

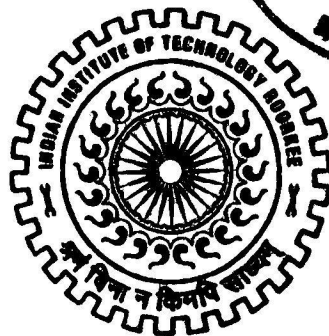
**URBAN RENEWAL STRATEGIES
FOR
CUTTACK CITY**

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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JUNE, 2009

CERTIFICATE

Certified that this report entitled “Urban Renewal Strategies for Cuttack City”, which has been submitted by **Miss Sumitra Deviprava Mallick**, 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**, Roorkee, is the student’s own work carried out by her under my supervision and guidance. The matter presented in this dissertation has not been submitted by her for the award of any other degree of this or any other institute.

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CANDIDATE'S DECLARATION

I hereby certify that the work which is being presented in this Dissertation entitled “**Urban Renewal Strategies for Cuttack City**”, 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**, 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 Dr. Nalini Singh and Dr. Ashutosh Joshi, Department of Architecture and Planning, **Indian Institute of Technology- Roorkee**, Roorkee, India.

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ABSTRACT

The need of the hour is to understand the growing problems of the inner city areas of historic cities of India. With this view it is of utmost importance to study Cuttack, one of the oldest cities of India and to have a holistic vision plan developed that would create a better living condition.

Cuttack, the Business/Commercial Capital of Orissa, also known as the "Millennium City", is the cultural centre of the state. It lies near Bhubaneswar, Puri and Konark. More than a thousand years old (formed in 989 A.D.), it was the capital of Orissa for almost nine centuries, before Bhubaneswar was made the capital city in 1948. Cuttack and Bhubaneswar are collectively known as the "twin cities" of Orissa. The 1000 years old silver city has achieved the status of multi-functional centre for administration. It is the most important regional commercial hub the entire state.

Due to its geographical location, the city has expanded horizontally to accommodate residential areas, while the C.B.D. has got restricted within the hub of the old city, covering areas like Baxi Bazar, Oriya Bazar, etc. The main problem with Cuttack is the limitation of roads. The existing ones are extremely narrow and congested, with practically, no breathing space within the city. Moreover, rapid urbanisation has created blight and serious congestion problems as increasing pressure due to migration of people to the city for employment. The old pattern is organic with narrow streets and lanes which are inadequate for the increasing vehicular traffic.

The study aims to frame urban renewal strategies for three select areas which are important as well as degraded due reasons like excessive concentration of population, old dilapidated buildings, disorganised spaces, poor condition of roads and infrastructure. The first area is in the core of the city having tremendous commercial value. The second area is the main wholesale market and warehouse near the railway station and Taladanda canal. The third area has the historic Barabati fort and some important features like Barabati Stadium, indoor Stadium, etc.

The final strategies are framed taking the above issues in to consideration and they are derived after studying the select areas carefully and the recent trends of urban renewal worldwide.

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1.1 Introduction

Urban renewal is often presented as a natural process through which the urban environment, viewed as a living entity, undergoes transformation. As the years pass, transformations take place, allowing the city to constantly rejuvenate itself in a natural and organic way.

Experts present at the first International Seminar on Urban Renewal, held in Den Haag in August 1958, agreed that the main purpose of urban renewal is to deliberately change the urban environment and to inject new vitality through planned adjustment of existing areas to respond to present and future requirements for urban living and working.

The fundamental objective of urban renewal is the application of several principles resulting in the revitalization of any or all portions of the urban structure which are not fulfilling the functions for which they were designed. Urban renewal generally applies to inner-city areas, centrally located in historical districts including non-residential as well as residential land uses.

Urban renewal may also be defined as a deliberate effort to change the urban environment through planned large scale adjustment of existing urban areas to the present and future requirements for urban living and working. It is an age old process of replacing the building, houses and facilities that have out lived their usefulness.

In other words it is a process of comprehensive redevelopment of land structure, physical and social infrastructure as well as conservation of areas and rehabilitation of local population.

Following World War II, and continuing into the early 1970s, "urban renewal" referred primarily to public efforts to revitalize aging and decaying inner cities, although some suburban communities undertook such projects as well. Including massive demolition, slum clearance, and rehabilitation, urban renewal proceeded initially from local and state legislation.

1.2 Need for Study

Cuttack is one of the oldest cities in India and the Business/Commercial Capital of Orissa. Cuttack also known as the "Millennium City", is the cultural centre of Orissa. It lies near Bhubaneswar, Puri and Konark. It is more than a thousand years old (formed in 989 A.D.), and was the capital of Orissa for almost nine centuries, before Bhubaneswar was made the capital city in 1948. Cuttack and Bhubaneswar are collectively known as the "twin cities" of Orissa.

The 1000 years old silver city has achieved the status of multi-functional centre for administration. It is the most important regional commercial hub the entire state.

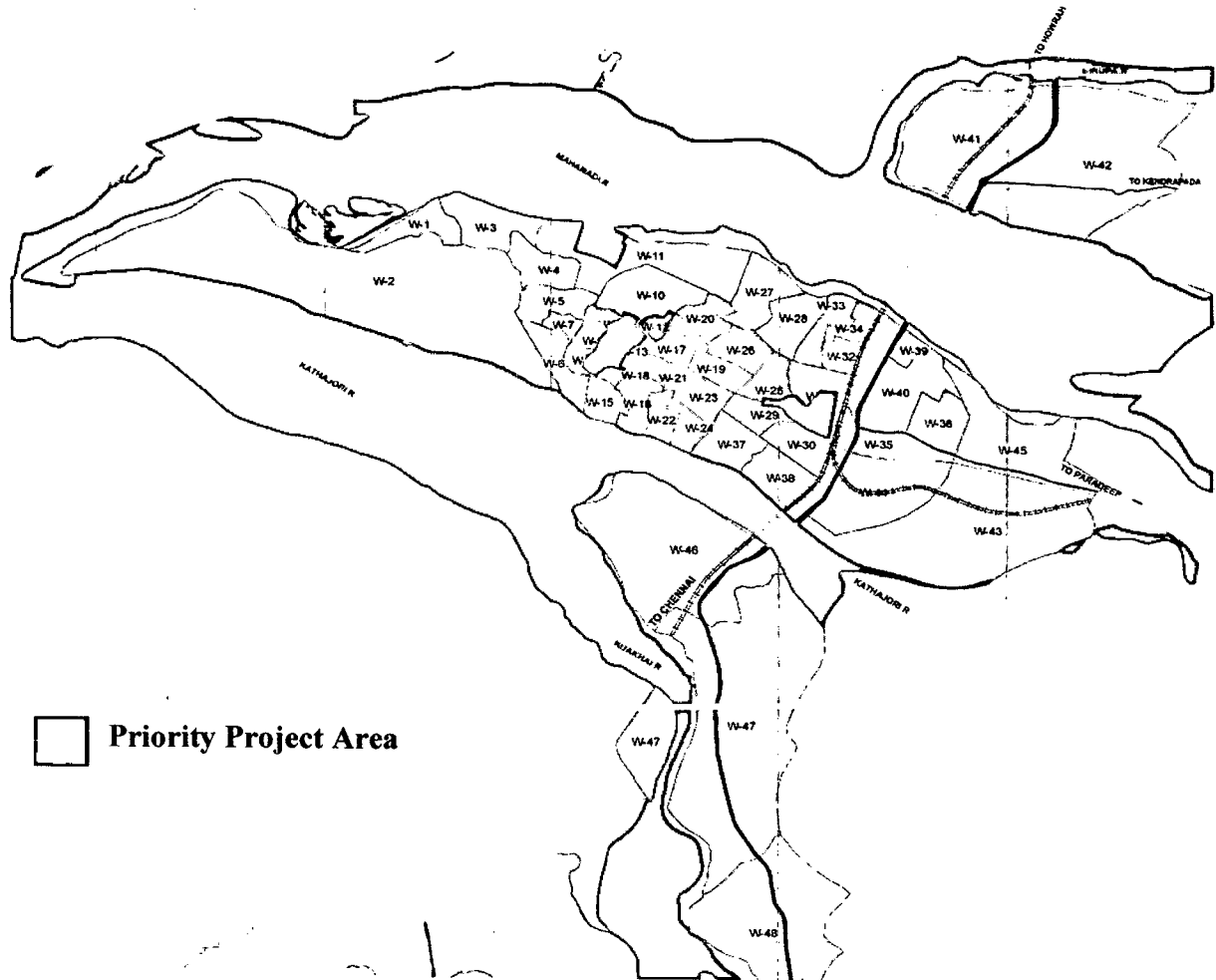
Cuttack is located between 20° 27' N to 29° 29' N latitude and 85° 50' E to 85° 52' E longitudes at the apex of the Mahanadi delta. It is bounded by river Mahanadi and its main distributory Kathajodi in North West and South and has an area of about 78.87 sq. km. the city is bounded by embankments along the river banks in three sides as a result the river beds are above the land level of the city which looks like saucer. It lies on the national highway no. 5, connecting Kolkata and Chennai. Well connected by rail, it is an important hub for most trains. The nearest airport is Biju Patnaik Airport, which is 28 km away. It also has the largest bus terminus of the state.

As of 2001 India census, Cuttack had a population of 5, 34,654 which has increased to 7,50,000 in 2007. Males constitute 53% of the population and females 47%. Cuttack has an average literacy rate of 85%, higher than the national average of 59.5%: male literacy is 89.6 % and, female literacy is 79.7%. In Cuttack, 10.79 % of the population is under 6 years of age.

Due to its geographical location, the city has expanded horizontally to accommodate residential areas, while the C.B.D. has got restricted within the hub of the old city, covering areas like Baxi Bazar, Oriya Bazar, etc. The main problem with Cuttack is the limitation of roads. The existing ones are extremely narrow and congested, with practically, no breathing space within the city. Moreover, rapid urbanisation has created blight and serious congestion problems as increasing pressure due to migration of people to the city for employment. The old pattern is organic with narrow streets and lanes which are inadequate for the increasing vehicular traffic.

After a through analysis of the problems and potentials of the city, some areas are selected as the priority project areas based on the parameters like density of population, economic activity and historical importance. The urban renewal strategies will be drafted for these selected area based on the priority basis because of their importance and urgent need for renewal.

The areas are Priority Project Area I (the area comprises of Baxibazar, Tinkonia Bagicha, Choudhry bazaar, Gaurishankar park area, Sutahat, Oriya bazaar, which is connected by a common commercial street (Jail Road). This area consists of some parts of ward no. 9,12, 13, 14, 15, 16, 17 and18.), Priority Project Area II(The Malgodown and Chartabazar area in ward no. 25, 29, 30, and 31)and Priority Project Area III(The Barabati fort area in ward no. 11).



Map 1.1: Map showing the three Priority Project Areas
 Source: Cuttack Municipal Corporation, Redrawn by Author

1.3 Aim

The aim is to frame strategies for urban renewal of Cuttack city.

1.4 Objectives

The objectives are:

1. To study the definition of urban renewal and understand the phenomenon in context of old historic cities.
2. To study various urban renewal schemes in global as well as Indian context.
3. To study the historic city of Cuttack, and to analyse and observe three priority project areas and to identify the problems and potentials of the three areas.
4. To formulate strategies for urban renewal of the city with respect to the select areas.

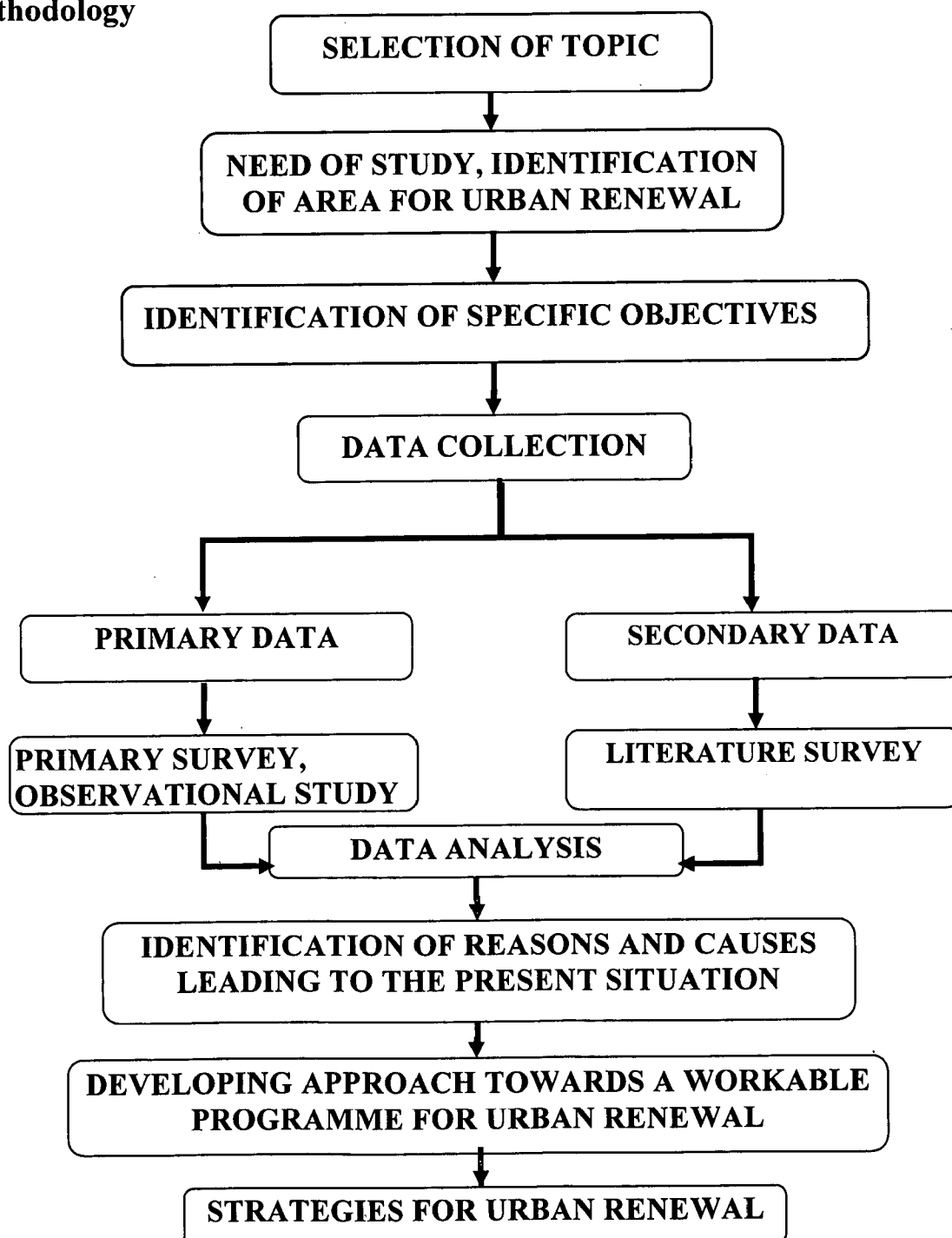
1.5 Scope

1. The study focuses on physical aspects of urban renewal like buildings, land use, social and physical infrastructure.
2. From the various aspects and techniques of urban renewal only those suited to the case city will be studied in detail.
3. The institutional framework for urban renewal will be briefly studied.

1.6 Limitation

The study will not cover the economic aspects, financial and implementation mechanism.

1.7 Methodology



2.1 Definition of Urban Renewal

It is not easy to find a satisfactory definition of urban renewal which embodies the complexity of issues involved in the process. Some of the existing theoretical and ideological disagreements about urban change are thought to come, in part, from the fact that the terms used by different scholars reflect different perceptions of the phenomenon and its significance (Palen and London, 1984). Urban literature uses, often without definition, terms such as urban regeneration, urban revitalization, gentrification, neighborhood renewal, rehabilitation, and renovation. In this discussion, the term urban renewal is used to refer to the general process of transforming the urban environment.

Experts present at the first International Seminar on Urban Renewal, held in Den Haag in August 1958, agreed that the main purpose of urban renewal is to deliberately change the urban environment and to inject new vitality through planned adjustment of existing areas to respond to present and future requirements for urban living and working (Miller, 1959). For them, the fundamental objective of urban renewal is the application of several principles resulting in the revitalization of any or all portions of the urban structure which are not fulfilling the functions for which they were designed (Miller, 1959). Urban renewal generally applies to inner-city areas, centrally located in historical districts including non-residential as well as residential land uses (Grebler, 1964).

2.2 Brief History of Renewal

Urban renewal has been operative since humans first built permanent settlements. "*Following the progress of history and the passage of time, old cities are in a constant process of metamorphosis and unavoidably have to face the necessity of continuous regeneration*" (Hou, in Conzen, 1986: 223). However, not until the late nineteenth and early twentieth centuries did relatively coordinated efforts on the part of local governments, reform groups and business interests arise whose intent was to eliminate the physical manifestations of urban decline (Holcomb and Beauregard, 1981)

The renewal of Paris by Haussmann is thought to be the first large scale urban renewal project implemented. However, the United States was among the first

countries to develop specific national programs of urban renewal (Grebler, 1964). The problem of deteriorating urban neighborhoods has been recognized in the United States since the mid-nineteenth century and over the years, major efforts have been made to counteract decay and to rejuvenate cities throughout the country (Nelson, 1988).

2.2.1 Urban Renewal in the United States

The first major urban renewal efforts in the *United States* were the *American Park movement* and the *City Beautiful movement*, both in the late *nineteenth century*, which emerged as responses to the environmental degradation brought about by the conjunction of urbanization and industrialization (Holcomb and Beauregard, 1981). Both movements placed emphasis on the transformation of urban centers through the creation of urban parks and the construction of monumental public buildings. In the 1930s, the Public Works and Public Housing programs shifted attention to the clearance of slums and blighted areas and the construction of low-income housing, in the form of multistoried apartment complexes (Nelson, 1988).

The first comprehensive move of the federal government towards urban renewal came with the Housing Act of 1949 (Colborn, 1963). Urban renewal was designed to remove slums and blighted conditions by demolishing old buildings and constructing new ones in their stead (Nelson, 1988).

According to Colborn, the 1949 Renewal Program defined urban renewal as:

"The diversified efforts by localities, with the assistance of the Federal Government, for the elimination and prevention of slums and blight, whether residential or non-residential, and the removal of the factors that create slums and blighting conditions."

The Renewal Program had three main elements: '*slum prevention through neighborhood conservation*', '*housing code enforcement and rehabilitation of structures and neighborhoods*'; and '*clearance and redevelopment of structures and neighborhoods*' (Colborn, 1963). Where as private investors were reluctant to participate because of the restrictions which oriented projects towards housing which was not at all the lucrative investment in the long run because projects took many years to complete. As a result, urban renewal still consisted mainly of slum clearance and redevelopment.

The criticisms of the Urban Renewal Program were many. Its application lead to the destruction of the homes and neighborhoods of the poor and minorities,

and to the displacement of small businesses and the demolition of inhabitable housing. Also, it directed too much investment to central business districts and not enough to positive actions in the neighborhoods and gave too little attention to social concerns (Holcomb and Beauregard, 1981).

Urban renewal soon earned the reputation of being a "*bulldozer approach*", demolishing blighted areas to make room for luxury housing (Santiago, 1975). According to Martin Anderson, the final result of the implementation of the 1949 Act was that more homes were destroyed than were actually built, and that predominantly low-rent dwelling units were demolished to be replaced by high-rent ones. In short '*housing conditions were made worse for those whose housing conditions were already bad, while they were improved for those whose housing conditions were best*' (Anderson, 1964).

The program was revised in 1954 to make profits, not the improvement of slums, the primary goal. Slums and blighted areas adjacent to existing central business districts were cleared and replaced with new land uses for a new class of people, making urban renewal more attractive to private investors (Holcomb and Beauregard, 1981). As the human, social, and economic costs of clearance were slowly recognized, program funds gradually shifted to support rehabilitation more than demolition and reconstruction (Nelson, 1988).

The 1960s brought a gradual acknowledgment that spreading suburbanization might exacerbate city problems and that improving urban conditions required more than physical renewal (Nelson, 1988). Small-scale programs were encouraged to plan more comprehensively for redevelopment (Holcomb and Beauregard, 1981). The Model Cities program, initiated in 1966, aimed at the provision of housing through physical rebuilding and paid greater attention to social renewal. Low-income residents were to be organized in order to plan for the physical, economic, and social rehabilitation of their own neighborhoods (Holcomb and Beauregard, 1981).

Urban Revitalization emerged in the 1970s as the dominant approach to urban renewal. By emphasizing neighborhood preservation and housing rehabilitation, it limited displacement and disruption of communities (Holcomb and Beauregard, 1981). Today, housing rehabilitation has become the dominant activity in urban renewal in the United States (Varady, 1986).

2.2.2 Urban Renewal in Europe

In Europe, the evolution of renewal policies followed a similar pattern. According to Leo Grebler, *'The need for the modernization of old city centers initiated during the industrial revolution came later to Europe than to the United States. As a result, European countries have often looked at the American experience as a model for urban renewal'* (Grebler, 1964).

The first example of state involvement in urban renewal was in Britain in the mid-nineteenth century to fight the unsanitary conditions in working-class neighborhoods through slum clearance (Couch, 1990). The renewal of war-damaged cities and towns all over Europe in the 1920s is considered the most extensive process of urban renewal in history, compressed into one single generation (Grebler, 1964). Until the 1950s, flats and tenements were considered as a suitable form for replacement of working class housing.

After World War II, the losses sustained during the war triggered an increased consciousness of the historic continuum embodied in the urban scene of previous eras, and growing attention was given to conservation and rehabilitation of historical towns and city sections (Grebler, 1964). As early as 1954, conservation and rehabilitation became fully accepted parts of urban renewal programs in Europe, long before it was in the United States (Grebler, 1964). By the end of the 1960s, most renewal policies began to totally discard large-scale slum clearance, and programs were reoriented towards rehabilitation and area improvement (Couch, 1990). Today, in the western world, most urban renewal actions are based on residential rehabilitation and upgrading.

2.2.3 Urban Renewal in Asia

Hong Kong and Singapore also developed elaborate renewal programs which evolved from large slum clearance schemes to inner-city renewal and redevelopment of public housing estates, under the management of public-private partnerships.

Initially, urban renewal in Hong Kong was dominated by the private sector. The first public intervention into urban renewal in Hong Kong was in 1954, with the large-scale slum clearance scheme which followed the disastrous fire in Shek Kip Mei, one of the largest and most congested squatter areas in North Kowloon, leaving some 53,000 people homeless (Castells et al. 1990). Through this first scheme, squatters were evicted from dangerous slums or sites slated for development and were resettled to public

housing estates or to temporary housing 2. Those who conducted private businesses from their home and had to vacate their shops were compensated (HKHA, 1988).

By 1972, a vast program of redevelopment of the resettlement estates built in the 1950s to re house squatters was introduced (Williams, 1979). These emergency housing blocks were either demolished to make way for the construction of new blocks or were converted into self-contained units. Modern schools and community and recreation facilities were introduced to the redeveloped estates. In 1974, a new approach, that of in situ redevelopment of dilapidated properties in old inner-city districts, was introduced. New apartments produced through the scheme were sold to families who had previously lived on the sites at discounted prices, which helped to limit social disruption (Yeh, 1990).

The private sector, motivated by the rapidly increasing land prices and building regulations which allow the replacement of low-rise buildings by high-rise developments, has been actively involved in the redevelopment of existing private sector estates (Yeh, 1990). The problem of multiple ownership of properties in Hong Kong, together with the necessity to acquire all the units in a multi-story building before it can be redeveloped, have resulted in small-scale in situ redevelopment, less profitable for private developers. Such redevelopment approach has led to the displacement of original residents to new towns, at a distance from the city center (Yeh, 1990).

In 1987, a new approach was introduced which promoted public-private partnership in carrying out comprehensive redevelopment in Hong Kong. The Land Development Corporation, an independent public body, was made responsible for carrying out redevelopment projects using resources from the private sector. The purpose was to speed up private sector redevelopment in selected areas, to encourage the participation of landowners, to improve the quality and economic benefit of development by assembling larger sites, to ensure equitable treatment of the tenants, and to minimize government subsidies (HKHA, 1988). Tenants are now rehoused in units acquired by the Corporation near the redevelopment site, and mortgages at a low interest rate are offered to the affected people to buy a new home.

In Singapore, urban renewal programs were initiated in the early 1960s, which consisted of systematic large-scale slum clearance and urban redevelopment of inner-city areas. In 1964, the Urban Renewal Program for the Central China Town was launched, with the aid of foreign consultants (Lim, 1983). In this public-private

partnership, land acquired by the state was cleared and assembled into larger sites then released on a competitive public basis to the private sector for development (Manning in Wong, 1974).

The Urban Renewal Program for the Central China Town resulted in the redevelopment of all colonial neighborhoods, which consisted mainly of two- and three-story century-old shop houses, and in the relocation of all original residents and businesses. The policy that no building can be demolished before alternative accommodations are allocated to its residents greatly reduced the trauma of resettlement. Affected households were generally rehoused in public apartments under special arrangements and were given priority on the waiting list for public housing. Businessmen were also given compensation and additional incentives to re-open businesses on the new housing estate (Siew-Eng, 1989).

Today, the central area has been completely redeveloped with shopping complexes, office towers, and apartment blocks, and the new high-rise Singapore has replaced the former colonial city. Only a few affluent colonial residential areas have been preserved. Considerable emphasis has recently been placed upon upgrading the physical environment of old inner-city neighborhoods (Castells et al., 1990).

2.2.4 Urban Renewal in Developing Countries

In developing countries, the process of urban renewal is still relatively new. Efforts are generally concentrated on solving the problems of urban slums, where from 30 to 60% of the urban population resides and which are considered the fastest growing portion of Third World cities (Hardoy & Satterthwaite in CHF, 1990). Before the 1980s, the main approach to urban renewal in developing countries was in the form of squatter eradication and relocation of the population to low-cost housing projects (Laquian, 1984).

In the late 1970s, a series of unconventional strategies, such as slum and squatter upgrading and sites and services, began to replace the previous clearance policies (Schmit-Kallert, 1990). Most governments started to acknowledge the socio-economic impacts of slum demolition, while substandard housing, including squatter shanties, was recognized as part of the housing stock. Community upgrading appeared as a way of improving living conditions in informal settlements (Laquian, 1984).

By the 1980s, many developing countries adopted an official policy of slum upgrading, realizing the potential for existing squatter settlements to be viable urban communities (Van Nostrand, 1982) (Faerstein, 1989). Basic services were

introduced on the sites and house improvement works were undertaken by the residents themselves (Laquian, 1984). Settlements were upgraded by improving the infrastructure and legalizing land tenure (Faerstein, 1989). Today, upgrading remains the most sensible approach to resolving the problems of informal settlements in Third World cities, although clearance is still commonly used.

In summary, it can be observed that, both in developing and developed countries, the evolution of policies regarding urban renewal followed a similar pattern, gradually evolving from a demolition and reconstruction approach to a softer, more socially-oriented approach, which concentrates on the renovation of existing structures. The following section summarizes the possible approaches to urban renewal in residential areas, based on this brief review of urban renewal policies around the world.

2.3 Main Approaches To Renewal

At the first International Seminar on Urban Renewal, in August 1958, the three principles of urban renewal were identified as '*redevelopment*'-consisting of demolition and reconstruction; '*rehabilitation*'- improvement of the original structures, and '*conservation*'- preservation of historical monuments. (Miller, 1959). According to Claude H. Boistière, of the French Ministry of Reconstruction and Housing, different approaches to urban renewal are identified as '*rehabilitation*', '*complete demolition*' and '*rebuilding*', and a combination of both. (Boistière in Miller, 1959).

These approaches to urban renewal correspond to those identified by Colborn in 1963. For him, urban renewal projects could be implemented in three different ways: first, they could involve acquiring and clearing a slum or blighted area and disposing of the land for redevelopment in accordance with planned uses; second, they could consist in the rehabilitation and conservation of structures in such an area by property owners, accompanied by improvement of community facilities by the local government; and, third, they could follow any combination of both. The possible approaches to neighborhood regeneration can therefore be identified as: redevelopment, wherein a neighborhood is rebuilt anew; rehabilitation, wherein the existing structures are preserved and upgraded; and integration, a combination of the first two approaches. Each approach can involve the rehousing of the population on the original site or its relocation to another part of the city. The three different approaches are presented here in more detail.

2.3.1 Redevelopment

Redevelopment consists of the removal of existing buildings and the re-use of cleared land for the implementation of new projects (Miller, 1959). This approach is applicable to areas in which buildings are in seriously deteriorated condition and have no preservation value, or in which the arrangement of buildings are such that the area cannot provide satisfactory living conditions (Miller, 1959). In such cases, demolition and reconstruction, of whole blocks or of small sections, is often thought to be the only solution to ensure future comfort and safety of the residents.

For developers, redevelopment represents maximum profit through the sale of new centrally -located units. For local governments, this approach represents maximum use of land, higher floor area ratio, and has the advantage of introducing higher income groups and commercial activities to the city center, which increase tax revenues. It also leads to higher population density and improved services and infrastructures, which is highly desirable for modernizing inner-city areas (Zhu Zixuan, 1989).

However, this approach may carry heavy social and environmental costs. The demolition of architectural environments is probably the most serious consequence of the redevelopment approach (Kazemian, 1991). It can bring about the sacrifice of a community's cultural heritage and the destruction of viable neighborhoods, depriving people of valuable housing resources which in many cases still serve a useful function (Frieden, 1964). Redevelopment generally involves the relocation of the original population to another part of the city. Even when the residents are rehoused on the same site after its redevelopment, the transformation of the neighborhood beyond recognition has inevitable psycho logical impacts upon the community. In his book *The Future of Old Neighborhoods*, Bernard J. Frieden (1964: 123) summarizes the social costs of redevelopment in these terms:

"For tenants, owners, and businessmen alike, the destruction of the neighborhood exacted social and psychological losses. The clearance destroyed not only old build ings, but a functioning social system. The scattering of families and friends was especially harmful to the many older people."

Redevelopment leads to the destruction of badly needed housing units and it does not prevent slums from reappearing in other parts of the city. It also contributes to the impoverishment of the original residents by reduction of job opportunities, as resettlement areas are usually located outside of the city proper (Mirbod, 1984).

In the majority of western countries, redevelopment has been discarded as a way to rejuvenate old city centers. However, in many developing countries, redevelopment through slum clearance and reconstruction is still regarded as the only viable way to improve housing conditions and to modernize inner-city areas.

2.3.2 Rehabilitation

Rehabilitation, often termed conservation or preservation, can be defined as the opposite of redevelopment. It is based on preserving, repairing, and restoring the natural and man-made environments of existing neighborhoods. Rehabilitation is applicable to areas where buildings are generally in structurally sound condition but have deteriorated because of neglected maintenance (Miller, 1959). It takes advantage of the existing housing stock as a valuable resource and adapts old houses to present-day life and acceptable standards by providing modern facilities (Zhu Zixuan, 1989).

Citizen participation is a recurring theme throughout all phases of the rehabilitation process. People organize themselves into neighborhood associations which lobby local governments to provide technical and financial assistance and improve public services, and to encourage other residents to fix up their housing (Holcomb and Beauregard, 1981). Laquian (1984) considers security of tenure and homeownership to be essential ways to encourage self-help and community-based upgrading efforts.

Rehabilitation recognizes that the limited availability of funds for new construction and the serious housing shortage make the option of destroying already-existing housing appear both unaffordable and imprudent. It recognizes the value of old neighborhoods and, by preserving what is unique, ancient, and specifically local, it can also contribute to the development of the tourism industry and stimulate the economy. From the standpoint of time and cost, rehabilitation is a sensible solution to the problem of neighborhood regeneration (Mirbod, 1984).

Concerning the impacts on the population, residential rehabilitation can take place in two distinct ways: gentrification and incumbent upgrading (Clay, 1979). Gentrification is defined as the process by which middle- and upper-class people move to a neighborhood, attracted by its proximity to central business districts and replace the previous working-class inhabitants (Holcomb and Beauregard, 1981) (Varady, 1986).

Through the process of incumbent upgrading, the residents remain in place and invest in their own time, money, and energy into refurbishing their housing and improving their social conditions (Varady, 1986). In developing countries, upgrading generally refers to a comprehensive developmental approach wherein the original population remains on the site and incrementally upgrades the neighborhood, with or without public assistance. By treating the resident population as an active force in the housing process, this approach generates a greater pride in the neighborhood and halts the impending deterioration caused by a lack of investment and environmental concern (Holcomb and Beauregard, 1981). It also respects the social links that have formed within and among the communities over the years.

However, many people do not consider rehabilitation to be a realistic approach because of the technical difficulties and the amount of work and research involved. Rehabilitation is often perceived as a complex and time-consuming process which is more difficult to implement than redevelopment. It requires a high degree of social organization and social responsibility, as well as a total reorganization of the housing process. It is sometimes resisted by developers, who see it as an infringement on free enterprise and a barrier to large-scale redevelopment (Holcomb and Beauregard, 1981). In many instances, old houses are so dilapidated and their original character lost after so many years that it is unrealistic to attempt to upgrade them and to raise their conditions to appropriate standards. The introduction of new infrastructure to old and dense neighborhoods can also be a difficult task.

2.3.3 Integration

The third approach to neighborhood regeneration referred to as integration, views rehabilitation and redevelopment as complementary forces and combines the best aspects of both approaches. It consists of rehabilitation of what can realistically be saved, combined with reconstruction of new buildings in place of those beyond the reach of feasible rehabilitation (Yu Qingkang, 1988).

Integration is considered today to be the most acceptable way to regenerate old neighborhoods. It allows for flexible project implementation which can preserve the traditional urban environment and its human scale while achieving respectable densities. It respects the social order of the community by rehousing the majority of the original residents on the site and invites mass participation. Integration results in the creation of rich environments through the integration of new buildings within the existing neighborhoods and allows for the development of a new form of contemporary architecture with local characteristics, enriching the appearance of the old city while maintaining its identity. However,

for many developers and local authorities, integration remains a time-consuming process, less profitable than redevelopment with mass housing.

2.4 CRITICAL ISSUES

Urban renewal can affect the urban environment at many levels. The preservation of the city's 'identity', 'community', 'local culture' and 'natural and built environments' must be given attention in the process of renewal.

2.4.1 Urban Identity

A frequent challenge faced in the sensitive reshaping of an already-existing environment is discovering and preserving its own visible structure and drawing out its inherent image and identity. Urban renewal modifies not only the physical form of the urban environment but also transforms the way in which it is perceived and experienced, and the psychological and emotional relationships between humans and urban places (Holcomb and Beauregard, 1981). Among the most important elements cited in the literature regarding the definition of the urban environment are: diversity and continuity (Mumford, 1956) (Lynch, 1960) (Jacobs, 1961).

Diversity, at all levels, is essential for the creation of a lively urban environment, and should be encouraged through urban renewal. According to Jane Jacobs (1961), '*one of the greatest assets of a city is its wholeness in bringing together an unpredictable mix of people with communities of interests. For her, big cities, with their intricate mingling of uses and complex interweaving of paths, are natural generators of diversity and prolific incubators of new enterprises and ideas of all kind*'. For Marcia Nozick (1992), from the Canadian Council on Social Development, diversity is essential for city life to work decently and constructively, and for the people to sustain and further develop their society and civilization.

Kevin Lynch (1960) considers that, although diversity is an essential characteristic of the urban environment, the complexity of the modern city also calls for continuity. He defines the city as: "*... an area of homogeneous character recognized by clues which are continuous throughout the district and discontinuous elsewhere*" (Lynch, 1960: 103). For Holcomb and Beauregard (1981), the sense of continuity of place is necessary to people's sense of reality, and the city should be apprehended over time as a pattern of high continuity with many distinctive parts which are clearly interconnected. It is therefore important to maintain the city's '*homogeneity and continuity*' even after its renewal. According to

Lynch (1981), local continuity should be a key aim in reshaping settlements., the aim of renewal should be " *to maintain continuity* , both of the community itself and the image of history and of nature that is held by its members" (Lynch, 1981: 260).

Diversity and continuity appear to be essential components of the urban environment which must be preserved in the process of urban renewal. However, in recent years, the emergence of a global model has been threatening local identity, integrity and authenticity, and cities around the world have become increasingly uniform (Nozick, 1992). Respecting the city's own identity through urban renewal will help rescue cities from the "*placelessness*" of contemporary international architecture and the homogeneous values of the mass culture (Holcomb and Beauregard, 1981) (Nozick, 1992).

2.4.2 Environmental Concerns

The preservation of natural and man-made environments is another important issue which should not be overlooked in the process of renewal. Old buildings, monuments, parks, and neighborhoods, as well as the old pattern of the city which gives the city its unique character are necessary to maintain the city's vitality (Holcomb and Beauregard, 1981)(Van der Ryn & Calthorpe, 1986).

The preservation of the historic core, which provides future generations with stimulating ideas from their cultural heritage, is essential for the development of modern cities (Wang, 1992). Cervellatti 6 considers the historic core of a city as the "*collective memory of the population*", and, even with its internal contradictions, as the only truly modern, authentically livable part of the city (Cervellatti, in Hatch, 1984).

Present, past, and future history are all equally important in the making of a modern city (Van der Ryn & Calthorpe, 1986).

According to Lewis Mumford (1956: 156):

"No adequate image of the emerging city can be formed without reference both to the most enduring and valuable features of historic cities as well as to the fresh departure and fresh opportunities that our modern age, with its immense store of knowledge, wealth and power has opened up."

Over the last few years, there has been a heightened appreciation of the value of preserving old sections of the urban fabric. For more than one-

hundred years, writers on architecture have returned to the pre-industrial town for models for a saner, more organic society. The historic core has become the point of reference for planners and architects. Some even consider the historic core to represent the design model that will ultimately be used to transform the remainder of the city (Cervellatti, in Hatch, 1984).

On the other hand, preservation must be handled with caution, and it requires a deep understanding of the nature of the city. A misinterpretation of the process by which cities evolve through time can lead to the creation of sanitized environments, or the reconstruction of an imaginary and more acceptable past (Holcomb and Beauregard, 1981). For Lewis Mumford (1961: 3):

"If we would lay a new foundation for urban life, we must understand the historic nature of the city, and distinguish between its original functions, those that have emerged from it, and those that may still be called forth."

2.4.3 Social Concerns

Concerns for the physical and psychological well-being of the individual and the community are essential for sensitive renewal. Urban renewal can either involve re-accommodation of the original population on the site after its renewal or its transfer to another part of the city through relocation. According to Kazemian (1991), relocation generally occurs in large-scale housing projects built in isolated environments and far from the city center, where access to facilities like schools and health services, is limited.

For the population, displacement carries not only financial costs, but social and emotional costs as well. Urban renewal often leads to the dissolution of urban communities and the loss of proximity to friends and relatives. People need to know that their communities will continue to exist and be able to provide for the present and future needs of themselves and their children (Nozick, 1992). In general, new social links are not easily formed in large-scale mass-housing projects (Nozick, 1992).

It is generally recognized that displacement from familiar locations translates into drastic changes in lifestyle and requires long-term readjustment which can cause serious psychological trauma, especially for the most vulnerable portion of the population, i.e. young children and the elderly (Holcomb and Beauregard, 1981).

The loss of contact with a familiar environment to which people have developed strong emotional attachments may occur both when residents are displaced and when familiar environments are radically altered by revitalizing activities (Holcomb and Beauregard, 1981). Jane Jacobs (1961, 279) explains this attachment as "the security of the home base, being, in part, a literal security from physical fear" (Jacobs, 1961: 279). However, little is written about the psychological costs of the destruction of an environment to which one is emotionally attached.

The high economic, social and emotional costs paid by evicted residents have generally been written off as an unavoidable by-product of "progress" and a necessary consequence of modernization (Kazemian, 1991). While the governments can intervene to compensate victims for part of the economic costs of displacement, the psychological costs are less easily mitigated. Relocation therefore remains an important aspect of the process of renewal and should be given special attention.

2.4.4 Cultural Concerns

The preservation of a unique urban culture is another critical issue in the process of urban renewal. Culture has been defined as the whole social mode of life, or the mode of life of the people in general (Azevedo, in Teixeira, 1990), and as the collective expression of shared history, traditions, values and ways of life (Nozick, 1992). The continuity of a culture is carried in its architecture, urban design, and planning, as well as in its community life (Van der Ryn, 1986). Urban culture can therefore be said to be closely related to the evolution of the relationship between the urban built environment and its social structure. The disappearance of the physical and social manifestations of a particular culture would lead to the decline of this culture.

The changes brought to the social, natural and built environment of the city through urban renewal can have a serious impact on the flourishing of urban culture. Just as much as the preservation of the environment and community can be important for that of the local culture, culture is itself essential in their development. It is often the local culture which defines what is special and unique about a group of people or a place, giving them their identity and making them last over generations (Nozick, 1992). It is therefore important to ensure that in the process of renewal, the urban culture is not destroyed, but stimulated and promoted through a conscious transformation of the urban environment.

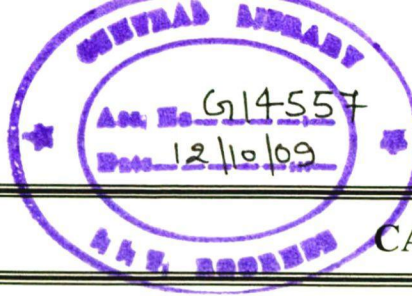
2.5 Urban Renewal as a Multi-Faceted Process

Urban renewal can be defined as a social and technical partnership based on the unification of the vision of politicians and designers and on the wide acceptance of the same by the community. It is thus a multi-faceted and complex process which should not be viewed merely as a physical and financial proposition, but as a sociological, cultural, economical and political matter as well (Couch, 1990). Past experience has demonstrated the need to view neighborhood regeneration as a comprehensive and integrated process. According to Lewis Mumford (1956; 43), "an organic conception of city planning, dealing with all the phases of life as well as all the functions of a community, is essential to create a truly livable environment."

It therefore appears that a realistic renewal program must approach regeneration in a holistic way and be based upon a multi-disciplinary understanding of the social and economic forces affecting urban areas and the physical nature of towns and cities. It thus requires variety and subtlety in policy responses (Couch, 1990). Nearly one century ago, Patrick Geddes (1968 (1915): 205) drew critical conclusions about planning approaches, which can be related to urban renewal:

"...town planning is not something which can be done from above, on general principles easily laid down, which can be learned in one place and imitated in another... It is the development of a local life, a regional character, a civic spirit, a unique individuality, capable of course of growth and expansion, of improvement and development in many ways, of profiting too by the example and criticism of others, yet always in its own way and upon its own foundations."

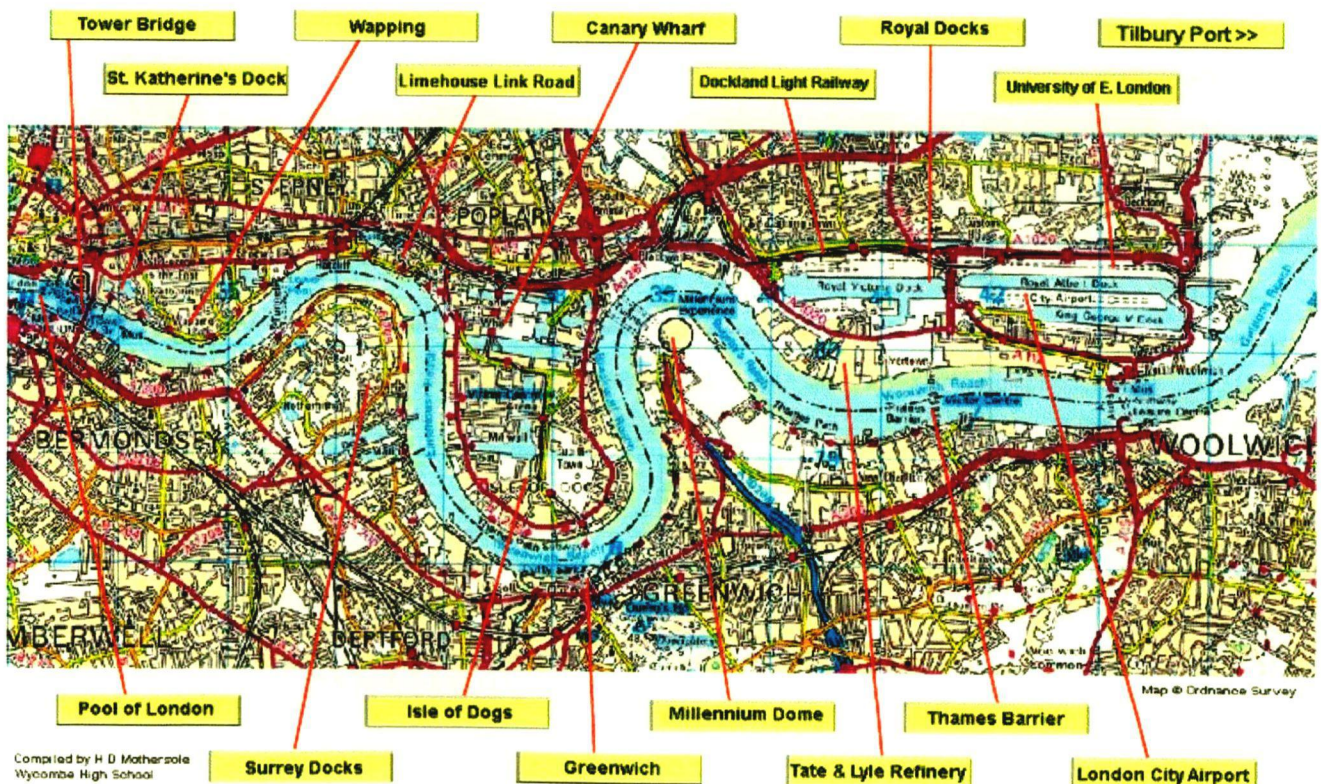
The many facets of neighborhood life should be analyzed in the process of developing an urban renewal program (Colborn, 1963). The fundamental prerequisite to the success of any program of development or renewal is the complete integration of these programs with the general plan of the urban area (Miller, 1959).



3.1 Urban Renewal of London Docklands

In medieval times development occurred on the Thames, where Romans had once settled. Growth of shipbuilding industry led to the development of this area. The London docks were built between 1700 and 1921. The reason was to ease congestion on the Thames between ships, and the lock gates helped to control the water level in the river. Security was also improved within the docks because of the high walls around the dock basins. The east end of London developed around the docks.

At the docks hay day London was at the centre of world trade. However in 1967 the docks started to decline, a number of reasons were to cause the downfall to one of the world's greatest trading ports. The docks were not designed for the size of the more modern ships, not been wide enough or deep enough to allow the ships in.



Map 3.1: Map Showing London Docklands
Source: <http://whs.moodleo.co.uk/file.php/2308/DocklandsTour/InteractiveDocklandsMap.html>

3.1.1 The problems in 1981 in the Isle of Dogs

- Population had declined
- Employment was in decline (loss of jobs from decline of docklands)
- Access to the rest of London was poor with narrow roads which were heavily congested, and a lack of public transport (a single bus route and no rail or underground service)
- 95% of housing was rented and including high density terraced houses and large estates dominated by high rise blocks
- Shopping facilities were limited
- Lack of open space and recreation facilities



Figure 3.1: Derelict and vacant spaces
Source:<http://geobytesgcse.blogspot.com/2007/03/inner-cities-case-study-regeneration-of.html>



Figure 3.2: The pedestrian bridge
Source:<http://geobytesgcse.blogspot.com/2007/03/inner-cities-case-study-regeneration-of.html>

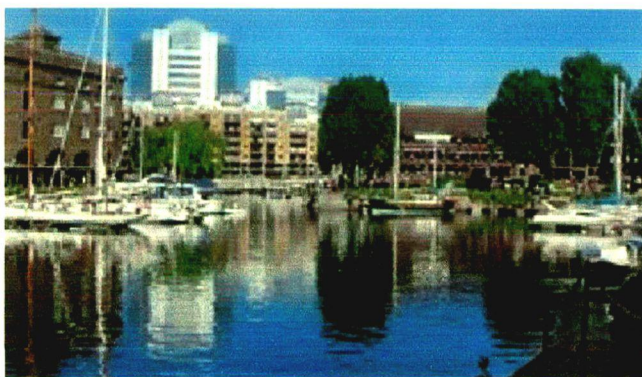


Figure 3.3: St Katherine's Dock
Source:<http://whs.moodledo.co.uk/file.php/2308/DocklandsTour/StKatherinesDock.html>



Figure 3.4: The preserved dock buildings
Source:<http://geobytesgcse.blogspot.com/2007/03/inner-cities-case-study-regeneration-of.html>

3.1.2 Changes to the area between 1981 – 1998

- Environmental Regeneration

- Network of pedestrian and cycle routes through the area with access to the river and dock edge through waterside walkways
- Creation of pedestrian bridges
- Creation of new open spaces (150ha)
- Water based Ecology Park and London's first bird sanctuary at East India Dock Basin - one of 17 conservation areas set up
- Planting of 200,000 trees;
- The area has now received many awards for architecture, conservation and landscaping

3.1.3 Economic Regeneration

- Unemployment had fallen from 14% to 7.4 with a doubling in employment and numbers of businesses
- Transport revolution - opening of the Docklands Light Railway in 1987 - now carrying 35,000 passengers a week
- £7.7 billion in private sector investment
- 2,700 businesses trading
- Major new roads including link to the M11
- Building of the City Airport in the former Royal Docks (500,000+ passengers a year) attraction of financial and high-tech firms
- TV studios and newspapers such as The Guardian now have offices in the prestigious Canary Wharf business complex.

3.1.4 Social Changes

- £10 million spent on improvement council and housing association homes
- A total of 22,000 new homes built (mainly private ownership with approx 19% for rent) conversion and gentrification of old warehouses to new homes
- New shopping centre built - including 4,600sq metres Asda Superstore and refurbishment of shopping parades - also included transformation of old dockland buildings into shopping outlets (e.g. Tobacco Dock)
- Large new shopping centre at Canary Wharf with over 30 shops many restaurants, pubs and cafes built
- Docklands Sailing and Water sports Centre
- £100 million spent on health, education, job training etc.

3.1.5 Successes

- More trade for local shopkeepers
- Cheaper rents here for large companies yet still the benefit of only being 10 minutes from central London
- A wide range of economic, environmental and social benefits (see above) - including 22,000 new housing units and 1000s of new jobs.
- Greatly improved accessibility in and out of docklands
- Addressed the once failing land, housing and commercial property markets in the area.

3.1.6 Criticisms

- There were criticisms that despite the improvements many of these didn't benefit the original 'eastenders'.
- Many locals were unable to afford the high costs of the new expensive houses / flats (still a lack of low-cost housing in the area).
- Despite an increase in jobs with new businesses coming in, most required skills that the old dockers did not have.
- Reduction in community spirit that the old Docklands had - with the 'yuppie' newcomers not mixing with the eastenders.

3.2 Urban Renewal in Hong Kong

The purpose of urban renewal is to improve the environment of the older urban areas and the living conditions of the residents therein through a comprehensive and holistic approach comprising the redevelopment of dilapidated buildings, the promotion of the rehabilitation of older buildings, the revitalization of old districts and the preservation of buildings of historical, cultural or architectural interest.



Figure 3.5: Old Dilapidated Area in Metro Area
Source:http://www.pland.gov.hk/p_study/comp_s/urss/urss_e.htm

3.2.1 Background

1. In his 1999 policy address, the Chief Executive highlighted the increasing need for urban renewal. He emphasized the urgency of taking a new and more proactive urban renewal approach to bring real improvement to the living conditions of the residents in dilapidated buildings in old, run-down areas. To that end, he announced the establishment of an Urban Renewal Authority (URA) next year. He also outlined a new strategy to urban renewal which aims at facilitating comprehensive planning over larger areas, providing additional green area of open space, and community facilities and improving road networks while preserving the distinctive features of the old districts concerned.
2. The Urban Renewal Strategy (URS) is prepared by the Planning, Environment and Lands Bureau (PELB). It is to provide a coherent planning framework to guide the improvement and restructuring of the old urban areas where urban renewal is required.
3. The URS Study is intended to provide the necessary input for PELB to formulate the URS covering the Metro Area. The Study contains 25 recommendations. They cover proposals on redevelopment, rehabilitation and preservation actions, financial arrangements, streamlined planning procedures, rehousing land, etc. This Executive Summary presents the main findings and recommendations of the Study.

3.2.2 Broad Goals of Urban Renewal

The goals of urban renewal are:-

- i. to improve the built environment by replacing old, run-down or under-utilised urban areas with new developments which are properly planned and, where appropriate, provided with adequate transport and other infrastructure and community facilities;
- ii. to achieve better utilisation of land in the dilapidated urban areas to meet various development needs;
- iii. to promote rehabilitation and preservation of buildings, and improvement of places of local, architectural, cultural or historical interest.

3.2.3 Specific Objectives of the URS Study

Having regard to the above, the specific objectives of the Study are:-

- i. to identify the needs for urban renewal and opportunities for improvement of community and open space facilities for the old urban areas;
- ii. to identify priority redevelopment project areas, rehabilitation and heritage preservation targets, and urban renewal target areas for future URA actions;
- iii. to formulate a set of strategic planning guidelines to expedite implementation of the priority project areas and target areas;
- iv. to examine various financial and non-financial tools to improve the overall financial viability of priority project areas;
- v. to identify rehousing sites and other implementation issues to facilitate urban renewal; and
- vi. to set up a geographical information system (GIS) to facilitate regular review of the URS.

3.2.4 Study Approach

1. The conventional urban renewal approach since the 1980s has emphasized piecemeal project-based redevelopments. It has not fully taken the opportunity of urban renewal to improve and restructure the outdated physical infrastructure of the old urban area. It may not have given sufficient priority to building rehabilitation and heritage buildings preservation. For financial reasons, most of the renewal projects have been targeted for profitable types of redevelopment.

2. The Study takes the view that urban renewal is an infrastructure investment to replan and transform the old urban areas to meet modern city



Figure 3.6: A Piecemeal Redevelopment
Source: http://www.pland.gov.hk/p_study/comp_s/urss/Ch4_e.htm

living requirements. Urban renewal should be planned on an area-wide basis in a comprehensive manner and sensitive to our community aspirations and heritage assets. The renewal area upon completion should provide an attractive environment for us to live in and to enjoy.

3. The Study adopts a two-pronged approach, viz. redevelopment and rehabilitation, to tackle the urban renewal problems.

4. On redevelopment, a target area approach is proposed to focus concerted efforts and resources on where priority redevelopment actions are required. Complementary rehabilitation action is also proposed to be taken by the URA within the target area, The approach is intended to achieve a comprehensive restructuring and replanning of the old urban area to make it an attractive place to live in and provide it with adequate community and open space facilities. It would also help to stimulate private redevelopments around the target area.

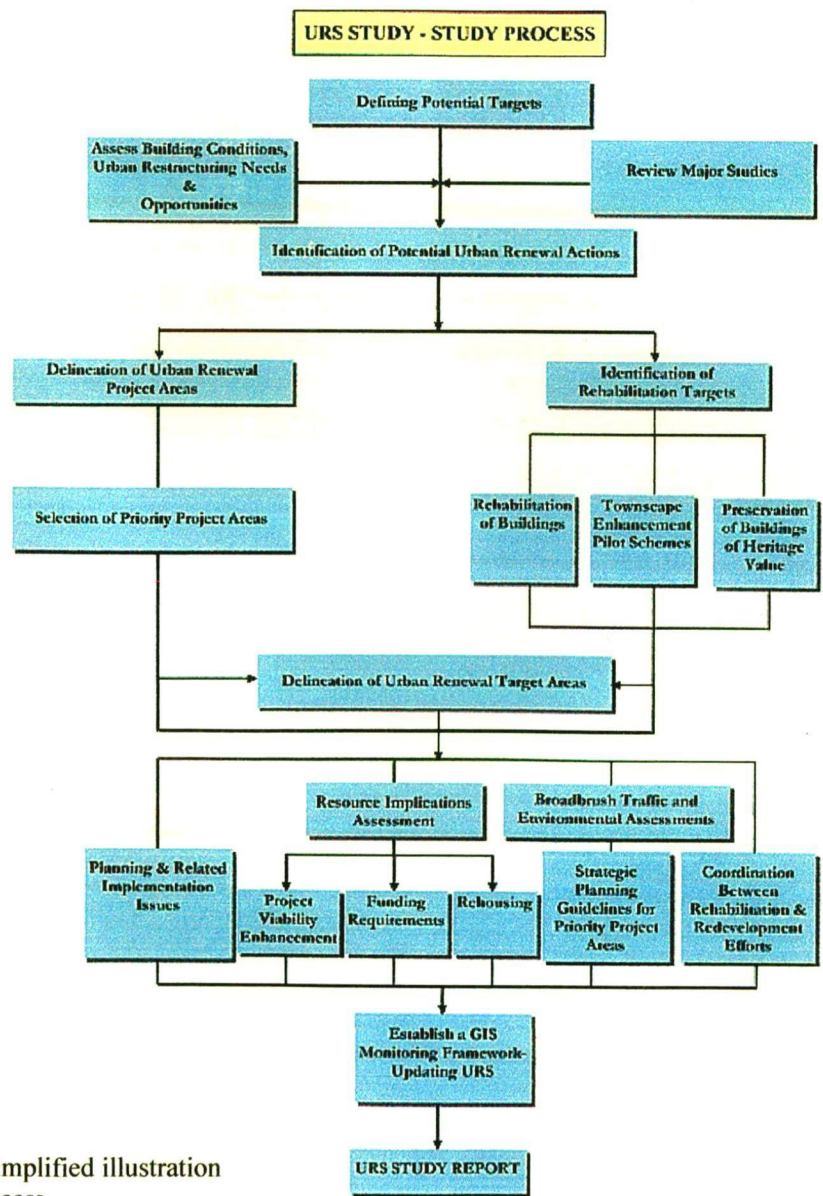


Figure 3.7: A simplified illustration of the Study process

Source: http://www.pland.gov.hk/p_study/comp_s/urss/Ch4_e.htm/comp_s/urss/Ch4_e.htm

5. Rehabilitation is the major tool to slow down the pace of physical decay of our building infrastructure. This is also an essential tool to upkeep the building heritage and the unique character of our city.

3.2.5 Scale of Urban Renewal Problem

3.2.5.1 Defining Potential Urban Renewal Targets

At present, there are about 13,000 private buildings which are 20 years and above, of which 8,500 are 30 years and above (Figures 2-3). In 10 years time, the number of buildings over 30 years old will increase by 50%. This means that the ageing problem of buildings is getting worse.

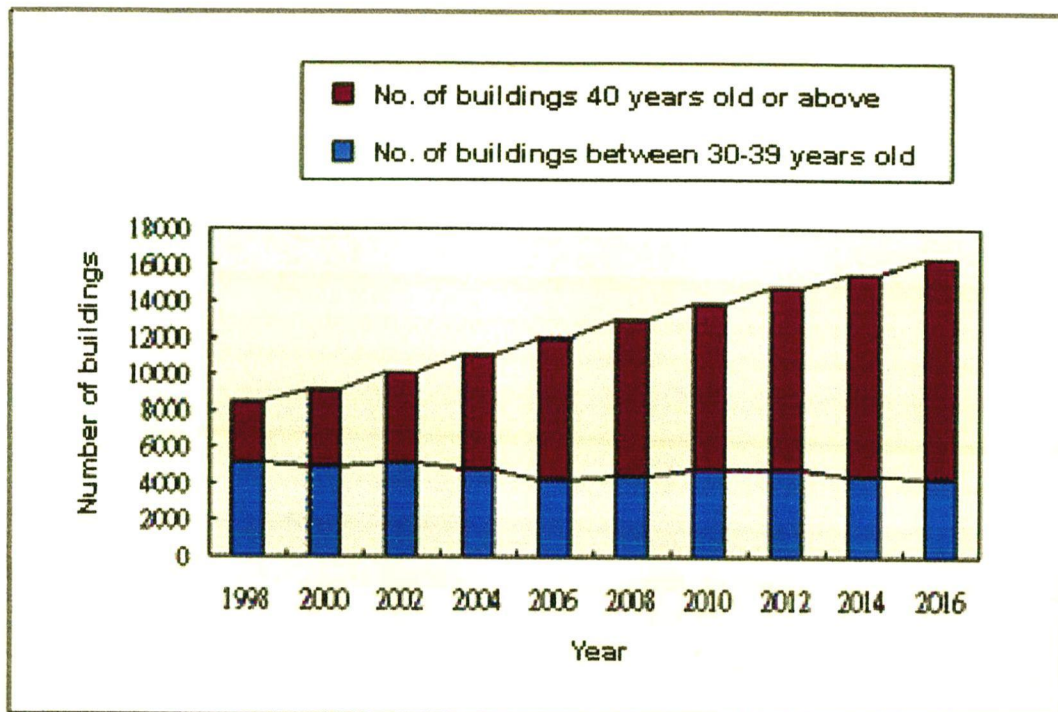


Figure 3.8: Projection of No. of Buildings aged 30 Years and above in the Metro Area (Years 1998 - 2016)
Source: http://www.pland.gov.hk/p_study/comp_s/urss/Ch5_e.htm

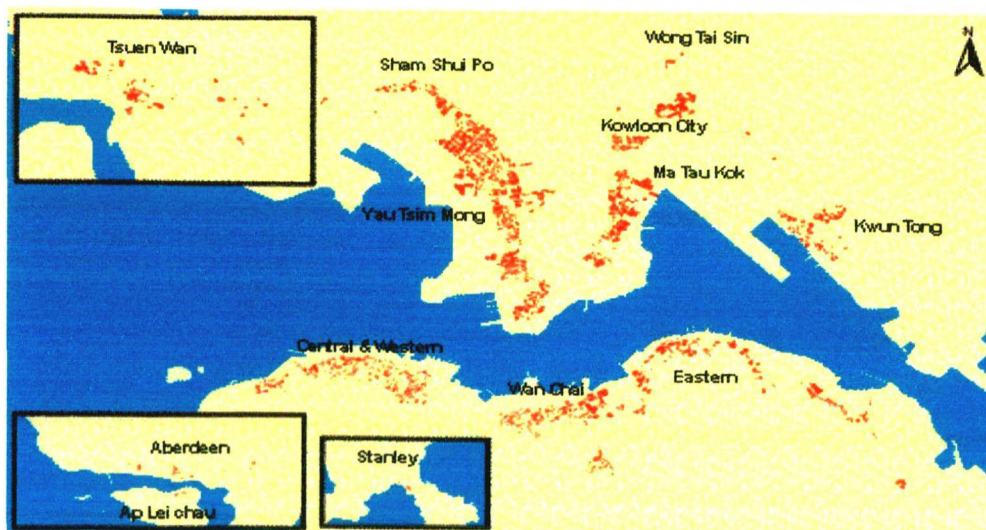


Figure 3.9: Broad Location of Private Building Aged 30 Years and Above
Source: http://www.pland.gov.hk/p_study/comp_s/urss/Ch5_e.htm

To focus on potential renewal actions, the Study has identified the potential renewal targets for about 9,500 buildings in the Metro Area. The targets are delineated with a view to covering areas where there is a potential need for public sector involvement in urban renewal. They cover private buildings that are 20 years old or more and within the old residential, mixed uses, or industrial areas.

3.2.5.2 Trend of Private Sector Redevelopment

1. There has been a consistent decline in the supply of private residential flats through redevelopment in the urban areas since the late 1980s. This is mainly because many of the existing old building stocks are either non-profitable for redevelopment or with major site assembly problems.

2. The above findings highlight the urgent need for more active involvement of the public sector in urban renewal. At the same time, more initiatives should be introduced to facilitate the private sector to overcome site assembly problems and to encourage private sector involvement in urban renewal.

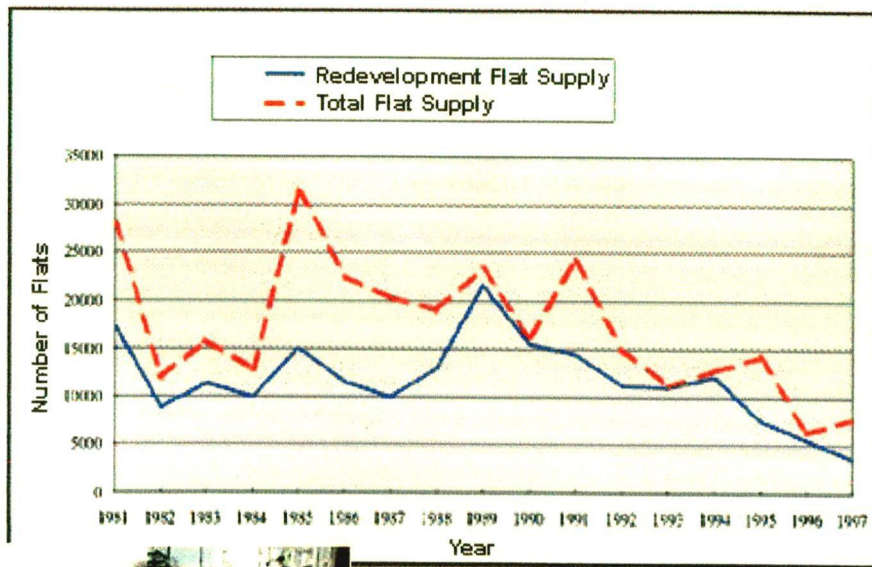


Figure 3.10: Total and Redeveloped Flat Supply in Metro Area (1981 - 1997)
Source: http://www.pland.gov.hk/p_study/comp_s/urss/Ch5_e.htm

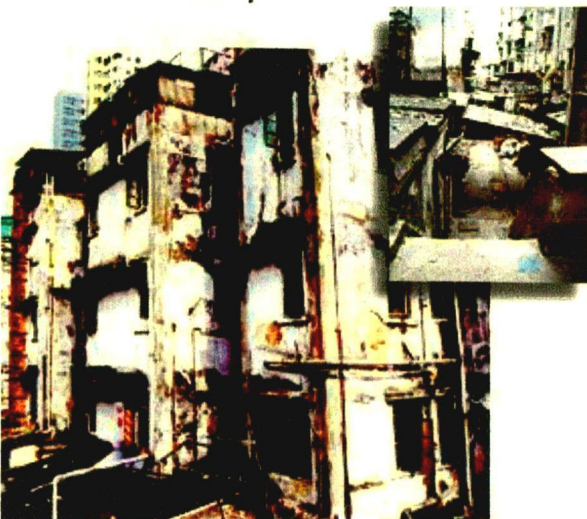


Figure 3.11: Poor Living Environment in the Old Urban Area
Source: http://www.pland.gov.hk/p_study/comp_s/urss/Ch5_e.htm

3.2.6 Urban Renewal Proposals

3.2.6.1 Redevelopment - Improving our Urban Environment

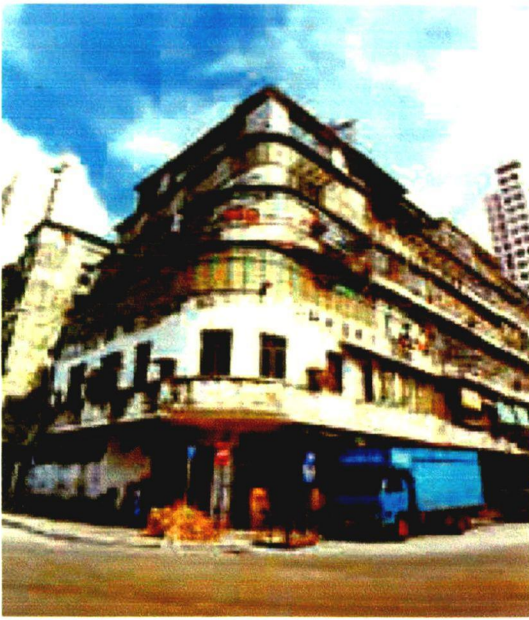
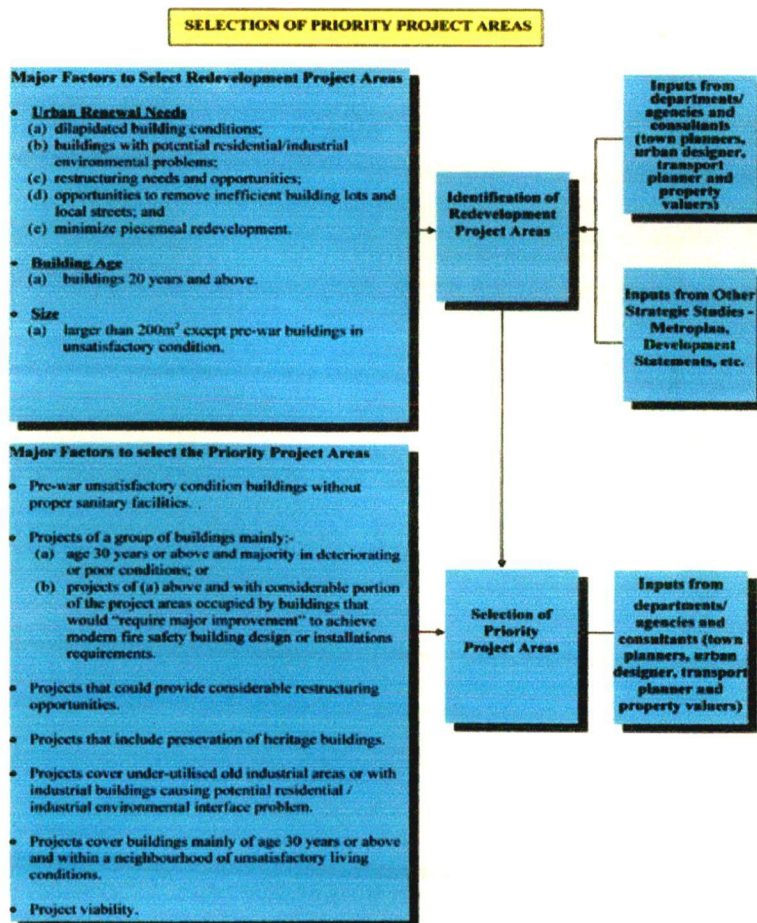


Figure 3.12: Old Dilapidated Area in Metro Area
Source:http://www.pland.gov.hk/p_study/comp_s/urss/Ch6_e.htm

1. The Study started with a broad assessment of the magnitude of the urban renewal problem. Information on building age and conditions extracted from databases kept by the Planning, Buildings, Fire Services, and Home Affairs Departments, and the Land Development Corporation was utilised as the initial basis for assessing the need for urban renewal. The Study gradually broadened to include district and strategic planning, transport, socio-demographic and environmental considerations in delineating urban

renewal project areas.



2. A list of priority project areas has been identified to focus renewal actions in areas where there are urgent needs for eradicating run-down buildings, preserving buildings of heritage value, area-wide replanning and restructuring. Buildings that are 30 years old and above in unsatisfactory conditions or are not up to modern fire safety building design or installation requirements are also targeted. Individual pre-war buildings without modern sanitary facilities will also be prioritised for redevelopment.

Figure 3.13: The major factors in delineating the priority project areas.
Source:http://www.pland.gov.hk/p_study/comp_s/urss/Ch6_e.htm

3. A total of 200 priority project areas, covering about 55 ha. of land, have been identified. About 90% of the buildings covered by the priority project areas are 30 years old or above. There are about 37,000 households, or 105,000 people who would be affected by the 200 priority project areas. The distribution of the priority project areas is shown in Figure 6.



Figure 3.14: Distribution of Priority Project Areas and LDC committed/potential projects
Source: http://www.pland.gov.hk/p_study/comp_s/urss/Ch6_e.htm

4. The Study recognises the need for old industrial area renewal. However, large scale redevelopment of industrial buildings might have an adverse impact on industrial activities and related employment. It should be undertaken with great care. At the same time, the

Planning Department has been proceeding with the rezoning of old industrial areas and relaxing

the user-restrictions of industrial uses to encourage the renewal of existing industrial areas.

5. Study has selectively identified two groups of industrial buildings initially for URA actions:-

i. To combine those old industrial buildings with adjoining residential buildings of unsatisfactory conditions into priority project areas. The proposed redevelopments under this category are mainly located in Ma Tau Kok, Tai Kok Tsui, etc.; and

ii. To identify selected under-utilised old industrial areas those are ready for comprehensive redevelopment and restructuring. They include Yau Tong industrial area and the industrial area bordering the old Kai Tai Airport site.

The URA is expected to play a facilitating role to expedite private

redevelopment in these areas. Should the private sector fail to respond, the URA could initiate redevelopment through such means as joint venture partnership, etc.



Figure 3.15: Old Dilapidated Area in Metro Area
Source: http://www.pland.gov.hk/p_study/comp_s/urss/Ch6_e.htm

6. The Study proposes to consider the renewal of older industrial areas such as Cheung Sha Wan, San Po Kong, Kwun Tong, Tsuen Wan, Kwai Chung, Chai Wan, etc. more comprehensively in the next round of the URS review.

3.2.7 Urban Renewal Target Areas

Many of the priority project areas are concentrated in localised parts of the old urban areas. The Study proposes to adopt a target area approach to tackle the urban renewal problem on an area basis. The following 9 target areas have initially been delineated to focus redevelopment and rehabilitation actions in a coordinated manner (Figure 7):-

- Ma Tau Kok
- Tai Kok Tsui
- Sham Shui Po
- Yau Ma Tei
- Yau Tong
- Kwun Tong
- Sai Ying Pun
- Wan Chai
- Tsuen Wan



Figure 3.16: Urban Renewal Target Areas
Source: http://www.pland.gov.hk/p_study/comp_s/urss/Ch6_e.htm

3.2.8 Delivering Enhanced Urban Quality through Urban Renewal

1. To ensure that the target areas and the priority project areas upon completion of urban renewal will become attractive places to live in, the Study proposes the following strategic planning guidelines to guide their developments:-

- i. preparation of a conceptual development framework for each of the target area to guide the proposed urban renewal actions in a coherent manner;
- ii. preparation of a set of broad development parameters for the priority project areas so as to streamline the planning process for redevelopment; and
- iii. set out the broad design objectives of the target areas to promote quality development. Emphases are given to promote an environmentally friendly road and transport system design; and to give priority to pedestrians and public transport.

2. The strategic planning guidelines will provide the basis for the URA to prepare its 5-year Corporate Plan and Annual Business Plan. Nevertheless, the details of the priority project areas development, including boundaries, etc. could be flexibly adjusted to changing circumstances. In preparing its annual 5-year Corporate and Business Plans, the Authority has to select their projects from the priority project areas. Nevertheless, the Authority could with justification make recommendations to carry out other projects not yet covered by the Study.

3. The proposed priority project areas and the strategic planning guidelines should be updated regularly, as appropriate. The URA, relevant policy bureaux and government departments concerned will also be involved at an early stage. This is to ensure that inter-departmental requirements and inputs, including GIC facilities and infrastructure improvements related to the priority project areas will be taken into account for URA planning purposes.

4. There are LDC projects at various implementation stages. The Study considers that the future URA should take up all those projects being implemented by LDC. The LDC has also announced another 20-odd potential project in early 1998. These projects could also be considered by the URA for action upon its establishment.

5. Upon redevelopment of the 200 priority project areas, there will be major improvements to the dilapidated urban areas, which will be brought up to modern city living standards. The major urban decay problem of our city will be largely resolved. Whilst many of the social benefits of urban renewal are non-quantifiable, the following are the more obvious improvements:-

- improvement of the environmental quality of about 55 ha of the older urban areas;
- production of 62,800 new flats;
- provision of 51,500m² open space, and 70,700m² community facilities, and
- Preservation of 27 buildings of local character to enhance our local architectural and cultural heritage.

3.2.9 Rehabilitation - Upkeeping our Buildings

1. Without proper building maintenance, the problem of building decay will continue to aggravate and it cannot be resolved by redevelopment alone. The Building Authority (BA) is responsible for monitoring the safety of the buildings.

2. In the past 2 years, the government has initiated a series of measures to encourage building rehabilitation. The Buildings Department has launched a voluntary approach of Building Safety Inspection Scheme (BSIS) supported by a Building Safety

Improvement Loan Scheme (BSILS) to encourage property owners to improve their buildings. The Fire Services Department has also introduced the Fire Safety Improvement Loan Scheme.

3. Whilst the overall effectiveness of the schemes is yet to be evaluated, the public has so far not shown much enthusiasm in the schemes. If the voluntary building maintenance approach proves to be not effective, more drastic rehabilitation actions such as a statutory preventive building maintenance scheme which emphasises preventive-type of rehabilitation should be seriously considered. Consideration should also be given to empowering the URA to administer the maintenance scheme within the target areas. The

BA will administer the scheme in other areas.

4. On occasions, property owners and tenants affected by a redevelopment scheme are also served



Figure 3.17: Pedestrian Arcade after Preservation & Redevelopment

Source: http://www.pland.gov.hk/p_study/comp_s/urss/Ch6_e.htm

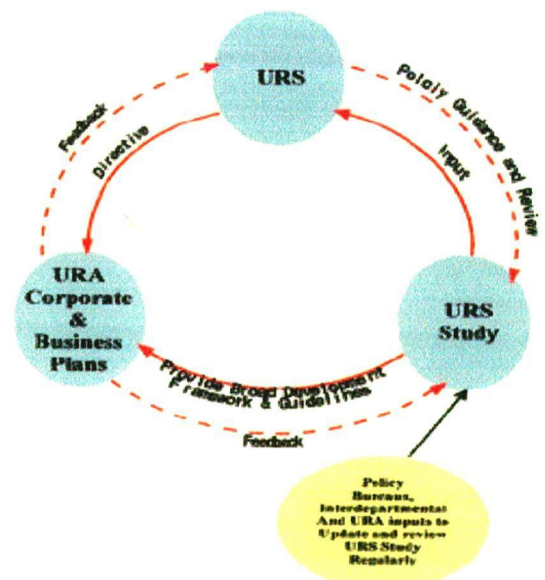


Figure 3.18: Updating and Review Cycle of URS

Source: http://www.pland.gov.hk/p_study/comp_s/urss/Ch6_e.htm

with notices to repair or rehabilitate their properties. This has caused considerable confusion and financial burden to the affected persons.

5. The Study proposes that a coordinated approach should be adopted by the redevelopment and rehabilitation agencies so as to minimize unnecessary disturbance to the affected property owners and tenants.



Figure 3.19: Example of a Pre-war Building before Rehabilitation and after Rehabilitation
Source: http://www.pland.gov.hk/p_study/comp_s/urss/Ch6_e.htm

Preservation - Enhancing Our Cultural Assets Diversity

Heritage buildings and places of local interests are important assets of our city.

Urban renewal could positively contribute to enhancing the uniqueness of our city as an international metropolis by preserving buildings of heritage value and enhancing places that are of historical, cultural or architectural interest.

i. Preservation of Buildings of Heritage Value:

The Study advocates preserving and improving the heritage buildings that fall within the priority project areas or target areas. The heritage buildings should be revitalised for more productive and beneficial uses. Groups of heritage buildings such as those in Yau Ma Tei and in Wan Chai areas have been included in the priority project areas. URA will be required to provide imaginative design solutions to preserve those heritage buildings and their adjoining areas as part of a comprehensive redevelopment scheme. Lands Department in liaison with the Antiquities and Monuments Office (AMO) has also been requested to explore the feasibility of preserving the potential and after-uses of those buildings of heritage value sitting on Government land.

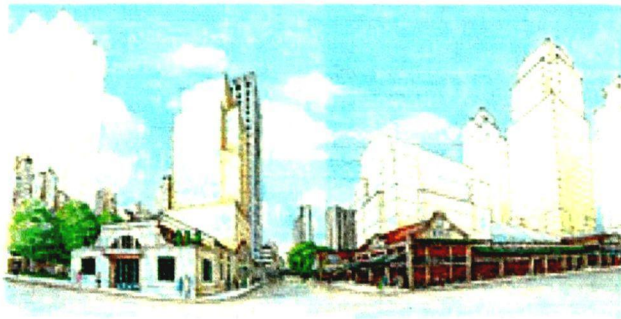


Plate 3.1: Yau Ma Tei Cinema and Wholesale Fruit Market Preservation Scheme
Source: http://www.pland.gov.hk/p_study/comp_s/urss/Ch6_e.htm

3.2.11 Main Recommendations

1. URA to continue those projects being implemented by LDC.
2. URA to target the 200 priority project areas in preparing the 5-year Corporate Plan and the Annual Business Plan of the Authority. URA could also consider the potential projects announced by LDC in early 1998.
3. To examine the feasibility of adopting a comprehensive industrial area renewal approach in the next URS review. In the meantime, URA to adopt a selective approach in the renewal of industrial sites:-
 - i. redeveloping those old industrial buildings adjoining residential buildings of unsatisfactory conditions, and
 - ii. facilitating private comprehensive redevelopment of selected under-utilised industrial areas that are ripe for redevelopment.
4. URA to adopt a target-area approach to tackle the priority redevelopment project areas, and rehabilitation targets in a coordinated and comprehensive manner.
5. URA to take on board the strategic planning guidelines proposed by the Study as the basis for guiding the planning and development of the priority project areas and the urban renewal target areas.

6. PELB to review the effectiveness of the voluntary Buildings Safety Inspection Scheme (BSIS) and the related loan scheme. The option for introducing a statutory preventive building maintenance scheme should be seriously considered.
7. URA and Building Authority to adopt a coordinated approach of rehabilitation and redevelopment to minimise unnecessary disruption to the affected owners and tenants.
8. To empower the URA responsible for the proposed statutory preventive building maintenance scheme within the urban renewal target areas. BA will administer the maintenance scheme in other areas.
9. AMO and Lands Department to explore the feasibility of preserving the buildings of heritage value sitting on government land proposed in the Study and their potential beneficial after-uses.
10. URA to undertake integrated and imaginative design solutions to the preservation and redevelopment of those heritage buildings included in the priority project areas having regard to the strategic planning guidelines proposed in the Study.
11. Two pilot townscape enhancement schemes in Lan Kwai Fong and in the area adjoining the Central Pedestrian Escalator Area and in Stone Nullah Lane Area, Wan Chai are proposed for Arch SD and URA implementation, respectively. The minor works programme of HAD could also be utilised for the townscape enhancement schemes, as appropriate.
12. The URA should undertake both profitable and unprofitable but socially desirable projects as priority for renewal.
13. URA to target a redevelopment programme, in its initial years of operation, that would lead to produce about 20,000 flats in preparing its 5-year Corporate and Annual Business Plans. Based on such target, the Authority would take 20 years to complete the redevelopment of the 200 priority project areas.
14. The Government should further explore the financing of the priority project areas. Private sector resources should be encouraged to finance the implementation of the projects. Other non-financial tools to enhance the project viability should also be explored. To enhance the financial viability of the URA priority projects, the Government should consider the following package of measures:-

i. Financial tools -

- forgoing land premia to URA redevelopment sites;
- forgoing land premia for rehousing land;
- linked site; and
- making loans to finance the URA projects.

ii. Non-financial tools -

- exemption of GIC facilities from plot ratio calculation,
- expedite land resumption procedures, and
- consider the feasibility of relaxing the plot ratio controls of the priority project areas.

15. To give URA the following flexibility in carrying out the priority project areas redevelopment:-

- i. to redevelop on its own;
- ii. to redevelop through joint-venture partnership; or
- iii. to dispose of project sites upon resumption in the market.

16. To invite the Housing Authority and the Housing Society to provide the rehousing flats for the URA projects.

17. To reserve the rehousing sites as proposed in the Study to meet the first 5-year rehousing demand for URA projects.

18. To reserve appropriate rehousing sites, wherever feasible, within the old urban area to accommodate the socially needy group, such as elderly, affected by URA projects.

19. As a long term option:-

- i. reservation of rehousing land to be included in the overall Public Housing Development Programme; and
- ii. URA should plough back part of its cleared project sites for rehousing purposes.

20. The Planning Department should continue its strategic planning and project coordination functions within the Government to expedite the urban renewal process. The Department should also assist PELB to implement the study recommendations and to establish the URA.

21. To investigate the feasibility of the following measures to encourage private sector's involvement in urban renewal:-

- i. to allow the URA to have the power to dispose of the cleared urban renewal sites, subject to government approval, in the open market for private sector development; and
- ii. to exempt the proposed GIC facilities from plot ratio calculation in private redevelopment projects.

22. Other agencies, including the Housing Authority, the Housing Society, the MTRC / KCRC, should be encouraged to take part in implementing those priority project areas of their common interests in an integrated manner.

23. To update the URS and the Study regularly and to review the Study in 2001/2002.

24. To enhance the geographical information system developed in the course of the Study. The building conditions and urban renewal related information in the existing old urban core should be updated regularly to facilitate future review of the URS.

25. To request the Buildings and Planning Departments to consider undertaking a building condition survey to tie in with the proposed URS review in 2001/2002.

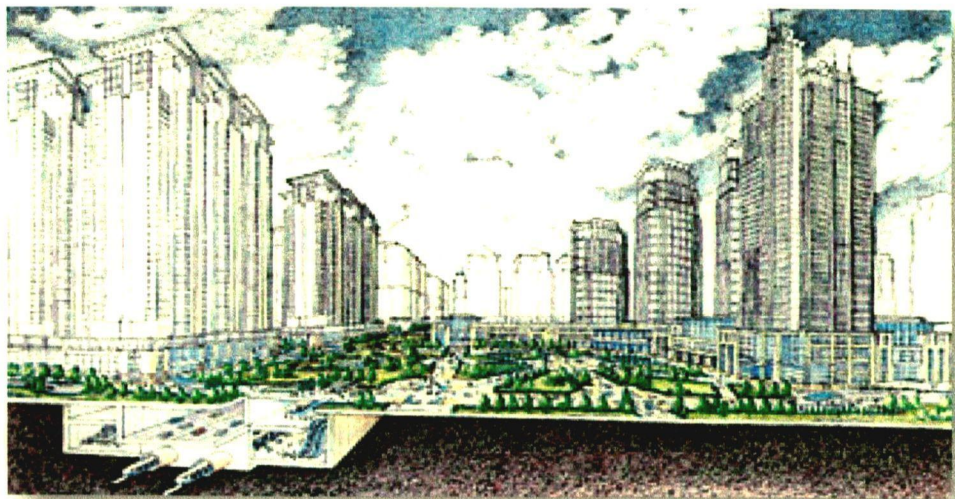


Figure 3.23: Integrated Comprehensive Redevelopment
Source: http://www.pland.gov.hk/p_study/comp_s/urss/Ch9_e.htm

3.2.12 Other Key Measures to Facilitate Urban Renewal

3.2.12.1 Rehousing Land

1. The Study proposes to invite the Housing Authority and the Hong Kong Housing Society to be the rehousing agents for the URA.
2. On rehousing land requirement, the Study estimated that a total of about 11 ha. of land, are required to meet the long term rehousing needs of the 200 priority project areas. Of the total, about 3 ha. of land are required to meet by the expected URA redevelopment activities in its initial 5 years of operation.
3. A number of potential short and long-term rehousing sites have been identified. Some rehousing sites are reserved near to the proposed renewal target areas to provide rehousing for the socially needy groups of affected tenants, such as elderly as appropriate.
4. However, it would be increasingly difficult to identify suitable long term rehousing sites in the urban areas as most of the potential sites have either been committed for housing or other uses. Also, many of the affected tenants might also be applying for public housing. It is therefore more appropriate to reserve the rehousing land requirement in the context of the overall Public Housing Development Programme. In the longer term, consideration should be given to requiring the URA to plough back a portion of the cleared sites of the large comprehensive redevelopment schemes for rehousing purposes.



Figure 3.24: A Proposed Scheme to Integrate Preservation of Heritage Buildings with Redevelopment Projects

Source: http://www.pland.gov.hk/p_study/comp_s/urss/Ch6_e.htm

3.2.12.2 Streamlining Planning Procedures

The Study proposes the following actions to facilitate the planning process of the URA projects:-

- i. Plan D to continue its strategic planning and project coordinating roles for the government in urban renewal matters;
- ii. the statutory planning procedures to process redevelopment schemes will be streamlined to 16 months;
- iii. Plan D should assist PELB to work out the implementation of the recommendations of the Study; and
- iv. Plan D to assist PELB in preparing the setting up of the URA.

3.2.12.3 Encouraging Multi-agency Participation in Redevelopment

1. The private sector should be encouraged to involve in URA projects as joint venture partners, contractor financing owners' participation, etc, as appropriate. Private developers should not be prevented from redeveloping the priority project areas prior to the URA action.

2. Opportunities should also be provided to allow other agencies such as MTRC, KCRC, Housing Society and Housing Authority to participate in the redevelopment process of those areas that they have common interests. Those renewal projects coincide with proposed new urban railway stations could be considered for integrated redevelopment with MTRC / KCRC. Whereas those old urban areas adjoining old public housing estates could be comprehensively replanned together with the Housing Authority so as to encourage integrated comprehensive redevelopment at an early stage. The Housing Society could also be involved in some of the target areas projects in conjunction with their proposed role to provide rehousing flats for the URA.

3.2.12.4 Review of URS and the Study

A major objective of the URS is to provide the direction for the URA to prepare its 5-year Corporate Plan and Annual Business Plan. At the same time, it also represents a corporate approach of government to consider the necessary financial, rehousing, land, and other resource requirements to support the URA activities. The Strategy should therefore be updated regularly taking account of changing circumstances and policies. The URS Study which provides the major input and recommendations to the Strategy should therefore also be updated regularly.

There are a number of strategic studies currently in progress that would have major effect on urban renewal. They include the Metroplan Review, the reclamation study in South East Kowloon, etc. Most of the socio-demographic data of the study are based on 1996 By-census. The data will likely be required for updating when the URA is in operation. It is necessary to carry out a review of the Study findings upon completion of these studies and the Census in 2001.

3.3 Inferences

3.3.1 London docklands

1. One of the objectives was to promote people's access to the river and dock edges by creating waterside walkways and pedestrian bridges.
2. The project was mobilized by creating intra rail transit system and new road networks.
3. New investment for housing, shopping centres, and transforming old dockland buildings into shopping out lets.
4. Facilities like sailing and water sports are provided.
5. Creation of new open spaces and aforestation.
6. Lack of cost effective housing.

3.3.2 Hong Kong City

1. The projects main focus was on redevelopment, rehabilitation, preservation of heritage buildings, townscape enhancements, rehousing land.
2. Infrastructure investment to replan and transform old urban areas.
3. The redevelopment of under utilised industrial areas for redevelopment.

PROFILE OF CUTTACK

4.1 Physiography

Cuttack is situated on the 20°59' N latitude & 85°-59'E longitude and is bounded by the rivers Mahanadi in the north and Kath Jodi in the south. The maximum width of the city is 2.5 miles from north to south whereas its' maximum length is 8.5 miles from east to west.

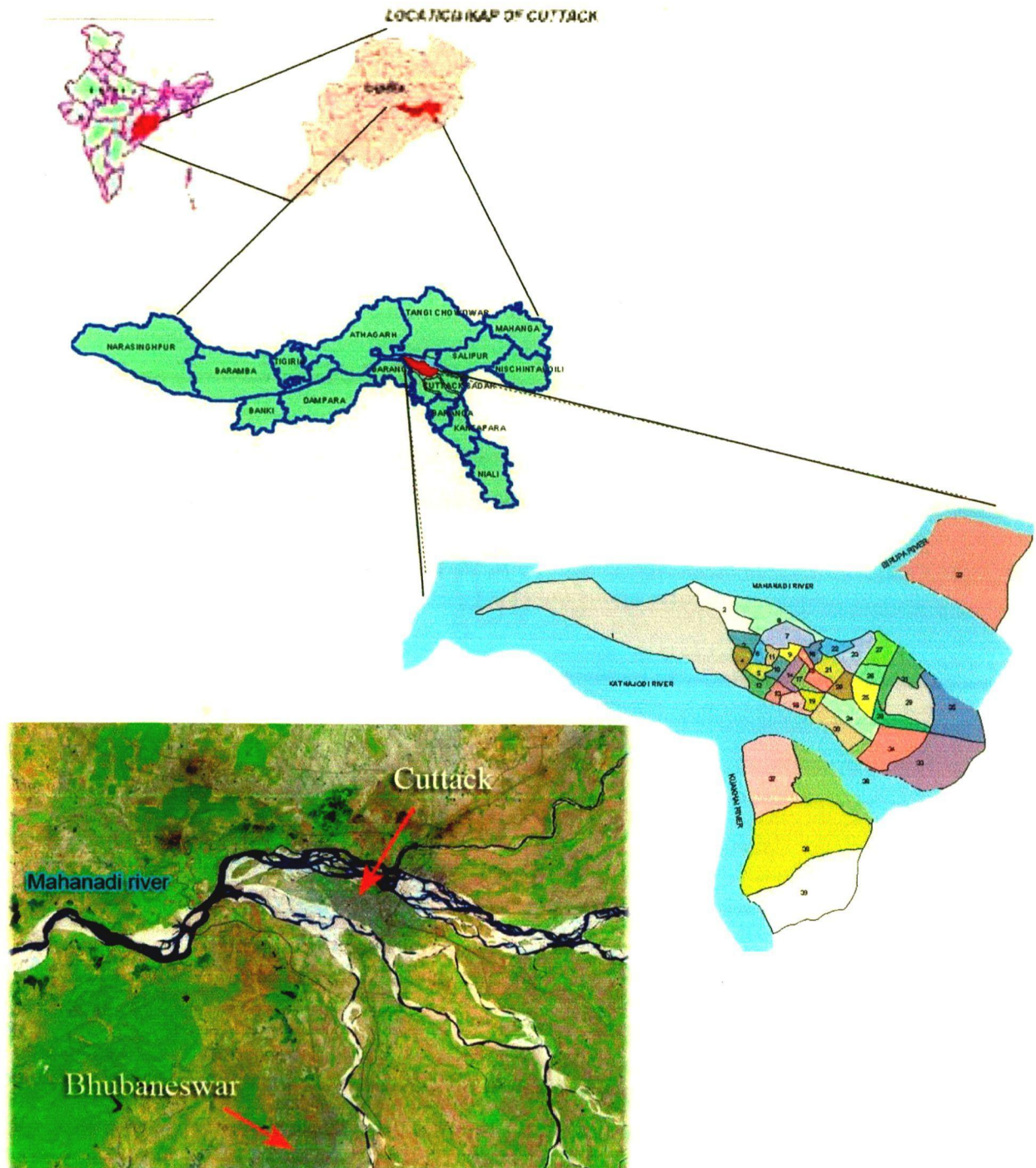


Figure 4.1: Location of Cuttack city

Source: OSDMA

4.2 Climate

The climate of the city is hot and humid with March- May as the hot season months , December- February as the cold season and June –September as the rainy season. The month of May is the hottest with the max. temperature of 38.6⁰ C and min. of 26.7°C. the month of December is the coldest with the max. temperature 37.4*c and the minimum of 14.9°C. July being the month of heaviest rainfall the average rainfall in Cuttack district is around 1892.5mm .

4.3 Topography & Soil Condition

Cuttack City, flanked by the river Mahanadi at north and river Kathajodi at the south is situated at the tip of the upper Mahanadi delta. The general topography of the city is gentle sloping from west to east and with high ground elevations towards banks of rivers in north & south and low elevation at the central part, the city assumes a saucer-like shape. The inner parts of the city are low-lying which earlier had many ponds. These ponds were eventually filled up thereby affecting the natural drainage of the city.

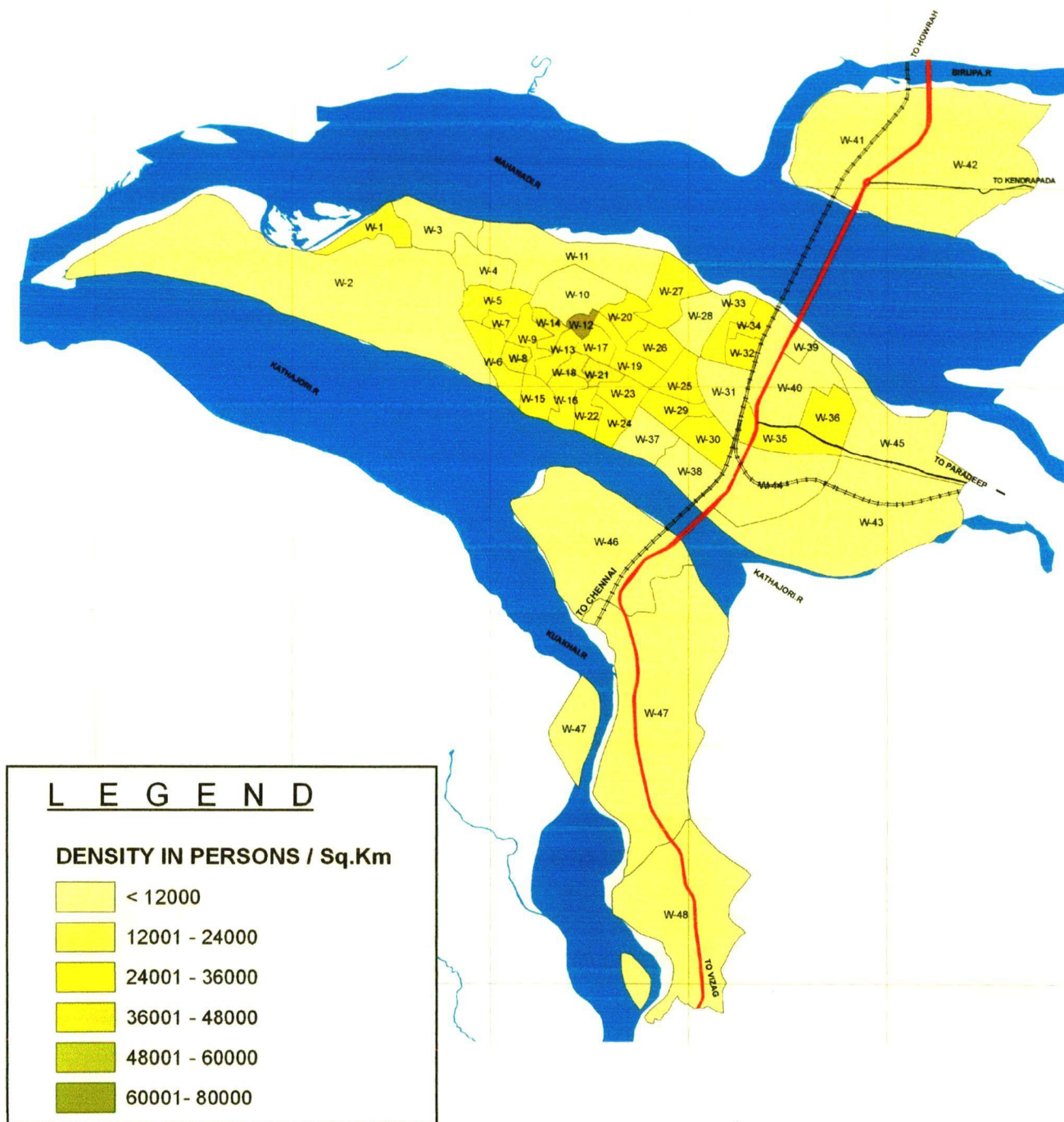
The soil in Cuttack zone is alluvial deposits predominantly sandy along the river beds and different clayey pockets along within the city. This type of soil has a very low bearing capacity (1-1.5 tons/sq. ft.) & is not very suitable for large structures.

4.4 Delineation of the Urban Area

The urban Area was first delineated while preparing the master plan in 1965 and then consisted of 16 mouzas having an area of 81.42 sq.kms. At present the Urban area has extended encompassing 49 mouzas and having an area of 195sq.kms.The Urban Area consists of 48 wards with a population of 5, 34, 654 and an overall density of 7507 persons /sq.km.

4.5 Demography

The population of Cuttack as per census 2001 is 534654 with a density of 7507 persons/sq. kms and a decadal growth rate of 32.53%. The population in 2007 is about 7,50,000. The %age of working population is 32.08% with a literacy rate of 89.6%. The sex ratio in CMC is 870.



Map 4.1: Map of Cuttack Showing Population Density

Source: Cuttack Municipal Corporation

4.6 Growth and Morphology

The 1000 year old Sliver City of Cuttack has recorded a rich and a glorious history inextricably interwoven with the social economic and political events leading to the growth and development of the city. The growth of the city can be broadly studied in 6 stages as per the situation and factors responsible for its growth.

Etymologically Cuttack means the army cantonment, and also ‘capital city’ whereas the history of Cuttack amply justifies its name. Being bounded by the rivers Mahanadi and

Kathajodi, Cuttack was named as 'Abhinav Bidanasi Kataka' during the period of Ananga Bhima Deva-III, its situation being compared with the city of Baranasi situated between the rivers Baruna and Asi.

Stage - I : As stated in history, Raja Nirupa Keshari of Keshari Dynasty is said to have first planted the city in 989 A.D. Thus, the early history of Cuttack is connected with the history of the Keshari Dynasty. Then, during the reign of Markata Keshari, in 1006 A.D., a stone revetment or embankment was constructed to protect the new Capital from inundation. Due to its strategic location Ananga Bhima Deva-III of the Ganga Dynasty built a magnificent palace or the Barabati fort where he held his court. Thus it can be seen that during the first stage the early settlements began along the river bed of Mahanadi mostly surrounding the fort of Barabati and mainly comprising of the people involved in fishing, agriculture and trading activities. The areas of Tulsipur, Deulia Sahi and Chandi Mandir developed during this time. The early rulers were motivated by the protection offered by the natural features and therefore established their capital at Cuttack and the embankments were reinforced from time to time for the protection of the early settlements.

Stage II : In 1568 A.D. Orissa passed into the hands of the Afghans. But the Afghans were not destined to rule Orissa and were ousted by the Imperial Mughal power. During the Mughal rules, a new palace, popularly known as the Lalbag fort was built on the banks of Kathajodi. Thus at that time, i.e. during the second stage of its development, the extent of Cuttack was about 2 miles on each side assuming a triangular shape. Areas like Mahamad Bazar, Shaikh Bazar, Chandi Chowk, came into being and the banks of river Kathajodi also become gradually inhabited.

Stage III : By 1747, Orissa was practically under the rule of Marathas, who improved the fort of Barabati and beautified the city of Cuttack by construction of temples. Cuttack greatly proposed as an emporium of trade at that time. The area of the town then extended considerably. Areas like Buxi Bazar, Oriya Bazar, Kadam Rasul Old Jail Tinkonia Bagicha, Balu Bazar, Cantonment and Chauhiaganj developed during the third stage of development thereby extending the limits of the city considerably on the Eastern Northern and Southern side.

Stage IV : Subsequently, development both physical and economic, of the city of Cuttack came into being after the occupation by the Britishers in 1803. By 1818, the physical boundary of the town was confined between the river Kathajodi and the Main Drain in the N-S direction and between Ramagarh and Bajrakabati Road in the E-W direction. Areas like Jobra, Telisahi, Sagariasahi, Sankarpur, Khannagar, Darkhapatna, Chauhiaganj, Shikharpur, Cantonment and Kharpuria developed in an unintegrated manner during the fourth stage.

Stage V : During the fifth stage of development, there was considerable improvement in the transportation network by canals, roads as well as rail. The canal system developed during the 1860's whereas the railways, i.e. the Bengal-Nagpur railway was introduced in 1919, connecting Cuttack with Calcutta and Madras. This provided enormous opportunities for trade and inland communications creating facilities for the healthy growth of the township, as well as it worked as a physical and psychological barrier for the development towards the east. Hence by 1930, the areas of Kesharpur, Ranihat, Kusumpur, Choudhury Bazar, Balubazar etc. became important for the activities of trade and commerce development in these areas by that time.

Stage VI : From 1960's, after the construction of the bridges on Mahanadi, Birupa, Brahmani and Baitrani, as well as the National Highway, shot up the economy of Cuttack substantially as its hinterland was extended towards west as well as North and North-East of Cuttack, whereas the city itself extended in all the directions resulting in an integrated growth of the city. Later in the 1980's, in the eastern side beyond the national highway the urban area has extended upto Bidhadharpur where C.R.R.I. and other government colonies as well as the Khapuria Industrial Estate has developed. After the construction Naraj Anicut, the extension of the city taken place in the Western direction also, whereas in the North Eastern direction the Municipal limits have extended upto the Birupa river, including the Jagatpur industrial estate within its limits. Since, the city is physically bounded by the natural barriers of Mahanadi and Kathajodi on the north and south, physical expansion in this direction is also limited horizontal expansion more than the vertical expansion and gradually the town area become congested due to its limited scope for expansion. Thus the age old city of Cuttack, which has developed over a period of years with a number of factors responsible for its growth, can be termed as a linear city with respect to its urban form. However, urbanization has progressed at a faster rate recently resulting in the overspill of urban population with generation of economic activity beyond the municipal limits and is discernible in the form of urban outgrowth in the immediate surrounding. The city of Cuttack with its high potential for generation of economic activities and the multifunctional role the city will perform will lead to a rapid and healthy growth of the city in future.

4.7 Economic Base and Employment

As mentioned earlier, Cuttack had its inception as the administrative capital of Orissa. Gradually other activities such as household industries, trade and commerce, developed and flourished under the patronage of the different rulers and Cuttack became the commercial centre of Orissa. Later transportation and medium and large scale industries developed which further diversified the function of the city. The generation of various economic activities such as

commercial, industrial, institutional and administrative and transportation lead to a constant migration from the country to the city for employment and job opportunities. So there was a shift of labour forces from primary sector of raw material production to secondary sector of material processing and finally to the tertiary sector of services. A detail probe into the employment structure will be useful to know the type of working population in the city. The existing and future occupational pattern can be broadly classified into the following sectors :

Primary Sector : Agriculture, dairies, animal husbandry, poultry and Fish culture.

Secondary Sector : Household industries, manufacturing and construction.

Tertiary Sector : Trade and commerce, storage, transport and communication, other services, on other services.

As, it is seen from the table, primary sector employment contributes very little to the urban economy. Primary sector employment is assumed to decline with the increase in population because of the increasing pressure on the land, acquiring of rural land for urban development and introduction of new techniques in the field. Secondary sector is assumed to grow in a pattern consistent with the current trends. Household industries will call for a slight fall because many of the industries are dying out and not many new industries will be set up. However, manufacturing industries and construction labour will increase with the improvement of infrastructure, allocation of space and increased accessibility, in future.

Tertiary sector employment will also increase both in percentage and absolute number trade and commerce will further boost up due to increase in wholesale activities, development of organised market centres and with better linkage. Employment in the transport sector will increase in absolute number though the overall percentage will show a gradual decrease. The percentage of employment in other services is also likely to increase owing to more specialization and intensification of activities.

As mentioned earlier, the future role of Cuttack as an industrial, institutional, administrative, commercial and transportation centre also justifies the projection of employment in the various sectors play a very important role in the growth of urban economy since ancient times as well as in future and thereby form the economic base of the city.

Table 4.1: Employment Pattern in the Past Few Decades

Sl.no.	Category	'71		'81		91	
		No. of Persons	% age	No. of Persons	% age	No. of Persons	% age
I	Primary Sector	2015	3.48	1105	1.37	5360	4.38
1	Household Industry	2680	4.63	3134	3.89	2903	2.37
2	Manufacture/ Processing /Service Industry	8096	14.00	11989	14.87	19274	15.75
3	Construction	1399	2.42	2216	2.75	3758	3.07
II	Secondary Sector	12175	21.05	17339	21.52	25935	21.20
1.	Trade & Commerce	15046	26.02	22415	27.82	33301	27.22
2	Transport & Communication	7502	12.98	10282	12.76	12757	10.43
3.	Other Services	21095	36.47	29433	36.53	44956	36.75
III.	Tertiary Sector	43643	75.47	62130	77.11	91014	74.44
1.	Total Main workers	57833	29.80	80574	29.84	122309	30.31
2.	Total Non workers	136235	70.20	189397	70.16	281142	69.99
3.	Dependency Ratio	3.36		3.34		3.29	

Source: Cuttack Municipal Corporation

4.8 Broad Landuse

Land use pattern is a reflection of the activities over physical space. The knowledge of the existing landuse is the basic criterion for the planning process. The quality of urban life and functional efficiency of a city is dependent on proper disposition of activities, the inter relationships it offers between the work centers, living areas and recreational areas. The present land uses have been studied broadly, giving an idea about the quantity of land available for urban uses and the functional relationship between the various uses.

Table 4.2: Landuse of Cuttack City

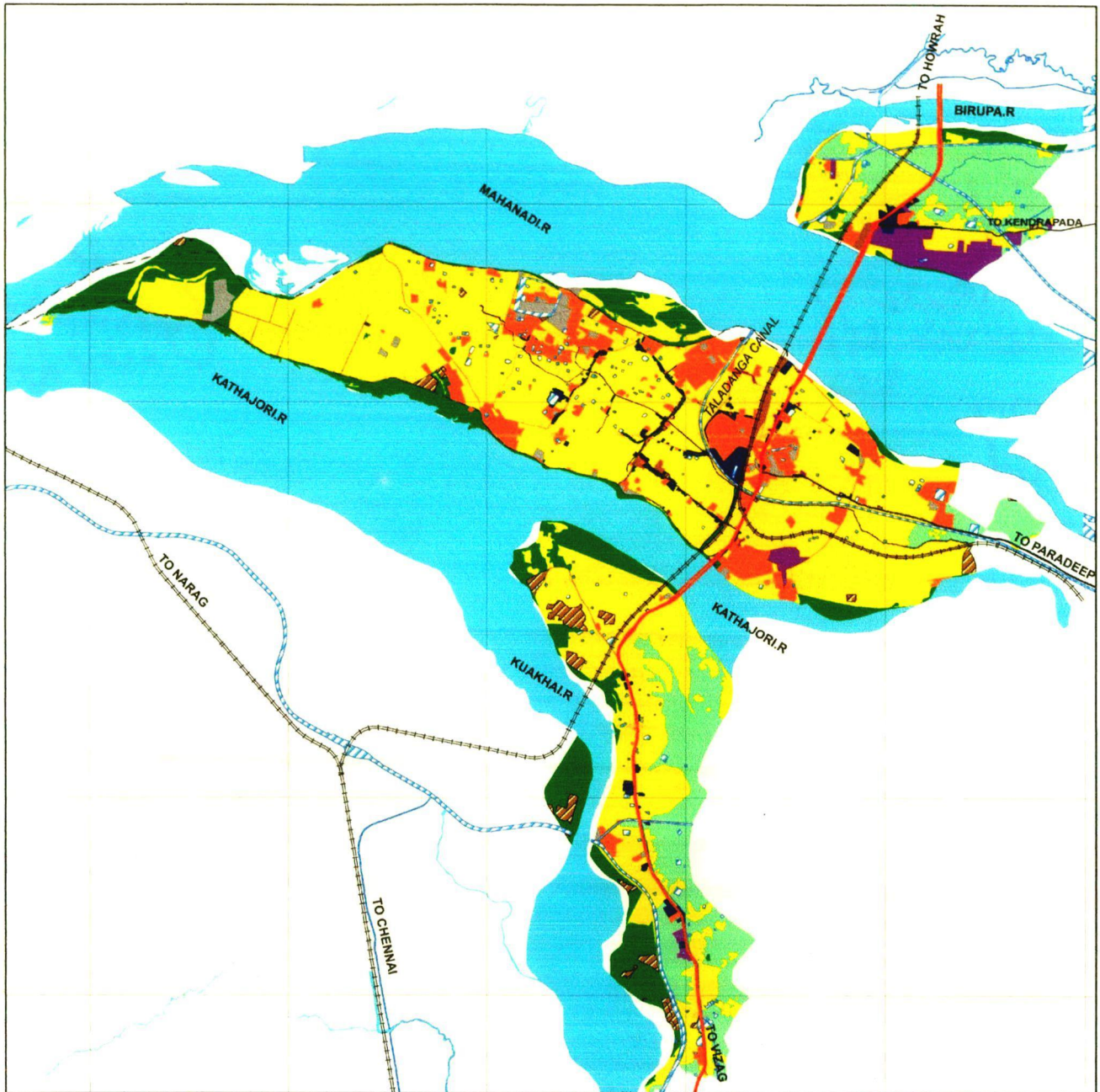
SL. NO.	LANDUSE	% OF AREA
1	RESIDENTIAL	39.80
2	COMMERCIAL/INSTITUTIONAL	3.05
3	PUBLIC-SEMI PUBLIC INSTITUTIONS	5.44
4	INDUSTRIAL	2.43
5	TRANSPORTATION INFRASTRUCTURE	5.18
6	UTILITIES & SERVICES	2.71
7	RECREATIONAL	1.12
8	AGRICULTURAL LAND	14.24
9	VEGETATION/FOREST LAND	15.05
10	WATER BODIES	6.58
11	VACANT LAND	4.39
TOTAL		100.00

Source: Cuttack Municipal Corporation

The city of Cuttack can be divided into 4 longitudinal zones:

1. Western Zone
2. Central Zone
3. Eastern Zone
4. Northern Zone

The Western Zone of the city has got a very low density and is gradually being filled up in the past few years. The Western zone mainly consists of residential, institutional and recreational landuses. The areas of Bidanasi, Tulsipur, and Cantonment etc have residential development taking place in a fairly well organised manner. The Barabati fort area, Barabati Stadium, Indoor Stadium are areas mainly for active and passive recreation and have a large chunk of open land in their vicinity which can be properly utilized for future expansion. Institutions like the S.B. Womens College, Convent School, Stewart College etc also occupy space in the Western Zone. Many new developments both private and public are appearing in this zone, although some of



Map 4.2: Map showing Landuse of Cuttack City

Source: Cuttack Municipal Corporation

the fringe areas still bear the rural character. With the construction of the Naraj Ancient vast chunk of land is available for the future growth of the city towards the farther western side. Thus the western part of the city can be developed in a proper manner with adequate infrastructural facilities and urban services required for the future expansion of the city.

The Central Zone is the most densely developed portion of the city, in contradiction to the Western Zone. It forms the congested core of the city where the entire landuse pattern presents a confused picture. Industries exist side by side with the residences whereas one can witness long stretches of dense commercial activity on both sides of the narrow serpentine roads. Even residential developments have not occurred in an organised manner. Semi puce houses with numerous slums interwoven with residential localities having poor structural condition of the houses and unsanitary environment exhibit a very unhealthy and deteriorated picture of the central area. Major work centres such as the High Court Collect orate, Tsahalis Office, State of Board Revenue office and many other public semipublic landuses are present in the southern part of the Central Zone. Areas like Buxibazar, Nayasarak, Choudhury Bazar, Ranihat, Mangalabag etc., occupy the central portions exhibit a dense development of commercial activity along both sides of the narrow roads.

Thick commercial development can also be seen along the Bajrakabati and College Sqaure Road. The Gourishankar Park as well as the Gopabandhu Park exists in the central portion but their locations as well as the surrounding land uses make them unsuitable for passive recreation. Health and education facilities such as S.C.B. Medical College, Engineering School and the General Hospital lie towards the Northern side whereas the Ravenshaw College lies to the Eastern side. Whole sale areas such as Malgodown Area, Chatrabazar area, Sikharpur, Malgodown area lie near the transportation corridors like the O.M.P. Road, Taldanga Canal and the S.E. Railway line. Regional transport terminal lies at the Badambadi, towards the south of this zone, whereas NH-5 forms its periphery on the eastern side.

Thus the central zone has a mixture of institutional, health and educational public and semi public commercial retail wholesale, warehouses, engineering workshops, industrial and transportation activities and incompatible land uses which result in acute congestion and deterioration of the physical environment. The Eastern Zone mainly comprises of the industrial estate, institutional land use like J.K.B.K. College and C.R.R.I. and other government colonies which exhibits a mediocre density development. This zone also has some pockets of vacant land in an unintegrated manner which can be used for future expansion of different land uses. The Northern Zone comprises mainly of the Jagatpur Industrial Estate

having small scale and medium scale industries. It also comprises of a few scattered settlements and agricultural land. The Government has proposed to convert this area into industrial zone exclusively.

Thus the city of Cuttack shows an organic growth over a period of time with heavily built up mixed land uses of residential, commercial and industrial activities. Most of the land uses do not have adequate space and are not fit in the environment of the area where they are located due to various factors such as, performance characteristics, the type of service required by them, traffic hazards and obstruction to the harmony of uses with the surrounding areas. As a result of all these factors the city of Cuttack presents a degenerated and deteriorated picture which can be changed provided adequate measures are taken to solve the problems of physical planning.

4.9 Transportation System

Within the structure of a community, the transportation lines form the arteries through which the economic energy, the life blood, of the community is kept flowing. Therefore a study of the transportation system and the load of traffic on important roads is essential. The study of the transportation system of Cuttack has been done at two levels namely intra-city and inter-city transport.

So far as the regional transportation system is concerned two important life lines of South-East India namely Calcutta-Madras railway line and National Highway No. 5 pass through the city. The city is also connected with Paradeep by road as well as canal. Thus in addition to the railway line there are two major entry points by roads from North and South through NH-5. The proposal to connect Paradeep by rail has increased the traffic load on the eastern corridor & Cuttack has become an important railway junction with the expansion of the railway line.

The existing intercity pattern in Cuttack is typical of a linear city. The main road which starts from the railway station passes through the congested portions of Mangalabag, Ranihat, Buxibazar, Choudhury Bazar and BaluBazar etc. This route has heavy traffic and practically all the road communication between the West and East is through this road.

At the same time this route forms the main shopping street of the city. Slow moving vehicles

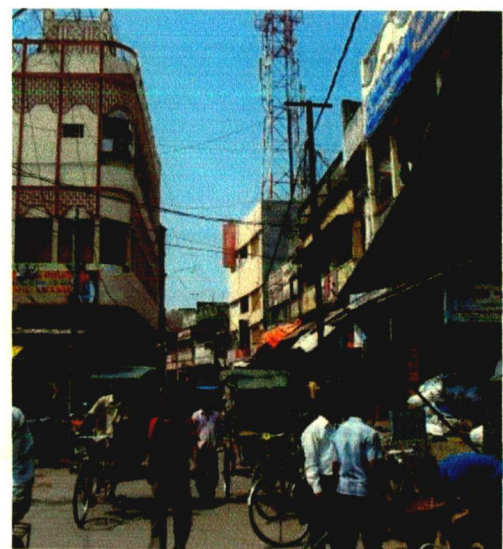


Figure 4.2: Domination of slow moving traffic and pedestrians on the commercial streets

Source: Author

dominate the roads and hinder the movement of the fast moving vehicles. Traffic jams and bottlenecks are frequent features on this road. To add to the congestion, pedestrian movement is also along this road due to the lack of footpaths.



Figure 4.3: The river drive/ring road encircling the city

Source: Author

The ring road encircling the city mainly forms the intercity bus and truck route. At present this road is underutilized as the trend of traffic flow through the internal roads continue. The link road connecting the Badambadi road and NH-5 forms another major intra-city road along which the regional bus traffic as well as the inter-city buses terminate at the Badambadi bus-stand. The other important roads are the Bajrakabati Road, Kathajodi embankment road, Tulasipur Road, Cantonment Road, Old Secretariat Road, Convent

Road, Pilgrim Road, Ice-factory Road, Mahtab Road, which connect almost all the parts of the city. Excepting the Tulsipur Road, Cantonment Road, Mission Road all the roads are insufficient in width and defective in alignment to handle the present load of traffic. So far as intracity traffic is concerned, though the slow moving vehicles still dominate the urban scene the increasing car ownership pose a threat on the transportation network in future.

Cuttack was the former capital and nerve center for trade and commerce for the state. Even after relocation of the state capital functions, some important administrative functions are still located in Cuttack. The key issues regarding the traffic and transportation system of the city is discussed following.

Preliminary investigation reveals that urban structure of the city has played a key role in the evolution and operation of the existing traffic and transportation system. The expansion of the town is restricted by rivers on all three sides. The town is not as wide as it is long (the proportion being almost 1:4). Due to cumulative trip loading on the urban arterials in such a linear urban arterial network, the core always gets congested,

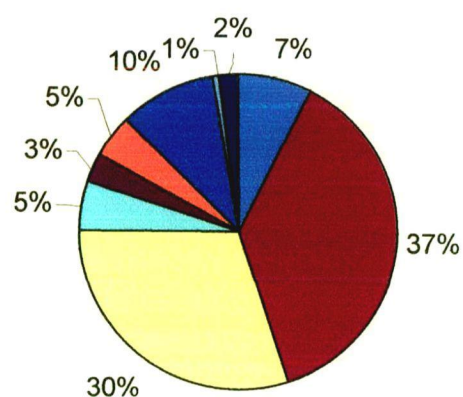


Chart 4.1: Modal Split

Source: Cuttack Municipal Corporation

especially during peak hours of traffic operation. The city is now subject to expansion on either side of the old core. One the one side along Cuttack-Paradeep road on the other half of the NH 5 – and on the other hand towards Bidansai, over the area reclaimed from Mahanadi River. This will make the urban structure more linear in nature and hence increase the traffic bottleneck in the midsection (Badambadi Bus stand area and the College Square area).

The layout of internal roads in Cuttack is organic in nature – evolved entirely on incremental basis. To alleviate the growing congestion on the internal road links, an existing Ring Road, all long the river banks of the town has been constructed. There is also a proposal to extend the Ring Road around the periphery of the Bidanasai area.

Most of the internal urban links are either single lane or intermediate lane with limited scope of capacity augmentation, both horizontal and vertical. Poor surface quality and poor geometry of intersections as well as the road links further reduces the capacity of the roads and increases vehicular accident rates

The NH 5 and the Kolkata-Chennai Railway link bisect Cuttack into two halves. The rail line poses a physical barrier to the road based movement as grade separated intersections are few. On the other hand, local traffic will considerable slow moving vehicles has to cross the NH 5 to make a trip to the other half of the town. Interference with the regional traffic by the local traffic, results in a collateral lowering of the level of service. Moreover, this has caused an impediment to the growth of the other half, the Naya Bazar Area.

The Cuttack-Paradeep Road has a high freight movement passing through the Eastern Cuttack Urban Area and this inhibits proper movement and development of this zone. The cumulative effect of the aforesaid two factors have led to the development of two distinctly disparate zones on either side of the Railway track exhibiting a marked difference in their levels of growth and urbanization.

The location of the wholesale trading zone in the central part of the town (Malgodown area) creates major hindrances to free movement owing to on street parking by the goods vehicles and loading/unloading activities on the carriageway. Ingress and egress of heavy goods vehicles in the narrow winding roads interferes with the local traffic operations and increases the probability of vehicular accidents.

The capacity of the Bus Stand at Badambadi is insufficient, and as a result of which, many long-distances vehicles plying through the region often park in the crossing of the national highway and the town roads, clogging the regional traffic corridor.

Recent traffic volume surveys reveal that the trips made by of two-wheelers is rapidly rising due to steadily rising two-wheeler ownership. This phenomenon will

have significant future repercussions on the parking supply-demand scenario of the city. On street parking facilities primarily cater to the present parking demand. On street parking, utilizing a lane on either one or both side of the carriageway reduces the capacity of the urban arterials. Growing demand for on-street parking due to rapid proliferation of two-wheeler population will make the situation worse.



Figure 4.4: Ariel View of Badambadi Bus Terminal
Source: Google Earth

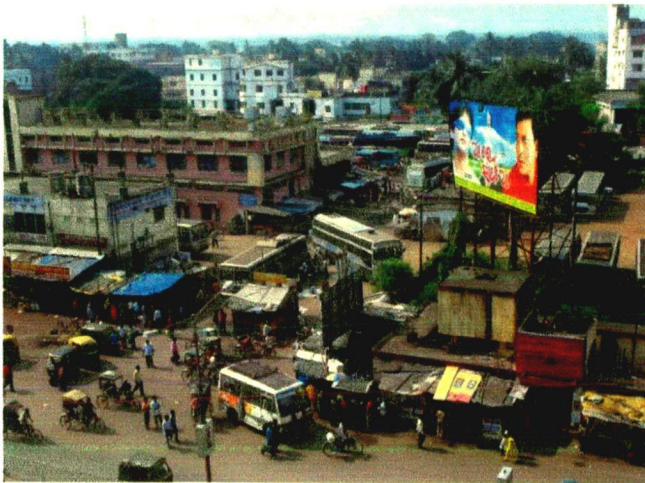


Figure 4.5: Birds Eye View of Badambadi Bus Terminal
Source: Author



Figure 4.6: Badambadi Bus Terminal
Source: Author

Cuttack has a high population density, which generates a significant amount of trip density and makes it suitable for public and para transit options. However, in absence of planned terminal facilities (due to space constraint) encroachment of the existing road carriageway space observed further lowering the capacity of the roads. Recently, initiatives are taken to provide innovative mass transit option which is less space intensive.

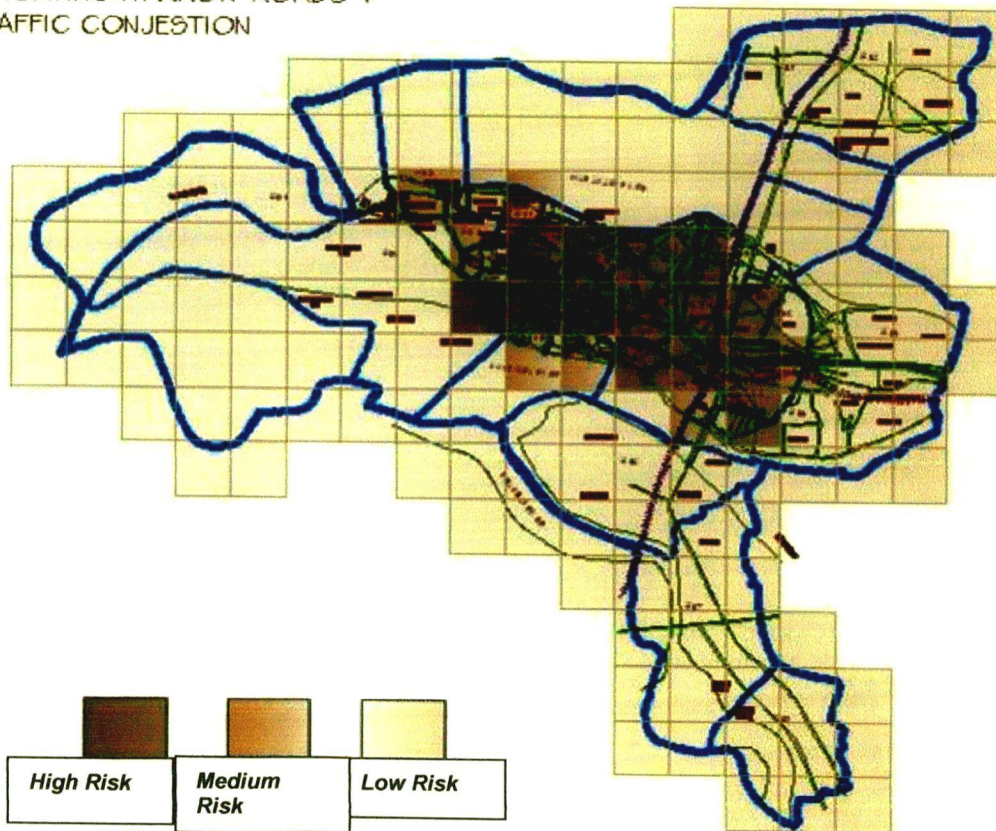
The trip distances within Cuttack are fairly negotiable (average trip distance being 1 – 1.5 km) and the gentle contour of the town facilitates slow

vehicular and pedestrian movement. Thus, there is a higher reliance on walking, bicycles, rickshaws. These slow moving vehicles significantly interfere with the vehicular traffic operations and lowers the vehicular travel speed.

Trade and commerce being a prime driver of the local economy, generates a huge influx of people from the surrounding hinterland to the commercial hubs of Cuttack. This leads to a huge flow in pedestrian traffic and, eventually, significant vehicular-pedestrian conflict.

Absence of proper signaling and signage, zebra crossing, missing road side railings indicate that inadequate attention has been paid to the pedestrian movement within the city. This increases pedestrian vehicular conflict and lowers the level of service for pedestrian movement. Poor traffic management further reduces the efficiency of the urban transportation in Cuttack. Need towards enforcement of general and proper traffic rules and regulations helps in a long way to achieve traffic circulation efficiency.

MUNICIPAL MAP OF CUTTACK
INDICATING NARROW ROADS &
TRAFFIC CONGESTION



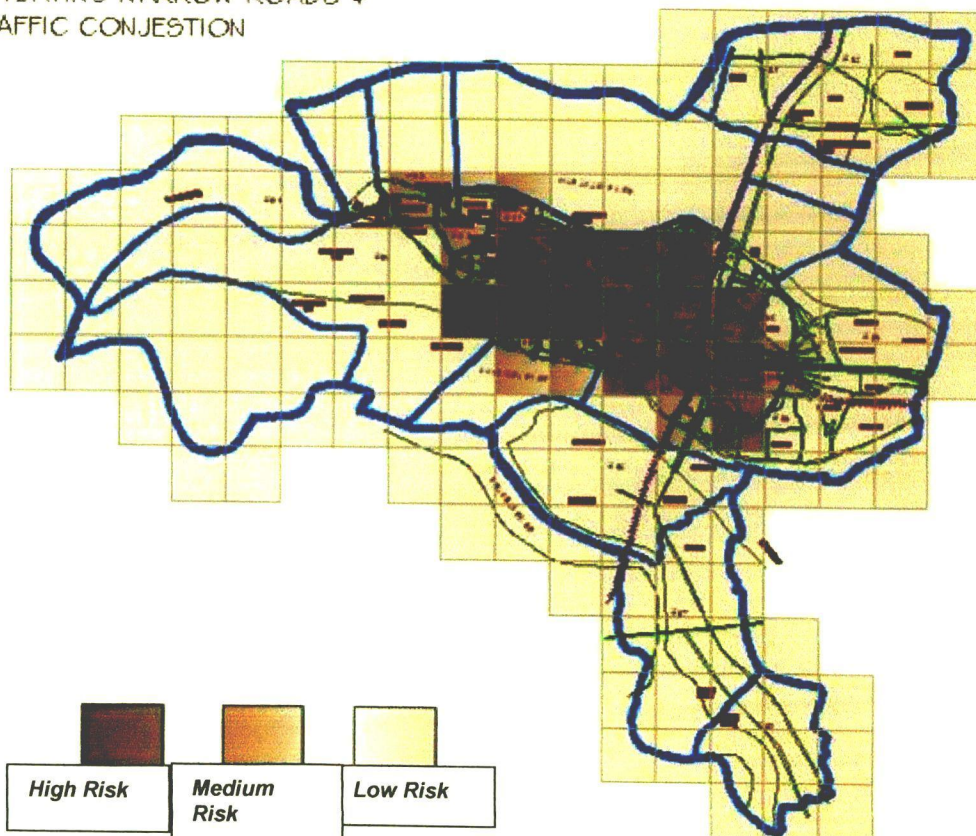
Map 4.3: Map indicating narrow roads & traffic congestion
Source: Cuttack Municipal Corporation

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MUNICIPAL MAP OF CUTTACK
INDICATING NARROW ROADS &
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Map 4.3: Map indicating narrow roads & traffic congestion
Source: Cuttack Municipal Corporation

4.10 Physical Infrastructure

The physical infrastructure deals with the water supply system, sanitation and drainage and solid waste management. The scenario of Cuttack Urban Area has been assessed under these aspects over here.

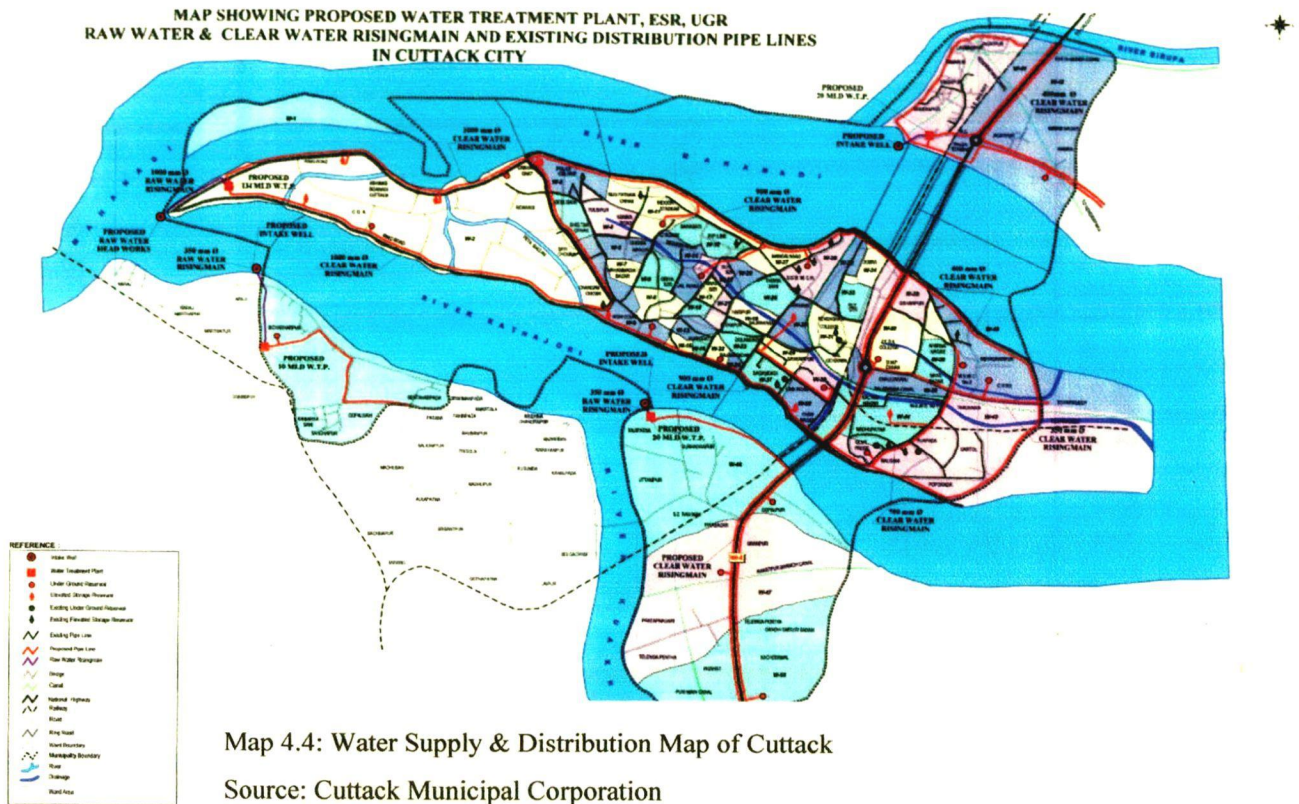
4.10.1 Water Supply System

Cuttack, the erstwhile princely capital of Orissa lies on the head of Mahanadi Delta, more precisely on the banks of the major Rivers Mahanadi, Devi and Kathajuri. The general topography of the city, which is spread over an area of 38.5 km² is flat and gently sloping from west to east. The general ground levels inside the city are low and below high flood levels of two rivers namely, Mahanadi in the north and Kathajuri in south. The high ground elevations, which are towards the bank of the rivers, are MSL + 30m in the north and MSL + 20m in the south and to the east of city. The central part of city is low with an elevation close to MSL + 17m. Thus the city has a saucer like profile and hence there are many low lying areas inside the city. Since the city lies under the confluence of these two big rivers, Mahanadi on the North and Kathajori on the South, it is regarded as the highest flood prone city of Orissa. Though, the city is surrounded by embankments which protects it from flooding, it suffers badly from flooding and water logging in the rivers during floods as well as due to high water tide. It is estimated that an area of 89.44 Km² in this district is prone to water-logging.

Cuttack municipal area has been divided into four water supply districts: (i) Ranihat (ii) Kila Area near Stadium (iii) Annpurana Theater in Trnkonja Baghicha and (iv) Town Hall.

The other areas and institutions like Police Colony, Mahanadi Vihar, Revenshaw College, Cuttack Medical College, Engineering School and Kanika Kothi Area (Bijupatnaik Chack, near OWSSB office) are provided with water supply by their own independent systems. The water is supplied 8 to 10 hours per day. Source of water supply to the city is based on tube wells only. There are 90 tube wells in the city for supply of drinking water. Average depth of the tube wells is about 100m below ground level. Existing distribution pipes are inadequate and not satisfactorily functioning. Pipes are incrustated due to high iron content in the water, and therefore, it is not able to carry adequate discharge flow rate. Maintenance and repair of these pipes is rather costly compared to that of laying new pipes. Therefore the damaged pipes are currently being replaced by PHEO, Orissa. The quality of groundwater of Cuttack municipal area has been tested at different locations by OWSSB and are reported within prescribed limits.

4. There is no provision of safe drinking water supply through pipe lines and majority of rural population are forced to depend on ground water sources only.

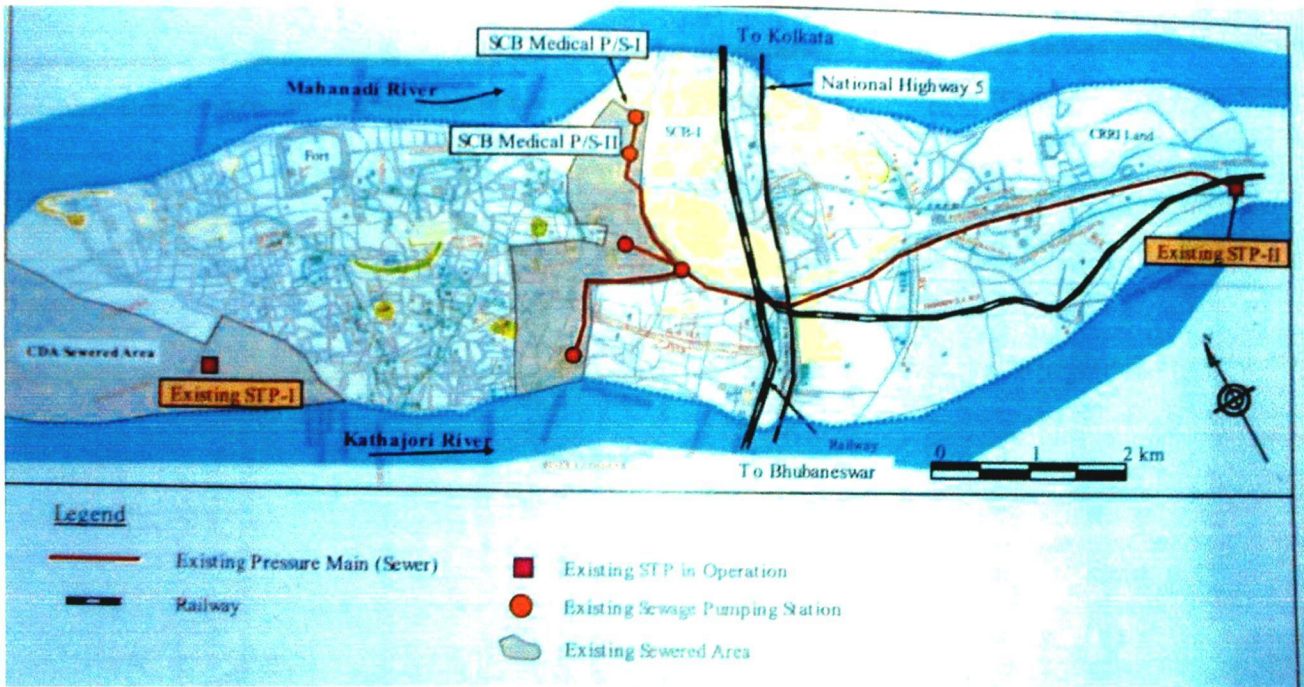


4.10.2 Sewerage System

Till recently, there was no systematic sewerage system or treatment plant in the city, the discharge of domestic waste through storm water drains was directed to the river. As a result, the quality of water in Mahanadi and Kathajori Rivers shows deterioration in quality. It is reported that down stream of Cuttack, there is a higher degree of pollution with high values of BOD, FC and COD. The high organic pollution in the river is due to the direct flow of sewage and domestic discharge into the river. The open drainage system of the city is totally polluted by sewage, contaminated ground water, and other wastes.

4.10.2.1 Existing System of Sewerage

A part of the city Professor Para, Saga Diasahi, Ranihat and Mehtab Road area have been covered by sewerage system for 40,000 people. The existing sewerage scheme is more than 20 years old and the same is functioning now. Three numbers of pumping stations have been installed at Rajabagicha, Professor Para and Chattra Bazar for pumping of sewage finally to dispose of at Matgajpur oxidation pond. It is reported that the Orissa Water Supply and Sewerage Board have prepared a comprehensive sewerage scheme for Cuttack city. The sewage is to be conveyed to Matgajpur where a sewage treatment plant of 33 MLD is already constructed and recently commissioned.



Map 4.5: Map Showing the Existing Sewerage Facility in the City

Source: Cuttack Development Authority

At present the existing collection system is divided into 3 drainage blocks, namely Block-V, Block-VII and Block-XIX. There are 3 pumping stations at Chatra Bazar, Professor Pada and Raja Bagicha using submersible 13.5 HP pumps which are discharging final flow into the treatment plant. The sewerage system under Block-V covers the part of Ward Nos. 15, 19 and 20. The sewage from this Block is collected at Chatra Bazar Pumping Station and pumped again into the main sump at Chatra Bazar Pumping Station. Then this final flow is pumping into the inlet chamber of Sewage Treatment Plant. It is reported that all existing pipe diameters in this block are adequate for future design flows except some portion of trunk sewers and few lateral pipes are to be replaced. In this Block, the total length of existing sewer pipe is 8.45 km and existing diameters varies from 150mm to 375 mm. The sewerage system under Block-VII covers the part of Ward Nos. 20, 21 & 23. This area is fully saturated and scope for further development is less. The sewage from this Block is collected in the sump of Professor Pada Pumping Station. Again this sewage is pumped into the Chattra Bazar Sump and Pump House. From here it is pumped into the sewage treatment plant. It is reported that all existing pipes of this blocks are adequate for future flows. In this Block, the total length of existing sewer pipe is 6.8 km and existing diameters varies from 150mm to 375mm. The sewerage system under Block-XIX covers the part of Ward No. 18 and 19. The sewage from this is collected at Raja Bagicha sump and pump house. Again this sewage goes to Chatra Bazar sump and pump house by gravity main of dia 375 mm.

From this sewage is pumping into the main sump at Chatra Bazar, and then pumped into sewage treatment plant. The total length of existing sewer pipe is 3.82 km and existing sewer pipe diameters varies from 150 to 300mm. Here also, all small existing pipe diameters are adequate for future design flows except trunk sewers and few lateral pipes. The total sewage flow generated from these blocks in future will be pumped into the existing STP at Matgajpur.

4.10.2.2 Wastewater Generation

For the purpose of design, the wastewater generated is estimated considering water supply rate as 173 lpcd and it is assumed that the 80% of the water supply i.e. 138 lpcd reaches the sewers. Infiltration into the wastewater system occurs through defective sewers, manhole etc. The rate of infiltration into sewers also depends upon the ground water table and permeability of the surrounding soil. Strict quality control and good workmanship will ensure minimum infiltration in initial condition; the same may increase, as the system condition deteriorates with age. Since the sewerage system is supposed to be watertight system, as any leakage will eventually accelerate the sub-soil water pollution. So, the expected wastewater generation is 19 MGD (~86 MLD).

4.10.2.3 New Sewerage Scheme

Under this study new sewerage scheme is proposed in ward No. 1, Part of 15, part of 20, 24-33, 34 & 35. The proposed treatment plant of 33 MLD is constructed at Matgajpur and is recently commissioned. Treatment process is the anaerobic pond (2 nos) followed by facultative pond (2 nos). Pre-treatment units of screen and grit chambers are provided. The effluent after treatment will be discharged in to River Kathajori. Low cost sanitation is suggested for Khannagar, Nuashai, Dhabasahi, Malgodown Beharia Sahi, Pilgrim road, Sagar Sahi, Ranihat, Jaimangal, Harijan Basti and Mochi Sahi.

In Cuttack City in some areas public latrines exist, which are maintained by Cuttack Municipal Corporation and Sulabh International (pay and use toilet). It is learned that there are 106 slums located all over the city. Community toilets are to be provided in localities where all individual dwellings units do not have their own toilets.

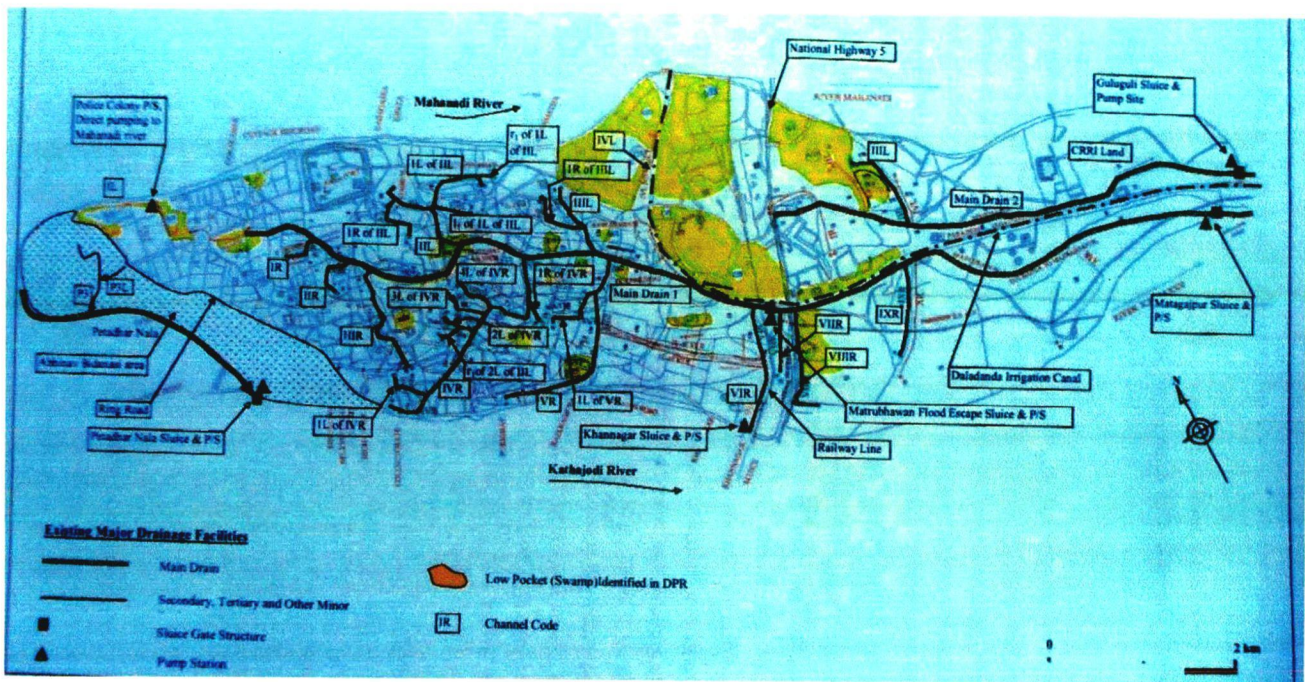
4.10.3 Drainage in Cuttack

4.10.3.1 Topography

The city is under the confluence of two rivers namely, Mahanadi and Kathajori. It is surrounded by embankments, which protect it from flooding, but the city suffers badly water logging during high floods as well as high water tide in these rivers. The general topography of the town is a

gentle slope from west to east. The maximum elevation is EL30 m in the north and the minimum is EL20 m in the south east.

The central part of the city is low with an elevation of about EL17 m. A major canal known as Taldanga canal starts from Jobra at about the center of the city and runs in a south, southeast direction bisecting the town. On the western and southern part, the city is divided by the canal. Storm water drain known as Drain No. 1 runs from west to east and discharges into Kathajori river. The second drain runs in west east direction and discharge into Mahanadhi river. The East Coast railway line divides the city into two segments. The western part has the old city area with maximum population and habitational density, as well as the areas of newly developed Abhinaba Bidanasi areas of CDA (Cuttack Development Authority).



Map 4.6: Map Showing the Drainage System
Source: Cuttack Development Authority

4.10.3.2 The Open Drain System

The city's drainage, which includes wastewater transport and disposal, is entirely by open drains. The city presently has two main drainage channels along-with their tributary drains. These cater to the (two) portions of city segmented by the Talandanga canal, which runs along the central part of the city. These drainage channels are referred to as Main Drain No.1 and Main Drain No. 2.

- Main Drain No. – 1

The main drain1 runs for a length of about 10.47 km. It originates at Srivihar Colony (Hanuman Temple) near Tulasipur which is to the north west of the city and ultimately outfalls in to river Kathajori near Matagajpur at the city's south east end . Beyond the Matagajpur sluice, water flows for about 2.25 km parallel to Kathajodi river inside the flood plain before joining the stream. This reach is not having defined drain section. At the origin of the main drain 1, a tributary drain also joins the main drain about a km upstream of Srivihar colony. The drain, which joins the main drain has been encroached upon and is almost in decaying state. The drainage area of the main drain up to Matagajpur sluice is 2727 hectares. The average flow of the drain, as estimated in a 1982 report, is 106 cumecs at Matagajpur sluice and 81 cumecs at NH bridge crossing. At many reaches the drain sidewalls are reported damaged. The section of the drain is also irregular and less adequate at many locations in the reach from Nayabazar to Matagajpur. Proper gradient is not maintained at several stretches on its reach and the hydraulic parameters are also not uniform.



Figure 4.7: Main Drain 1

Source: Author



Figure 4.8: Main Drain 2

Source: Author

It is reported that the carrying capacity of the drain is throttled due to narrow culverts at many locations. To prevent back flow of flood water from the river entering the city (during floods) the drain is controlled by gated sluice at its discharging end into river Kathajodi at Matgajpur. The flap shutters of the Matagajpur drainage sluice are in damaged condition and significant flood flow enters through the sluice during floods. This causes flooding in the upstream of the drain specially affecting the low-lying pockets. During 1985, two more sluices were built, one at Matrubhavan to release water to Taladanga canal and the second at Khannagar Railway Bridge. The Khannagar sluice is linked to the main drain1 by a link drain to discharge water into river Kathajodi. The link drain is about 1.30 Kms in length. This gets regularly silted up and needs re-grading from time to time. Matrubhavan sluice seldom helps in evacuation of

floodwater due to interference of canal regulation measures for safety at critical reaches down stream and other constraints.

- Main Drain No. 2

The main drain No. 2 originates from eastern part of Cuttack Railway Station near to the railway track. It runs for a length of 5.175 km from OMP square to bank of R. Mahanadi beyond C.R.R.I. campus and thereafter 3.825 km inside the flood plain before joining the river Mahanadi. Guluguli sluice on Mahanadi right embankment, just on the eastern boundary of C.R.R.I, controls water of river Mahanadi and prevents back flowing into the city. The drainage area of main drain 2 at Guluguli sluice is 565 hectares. No definite drain section is maintained in the reach inside the C.R.R.I campus.

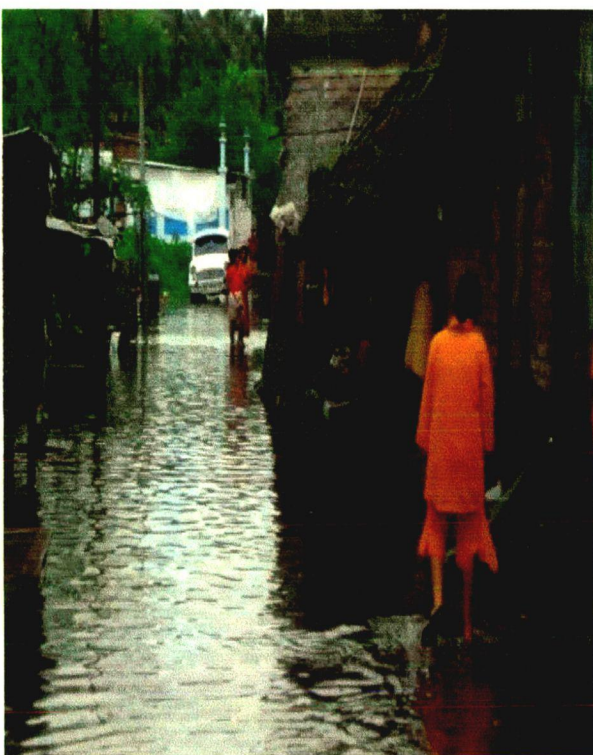


Figure 4.9: Water logging in rainy season
Source: Cuttack Municipal Authority

4.10.3.3 The Problems of Flooding

The city suffers badly from flooding and water logging mainly due to high water levels of the rivers. It gets inundated during heavy down pours due to inadequate drainage systems. There are also a number of lower pockets in the city, from where storm water does not get evacuated through the existing (drainage) system. During rainy seasons, the sewage and storm water mix together and find their way into the households creating a very unhygienic situation in many such pockets/localities. It was reported that during 2003 monsoon period, the issues of water logging aggravated due to continuous heavy rainfall throughout Cuttack city followed by high flood in the rivers. The storm water drains from

Cuttack City could not discharge floodwaters to the rivers for more than 29 days in August, September and October due to flood lockage. Except for stagnating pools of sewage and wastewater, there are fewer problems in dry weather and non-monsoon season. As stated earlier, the problem becomes acute every year during the monsoon due to inadequate carrying capacity of the drains. The problem aggravates when flood water level in the two rivers are above the water levels in the drainage channels. Over the years the (two) rivers progressively have silted and as a result the floodwater flows at rivers were at higher levels than the main drains. This cause flood lockage and often results in back flow of floodwater to the town

through (leakage in the) control sluices. During such times many areas in the city remain water logged while low-lying areas get inundated. The problems are so severe that to drain out rainwater from the city even during moderate rains, pumping becomes essential.

4.10.3.4 Critical Issues of Concern

By analyzing the present sewerage system of Cuttack, the following critical issues/points are observed as of concern:

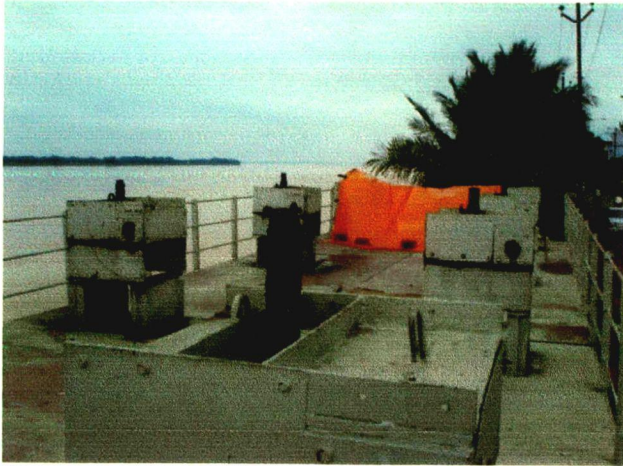


Figure 4.10: Higher River Level than the city's level in rainy seasons

Source: Cuttack Municipal Authority

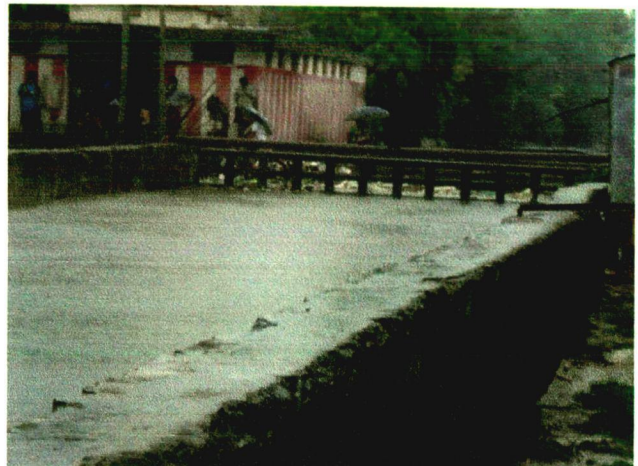


Figure 4.11: Overflowing main drains in rains

Source: Cuttack Municipal Authority

1. The existing system of sewerage is inadequate to handle the increasing wastewater generation and lacks the vigor of present day planning technology.
2. Though the city is growing at a rapid pace, the systems of sanitation and drainage are unable to keep pace with it.
3. The natural depressions and ponds, which were instrumental in preventing excess storm run-off, are getting filled up at a rapid rate due to urbanization. This may further aggravates the existing problems of water logging.
4. Due to the lack of proper drainage and wastewater management, combined with indiscriminate dumping of solid waste, natural drains are functioning like sewers.
5. A detailed understanding of drainage problems of Cuttack, including the possibilities of de-silting of rivers, and implementation of a master drainage plan is much essential.



Figure 4.12: Water logging in rainy season in slums
Source: Cuttack Municipal Authority

4.10.4 Solid Waste Management

The Cuttack City does not have an adequate Garbage collection and disposal system. In general there is no systematic collection, segregation, storage system for the solid waste generated in the city. All the municipal wastes generated from various sources are generally dumped either on the streets or on the storm water drains and canal. The present system of solid waste collection is through dust bins placed in different places and street sweeping followed by carriage through open trucks, tractors and by the employees of Cuttack Municipal Corporation to the open dumping yards for disposal.

4.10.4.1 Solid Waste Generation Rate

The population of Cuttack as on 2006 is 6,20,000. The average SW generation per person is expected as 400 gp/d. Accordingly, the total SW generation in Cuttack is estimated as 248 MT/d.

4.10.4.2 Existing System of Collection and Storage

The Safai Karmacharis are entrusted with the sweeping of streets in the morning. Each worker is assigned a specific area known as a beat, which is of 300-500m in length depending upon the size of road and density of population. The sweepings accumulated in small piles are taken up in wheelbarrow (single chambered) or by means of metal/wooden plates and shifted to the nearest collection point manually. Garbage collection points are mostly located on wide roads within the city. Time to time Garbage is transported to the disposal ground by tractor and trucks. More than 300 wheelbarrows are used by the CMC for this purpose. Around 900 permanent staff and 150 temporary staff are being engaged. The work of the sweeping

operation, collection, transportation and disposal of solid waste are actually being looked after by Jamadars and are being supervised by sanitary inspectors, in turn monitored by Health officers. Private contractors are also appointed to provide sweeping and various drain cleaning services. However house-to-house collection of waste is still the responsibility of CMC.



Figure 4.13: Municipality Sweeper collecting the garbage
Source: Author

There are presently around 90-collection point and depots in the entire Cuttack City. The wastes brought from primary collection in wheelbarrows and auto-rickshaw containers also unload into open heaps at these collection depots. The mode of transportation is through the dumpers, minitrucks, loaders and tractor-trailers which directly collect the solid waste from garbage points then have an out fall in to the dumping ground.

In most of the places, where collection points and depots are unavailable for the household wastes, people generally dump these wastes openly on the roads. Since the facilities for SW collection are not provided in slum areas like Charta Bazar Area, people use to dump the waste in to the nearby Taladanda Canal. It is a common practice that the shopkeepers throw their wastes on the roads and drains. The waste from vegetable and fruit market, fish and meat market and restaurants and hotels are not collected and transported to disposal sites separately. Being, highly biodegradable this waste contributing maximum odour.

Since the segregation of wastes is not being practiced, composting plants are not in operation and all the wastes both biodegradable and no-biodegradable wastes are being dumped on the dumping ground. Even the infectious and non-infectious biomedical wastes are not segregated, stored and treated before disposal. Only few of the Hospitals are seeking the

help of some private agencies to collect and dispose their bio medical wastes. All the hospitals are dumping these infectious and non-infectious biomedical wastes in the hospital premises and burn them.

4.10.4.3 Disposal of Solid Waste

The Solid Waste ultimately gets dumped in to the dumping ground at Brajabiharipur near Bidanasi development area between the rivers Mahanadi and Kathajori. This land is basically selected may be because of deep natural depressions. It is learned that CMC have identified a new dumping ground at Naraj of 20 Hectares for disposal of SW. Though two composting plants were set up at Satty Chuaraha and Nehru Pally with capacities of 5T and 1T respectively to treat the biodegradable wastes from of 18 wards of the Municipality, it is not functioning now. So, simple open dumping is the only management technique practiced. It has also been observed some wastes are also being dumped as a high embankment in the Kathajori river bed and on Mahanadi river bed Since the city also does not have adequate land for waste disposal, 90% of the waste gets deposited in the river bed, low lying areas and back yards of houses with only very low percentage is being taken to the land fill sites.

4.10.5 Electricity Supply

Cuttack is connected to the Choudwar grid & Bidanasi grid which ultimately gets its power supply from the Hirakud Hydroelectric project.

4.10.6 Social Infrastructure

4.10.6.1 Education

There are a total of 330 educational institutes in Cuttack city out of which 118 are primary schools, 64 are middle schools, 64 are secondary schools, 20 are senior secondary schools, 17 are colleges/university, 23 are professional technical institutes, 19 special schools, 5 public libraries.



Figure 4.15: The SCB medical college and hospital
Source: Author

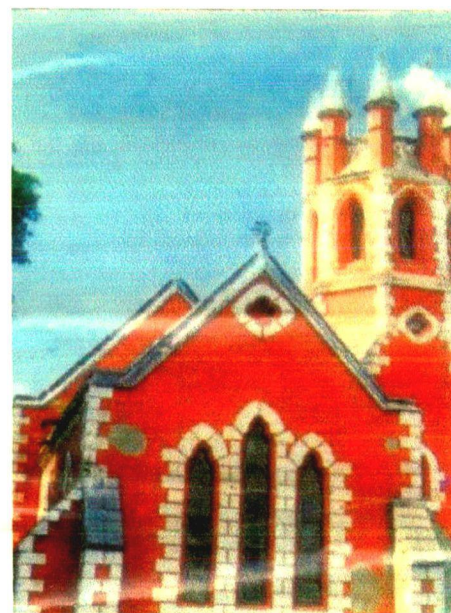


Figure 4.14: the old Christ collegiate school
Source: Author

4.10.6.2 Health

Cuttack acts as a central place for health care facility for not only the city but for the whole of north eastern coastal Orissa due to the SCB medical college, 6 hospitals, 1 health centre, 12 dispensaries, 2 family welfare centre, 2 TB clinic and 60 private nursing homes.

4.10.6.3 Religious Facilities

There are temples, mosques, churches and a gurudwara in the city. Out of these temple of Katak Chandi Devi, Quadam-i-Rasool etc are famous in the state.

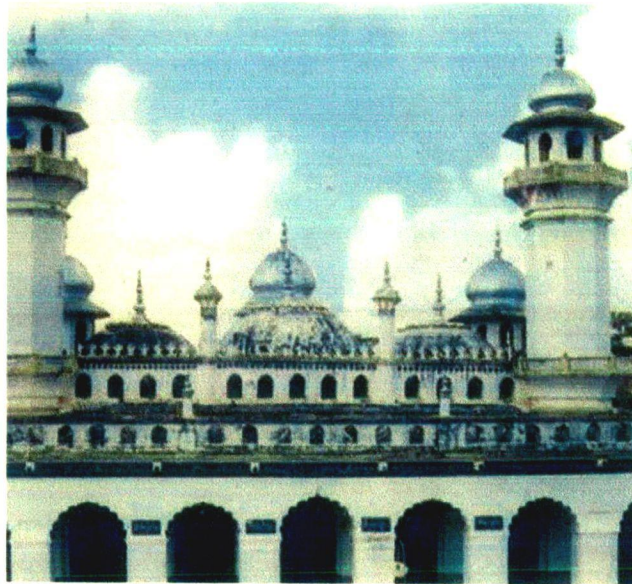


Figure 4.16: Quadam-i-Rasool
Source: Author



Figure 4.17: The Temple of Katak Chandi
Source: Author

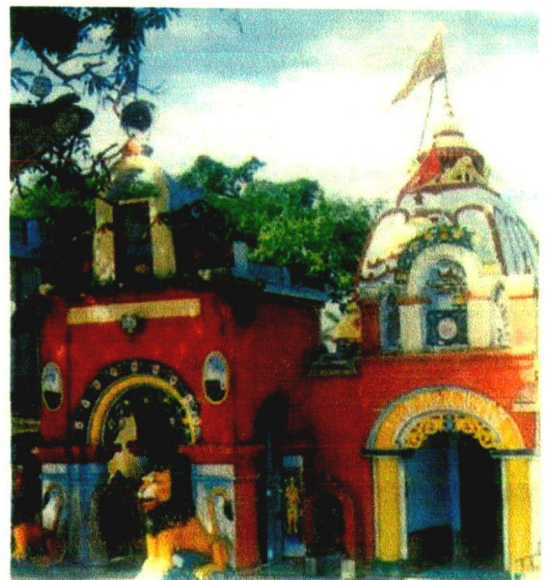


Figure 4.18: The Temple of Gada Chandi
Source: Author

4.10.6.4 Administrative and Legal Facilities

The Orissa High court is situated in the city providing legal service to the citizens. The city also houses the district headquarters office, the collectorate, etc.



Figure 4.19: The District Collector's Office
Source: Author

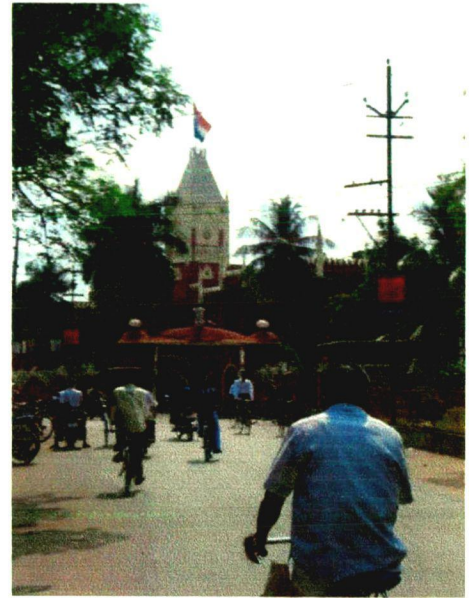


Figure 4.20: The Orissa High court
Source: Author

4.10.7 Recreational Facilities

The city some good sports facilities like the Barabati Stadium, the Indoor stadium, the Playground like sunshine field , killa field, etc. The Barabati fort and its surroundings are the major recreational space of the city.



Figure 4.21: The Barabati Stadium
Source: Author



Figure 4.22: The Indoor Stadium
Source: Author

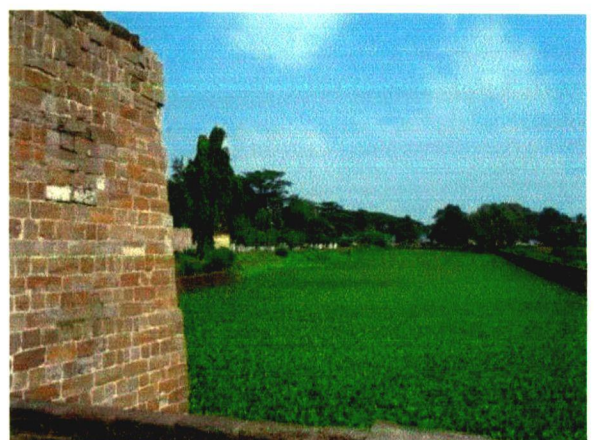


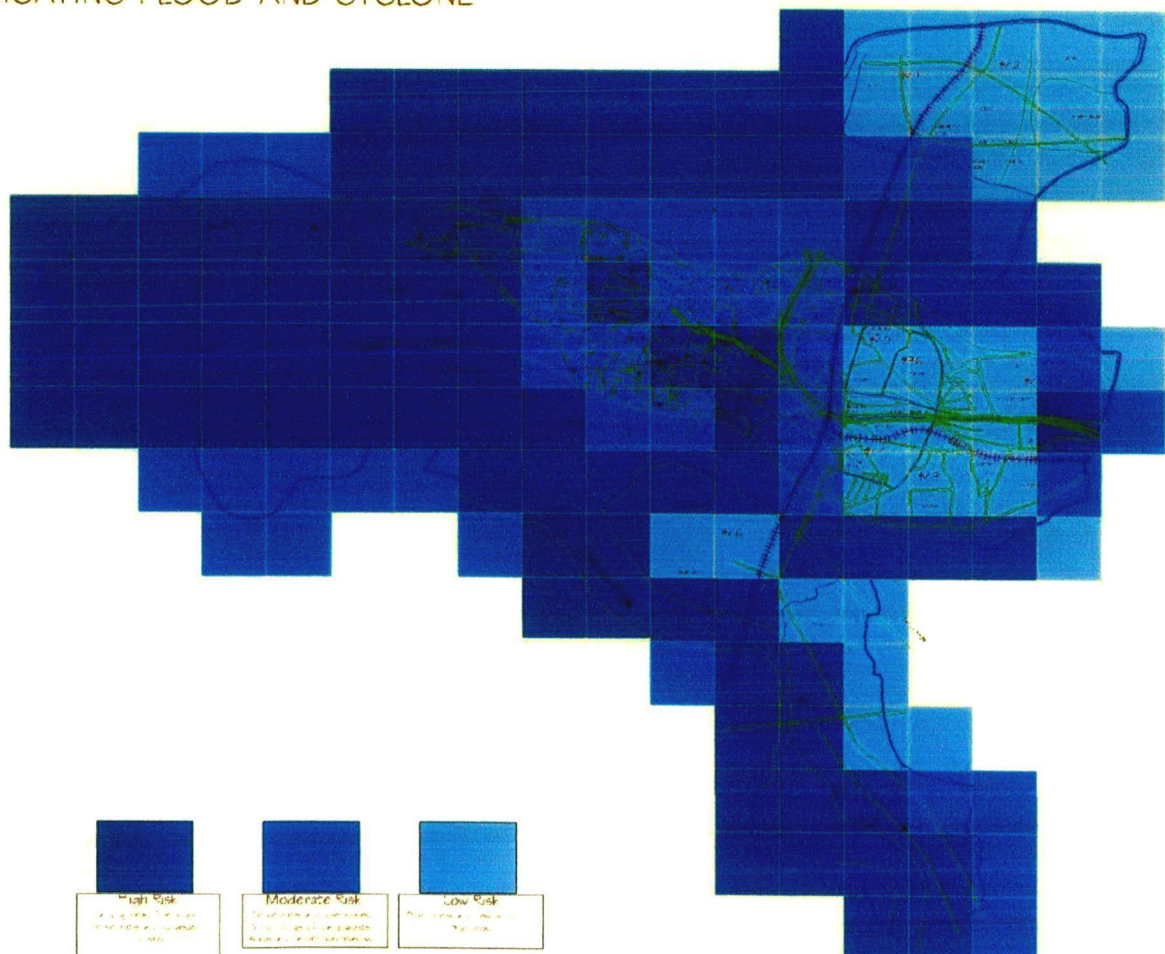
Figure 4.23: The moat surrounding the Fort
Source: Author

4.10.8 Environment & Disaster

The vulnerable issues in Cuttack with respect to environment and disaster are as follows:

1. Being located near the two rivers the city is subjected to frequent flood risk and is the highest flood affected city in the state.
2. Due to the existence of old and kuccha bldgs. As well as household industries adjacent to the residential bldgs. The city is susceptible to fire hazards.
3. Cuttack being nearer to the sea is subjected to heavy cyclones.
4. The nature of construction of bldgs. Make the city vulnerable to earthquakes.
5. Open drains and slums pose a serious threat to public life. Open dumping sites within the city pollute the environment in the city.
6. Stray animals and slow moving traffic obstruct the vehicular flow.
7. Besides the narrow roads and heavy traffic flow, encroachments at traffic junctions and along the roadside make the city vulnerable to traffic hazards.

MUNICIPAL MAP OF CUTTACK
INDICATING FLOOD AND CYCLONE



Map 4.7: Map showing the floor prone and cyclone prone areas
Source: Cuttack Municipal Corporation

4.11 Problems of the Urban Area

Cuttack is a city in crisis. The increase in population has not been matched by the necessary increase in developed land due to consequent land scarcities which is injurious both to economic growth and individual living standard. Cuttack has grown haphazardly, unsystematically without a suitable structure or coordination of forces of growth. The major problems the city is facing are:

1. The typical physiography of Cuttack, with 2 rivers Mahanadi in the North and Kathajodi in the South has made this town almost a water locked island as a result of which the city is forced to grow in a linear fashion. It would be interesting to note that the maximum width of the town is only 2.5 miles whereas its maximum length is about 8.5 miles.
2. The typical saucer shaped topography has made the land within the town susceptible to internal water logging which has resulted into insurmountable problems of drainage and emergence of countless marshy and shallow tanks with sporadic growth on highlands.
3. The pattern of development of Cuttack Urban Area shows that the growths of the urban activities are generally not uniformly distributed over the total area but concentrated on some particular locations, which have become inaccessible and congested over a period of time.
4. The major regional transportation corridor passes through the city causing traffic bottlenecks and congestion.
5. The overall structural condition in Cuttack Urban Area is poor due to which any growth of new activities on the existing area need huge cost of urban renewal.
6. The urban core of the city which forms the most important part of the city is gradually decaying. The overall density of Cuttack is not very high, but the main concentrations of population and work activities are in the Central urban core and this area has reached a point of saturation. The buildings in this area have attained obsolescence and all types of activities have suffered because of extreme deterioration of urban living. The deterioration of the environmental condition is due to numerous number of slums, blind lanes and by-lanes and unhygienic sanitary conditions which is polluting the environment and hazardous for urban life.
7. Noticeable absence of any properly organised market in the city spillover from the roadside shops is creating traffic hazard and bottlenecks.
8. The traffic congestion is due to great rush of traffic and overcrowding. The insufficient width of roads, encroachment on road sides, odd junctions, blink corners, inadequate

parking facilities, absence of traffic control signals or signs at crossing points cause traffic bottlenecks, accidents and lots of problems in the circulation pattern.

9. Organised open spaces are very less in number.
10. Locations of hospitals in congested areas with inadequate number of beds are adding to the list of problems.
11. Lastly, the most important deficit is the absence of an appropriate town centre to give a strong identity to the city.

4.12 Potentials of the Urban Area

1. As the city will continue to perform its' multifunctional role the growth of the city is inevitable.
2. Most parts of the city are not yet explored for the purpose of development. The city has a beautiful river front zone that can be explored for locating recreational activities for the city inhabitants as well as to attract the inflow of tourists to the city.
3. The city also has a unique opportunity to develop water sports activities along the river banks which can further boost the tourism potential of the city.
4. The city has potential to absorb other higher order functions such as education & health
5. With the growth of trade and commerce the wholesale and retail activity will be further boosted along with the logistics.
6. With upcoming industrial centres in the near vicinity the city has potential for development of industries as well as supplementary activities.
7. The city will function as the logistic hub and a major transportation node.
8. The city has an abundance of heritage structures and sites and areas which need to be protected. Dying arts and crafts of the city can be protected and conserved in order to boost the art and craft industry.
9. With various sites of tourist interest in and around the city the tourism potential of the city can be increased by its' inclusion in the tourist circuits.

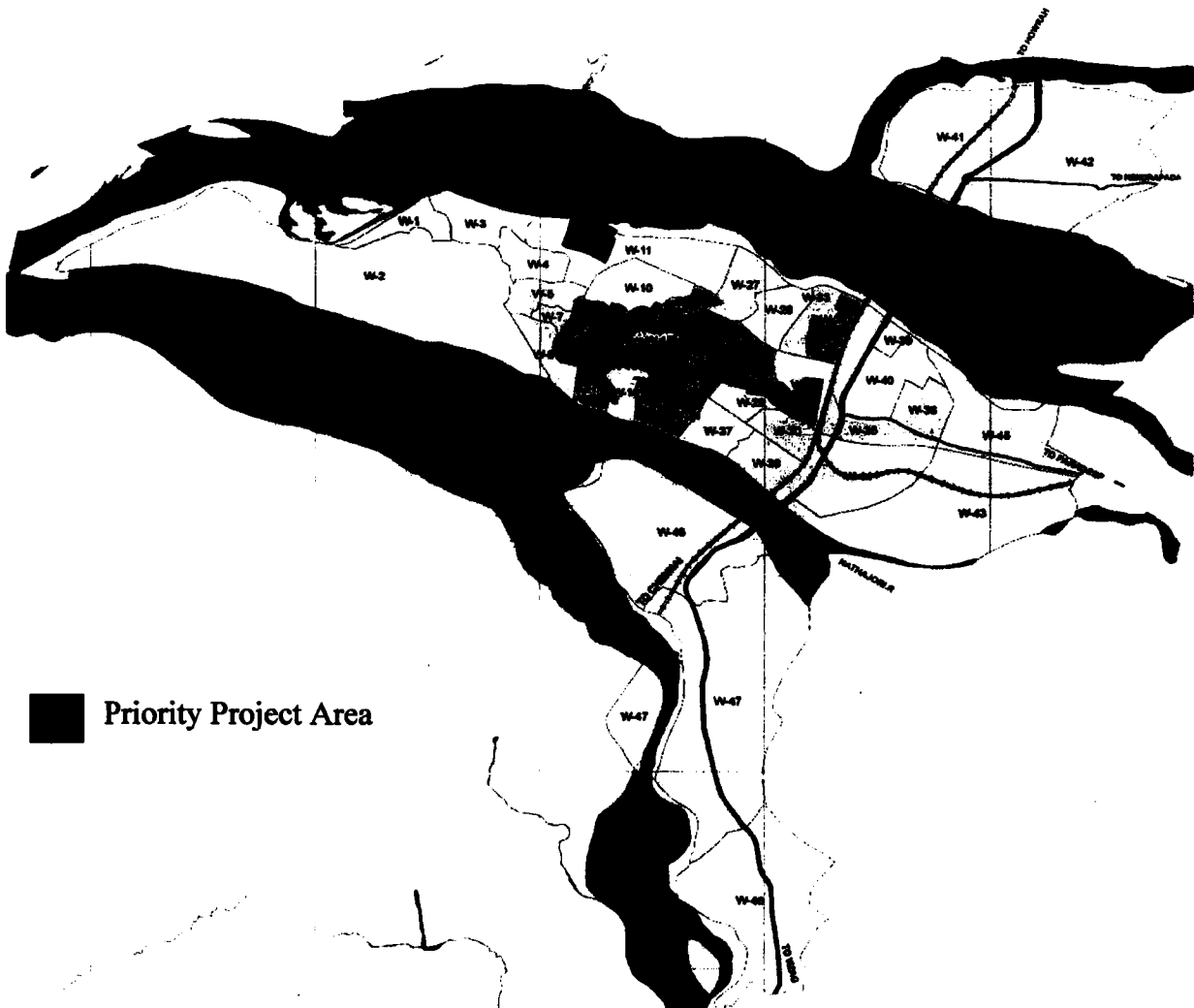
4.13 Selection of Priority Project Areas for Urban Renewal

After a through analysis of the problems and potentials of the city, some areas are selected as the priority project areas based on the parameters like

1. density of population
2. economic activity
3. historically important

The areas are

1. Priority Project Area I - The area comprises of Baxibazar, Tinkonia Bagicha, Choudhry bazaar, Gaurishankar park area, Sutahat, Oriya bazaar, which is connected by a common commercial street (Jail Road). This area consists of some parts of ward no. 9,12, 13, 14, 15, 16, 17 and18.
2. Priority Project Area II- The Malgoldown and Chartabazar area in ward no. 25, 29, 30, and 31.
3. Priority Project Area III- The Barabati fort area in ward no. 11



Map 4.8: Map showing the three Priority Project Areas
Source: Cuttack Municipal Corporation, Redrawn By Author

4.13.1 Priority Project Area I

This area is a part of the high density wards where the population density ranges from 300 person per hectare in ward no. 16 to 420 persons per hectare in ward no. 9, 13, 15 and 17 to 540 person per hectare in ward no. 14 and 18 to 750 persons per hectare in ward no.12. [1]

The Jail road that segregates these wards is characterized by commercial activities like retail, wholesale of textile and garments. The areas like Binodh Bihari and Balu bazaar are famous for their whole sale books and stationary markets. The commercial Naya Sadak is the hub of many Gold and silver jewelers.

Main drain I passes through the wards like 12, 9 and 13. Along this drain some densely populated slum pockets are there like Sutahat Harijan Sahi, Sutahat Tanti Sahi, Sutahat Pana Sahi, etc. There are some more over crowded old residential pockets like Oriya Bazaar, Binod Bihari which has also become slums due to lack of services and congested roads. Moreover, there are some low lying pockets which get severely water logged creating unhygienic and insanitary conditions during rainy season. Some major issues dominant in this area are lack of open spaces, vacant low laying pockets, narrow roads, unutilized old jail Complex, Nuisance created by chuna bhatti (lime manufacture units) in Oriya bazaar, lack of sanitation, lack of waste disposal sites.



Figure 4.24: The Jail Road with its old buildings

Source: Primary Survey by Author



Figure 4.25: The Jail Road with its new commercial built areas

Source: Primary Survey by Author

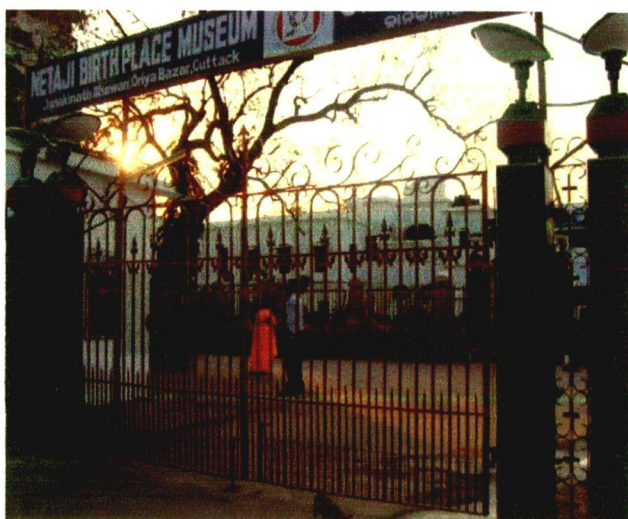


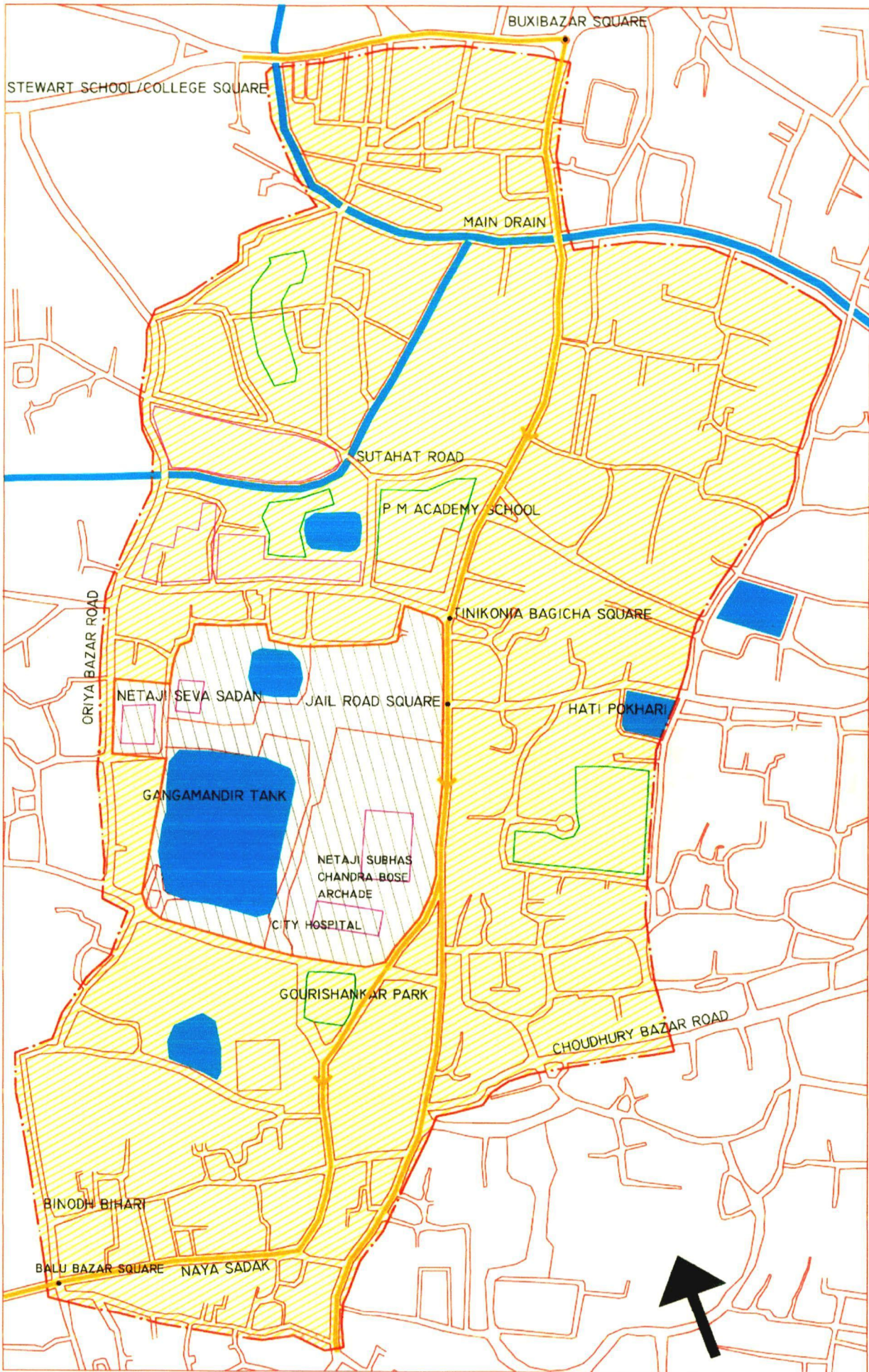
Figure 4.26: Netaji's Birth place Memorial

Source: Primary Survey by Author



Figure 4.27: Newly built shopping complex in the old jail premise

Source: Primary Survey by Author



Map 4.9: Map of the Priority Project Area I
 Source: Redrawn by Author



Figure 4.28: Unutilised space in old jail complex
Source: Primary Survey by Author



Figure 4.29: The Street approaching Gaurishankar Park
Source: Primary Survey by Author



Figure 4.30: On street parking of vehicles due to lack of parking space
Source: Primary Survey by Author



Figure 4.31: The Neglected Ganga Mandir Tank
Source: Primary Survey by Author

4.13.2 Priority Project Area II

The second priority project area is the Malgodown and Chartabazar Wholesale Market. This area comes under the ward no. 25, 29, 30, and 31. The area is defined by Howrah- Chennai Railway Line and NH 5 on its east and the Taladanda Canal on its West.

This area constitutes some major economic activity like whole sale trade which is the main economic function of the city. This area has developed over a long period of time. The main pockets are-

1. Malgodown which the hub of wholesale trade of grains, pulses, kerosene, cooking oil, etc.
2. Chartabazar is the wholesale market for fruits and vegetables.

The other important features in this area are the Ravenshaw College, Cuttack Railway Station, slums along Taladanda Canal.



Figure 4.32: Taladanda Canal
Source: Primary Survey by Author



Figure 4.33: Chartabazar market in action
Source: Primary Survey by Author



Figure 4.34: Road towards Malgodown
Source: Primary Survey by Author



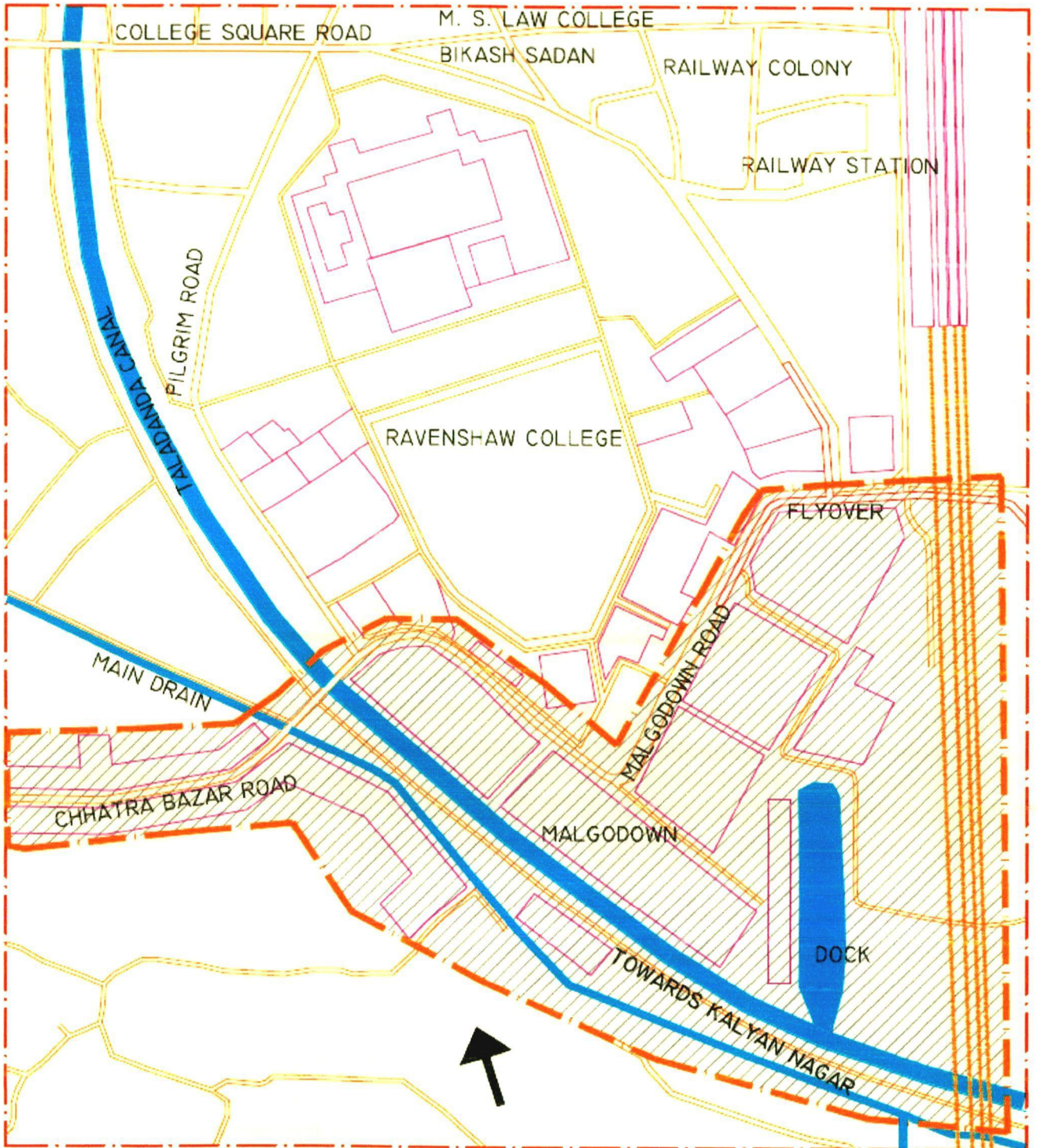
Figure 4.35: The roadside vegetable market
Source: Primary Survey by Author



Figure 4.36: Road towards Malgodown
Source: Primary Survey by Author



Figure 4.37: Road towards Malgodown
Source: Primary Survey by Author



Map 4.10: Map of the Priority Project Area II
 Source: Redrawn by Author

4.13.3 Priority Project Area III

This area consists of the historic fort of Barabati. The fort is situated on the right bank of river Mahanadi in the western parts of the city. The fort which is square in plan, having an area of over 102 acres is surrounded by a stone lined moat having a width of 10 mts on its north and western sides and 20 mts on the eastern and southern sides. Only the gate of the fort now exists whereas the wall of the effort is no more there.

The remains of the fort is in the form of ruins of few excavated pillars of the palace. The fort premise now has an indoor stadium, and two play grounds. The fort is surrounded by very important open spaces of the city i.e, the Killa ground which caters to the annual fairs like Baliyatra, congregations. Barabati stadium is also in the vicinity.

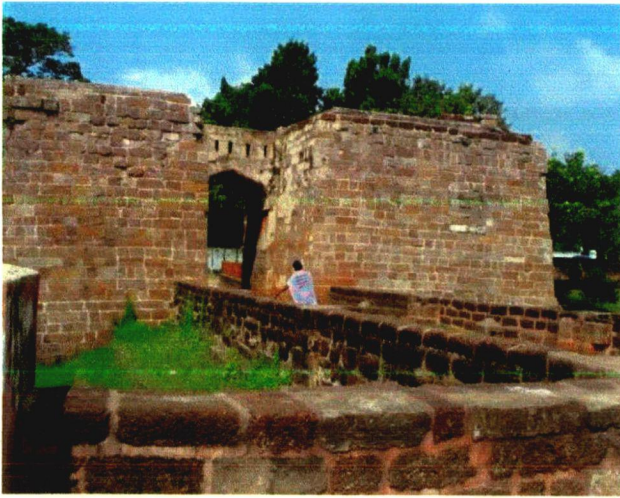


Figure 4.38: The Gate of Barabati fort
Source: Primary Survey by Author



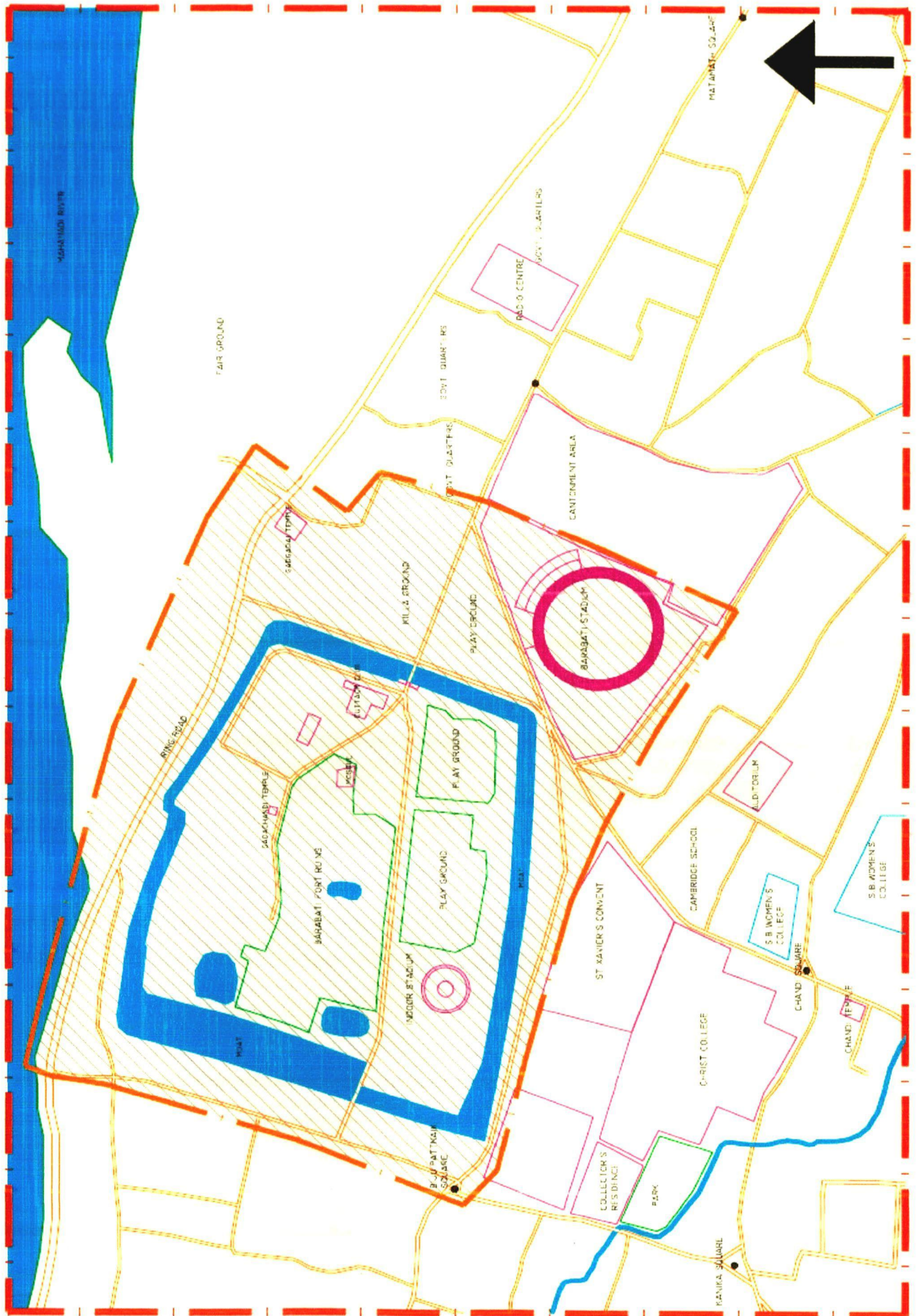
Figure 4.39: The moat surrounding the fort
Source: Primary Survey by Author



Figure 4.40: The ruins of the palace
Source: Primary Survey by Author



Figure 4.41: The indoor stadium in the fort area
Source: Primary Survey by Author



Map 4.11: Map of the Priority Project Area III
 Source: Redrawn by Author

5.1 Survey of Slums in Sutahat

A detail Survey followed by analysis showed the existing condition of some of the slum pockets in this area. The primary survey was conducted in Sutahat Tala Harijan sahi, Sutahat Upara Harijan Sahi, Sutahat Tanti Sahi and Sutahat Pana Sahi.



Figure 5.1: The road along the main drain
Source: Primary survey by author



Figure 5.2: Women collecting water from the municipality water standpoint
Source: Primary survey by author

The analysis gave the following information:

Table 5.1: Profile of Sutahat Tala Harijan Sahi Slum

1	Name of the Slum	Sutahat Tala Harijan Sahi
2	No. of Households	60
3	population	300
4	Width of road in feet	10'
5	Type of paving:	Concrete
6	Drain	Open Pucca
7	Sewerage	septic tank, open defecation
8	Water supply	municipality
9	Dustbin	Nil
10	Street Lighting	7
11	Health facilities	Nil
12	Roadside trees	Nil
13	School	Anganwadi, Sutahat school at a distance of 1/2 km
14	Market facility	Baxibazar
15	Water Logging	upto 2-3 ft ht during 7-8 days in rainy season
16	Waste Dump	Road side
17	Housing type	mix of kutccha(majority) and semi kutccha
18	Telephone	Cell phone users
19	General issues	sewage, toilets, water supply

Source: Primary Survey by Author



Figure 5.3: A slum dwellers abode
Source: Primary survey by author

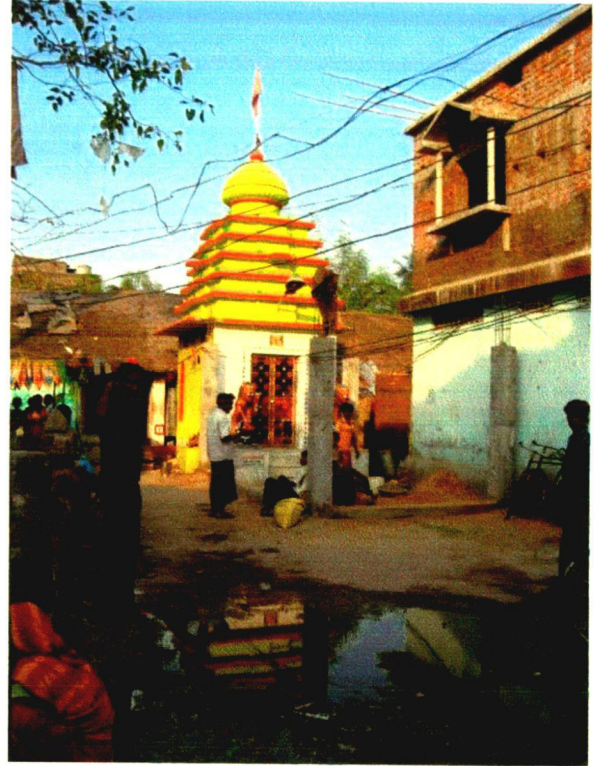


Figure 5.4: Temple in the slum pocket
Source: Primary survey by author

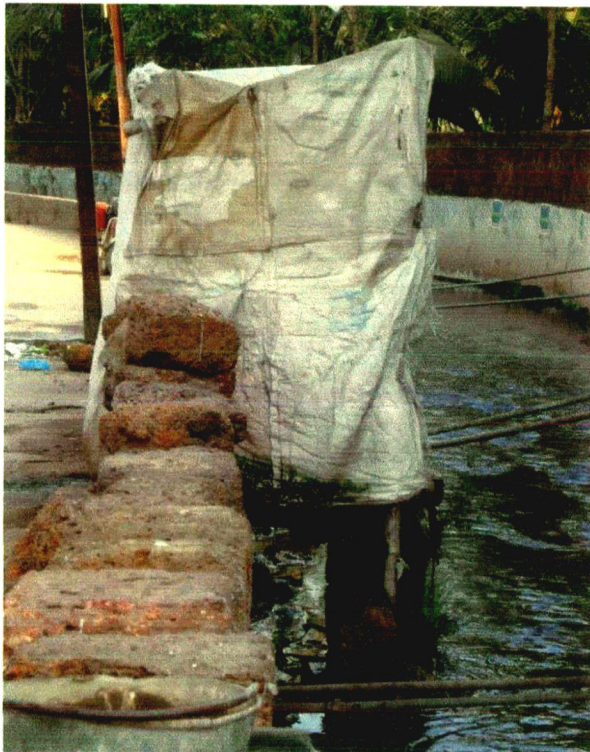


Figure 5.5: A toilet built over the main drain
Source: Primary survey by author

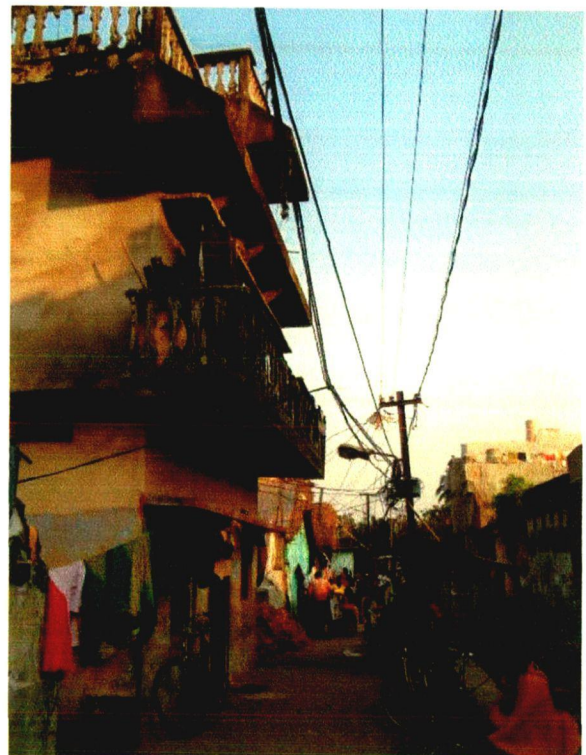


Figure 5.6: A pucca house on the slum lane
Source: Primary survey by author

Table 5.2: Profile of Sutahat Upara Harijan Sahi Slum

1	Name of the Slum	Sutahat Upara Harijan Sahi
2	No. of Households	45
3	population	225
4	Width of road in feet	4'
5	Type of paving:	Concrete
6	Drain	Open Pucca
7	Sewerage	septic tank, open defecation
8	Water supply	municipality
9	Dustbin	Nil
10	Street Lighting	Nil
11	Health facilities	Nil
12	Roadside trees	Nil
13	School	Sutahat school at a distance of 1/2 km
14	Market facility	Buxibazar distance- 1.5 kms
15	Water Logging	In rainy season
16	Waste Dump	Road side
17	Housing type	mix of kutccha(majority) and semi kutccha, pucca wall and asbestos roof
18	Telephone	few cell phone users
19	General issues	sanitation and water supply

Source: Primary Survey by Author



Figure 5.7: Narrow lanes without any setback in Upara Harijan Sahi

Source: Primary survey by author



Figure 5.8: Single room tenement in the slum

Source: Primary survey by author

Table 5.3: Profile of Sutahat Tanti Sahi Slum

1	Name of the Slum	Sutahat Tanti Sahi
2	No. of Households	102
3	population	510
4	Width of road in feet	10'
5	Type of paving:	Concrete
6	Drain	Open Pucca
7	Sewerage	Septic tank, open defecation
8	Water supply	municipality
9	Dustbin	Nil
10	Street Lighting	14
11	Health facilities	Nil
12	Roadside trees	Nil
13	School	Anganwadi, Sutahat school at a distance of 1 km
14	Market facility	Buxibazar
15	Water Logging	Rainy season
16	Waste Dump	Road side
17	Housing type	mix of kutccha(majority) and semi kutccha
18	Telephone	Cell phone users
19	Community facilities	1 community centre
20	General issues	sewage, toilets, water supply

Source: Primary Survey by Author



Figure 5.9: The Street in the Tanti Sahi Slum
Source: Primary survey by author



Figure 5.10: A multi family tenement in the slum
Source: Primary survey by author

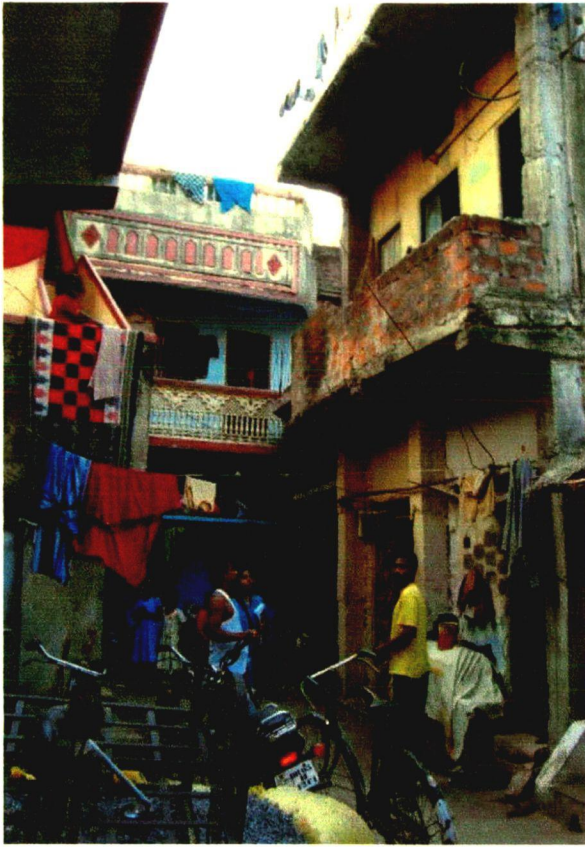


Figure 5.11: Houses forming a cluster in the Upara Harijan Sahi
Source: Primary survey by author

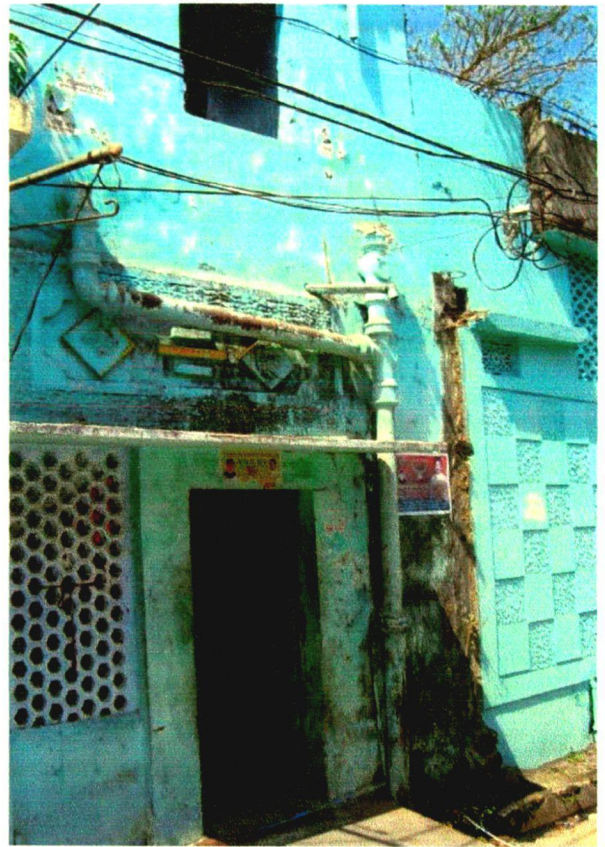


Figure 5.12: Housing condition in the slum pocket
Source: Primary survey by author

Table 5.4: Profile of Sutahat Pana Sahi Slum

1	Name of the Slum	Sutahat Pana Sahi
2	No. of Households	168
3	population	840
4	Width of road in feet	8-10'
5	Type of paving:	Concrete
6	Drain	Open Pucca
7	Sewerage	septic tank, open defecation
8	Water supply	municipality
9	Dustbin	5
10	Street Lighting	7
11	Health facilities	Nil
12	Roadside trees	Nil
13	School	Anganwadi, Sutahat school at a distance of 1/2 km
14	Market facility	Buxibazar
15	Water Logging	upto 2-3 ft ht during 7-8 days in rainy season
16	Waste Dump	Road side
17	Housing type	mix of kutcha(majority) and semi kutcha
18	Telephone	Cell phone users
19	General issues	sewage, toilets, water supply

Source: Primary Survey by Author



Figure 5.13: A toilet outside a house
Source: Primary survey by author



Figure 5.14: A narrow lane in the slum
Source: Primary survey by author



Figure 5.15: A hut made out of polythene
Source: Primary survey by author



Figure 5.16: A water standpipe in poor condition
Source: Primary survey by author

5.1.1 Analysis of the survey data

The primary survey is conducted on a sample of 20 households in the four slum pockets of Sutahat slum area. The survey has provided an amount of data which is analysed by multi variate table and pie charts.

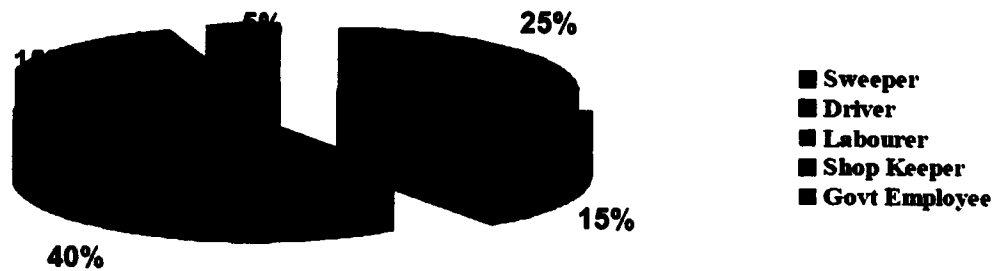
Table 5.5: Occupation vs Income

Sl. No.	Income (Rs.)	Occupation											
		Sweeper	%	Driver	%	Labourer	%	Shop Keeper	%	Govt Employee	%	Total	%
1	< 5000	2 (28.75)	40	1 (14.28)	33.33	3 (42.85)	37.5	1 (14.28)	33.33	0 (0)	0	7 (100)	35
2	5000 - 10000	3 (27.27)	60	1 (9.09)	33.33	5 (45.45)	62.5	1 (9.09)	33.33	1 (9.09)	100	11 (100)	55
3	>10000	0 (0)	0	1 (50)	33.33	0 (0)	0	1 (50)	33.33	0 (0)	0	2 (100)	10
	Total	5 (25.00)	100	3 (15.00)	100	8 (40.00)	100	3 (15.00)	100	1 (5.00)	100	20 (100)	100

Note: Figures within parentheses represent the row percentage

Source: Author

Chart 5.1: Occupation vs Income



Source: Author

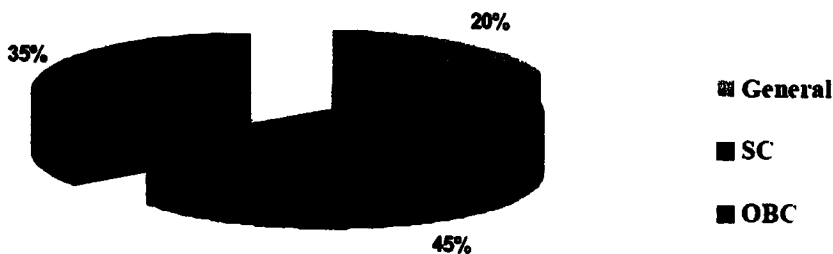
Table 5.6: Caste vs Income

Sl. No.	Income (Rs.)	Caste						Total	%
		General	%	SC	%	OBC	%		
1	< 5000	0 (0)	0	3 (57.14)	33.33	4 (42.86)	57.14	7 (100)	35
2	5000 - 10000	3 (27.27)	75	5 (45.45)	55.55	3 (27.27)	42.86	11 (100)	55
3	>10000	1 (50)	25	1 (50)	11.11	0 (0)	0	2 (100)	10
	Total	4 (20)	100	9 (45)	100	7 (35)	100	20 (100)	100

Note: Figures within parentheses represent the row percentage

Source: Author

Chart 5.2: Caste vs Income



Source: Author

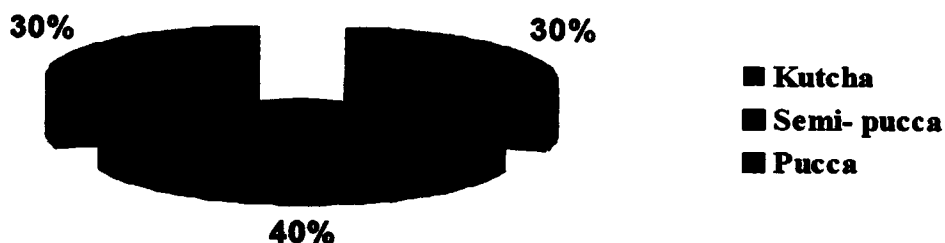
Table 5.7: Type of House vs Income

Sr. No.	Income (Rs.)	Type of House							
		Kutchha	%	Semi-pucca	%	Pucca	%	Total	%
1	< 5000	2 (28.57)	33.33	4 (42.86)	50	1 (14.28)	16.66	7 (100)	35
2	5000 - 10000	4 (36.36)	66.67	4 (36.36)	50	3 (27.27)	50	11 (100)	55
3	>10000	0 (0)	0	0 (0)	0	2 (100)	33.33	2 (100)	10
	Total	6 (30)	100	8 (40)	100	6 (30)	100	20 (100)	100

Note: Figures within parentheses represent the row percentage

Source: Author

Chart 5.3: Type of House vs Income



Source: Author

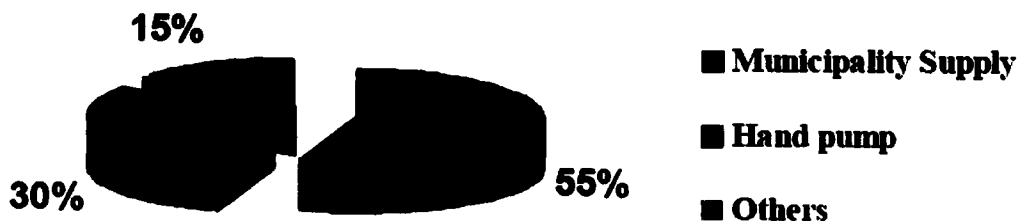
Table 5.8: Water Supply Source vs Income

Sl. No.	Income (Rs.)	Water Supply Source							
		Municipality Supply	%	Hand pump	%	Others	%	Total	%
1	< 5000	5 (71.43)	45.45	2 (28.57)	33.33	0 (0)	0	7 (100)	35
2	5000 - 10000	5 (45.45)	45.45	4 (36.36)	66.67	2 (18.18)	66.67	11 (100)	55
3	>10000	1 (50)	9.1	0 (0)	0	1 (50)	33.33	2 (100)	10
	Total	11 (55)	100	6 (30)	100	3 (15)	100	20 (100)	100

Note: Figures within parentheses represent the row percentage

Source: Author

Chart 5.4: Water Supply Source vs Income



Source: Author

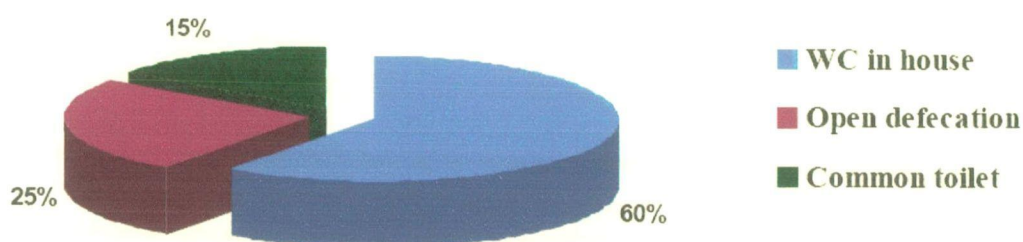
Table 5.9: Toilet vs Income

Sl. No.	Income (Rs.)	Toilet							
		WC in house	%	Open defecation	%	Common toilet	%	Total	%
1	< 5000	0 (0)	0	5 (71.43)	100	2 (28.57)	66.67	7 (100)	35
2	5000 - 10000	10 (90.9)	83.3 3	0 (0)	0	1 (9.1)	33.33	11 (100)	55
3	>10000	2 (100)	16.6 7	0 (0)	0	0 (0)	0	2 (100)	10
	Total	12 (60)	100	5 (25)	100	3 (15)	100	20 (100)	100

Note: Figures within parentheses represent the row percentage

Source: Author

Chart 5.5: Toilet vs Income



Source: Author

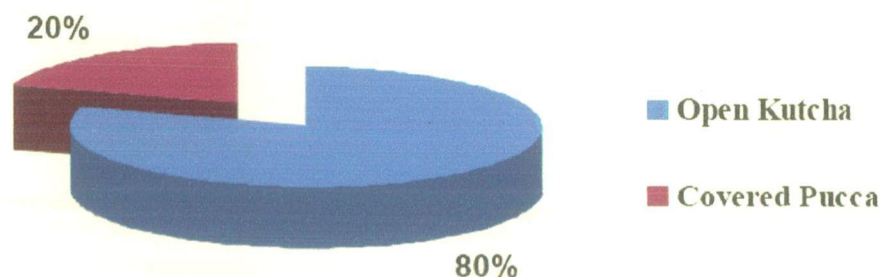
Table 5.10: Drainage vs Income

Sl. No.	Income (Rs.)	Drainage					
		Open kutcha	%	Covered Pucca	%	Total	%
1	< 5000	6 (85.71)	37.5	1 (14.29)	25	7 (100)	35
2	5000 - 10000	8 (72.73)	50	3 (27.27)	75	11 (100)	55
3	>10000	2 (100)	12.5	0 (0)	0	2 (100)	10
	Total	16 (80)	100	4 (20)	100	20 (100)	100

Note: Figures within parentheses represent the row percentage

Source: Author

Chart 5.6: Drainage vs Income



Source: Author

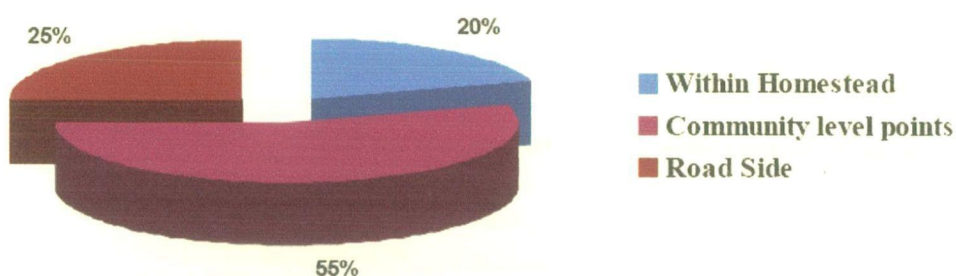
Table 5.11: Garbage Disposal vs Income

Sl. No.	Income (Rs.)	Garbage Disposal							
		Within Homestead	%	Community level points	%	Road Side	%	Total	%
1	< 5000	1 (14.29)	25	1 (14.29)	9.1	5 (71.42)	100	7 (100)	35
2	5000 - 10000	2 (18.18)	50	9 (81.82)	81.8	0 (0)	0	11 (100)	55
3	>10000	1 (50)	25	1 (50)	9.1	0 (0)	0	2 (100)	10
	Total	4 (20)	100	11 (55)	100	5 (25)	100	20 (100)	100

Note: Figures within parentheses represent the row percentage

Source: Author

Chart 5.7: Garbage Disposal vs Income



Source: Author

Table 5.12: Electricity vs Income

Sl. No.	Income (Rs.)	Electricity					
		Metered	%	Not Available	%	Total	%
1	< 5000	1 (14.29)	7.15	6 (85.71)	100	7 (100)	35
2	5000 - 10000	11 (100)	78.57	0 (0)	0	11 (100)	55
3	>10000	2 (100)	14.28	0 (0)	0	2 (100)	10
	Total	14 (70)	100	6 (30)	100	20 (100)	100

Note: Figures within parentheses represent the row percentage

Source: Author

Chart 5.8: Electricity vs Income

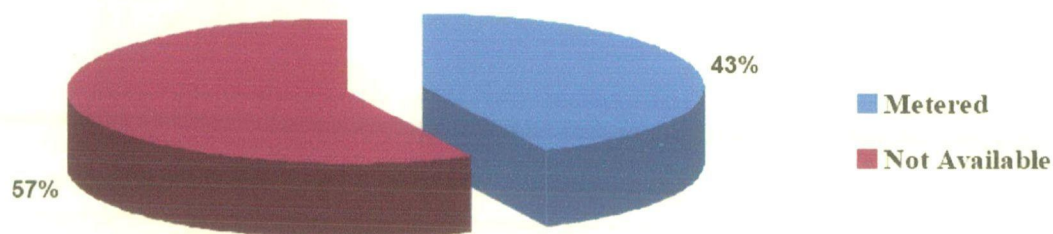


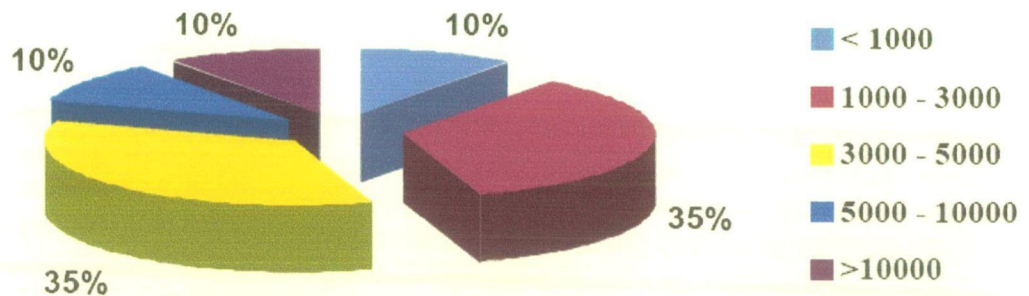
Table 5.13: Expenditure vs Income

Sl. No.	Income (Rs.)	Expenditure											
		< 1000	%	1000 - 3000	%	3000 - 5000	%	5000 - 10000	%	>10000	%	Total	%
1	< 5000	2 (28.57)	10 0	2 (28.57)	28.5 7	3 (42.86)	42.8 6	0 (0)	0	0 (0)	0	7	35
2	5000 - 10000	0 (0)	0	5 (45.46)	71.4 3	4 (36.36)	57.1 4	2 (18.18)	100	0 (0)	0	11	55
3	>10000	0 (0)	0	0 (0)	0	0 (0)	0	0 (0)	0	2 (100)	100	2	10
	Total	2 (10)	10 0	7 (35)	100	7 (35)	100	2 (10)	100	2 (10)	100	20	100

Note: Figures within parentheses represent the row percentage

Source: Author

Chart 5.9: Expenditure vs Income



Source: Author

5.1.2 Inferences

1. Almost half of the slum people are daily Labourer and half of the rest are sweepers.
2. The majority (45%) of the slum population is scheduled caste, and 35% belong to OBC and the rest comes under general category.
3. The housing condition in the slum pockets is mostly semi pucca houses since almost 40% of the total population stays in such houses.
4. More than 50% of the population depends on the municipality stand points for their drinking water.
5. Though 60% of the population have toilets in their house, still 25% of the population do not have toilet at all and 15% use common toilets.
6. All most all the drains in the slums are open kutchra whereas very few areas have covered pucca drains.
7. Almost 55% of the population disposes their garbage at community level points whereas 20% disposes within their own homestead and rest 25% uses road side as garbage dumping places.
8. Only 45% of the slum population has the metered electricity supply and the rest does not have any connection.

6.1 Final Strategies for Select Areas

6.1.1 Broad Policy Framework

6.1.1.1 Priority Project Area I

1. Slum upgradation in Sutaht and Oriya Bazaar. It should cover the housing, basic infrastructure facilities, health, community participation and education of the slum dwellers. Other essential services like potable water supply should be provided.
2. The vacant land of the old jail premise is partly covered by city hospital and a shopping complex. The vacant space left along with the Ganga Mandir tank, Netaji's Birthplace museum can be utilized for creation of commercial cum recreational spaces because the land has good commercial value.
3. The old and heritage buildings for eg, the old buildings housing printing presses, the old residences, can be preserved and given a make over to showcase the age of the city gracefully.
4. The municipal corporation should increase the allocation of funds to physical infrastructure- primarily to build and widen roads. Almost all the roads suffer due to water clogging. The encroachment by the informal sector, parked vehicles on the main road creates traffic bottlenecks and congestion. The hawkers can be shifted to planned locations leaving the road free for vehicular and pedestrian movement.
5. The commercial street starting from Baxibazar till BaluBazar is the abode of various specialised activities like garments and textiles trade in Baxibazar, Jail road, Gaurishankar park, gold and silver filigree jewelry in Naya Sadak, whole sale stationery in Balu bazaar, Book publishers in Binodh Bihari, vegetable, fruit and flower market in Binodh Bihari, etc. So these activities can be organised at different locations to have maximum return.
6. The widening and beautification of the main street can give a major facelift to the area and the streets can be made more pedestrian friendly by required traffic control and regulation.
7. Open spaces like Gaurishankar park, Tinkonia Bagicha can be maintained as recreational spaces by removing the litter, garbage, placing dustbins and improving the street and parking conditions.

8. Repairing and building the public conveniences is required. Awareness for good sanitation and hygiene can be created with help of NGO's in the slums and other degraded residential pockets.
9. Provision for public transport like bus service has to be improved in this area.
10. The removal of the polluting small scale industries like lime making industry in some inner pockets (Oriya Bazaar) of the city can curb the environmental hazard.

6.1.1.2 Priority Project Area II

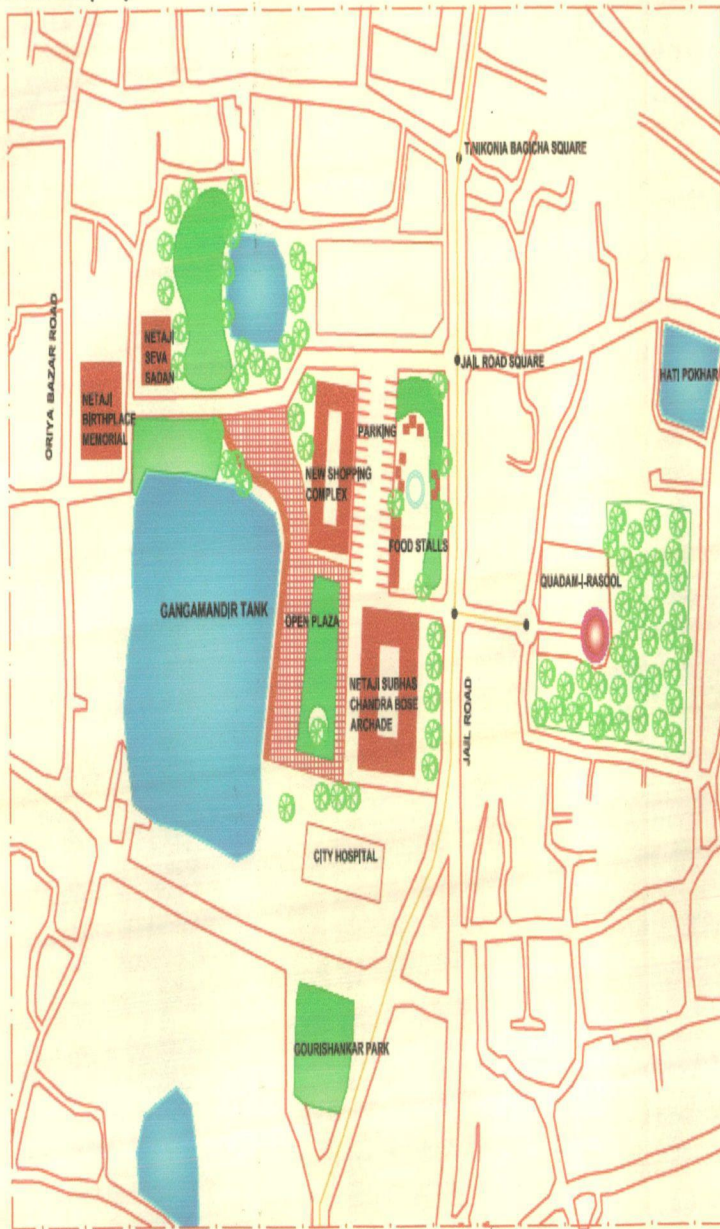
1. Organising the wholesale trade activities which takes place on the sides of the road by shifting to a better planned wholesale mart in vacant land nearby.
2. Segregating the perishable and non perishable goods in the wholesale markets.
3. Segregation of the hazardous material depots like oil and gas from the residential pockets.
4. To check and divert the movement of heavy vehicles carrying goods from the Malgodown towards the city from the narrow congested streets to the outer ring road.
5. Creation of green belt along the railway line and Taladanda Canal to enhance the quality of the canal front which is now dominated by slums and garbage disposal sites.

6.1.1.3 Priority Project Area III

1. The developments inside the fort area can be checked to protect the area from further degradation. The existing Govt buildings can be removed and the space can be used for preservation of the forts historic importance.
2. The moat can be cleared and dug so that it can be used as a recreational purpose like boating.
3. The area also has some important open spaces which are not maintained and are in very dirty condition. The areas can be maintained and provision of public utilities like toilets, drinking water, etc can be made for year round activities.
4. This area contains some religious structures like Gadachandi temple, Gadagadia temple, and Ghali mosque. The area can be developed as a tourist destination because of these attractions and can be a mirror to the history and culture of the city.

6.1.2 Plan Proposal

6.1.2.1 Priority Project Area I



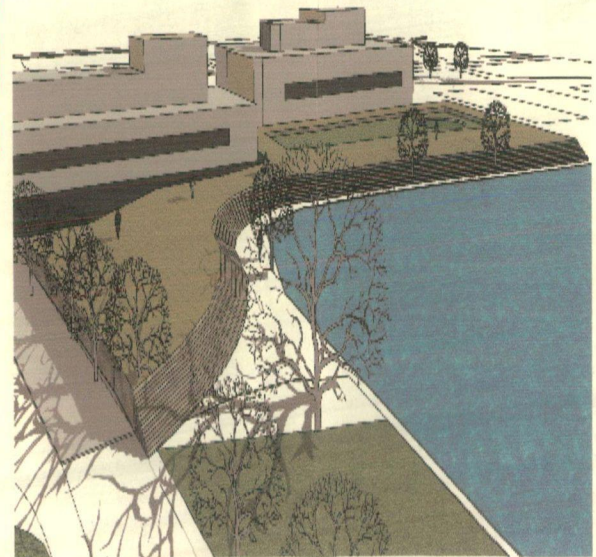
PROPOSED CITY CENTRE AT JAIL ROAD

SCALE=1:1000

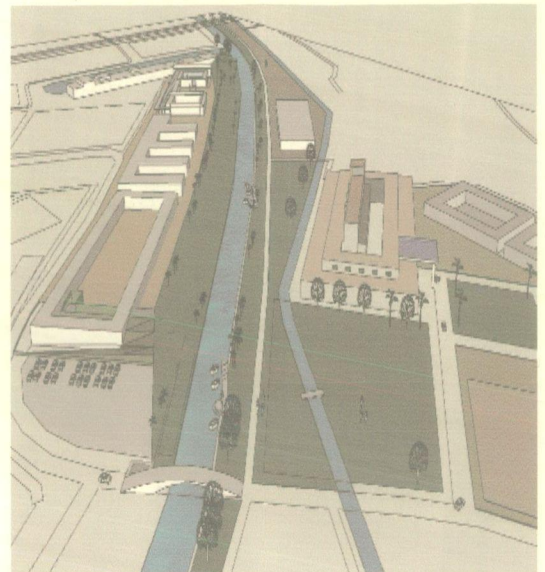
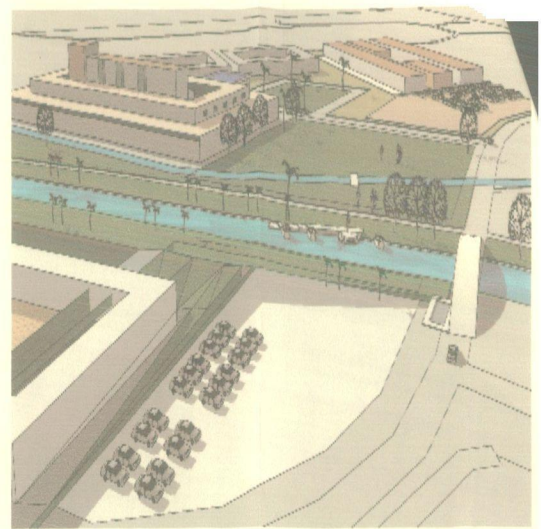
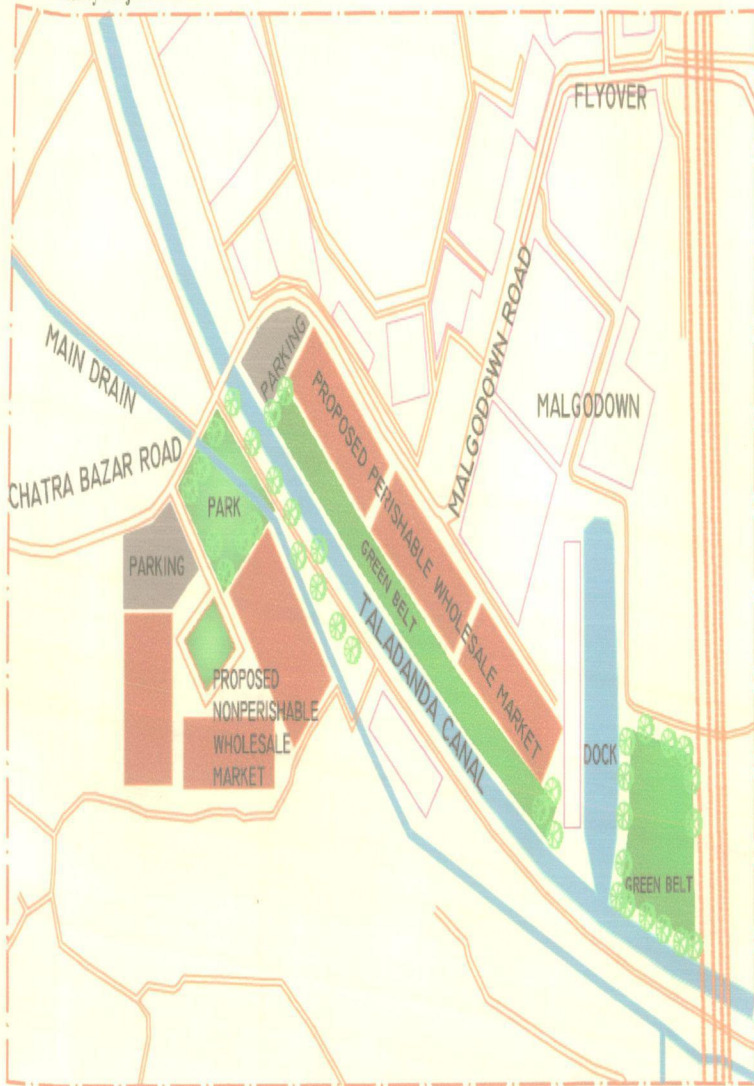


Plate 6.1: Proposed city centre at jail road

Source: Author



6.1.2.2 Priority Project Area II

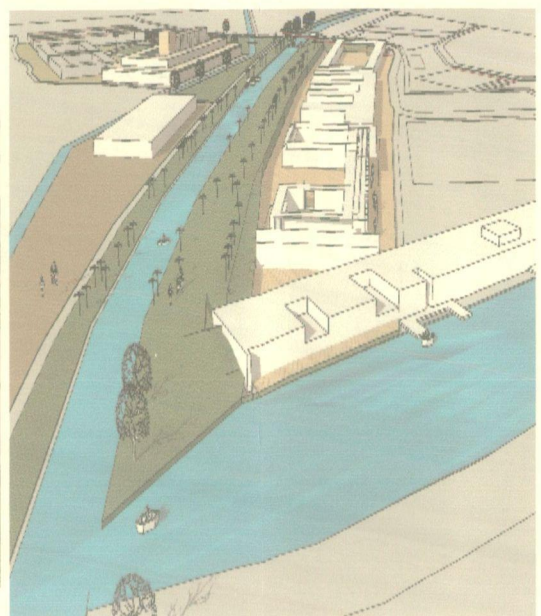
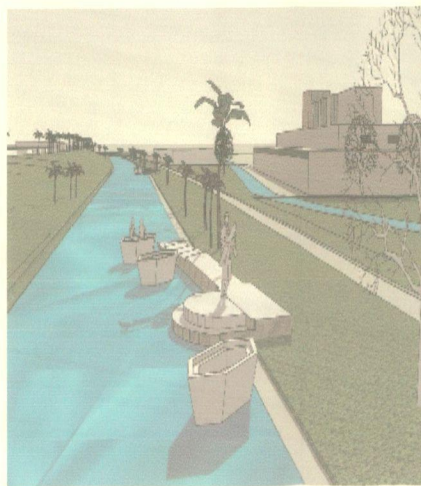


PROPOSAL FOR ORGANISED WHOLESALE MARKET
AT CHATRABAZAR AND MALGODOWN

SCALE=1:1000



Plate 6.2: Proposed Organised Wholesale Market at
Chartabazar and Malgodown
Source: Author

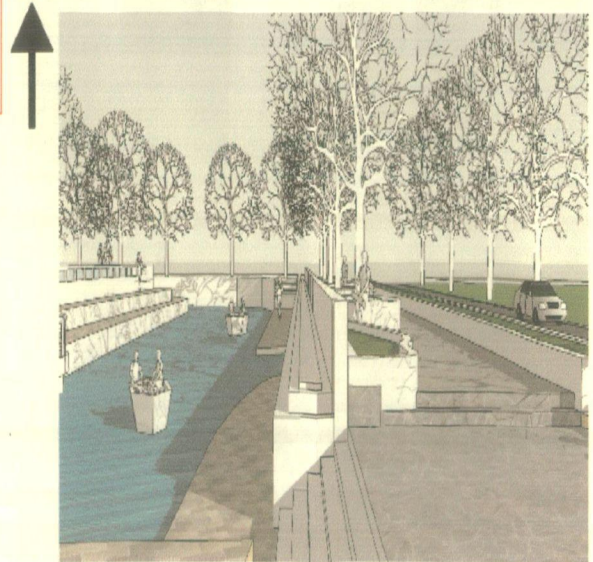
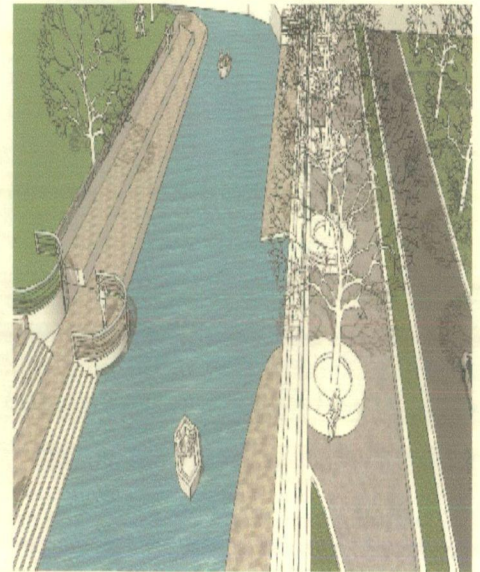
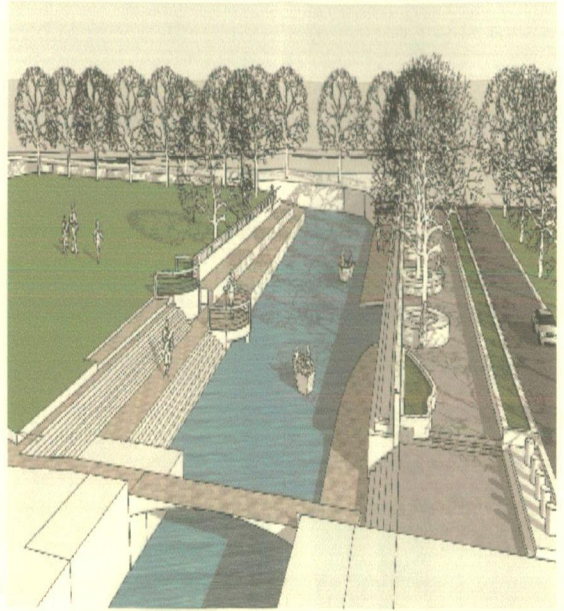


6-1-2-3 Priority Project Area III



PROPOSAL FOR PRESERVATION OF BARABATI FORT AND SURROUNDINGS
SCALE= 1:2500

Plate 6.3: Proposal for Preservation of Barabati Fort Surroundings
Source: Author



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<http://geobytesgcse.blogspot.com/2007/03/inner-cities-case-study-regeneration-of.html>

ANNEXES

ANNEXURE-I

QUESTIONNAIRE FOR SLUM CONDITION

Date of survey:

1. name of lane :
2. width in feet:
3. type of paving:
4. drain: open/ kutcha/brick/stone slabs/covered
5. sewerage: service latrines/underground sewers/septic tank
6. water supply: pipe/public hydrant/well/tank
7. dustbin:
8. street lighting: no., type, frequency:
9. health facilities: public/ private
10. roadside trees: Y/ N/ few
11. school: (i) primary, middle, high
(ii) in the lane/ in next lane/ at a distance of
12. market facility:
13. water- logging:
14. waste dump:
15. type of house in locality:
16. general condition of locality: congested, water flowing on road/ dirt on road/ general in sanitation
17. telephone: Y/N
18. any other remark:

QUESTIONNAIRE FOR HOUSEHOLD SURVEY

Name of slum			
Name of Interviewer			
Name of Respondent		Relation to HOH	
Name of Head of Household			
Day	Date	Time	
Location on map (put the house no. from map)			

SOCIO-ECONOMIC DEMOGRAPHIC PROFILE

Family type (nuclear/ joint):

Caste/Religion:

No. of members in the household:

No. of earners in the household:

a.) Monthly expenditure (Rs.):

Food		Health		Recreation	
Clothing		Travel		Savings	
Housing		Education		Others (specify)	

b.) Personal information (pl. fill in the table using the code below):

Person No.	Relation to HOH	Age (yrs)	Sex (M/F)	Marital Status	Education	Occupation	Average daily income (Rs.)

HOH= Head of Household

<u>RELATION TO HoH</u>		<u>MARITAL STATUS</u>		<u>EDUCATION</u>		<u>OCCUPATION</u>	
Self	0	Brother-in-law	11	Nil	1	Govt. Service	1
Husband	1	Sister-in-law	12	Primary	2	Private service	2
Wife	2	Daughter-in-law	13	Middle	3	Cultivator	3
Son	3	Nephew	14	Secondary	4	Daily Worker	4
Daughter	4	Niece	15	Graduation	5	Business	5
Father	5	Grandson	16	Post Graduation	6	Student	6
Mother	6	Granddaughter	17	Professional	7	Housewife	7
Father-in-law	7	Others	18	Others	8	Retired	8
Mother-in-law	8					Unemployed	9
Brother	9					Professional	10
Sister	10					Others	11

c.) Assets:

Type	Nos.
Cycle	
Two-wheeler	
Television	
Others(specify)	

d) Family income/month:

Less than 5000	
5000– 10000	
More than 10000	

e) Occupation (put √)

Sweeper	
Drivers	
Labourer	
Business/shops	

Govt Employee	
Others	

HOUSING CHARACTERISTICS

a.) No. of habitable rooms:

b.) Plinth area (sq. ft.):

c.) Ownership Status (put √):

Owned	Rented	Illegal / encroached	Others (specify)

d.) Classification of house based on use (put √):

Only Residential	Workplace cum housing	Commercial cum housing	Others (specify)

e.) Whether toilet present or not (Y/N)?

f.) Whether kitchen integrated with the main house (Y/N)?

g.) Use of space within homestead (pl. show plan showing the relation of the spaces within the plot / homestead incl. cattle sheds, etc. on the reverse side of paper)

h.) Any specific orientation and siting of house, keeping in mind calamities? If yes, then specify.

i.) Type of boundary wall present

Fence (twigs, bamboo, etc.)	Masonry wall	No clear demarcation	Others specify

j.) Housing Typologies:

	Pucca	Semi-Pucca	Kutchra
No. of Rooms			
No. of Rooms needing retrofitting			
No. of rooms needing reconstruction			

k.) Building materials of use (specify):

Housing components	Materials	Retrofitting needed (put √)	Reconstruction needed (put√)
Foundation			
Wall			
Roof			
Doors & Windows			

l.) If pucca house, classify (put √):

IAY	HUDCO/ ORHDC	NGO	Own efforts	Others (specify)

Completion of the above classify (put√):

Not started	Excavation	Foundation	Sill level	Lintel level	Roof level	Roof cast	Others (specify)

INFRASTRUCTURE

a.) Source of availability of water

Drinking	Bathing	Washing

<i>Deep tube well</i>	1	<i>Pond / tank</i>	4
<i>Shallow tube well</i>	2	<i>River / canal</i>	5
<i>Well</i>	3	<i>others (specify)</i>	6

b.) Sanitation

Defecation	
Garbage disposal	

<u>Defecation</u>		<u>Garbage disposal</u>	
<i>Toilets</i>	1	<i>within homestead</i>	1
<i>Open fields / road side</i>	2	<i>At community level common points</i>	2
		<i>Others (specify)</i>	3

Drainage within homestead (mark on the plan)

c.) Energy needs

Fuel used for:

Cooking	Lighting	Transport

<i>Wood</i>	1	<i>Cooking gas</i>	5
<i>Coal</i>	2	<i>Electricity</i>	6
<i>Kerosene</i>	3	<i>Solar power</i>	7
<i>Cow dung</i>	4	<i>Others (specify)</i>	8

Whether any renewable source of energy is utilized (Y/N)? If yes, classify (put√);

Solar	Wind	Bio-gas	Others (specify)

d.) Width of abutting road (in ft.):

Type of road (black top /concrete/ morramed/ sandy/ muddy):

Motorable accessibility of the road (poor/ fair/ good):

PROBLEMS FACED

Nature of problem	Weightage (%age)	Prioritization	Suggestions
		1	
		2	
		3	
		4	
		5	
		6	
		7	
		8	

WARD WISE POPULATION OF CUTTACK MUNICIPAL CORPORATION
(As Per 2001 Census)

Ward No.	Population
1	11,148
2	10,800
3	11,055
4	11,074
5	10,070
6	9,930
7	9,600
8	10,100
9	8,920
10	10,450
11	9,759
12	11,566
13	9,926
14	9,127
15	10,563
16	9,467
17	9,802
18	10,645
19	10,052
20	11,535
21	11,074
22	10,408
23	10,357
24	10,400

Ward No.	Population
25	9,102
26	9,077
27	10,952
28	10,504
29	11,400
30	9,629
31	10,874
32	12,115
33	12,116
34	10,874
35	10,422
36	11,687
37	9,998
38	9,580
39	12,859
40	12,903
41	12,951
42	12,748
43	16,276
44	19,156
45	17,403
46	11,630
47	12,100
48	10,955

TOTAL - 5,35,139

List of Identified Slum Pockets

(Revised Population & House Hold as per BPL Survey-2004)

Sl. No. / Slum No.	Ward No.	Name of the Slum	Category	Population	Household
1	1	Bidanasi Gopal Sahi	II	2835	525
2	1	Bidanasi Kumbhar Sahi	II	1972	326
3	2	Bidanasi Dhoba Sahi	II	135	29
4	1	Bidanasi Bauri Sahi	II	448	112
5	2	Bidanasi Hairanpur	I	488	122
6	1	Bidanasi Municipal Colony, Nua Sahi	II	2424	606
7	3	Tulasipur Tanla Sahi	I	1807	383
8	3	Tulasipur Hadi Sahi	II	350	69
9	3	Tulasipur Bauri Sahi	II	1870	386
10	11	Fasidia Pana Sahi	I	809	161
11	3	Tulasipur Hatua Sahi	II	992	248
12	5	Ramagarh	III	1232	245
13	5	Mansingh Patna Muslim Sahi	II	306	52
14	6	Dagarapara	II	1853	365
15	7	Alisha Bazar Hadi Sahi	II	550	100
16	2	Idga Refugee Colony	II	843	211
17	6	Kafla Pana Sahi	II	865	160
18	4	Stewart Patna Tanla Sahi	I	840	164
19	5	Sidheswar Sahi Pana Sahi	II	2500	500
20	13	Oriya Bazar Salmalia Padia	II	925	152
21	13	Oriya Bazar Gauda Sahi	II	850	180
22	9	Oriya Bazar Chamar Sahi	II	1455	291
23	14	Oriya Bazar Kutakhai Gali	II	1425	285
24	9	Kazi Bazar	II	550	110
25	14	Deewan Bazar Muslim Sahi	II	2050	410
26	14	Deewan Bazar Tanti Sahi	II	1150	230
27	8	Mehendipur	II	2232	372
28	9	Mehendipur Refugee Colony	II	530	87
29	15	Dhuanpatria Gali	II	1072	235
30	15	Ganeshghat Pana Sahi	II	530	110
31	15	Ganeshghat Keuta Sahi	II	1630	364
32	15	Ganeshghat Bhandari Sahi	II	1135	235

33	15	Sahebzada Bazar	II	1905	336
34	12	Pattapole Colony	II	3600	720
35	12	Sutahat Tanti Sahi	II	510	102
36	10	Pattapole Muslim Sahi	II	4500	900
37	12	Pattapole Tanti Sahi	II	275	55
Sl. No. / Slum No.	Ward No.	Name of the Slum	Category	Population	Household
38	12	Sutahat Hadi Sahi	I	765	153
39	16	Gopal Jew Matha Sahi, Harijana Sahi	II	2503	305
40	16	Purighat Bauri Sahi	II	1055	150
41	22	Purighat Pana Sahi	I	620	113
42	19	Makaraba Sahi Dhobi Lane	II	1675	335
43	17	Makaraba Sahi Telgu Muslim Sahi	II	1378	213
44	17	Meria Bazar	II	1233	264
45	19,20,26	Kesharpur	II	2096	407
46	26	Gamhadia	II	1015	200
47	26	Thoria Sahi Ghashia Sahi	II	780	190
48	26	Thoria Sahi Main Bastee	III	1810	200
49	26	Thoria Sahi Nayak Sahi	III	450	100
50	27	Thoria Sahi Mallha Sahi	II	1808	450
51	17	Tinikonja Bagicha	II	4015	700
52	18	Kadam Rasool	II	2050	550
53	21	Hatipokhari	II	1100	100
54	21	Niam Sahi Dhoba Sahi Tanti Sahi	II	576	144
55	21	Nima Sahi Pana Sahi	II	600	150
56	21	Nima Sahi Kumbhar Sahi	II	1909	380
57	23	Dolamundai	II	640	225
58	30	Bisinabar	III	936	186
59	21	Pithapur Pana Sahi	II	603	100
60	28	Ranihat Mochi Sahi	I	2128	359
61	25	Professorpara	II	4320	652
62	23	Jhanjirimangala Hadi Sahi	II	429	95
63	23	Jhanjirimangala Pana Sahi	II	415	90
64	22	Rajabagicha Puruna Hadi Sahi	II	542	90
65	24	Rajabagicha Hadi Sahi	I	1100	220
66	24	Sarbodayapur	II	1075	200
67	24	Rajabagicha Kusunpur	II	1263	225

68	37	Khannagar Bauri Sahi Sahar Sahi	I	374	64
69	19	Samanta Sahi	II	1900	380
70	19	Haripur	II	1800	360
71	19	Rausapatna Main Bastee	II	4140	828
72	30	Sankarpur Main Bastee	II	9043	1396
73	29	Balabhadrapur	II	2572	496
74	31	Pilgrim Road Das Sahi	I	1585	304
75	31	Chhatra Bazar Behera Sahi	I	704	145
76	31	Malgodown Behera Sahi	I	830	177
Sl. No. / Slum No.	Ward No.	Name of the Slum	Category	Population	Household
77	34&32	Pareswar Sahi	II	2215	443
78	32&34	Muradkhan Patna Samadhi Patna	II	1427	298
79	33	Jobra Nadikula Sahi	II	2435	415
80	34	Jobra Tinapita Sahi	II	1700	211
81	39	Sikharpur Uppar Sahi	II	1688	307
82	40	Sikharpur Nadikula Sahi	II	1687	315
83	45	Gandhipalli	II	3815	763
84	45	Nehrupalli	II	2290	665
85	45	Potapokhari Sahi	II	1500	290
86	44	Nua Gauda Sahi	II	1160	232
87	44	Kazidhia	II	1980	396
88	44	Dargha Patna	II	2135	427
89	43	Nuapara	II	1050	210
90	43	Sartol Mallick Sahi	II	200	40
91	43	Sartol Bauri Sahi	II	225	45
92	43	Poparada	II	1100	220
93	43	Beleswar	II	575	115
94	43	Tinigharia Canal Road	II	410	82
95	44	Andarpur	II	2375	475
96	35	Chauliagunj Dhoba Sahi	II	250	50
97	36	Chauliagunj Muslim Sahi	II	1176	196
98	40	Chauliagunj Sahar Sahi	II	299	45
99	35	Chauliagunj Matha Sahi	III	2500	510
100	45	Bidyadharpur Mallick Sahi Bhoi Sahi	II	500	100
101	45	Bidyadharpur Barik Sahi	II	520	102
102	45	Bidyadharpur Gopinath Bazar	II	525	100

103	45	Bidyadharpur Pana Sahi	II	305	61
104	45	Kanheipur Bauri Sahi	II	780	130
105	45	Keshpur	II	1180	236
106	38	Khannagar Guru Sahi Keuta Sahi	II	900	250
TOTAL -				152182	29363

NEWLY IDENTIFIED SLUMS

Sl. No./ Slum No.	Ward No.	Name of the Slum	Category	Population	Household
107	2	Mahatab Nagar	I	895	179
108	2	Radahakrishnapur	I	305	60
109	2	Ring Road Bandha Tala Sahi (Back Side Uppar Police Colony)	I	567	133
110	2	Satichaura Bandha Tala Sahi	I	844	211
111	2	Idga Muslim Sahi	II	280	50
Sl. No. / Slum No.	Ward No.	Name of the Slum	Category	Population	Household
112	2	Sati Gumpha	I	180	40
113	2	Kathajodi Vihar	I	935	200
114	2	Braja Biharipur	II	569	113
115	2	Munda Sahi CDA, Sec-13	II	935	187
116	2	Dhabeleswar Gada Harijana Sahi	I	195	38
117	3	Chahata Nagar Bastee	I	115	25
118	3	Ring Road Bandha Tala Sahi (Back Side Tulasipur Dispensary)	I	258	60
119	6&2	Sati Chaura Harijana Sahi	I	200	40
120	7	Matha Gali Antaryami	II	250	50
121	7	Bhandari Sahi (Immam Badi)	II	500	100
122	8	Makara Sahi (Bana Padia)		150	30
123	9	Telgu Sahi Rover Street	I	110	22
124	10	Gadagadia Patha Adibasi Sahi	I	535	107
125	10	Sutahat Pana Sahi Gali	II	840	168
126	10	Surya Kiran Sahi (Behind Hotelsurya Kiran)	I	Evicted	25
127	11	Berhampur Bastee (Inside Gada Khai)	I	575	119
128	11	Berhampur Bastee (Inside Barbati Stadium)	I	205	50
129	12	Godam Gali Pattapole	II	835	167
130	12	Dagbar Sahi Sutahat	II	850	170
131	13	Baunsa Gali Part	II	760	150
132	14	Oriya Bazar Muslim Sahi	II	1690	338
133	9	Kazi Bazar Dhobi Sahi	II	250	50

134	16	Mallickbag (Near Town Hall)	I	505	95
135	18	Telgu Baste (Infront Of Asha Apartment)	I	430	80
136	18	Tinigharia Jama Gali (Jhola Sahi)	II	830	120
137	19	Bepari Sahi Muslim Sahi	II	250	50
138	20	Thoria Sahi Harijana Sahi	II	520	104
139	20	Akhada Gali	II	370	74
140	20	Machhua Bazar	II	2375	475
141	20	Kumbhar Sahi Buxi Bazar	II	345	69
142	20	Badhei Sahi Buxi Bazar	II	1010	202
143	21	Nima Sahi Telgu Baste	II	209	50
144	23	Labour Colony Sweeper Sahi	I	250	45
145	23	Jhola Sahi Bauri Sahi	II	365	50
146	25	Gopa Nahakani Baste (Private Land)	I	178	40
147	25	Narayan Mishra Lane Bauri Sahi	I	95	20
148	26	Siakari Sahi	II	290	75
149	27	Mallha Sahi Nadikula Sahi	I	490	100
Sl. No. / Slum No.	Ward No.	Name of the Slum	Category	Population	Household
150	28	Ranihat Canal Road	I	500	155
151	28	Medical Sweeper Colony (Tenement)	II	250	50
152	29	Balabhadrapur Telgu Sahi	I	500	100
153	29	Mahatab Road New Colony	II	250	50
154	29	Mahatab Road	II	250	50
155	31	Surya Nagar Sahi (Pilgrim Road)	I	135	30
156	35	Santala Sahi Gorkha Lane	I	200	40
157	32	Patra Sahi	II	3075	615
158	32	KuLibasa Lane(Near Railway Station)	I	1270	254
159	32	Station Bazar Behera Colony	II	255	51
160	32	Pareswar Sahi Mir Sahi	II	360	72
161	32	Station Bazar Matha Sahi	II	1765	353
162	32	Potter's Colony Station Bazar	I	554	100
163	33	Barrage Colony	I	549	119
164	33	Charigharia	II	298	62
165	33	Jamal Baste Bhoi Sahi Bhandari Sahi	II	386	78
166	33	Junus Patna Harijana Sahi Canal Road Baste, Chuna Bhati Baste	I	397	80
167	35	Gurkha Colony	I	2000	318
168	35	Nua Nima Sahi	I	980	168

169	35	Gandhi Chhak	I	600	100
170	38	Kali Vihar Nadikula Sahi	I	502	117
171	39	Kora Pokhari Harijana Sahi	II	262	55
172	39	Nadikula Sahi Gurukhetra Padia	I	562	115
173	41	Najarpur	II	1340	268
174	41	Najarpur Keuta Sahi	I	450	89
175	41	Najarpur Munda Sahi	I	1500	252
176	41	Sikaripur Bateswar Sahi	II	670	135
177	41	Fakirpur	II	1350	260
178	41	Jagatpur Old Industrial Estate	I	636	106
179	41	Nimapur Sahar Sahi	II	1044	174
180	41	Laxmanpur Harijana Sahi	II	280	45
181	41	Jagatpur Harijana Sahi	II	300	52
182	41	Bhubanpur Hadi Sahi	I	250	50
183	41	Laxmanpur Muslim Sahi	I	150	25
184	42	Immam Nagar Harijan Sahi	II	300	60
185	42	Podabara	II	280	55
186	42	Industrial Estate Jagatpur Bali Sahi	I	1380	230
187	42	Nankar Dhoba Sahi Behera Sahi	II	250	50
Sl. No. / Slum No.	Ward No.	Name of the Slum	Category	Population	Household
188	42	Jagatpur Harijana Sahi Nua Sahi	II	500	100
189	42	Immam Nagar Muslim Sahi	II	500	100
190	42	Station Bazar Jagatpur	I	250	50
191	43	Jagannath Colony (Infront Of Panchamukhi Hanuman Temple)	I	730	146
192	43	Mangala Sahi	I	465	93
193	43	Santoshi Nagar	I	410	82
194	43	Gujurati Bastee (Near Ghatakula)	I	175	35
195	43	Munda Sahi (Near Poporada)	I	150	30
196	43	Sartol Bhoi Sahi	II	225	45
197	43	Tinigharia Level Crossing	II	175	35
198	44	Srikhetra Nagar Darkha Patna	I	350	70
199	44	Taladanda Canal Embankment (Near Andarpur)	I	210	42
200	44	Manimatha Sahi	I	390	78
201	44	Nisamani Lane Bauri Sahi	I	170	32
202	44	Rajendra Nagar Sabar Sahi	I	215	43

203	44	Bissalyakarani Lane Bauri Sahi	I	760	152
204	45	Bhadimula	II	1185	237
205	45	Bhadimula Nadia Bagicha	I	250	50
206	45	Canal Bandha Bastee (Infront Of CRR I Gate)	I	725	125
207	45	Jagannath Road (Near Leprosy Colony)	I	609	103
208	45	Mahima Nagar	I	800	160
209	45	Debendra Nagar	I	490	95
210	46	Srikoruan Gurubari Sahi	II	499	100
211	46	Srikoruan Bauri Sahi	II	248	52
212	46	Gopalpur Harijana Sahi	II	247	53
213	46	Balikuda Samal Sahi	II	253	57
214	46	Gopal Pur Saharsahi	I	242	51
215	46	Subhadra Pur Harijana Sahi	II	248	53
216	46	Kajipatna Muslim Sahi	I	265	52
217	46	Tota Sahi	II	248	51
218	46	Amaniapatna Bhoi Sahi	I	201	42
219	47	Pratap Nagari Kaibartya Sahi	II	560	112
220	47	Puruna Nuagada Pana Sahi	II	500	100
221	47	Bhanapur Samal Sahi	II	150	25
222	47	Telengapentha Samal Sahi	II	180	30
223	48	Adhangadhia Harijana Sahi	II	257	67
224	48	Nua Patna Indira Gandhi Colony	II	373	75
225	48	Mugabhanga Muslim Sahi	II	129	26
Sl. No. / Slum No.	Ward No.	Name of the Slum	Category	Population	Household
226	48	Kacharamala Harijana Sahi	II	497	100
227	48	Puruna Kacharamala Harijana Sahi	II	481	100
229	46	Kajipatna Indiracolony	I	133	30
230	47	Dahaliabag Bhoi sahi	II	100	20
231	47	Kumbharajpur Bhoisahi	II	125	25
232	47	Purunanuagada Bariksahi	II	175	35
233	47	Purunanuagada Ostakudasahi	I	250	50
234	47	Nuagada Dandakulala Sahi	II	150	30
235	42	Immanagar Bariksahi	II	180	36
236	42	Immanagar Mallicksahi	II	250	50
237	42	Tarala sahasahi(Adibasisahi)	I	250	50
238	1	Nua Adibasi sahi (Bidyadhar Pur)	II	160	32

239	1	Puruna Adibasi sahi (Bidyadhar Pur)	II	125	25
240	1	Bauri Sahi (Sandhapur)	II	130	25
241	1	Kaibarta Sahi (Sandhapur)	II	392	78
242	1	Bentakarapada	II	255	49
243	23	Telgu Bastee (Infront of Akbari Hotel)	I	290	50
244	34	Malha Sahi (Near Railway Bridge)	I	127	26
245	34	Samadhipatna (Northside)	II	251	52
246	4	Tulasipur Bila Sahi	I	112	30
247	4	Tulasipur Bauri sahi Chakra Dhara Behera Gali	II	165	35
248	6	Alisabajar Seema Icecream Factory Gali	I	200	40
249	6	Harihara Ghat Near Gundicha Mandira	I	250	50
250	13	Oriya Bajar Telugu bastee	II	775	130
251	13	Baunsa Gali Telugubastee	II	890	200
252	4	Tinigharia Sahi	I	185	40
253	9	Khatbini Sahi-Phakir lane Pana Sahi	II	100	20
254	9	Khatbini sahi-Phakir lane Muslim Sahi	II	750	150
255	9	Mehindpur sunadei Gali to Dr. Naim House Gali	II	500	100
256	9	Balubajar(Nimchoudi) Masjid gali Markandia Sahi	II	190	38
257	9	Balubajar(Nimchoudi) Masjid gali Muslim sahi	II	160	32
258	9	Gangamandir Mitra colony (Near Anchala Office)	II	285	57
TOTAL -				71637	14148