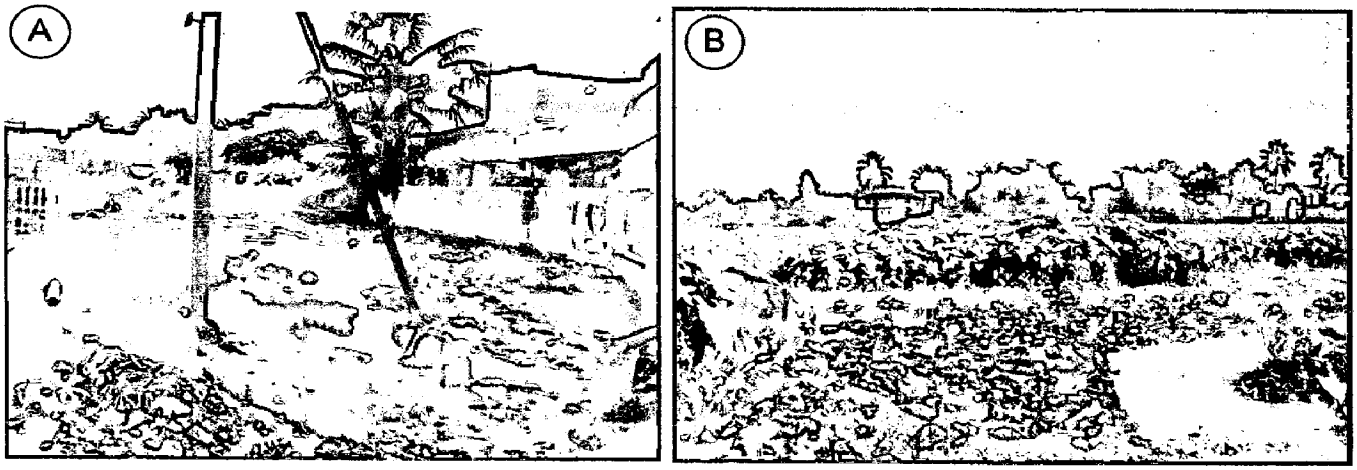


Fig.6.15. A. Solid waste dumped openly here and there poses environmental problem, B. Dumping of garbage in the swampy areas creates serious threat as they act as natural recharge zones
Source: Author

6.5.5. Problems

1. Based on consultation of the people, it is found that the entire area has not yet been covered with safe drinking water. Some areas including the slum pockets are not fully covered by the present distribution system, since these areas are provided

with only public stand posts / tubewells. The problem becomes more acute during the summer as adequate distribution network does not exist.

2. Sewerage system is absent in many areas. Lack of periodic maintenance and renovation of old sewers leads to overflow of sewage into roads and creates bad sanitary conditions.
3. The wastewater from the residential areas are reaching to the lakes and the ponds and polluting the water bodies. Also, due to the lack of sewerage system, the sewage is allowed to the roadside drains which ultimately reach the water bodies.
4. Except for the planned residential areas in the south, most of the other areas within zone-1 lack proper drainage system. Major roads in residential areas towards the north do not have road-side drains.
5. Moreover, indiscriminate dumping of solid waste is resulting in clogging of drains and water bodies.
6. Encroachments into low-lying areas are resulting in blocking drainage channels. This leads to severe drainage problems particularly during the monsoons.
7. The solid waste is being dumped irregularly in many areas, even in residential colonies, in the drains, in the low lying areas, or even in parks.

6.6. TRAFFIC AND TRANSPORTATION

The roads in the OId Town are generally narrow and winding. The major corridors of movement in the Old Town are Lewis Road and the Jatni Road. This is a predominantly residential area and traffic is composed mainly of slow moving vehicles and of generally low volumes. Major road network within the study area consists of Cuttack-Puri Road, Badadanda Sahi, Sishu Bhavan Road, Vivekananda Marg, Rabi Talkies Road, Ananta Vasudeva Mandir Marg (along Bindusagar). Besides these roads, there are many lanes/narrow links, some of them being functionally important.

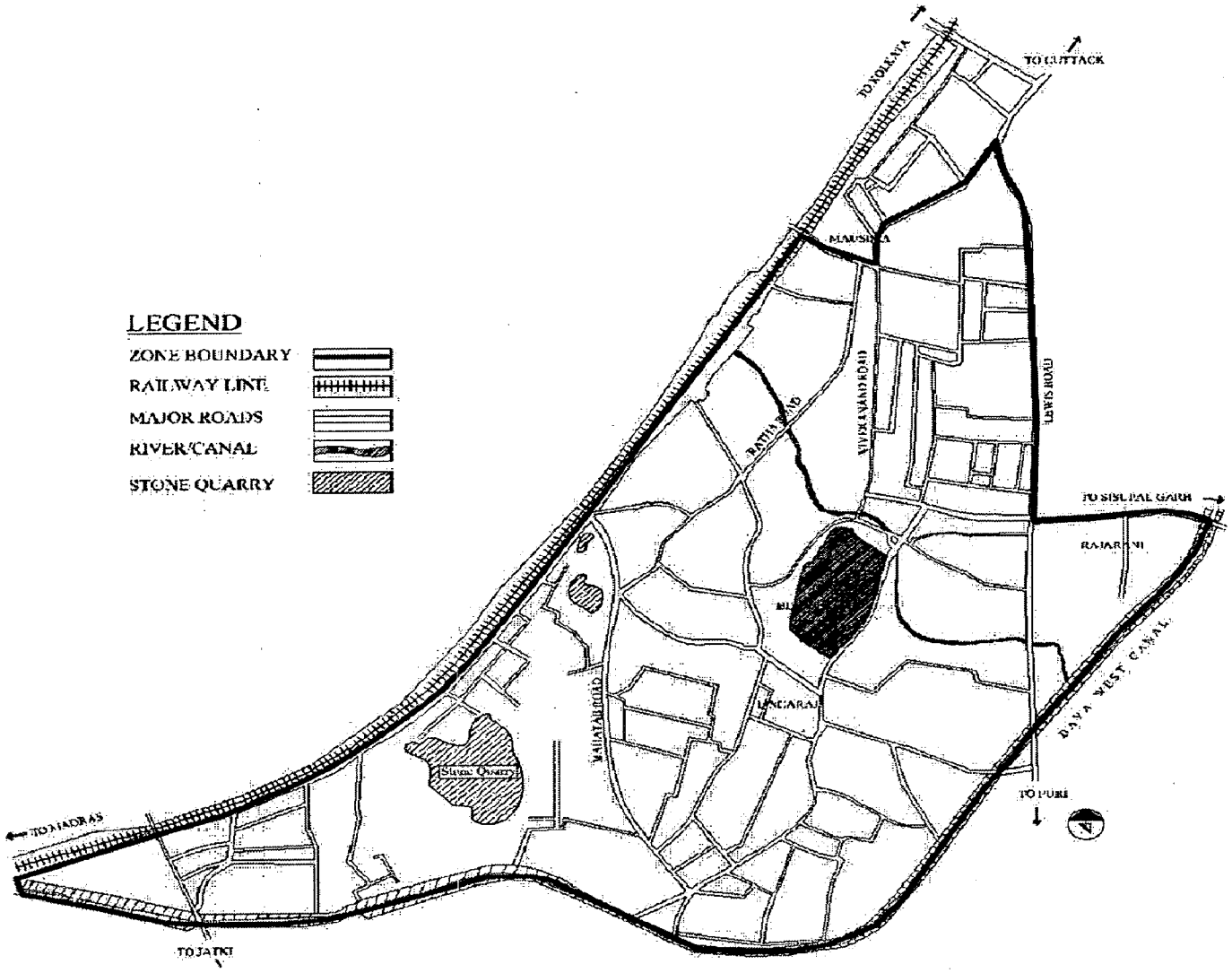
Of all these roads Vivekananda Marg has a four lane provided carriage way, Ratha road(20m) and Kargil Road(30m) has a two lane carriage way width with enough scope for widening. All other roads are mostly single lane or intermediate lane wide.

The study area attracts considerable tourist traffic due to the presence of the religious places like Lingaraj Temple, Mausimaa Temple, Bindusagar, Kedar Gauri Mandir, Raja Rani Temple etc. Besides these within the old town, many religious festivals are

celebrated round the year. This results in significant influx of taxis and tourist buses creating congestion and parking problems near major religious centres.

Fig.6.16. 1- Vivekananda Marg, 2- Kargil Road, 3- Lewis Road, 4- Badadanda Sahi, 5- Sishu Bhawan Road, 6- Road leading to an old residential colony
Source: Author

The travel speeds on roads like, ORT Garage Road, Ananta Vasudeva Mandir Road, Kapileswar Road, and Rabi Talkies Road are very low because these roads are narrow and carry significant volume of slow traffic. On-street parking and encroachments along footpath by informal activities make the situation worse (Table 6.5).



Map 6.2. Road Network of Old Town area, Bhubaneswar
Source: Zonal Development Plan, BDA; Redrawn by self

Table 6.5: Peak Hour Traffic Volume along major Roads within Heritage Zone

Name of the Road	Peak hour traffic volume(PCU)			Road capacity (PCU)
	Direction	Volume	Total	
Kapileswar Road	From Kapilweswar	541	1040	1200
	To Kapileswar	599		
Ananta Vasudeva Mandir Road	From Lingraj temple	381	690	1200
	To Lingraj Temple	309		
Road from Lingraj Mandir	To Bindusagar	497	900	1200
	From Bindusagar	403		
ORT Garage Road	From Lingraj Temple	368	619	1200
	To Lingraj Temple	251		
Purnama Gate Road	To old town	734	1306	1800
	From old town	572		

Source: Zonal Development Plan, BDA

6.6.1. Problems

1. In the absence of designated parking spaces in the study area the resident population, tourist taxis, autos use roads for parking creating congestion in the area.
2. Encroachment of shops and vendors near major religious centres add to this congestion.
3. On street parking of vehicles causes uncomfortable movement of pedestrian traffic within the narrow residential roads.
4. Heavy vehicles like trucks and buses deteriorate the road conditions.
5. Bulls often create nuisance in the area as well as cause road accidents.

Fig.6.17. **1.** Traffic congestion an all most all parts of the area, **2.** Autos and taxis are parked in the vicinity of the temples due to lack of proper parking space, **3.** Due to absence of proper embankment in Bindusagar, erosion makes the Anant Basudev Road even narrower, **4.** Roads are water logged during the monsoon.
Source: Author

6.7. SOCIO-ECONOMIC CONDITIONS

We have already studied the socio economic profile of the area in the previous chapter (Ref. 5.11). To understand the socio-economic condition of the residents and to analyse their problems better, three types of occupational community from each economic group are identified and studied in detail.

6.7.1. The Sevayats (Brahmins)

The temple servants (sevayats) are generally involved in the ritual activities of the temple. Some people have the traditional occupations to take care of visiting Hindu pilgrims, to attend the temples and their deities, and to perform sacred rituals. There are several categories of temple servants that have a hierarchical relationship to one another. Those who serve as a priest and perform rituals for others have the highest status, whereas those who are temple cooks have the lowest status.

Fig.6.18. The priest worshipping the deity. Source:http://www.vaisnava.cz/fotky/bhuvanesvar/Mukteswara-2v.jpg

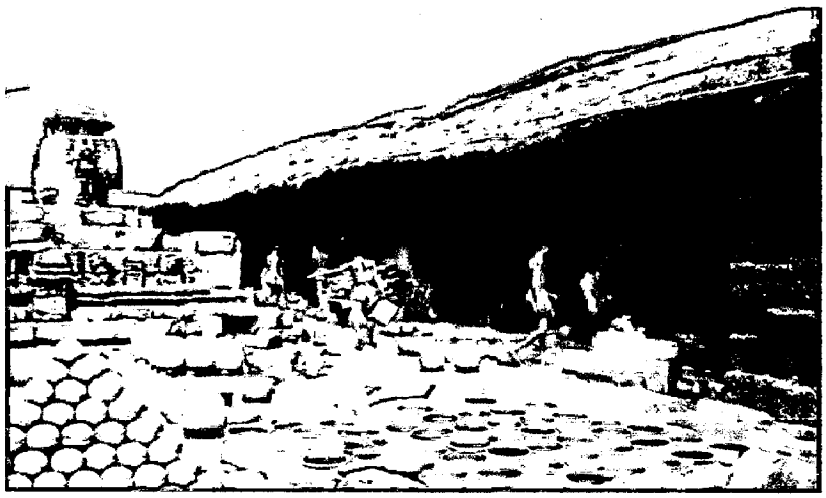


Fig.6.19. Kitchen of the Lingaraj temple where the Sevayats are making the offerings. http://www.vaisnava.cz/fotky/bhuvanesvar/Mukteswara

Temple duty is not a full-time occupation for most of the adult males in the Brahmin families. Most are employed or engaged in other activities or occupations, as shopkeepers, tailors, civil servants, businessmen, teachers, or property owners and landlords. The influx of new residents to Bhubaneswar, building and renting houses had become another source of income for some Brahmin families. Some of them have rented their old paternal houses and shifted to other newly developed areas of old town. These families generally have a monthly income of more than 10000 per month.

These families have homes that are 2 or 3 stories high with stucco walls and cement floors rather than mud walls and dirt floors. Their homes also have reinforced cement ceilings

rather than thatch roofs. Most of the families have bicycles and motor scooters. Brahmin women in the families have maintained traditional female roles in a Brahmin household or joint family, as wife, mother-in-law, or widowed matriarch.

6.7.2. The Stone carvers/ Craftsmen

Many traditional artisans reside in the old town area. But gradually, they lost their livelihood with declining demand for stone craft. Most of the stone carver families have their own small household enterprises, which sell their products to the local outlets or craft production units. The craftsmen working in this area can be categorized in to two types - Skilled craftsmen and semi skilled craftsmen. The monthly earning of the skilled craftsmen is around 6000/-@ 200/- per working day. However some highly skilled craftsmen even earn more than that. Semi skilled Craftsmen produce small items which require low skill level or they assist the skilled craftsmen. Their average earning per month is 2500 to 3000/- @ 80/- to 100/- per day.[1]

The main causes of declining demand for stone craft are:

1. There is no systematic effort to attract the national/international buyers
2. Lack of advertisement of the products either in written form or in electronic media
3. There is no resource organisation actively involved in design development and feeding to the craftsmen regularly.
4. Opportunity to participate in national level fair, exhibitions, retailers meet is limited
5. The raw materials of required quality and quantity are not available in time hampering the production process.

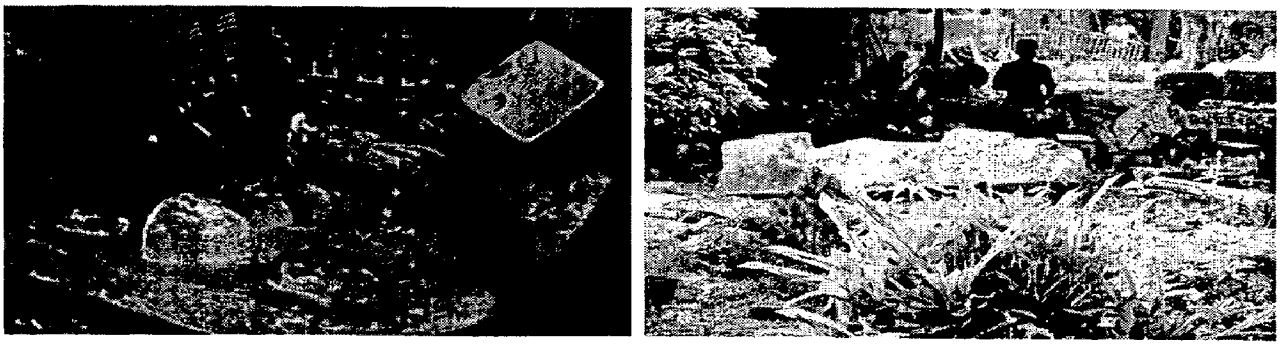


Fig.6.20. The stone carvers
Source: Mishra P.M. "Diagnostic Study of Stone Carving Cluster, Bhubaneswar", UNIDO

More than 150 skilled craftsmen have left their home for better job opportunities out of the state. They are mostly located at Rajasthan and Mount Abu. The reason for such migration is better wage and regular employment opportunities. This trend is still continuing. This is resulting in shrinking artisan concentration in the cluster.

[1]Mishra P.M. "Diagnostic Study of Stone Carving Cluster, Bhubaneswar", UNIDO

6.7.3. The Labourers (Bauris)

These people belong to the Bauri caste, thought to be of tribal origin. They have a poor economic background. Bauris provide much of agricultural labour in the Old town and the construction labour in the new capital. They also work in rock quarries, helping to provide the basic building material of both the Old town and the new Capital – red laterite stone blocks. They do not follow a well-defined daily schedule because their activities vary by agricultural season and by the demand for rock cutting and construction. Hence, they do not have a fixed earning but broadly it is 1500 to 4000 per month depending on their wages.

They do not have a land of their own. So they reside in the squatter settlements consisting of a row of mud-walled, thatched-roofed houses. These people have no electricity, running water, or latrines. They go to a public well for their water and to field for defecation. Like Bauri people, people from Washerman community in the Old Town are also of low status, potentially poor, and required to work hard.

6.8. CONCLUSION

The old town, Bhubaneswar possesses numerous inner city issues and problems starting from congestion, dilapidation to environmental problems and declining economy. In order to revive the traditional core of Bhubaneswar, we must analyse the root causes of the problems that we came across. As well as it is very important to assess the present status of development. Hence, it will be discussed in the next chapter which will help us in successful decision making.

CHAPTER 7

STUDY AREA: ASSESSMENT OF PRESENT STATUS OF DEVELOPMENT

7.1. INTRODUCTION

An assessment of present status of development of the Old town, Bhubaneswar, is very much essential in order to understand the present status of development which is required in formulating workable recommendations to solve the existing problems. To assess the present status of development, four kinds of analysis methodology has been adopted, and assessed in detail.

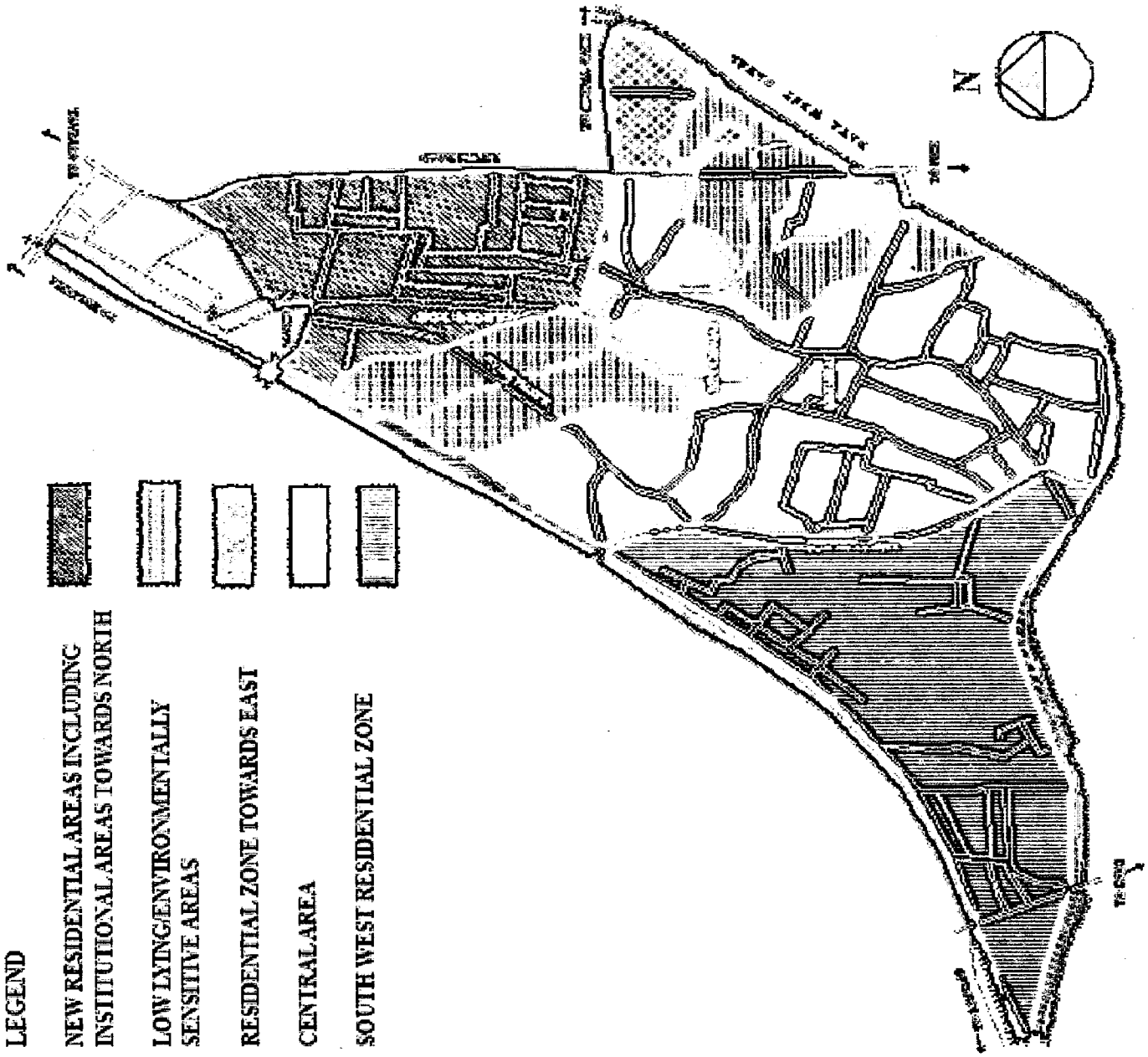
Firstly, the entire area has been delineated into sub-zones and sub-zone level analysis has been carried out to have a better understanding of the issues associated with each area. Secondly, the method of analysis of problems in these sub-zones rest upon a primary household survey carried out at household levels. Then a framework for the regeneration rationale that can be summarized as the triangulation of the *values, obsolescence* and *development dynamics* of the historic core has been set up. Finally through the application of SWOT analysis, these three contextual attributes have been presented in a matrix form with regard to strengths, weaknesses, opportunities and threats.

7.2. SUB-ZONE LEVEL ANALYSIS OF OLD TOWN AREA, BHUBANESWAR

The old city area of Bhubaneswar has been further subdivided into five sub zones (Fig.) on the basis of chronology, presence of historic elements, distinctive physical features, visual character, development pattern, environmental ecological considerations etc.

The various sub zones have been delineated in order to evolve a detailed framework for analysis of areas within the zone having similar characteristics and to recommend specific guidelines and proposals. The individual sub zones are the following:

a. New Residential areas including institutional areas towards the North.
b. Central Area
c. Low lying/Environmentally Sensitive areas
d. Residential Zone towards the east of Lewis road including Rajarani temple complex
e. South west Residential Zone



Map7.1. Sub zones of Old Town area, Bhubaneswar
Source of base map: Zonal Development Plan, BDA; Drawn by Author

7.2.1. New Residential Areas Including Institutional Areas Towards North

7.2.1.1. Characteristics

1. The residential areas of Gautam Nagar including the institutional areas towards the north are relatively new developments, characterized by low density plotted development having well laid internal road network and 1-2 storeyed residential structures.
2. Being one of the earliest planned "units" of the New Capital, Gautam Nagar possesses a mix character of old and new elements.
3. Jaydev Nagar Housing Complex is the first housing board colony of Bhubanswar which falls under the Nageswar Tangi area of old town. The first plotted

development in the city was provided by the State Housing Board in the vicinity of the central core (Lingaraj temple complex and areas around Bindusagar tank) in the year 1982-83.

4. The colony was designed for H.I.G people and hence the area was divided into 26 plots of 2700sqft area each. Each unit has 2-3 nos. of bedroom, which leads to a minimum of 4-6 member family.
5. The infrastructure facilities provided here are better in comparison to the core area. Different age group of people are served inside the colony with different amenities, such as play area for children, jogging track for middle age and elderly group, interaction spaces for all age people.
6. Of late the sub-zone is witnessing a trend of multistoried buildings particularly along Vivekananda Road.
7. The zone contains Govt. offices and other institutional buildings viz., Judicial Court, Tahsil Office. Panchayat Office, Ayurvedic Hospital. Ramakrishna Math etc.

Fig.7.1. Views of the residential colonies within Nageswar Tangi
Source: Author

7.2.1.2. Development issues/Critical problems

1. Unauthorized unregulated building activity.
2. Emergence of Multistoried buildings particularly along Vivekananda road resulting in loss of visual character.
3. Skyline punctuated by temple shikharas and dominated by traditional architectural features is in danger of being gradually replaced by modern constructions.
4. Lack of proper drainage system particularly along major roads.

7.2.2. Central Area

1. This area is the center of the old town, both symbolically and geographically.
2. Old residential areas In the central area are characterised by narrow plots and road widths. Almost all the houses present in this area are of the traditional tissue and are in a poor condition.
3. One of the major roads called as Rathadanda, which is about 20m wide runs in this area. This road is purposefully made to connect the Lingaraj temple with the Mausima temple as during the Great chariot festival, the chariot of Lord Shiva passes through this road. During this chariot festival lot of devotees gather here.
4. On both the sides of the Rathadanda, many commercial activities in the form of shops and vendors are observed. Lingaraj temple complex and area around Bindusagar is a zone of intense pilgrimage/tourist activity.

Fig.7.2. A. A residential street, B. Rathadanda giving the view of the sikhara of the Lingaraj temple in the skyline.
Source: Author

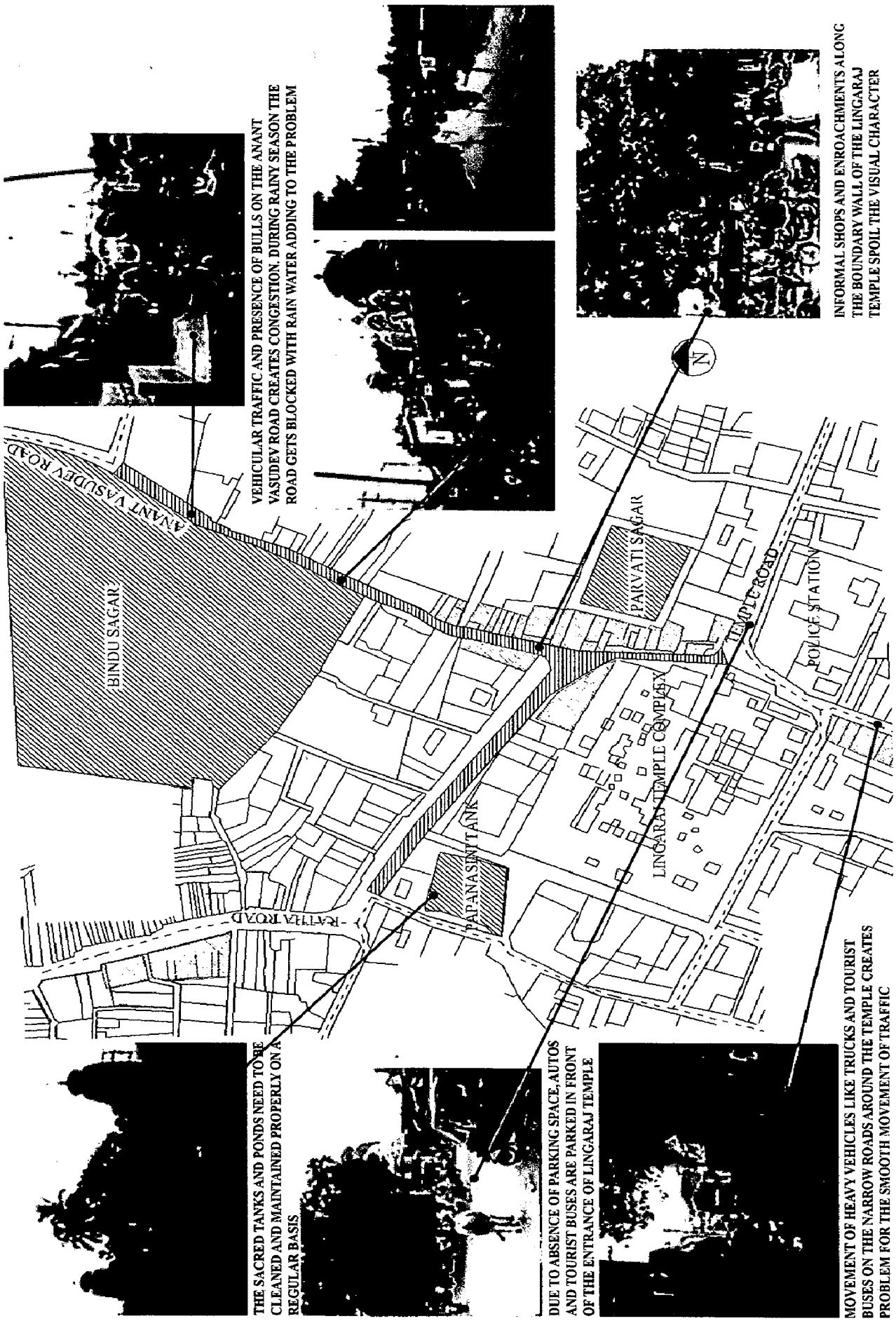


Fig.7.3. Critical problems observed around the Lingaraj temple complex
Source of base map: Zonal Development Plan, BDA; Drawn by Author
Source of photographs: Author; Compiled by Author

7.2.2.1. Characteristics

1. Contains the Lingaraj temple complex and many other important temples, tanks and lakes.
2. Old residential areas, narrow lanes, mixed landuses and traditional activity patterns.
3. Area of intense pilgrimage/tourist activity (500 devotees on an average day over 25000 per day during festivals).
4. The commercial activities have been mostly in the form of retail trade in informal/unorganized temple related activities.

7.2.2.2. Development issues/Critical problems

1. Preservation/conservation of temples/monuments mandapas/ponds etc. are in state of neglect and disrepair, important to preserve the character and reinforce the image ability of the heritage zone.
2. Traffic circulation and parking problems especially during peak religious activity periods causes congestion.
3. Unauthorized unregulated commercial encroachments around the Lingaraj temple complex spoil the visual character and add to congestion.
4. Sanitation and solid waste disposal blocking of drainage channels/pollution of water bodies.

Some of the critical problems observed around the Lingaraj temple complex and Bindusagar have been shown in the Fig.7.3.

7.2.3. Low lying/Environmentally Sensitive areas

Considerable low-lying swampy/marshy areas and agricultural land lie to the north/ north-west and east of Bindusagar. These are in fact an integral part of the overall natural drainage system of the old town. These areas have an important ecological role as they act as ground water recharge areas. Gradually, these low lying areas are being converted into residential units due to development pressure. The wetlands and the natural drains are facing maximum conversion and encroachments. Large scale construction (especially for housing, roads and slums) is being carried on the drainage area. These natural drains and the wetlands are natural recharge zones and hence need special attention.

7.2.3.1. Characteristics:

1. Natural drainage channel low laying areas/swampy land.
2. Very important ecological role act as ground water recharge areas

7.2.3.2. Development issues/Critical problems

1. Intrusion of unauthorized residential development (Fig.7.4).
2. Snakes are prevalent in this area

Fig.7.4. Low lying/marshy areas
Source: Author

7.2.4. Residential Zone towards the east of Lewis road including Rajarani temple complex

This zone lies to the east of the Cuttack-Puri road (Lewis road) and contains the visually dominating Rajarani temple complex. Other features are in forms of new residential developments (1.2 storey high) and low lying agricultural land (Falling in environmentally sensitive area).

7.2.4.1. Characteristics:

1. Lies to the east of Cuttack-puri road (lewis road) and bounded by Daya west canal on one side.
2. New residential areas (2 storied tenements) and many new multistoried apartments.
3. Agricultural lands

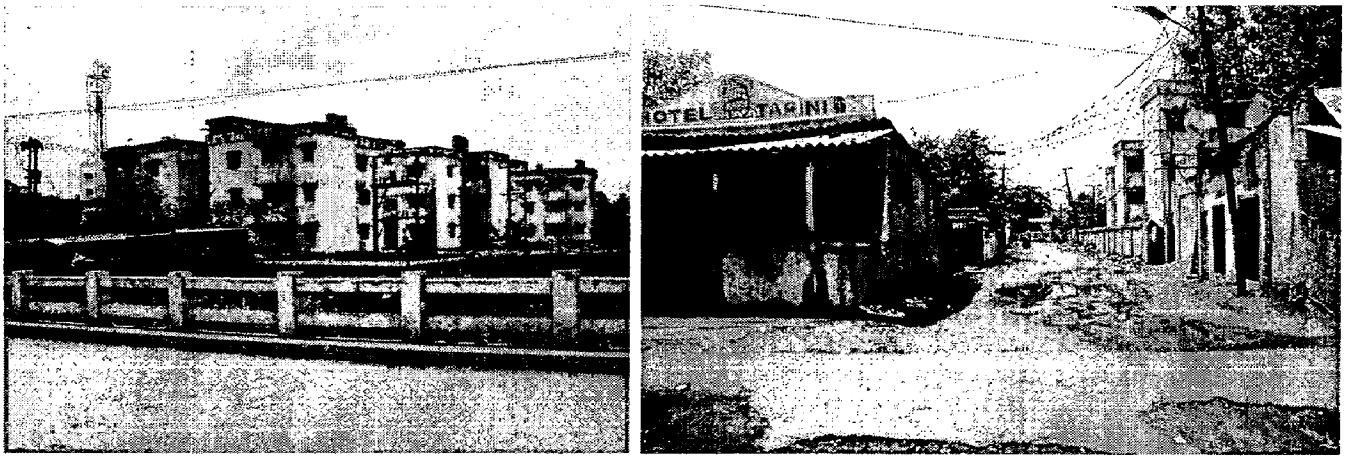


Fig.7.5. Residential structures in the residential Zone towards the east
Source: Author

7.2.4.2. Development issues/Critical problems

1. Lack of Infrastructure particularly drainage results in frequent water logging.
2. High rise buildings dwarfing the once dominated temple structures.

7.2.5. South west Residential Zone

The south-west zone essentially consist of recently developed residential areas (1-2 storey high) developed by the Housing Board. This area including the Bhimtangi housing board colony has relatively good physical infrastructure as compared to other sub zones within zone -1. But along the railway track, slums have been developed. The increasing needs of stones for construction has left many abandoned laterite quarries and low lying depressed areas, which are being used as solid waste disposal sites of the city.

7.2.5.1. Characteristics:

1. Government allotted land developed by Orissa Housing Board, 2 storied tenements.
2. New built up residential colonies-Kapilprasad and Bhimtangi area
3. Relatively good infrastructure
4. Abandoned quarries are found

7.2.5.2. Development issues/Critical problems

1. Growth of slums along Daya-west canal and the railway track.
2. Absence of drainage facility

Fig.7.6. South west Residential Zone; A. The stone quarries are now slowly being converted into residential uses, B. Bhimtangi Housing Board Colony
Source: Author

7.3. ASSESSMENT OF PRESENT STATUS OF DEVELOPMENT THROUGH HOUSEHOLD SURVEY

In order to understand the present status of development in the Old Town area, the investigator has conducted an observation study and also conducted a household survey taking into account some important parameters like; income, occupation, ownership pattern, changes in social composition, level of rents, age of structures, transportation and other physical infrastructures.

The investigator has chosen households randomly from each of the five sub zones to conduct the survey and conducted the survey at the household level by her-self. In the present investigation, households are selected by random sampling method. The surveyed households are grouped into different sub-zones i.e. New residential areas including institutional areas in the North, Central area, Low lying/Environmentally sensitive areas, Residential areas towards the East and the South-West residential zone. In this investigation, the sub zone is considered as y variable and the other variables are considered as x variables.

7.3.1. Family Size

An attempt has been made to get an idea of the distribution of households in the different sub zones by their size and is presented in the Table

Table 7.1: Family size

Sr. No.	Sub zone	Family Size (V1)					
		1	2 - 5	6 - 10	11 - 15	>16	Total
1	New residential areas towards north	0	8	2	2	0	12
2	Central area	0	18	2	0	2	22
3	Residential zone towards east	2	2	2	0	0	6
4	South west residential zone	0	4	2	2	0	8
5	Low lying/Environmentally sensitive areas	0	2	0	0	0	2
	Total	**2** (4%)	**34** (68%)	**8** (16%)	**4** (8%)	**2** (4%)	**50** (100%)

Source: Author

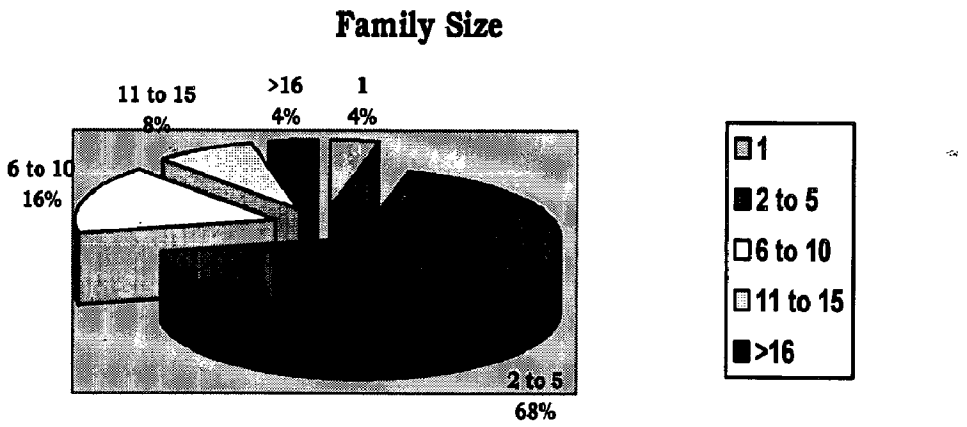


Fig.7.7. Family Size
Source: Author

It is clearly observed that most of the households (68%) are having 2-5 members. Some joint families having more than 10 members are found in the Central area and the South-West residential zone.

7.3.2. Family Type

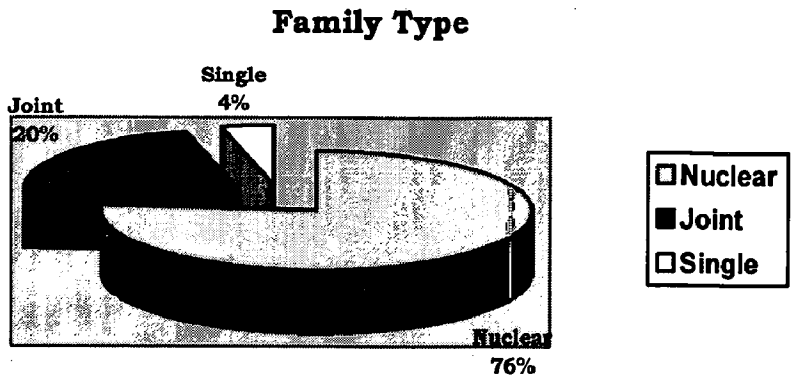


Fig.7.8. Family Type
Source: Author

Table 7.2: Family type

Sr. No.	Sub zone	Family Type (V2)			
		Nuclear	Joint	Single	Total
1	New residential areas towards north	8	4	0	12
2	Central area	20	2	0	22
3	Residential zone towards east	2	2	2	6
4	South west residential zone	6	2	0	8
5	Low lying/Environmentally sensitive areas	2	0	0	2
	Total	**38** (76%)	**10** (20%)	**2** (4%)	**50** (100%)

Source: Author

It is found that most of the households have a nuclear family. 20% of the households have a joint family and 4% are single.

7.3.3. Period of stay

Distribution of households by period of stay (Table 7.3 and fig.7.9) reveals that out of the sampled households 44% are found to be staying in zone for less than 10 years whereas only 16% of the total households are residents of the zone for more than 75 years.

Table 7.3: Period of stay

Sr. No.	Sub zone	Period of stay (V3)				
		Less than 10 years	10-25 years	25-75 years	More than 75 years	Total
1	New residential areas towards north	2	4	2	4	12
2	Central area	8	6	4	4	22
3	Residential zone towards east	4	0	2	0	6
4	South west residential zone	6	2	0	0	8
5	Low lying/Environmentally sensitive areas	2	0	0	0	2
	Total	**22**	**12**	**8**	**8**	**50**
	%	44	24	16	16	100

Source: Author

This table shows that the families who are staying in this area since long time are mainly found in the central core and some in the new residential areas towards north and near Rajarani area. It is also observed that old residents may have been leaving this place which is replaced by the new in-migrating population.

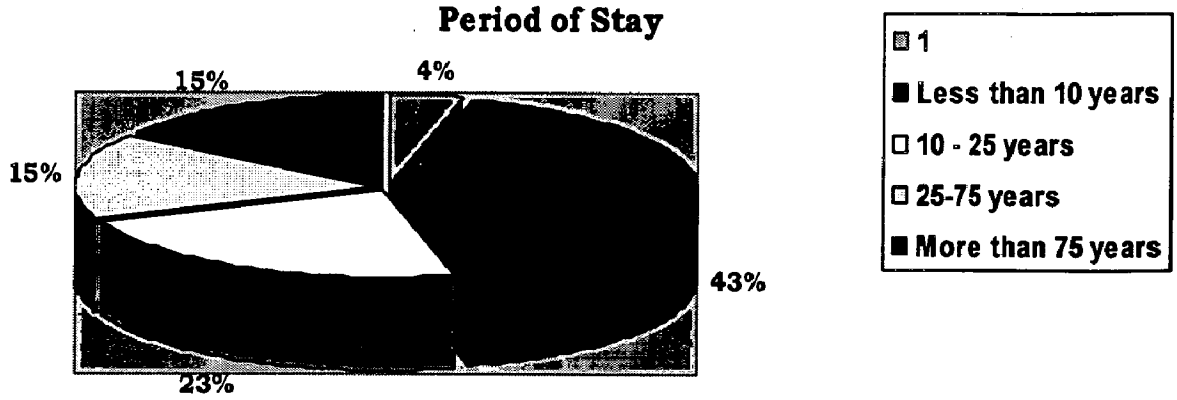


Fig.7.9. Period of stay
Source: Author

7.3.4. Occupation

From the table we get an idea that people are gradually leaving their traditional occupation in order to pursue other profitable jobs (Table 7.4).

7.3.5. Income

The survey reveals that about 40% of the households have an income between Rs 10000-50000 and 36% households have income between Rs 5000-10000 (Table 7.5).

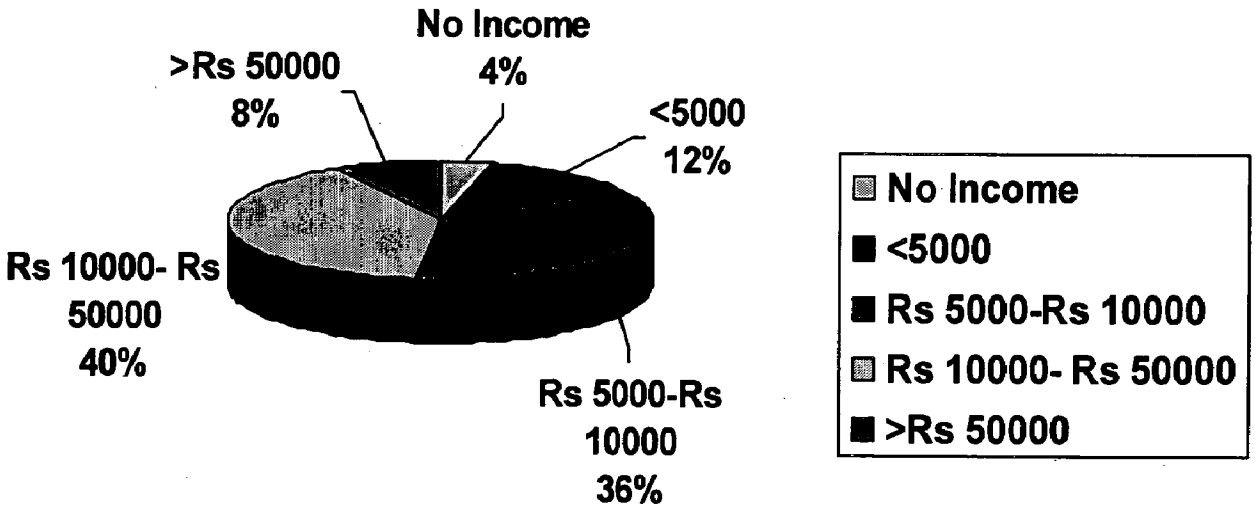


Fig.7.10. Income
Source: Author

Table 7.4: Occupation

Sr. No.	Sub zone	Occupation (V4)													
		Temple sevayat	%	Traditional business	%	Service -men	%	Retd. Personnel	%	Other business	%	Others	%	Total	%
1	New residential areas towards north	2 (10)	25	4 (20)	33.33	6 (30)	37.5	4 (20)	40	0 (0)	0	4 (20)	40	20 (100)	27
2	Central area	6 (16.67)	75	4 (11.11)	33.33	6 (16.67)	37.5	4 (11.11)	40	12 (33.33)	66.67	4 (11.11)	40	36 (100)	48.65
3	Residential zone towards east	0 (0)	0	2 (33.33)	16.67	2 (33.33)	12.5	0 (0)	0	0 (0)	0	2 (33.33)	20	6 (100)	8.1
4	South west residential zone	0 (0)	0	2 (20)	16.67	2 (20)	12.5	2 (20)	20	4 (40)	22.22	0 (0)	0	10 (100)	13.5
5	Low lying/ Environmentally sensitive areas	0 (0)	0	0 (0)	0	0 (0)	0	0 (0)	0	2 (100)	11.11	0 (0)	0	2 (100)	2.75
	Total	8	100	12	100	16	100	10	100	18	100	10	100	74	100
	%	10.81		16.21		21.62		13.51		24.34		13.51		100	

Source: Author

Note: The figure within parentheses represents row percentage

Table 7.5: Income

Sr. No.	Sub zone	Income (V5)					
		No income (Student/Retd. Persons/Others)	< Rs. 5000	Rs. 5000 – Rs. 10000	Rs. 10000 – Rs. 50000	> Rs. 50000	Total
1	New residential areas towards north	0	0	2	10	0	12
2	Central area	0	4	10	4	4	22
3	Residential zone towards east	2	0	2	2	0	6
4	South west residential zone	0	2	2	4	0	8
5	Low lying/ Environmentally sensitive areas	0	0	2	0	0	2
	Total	**2**	**6**	**18**	**20**	**4**	**50**
	%	4	12	36	40	8	100

Source: Author

7.3.6. Ownership Status

Table 7.6: Ownership Status

Sr. No.	Sub zone	Ownership Status (V6)		
		Owned	Tenants	Total
1	New residential areas towards north	10	2	12
2	Central area	10	12	22
3	Residential zone towards east	2	4	6
4	South west residential zone	2	6	8
5	Low lying/Environmentally sensitive areas	2	0	2
	Total	**26**	**24**	**50**
	%	52	48	100

Source: Author

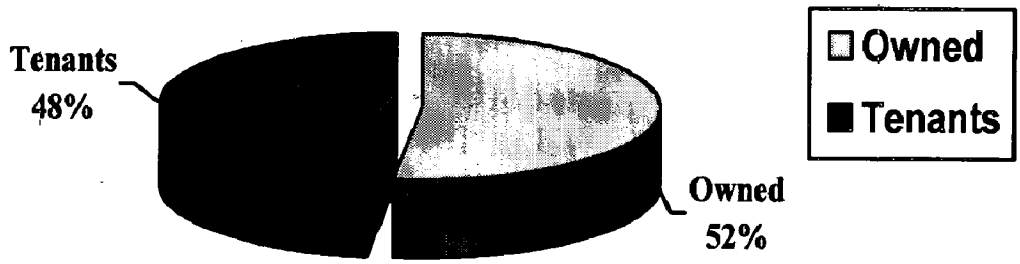


Fig.7.11. Ownership Status
Source: Author

This table shows that 52% of the people are staying in their own houses and 48% are staying as tenants.

7.3.7. Property Ownership

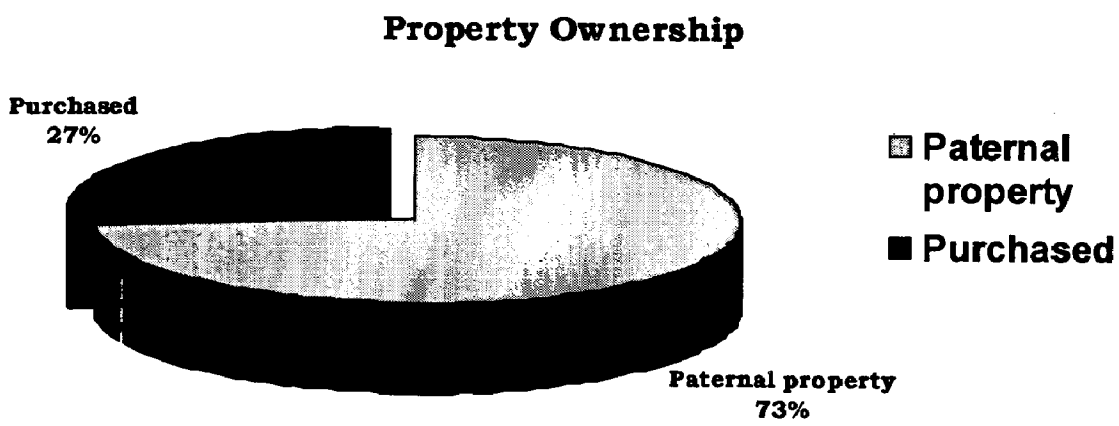


Fig.7.12. Property Ownership
Source: Author

Table 7.7: Property Ownership

Sr. No.	Sub zone	Property ownership (V7)				
		Paternal property	%	Purchased	%	Total
1	New residential areas towards north	6 (60)	27.27	4 (40)	50	10
2	Central area	10 (83.33)	45.45	2 (16.67)	25	12
3	Residential zone towards east	2 (100)	9.09	0 (0)	0	2
4	South west residential zone	2 (50)	9.09	2 (50)	25	4
5	Low lying/ Environmentally sensitive areas	2 (100)	9.09	0 (0)	0	2
	Total	**22**	100	**8**	100	**30**
	%	73.33		26.67		100

Source: Author
Note: The figure within parentheses represents row percentage

The table reveals that, most of the people (73%) are enjoying their paternal property. This percentage is highest (83.3%) in the central core area. Only 27% of the sample households have purchased their property either from the owner or from the State housing board.

7.3.8. Type of unit

Table 7.8: Type of unit

Sr. No.	Sub zone	Type of Unit (V8)			
		Plotted	Old residential dwelling units	Jhuggi jhopdi	Total
1	New residential areas towards north	6	6	0	12
2	Central area	0	20	2	22
3	Residential zone towards east	4	2	0	6
4	South west residential zone	4	2	2	8
5	Low lying/ Environmentally sensitive areas	2	0	0	2
	Total	**16**	**30**	**4**	**50**
	%	32	60	8	100

Source: Author

It is clear from the Table 7.8 and Fig.7.13 that most of the people (60%) in the old town; especially all families of the central core are staying in old residential units. Some plotted housing schemes by the State Housing Board have been emerged in the periphery.

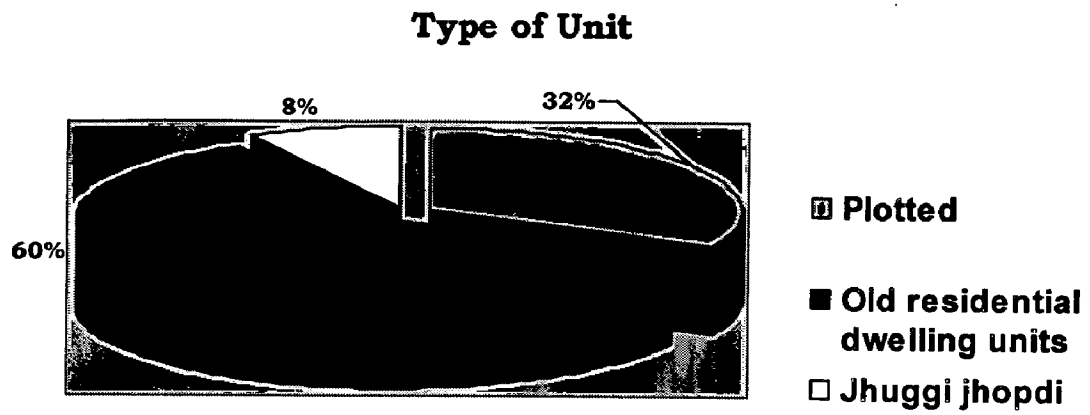


Fig.7.13. Type of Unit
Source: Author

7.3.9. Area of the Dwelling Unit

Table 7.9: Area of the dwelling unit

Sr. No.	Sub zone	Area of the dwelling unit (V9)				
		Less than 1000 sqft	1000sqft – 2000 sqft	2000sqft – 3000 sqft	3000sqft – 5000 sqft	Total
1	New residential areas towards north	0	4	6	2	12
2	Central area	2	10	6	4	22
3	Residential zone towards east	4	0	0	2	6
4	South west residential zone	4	2	2	0	8
5	Low lying/ Environmentally sensitive areas	0	2	0	0	2
	Total	**10**	**18**	**14**	**8**	**50**
	%	20	36	28	16	100

Source: Author

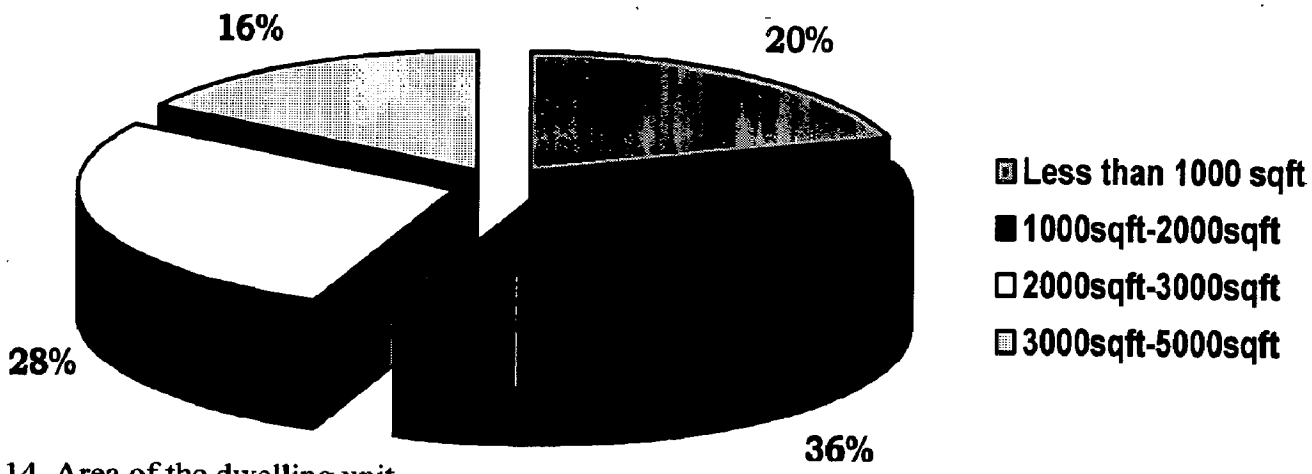


Fig.7.14. Area of the dwelling unit
Source: Author

7.3.10. Age of structure

Table 7.10: Age of structure

Sr. No.	Sub zone	Age of structure (V10)				
		Less than 20 years	20 years – 50 years	50 years – 100 years	More than 100 years	Total
1	New residential areas towards north	0	8	2	2	12
2	Central area	2	8	4	8	22
3	Residential zone towards east	4	2	0	0	6
4	South west residential zone	4	2	2	0	8
5	Low lying/ Environmentally sensitive areas	2	0	0	0	2
	Total	**12**	**20**	**8**	**10**	**50**
	%	24	40	16	20	100

Source: Author

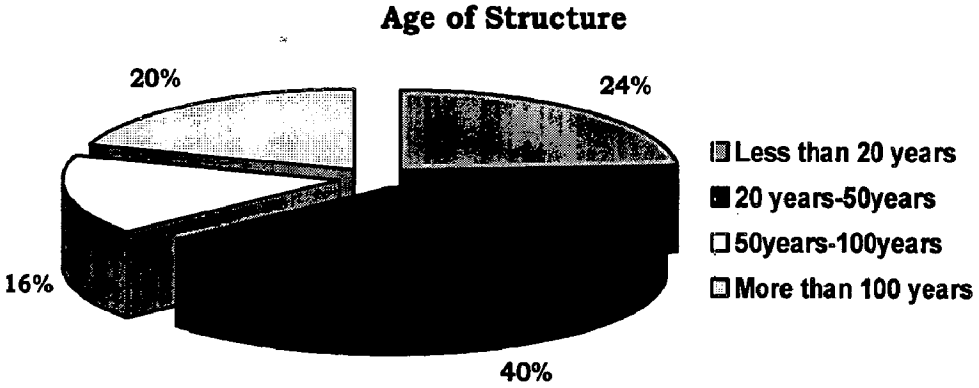


Fig.7.15. Age of structure
Source: Author

Table 7.10 and fig.7.15 give the distribution of the houses by age of structure. It is observed that 36% of the sampled houses are more than 50 years old and are mainly found near the Bindusagar and Lingraj temple area. Houses with age of structure between 20 to 50 years constitute 40% of the housing stock and the remaining 24% houses are comparatively new with age of structure below 10 years.

7.3.11. Water supply source

As per the household surveys, it is observed that Municipal Water is available to 70% of total sampled households. Other households mainly depend on wells (23%) and tube wells are used in 7% households (Fig.7.16).

Table 7.11: Water supply source

Sr. No.	Sub zone	Water supply source (V11)			
		Municipal supply	Well	Tube well	Total
1	New residential areas towards north	12	4	0	16
2	Central area	16	8	2	26
3	Residential zone towards east	6	2	0	8
4	South west residential zone	6	0	2	8
5	Low lying/Environmentally sensitive areas	2	0	0	2
	Total	**42**	**14**	**4**	**60**
	%	70	23.33	6.67	100

Source: Author

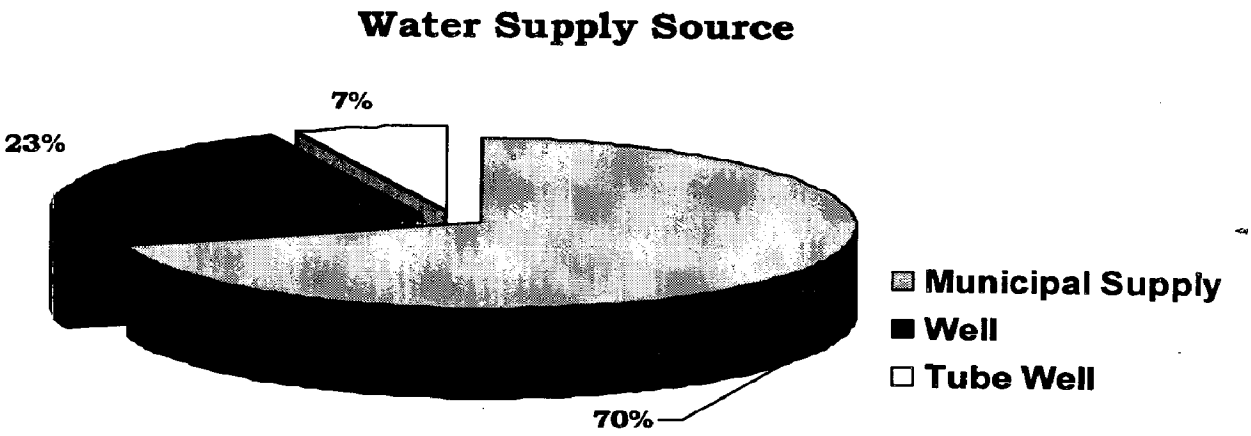


Fig.7.16. Water Supply Source
Source: Author

7.3.12. Sewage disposal

Table 7.12: Sewage disposal

Sr. No.	Sub zone	Sewage disposal (V12)			
		Sewer line	Soak pit	None	Total
1	New residential areas towards north	10	2	0	12
2	Central area	0	20	2	22
3	Residential zone towards east	4	2	0	6
4	South west residential zone	2	4	2	8
5	Low lying/Environmentally sensitive areas	0	2	0	2
	Total	**16**	**30**	**4**	**50**
	%	32	60	8	100

Source: Author

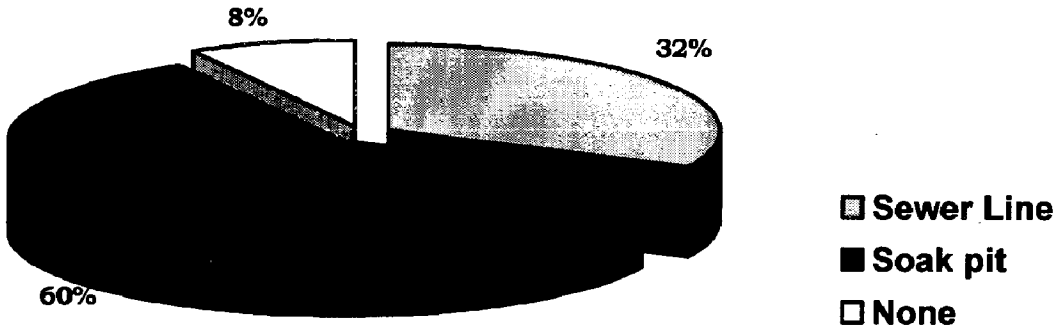


Fig.7.17. Sewage Disposal
Source: Author

From the above table, it is observed that 60% of the sampled households have individual/combined septic tanks/soak pits, 32% households are connected to localized sewerage network and 8% of them do not have any facility for sewage disposal.

7.3.13. Drainage

Table 7.13: Drainage

Sr. No.	Sub zone	Drainage (V13)			
		Pipe line	Open drain	None	Total
1	New residential areas towards north	12	0	0	12
2	Central area	2	18	2	22
3	Residential zone towards east	6	0	0	6
4	South west residential zone	6	0	2	8
5	Low lying/Environmentally sensitive areas	2	0	0	2
	Total	**28**	**18**	**4**	**50**
	%	56	36	8	100

Source: Author

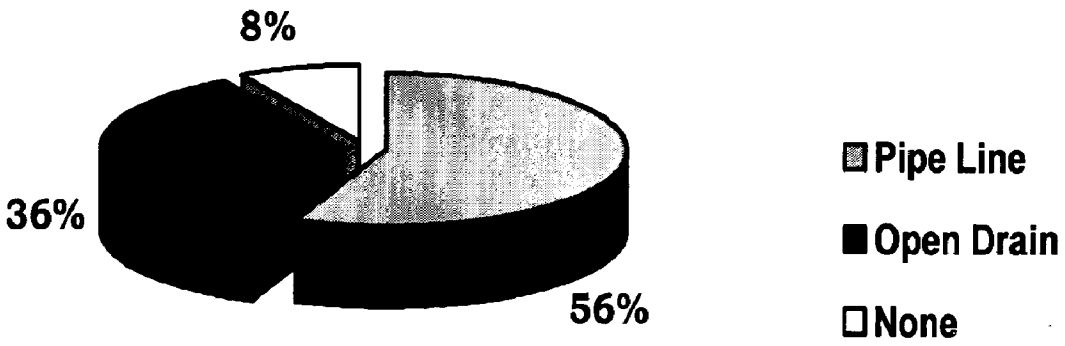


Fig.7.18. Drainage
Source: Author

It is observed that 56% of the surveyed households have open drains where as 36% have proper pipe line connection and 8% of the households do not have any such facility.

7.3.14. Garbage Disposal

Table 7.14: Garbage Disposal

Sr. No.	Sub zone	Garbage Disposal (V14)			
		Manual garbage collection	Garbage Pits	Open drains	Total
1	New residential areas towards north	10	0	2	12
2	Central area	18	2	2	22
3	Residential zone towards east	4	2	0	6
4	South west residential zone	4	2	2	8
5	Low lying/ Environmentally sensitive areas	0	0	2	2
	Total	**36**	**6**	**8**	**50**
	%	72	12	16	100

Source: Author

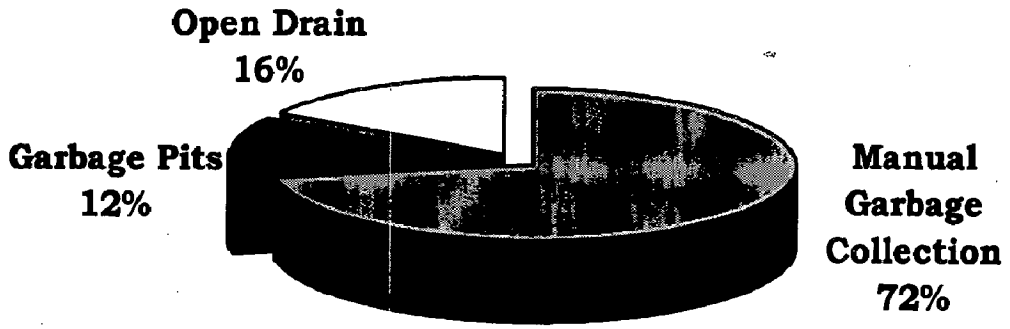


Fig.7.19. Garbage Disposal
Source: Author

The table reveals that from 72% households solid wastes are disposed through manual garbage collection methods, 16% dumps the solid wastes into open areas/drains and remaining 12% uses garbage pits.

7.3.15. Means of transport

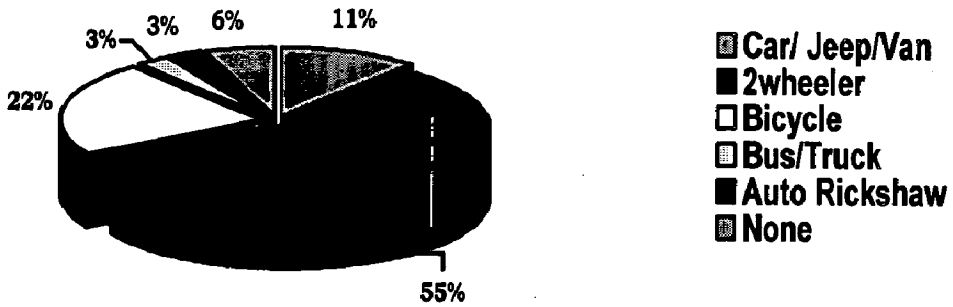


Fig.7.20. Means of Transport
Source: Author

Table 7.15: Means of transport

Sr. No.	Sub zone	Means of transport (V15)						
		Car/ Jeep/ Van	2-wheeler	Bicycle	Bus/ Truck	Auto rickshaw	None	Total
1	New residential areas towards north	6	10	4	0	2	0	22
2	Central area	2	18	8	2	0	2	32
3	Residential zone towards east	0	4	0	0	0	2	6
4	South west residential zone	0	6	4	0	0	0	10
5	Low lying/ Environmentally sensitive areas	0	2	0	0	0	0	2
	Total	**8**	**40**	**16**	**2**	**2**	**4**	**72**
	%	11.11	55.56	22.22	2.78	2.78	5.55	100

Source: Author

The vehicle ownership pattern of the study area reveals that with respect to personalized vehicles, share of 2-wheelers is about 55% and next highest share being that of cycles (22%).

7.3.16. Road Width

Table 7.16: Road Width

Sr. No.	Sub zone	Road Width (V16)			
		15 feet	Above15 feet & less than 30 feet	30 feet and above	Total
1	New residential areas towards north	0	12	0	12
2	Central area	18	0	4	22
3	Residential zone towards east	0	6	0	6
4	South west residential zone	4	0	4	8
5	Low lying/ Environmentally sensitive areas	0	2	0	2
	Total	**22**	**20**	**8**	**50**
	%	44	40	16	100

Source: Author

4. In recent periods, the study area is dominated by business activities with majority of people belonging to the middle income group category.
5. Almost half of the people are still living in owned houses but the tenant population has been increased noticeably in last 2 decades.
6. Mainly people are enjoying their ancestral property. Only a few households have purchased houses from the development authority.
7. Most of the houses are old residential dwelling units with a distinctive architectural character. Mainly, the area of these houses varies between 1000sqft to 2000sqft.
8. The houses in the central core area are more than 50 years old. In other areas, the houses have an age structure between 20- 50 years.
9. The water supplied by Municipality is mainly 2hrs. per day in the study area.
10. Most of the houses have septic tanks/soak pits for sewage disposal. Sewerage network has partially covered the area.
11. Most of the houses have open drains running at their front that reveals that hygiene and the cleanliness at most of the places are improper.
12. Problem of overflow and clogging is observed in the study area due to open drains.
13. The waste disposal system in the area is more or less satisfactory.
14. The two wheelers and bicycles are the major type of private vehicles in the study area. Four wheelers belong to the higher income groups.
15. Most of the streets have a road width of only 15' especially in the core residential areas. So, people are bound to use two wheelers for their transportation.
16. Overall road condition is good in the area except in the central zone.
17. Half of the population parks their own vehicles inside their premises where as half of them park them on road as there is hardly any space inside houses to park the vehicles.

7.4. PRINCIPLES AND METHODOLOGY ADOPTED FOR ANALYSIS OF PRESENT SCENARIO OF THE STUDY AREA

In order to incorporate sustainable growth of the old historic city core of Bhubaneswar by the process of regeneration, we have to first study the three contextual attributes that the historic urban quarters possess i.e. values, obsolescence, and development dynamics. This will be an initial step in the process of the determination of a strategic approach for regeneration. Secondly, the method of analysis will rest upon the household survey already discussed, through the application of SWOT analysis.

7.4.1. The Three Attributes of Historic Urban Quarters

The three contextual attributes that the historic urban quarters possess are values, obsolescence, and development dynamics.[1] Hence, these three attributes should be well understood prior to further discussions on regeneration of the historic cores.

7.4.1.1. Values – Factors that make the areas worth being preserved and revitalized

In the ICOMOS Charter for the Conservation of Historic Towns and Urban Areas (2003), it is stated that beyond their role as historic documents, the historic urban areas embody the values of traditional urban cultures.[1]

A historic urban core possesses a mix of assets that offers a variety of possibilities for defining its identity. Hand in hand they are part of the cultural heritage with a different variety of values like;

1. Cultural identity value – It includes age, tradition, continuity, political and national values
2. Scarcity value – It results from typology, form, period of construction and design of the buildings in these areas, which make them unique when compared with recently built buildings.
3. Resource value – The amount of housing stock, which can also be considered from an economic issue.
4. Aesthetic value
5. Social and psychological value
6. Political value
7. Environmental value
8. Educational value

7.4.1.2. Obsolescence – Factors/ Processes contributing to deterioration and decay

Obsolescence can be briefly be defined as "the mismatch between the services offered by the fabric and the contemporary needs" (Litchfield, 1988:25). So based on this argument we can consider obsolescence as a process through which most of the problems of traditional city cores are being generated.

[1]Doratli "Revitalizing A Declining Historic Urban Quarter- The Walled City of Famagusta, North Cyprus", Journal of Architectural and Planning Reasearch, 2007

Thus the area may suffer from different types of obsolescence like;

1. **Physical/Structural obsolescence** – Through the effects of time, weather changes, earth movement, and poor maintenance, the traditional buildings and the building fabric is subjected to physical/structural deterioration. This kind of obsolescence generally is result of a gradual process.
2. **Functional obsolescence** – Functional characteristics of a building or an area may cause obsolescence of this kind. For example, a building may fail to meet the contemporary standards and requirements of the users with its design and fabric which may include the different kinds of infrastructure facilities provided.
3. **Locational obsolescence** - When a building is built, its location is determined through its accessibility to other uses like markets, educational facilities, workplaces, transportation infrastructure etc which over a period of time may be unfavourable for the activities for which the building was originally constructed. Locational obsolescence in many cases paves path for functional obsolescence.
4. **Image obsolescence** – It includes the perception of a building or an area with its uncomfortable traffic circulation, noise, smell and vibration.
5. **Official/Legal obsolescence** – It is related to the restrictions that render buildings or the area obsolete, or an absence of financial incentives that may hinder the willingness of property owners to restore and rehabilitate their property.

7.4.1.3. Development Dynamics – Factors triggering physical change

Depending on the economic pressure for development on the area, a historic urban area may face a different state of dynamics of development, described as **high, static & declining**.

In most cases, development dynamics and obsolescence of an area act inversely proportional to each other. For example, due to physical/functional obsolescence, development dynamics of an area approach static or declining states. Similarly, static/declining state of development dynamics accelerates physical/functional obsolescence in an area and may give rise to other types of obsolescence. Some of the central core areas, as in case of Shahjahanabad, are affected by structural and environmental decay but are characterized by high concentration of economic activities and provide a wide range of employment opportunities. This process results in increasing density and can be identified to be in high state of development dynamics. Hence, due to high economic pressure, there is a pressure for the demolition of old buildings in order to fully utilize the valuable sites.

Correct identification of the above-stated contextual attributes during the analytical stage plays a key role in determining relevant strategic approaches for regeneration.

7.4.2. SWOT Analysis Method

SWOT generates lists of strengths, weaknesses, opportunities and threats. The structure imposed by the listing and categorization of aspects and qualities of the working area under these four broad headings assists in formulating possible strategies for intervention.

Keeping in mind that effective strategies will be built on strengths, taking advantage of opportunities, and overcome the weaknesses and threats, the historic core should be assessed on their positive aspects, negative aspects & changes likely to occur for better or for worse.

7.5. SWOT ANALYSIS OF THE OLD TOWN AREA ON THE BASIS OF THE CONTEXTUAL ATTRIBUTES OF HISTORIC URBAN QUARTERS

Considering the values, type of obsolescence and the development dynamics of the old town, the key strategic issues will be taken as follows:

- ***Values*** would be considered as the strength – the capacity of an area, which can be used effectively to achieve the objective of regeneration.
- ***Obsolescence and Development dynamics*** can be considered as:
    i. a weakness – a limitation, fault or defect that would keep the area from achieving regeneration
    ii. an opportunity – a favourable situation in the environment
    iii. a threat – any unfavourable situation in the environment that is potentially damaging to the strategy.

7.5.1. VALUES

The old town as a whole embraces '***cultural identity value***' and '***scarcity value***'. This is reflected in the traditional tissue with temples and houses of architectural, artistic value and historic tanks of environmental value. This area has a recorded history of over 2500 years. It is rare to find anywhere in India such a living example of large number of ancient temples/monuments, ponds, mandapas etc at one place as in this area. The earliest developments within the zone were focused around the Bindusagar and Lingaraj temple.

The area also embraces a '***resource value***', which can be seen from a housing stock point of view with its about 360 traditional houses present in the central core (Fig.7.24). The central city area has housing areas in a very poor condition, although these areas have some very architecturally appealing buildings.

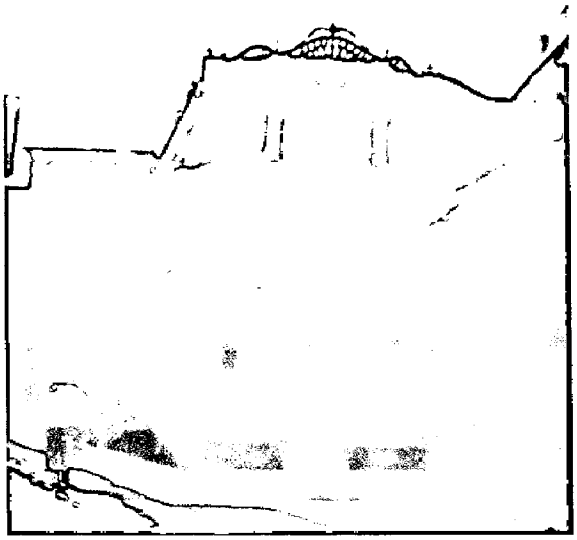


Fig.7.24. A traditional house in the Study area
Source: Author

It also embraces a good '***aesthetic value***' due to presence of the majestic and intricately carved temples which prove the high standard of art and architectural quality of Orissan sculptors and artisans.

This area consists of a '***psychological value***' as the peoples' sentiments are associated to this area in the form of faith on the deity, worshipping the God by sincerely performing the rituals and merrymaking & enjoyment at the time of festivals. Lingaraja, Kapileshwar, Anant Vasudev, Mukteswar, Kedargauri and Bindusagar are major focus of pilgrim/ tourist attractions and centers of religious activity primarily because of their visual prominence, associated festivals and attributed values. The major festivals observed in the old town are the following:

1	Prathamastami	10	Rath yatra (Chariot Festival)
2	Pravarana Sasthi	11	Bahuda Yatra
3	Pushpavisheka	12	Damanaka Chaturdashi
4	Makara sankranti	13	Akshaya Trutiya
5	Magha Saptami	14	Parsuram Astami
6	Maha Shivaratri	15	Sayan Chaturdashi
7	Asijastanu	16	Pabitra Ropan
8	Basanta Panchami	17	Yama dutiya
9	Netrauschhab	18	Uthapana Chaturdashi

During these festive occasions, huge number of devotees/pilgrims from all over the state gather in this place (Fig.7.25).

This area also consists of an '***environmental value***' due to the presence of considerable low lying swampy /marshy areas and agricultural land in the central portion, which

have an important ecological role as they act as ground water recharge areas for the whole old town.

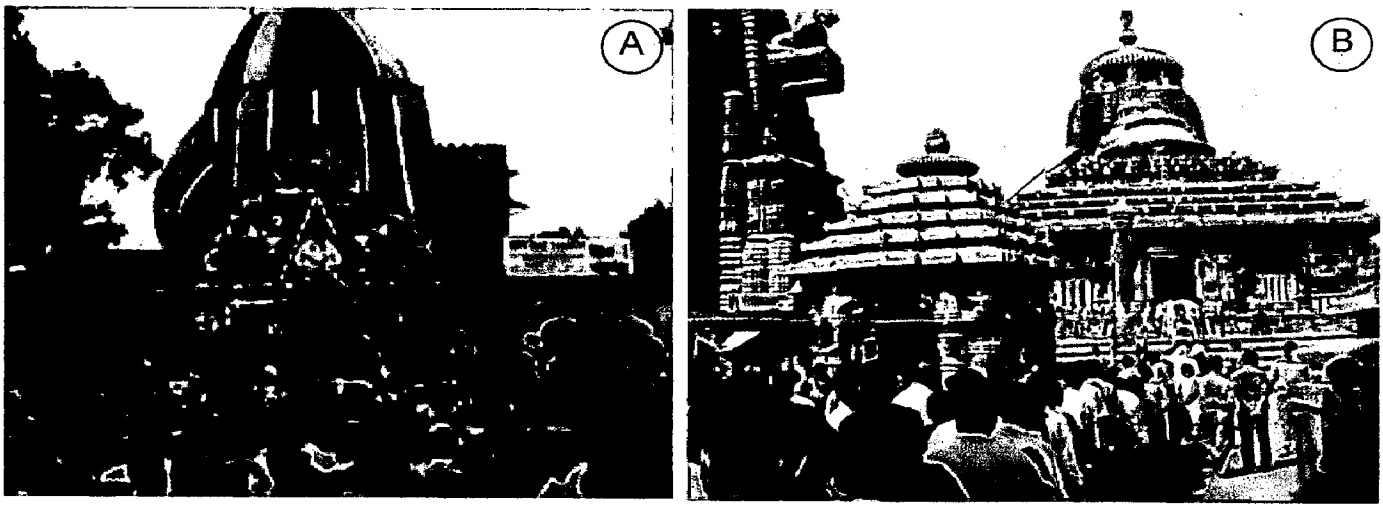


Fig.7.25. Festivals observed in the study area; A. The chariot festival, B.Devotees at Lingaraj Temple in Bhubaneswar to perform puja on the occasion of Mahasivaratri
Source: Author

If these values would be utilized effectively, the objectives of regeneration of the area would be achieved. Accordingly, it can easily be claimed that these values make up the strength of the area.

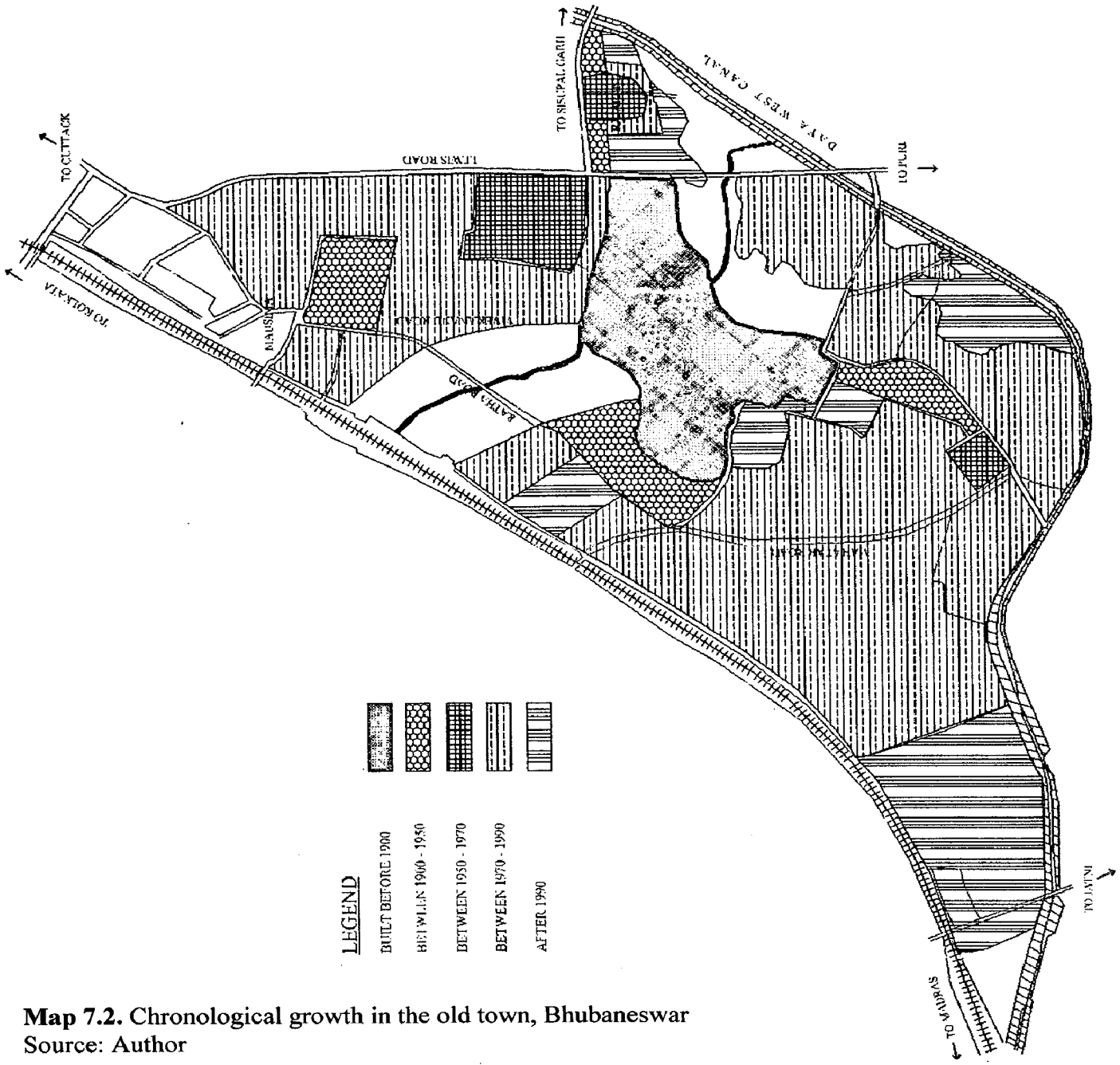
7.5.2. OBSOLESCENCE

The different kinds of obsolescence faced by an area sometimes provide good opportunities for regeneration efforts, and sometimes this is a limitation against it. By observing the different characteristics of the old town, Bhubaneswar in the present scenario, we will see that it suffers from physical, functional, locational, image and official/legal obsolescence.

7.5.2.1. Physical Obsolescence

The old town has a recorded history of over 2500 years. The Lingaraj temple complex and the Bindusagar tank was constructed in the 11th century B.C. Studying the chronological growth of the area, we see that the earliest developments were focused around this temple complex.

The temple administration had given nearby lands to the people who served the deity in the daily rituals. These people were known as ***Sevayats*** and ***Kalabethias***. These people started to live in separate areas, known as ***sahis,*** which were differentiated according to their occupation. So, almost all the buildings present in the central core of the old town were built before 1900.



Map 7.2. Chronological growth in the old town, Bhubaneswar
Source: Author

Most of these buildings are in a poor structural condition. Many of the houses have developed cracks as moss and small plants have grown on their walls. As a result of the physical analysis it is discovered that there are some buildings in the surveyed street having physical/structural deterioration, which leads obsolescence and is of course a threat.

Fig.7.26. Small plants have grown on the roof of old structures
Source: Author

7.5.2.2. Functional Obsolescence

Although not large in numbers, the availability of dwellings with inferior quality sanitary conditions in the central core, is a clear indicator of this kind of obsolescence. Besides inadequacy of central heating, air conditioning, natural lighting and ventilation, inadequate parking facilities and attributes of the organic street pattern with narrow organization create unfavourable conditions and strengthen the functional obsolescence. As a result of the mentioned attributes above, the surveyed street as a general perception can be determined as having a high level of obsolescence, which shows a clear weakness.

Fig.7.27. A view of the narrow residential streets of the core area
Source: Author

7.5.2.3. Locational Obsolescence

Analysing the old town, Bhubaneswar from this point of view, it can be observed that the locational obsolescence has not yet reached a critical level, which surely presents a considerable opportunity. However, there are some buildings which have become obsolete for the activities for which they are constructed and are left vacant. For better understanding of locational obsolescence, changes in ownership pattern, changes in social composition, vacancy rates, land and property values, rate of rents, incompatible uses, and type and amount of new development have been identified through site and questionnaire surveys.

1. **Ownership pattern:**

A high rate of owner occupation of the dwellings in historic areas is an indication of the level of attraction of the area. Considering the old town from this perspective, the questionnaire survey reveals that the ownership pattern within last 5 decades have decreased from 75% to 52%. The change in owner occupation clearly reflects that the attractiveness of this area is gradually decreasing. Some people are leaving this area for better job prospects and some are shifting to the newly developed housing areas by giving their paternal house to rent in order to avail better infrastructure facility.

2. Changes in Social Composition:

Literature survey reveals that in historic areas that suffer from this kind of obsolescence, well-to-do residents leave the area and move out to suburbs. Houses that are left by these people remain either vacant or are occupied by families of low status. This process of change can clearly be seen in the case of the old town area, but not at a level of emergency.

i. Analysing the secondary data available, it is observed that the new comers are from middle classes who come to stay in this area because of low rents of houses
ii. There are immigrant families or workers from Lalitgiri area of Cuttack district and Ganjam district in search of a new existence. The skilled artisans from Cuttack have shifted to Bhubaneswar and opened their workshops to cater to domestic market at local as well as national level. They have established their workshops in the vicinity of Bhubaneswar for easy access to traders/showroom dealers. On the other hand, labour class families have migrated from Ganjam district to this area in search of job opportunities and settled down in the slums at the periphery of the old town.

3. Level of Rents:

Rental rates are relatively lower in the old town when compared with the rest of the city, which is a main cause of influx of working class people to this area. The main cause of low rental rate in this area may be the poor infrastructure facility of the houses.

It is observed that 20% of the tenant households are paying monthly rent below Rs.1,000 and about 50% are paying between RS.1,OOO to 2,000 and 28.79% of tenant households pays monthly rent above- Rs 2.000. Higher rent is mainly charged in apartments or big plotted development outside the core temple area.

From household surveys it is found that the percentage of tenants in 1998 was 33% and now it has been increased to 48%. It shows that the area started to become a pole of attraction for a different segment of population than before. The new inhabitants may not have cultural linkage or attachment to the area, which should be considered as a serious threat to this historic area. If this trend continues, the new inhabitants would contribute to further deterioration of the housing stock, since the vast majority of houses are old and in poor condition and need much more and expensive maintenance.

4. Vacancy rates

In the old core area, some of the buildings that are identified as being in "very poor" structural condition are vacant. This can be considered both as threat and an opportunity.

Threat – As it reveals the declining attractiveness of the area.

Opportunity – Because it may ease appropriate utilization of the vacant buildings according to revitalization process.

Fig.7.28. Buildings that are in a very poor structural condition are left vacant.
Source: Author

5. Land and property values

In case of old city of Bhubaneswar, land and property values are far less than the other areas of the town. The Government rate as per G.A. department order no. 4797/CA 01.05.98, the property value of old town was Rs. 103 per sqft (Rs. 1112 per sqm.). Now this rate has been increased to about Rs. **500 per sqft** (Rs. 5382 per sqm.) but it is very very less than the land value of the main capital city area i.e. Rs. 1500 – 2000 per sq ft (Rs 16000 – 21500 per sqm). The main cause behind this is the congested organic development pattern, narrow roads and lack of good infrastructure facilities in the old city.

The low land and property values can be considered as a disadvantage or threat for historic old buildings. However, it might be also an opportunity for conservation efforts.

6. Type and Amount of New Development

The rate of new developments in historic areas is considered as an indicator of their ability to induce private investment. If the areas suffer from locational as well as image obsolescence, it can be expected that neither the private investors will have interest in these areas nor will the owners take action to enhance their buildings. Considering, the old town from this perspective, new developments have taken place in the outer areas of the central core.

It is seen that new residential colonies have been created towards the North and South-West of the old city. This is considered as strength, as these areas are attractive places for private investors. In other hand, since not much new developments are seen in the old core area, it is also an opportunity because lack of interest in terms of investment has served as protection for existing buildings/monuments.

Fig.7.29. New developments in the study area
Source: Author

7.5.3. DEVELOPMENT DYNAMICS

There is a mutual relationship between obsolescence and the dynamics of a place. Depending on the characteristics and other qualities of the area, development dynamics may sometimes act as a threat or weakness and sometimes as an opportunity. Most of the indicators of obsolescence reflect whether there is high, static, or declining development dynamics in an area. Since different development dynamics prevail in the different parts of the old city, so it is studied in detail in terms of separate subzones.

7.5.3.1. New Residential areas including institutional areas towards the North

Developed by the State Housing Board during 1982-83, this area consists of comparatively newly developed housing stock with better infrastructure facility and good road conditions. This sub-zone has high land and property values in comparison to the other zones. So from the point of interest in terms of investment, it shows a high state of development – an opportunity.

7.5.3.2. The Central Area and its near vicinity

This area occupies the largest area of the old town. This area shows high vacancy rates, high proportion of poor buildings, lowest property values and rents, congested roads, absence of development, unstable population, and low ownership rates. Although the Lingaraj temple area, the Bindusagar lake and their surrounding areas are attractive places, this portion of the old city in general is faced with physical, functional and locational obsolescence. With these characteristics, this area is in a declining state of development, which is the most unfavourable situation for a historic urban area – a threat.

7.5.3.3. Low lying/Environmentally Sensitive areas

These areas containing the largest area of open space structure have an important ecological role as they act as ground water recharge areas. Although, large scale development is found in this area, it is causing great harm to the environmental balance. So even if it shows a high state of development potential, it is considered as a threat.

7.5.3.4. Residential Zone towards the east of Lewis road including Rajarani temple complex

This zone dominated by old buildings and monuments, shows all signs of physical and functional obsolescence, leading to a static state of development, which can be considered as a weakness.

7.5.3.5. South west Residential Zone

This area earlier was the property of the Temple, which in the year 1974, was taken into Govt. possession and 2 new colonies i.e. Bhimtangi Housing Board Colony and Kapilparasad Housing Board Colony were developed. So this sub zone avails best infrastructure facility in the old town. Property values and rents are highest here within the zone. So the area is currently in high state of development – an opportunity.

7.6. MATRIX OF THE THREE CONTEXTUAL ATTRIBUTES OF OLD TOWN, BHUBANESWAR THROUGH THE APPLICATION OF SWOT ANALYSIS

Based on the framework of SWOT analysis which argues that effective strategies should be built on strengths, taking advantage of opportunities, and by overcoming or minimizing weaknesses and threats, and considering the characteristics of the study area, the sub-zones of the area will now be scanned for assessment of positive and negative aspects and the changes likely to occur for better or for worse. This will be presented in the form of a matrix, with an emphasis on the different types of values of the area, different types of obsolescence and development dynamics (Table 7.19).

7.7. CONCLUSION

Based on all the discussions regarding the values, obsolescence and development dynamics of the old town area within the framework of SWOT analysis, it can be clearly stated that the Old Town of Bhubaneswar is a historic urban core possessing a mix of assets. It consists of cultural identity value, scarcity value, resource value, aesthetic value, psychological value and environmental value; which set up the strength of the area. Any strategy can be built up on these strengths for sustainable development. The findings also indicate that 2 sub-zones within the area suffer from physical, functional and locational obsolescence to a larger extent, and the largest parts of it are in declining states of development dynamics.

The actions to be undertaken can be deduced from the four elements of SWOT that are build on strengths, eliminating weaknesses, exploiting opportunities and mitigating the effect of threats (Dealtry, 1992). Hence the given matrix will help us in determining the most relevant strategic approach for development of the study area. The next chapter deals with the proposals and final discussions for the recommended strategic approach for the regeneration of the historic core of Bhubaneswar.

Table 7.19: The Values, Obsolescence and Dynamics of Development of Old Town, Bhubaneswar

SUB ZONES → / VALUES, OBSOLESCENCE & DYNAMICS OF DEVELOPMENT ↓		New Residential areas including institutional areas towards the North	The Central Area and its near vicinity	Low lying/ Environmentally Sensitive areas	Residential Zone towards the east of Lewis road including Raiarani temple complex	South west Residential Zone
VALUES	Cultural identity	HIGH (S)				
	Scarcity	MODERATE TO HIGH	HIGH (S)	LOW (W)	HIGH (S)	MODERATE
	Resource	HIGH (S)				
	Aesthetic	HIGH (S)		MODERATE	HIGH (S)	
	Psychological	HIGH (S)				
	Environmental	HIGH (S)				
PHYSICAL OBSOLESCENCE (Structural Condition)		30% of the buildings are in poor condition (S)	70% of the buildings are in poor condition (T)	50% of the buildings are in excellent condition	50% of the buildings are in good condition	30% of the buildings are in poor condition (S)
FUNCTIONAL OBSOLESCENCE (Mismatch between fabric and use)		MODERATE	HIGH (W)	MODERATE	HIGH (W)	LOW
LOCATIONAL OBSOLESCENCE	Ownership Pattern	Changes in owner occupied houses- decreased from 75% to 50% in last 5 decades (T)				
	Changes in Social Composition	The new comers are from lower middle class families (T) They are immigrant families or workers among which many are skilled artisans (O)				
	Rate of Rents	MODERATE	LOWEST (W) (O)	LOWEST (W)	MODERATE	LOW TO MODERATE
	Vacancy Rates	NONE (S)	MODERATE (T) (O)	NONE (S)	LOW (W) (O)	LOW(W) (O)
	Land and Property Values	HIGHEST	LOWEST	MODERATE	MODERATE	HIGHEST
	New Development (Maintenance)	A FEW (O)	ALMOST NONE (O)	HIGH (T)	NOT APPARENT (T)	MODERATE (S)
DYNAMICS OF THE PLACE		HIGH (O)	DECLINING (T)	HIGH (T)	STATIC (W)	HIGH (O)

Source: Author

CHAPTER 8

RECOMMENDATIONS & CONCLUSIONS

8.1. INTRODUCTION

On the basis of problem study as in Chapter 5 under the heading of "Problem Analysis of The Study Area", it has been clearly marked that in all a total of six aspects have been dealt and accordingly the sub zones have been critically viewed in the same perception. The following are the broad recommendation areas/aspects:

1. **Tourism**: Under this heading, the problems like lack of lodging and boarding facilities for the tourists, lack of tourist infrastructure and also overcrowding and congestion near the vicinity of the major tourist places have been covered.
2. **Environment**: Under this heading, problems like water pollution, air pollution and gradual deterioration of the built/visual environment have been dealt with.
3. **Housing**: This aspect deals with the height regulation of the built structures and the problems of improper use of buildings, their worsening physical condition and emergence of slum and squatter settlements.
4. **Physical infrastructure**: Under this heading, problems pertaining to the various infrastructure facilities like water supply, sewerage, drainage and solid waste management have been covered.
5. **Traffic and Transportation**: This aspect covers the problems of parking facility, congestion and encroachment along roads, condition of major roads and narrow lanes leading to the housing colonies etc.
6. **Socio-economic Condition**: Upgrading the economic activities along with provision of adequate health and educational facilities and overall improvement of the quality of life of the people are the major areas which are to be looked into.

8.2. GOALS FOR OLD TOWN, BHUBANESWAR

1. Establish Old town as a unique signature location for pilgrims and tourists; highlight temple complexes and heritage lakes and ponds
2. Make downtown a gathering place, a place where people meet, celebrate, participate in community activities, and enjoy the religious activities.
3. Increase the variety and volume of use of built structures to increase presence during typical non-business hours.
4. Increase the walkability of downtown.
5. Develop the old town low lying/marshy areas as a feature for old town residents and potential residents and visitors.

6. Encourage reinvestment and restoration of old town residential neighborhoods/sahis.
7. Grow and diversify the tax base of Old town by redeveloping under-utilized properties; create business momentum that will encourage additional private sector investment and job creation.

8.3. RECOMMENDATIONS ON TOURISM

8.3.1. Broad Policy Framework

1. A proper tourism circuit with properly located parking spaces for tourist buses and taxis should be made, which would connect all the major places of tourist importance. This would assist the tourists to cover all the major historical places and temples without any confusion and difficulty.
2. Some of the central portions within the area should be pedestrianized and in some areas limited vehicular access (no heavy vehicles) should be there in order to get rid of overcrowding and congestion.
3. Encroachment along footpaths and at the near vicinity of major heritage areas should be relocated to new planned commercial complexes.
4. The existing dharmasalas[1] should be improved with provision of good facilities and some new lodging and boarding arrangements should be made within the periphery of the study area for the convenience of the floating population.
5. Public conveyances like Sulabh sauchalaya[2], drinking water points, information kiosks, solid waste disposal bins, signage etc to be provided at appropriate locations.

8.3.2. Proposals

The detail proposals and the department/agency dealing with each of them are presented in the Table 8.1.

[1] Traditional accommodations
[2] Public Toilets

Table 8.1: Proposals for Tourism Development

S. No.	Role/ Responsibility	Department/ Agency
1	Preparation of a tourist circuit showing directions, major tourist places, location of tourist conveyances and parking lots (Fig.8.1).	BDA, OTDC
2	Pedestrianization of the proposed roads around Lingaraj temple and Bindusagar.(Fig.8.2 and Fig.8.3.C)	BMC
3	Active protection and conservation of all temples especially the neglected ones (Eshno temple, Taleswar temple, Traffic Mahadev etc.), and beautification of their premises.	ASI/ State Archaelogical Dept./ State Pollution Control Board
4	Repair and cleaning of historic tanks and water bodies and Bindusagar lake side development	
5	Removal and relocation of unauthorized shops and encroachments along footpaths especially around the Lingaraj temple (Fig.8.3.B).	BMC
6	Providing proper shoe stands, toilets, dustbins, drinking water facilities and authorized shops for selling religious commodities (flowers, incense sticks, Prasad etc.) at a reasonable price in each of the temples.	OTDC, Temple Authority, BMC
7	Replacing the existing commercial establishments near the Lingaraj temple complex with craft shops, antique shops, florists' shops, food plazas and garment shops specializing in khadi and local handloom (Fig.8.3.B).	BDA, BMC
8	Providing cow traps at the junction points of pedestrian areas and vehicular roads as well as wherever needed.	BMC
9	Improvement of the existing dharmashalas	BDA
10	Construction of new hotels, dharmashalas, restaurants serving local/traditional cuisine etc. (Fig.8.3.A).	BDA, OTDC, Private Partnership
11	Development of rock sculpture theme park, food court, open air dance and music pavilion (where both classical and folk dance and music programmes, ***pala, daskathia***, puppet show etc can be performed during the weekends and on special occasions in the evening keeping the temple as a backdrop) at the proposed location to the opposite side of Rajarani temple (Fig 8.5).	BMC, OTDC

S. No.	Role/ Responsibility	Department/ Agency
12	Adaptive reuse of vacant buildings: converting them into museums on evolution of Orissan temple architecture, Odissi dance and classical music schools, Art and culture based training and research institutes etc.	BDA, NGO's, Private Partnership
13	Meditation and spiritual centres and five star hotels etc as part of Daya riverfront development (Fig.8.1.)	OTDC, Private Partnership

Source: Author

8.3.3. Plan Implementation

Refer Fig.8.2.

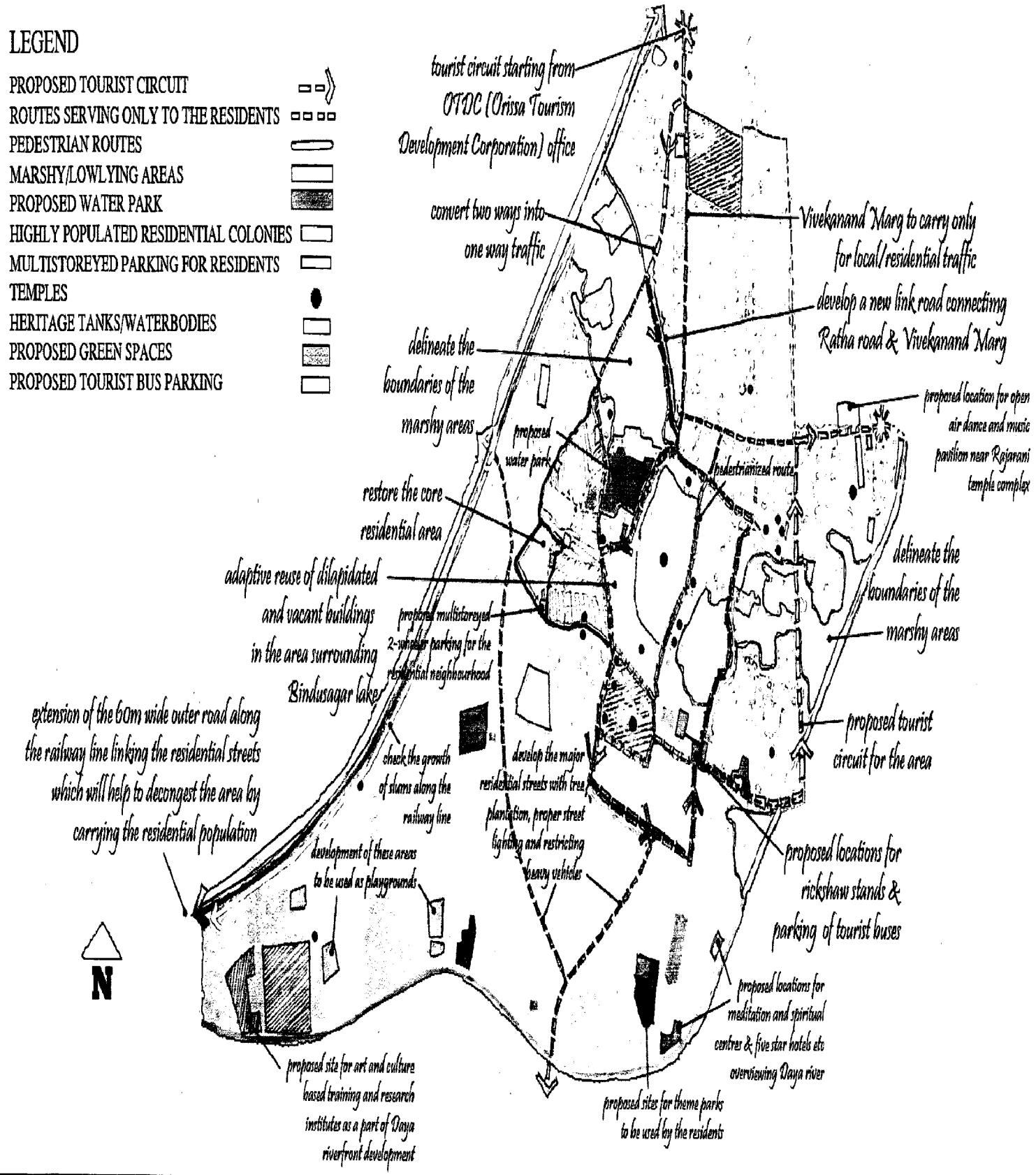
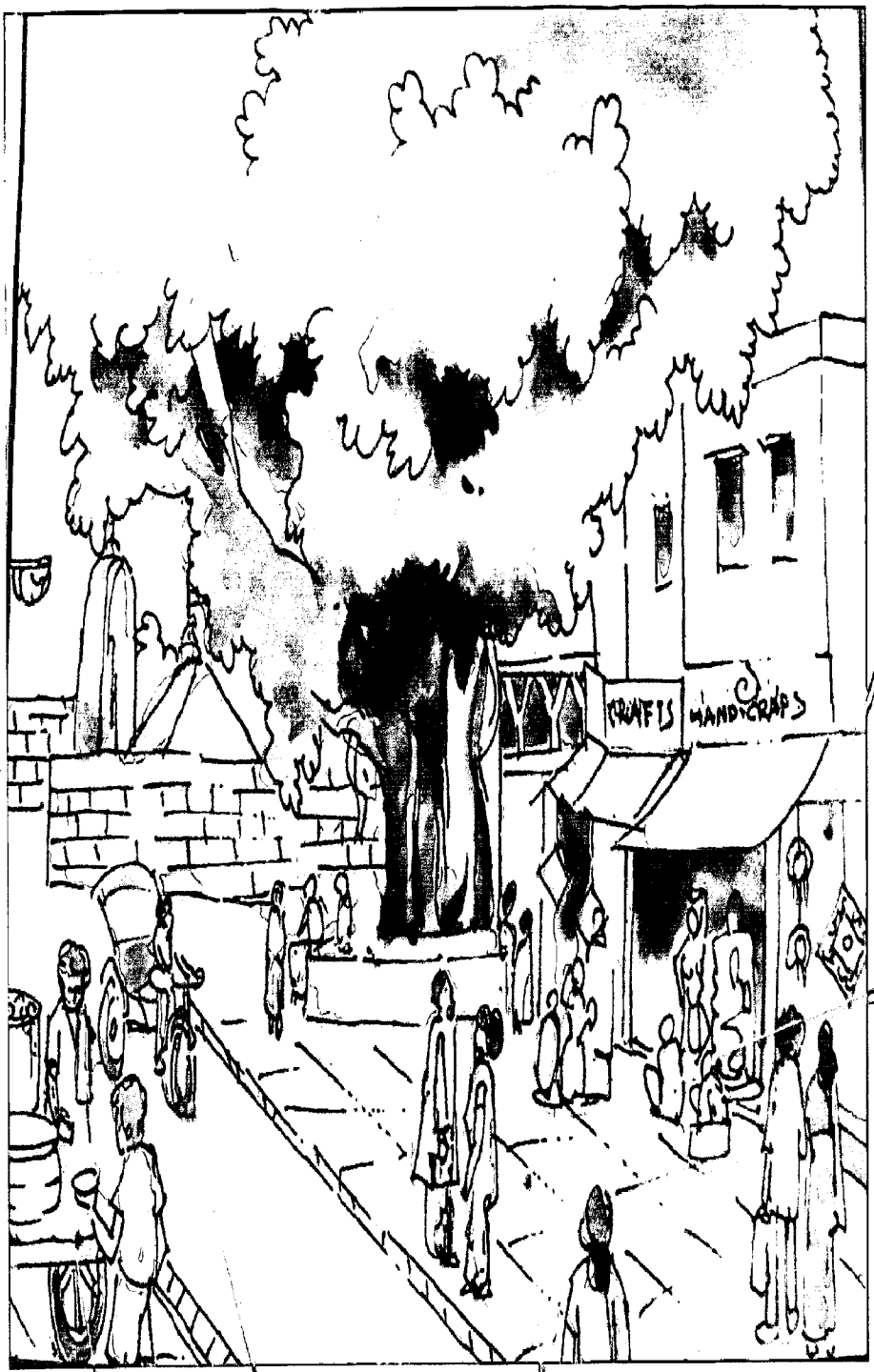
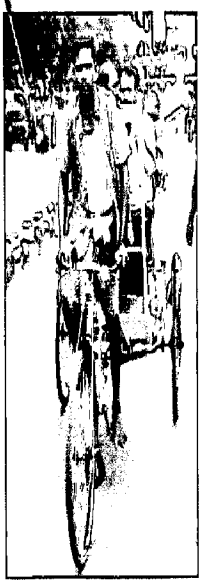


Fig. 8.1 : Proposal Map for Regeneration of Old Town, Bhubaneswar
Source: Author [Drawn by Ms. Suparna S. Das for MURP Dissertaion]





The area near tha Lingaraj temple can be turned into an enjoyable place by replacing the existing commercial establishments with craft shops, antique shops, florists' shops, food plazas and garment shops specializing in khadi and local handloom.

At the other side of the road a specific arae can be alloted to the food vendors.

Only cycle rickshaws can be allowed to carry the tourists/pilgrims from one end of the Bindusagar lake to another.

Fig.8.4 : Proposal for development of the area near Lingaraj temple in Old Town, Bhubaneswar
Source: Author [Drawn by Ms. Suparna S. Das for MURP Dissertaion]

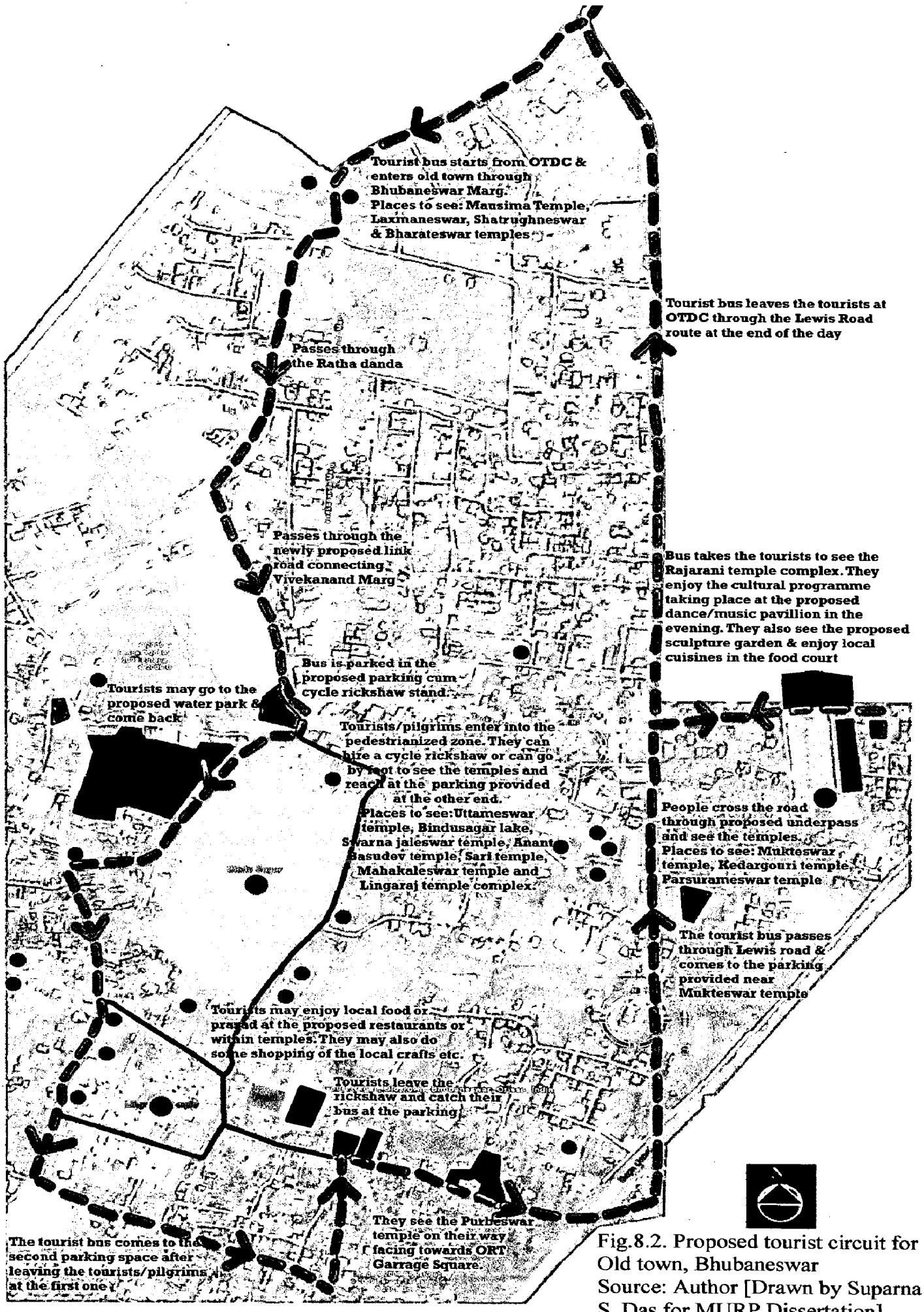


Fig.8.2. Proposed tourist circuit for Old town, Bhubaneswar
Source: Author [Drawn by Suparna S. Das for MURP Dissertation]

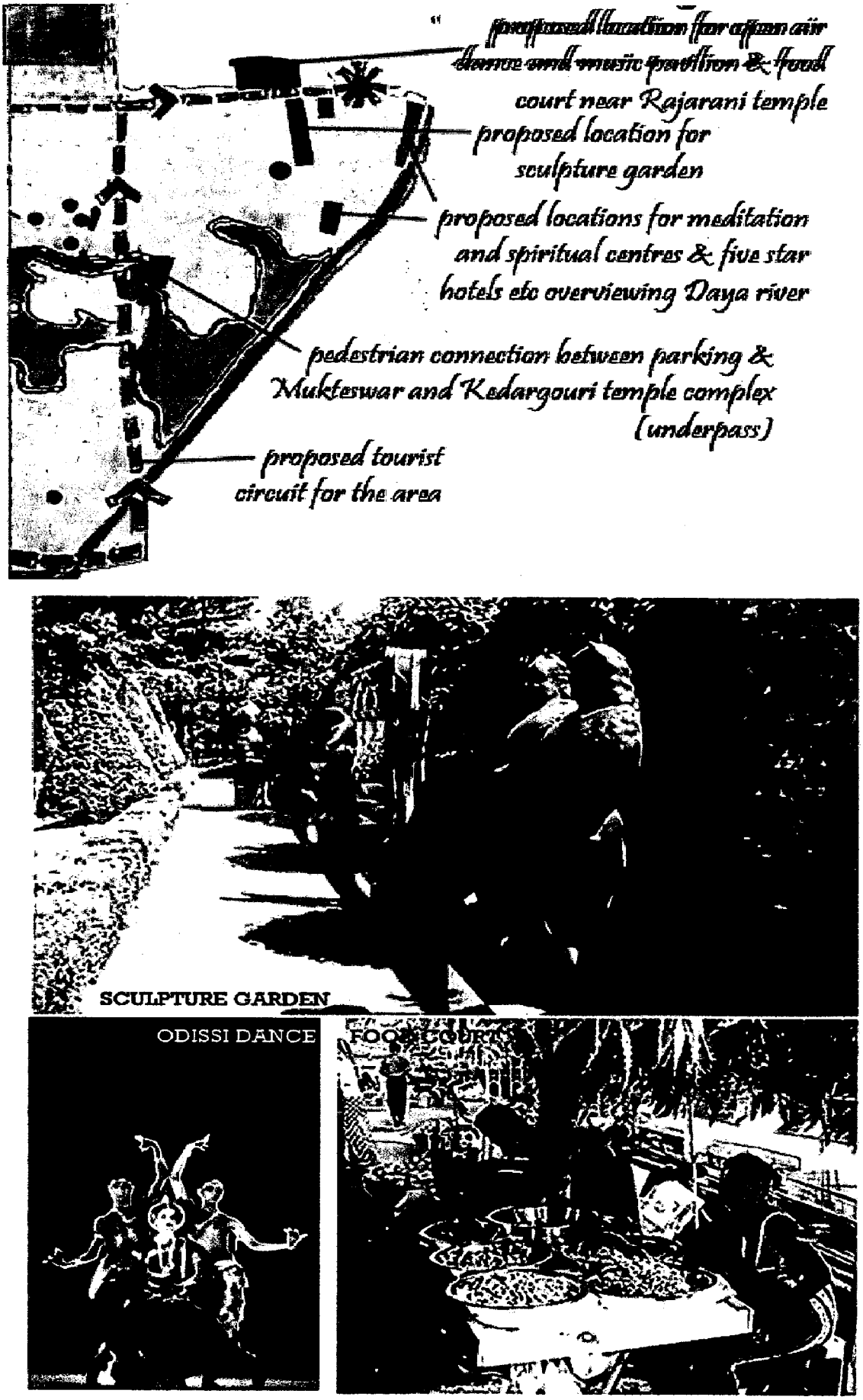


Fig.8.5. Proposed development measures near Rajarani temple complex
Source: Author [Drawn & compiled by Suparna S. Das for MURP Dissertation]

8.4. RECOMMENDATIONS ON ENVIRONMENT

8.4.1. Broad Policy Framework:

1. Ground water recharge areas should be declared as protected. There is a need to clearly delineate the edges of ground water recharge areas and check the growth of encroachments.
2. Specific proposals for repair and cleaning of historic tanks and water bodies should be formulated and implemented.
3. Encroachments and unauthorized building activity in the entire zone in general and along approach roads to the temple and inside core area in particular should be stopped immediately.
4. Enhancement of the visual corridors by a comprehensive urban design study is very necessary.
5. The unregulated building activity in the form of multistoried buildings must be freezed/ stopped immediately and any major development proposals should be examined by an architectural/heritage control committee before getting approval.
6. Overall landscape/area development plan of the core area to be prepared and implemented on the basis of detailed conservation and urban design study.
7. Solid waste collection process should be expedited in the whole area.

8.4.2. Proposals

The detail proposals for improving the environment and the department/agency dealing with each of them are presented in the Table 8.2.

Table 8.2: Proposals for Improving the Environment

S. No.	Role/ Responsibility	Department/ Agency
1	Delineate the boundaries of the low lying/marshy areas and check the growth of encroachments upon it (Fig.8.1)	BDA
2	Immediately freezing unregulated building activity in the form of multistoried buildings and putting some height restrictions on the new constructions within the area.	
2	Developing the water park at the proposed location within the low lying area after required clearance and delineation (Fig.8.6)	BMC

S. No.	Role/ Responsibility	Department/ Agency
3	Active protection and conservation of temples and their premises. As not much space is available for separate parks, green space within the temple premises can be used by the people to spend their leisure time.	ASI/ State Archaelogical Dept./ State Pollution Control Board
4	Security against theft from temple premises	
5	Repair and cleaning of historic tanks and water bodies.	
6	Construction of separate wells at the corner of heritage tanks for presenting flowers and other offerings during religious functions/ rituals.	
7	Placing garbage bins near tanks and in temple premises for disposal of materials concerned with religious rights.	
8	Removal and relocation of unauthorized shops and encroachments along the footpaths especially around the Lingaraj temple complex (Fig.8.3)	BMC
9	Restricting the drainage water to enter into the ponds and tanks	
10	Plantation of trees along wider roads and major water bodies of the study area.	BMC/PHED
11	Upgradation of the existing parks and playgrounds	BMC
12	Development of a theme park & music pavilion opposite to Rajarani temple complex (Ref. Table 8.1 and Fig.8.5)	
12	Placing garbage bins at regular intervals near tourist places and in residential colonies.	

Source: Author

8.4.3. Plan Implementation

8.4.3.1. Water Park within the Marshy Area

Construction and any other forms of disturbance can serve to degrade the wetland area. Hence, green and sustainable initiatives should be taken when developing this water park within the wetland or critical recharge area which can ensure that its features are preserved and remain fully functional. It will give the area the following benefits.

1. Provide spaces for social interaction
2. Provide opportunities for passive experiences with nature

3. The existing vegetation on the site should be protected and properly managed through natural landscaping.

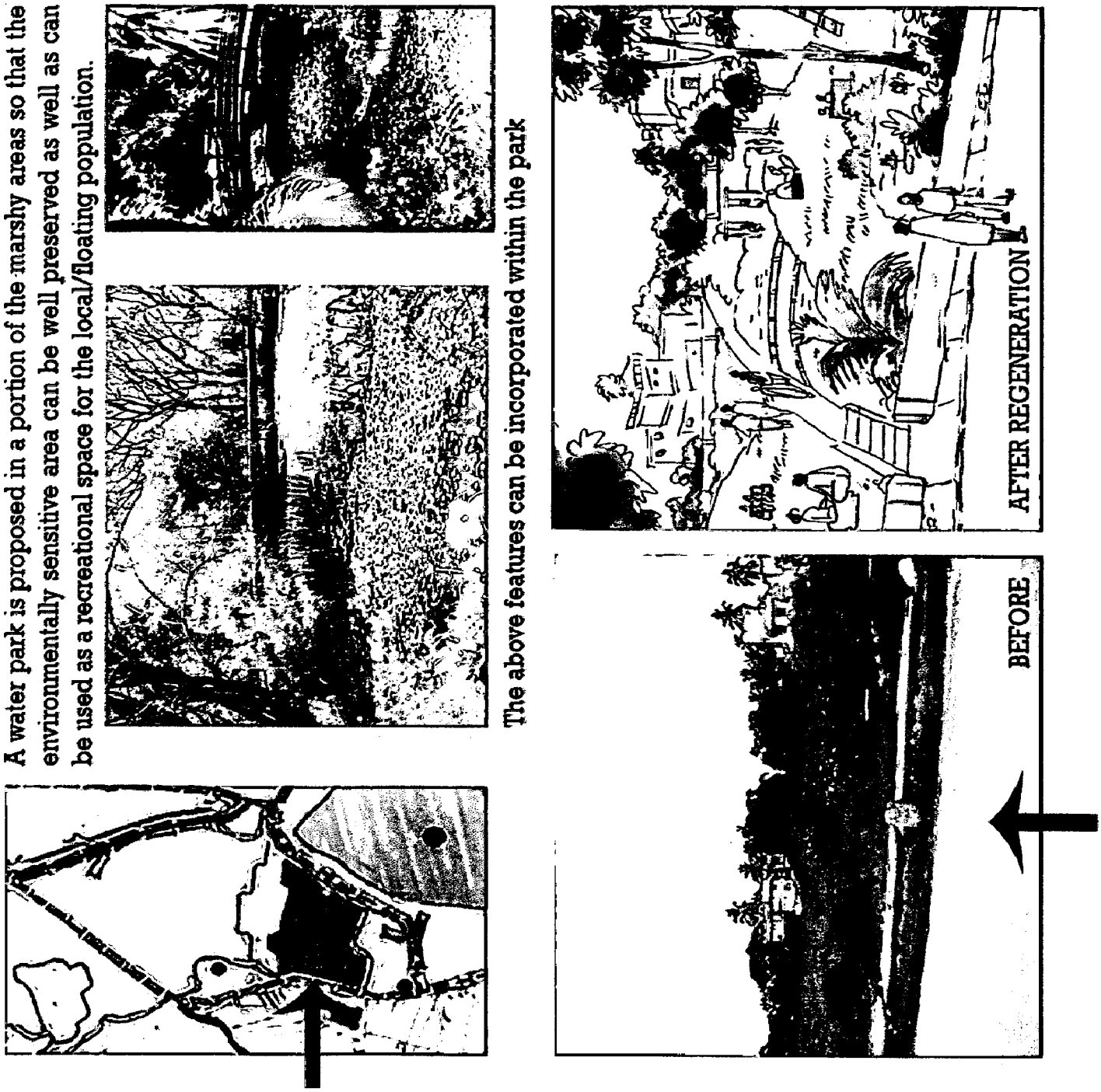


Fig.8.6. Proposed development measures for the low-lying/ marshy areas in Old town, Bhubaneswar
Source: Author [Drawn & compiled by Suparna S. Das for MURP Dissertation]

8.5. RECOMMENDATIONS ON HOUSING

8.5.1. Broad Policy Framework

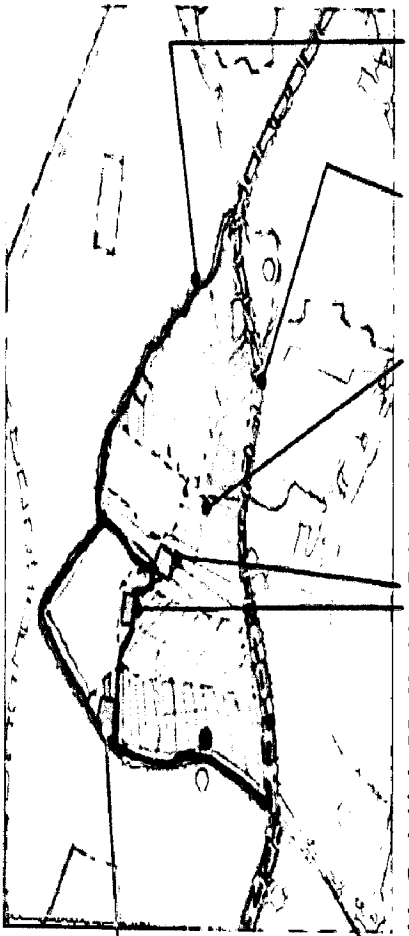
1. A comprehensive study of the core area and major roads leading to the core area must be carried out in order to impact of unregulated building activity on the overall visual character and skyline.
2. The unregulated building activity in form of multistoried buildings must be stopped immediately
3. Growth of slums should be checked immediately and a slum improvement programme should be established.
4. Proper utilization of vacant buildings.
5. A restoration programme for existing housing stock especially within the central core area must be implemented.

8.5.2. Proposals

The detail proposals for improving the housing/building activity and the department/agency dealing with each of them are presented in the Table 8.3.

Table 8.3: Proposals for Improving the Housing/ Building activity

S. No.	Role/ Responsibility	Department/ Agency
1	Immediately freezing unregulated building activity in the form of multistoried buildings and putting some height restrictions on the new constructions within the area.	BDA
2	Deciding F.A.R. of houses as per the road width for further constructions in the area	
3	Carrying out a slum upgradation and improvement programme for the existing authorized slums along Howrah-Chennai rail route and Daya West canal	BDA, BMC
4	Carrying out a rehabilitation programme for unauthorized slums through provision of G+1 or G+2 storied dwelling units with basic minimum infrastructure facilities somewhere outside the Old town area.	
5	Checking growth of building activities into the low-lying areas immediately.	BDA



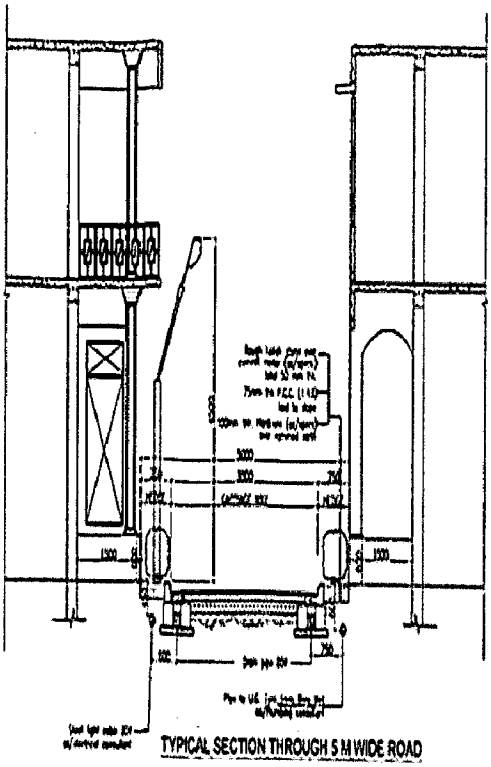
A new road can be developed at the backside of the residential area from where people can access to the multistoried parking units

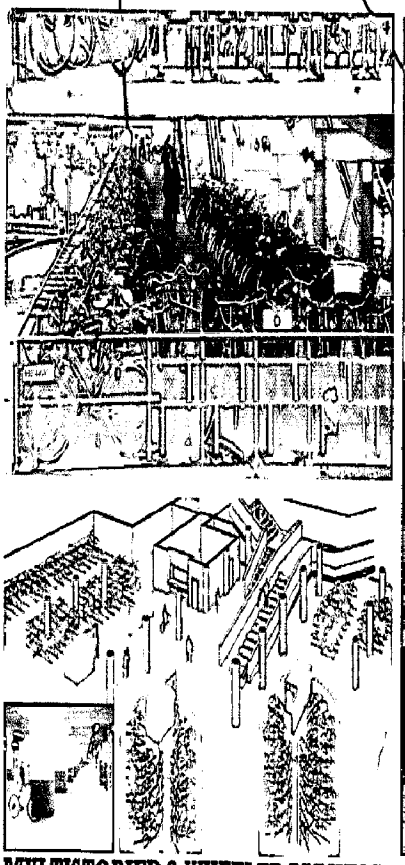
The Ratha danda can be decongested in this way as the entry into the colonies will be from the new backside road.

The narrow lanes can be completely pedestrianized with proper infrastructure, plantation and street lighting which will create a safe, enjoyable and interactive space for the residents.

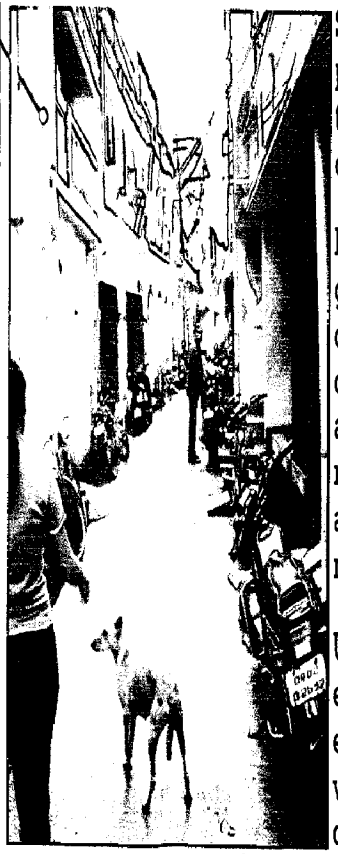
The area can be divided into 4 zones and one multistoried 2-wheeler and cycle parking will serve each of them.

Some surface parking will also provided for people who want to park for a shorter period. For this surface parking some amount can be charged after one hour so that one person can not park his vehicle for a long time there.





MULTISTORIED 2-WHEELER PARKING



BEFORE

Street light poles of a traditional design

Providing a green patch over the covered drain along the road creates a link with nature

Underground electrification enhances the visual character

AFTER REGENERATION

Providing a auspicious tulsi chaura in front of every acts as an incentive because all the families are very much religious

Complete pedestrianisation of congested roads boosts safety and interaction of the residents

Fig. 8.7 : Proposal for Regeneration of old residential colonies in Old Town, Bhubaneswar
Source: Author [Drawn by Ms. Suparna S. Das for MURP Dissertaion]

S. No.	Role/ Responsibility	Department/ Agency
6	Establishing a revitalization programme for the existing residential neighborhoods within the central core (Fig.8.7): a. Encouraging home ownership b. Pedestrianization of the narrow residential colonies c. Providing separate multistoried parking (G+2) for residents d. Providing special financial incentives to the home owners for reinvestment in improvement of their houses e. Upgrading the existing infrastructure facilities	BDA
7	Proper use of vacant buildings and adaptive reuse of old buildings into more attractive places like restaurants, coffee shops, antique shops, craft shops, museum and art & music centres. (Fig.8.3)	BDA, Private Partnership

Source: Author

8.5.3. Plan Implementation

A revitalization programme for the existing residential neighborhoods within the central core is proposed and is presented in the Fig.8.7.

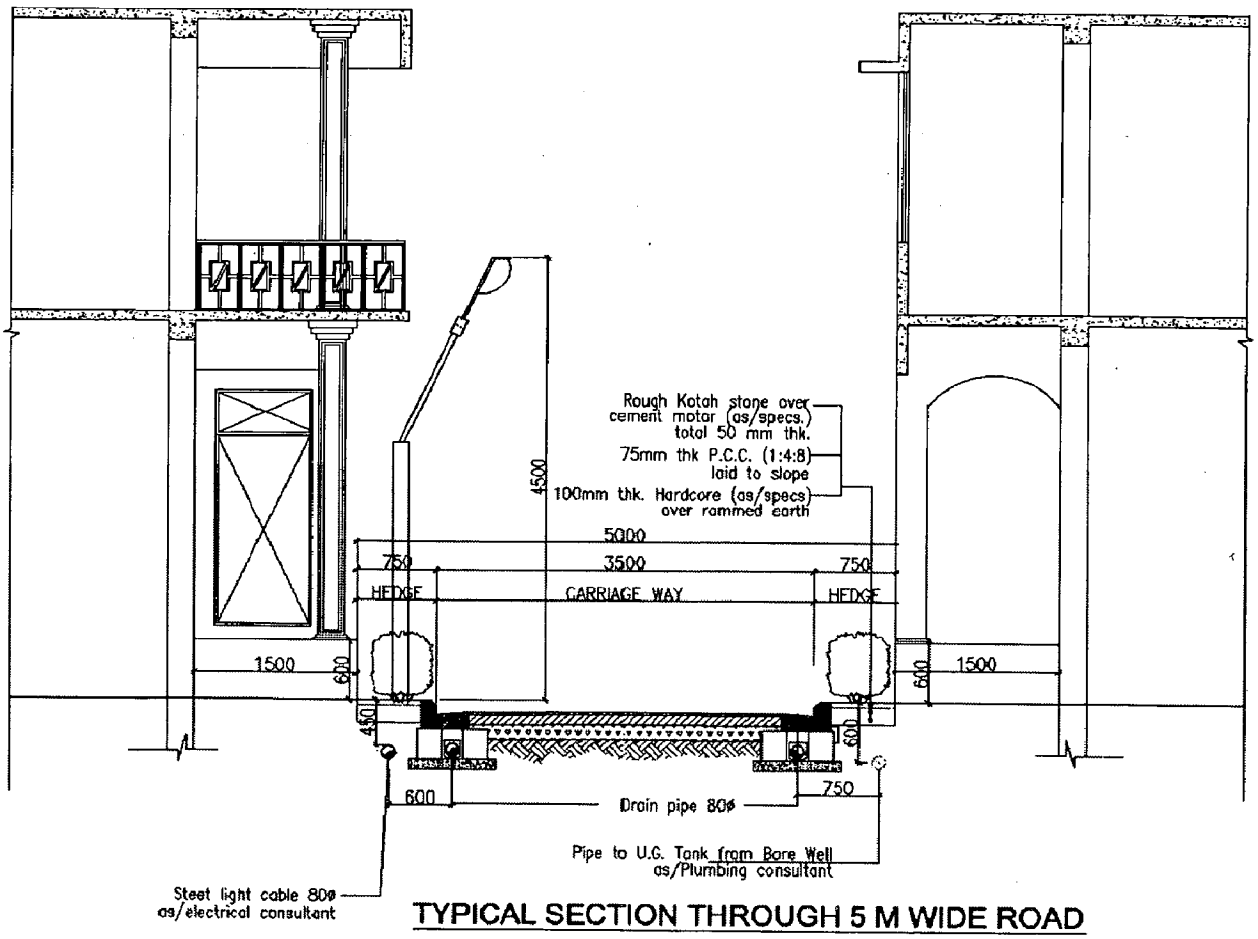


Fig.8.8. Proposed road section of the 5m wide residential streets
Source: Author [Drawn by Suparna S. Das for MURP Dissertation]

8.6. RECOMMENDATIONS ON PHYSICAL INFRASTRUCTURE

8.6.1. Broad Policy Framework

1. Augmentation and expansion of existing water supply network is required.
2. Quality of drinking water must be maintained.
3. A proper sewerage network must be established covering all the areas.
4. The proposals of the Comprehensive of Sewerage System of Bhubaneswar city made by AHEC, IIT Roorkee should be re-evaluated and Implemented (Fig.)
5. Construction of new drainage facilities and upgrades to existing drainage facilities should be designed in accordance with the recommendations given in an adopted comprehensive drainage plan.
6. Solid Waste Management programme must be encouraged.
7. Underground electrification can be experimented at some areas in order to avoid visual pollution created due to improper placing of electric poles and winding electric wires.
8. Street lighting programme should be expedited covering the entire area.
9. Basic minimum infrastructure facilities should be provided in the existing authorized slums within the study area.

8.6.2. Proposals

The detail proposals for development of physical infrastructure in the study area and the department/agency dealing with each of them are presented in the Table 8.4.

Table 8.4: Proposals for Development of Physical Infrastructure

S. No.	Role/ Responsibility	Department/ Agency
1	Supplying drinking water to the remaining areas and upgrading & repairing of the existing network.	BMC, PHED
2	Establising a proper sewerage network all over the area and taking care of the fact that the sewage should not be allowed into the roadside drains and water bodies (Fig.8.8 and Fig.8.9).	
3	Augmentation and maintenance of the drainage system in the area so that frequent waterlogging on the roads can be avoided. Locating manholes at junction points, changes in gradient, and changes in conduit size and at least every 15m.	

S. No.	Role/ Responsibility	Department/ Agency
4	Augmentation of door to door collection, source segregation of waste, containerization for collection and transportation of solid waste. Placing dustbins at regular distances near tourist places, pedestrianized roads and residential areas.	BMC, NGO's must work for creating awareness among people to segregate waste at the point of generation itself and to use dustbins.
5	Dumping of solid waste in drainage channels should be checked	
6	Laying electric transmission lines below ground at some places like residential areas where road width is less than 15' and around Bindusagar lake and near the heritage structures in order to avoid visual pollution and to create good vistas through streets (Fig.8.7)	BMC, CESCO, BDA
7	Providing proper street lighting along the streets and around Bindusagar lake (Fig.8.3.C).	
8	Provision of basic infrastructure facilities like safe drinking water, drainage, sanitation toilets (community), electricity and street lighting, garbage collection points etc. in the existing authorized slums.	BMC, BDA

Source: Author

8.6.3. Plan Implementation

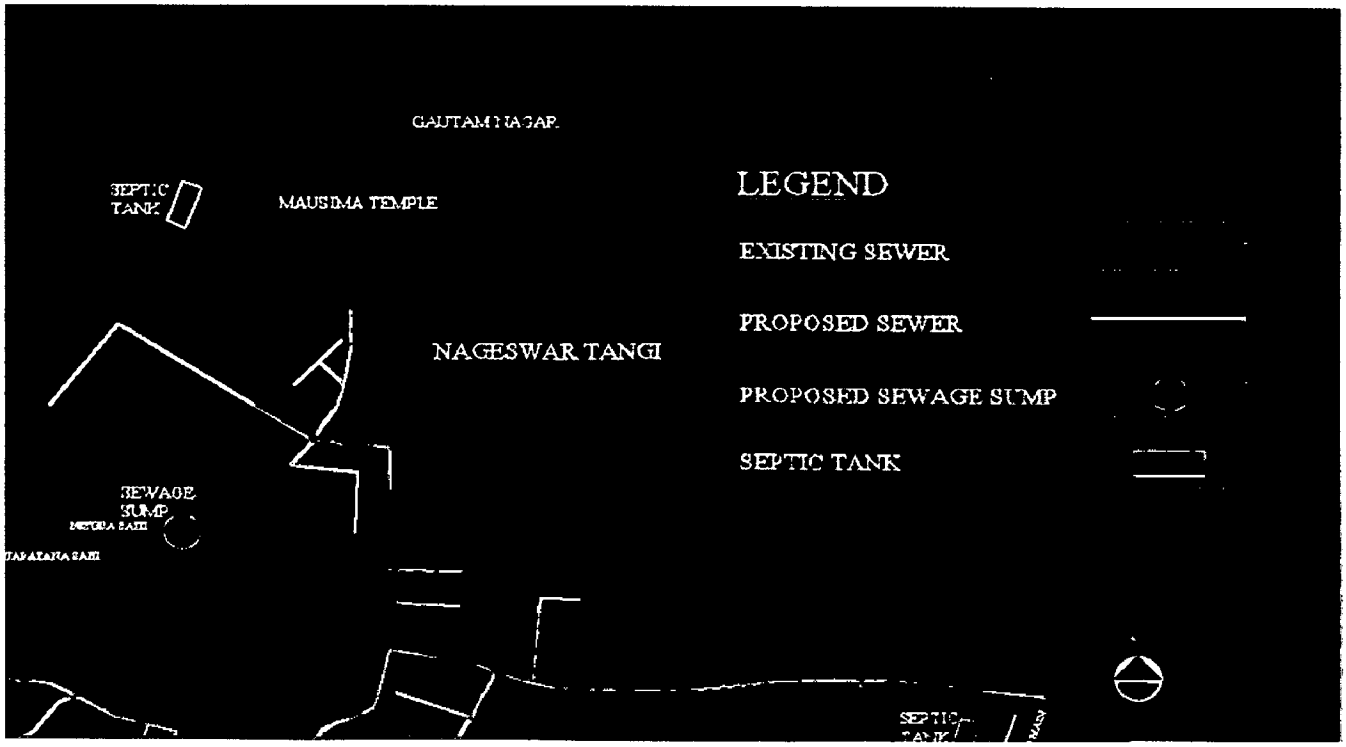


Fig.8.9. Suggested sewage network near the Nageswar Tangi area as proposed by AHEC, IITR
Source: Orissa water supply & sewerage board; Redrawn by author

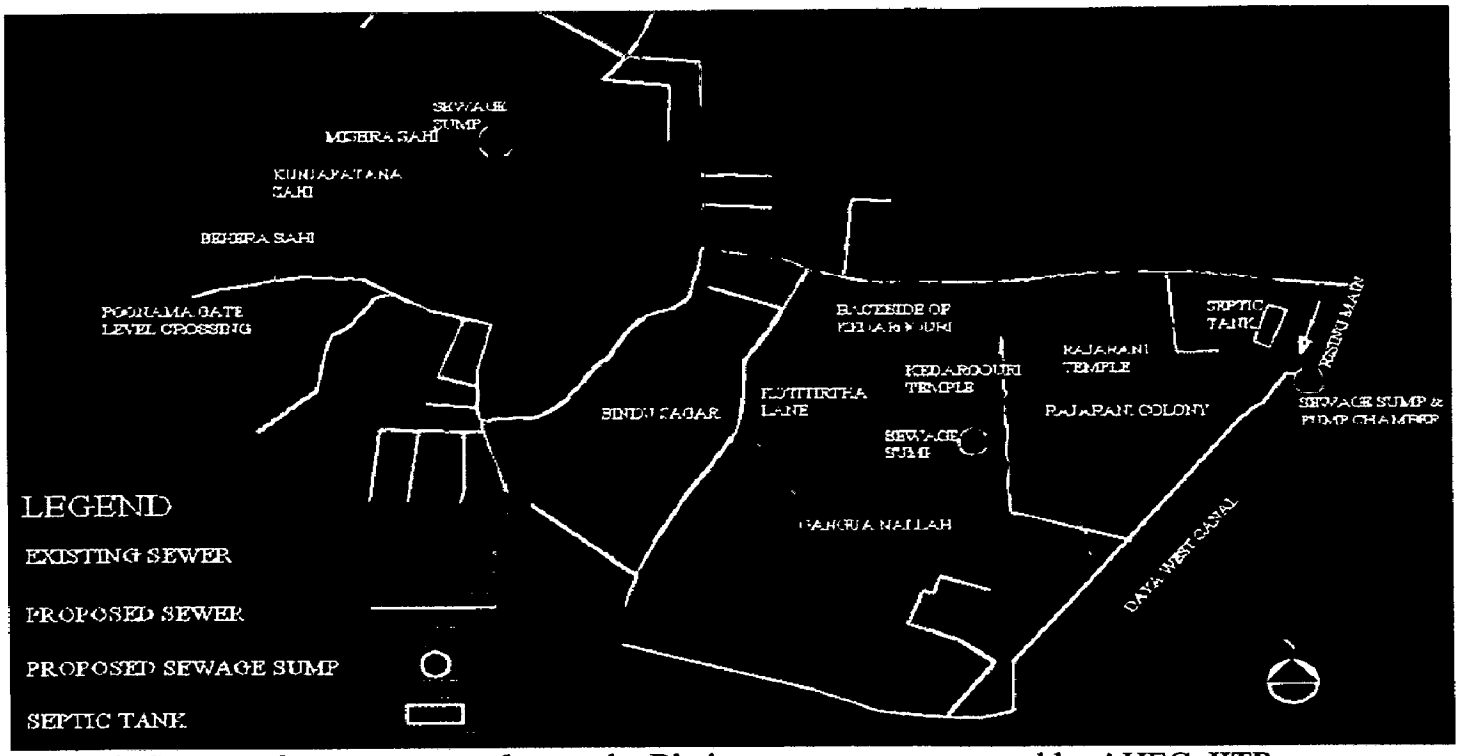


Fig.8.10. Suggested sewage network near the Bindusagar area as proposed by AHEC, IITR
Source: Orissa water supply & sewerage board; Redrawn by author

8.7. RECOMMENDATIONS ON TRAFFIC AND TRANSPORTATION

8.7.1. Broad Policy Framework

1. The overall traffic and circulation network should be rearranged so that the major temples/monuments must be easily approachable and there must not be clash between the pedestrian and vehicular traffic.
2. To create a "pleasant walking atmosphere," in the entire area around the Lingaraj temple through pedestrianization.
3. Maintenance of all the roads along with provision of proper lighting and drainage facilities should be done.
4. Appropriate road signs should be provided as they are essential from the point of view of safety and convenience of motorists.
5. Segregation of pedestrian and vehicular traffic should be done in order to reduce congestion.
6. Tourist vehicle parking facility should be developed.
7. Heavy vehicles should not be allowed into the core area during peak hours.
8. Encroachments along footpaths must be relocated and cow traps must be created at important places in order to get rid of bulls near the vicinity of the historical monuments.

8.7.2. Proposals

The detail proposals for development of traffic and transportation in the study area and the department/agency dealing with each of them are presented in the Table 8.5.

Table 8.5: Proposals for Traffic and Transportation

S. No.	Role/ Responsibility	Department/ Agency
1	Pedestrianization of the proposed roads around Lingaraj temple and Bindusagar.(Fig.8.2 and Fig.8.3.C)	BMC
2	Pedestrianization of the narrow residential colonies (Fig.8.7)	
3	Improvement and beautification of major road junctions in the area	BDA, BMC
4	Developing parking spaces for tourist buses and multistoried two-wheeler parking for residents (Fig.8.1)	
5	Improvement of road surfaces, street realignment and streetscape improvements (brick sidewalks, lighting, signage, benches, trash receptacles, intersection improvements, and underground utilities)	BMC, Public Works Dept.
6	Construction of new roads, widening of some existing roads as per the proposal (Fig.8.10)	
7	Traffic regulation and control	Traffic police

Source: Author

8.7.3. Plan Implementation

8.7.3.1. Pedestrianisation:

Stretch of road along Bindusagar and around Lingaraj temple complex to be pedestrianised (As shown in Fig.8.10). Similarly, the entire residential core in the centre will be pedestrianized (Fig.8.7). It will give the area the following benefits.

1. Create a "pleasant walking atmosphere"
2. Decrease congestion
3. Creates safer spaces
4. Walking is also healthy: for most people it is the best overall physical activity for maintaining and improving fitness and health.

At the same time, cycle rickshaws allowed to carry the tourists/pilgrims from one end of the Bindusagar to the other end near Parvati Sagar Tank. For this purpose authorized rickshaw stands are provided along with bus parking. Cycle rickshaws are least energy consuming, pollution free, highly accessible, is a cheap mode of transport, easily repairable and economic on space, hence chosen for this purpose.

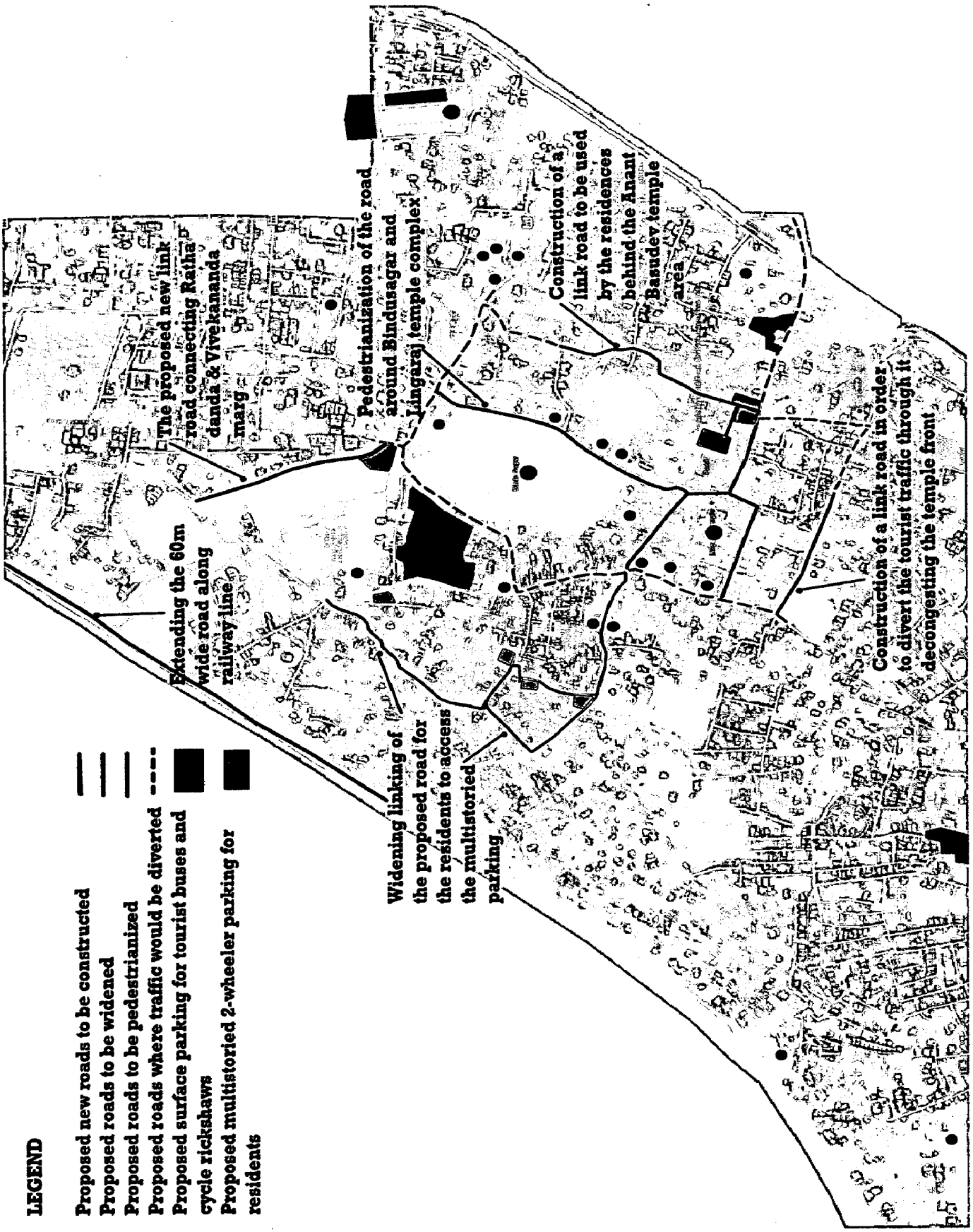


Fig.8.11. Proposed development measures for the traffic & transportation in Old town, Bhubaneswar
Source: Author [Drawn by Suparna S. Das for MURP Dissertation]

8.7.3.2. New Link Road between Rathadanda and Vivekananda Marg

It will give the area the following benefits.

1. The tourist traffic destined towards Bindusagar which currently uses Vivekananda Marg could be diverted to this new link road.
2. Vivekananda Marg will thus carry only local/residential traffic.
3. The road along the low lying area would also form a clear edge thus delineating its extents and preventing future extensions.

8.7.3.3. Extension of the outer road along railway line

The proposed 60m wide outer road will allow a constant vehicular movement outside the old town connecting various feeder streets reaching the innermost residential colonies of the area, thus decreasing congestion in the Ratha road and other major roads currently being used to access the residential areas.

8.7.3.4. Construction of other new link roads

Since the roads near Lingaraj temple complex and Bindusagar have been pedestrianized, for the households residing in those areas to access their houses, two new roads have been proposed. One is parallel to the Anant Basudev road and starts from the proposed parking area and ends at the St. Xavier High School. The other one runs parallel to the south wall of Lingaraj temple complex and starts from the side of B.M.High School playground. These roads can also be used as diversions during the special occasions when there is huge flow of pilgrims into the area.

8.7.3.5. Widening of roads behind the core residential neighbourhood

Widening of the roads located behind the core residential area which includes Kunjapatana sahi, Barik sahi, Mishra sahi, Pujapanda sahi, Mangala sahi, Behera sahi, Chemedi Bhoi sahi, Harachandi sahi etc. is proposed so that the residents can park their vehicles at the proposed multistoried parking at ease and enter to their respective streets from the back side. In this way, the Rathadanda which is currently being used for access to the residential streets will be decongested (Fig.8.7 and Fig.8.10).

8.8. RECOMMENDATIONS ON SOCIO-ECONOMIC CONDITION

1. Strongly to develop and raise the quality and efficiency of tourism, giving special priority to the development of international tourism. This automatically improves the QOL of all categories of people. With increase of tourism, there will be a faster socio-cultural and economic interaction of people of Bhubaneswar with people from outside.
2. Generate indirect employment for the local inhabitants through enhancement of tourism. The people from low income group can be engaged as labourers in all the construction works and other development measures as proposed in the regeneration process. This subsequently gives economic support to them. Similarly as it is proposed to use cycle rickshaw as a medium of transport within the pedestrian area, the poor people can be hired as rickshaw pullers, which gives them a permanent source of income.
3. Due to pedestrianisation, the local craft shops will get more attention thus increasing the sale.
4. Priority is to be given to the preservation and development of traditional arts, focusing on the preservation of historical sites and special culture. Encourage the artist group like; stone carvers, people making brass & bronze utensils and handicrafts, weavers and even classical dancers and vocalists for improving their skill so that they would not leave their age old occupation. This traditional occupation can be used as a tool for economic regeneration in the area. The Government should reward (or provide grants to) the talented people in the cultural affairs and promote artistic development projects, with valuable ideas and arts.
5. Systematic effort should be given to attract the national/international buyers for the craftsmen. Advertisement of their products through organizing national level fair, exhibitions, retailers meet etc. is very necessary to create a good market for them.
6. Improvement of recreational facilities in the area is needed, which have been mentioned in the previous sections of this chapter.
7. An economic development programme for the slum dwellers should be carried out. It is seen that majority of the slum population are self employed. Strategies must be undertaken to enhance, protect and promote their work and income and there by increasing their productivity. This may include reserving

space for street vending, developing localized markets for small traders, training and providing finance for cottage industry.

8.9. POLICY GUIDELINES FOR PRIVATE PARTICIPATION IN THE REGENERATION PROGRAMME

Active citizen participation and civic awareness is very much necessary before going for any big intervention in an area, as they will be the main users and protectors of this environment. Hence, NGO's and other private organizations can help in creating awareness among the people about the long term benefits of the regeneration programme. Prior to taking any big decision, public views should also be considered.

The regeneration programme for Old town will require a huge finance which the development authority, Municipal Corporation as well as the Govt. alone can not afford. Therefore, a definite space earmarked for specific development projects or part of a large intervention can be allotted in favour of the interested private organization for a term of 5 years. This will be a temporary allotment and can be extended further with satisfactory performance record. These private organizations will develop spaces as per the design and estimate of the public sector organizations like BDA, BMC etc.

8.10. CONCLUSION

Old town, Bhubaneswar presents a fascinating case study in urban development, where planners come across great challenges and contrasts. Its development should necessarily be in continuum to its glorious past. Although there have been numerous development efforts to deal with the inner city problems of many cities, the primary cause behind the failure of the projects is inefficient physical and functional connectivity between different organizations involved in it. Hence, the regeneration programme should be carried out with the combine effort of various departments as well as private organizations participating in the programme. At the same time, the new design proposals should not only be guided by the strict zonal regulations, but also by the existing open spaces and streets, which correlates to the existing historic patterns of the historic city.

ANNEXURE I

HOUSEHOLD SURVEY

Form No.:
Name of the surveyor:

Date:
Time:

A. General Information

1. Name of the interviewee: 2. Caste:
3. No. of persons in the household:

a. Male b. Female c. Total

4. Family Type:

a. Nuclear b. Joint c. Single d. Others

5. Period of stay in this place
a. Less than 1 year b. 1-5 years c. 5-10 years d. More than 10 years

B. Individual Information

1.

S. No.	Sex (M/F)	Relation with Head	Occupation	Place of work/education

2. Gross Household Income per month
a. Less than Rs.1000 b. Rs.1000-Rs.2000 c. Rs.2000-Rs.3500
d. Rs.3500-Rs.5000 e. Rs.5000-Rs.10000 f. Rs.10000 & above

C. Housing Information

1. Status:
a. Owned b. Tenants c. Employer Provided

2. If tenant, monthly rent Rs.:
3. If owned, a. Paternal property b. Purchased

D. Dwelling Unit Information

1. Type of unit
a. Plotted b. Flat c. Jhuggi Jhopdi

2. Area :
3. Age of Structure:

a. 0-10 years b. 10-25 years c. More than 25 years

E. Services/Infrastructure

1. Where do u get potable water from:

a. Municipal Supply b. Hand pump c. Well
d. Tube well e. Others (specify)

2. If Municipal Supply, hours of water supply/day:
3. Water supplied through Municipal Supply is sufficient? (Y/N)
4. Methods of sewage disposal

a. Sewer line b. Soak pit c. Open drain d. Manual

5. Methods used for waste disposal:

a. Pipe line b. Open drain

6. Garbage disposal system:

a. Manual garbage collection b. Garbage pits c. Open drains

F. Transport

1. No. of vehicles owned:

a. Car/Jeep/Van b. 2-Wheeler c. Bicycle d. Cycle rickshaw
e. Auto Rickshaw f. Bus/Truck g. Taxi h. Others (specify)

2. Width of the approaching road:
3. Condition of approaching road:

a. Fair b. Good c. Poor

4. Parking at home:

a. On street b. Off street

Comments if any:

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