GUIDELINES FOR MERGING OF NEIGHBOURING PERI URBAN AREA WITH IMMEDIATE SUBURBAN AND URBAN AREA - CASE EXAMPLE KHODAR BAZAR UNDER BARUIPUR SUBDIVISION, WEST BENGAL

AN URBAN DESIGN THESIS REPORT

SUBMITTED IN PARTIAL FULFILLMENT OF THE
REQUIREMENTS FOR THE POST GRADUATION DEGREE OF MASTERS OF ARCHITECTURE (URBAN DESIGN) UNDER FACULTY OF ENGINERRING AND TECHNOLOGY,
JADAVPUR UNIVERSITY, KOLKATA

GUIDED BY : Professor Tapas Kumar Bhattacharyya
Professor Jayita Guha Niyogi

PREPARED BY : RESHMI RAHA
ROLL NO.: 002010202002
EXAM ROLL NO: M4ARC22002
STUDENT OF FINAL YEAR, M.ARCH (URBAN DESIGN)
DEPARTMENT OF ARCHITECTURE
JADAVPUR UNIVERSITY
KOLKATA-700032

AUGUST 2022

ACKNOWLEDGEMENT

I would like to express my sincere gratitude to the following people who have made generous contributions to my thesis project through their constant encouragement, constructive criticism, good wishes and suggestions. I would like to thank my guides Prof. Tapas Kumar Bhattacharyya and Prof. Jayita Guha Niyogi for guiding me at every step, being patience and motivation and for their continuous support. I would not have imagined having better advisor and mentor for my M.Arch thesis.

I sincerely thank the design review jury members for their valuable comments that have helped me to fortify this thesis.

I thank all the staff of Jadavpur University for being helpful and all my fellow classmates for enriching me through interactions.

Beside everyone, I would like to thank my mother for encouraging me all the time and also my sister for helping me in my thesis.

Reshmi Raha

CONTENTS

ABSTRACT

"*The child is the father of a man*" – William Wordsworth
(Poet, appeared in his poem "My heart leaps up", 1802)
It means the behaviour and activities of a person go through in his childhood helps in building his personality.

The unregulated or unplanned development around the fringe area is nothing new in a country like India. Relocation of population due to economic reasons or may be due to land speculation led people to settle at the periphery of the urban areas which can be termed as "peri-urban areas". The increase in population due to migration and emergence of new activities has been transforming the areas by change in land use pattern, occupational pattern and also growth in built structure. Inadequate planning and governance in such areas by local governments is resulting in various problems. While urbanization is in process, in India, the scarcity of land in megacities or metropolitan cities results in pressure on peri-urban areas which will only grow further. The pressure of land, market and other external factors can be on any exiting cities as well. This brief calls on to formulate guidelines for planning spatial growth of peri-urban areas to ensure sustainable development.

Khodar Bazar has been identified as the site which lies in the western side of Baruipur Municipality under Baruipur Sub-Division, South 24 Parganas. Kolkata Metropolitan Development Authority has declared Khodar Bazar as a Peri-urban area as it is dependent of Baruipur Municipal area as well as Kolkata for its resources.

The main focus of this research is to evolve with the design guidelines which can control the unplanned development in peri-urban areas and also upgrading the existing infrastructure along with providing new infrastructure. Creating strong connectivity with the urban areas is another major aspect. As we can say- "Todays peri-urban area can develop into a suburban area or urban area in course of time it is our responsibility as urban designer to evolve with new additional guidelines for planning the spatial growth of areas around the periphery of mega cities.

PERI URBAN AREA → **SUBURBAN AREA** → **URBAN AREA**

The research focuses on identifying the unregulated growth in per-urban areas and finding out the parameters through which the guidelines can be evolved for better management and planning for a sustainable development.

Case studies has been done on peri-urban areas which are being developed in recent times like Gomti Nagar in Lucknow, India and Huamingzhen Town in Tiajin, China. Case studies on riverfront development are also done such as Gomti riverfront development and Sabarmati riverfront development. From all the above case studies analysis has been done and the appropriate solutions are taken up for evolving into guidelines.

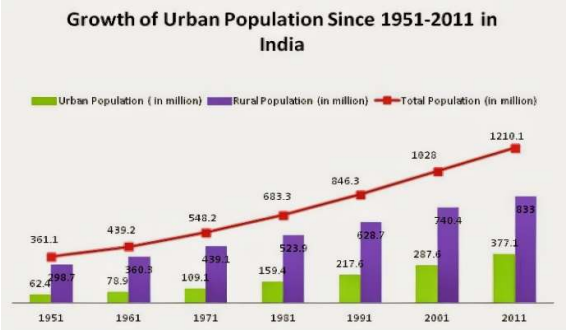
The major concern of the thesis is to analyse the dynamism of the Peri-urban area which acts as a buffer between urban and rural area by evolving additional design guidelines for future development and introducing public interaction areas to achieve public realm by keeping the imageability of the place same. So that the essence of that area is not lost.

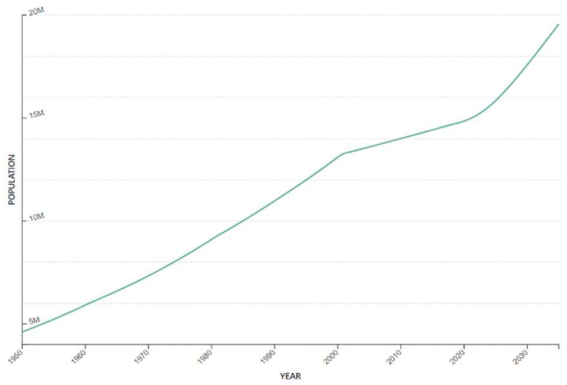
1.0. INTRODUCTION

1.1 BACKGROUND

1.1.1. GENERAL:

Many people migrate to cities in search of job or other economic activities. Staying in the cities are too costly for them, so the migrants reside in the periphery within city limits. Such population movement and concentration of population triggered by economic reasons or caused by land speculation which led to the occurrence of changes and problems in peri-urban areas.





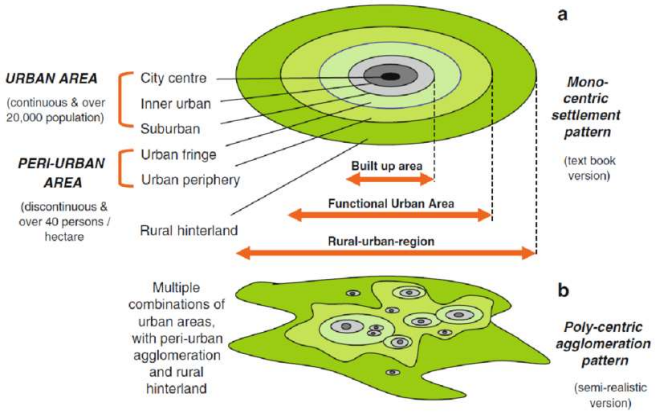
POPULATION GROWTH FROM 1951 TO 2011 IN INDIA

Peri- urban areas can be described as the peripheral areas of the cities adjacent to the rural area which are intrinsically linked with the cities by means of economy. These areas also experience constant transformation and can be characterized by a mix of rural and urban development. Most of these areas are inhabited by local people who are normally engaged in the agro-based activities, fisheries, poultries etc., along with the migrated people such as informal settlers, small-scale industrial entrepreneurs, urban-middle class commuters etc.

In India, the statutory towns which are close to census town or municipal area or suburban areas may be considered as peri-urban growth. These areas are governed by urban local government such as Panchayats.

1.1.2. DEFINATION OF KEYWORDS:

A. PERI - URBAN AREAS:

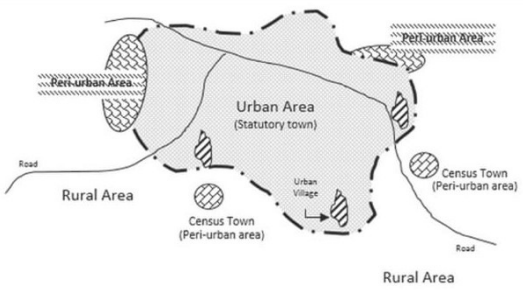


PERI-URBAN AREA

Peri - urban areas are the zones of transition from urban to rural land uses which area located at the periphery of the city.
Peri -urban growth takes place due to decentralization of urban population, change of land use is influence by location of the land that is controlled by transport and communication. The change in spatial development increases the cost of land.
These areas can also be described as fringe areas of cities or adjoining rural areas which are intrinsically linked with city economy and experiences constant transformation which are characterized by a mix of rural and urban activities.

B. SUBURBAN AREAS:

Suburban areas are the mixed-use zone, primarily residential that are not densely compacted and located near an urban area.



URBAN AND SUBURBAN AREA

C. URBAN AREAS:

Urban areas are the region surrounding a city with high population density. Most inhabitants of urban areas have non-agricultural jobs. These areas are well developed in terms of infrastructure such as roads, bridges, railways, sewerage networks, houses, commercial spaces, etc.

URBAN STREETSCAPE

D. GUIDELINES:

Guidelines are set of recommendations which suggest how to apply design principles to provide a positive user experience. It can also be defined as rules of thumb for the designer to work with efficiency.
In Urban Design, guidelines are those which a city adopts to direct its long-term strategies in order to achieve a level of design quality for all physical elements of neighbourhood.

DESIGN GUIDELINES HELP IN POSITIVE EXPERIENCE OF THAT AREA.

1.1.3. RELEVANCE OF THE THESIS

Printed from
THE TIMES OF INDIA

South-east shift to Kolkata expansion

TNN | Jan 17, 2005, 02.41 AM IST

KOLKATA: After Salt Lake and Rajarhat New Town, the state"s attention is shifting south-east, towards the Baruipur-Sonarpur area, to accommodate the needs of a fast growing city.
The Kolkata Metropolitan Development Authority (KMDA) has prepared an"Integrated Development Plan" for the area, which includes setting up a"Health City", a Bio-tech Park, and new settlement areas and activity centres. There will also be a zoological park-cum-safari at Bhagabanpur Mouza. The area on which the park may be built is within the East Kolkata Wetlands, under the land and land reforms department, which the forest department is trying to get transferred.

"Discussions on the proposed project are going on," said KMDA chief executive officer P.R. Babhiskar.

Congratulations!

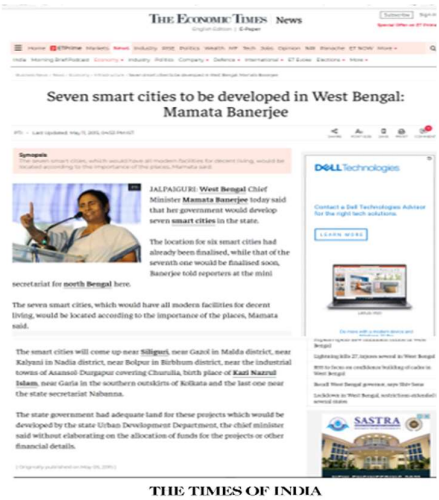
You have successfully cast your vote

Login to view result

KMDA"s planning committee cites several reasons for why the Baruipur-Sonarpur area needs to be developed, chief among them being the high decadal growth rate of population in this region â€" the highest (40 per cent) in KMA. Salt Lake has reached its saturation point and Rajarhat township cannot be extended further due to the East Kolkata Wetlands, so the South-East KMA is the ideal area for development.

"This area has been identified by KMDA as one of the thrust areas for development. Work has already started on the infrastructure," said a senior KMDA official. These include setting up new roads (also, widening and improving existing ones), setting up new railway links and improving the drainage system."There are plans to set up an industrial zone on one side and a residential complex on the other. The housing projects would be for the low income group," said a KMDA official.

The"Health City" concept includes developing multiple healthcare institutions â€" hospitals, medical colleges, nursing and paramedical schools, pharmaceuticals and medical suppliers â€" in the region. The Bio Tech Park aims to develop bio-technology complexes with research facilities, for which 250 acres of land is to be acquired at Dihi Mouza. In the integrated plan prepared by KMDA, a new road has been proposed connecting EM Bypass with the proposed Health City and Bio-tech park to Chakberia (about 16 km).



THE ECONOMIC TIMES News

Seven smart cities to be developed in West Bengal: Mamata Banerjee

JALPAIGURI: West Bengal Chief Minister Mamata Banerjee today said that her government would develop seven smart cities in the state.

The location for six smart cities had already been finalised, while that of the seventh one would be finalised soon, Banerjee told reporters at the mini secretariat for north Bengal here.

The seven smart cities, which would have all modern facilities for decent living, would be located according to the importance of the places, Mamata said.

The smart cities will come up near Siliguri, near Gazol in Malda district, near Kalyani in Nadia district, near Bolpur in Birbhum district, near the industrial towns of Asansol-Durgapur covering Churulia, birth place of Kazi Nazrul Islam, near Garia in the southern outskirts of Kolkata and the last one near the state secretariat Nabanna.

The state government had adequate land for these projects which would be developed by the state Urban Development Department, the chief minister said without elaborating on the allocation of funds for the projects or other financial details.

THE TIMES OF INDIA

Urbanise fast for high growth: India's land policies are at the bottom of its economy failing to take off

1.1.3.1. ISSUES RELATED TO PERI URBAN AREAS

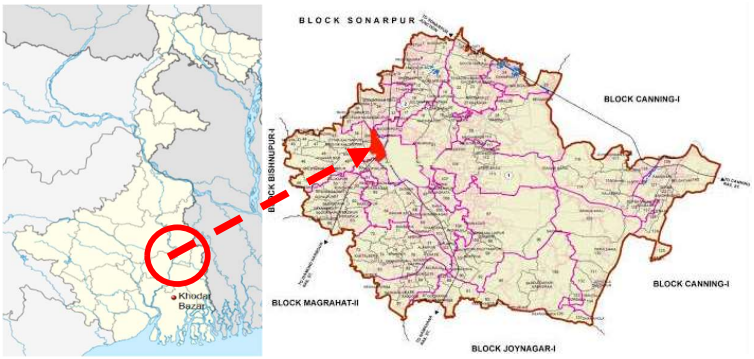
India's existing peri-urban areas are undergoing constant transformation and are under tremendous pressure created by urbanization. Due to this urbanization few issues are encountered in these areas. They are as follows: -

I. **Uncontrolled growth or irregular development**: This type of situation takes place as there is no land monitoring system, no laws or development plans.
II. **Increase in population density and building density**: Due to absence of land development control plans, there is a rise in building density which led to change in land use. Due to relocation of population these buildings are may be considered as quarter settlements, slums or even apartments.
III. **Construction of unauthorized buildings and land acquisition**: Fragment and uncoordinated planning of land tends to this type of situation.
IV. **Shrinkage of open spaces**: The vacant lands and water bodies are covered and used for constructing buildings. This led to change in land use since there is no proper administration along the boundaries.
V. **Poor mobility and connectivity**: Mobility and connectivity in peri-urban areas with the city and surrounding areas are another matter of concern. The surface of local roads and streets are in bad condition. Proper pavements for walking and parking space are not available which are even unsafe and uncomfortable. Therefore, bikes and cars are parked on the street and narrow pavement and hawkers force the pedestrians to walk on the roads. This makes the area chaotic.
VI. **Insufficient Public Infrastructure**: Very less public infrastructure is provided in these areas. Open drainage system, absence of proper garbage disposal area pollutes the environment.

1.1.4. SELECTION OF SITE LOCATION

The unregulated development of peri-urban areas around big cities is nothing new in a country like India. In the middle of 19th century, the border of Kolkata started expanding giving birth to such peri-urban areas.

Khodar Bazar is such as example of peri-urban area which is dependent on Kolkata. Kolkata Metropolitan Development Authority has declared Khodar bazar as a peri- urban area. It is also dependent on Baruipur Municipality for its resources which lies to the western side of



the selected area. It covers an area of 0.88 sq.km. and population of 6360 according to 2011 census. It is situated on the banks of tolly canal which is also known as Adi Ganga Canal and falls under Baruipur Subdivision.

1.1.5. AIM

The main aim of the research is to formulate guidelines which can improve the development pattern in the peri-urban areas through urban design and also investigate ways through which the dynamic changes can be controlled so that the essence of that area is not lost.

1.1.6. OBJECTIVES

1. Identify and study the urban development process of a peri-urban area.
2. To study and establish the relationship between urban development and resources available such as physical and natural.
3. To formulate guidelines for future development to enhance design guidelines for the future urban development based on the sky.
4. To implement the evolved design guidelines by design intervention to enhance the imageability of peri-urban area
5. To provide alternative urban development solution for peri-urban area by using urban design.

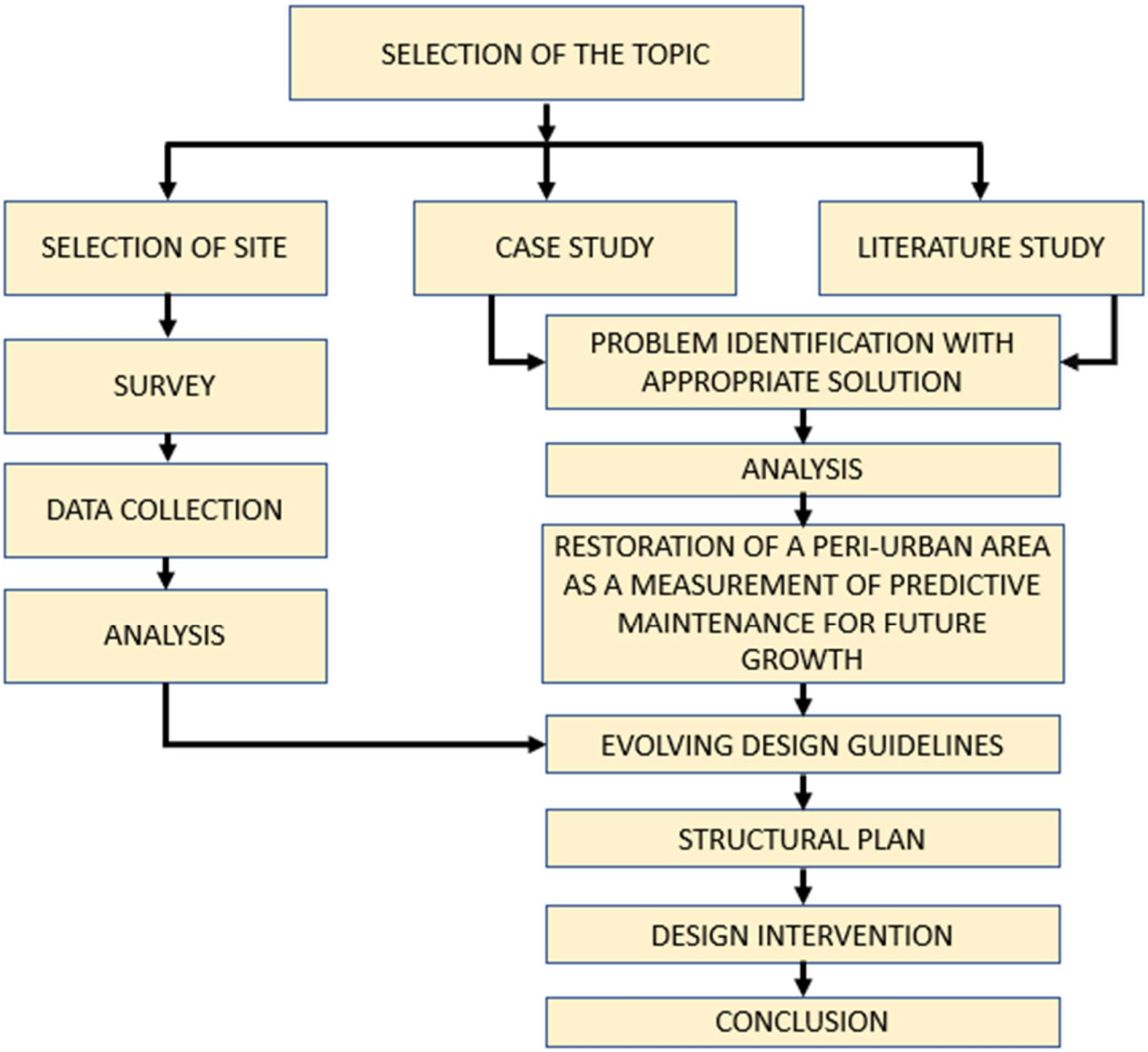
1.1.7. SCOPE

1. Creating set of design guidelines for new urban development to resist uncontrolled development growth.
2. Implementing design guidelines to create alternative proposals.
3. Designing new public spaces for public interaction and other public facilities to create imageability character of peri urban area.
4. Preserving and upgrading the existing facilities and land use along with heritage properties of that area.

1.1.8. LIMITATIONS

1. Work is done on a selected area which is a small part of entire area.
2. In the selected area it is found that growth is in process but not development due to various forces. So, academic inputs play an important role. Moreover, the design will be a prototype of a large area.

1.1.9. METHODOLOGY



2.0. STUDY AND RESEARCH

2.1. LITERATURE STUDY

2.1.1. DEFINITION FROM LITERATURE

Many authors make no attempt to define what peri-urban means or to cite a source for the term, yet they use peri-urban as a substantive category or phenomenon in their work (e.g. Clough, 1996). The following conclusions can be drawn from this "implicit definition":

- Peri-urban is different from urban.
- Peri-urban is often specifically associated with the urban fringe.
- Peri-urban carries a largely negative connotation.

Other authors undertake a critical review of the theoretical concept, but subsequently employ an exclusively urban fringe operational definition,[4] leading to the following conclusions:

- Peri-urban is, in some fashion, connected to being urban.
- Peri-urban has a demographic component, related to population size or density.
- Peri-urban has a geographic component, often reduced to proximity to a city.
- Peri-urban has a temporal component owing to urban growth and expansion and to improvements in transportation.

As OECD (1979: 9) states:

The impacts of economic growth and physical expansion of the urban area are not confined within urban boundaries; they reach into much wider areas surrounding urban centres, creating so-called "rurban areas", "urban fringe areas", or "peri-urban areas". While the peri-urban area retains the characteristics of the rural area, these are subject to major modifications: changes take place with respect to physical configuration, economic activities, social relationships and so forth.

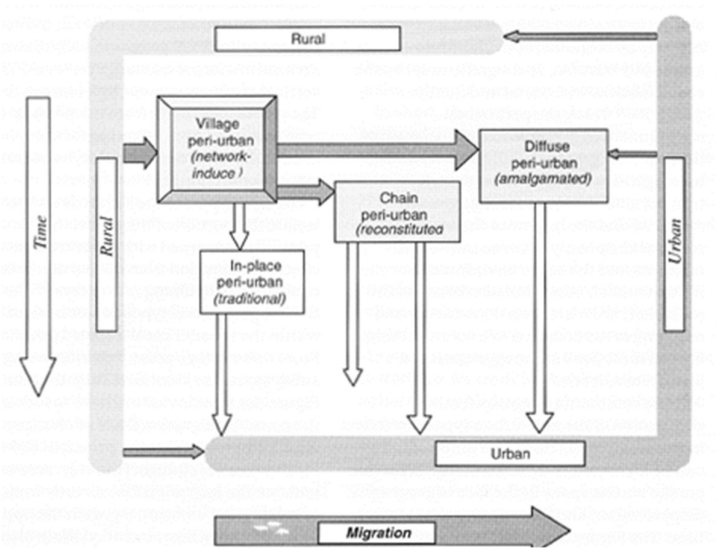
2.1.2. CHARACTERSTICS OF PERI URBAN AREA

I. Peri-urban growth takes place due to decentralization of urban population.
II. The boundaries of Peri-Urban area are porous and transitory as urban development extends into rural and industrial Land.
III. This influence change of land use and is controlled by transport and communication.
IV. Change in spatial development pattern which increases the cost of land
V. The environment of this area is dynamic in nature.
VI. Peri-Urban area must be in close proximity to the city.

2.1.3. TYPOLOGY OF PERI- URBAN AREAS

Urban growth dynamics consist of increasing intensity of use of land in already developed areas, filling of undeveloped pockets of land within the area, development of peripheral area and also merger of outlying settlement as the development area expands. Peri- urban development usually involves rapid social changes as small agricultural communities are forced to adjust to an urban/ industrial way of life in very short time. In 2001, Iaquinta & Drencher argued that it is not necessary for peri urban to have close proximity to the city. According to Iaquinta & Drencher (2001) Peri-urban area consist of 5 types: -

- **Village Peri-Urban:** Rural Villages with an urban consciousness, these areas are geographically non-proximate to urban region. It designation as Peri-Urban rests on its social, psychological transformation rather than geography and size.
- **Diffuse Peri-Urban:** It includes areas near the city that are settled based on migration- immigrants from different geographical roots.
- **Chain Peri-Urban:** The urban Fringe area which is established through chain migration process, can be identified as Squatter settlements around metropolitan area.
- **In place Peri Urban:** Caused by in-situ urbanisation, natural growth and some migration. these areas are completely absorbed by actual urban fringe expansion.
- **Absorbed Peri- Urban:** Areas which are located close or within the city that have been absorbed for a long time and are derived either in-place or chain peri-urban areas.



Characteristics of institutional contexts by peri-urban type

Characteristic of institutional context	Peri-urban type				
	Linked across space		Linked across space and/or over time[1]	Linked over time	
	Village PU	Diffuse PU	Chain PU	In-place PU	Absorbed PU
Type of institutional context	Network-induced (tradition-oriented)	Amalgamated	Reconstituted	Traditional	Residual (traditionalism)
Creation process	Out-migration with networking; Circulation	Diffuse migration	Chain (point source) migration	Annexation; In-migration	Succession-displacement
Proximity to urban centre	Non-proximate	Proximate	Proximate	Proximate	Absorbed[2]
Organizing principle	Integrative maintenance of traditional links	Survival and collective formation	Defensive reconstruction of cultural identity	Defensive maintenance of tradition	Maladaptive adherence to tradition
Primary stimulus for change	Emigrant influences (remittances, circulation, participation)	Compositional heterogeneity; Interface with urban formal structures	Interface with urban formal institutions	Urban in-migrants; Interface with urban formal institutions	Interface with urban formal institutions; Loss of traditionalist legitimacy
Primary mechanism limiting or effecting change	Traditional (i.e. existing) structures	Negotiation among residents; Emergent/novel structures	Reconstituted structures organized along traditional lines	Traditional (i.e. existing) structures	Ritualized structures
Need for Change	Low	High	High	Moderate	High
Resistance to change	High	Low	Moderate	High	High
Pace of adaptation	Slow	Fast	Moderate	Slow	Very slow
Likelihood for disruptive conflict	Low	Moderate	Moderate	High	High
Characteristics of change	Existential and tradition-oriented (maintenance of ideal culture via redefinition of adaptation)	Experimental; Democratic or consensus-based; Function-oriented	Tradition-oriented incorporating some urban components	Polarized between traditional and modern sectors	At best external compliance only
Most likely types of adaptations	Novel solutions that maintain the appearance of tradition and meet modern sector needs	Novel solutions that meet modern sector needs and create a new basis for legitimacy	Solutions that make inefficient use of the formal sector	Solutions that make inefficient use of the formal sector owing to slow pace of change in high need situation	Solutions imposed from the external formal sector
Impact on stratification systems	Greater individual access with formal maintenance of system	More opportunity for egalitarianism; Erosion of system	Maintenance of system, possibly in new forms	Heightened conflict over system; Increased oppression	Strong support for maintenance of system

[1] Chain PU is linked across space as a receiving area for migrants coming from rural and village PU areas. It is linked through time to absorbed PU areas insofar as succession/displacement produces ritualism in institutional maintenance.
[2] Formally speaking, absorbed PU types lie within the city. Their roots lie in the peri-urban zone with in-place PU and village PU, and they are included as a form of peri-urban to underscore this temporal linkage.

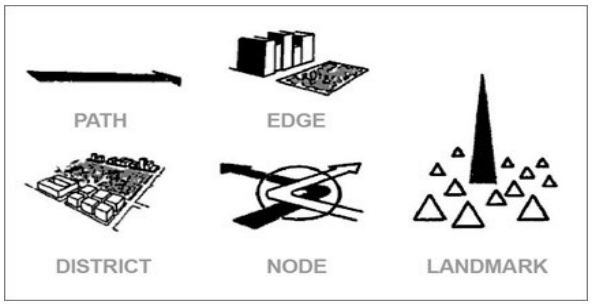
2.1.4. SWOT ANALYSIS ON PERI- URBAN AREAS

SL. NO.	STRENGTH	WEAKNESS	OPPORTUNITIES	THREATS
1	High growth potential for urban development	Absence of planning and development agencies to regulate development within the area.	Promote planned development of urban district.	Large scale conversion of agricultural land into non-agricultural uses.
2	Existence of developmental major road/ rail networks	Large scale conversion of agricultural land into non agricultural uses due to lack of any legal framework.	Ensuring dispersed pattern of urban growth.	Unauthorized and haphazard growth.
3	Better option for cheaper, spacious and affordable housing	Unauthorized and haphazard growth of development	Creating efficient and cost effective land market.	Absence of basic infrastructure and services.
4	Easy access to urban district.	Existence of slum	Minimizing growth of slums in urban district.	Absence of traffic and transportation networks
5	Close proximity to work center.	Poor accessibility within the habitable areas.	Creating a pattern of development which is affordable, economical and user friendly.	Poor accessibility.
6	Comparatively low cost of living		Creating balance between rural and urban.	Low quality of housing.
7	Availability of basic amenities and service at comparatively lower price.			

2.1.5. IMAGEABILITY

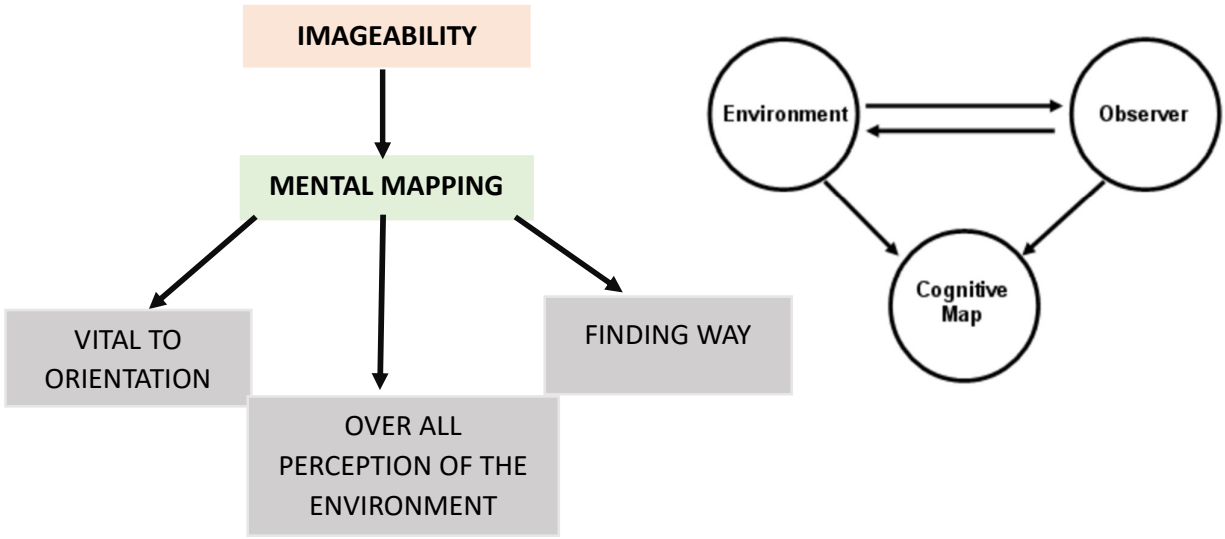
The word "**Imageability"** was first wined by Kevin Lynch in his book image of the city.

According to him, a city contains a set of Physical elements which people use to understand the environment of the place and accordingly orient themselves inside that place the five elements are – **Node, Pathways, Landmarks, Edge and district.** These five elements help to evoke a strong image of the place by any observer. High imageable city contains district paths that can be instantly recognizable. The imageability of a city is the outcome of two ways interactive process between the environment and the observer. According to the response between the residents and the environmental, economic, social and technological developments that reflecting local climate of the cities, the image of the city is being shaped.



FIVE ELEMENTS OF IMAGEABILITY

There are four important functions which is served by the clear image of the city - mobility, structural knowledge, emotional function and strong association. Mobility function allows people to move around easily. Image serves as a board frame of structural knowledge of the city and activities within it. The emotional function allows one to move about in the city with a sense of comfort, ease and emotional security. Finally, the urban image serves a symbolic function by providing symbols and strong associations with place. This facilities communication between people within a common environment. Hence to maximize man's relationship with his environment, cities should be planned to maximized their imageability through highlighted the factors that shape the image of the city.



INTERACTION BETWEEN OBSERVER AND ENVIRONMENT IN CREATING COGNITIVE MAP

2.1.6. PUBLIC REALM

The public realm is defined as the publicly owned places and spaces that belong to and are accessible by everyone. This can include streets, Lanes, Squares, Plazas, Sidewalks, Trails, Parks, Open Spaces, Water plants, Public Transit Systems Conservators areas and civic building and institutions.

PUBLIC	→	Concerning the people as a whole
REALM	→	A field of activity or interest.

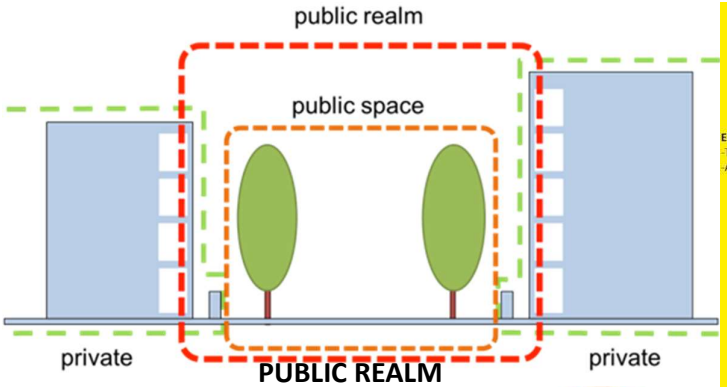
So collectively public realm stands for a domain which is not private. It deals with area which is accessible by everyone and can be treated as common ground with shared activities.

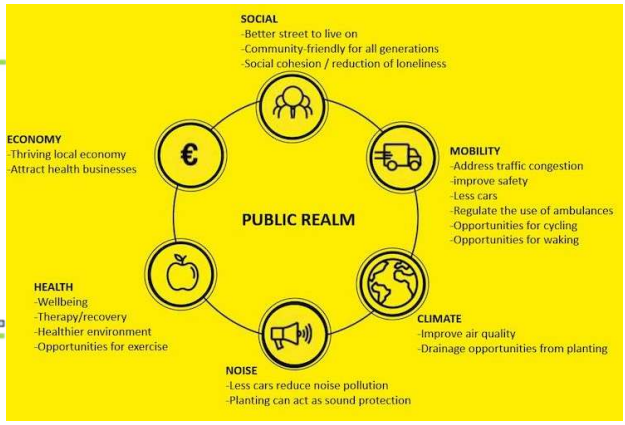
PLACE + ACTIVITY + BUILT FORM = **PUBLIC REALM**

BENEFITS OF GOOD PUBLIC REALM: -

1. Promote accessibility for all, therefore encourage pedestrian movement.
2. Increase social interaction.

The element of Public Realm combines to create a distractive and unique place that invite use and activity. The mix and location of land uses in close proximity activate the Public Realm.



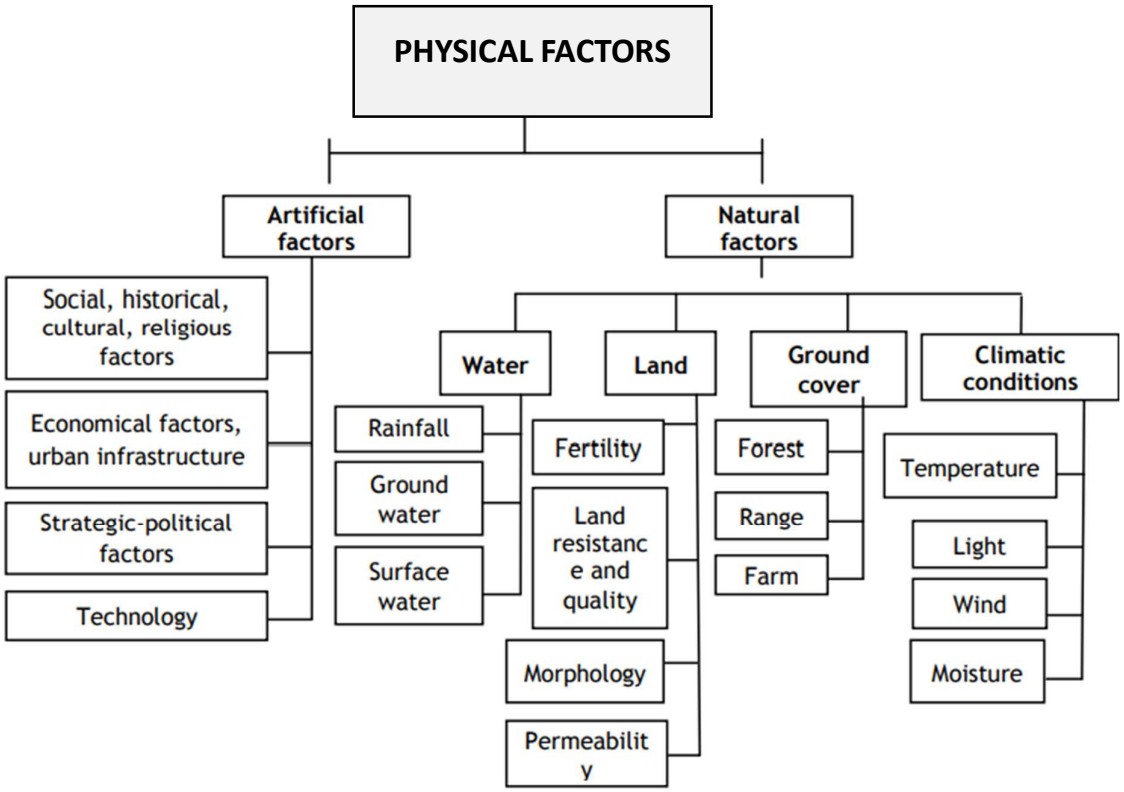


BENEFITS OF PUBLIC REALM

2.1.7. PHYSICAL COMPONENTS

The physical components of city include the streets, building and sidewalks within and around parks and open space provide the lungs of the city. This are the key element for any urban design intervention in a city. City wide urban design recommendations are necessary to ensure that the built environment continues to contribute to the qualities that distinguish the city as a unique living environment. The aesthetic components of urban design deals with conceptive and cognitive perception of a person. These physical characteristics of urban areas termed as urban fabric which includes streetscape, building, soft and hard landscaping, singes, lighting, roads and other infrastructure. Urban fabrics can be divided into two typologies: -

1. Coarse grain where “Large blocks isolated the users of one street from the next one. This isolation reduces the capability of those living on these streets to jointly support retails establishment.” – Jane Jacobs.
2. Fine Grain where “Street pattern must be earing --- and lattice like, with blocks that one not too big and intersection that are not too far apart” – Roger Lewis.



TYPES OF PHYSICAL FACTORS EFFECTING A CITY

2.1.8. EXISTING CONCEPTS

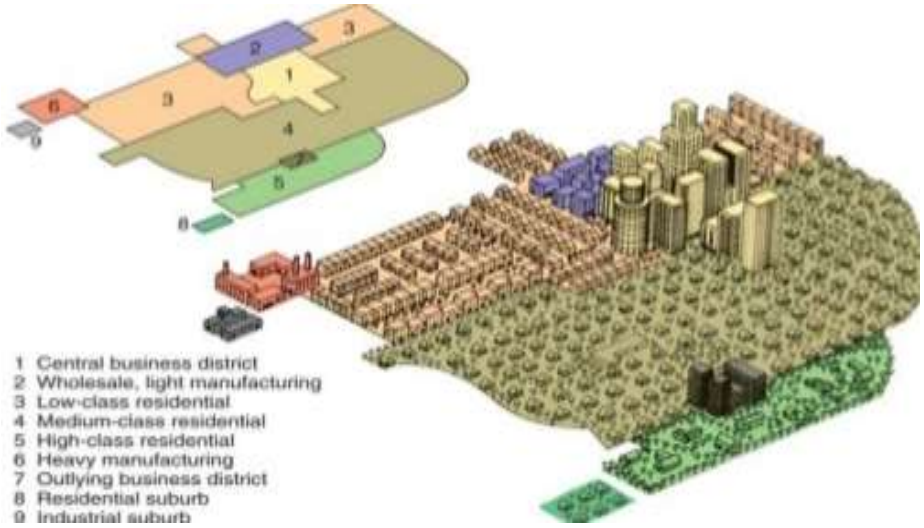
2.1.8.1. MULTI – NUCLEI MODEL

In 1945 C.D. Harris & Edward L. Ullman argued that the cities have multiple growth points or “Nuclei” around which growth take place. Each Nuclei act as a growth or development point from a particular type of land use. Growth occurs from each nuclei outside until they all merge into a large urban area. The theory was based on the idea that people have more movement due to increase transport facilities and car ownership.

Some centres or node include ports, university, airports, parks, and neighbourhood business centres.

FACTORS: -

- Certain activities are limited to particular sites because they have specialised needs. Example- retail district.
- Certain related activities or economic functions tend to cluster in the same district. They can carry on their activities more efficiently as a cohesive unit, like automobile dealer etc.
- Certain related activities repel each other, example: - high end residential district will locate away from the heavy manufacturing district.
- Certain activities may be relegated to less accessible location. Example: - Due to inability to generate enough income to pay high rent of certain site.

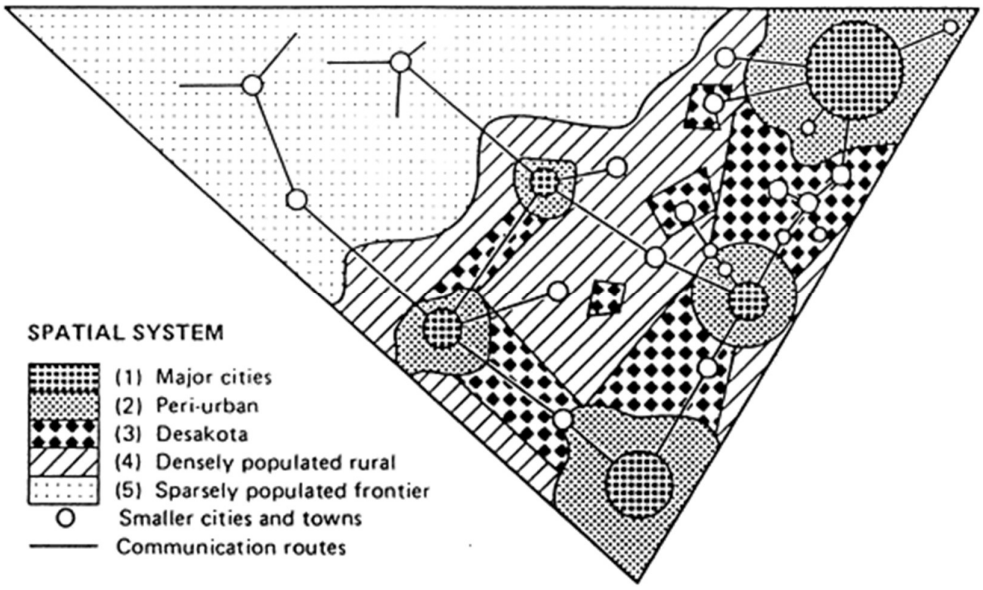


MULTI-NUCLEI MODEL

2.1.8.2. DESAKOTA THEORY

Desakota is a term used in urban geography used to describe areas in the extended surroundings of large cities, in which urban and agricultural form of land use and settlement co-exist and are intensively intermingled. "Desa" which is derived from Indonesia refers to the densely populated agricultural areas that often stretch along corridors between large urban centers and are characterized by agricultural activities done by dense population that is high population density rural areas or borderland with few people. Mc Gee defined it as "the area surrounding cities within daily commuting distance of the city core." Mc Gee believed that 3 types of spatial economy transitional are occurring in Asia :

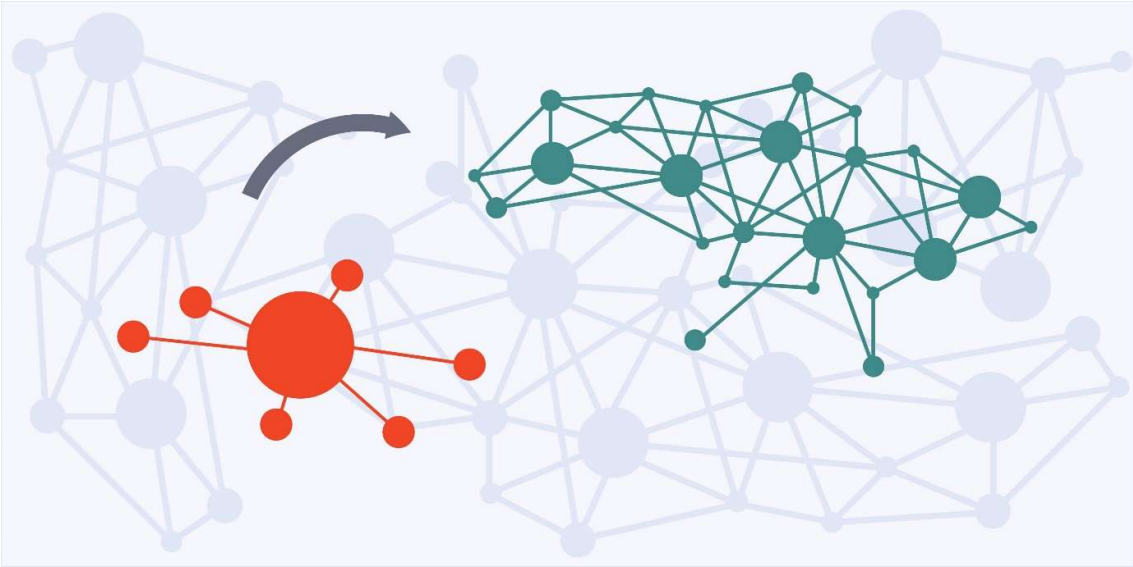
- DESAKOTA TYPE 1: A decline in rural settlement and land use has occurred in these areas and the agricultural population has migrated to urban centers. like South Korea and Japan where most of the economically active work is not agricultural-based.
- DESAKOTA TYPE 2: These are areas where, overtime, productivity gains in agriculture and industry as well as population shifts from agricultural to non-agricultural have concentrated on the core city and adjacent regions. these are also areas with rapid economic growth in comparison to the rest of the country.
- DESAKOTA TYPE 3: These are high density areas with slow economic and high level of involuntary economic activities. these areas are typically found along secondary urban centers.



DESAKOTA REGION MARKED IN THE SPATIAL SYSTEM

2.1.8.3. DECENTRALIZATION

Decentralization may be defined as the breaking-up of large cities into widely separated small towns or it may denote movement of the industries and the residential population from the centre to the periphery of the same urban mass. Decentralization occurs when people or economic activities are relocated from urban cores to peripheral areas and along major transportation corridors radiating from the urban core to the metropolitan region. People and activities disperse when they leave secondary or provincial cities or other growth centres. This decentralisation has been attributed to market forces as opposed to government policy.



DECENTRALIZATION

Urban decentralization depicts two wave of urban population explosion: decentralization of both population and employment. This pattern of decentralization is found in developing countries in recent decades. It is evident that identification of population and employment subcentres can help understand the urban spatial structure of cities.

2.1.9. IMPORTANCE OF GREEN SPACE IN URBAN AREAS

A green space can be defined as a land characterized by the significant presence of varied vegetation. Therefore, the forest, parks, garden and green areas that although can host ecosystem connected or separated, deserve the greatest care since they are the best weapon for global warming.

The conservation of green spaces on the planet is essential to improve the quality of the air we breathe.

Evidence of Plant Benefit Blindness?

In 2006, the Project EverGreen Survey conducted interviews to judge public agreement to the following statements, all which are true:

"Psychologists have found that access to plants and green spaces provides a sense of rest and allows workers to be more productive."

35% agree, 55% disagree

"When landscaping is developed in a neighborhood, there is a decrease in vandalism."

30% agree, 70% disagree

"Improving landscaping can reduce energy costs"

30% agree, 70% disagree

The other benefits of green spaces are:

I. MENTAL HEALTH:

- Stress and violence reduction: Parks, garden spaces, street trees and landscaped traffic islands provide more than a panoramic view, effectively reducing the stress of our daily life. Studies have shown that stressed individual feel better exposure to natural scenes.
- Improved concentration: Scientists assert that green spaces increase our ability to concentrate, both on the task at hand and on our subconsciously viewed surroundings. Voluntary attention, the exhausting focus required to ignore distractions and remain intensely devoted to work or study must be employed throughout the traditional work day. Involuntary attention is the effortless and enjoyable awareness of sensory stimuli in the environment.

II. PHYSICAL BENEFITS:

- Enhanced Health: Cities with high number of parks battle obesity and diabetes. Recent studies show that people with easy access to green space boasted better health and low morality rate. It also lowers blood pressure and anxiety levels.

- More Rapid Healing:
  The green trees have a positive effect on the humans and helps in recovering quickly even in surgical cases.

- Improved Environmental Conditions:
  City greenery cleans and cools the air for improved quality of life. Vegetated areas also provide relief from heat island effect caused by the heat trapping quality of asphalt, concrete and building materials.

A Case for Green Space

Frances Kuo of the University of Illinois conducted a study of 28 identical high-rise public housing projects. She found that people living near green spaces:

- Boasted a stronger sense of community
- Coped better with everyday stress and hardship
- Were less aggressive and less violent
- Performed better on tests of concentration
- Managed problems more effectively

III. SOCIAL BENEFITS

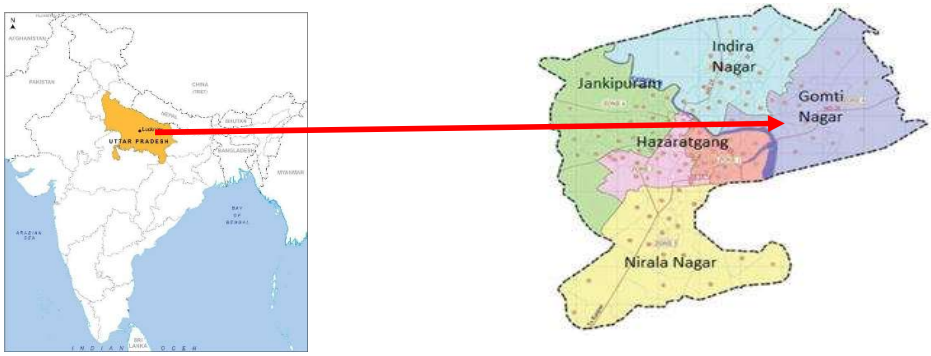
- Crime Reduction:
  Open mowed are generally considered safest, while densely vegetated areas are most feared. Vegetated landscape invites more people to use them ensuring more eyes on the watch to prevent crime in outdoor space.
- Increase Workplace Productivity:
  Green space improves productivity and morale among workers as they feel relaxed.
- Safer Driving:
  Vegetated roadsides may also serve a social benefit by reducing fatigue, anger, aggression, fear and stress of automobile drivers.
- Economic Stimulation:
  Street trees and other streetscapes in downtown shopping districts were rated as highly preferable in survey as it fosters the community's sense of place, but well- maintained streetscape raise opinions about the quality and service offered.
- Positive Effects on Children:
  The view of tree from home improves self-discipline, enhances concentration, inhabitation of impulsive behaviour and delay of gratification.

2.2. CASE STUDY

2.2.1. GOMTI NAGAR, LUCKNOW, INDIA

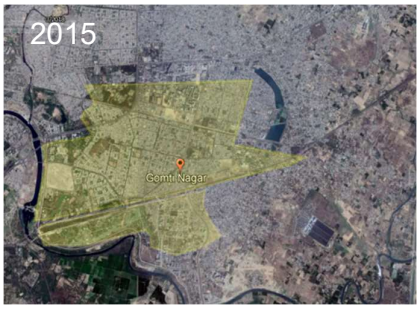
2.2.1.1. LOCATION:

Gomti Nagar is a peri-urban area located in north eastern part of Lucknow in Uttar Pradesh. This area is under Lucknow Municipal Corporation. Gomti Nagar is one of the largest and most preferred commercial destinations in the city along with abrupt residential development.

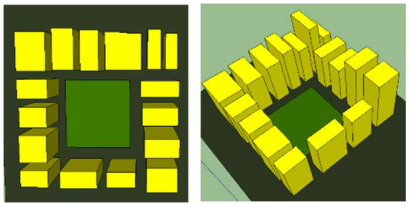


2.2.1.2. HISTORY AND EVOLUTION

The neighbourhood has attracted a large no of migrants from smaller towns and villages of the state who were in search of employment, education and a better life style. This migrant started to settle in this area as it is in close proximity to Lucknow city which is rapidly growing. The agricultural lands around the built-up areas of the neighbourhood slowly converted into land for urban use. Though some of the conversion is planned growth, rest is haphazard which is being carried out by private developers, property agents, land speculators and individual owners. In 1980 Lucknow Development Authority organized the settlement and fulfill the growing demand of housing in the state.



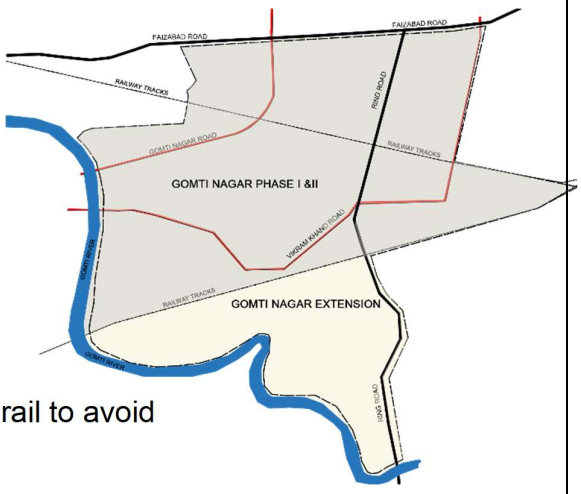
2.2.1.3. SHAPES AND PATTERN



- Roads are laid in Grid –iron pattern.
- Rectangular building blocks are found mostly. Helps in generation of effective geometry in between spaces.

RECTANGULAR BUILDING BLOCKS

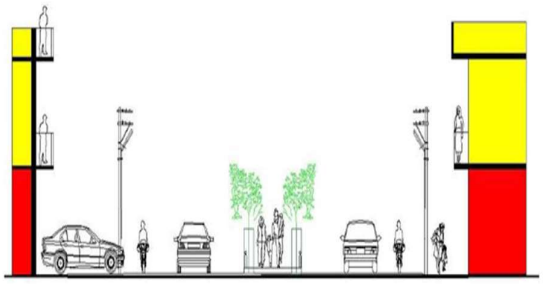
2.2.1.4. ROUTES AND PATHWAYS



- The main arterial roads are :-
  1. Lucknow- Faizabad Highway
  2. Ring Road (NH30)
- The area is well connected by rail routes as well. Gomti Nagar Railway station is being redeveloped under NBCC and RLDA.
- The streets have narrow footpath varying from 900mm to 1200mm wide with no guard rail to avoid visual barrier.
- The internal roads are 10 m wide.
- Trees are planted along the streets for shading purpose.
- Urban roads are classified into following five categories on the basis of their uses and importance arterial, sub-arterial, local roads, streets and pathways .

AERIAL VIEW

AERIAL VIEW

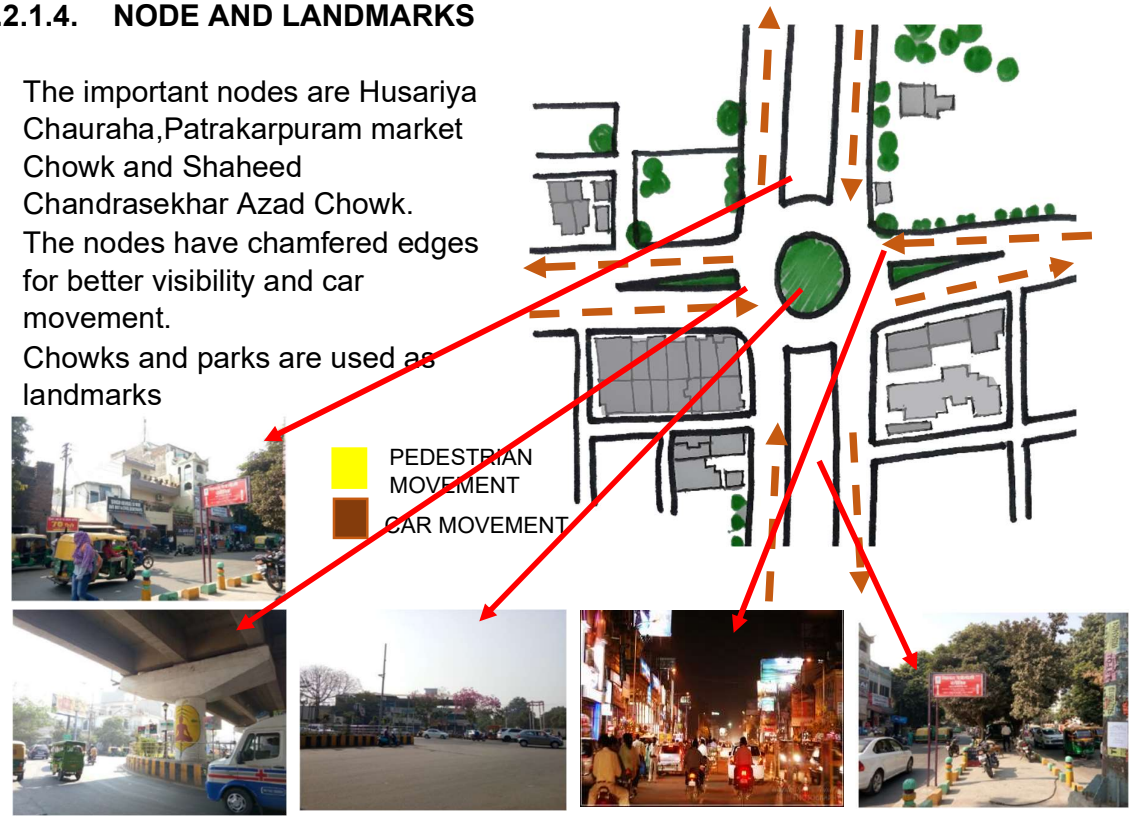


SECTION THROUGH SUB-ARTERIAL ROAD

SECTION THROUGH ARTERIAL ROAD

2.2.1.4. NODE AND LANDMARKS

- The important nodes are Husariya Chauraha,Patrakarpuram market Chowk and Shaheed Chandrasekhar Azad Chowk.
- The nodes have chamfered edges for better visibility and car movement.
- Chowks and parks are used as landmarks



2.2.1.5. VIEW VISTA AND SKYLINE

- ❑ Building height is mostly G+1 and G+2. Few G+3 are found.
- ❑ Few high rise are found which shows abrupt changes in skyline.
- ❑ Billboards and poles destroy the vista of the place.
- ❑ Important landmarks are Ambedkar Park, Janeshwar Mishra Park and Ram Manohar Lohia Park.

BILLBOARDS DESTROYING THE VIEW AND VISTA OF THE AREA AND NO ABRUPT CHANGE IN SKYLINE

AMBEDKAR PARK | JANESHWAR MISHRA PARK | RAM MOHAR LOHIA PARK

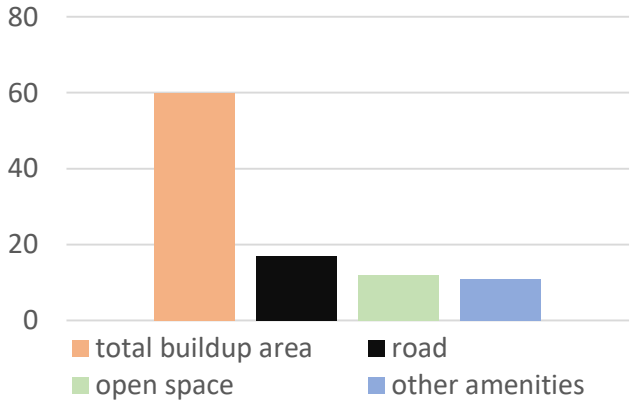
2.2.1.6. LANDUSE

- The development of Gomti Nagar is divided into 3 parts-

1. Gomti Nagar- Phase- I
2. Gomti Nagar- Phase -II
3. Gomti Nagar Extension.

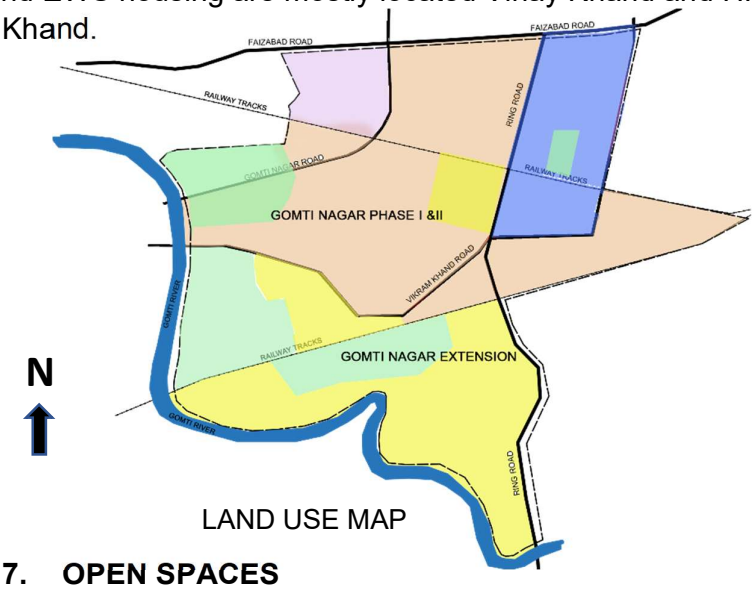
- It covers an area of 1080Ha or 10.8 sq km and divided into 26 sectors. Each sector are known as 'khands' which starts with alphabet 'V'.
- Mix land use
- Total Build up Area- 3,800,000 sq m. (60%)

a. Road Area= 9,40,000 sq m. (17%)
b. Open space = 9,00,000 sq m.(12%)
c. Other amenities = 6,00,000 (11%)



LAND USE

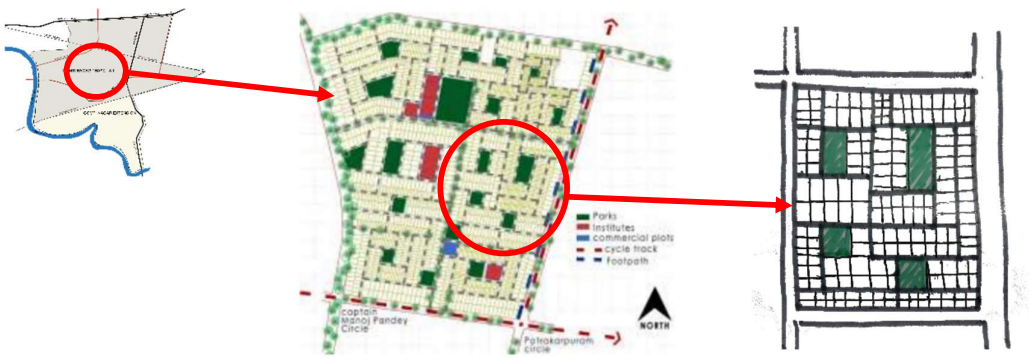
- LIG and EWS housing are mostly located Vinay Khand and HIG colonies in Vipul Khand.



LAND USE MAP

2.2.1.7. OPEN SPACES

- The colonies in Gomti Nagar are based on maximum open space concept hence most of the plots/ houses and apartments are park-facing.



RESIDENTIAL APARTMENTS ARE PARK FACING OR ROAD FACING

2.2.1.8. LANDFORM AND NATURE

- Gomti River basin is predominantly agricultural more than 80% of the crops in the basin are grown under full or supplementary irrigation.
- Gomti Nagar is being developed in the Trans-Gomti river area, which is very low lying and marshy land.

2.2.1.9. CLIMATE AND ORIENTATION

- Gomti Nagar has a humid subtropical climate. Therefore enhances more outdoor activities.
- The buildings blocks are oriented perpendicular to the street grid which helps to create uniform elevational corridor.

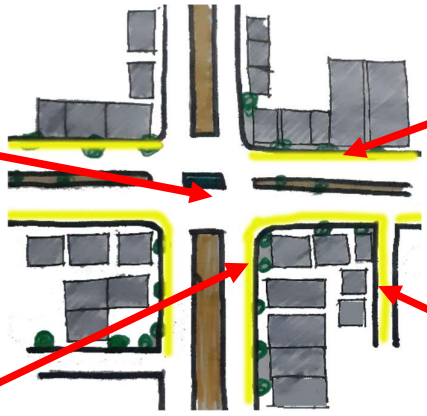
2.2.1.10. ACTIVITIES

- Patrakarpuram is one of the major markets in Gomti Nagar.
- Gomti Nagar consist of important office buildings, IT hubs etc.
- Parks and Chowks are the gathering places which encourage Public Realm.



PARKS AND CHOWKS ENCOURAGES PUBLIC REALM





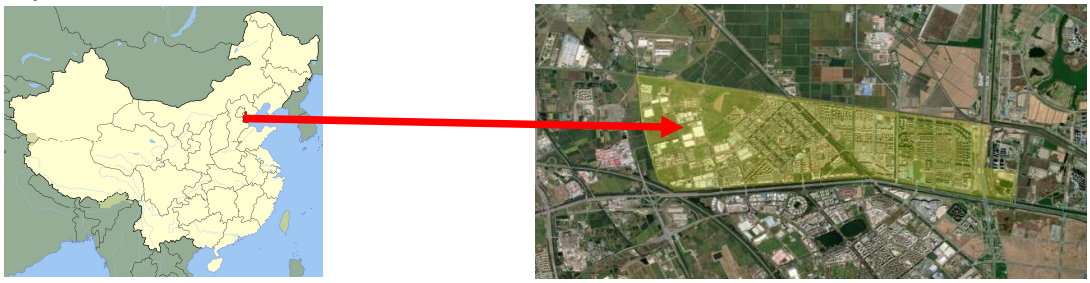
PATRAKARPURAM AREA

COMMERCIAL ZONE

2.2.2. HUAMINGZHEN, TIAJIN, CHINA

2.2.2.1. LOCATION:

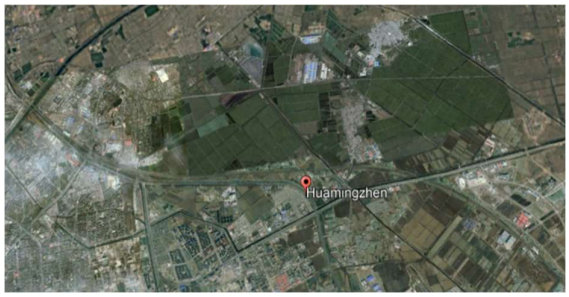
Huamingzhen Township is located in the Dongli district of east suburban of Tiajin city.



2.2.2.2. DESCRIPTION

Huamingzhen was featured at 2010 Shangai Expo under the slogan “same land and different Life”. Huamingzhen has experienced a major change since 2005 as urbanization started with a Municipal Government document which approved the approach of exchanging traditional village resident land plot for new housing in the township seat village. The project took a period less than 20 months. Redevelopment started in April 2006 and relocation of farmers in 2007. Total population which relocated is 41063.

1985



2015

BEFORE REDEVELOPMENT

AFTER REDEVELOPMENT

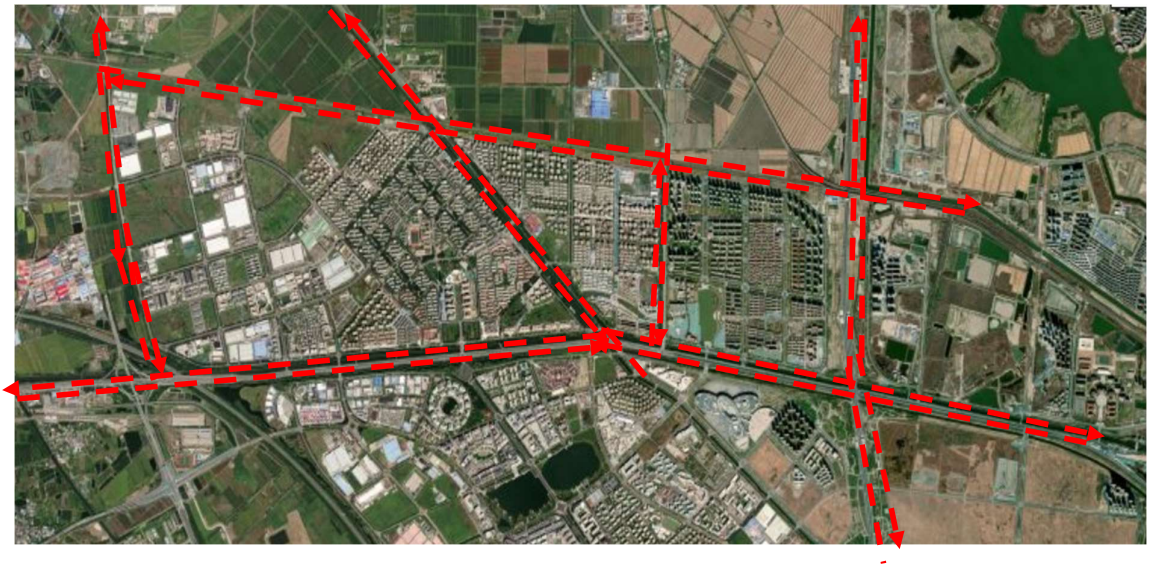
2.2.2.3. SHAPE AND PATTERN

- Roads are laid in Grid –iron pattern.
- Rectangular building blocks are found mostly. Helps in generation of effective geometry in between spaces

AERIAL VIEW OF THE TOWNSHIP

2.2.2.4. ROAD AND PATHWAYS

- The important roads in the northern side is the Jing Han Road and Beiyang Road on the west.
- The major arterial road that is the Jinghan Road caters most of the vehicular movement.
- Wide pathways are provided with greenery
- Proper parking area is also provided so that the arterial road does not gets narrow.



2.2.2.5. LANDFORM AND NATURE

- The town was developed on the banks of Beitang Drainage River.
- Low lying area mostly agricultural lands

2.2.2.6. NODE

- Chamfered nodes for better visibility and car movement.

2.2.2.7. VISTA AND SKYLINE

- High rise buildings are present mainly G+4, G+5, G+6

2.2.2.8. OTHER AMENITIES

- Paved street, public parks, gardens and well maintained open spaces are also provided.
- Drainage system and sewerage system are provided.

2.2.2.9. LAND USE

- The redevelopment project involves the building of a new town- the Huamingzhen model town and relocation of residents from 12 traditional villages.
- The guiding principles are:

I. Improve the living environment of local farmers
II. To reduce residential land waste occupied by traditional houses through market operation.

- Total land area is 5618280.9 sqm. which is divided into three different functional zones:

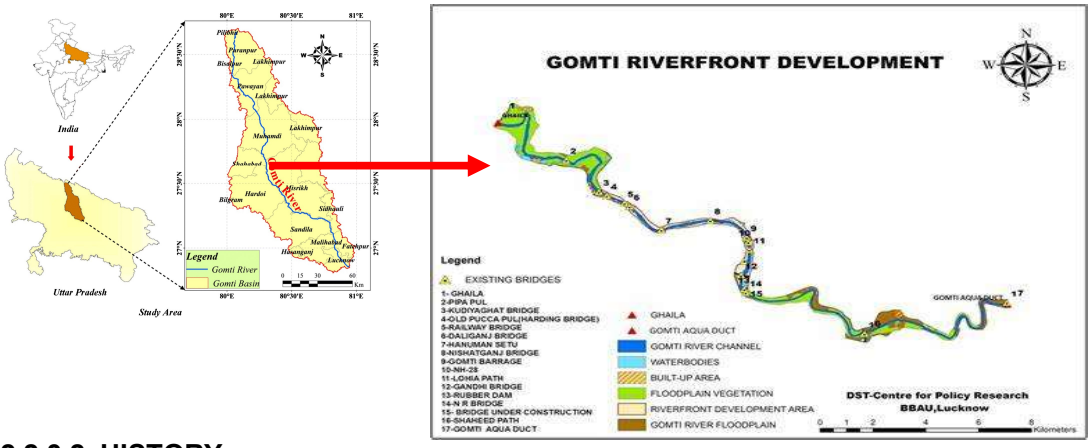
I. Relocation of housing area = 2400120 sqm.
II. New urban resident area = 1962098 sqm.
III. Business and shopping area = 1322732.8 sqm.

Relocation of housing area New urban resident area Business and shopping area

2.2.3. GOMTI NAGAR RIVERFRONT DEVELOPMENT

2.2.3.1. DESCRIPTION

Gomti River flows through the middle of Lucknow. it is newly constructed park with some excellent aesthetic attraction positioned in Lucknow, Uttar Pradesh. it was inaugurated by honorable Chief Minister of Uttar Pradesh on 16th October, 2016. It is one of the largest eco-friendly projects and has no parallel anywhere else on the country.



2.2.3.2. HISTORY

The orientation of historic Lucknow was towards Gomti Riverfront with monumental architecture of mosques, mausoleums and palaces which was concentrated on the southern banks. in 18th and 19th centuries bank of Gomti River flourished with Landscape and palaces. But on course of time this riverfront transformed into backwaters and disappeared from the public eye. After that this river started getting depleted as the area of the city of Lucknow increased by 60% from 1987 to 2005. this led to massive flooding as the embankments were interrupts the natural drainage of the city and rainwater. The Uttar Pradesh Government responded to the situation by initiating riverfront development from April 2015 to March 2019.

2.2.3.3. ISSUES

Gomti river has been stressed with 3 major issues in and around Lucknow. They are as follows:

a. EMBANKMENT- High embankments were built to protect from flood during 1970.
b. POLLUTION- The Gomti has 40 natural drains of which 23 are major. The drain used to carry surplus water during monsoon and helped in recharge of ground water, reduced due to sewage from residential and industrial into the river.
c. DEVELOPMENT- The river's flood plains and fertile land got covered with residential areas such as Gomti Nagar and started receding during late 1970s.



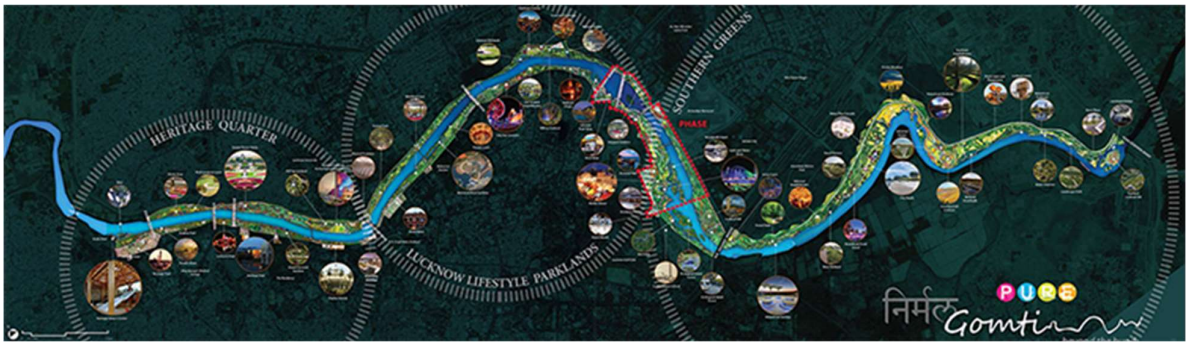



2.2.3.4. DEVELOPMENTS MADE ALONG THE RIVERFRONT (LAND USE)

- Gomti Riverfront span across 14km from Pucca Pull to Shaheed Path and divided into 3 zones- heritage quarter, Lucknow lifestyle parklands and southern greens.
- Gomti Riverfront Park spreads over 2 km along the banks of River Gomti. It was created to conserve and develop the Gomti River which is considered as the life line of Uttar Pradesh.

- It turned into built with the concern of renovation and development of River Gomti which is taken into considerations.
- The lush green surroundings across the bank of Gomti River for around 15kms long has been created as in keeping with International Standards.

- Its predominant enchantment is the musical fountain which is very massive and can be seen from both side of the river.
- This musical fountain attracts 200-300 people on a regular basis.
- Many types of trees are grown in the wetlands in which the chirping of birds fascinates the visitors.
- Amphitheaters (2000-person capacity), biking area, walking tracks and jogging tracks, boating facility, play region for kids are also provided.
- Public Toilet, portable drinking water and parking area is provided at every 500 m.
- Place for yoga, wedding ground, stadium for playing football and cricket is also provided.
- A diaphragm wall has been constructed on both the banks of Gomti for connecting water ways.
- Lucknow Eye – a 100-m-high giant ferry wheel patterned on London Eye on Thames River. Riding the giant wheel, people can enjoy a bird's eye picture of the city.



2.2.3.5. ACTIVITY

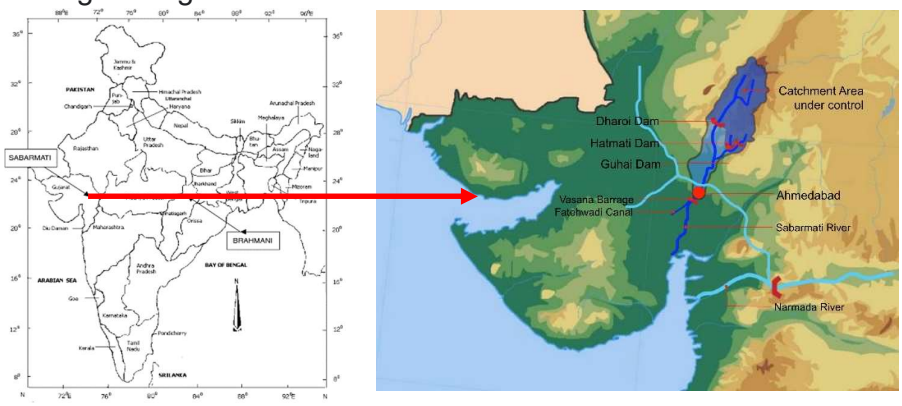
- Visitors experience the splendor of River Gomti as it is a peaceful area for individual, friends and family.
- Many parks are provided along the river like butterfly park, Gomti Riverfront Park.



2.2.4. SABARMATI WATERFRONT DEVELOPMENT

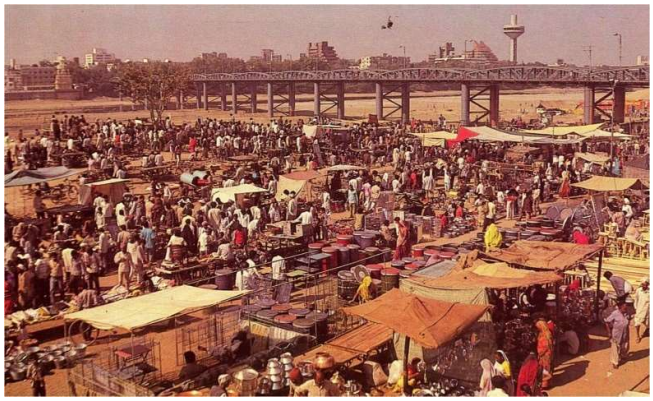
2.2.4.1. DESCRIPTION

The Sabarmati a riverfront is located at Gandhinagar, Ahmedabad, Gujrat. KPMG (Klynveld Peat Marwick Goerdeler) regenerated Sabarmati River front under. Ahmedabad Municipal. Corporation. The project consists both banks. of Sabarmati Rives. It creates a public edge along the river banks on both eastern and western side. It is 263m nude and stretches up to 11.25 km covering land area of 204.91 hectares.



2.2.4.2. HISTORY

Sabarmati is one of the important rivers of Gujrat and also considered to be sacred. According to mythology, it is believed that Lord Shiva bought Goddess Ganga to Gujrat which caused the Sabarmati to came into being. During Independence, Gandhi ji also to established. Sabarmati ashram in the banks of the river and considered it as his home. Over the years Sabarmati gat polluted. According to National Water Quality programme which was led. by Central "Pollution Control Board (CPCB), Sabarmati River is one of the most polluted rivers in India. This is when the A Gujrat Government has undertaken the most ambitious project of developing the Sabarmati Riverfront to enrich the economy. Many research works have been carried out by academicians whose main concern was to reduce the river pollution, increase tourism and prevent flood.



In 1960, a French Architect Bernard Kohn proposed an ecological valley in Sabarmati Basin stretched from Dharbi Dam to Guy of Combay. Thereafter, in 1964 an Integrated Planning and Development of Sabarmati Riverfront was proposed by him, reclaiming 30 hectares as 74 acres The project get approved in 1966 by Gujrat government. In 2005. Construction of this riverfront started and was inaugurated by the 15th Hon'ble Chief Minister of Gujrat on 15th August 2012.

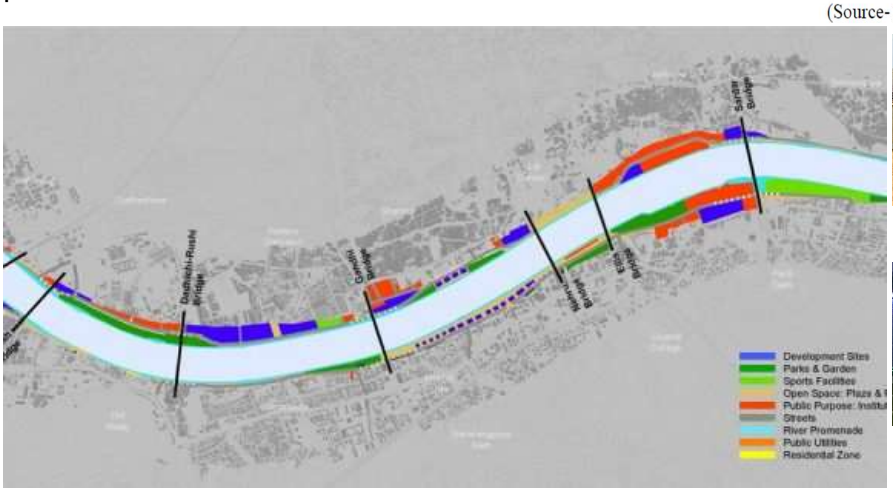
2.2.4.3. LAND USE

The Riverfront project creates a public edge along the river on the eastern and western banks. By channeling the river to a constant width of 263m, riverbed land of 204.91 hetares has been reclaimed. The public riverfront extends up to a length of 11.25 kilometers within the city on either banks.

The main considerations in allocating land uses for the reclaimed portions have been

Sr. No.	Sanctioned Land Use	Area Sq. m.	Area Ha.	%
1	Road	4,44,378	44	22
2.	Garden	2,74,585	27	14
3.	Open space	3,71,198	37	18
4.	Public purpose	2,88,875	29	14
5.	Lower Promenade	2,66,462	27	13
6.	Multi use for sale	2,94,083	29	14
7.	Sports	72,503	7	4
8.	Residual (Utilities, Residential, Commercial, General, Education)	15,787	2	1
	Total	20,27,871	202.8	

(Source- http://www.sabarmatiriverfront.com)



LAND USE MAP

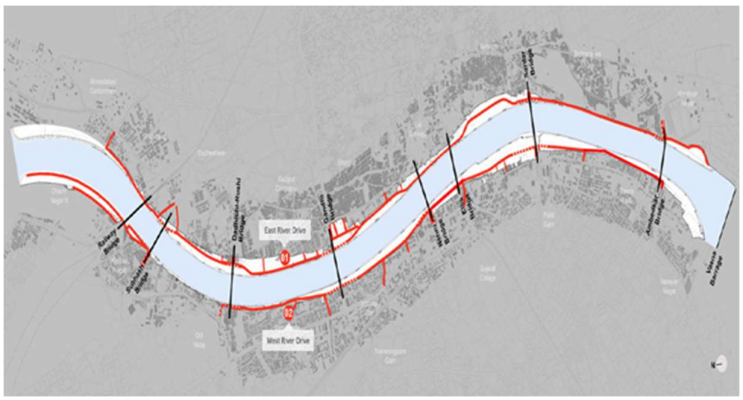
SIDE WALK

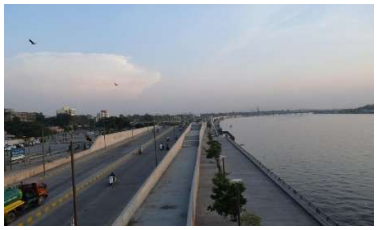
PARKS

existing land uses along the river; extent, location and configuration of reclaimed land available; potential for development; the structural road network and form of the city; bridges proposed in the Ahmedabad Development Plan; and the possibility of providing adequate infrastructure in the new development.

2.2.4.4. A STREET LAYOUT

- North south linkages strengthen the existing transport network of city.
- A number of streets leading up to the river are provided for better access to the riverfront.
- New streets are also provided which are designed with width footpath & designated cycle tracks to encourage pedestrian access to the river.

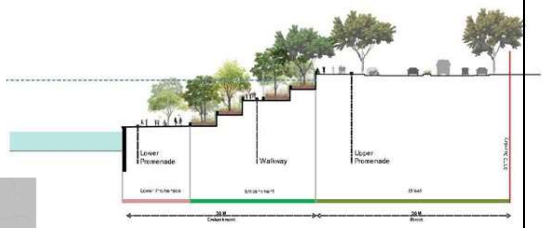


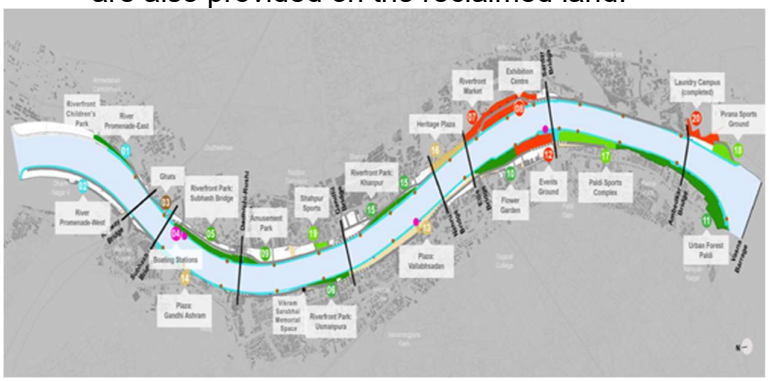


STREET LAYOUT MAP

2.2.4.5. PROMENADE

- Two level, continuous promenades provided at the water edges along each bank of the river.
- Promenade provides with 11.5km long pedestrian walkway is provided in centre of the city.
- Ghats are punctuated at lower level of promenade at planned interval to provide better access to the river.
- Boating Station enables water recreation at lower Level and also offers water-based that public transportation.
- Many new parks, gardens and sport facilities 4 are also provided on the reclaimed land.





PLAN SHOWING PROMENADE AND PARKS

BEFORE

AFTER

2.2.4.6. HOUSING AND REHABILITATION

- A small portion of the reclaimed land to considered for commercial development, to generate sufficient resources for developing the riverfront and maintaining it, the private developments were controlled by volumetric regulations. to ensure that the built environment along the is harmonious and skyline is riverfront constant.
- Provision for markets, vending area, laundry facilities, trade and fair facilities are also considered.
- 1200 that hutments on both side of river bank that covered nearly 20% of the area.
- 10,000 families are arrested with houses for resettlement.
- Each house is 26.77 sqm carpet area. After relocation, 70 sqm area is covered where 1600 vendors can accommodate out of which 788 have pucca platforms and 783 with laris.

BEFORE

AFTER

2.2.4.7. OTHER AMENITIES

2.2.4.7.1. Dhobi Ghat: Dhabi Ghat was constructed on the eastern bank. the river with an area of 9400 sqm approximately has utility area of about 600 Sym. 7 blocks of modern Dhobi Ghat are created. Each block has 24 units. with well-developed water supply and drainage. system with a water meter for inlet watering.

BEFORE

AFTER

2.2.4.7.2. Event Area: Event area has been redesigned. with an • cultural area events of 60 sqm for hasting different. such as marathon, cyclothon kite festival, Garib Kalyan Mela etc.

BEFORE

AFTER

2.2.4.7.3. Urban Forestry: Urban forestry. 1 lakh sqm area. from Gujrat developed over with different plant species. including certain rase species.

BEFORE

AFTER

2.2.4.7.4. Drainage System: 36 drainage point directly falls into the river that makes water dirty earlier. After development, sewage goes to a for transformation. pumping station for transformation.

2.2.4.7.5. Public Garden: Public Gardens and flower gardens are created with 27% of the whole project land.

3.0. AREA LEVEL STUDY

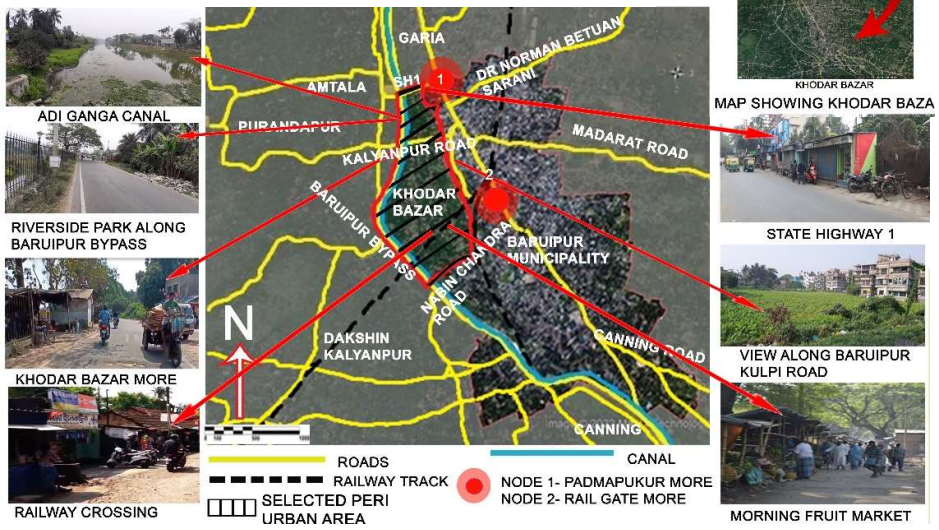
3.0. SITE STUDY

3.1. JUSTIFICATION FOR SELECTION OF SITE

- This area is selected by its spatial activities depending on municipal area for resources.
- Baruipur Municipal Area is getting congested so people are trying settle around or near it and is marked by many housings' groups
- Population increased by 27% approximately according to 2011 census.
- The unregulated growth in this area is needed to be controlled
- Selection of this area has been done depending on the activities and accessibility of that place.

3.2. LOCATION

Khodar Bazar lies to the western side of Baruipur Municipality under Kolkata Metropolitan Area in South 24 parganas. Khodar Bazar is a peri urban area as declared by Kolkata Metropolitan Development Authority (KMDA). Over the years it has showed



27% growth Approximately. The area is mainly dependent on the municipal area for its resources. It covers an area of 0.88sq.km. It has a population of 6360 according to 2011 census. The area is situated in the Ganga-Delta plain. So, low lying area.

3.3. HISTORY AND EVOLUTION

- Baruipur started with a ghat on the southern coast of Tolly Canal which is also known as Adi Ganga River.

- In 1800s, zamindari and weekly market one of the important cause for evolution of settlement around these activity zone and continued till 1882.
- With the establishment of the railway station, there was a sudden shift in growth epi-centre which prompted within the city. The focal point then shifted to the station.
- In 1919, after the establishment of new station, new bazar started coming up near the station within the neighbourhood.
- From 1965 the immigrants came into Baruipur and settled there. This increased the population of that area to some extend and it continued till 1981.
- In 1982 EM bypass extended till baruipur and further strengthen the connectivity of that area. The strong connectivity and advancing public

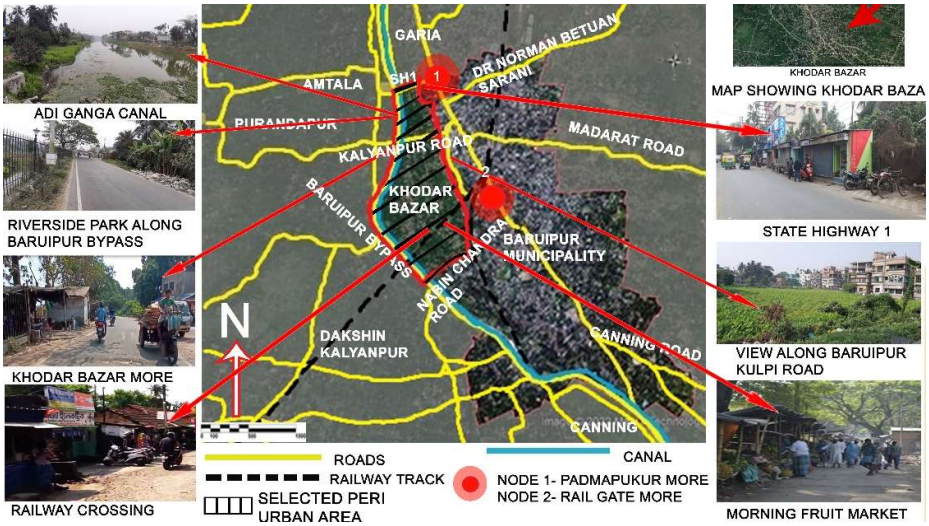
infrastructure started attracting people to settle there. This led to population growth and formation of slums.
- In 2010, when the metro line got connected to Garia (a neighbourhood of Southern Kolkata) from other parts of Kolkata, the corridor along the Kulpi Road and Garia started transforming and marked by many group housing projects and commercial retail stores along the road.

3.4. AREA LEVEL STUDY

3.4.1. EDGES

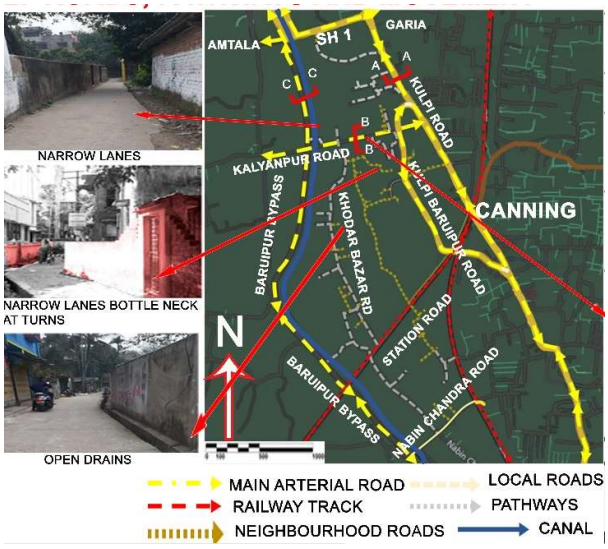
Khodar bazar lies to the western side of Baruipur Municipality. It is bounded by Salipur on the North and Komorhat in the south. Adi ganga runs along the west. The physical edges of this area are:

1. Kulpi Road on the east
2. Baruipur- kulpi Road on the east
3. State Highway on the north
4. Baruipur Bypass along with Adi ganga Canal on the west
5. Nabin Chandra Road on the south.

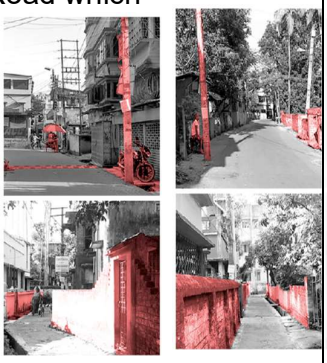


3.4.2. ROADS

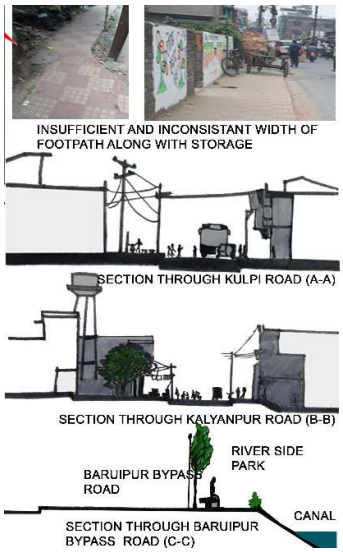
- Kulpi Road acts as the major arterial road which passes through the western side of the neighbourhood and makes the area solely dependend on it for commercial growth and connectivity to Kolkata.
- State Highway 1 also connects the selected area to further west.
- Major arterial roads are- State Highway 1, Baruipur Bypass and Kulpi Road.
- Nearest Railway Station is Shasan Road Railway Station.



- Other major roads are Kalyanpur Road and Khodar Bazar Road which again connects to Kulpi Road.
- The Baruipur Bypass Road caters most of the vehicular load as it helps in easy access to the road and major corridor for connecting the city through the neighbourhood to the rural areas in the south.
- No footpath provided along baruipur Bypass which acts as the major arterial road for this area.
- Due to inconsistency of footpath within the neighbourhood results in interrupted footpath, traffic jam and unorganized pedestrian movement.



- Narrow secondary and feeder roads are also insufficient in sharing traffic load throughout the neighbourhood.
- In the neighbourhood there is no dedicated path for the people to walk on and are obstructed by electric post, informal parking along the road.
- Footpaths are inconsistent and occupied by the construction material, parking and hawkers.
- The feeder roads and secondary road are single lane which creates bottle neck at turns. Thus, discourages vehicular mobility.

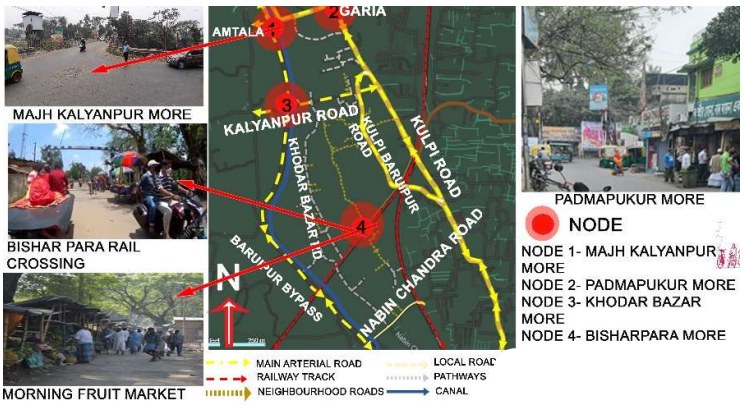


INFERENCE:

- Maximize the effective road width by providing sufficient space for informal activities along the connector road.
- Mixed use activities along the railway routes needs intervention.
- The width of the footpath should be made consistent.
- Separate place for hawkers to be provided.
- Feeder roads need to made wider and asphalted.

3.4.3. NODES AND LANDMARKS

- The two major nodes of this area are along the Baruipur Bypass Road.- Khodar Bazar, and Majh Kalyanpur More.
- As the local roads are predominant it ends up creating linear networks of roads along the length of the neighbourhood area.
- The landmarks are Riverside Park, Krishna Cinema Hall and Baruipur Surgical Industry.



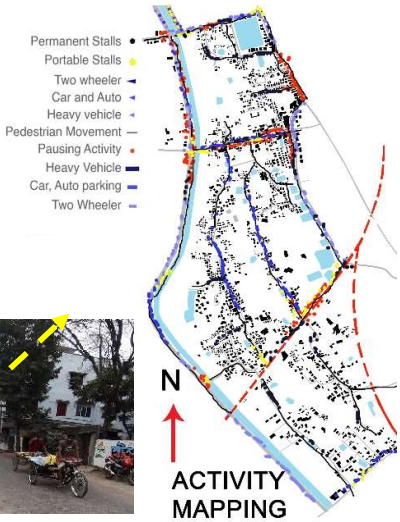
- No infrastructure is provided along the nodes.
- No proper safety signages provided.

INFERENCE:

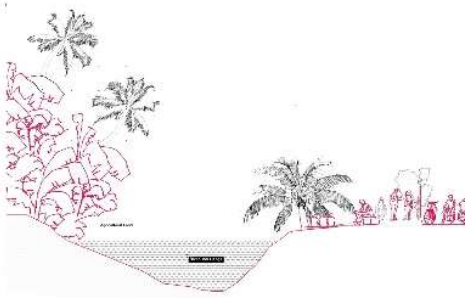
1. Nodes must be designed with adequate space depending upon vehicular load.
2. Activities around the node must be regularized through design intervention
3. New landmarks needed to be created with design intervemtion.
4. Transit hubs to be provided near to the node.
5.

3.4.4. VISTA, SKYLINE AND ACTIVITIES

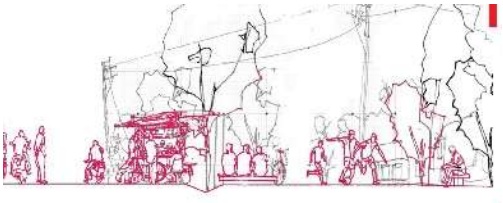
- The skyline is consistent.
- Maximum building height is G+3, few G+4 buildings are found.
- Electric post, electric wires and billboards disturbs the vista of the place.
- The major activities are along the feeder roads.
- Mostly agricultural land. Fruits like guava, mango, banana are famous.
- The wholesale Fruit market starts from 6am in the morning till 9am which creates chaos along the station road.
- The Riverside Park is the only gathering place along Adi Ganga Canal but it is not maintained.
- No parking space provided for the visitor results in either on-street parking or they take their vehicle inside the park.
- Due to lack of open space within municipal area, people are forced to move towards the river edge at the outskirts which acts as the social ground for the people to interact in pressure of nature.



ACTIVITY MAPPING



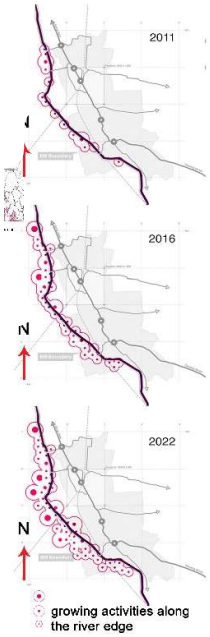
SECTION ALONG THE EDGES OF THE RIVER



SECTION THROUGH BARUIPUR BYPASS

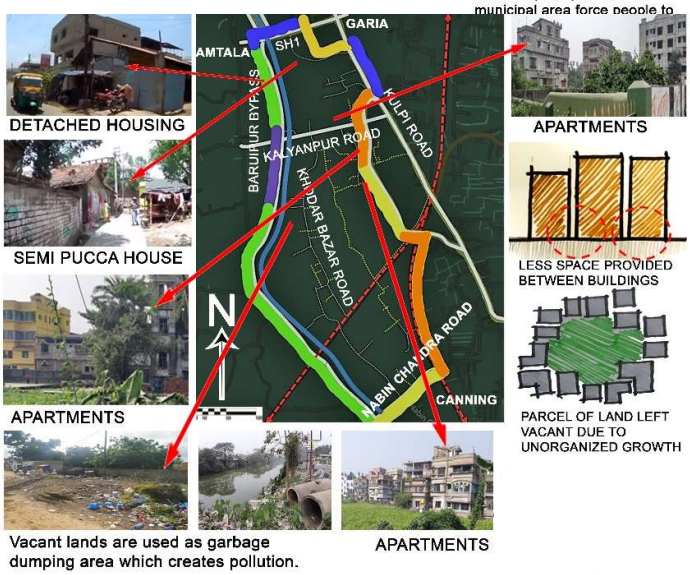
INFERENCE

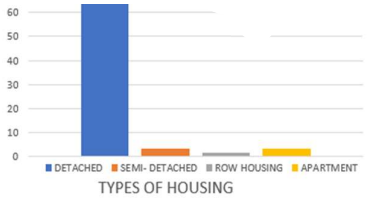
1. Creation of more public spaces and activities.
2. Redeveloping the riverside park with adequate facilities.
3. The wholesale market needed to be designed.



3.4.5. LAND USE

- Density of houses along the arterial road is more which infers the demand of land. As we move away from the arterial road the percentage of built use decreases.
- Residential houses are mostly two storied. The commercial buildings or apartments are either three or four storied.
- No significant change in height is observed.
- Types of houses found are- detached, semi-detached, row housing, apartments.
- Very less public space present in the neighbourhood.
- The area consists of vacant land and agricultural fields with less built forms.
- Less space is provided between buildings.
- Due to unorganized growth throughout the area, there are few parcels of lands which are not connected to the arterial road, left vacant.

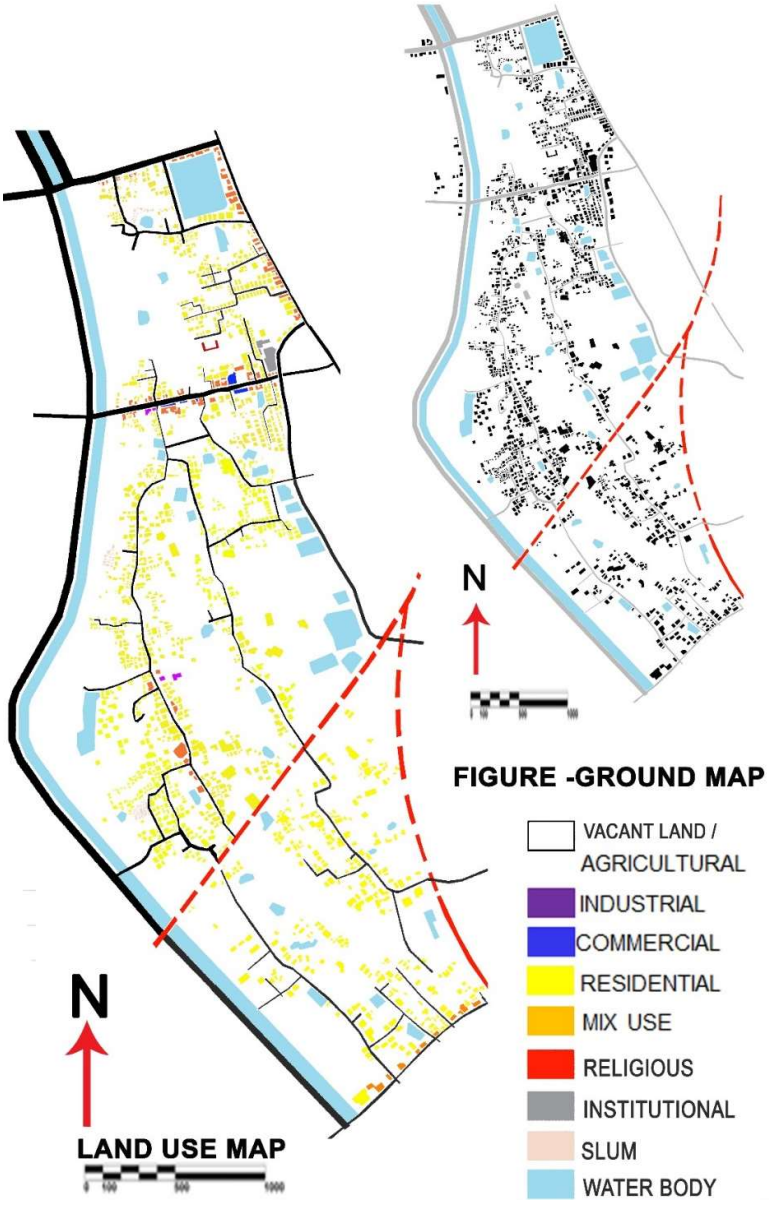




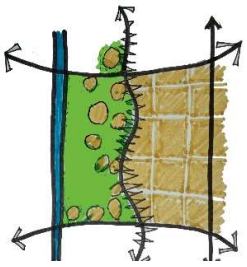
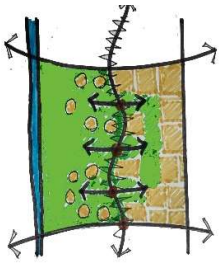
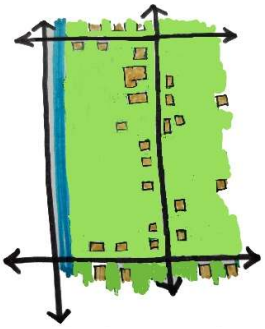
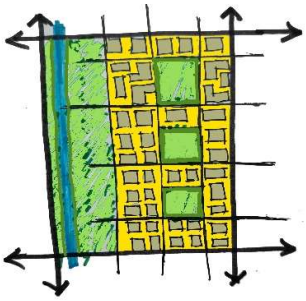
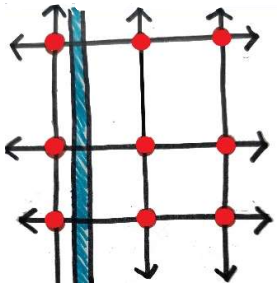
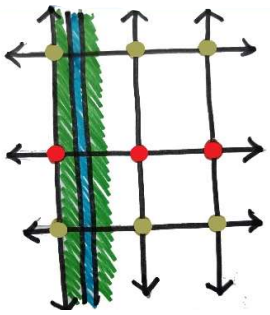
INFERENCE:

1. Restrict and control the development of unauthorized structures.
2. Formulate the strategical framework to keep balance between open space and built form.

TYPES OF BUILDING FOUND



3.5. ISSUES AND POTENTIAL OF THE SELECTED AREA

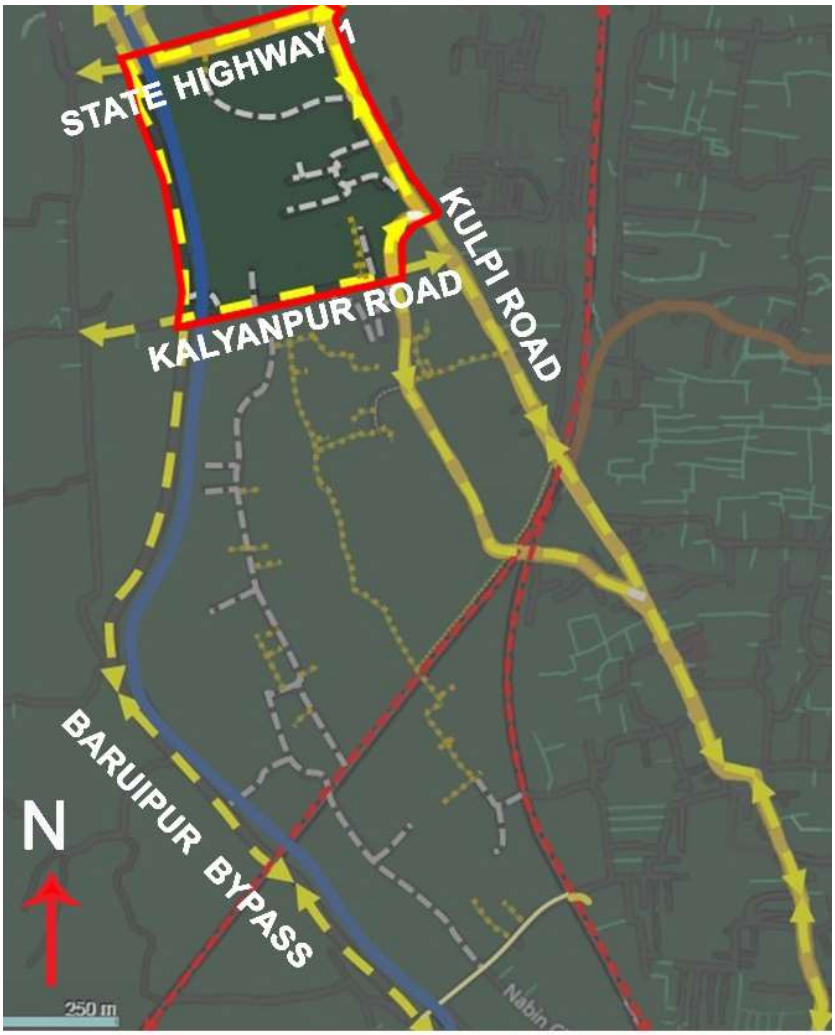
SL NO.	ISSUES	POTENTIAL
1.	Unplanned development in the city periphery creating non-interactive urban edges. 	Strengthening the cross linkages by introduction of public spaces. 
2.	Lack of sense of community. 	Creating a strong sense of place by building the imageability of the place. 
3.	The canal is becoming the backyard of that area. 	Activating canal by assigning functional role to it. 

4.0. SITE STUDY

4.0. SITE LEVEL STUDY

4.1. IDENTIFICATION OF AREA FOR STUDY

Based on the study done it is established that the selected area has most potential to be developed through design intervention and it shows the changing dynamics merging of peri-urban area with immediate suburban area.



SELECTED AREA OF STUDY

The study will be done on same parameters as done in Area Level Study.

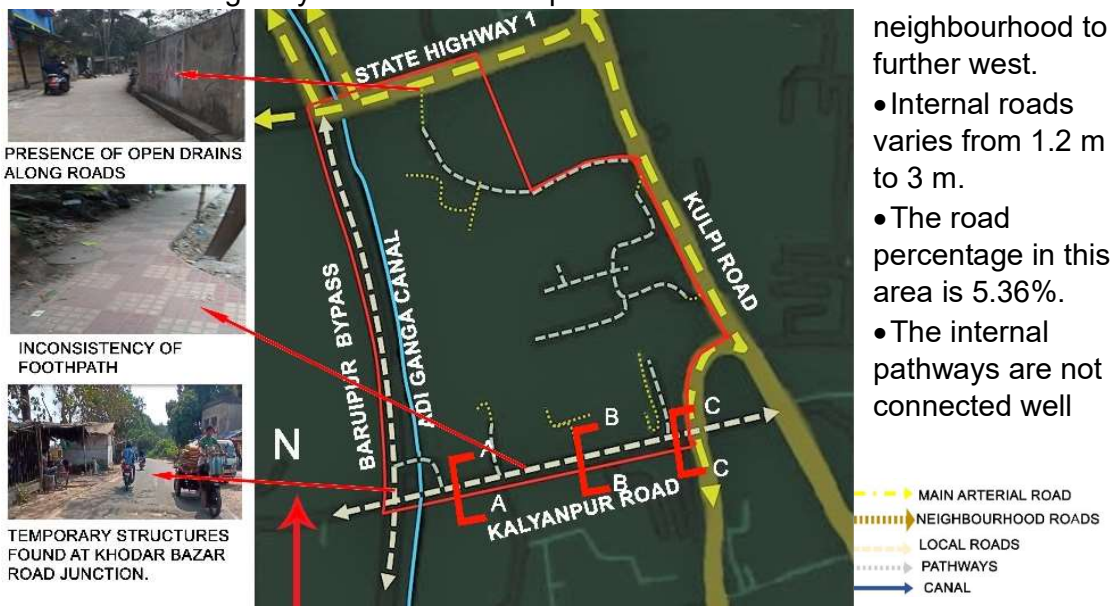
4.1. SURVEY

4.1.1. EDGES

1.The eastern side is bounded by Baruipur Municipal area which is the major source of livelihood for the people living in this area and Kulpi Road acts as the major commercial corridor for this area.
2. On the northern side, State Highway 1 acts as the strong connectivity.
3. On the western side runs the Baruipur Bypass Road which connects the area to the further south, along with runs the Adi Ganga Canal.
4. The whole area is residential zone with few commercial built-form along the feeder roads and mix use buildings along the Kulpi Road.

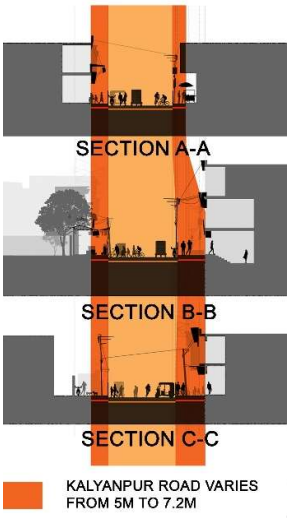
4.1.2. ROADS, PATHWAYS AND MOVEMENT

- Since the growth took place in an organic manner, the roads are not laid in any geometric pattern.
- The hierarchy of roads is not maintained in the neighbourhood.
- State highway 1 is one of the important road in this area as it connects the neighbourhood to further west.
- Internal roads varies from 1.2 m to 3 m.
- The road percentage in this area is 5.36%.
- The internal pathways are not connected well



which reduces the walkability of the area.

- The pathways are not in any geometric pattern due to organic growth.
- Open drainage system along the pathway may lead to accidents
- At places there is no proper access road.
- Width of the pathways varies from 1.2 m to 2m.
- Inconsistency in footpath in the neighbourhood results in traffic jams and unorganized pedestrian movement.
- Storage of construction materials and 2-wheeler & 3-wheeler parking on the footpath results in interrupted pedestrian movement.



NAME OF ROAD	WIDTH OF ROAD
STATE HIGHWAY 1	5 M (SINGLE LANE)
BARUIPUR BYPASS	5 M (2-LANE)
KALYANPUR ROAD	4 M (SINGLE LANE)

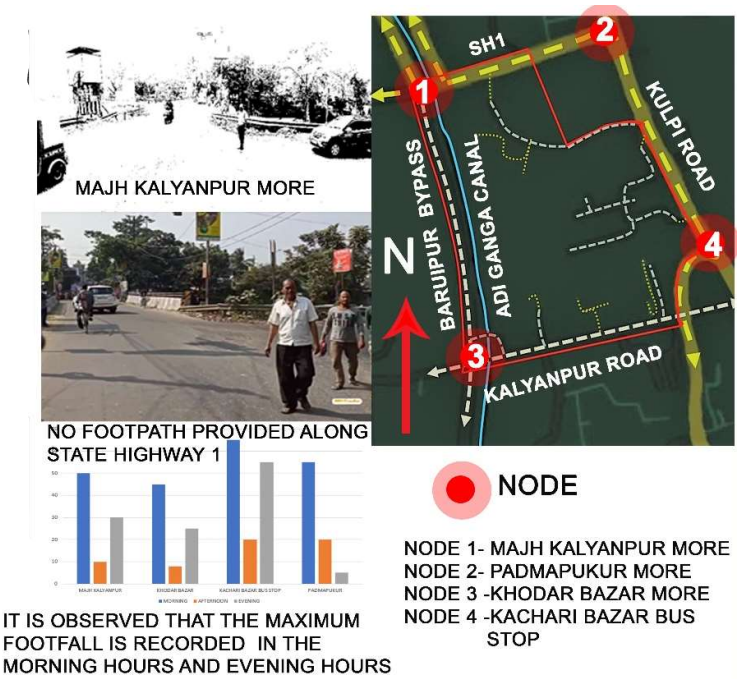
INFERENCE:

- Hierarchy of roads should be maintained according to IRC.
- Strategical location to be designed for informal vendors.
- Adequate bus bay to be provided.
- Internal roads needs to be widen for uninterrupted pedestrian movement
- Local roads must be widen following Indian Road Congress i.e. 2.25m .
- Local roads should be designed for pedestrian and light vehicular movement.
- Proper access road to be provided to all the areas.
- Infrastructure like drainage system, water supply system needs to be upgraded.
- Local streets should be widen providing parking space.

4.1.3. NODES AND LANDMARKS

- The important nodes of this area lie in this zone. They are Majh Kalyanpur More, Gobindapur bus stop, Khodar bazar more and Kachari Bazar Bus Stop.
- Due to the presence of Riverside Park which acts as the major landmark, Majh kalyanpur more is one of the busiest node.State Highway 1 connects EM Bypass and it is the corridor for further west.
- No proper bus bay provided at the node.
- No proper signage island provided.

- No proper space for vendors is planned.
- No parking space provided.
- Till Majh Kalyanpur the EM Bypass Road is 2- lane, after that it is single lane. Therefore, the vehicular load increases.

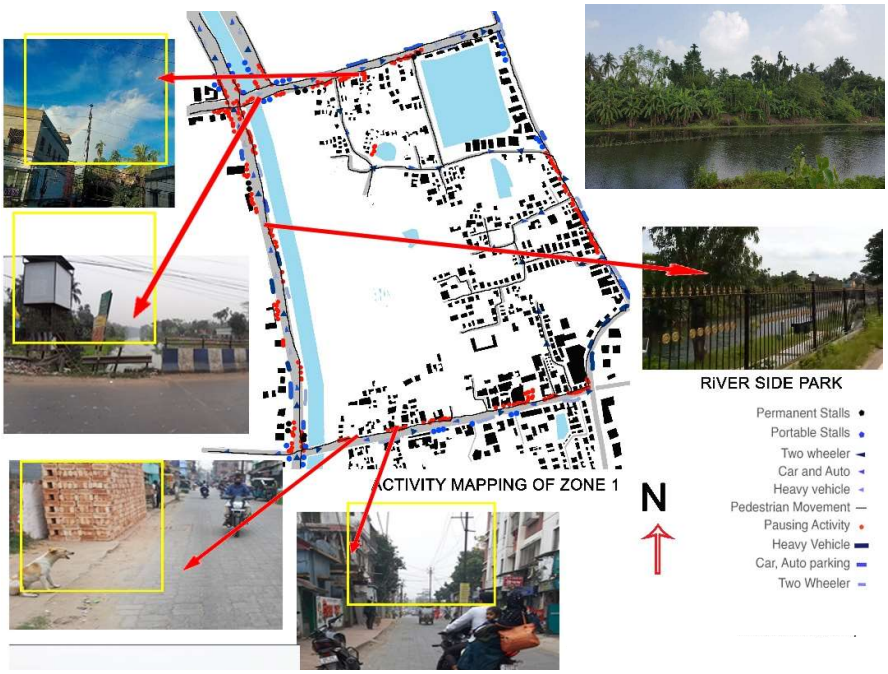


INFERENCE:

- Node must be designed with activities around and must be designed with adequate space depending upon the vehicular load.

4.1.4. VISTA, SKYLINE AND VIEW

- Building height -mostly 2-storied. Few G+3 is found.
- Few high rises are found which shows abrupt changes in skyline.
- Billboards and poles destroy the vista of the place.
- The Riverside Park is one of the important landmarks of this area. Due to lack of open space in the municipal area, people are driven to come there.
- Due to lack of parking in the park people park their vehicles inside the park
- Ghats provided at the places of the bank of the river.
- Unauthorized structure along the road is found.
- Few street furniture and lighting arrangements are provided.



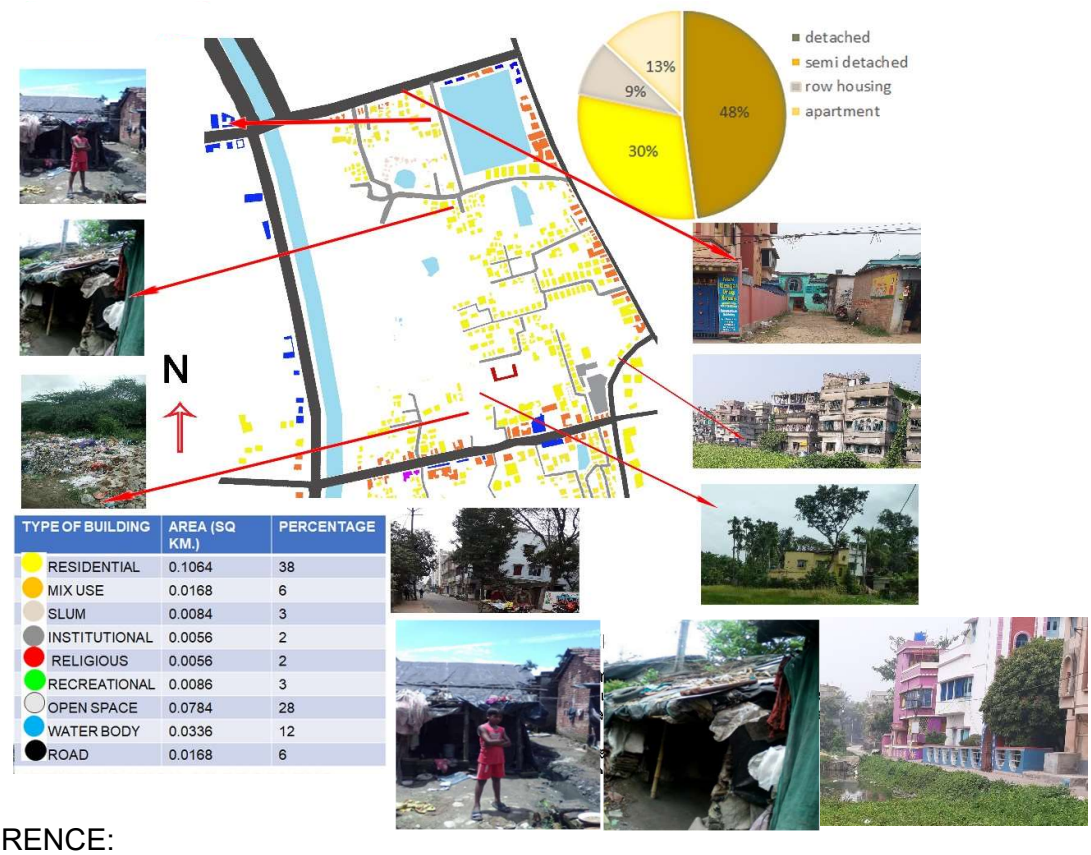
INFERENCE:

- The major road is almost linear, vista must be enhanced by design measurements.
- In some areas, contrast can be created to break the monotony in skyline.
- Creation of more public spaces and activity.
- Potential area for new public realm intervention.

4.1.5. LANDUSE

- Mostly residential buildings present.
- Due to unplanned growth few slum areas are seen.
- Commercial build form is found along the Kalyanpur Road and State Highway 1.
- The open spaces are not maintained which pollutes the environment.
- Front open space is not maintained in most of the buildings.
- Parcel of land in between buildings are left vacant.
- Change in land use is observed over the years.
- Few open space are privately owned. Rest is agricultural land.
- Front open space is not maintained.

- Change in land use is observed over the years.



TYPE OF BUILDING	AREA (SQ KM.)	PERCENTAGE
RESIDENTIAL	0.1064	38
MIX USE	0.0168	6
SLUM	0.0084	3
INSTITUTIONAL	0.0056	2
RELIGIOUS	0.0056	2
RECREATIONAL	0.0086	3
OPEN SPACE	0.0784	28
WATER BODY	0.0336	12
ROAD	0.0168	6

INFERENCE:

- Pockets of land which are left vacant can be developed in spaces for public realm.
- Open spaces must be protected from damages and mis use.
- Mix use buildings can make the space vibrant.
- Intervention needed in slum areas.

4.2. IDENTIFICATION OF PROBLEMS

- Open drains along the road creates unhygienic environment.
- Width of the roads are insufficient.
- Dedicated pathway for pedestrian movement is occupied by vendors, on street parking and storage.
- Less Internal pathways
- The infrastructure of nodes are not upgraded.
- No landmark and signages provided.
- The electric poles and billboards destroys the vista of the place.
- Most of the land are left vacant - used as dumping ground and creates unhygienic environment.
- The water bodies are not maintained.
- Very less commercial built form.

5.0. DESIGN IMPLEMENTATION

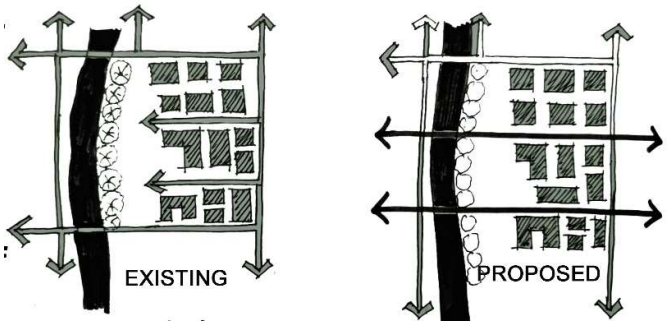
5.0. DESIGN IMPLEMENTATION

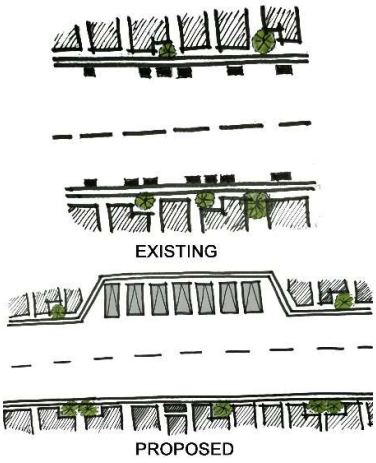
5.1 DESIGN GUIDELINES

5.1.1. ROADS AND PATHWAYS

i. Minimum clear width of road should be 5m provided with curbs for single lane drive way.
ii. Road safety signages and proper road marking should be provided as per IRC standards.
iii. No street parking should be allowed. dedicated parking space should be provided.
iv. The level of porosity required along the canal or bypass varies and it is formed by linkages at larger level.
v. Providing internal pathways to increase the permeability of the place therefore increasing walkability.
vi. Pedestrian walkway should be of minimum 2m wide.

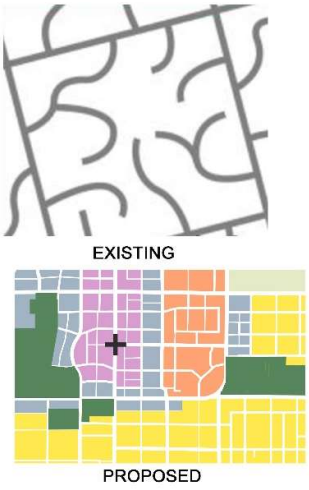

ROAD SAFETY MARKINGS TO BE PROVIDED.





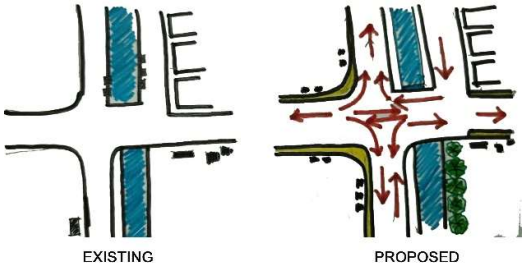
5.1.2. LAND USE

i. New development should be done in a geometric pattern to control the unplanned growth.
ii. Conservation of existing natural water bodies should be done to maintain the ecological balance.
iii. Land use regulation should ensure that housing construction can keep pace with population growth.
iv. Land use regulation should encourage increased density, especially in low density areas as well as public transport corridors.
v. Changing of land use type can be done to increase the efficiency of the land economically.



5.1.3. NODE

i. All major nodes should be free from any chaos with respect to movement and unnecessary activities.
ii. Important nodes should be designed with landmark features to enhance zonal characters.



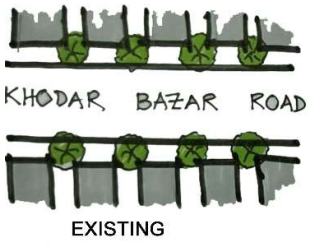
iii. Infrastructure in existing nodes should be upgraded.
iv. to develop the nodes with adequate space and make it comfortable for all user group.

5.1.4. VIEW, VISTA, SKYLINE AND LANDMARK

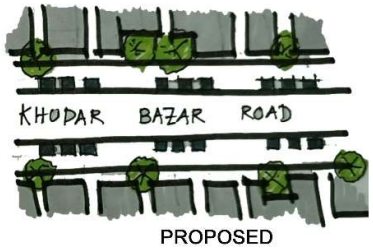
i. Enhancing the existing vistas and view and new view and vista should be created wherever possible.
ii. Template has to be designed for advisement boards, billboards etc.
III. New landmarks should be created keeping the imageability of the area intact.

5.1.5. ACTIVITY

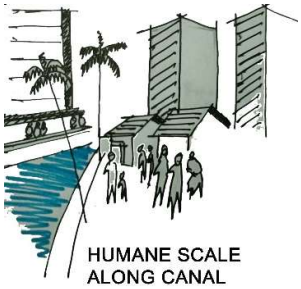
i. Public realm should be created at open spaces in the parcel of vacant lands in the neighbourhood.
ii. Mix use development should be encouraged along the local roads.
iii. Space for vendor should be provided along the road to encourage economic development.



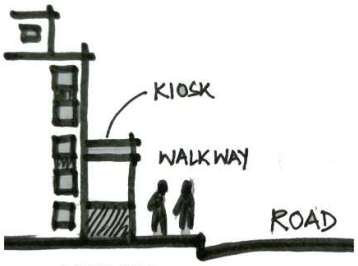
EXISTING



PROPOSED


HUMANE SCALE ALONG CANAL

iv. Two storied building blocks adjacent to the canal and high rises will be behind. the low height buildings along the pedestrian spine helps to give it more local character and make the place more humane in nature.
v. Different order social nodes act as a link between most private and most public space.

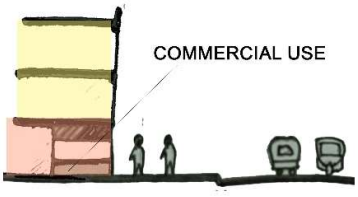


EXISTING

PROPOSED

5.1.6. ARCHITECTURAL FEATURES

i. The uniform character of the building should be maintained for better streetscape.
ii. The ground floor along the arterial road and feeder roads must be used for commercial purpose.



5.2. CONCEPT

This is basically an attempt to ensure the very dynamism of flow of population resources and establishment of various nature etc, from two sides:

a) Urbanized area to Peri urban Area
b) Suburban or rural area to Peri-urban area.

So basically, the peri-urban area is getting sandwiched between the two. For this sort of hex of peri-urban areas we have often encountered and observed the absence of any peri-urban area which should have been maintained. But this pressure of population, pressure of economic activities, pressure of social or cultural spheres all finally put this peri-urban areas into obsolescence and this happen in due course of time the total absence of peri urban area which might have been there at any point of time. Here we understand as urban designers also the planners will share the same things that the peri-urban areas must be retained at the fringes of the cities. Towns have the fringes of the rural areas just as the buffer area which is at the perimeter of the towns and also the rural areas. There been some edges which are very prominent and well defined and which are dynamic in nature like a river or some linear rocks. This peri-urban areas can be retained in a very rational way but this peri-urbanism might not be retained in rational way when this demographic movement of this 'TO and FRO' nature exist in some area that pressure rises peri-urban area to go to non-existence.

So, under these circumstances I have made a study about the demographic flow so that we can understand that even in cities like Kolkata- from rural areas, suburban areas, municipal areas people come in large number using various mass transit facilities including trains, buses and motor vehicles but they could not stay in the city and they go back. But in due course of time with aging with additional interest they try to settle down and pressurise the cities to increase, increasing in irregular unplanned development full of different types of settlers in shanty settlements, in slums or other type of rudimentary settlements which do not have any civic amenities.

On the other hand, there is a trend of flow in opposite direction as well. Population of the urban areas want to set up commercial establishment including industries or mass agriculture or mass orchards. In our country, especially in West Bengal, due to lack of land they want to just end the existence of peri-urban area and fringe of the rural area attempting to cater who could easily communicate from there. They want to have some settlement developing the land at a very low cost compared to towns. So, those areas started getting developed. Such things happened when areas like Barrackpore, Amtala, Sodepur and many other places also got developed in a very unplanned way.

So, to represent this two-way flow of population I have used the logo of Delhi Transport Corporation which symbolises the 'To and Fro' movement of population.

LOGO OF DELHI TRANSPORT CORPORATION

According to Le Chatelier's Principle, any change to a system at equilibrium will adjust to compensate for the change.

A+B ↔ AB

It means if a dynamic equilibrium is disturbed by changing the conditions, the position of the equilibrium shifts to counteract the change to re-establish an equilibrium.

This is an attempt to preserve the characteristic of peri-urban area to re-establish the equilibrium of that area keeping the imageability of the area constant.

5.3. PARAMETERS OF DESIGN

- **IMAGE OF THE CITY:** Must preserve the original character of the site.
- **FORM AND ORIENTATION:** Design intervention must give away to creation of focal point, vista and interesting skyline.
- **MAGNET AND GENERATORS:** Additional element that would attract.
- **HISTORICAL CONTEXT:** Relevance is key, cultural, traditional and social norms should be conserved.

5.4. DESIGN STRATEGIES

- Conserving the peri-urban area along the canal by creating a green buffer zone.
- Activating the canal edges with different types of activities like commercial space, public realm etc.
- Providing community facilities along the open spaces.
- Enhancing and strengthening neighbourhood level nodes.
- Public spaces at nodes to strengthen cross links.

5.5. OTHER DETAILS

5.5.1. ARCHITECTURAL FEATURES USED IN DESIGN

These arches are found in Baruipur Raj Bari which was built almost 300 years back and is conserved till now. This building is still in use during festivals for religious activity which encourage public gathering. The most common architectural feature found in this area which is used to keep the imageability of the place same.

BARUIPUR RASHMANDAP ARCH

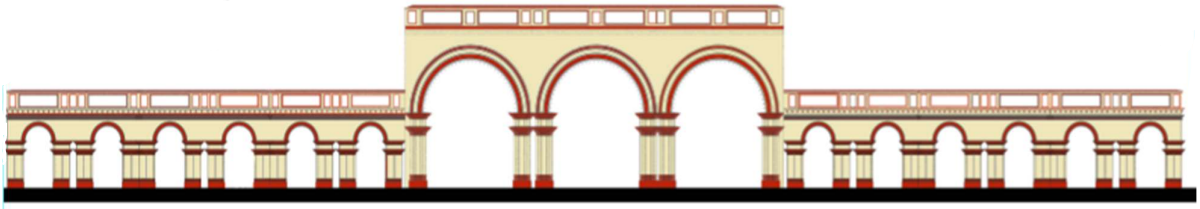
PUCTURES ON THE WALL SURFACE creates:

- curiousity in one's mind.
- maintain the level of porosity.

PUNCTURES ON THE WALL PROVIDED TO MAINTAIN POROSITY OF THAT AREA

The wall act as a selectively permeable membrane as it allows the passer by to see selected portion of that area. So, it creates a **"VISUAL OSMOSIS".**

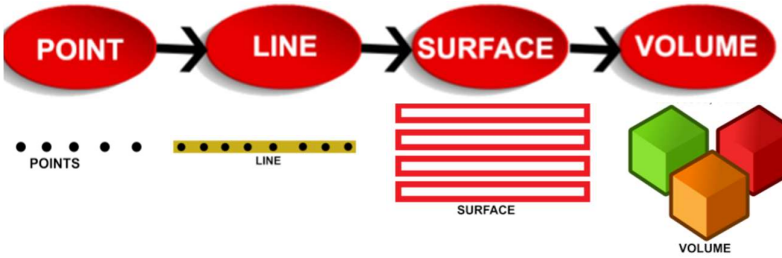
OSMOSIS is a phenomenon of passing of solvent through a semipermeable membrane from a less concentrated to a more concentrated solution.

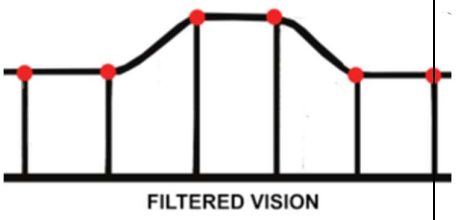


ELEVATION OF THE WALL

A **FILTERED VISION** can help in demonstrating the ARCHITECTURAL

AND URBAN DESIGN experience of the park.



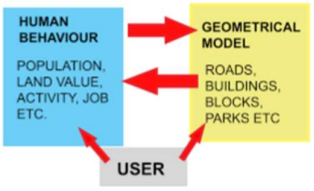


FILTERED VISION

1. From the top a series of POINTS are visible- the focus of something visual to draw attention. Joining those points evolve LINES. Parallel lines running along the points describes the form of the structure.
2. From side lines are also visible. Joining those lines SURFACES are created. it is the primary instrument of identity and engagement with its surroundings.
3. Surfaces joins together to create VOLUME. When an object has volume, it has a form characterized by angles -determines the exterior geometry of the form.

5.5.2. INTERACTIVE (INTER+ACTIVE) VOLUMES IN CREATION OF PLACE

Increasing elements of suspense, pleasure, learning, changing behaviour and enriching the users' sensory experience and interaction through the five senses, to achieve an enjoyable experience and a good function that is easy to use. VOLUME creates the sense of enclosure which enables human mind to feel safe and secure in that particular environment.

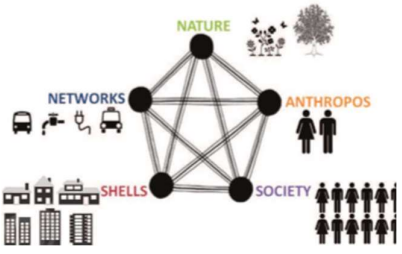


INTERACTION BETWEEN VOLUME AND HUMAN MIND

C.A. DOXIADIS SAID THAT,

The five elements of human settlements are Man, Society, Nature, Shell and Networks.
To satisfy a man's need-economic, social, political, technological and cultural aspects are to be considered.
He derived 5 principles:

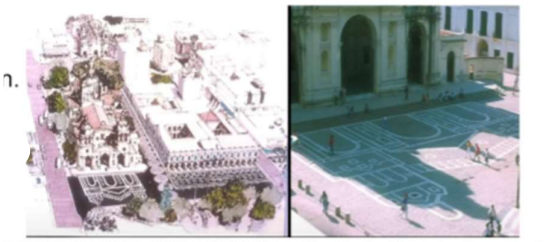
1. Maximum contact
2. Minimum effort
3. Optimum space
4. Quality of the environment
5. Optimum in the synthesis of all principles



5.5.3. INTERACTIVE (INTER+ACTIVE) PLANES IN CREATION OF PLACE

ACCORDING TO THE DESIGN PRINCIPLES OF MIGUEL ANGEL ROCA,

1. Urban scale is an important aspect for wider vision.
2. Enhancing one's awareness of physical surroundings -natural/man-made.
3. Diversity in use of material, geometric forms and colour - unconventional look.
4. Culture - strong enough to create "identity" in an urban environment.



WORK OF MIGUEL ANGEL ROCA (Plaza San Martin, Cordoba, Argentina)
PLAN AS PAVEMENT

He emphasizes that " three are irreducible: matter, structure, light, but to put them into action two dimensions are necessary: feeling and thinking."

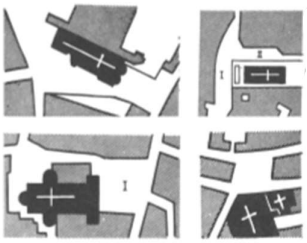
THE PAVEMENTED AREAS THE SHADOW REGION WITH THE BUILDING PROFILE MARKED ON THE PAVEMENT

CULTURAL INTEGRITY WITH THE WALL

The wall - cultural essence of that area. Replication of same architectural features has a great impact on human thinking process as it leads to **frequency illusion**, which is a phenomenon of cognitive bias.

CAMILLIO SITTEE suggest that:

1. Straight lines are unnatural- do not follow terrain.
2. Asymmetrical and irregularity urban forms.
3. Deep plazas are better facing of church of slender forms.
4. He also made s forceful case that the public spaces should lead to church or any furnished room.

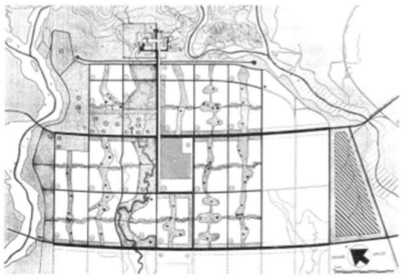


WORK OF CAMILLIO SITTE
Top left: Piazza degli Eremitani, Padua. Top right:Piazza del Duomo and Piazza Minerva , Syracuse. Bottom left: Piazza del Duomo, Padua. Bottom right:Piazza S.-Francesco, Palermo.

Similarly, in plan the main focus was the replica of Rash Mandap which is placed in such a way that it is connected to every part of the site. Again, it opens up into a large a plaza, encourages public gathering.

Le Corbusier said that,

1. Open spaces are generally inadequate even when an adequate size of open space is available is poorly located.
2. Aesthetic facilities are to be provided for accessibility.
3. The site could be set aside for weekly leisure activities which need to be well connected to the city.



WORK OF Le Corbusier
PLAN OF CHANDIGARH, PUNJAB, INDIA

Due to presence of Baruipur Bypass the site is well connected to the city. While designing the open space, aesthetic facilities are provided along with leisure activities.

PARKS OF CHANDIGARH

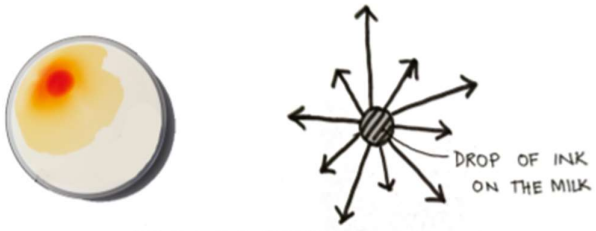
While designing all these principles are combined with desirability and feasibility of the social, technological,

political, economic and cultural aspect to form a satisfactory development for that area and strengthening the man and nature bond.

5.6. FRAGMENT DESIGN CONCEPT

5.6.1. GROWTH PATTERN OF A CITY ALONG PHYSICAL EDGES

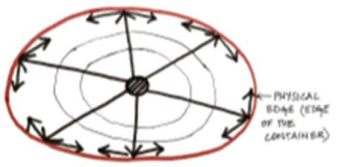
When a city starts to grow, it grows in a radial form. The CBD area at the centre around which growth takes place, just like if we split a drop of ink on the milk. It is seen that the ink spreads very slowly in radial form. The colour of the milk starts to change and finally the ink gets mixed with the milk.
Similarly, the expanded areas started developing like the urban area and converts its character into peri-urban/ suburban area and then finally into Urban area.



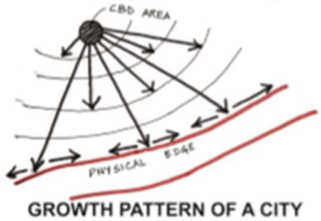
DROP OF INK ON THE MILK

GROWTH OF A CITY FROM URBAN CORE

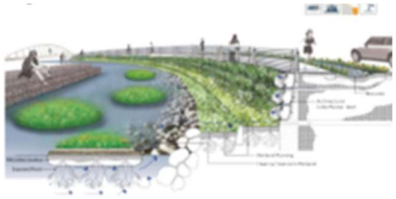
But physical edges have a very vital role in controlling the spread of cities. due to presence of any physical edges like river, canal or road, the flow of development pattern gets interrupted and continues along the edges where as in the opposite side the growth takes place very slowly.



SPREADING OF INK ALONG THE EDGE OF THE CONTAINER

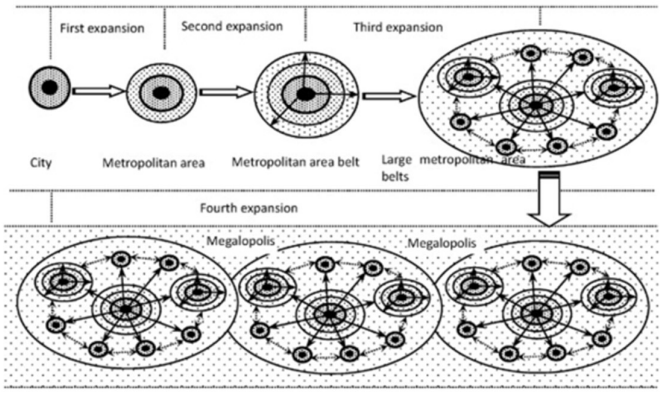


GROWTH PATTERN OF A CITY ALONG PHYSICAL EDGES



PUBLIC SPACE ALONG PHYSICAL EDGES

It is the physical connotation of same philosophical dictum. Like the ink spread stops as it reaches the edge of the container and starts to spread along the edges.



DEVELOPMENT PATTERN IN EXPANDED AREAS

5.6.2. NEIGHBOURHOOD UNIT

Neighbourhood unit can be referred to regional community, village or city community. It actually refers to the scheme of arrangement for family life community. Clarence Arthur Perry introduced it and classified the services into 4 heads: -

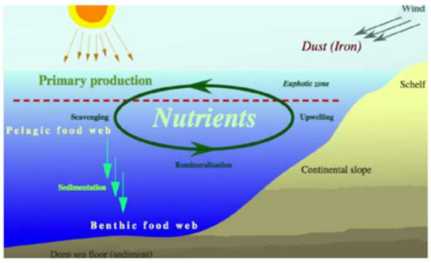
1. Elementary School
2. Small Parks and Playgrounds
3. Local shops
4. Residential Environment

5.6.3. PRINCIPLES FOR NEIGHBOURHOOD DEVELOPMENT PLAN

1. SIZE: A residential unit development should be provided for that population for which one elementary school is ordinary required.
2. BOUNDARY: Should be bounded on all sides by arterial streets.
3. OPEN SPACES: A system of small parks and recreations space should be provided.
4. LOCAL SHOPS: One or more shopping districts, adequate for population to be serve should be laid out in the circumference of the unit or at node.
5. INTERNAL STREET SYSTEM: The unit should be provided with a special street system to facilitate circulations.

5.6.4. ACCORDING TO LIMNOLOGY,

Peri-urban ponds shows signs of progressive eutrophication as urban lakes are polluted; conservation of the Peri-urban inland water system is an important aspect while designing. Aquatic life is also a part of our ecosystem. Lakes and ponds are used for social-
economic activities. Guidelines are need to be set to arrest the fast-declining water quality and rate in loss of inland water bodies.

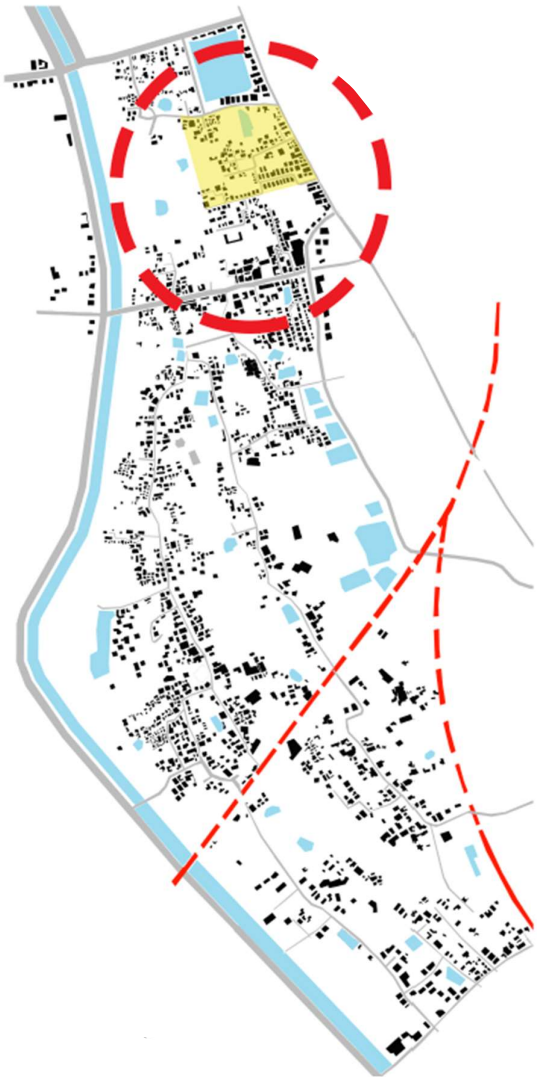


P.K. Sikdar, a researcher at the Indian Institute of Social Welfare and Business Management (IISWBM) pointed out, "Groundwater (availability) is rapidly shrinking in the city. It might lead to land subsidence as there is a layer of around 40 metres of clay underground and then sand that might give away."

5.6.5. DESIGN STRATEGIES

1. Keeping certain growth entities as they are.
2. Suggesting certain modification in and around an existing growth entity (a conservation surgery model application)
3. Deleting or suggesting elimination of certain existing growth entities.
4. Suggesting certain fresh incorporation of certain growth or development entities in the area.
5. Pedestrianization of a district of a lucy city.
6. Conservation of an urban prescient.

Through this process, we can control the future typology of growth pattern.



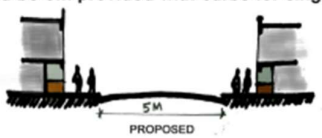
FRAGMENT SELECTED FOR REDESIGNING

5.4. DESIGN PROPOSAL

GUIDELINES FOR MERGING OF NEIGHBOURING PERI URBAN AREA WITH IMMEDIATED SUBURBAN AND URBAN AREA- CASE EXAMPLE : KHODAR BAZAR ,BARUIPUR SUBDIVISION, WEST BENGAL

1. ROADS AND PATHWAYS

i. Minimum clear width of road should be 5m provided with curbs for single lane drive way.



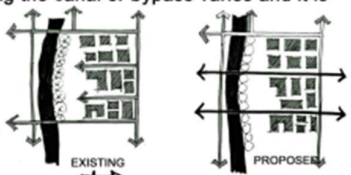
ii. Road safety sinages and proper road marking should be provided as per IRC standards.

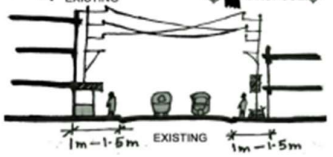
iii. No street parking should be allowed. dedicated parking space should be provided.

iv. The level of porosity required along the canal or bypass varies and it is formed by linkages at larger level.

v. Providing internal pathways to increase the permeability of the place therefore increasing walkability.

vi. Pedestrian walkway should be of minimum 2m wide.





2. LAND USE

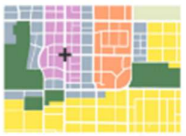
i. New development should be done in a geometric pattern to control the unplanned growth.

ii. Conservation of existing natural water bodies should be done to maintain the ecological balance.

iii. Land use regulation should ensure that housing construction can keep pace with population growth.

iv. Land use regulation should encourage increased density, especially in low density areas as well as public transport corridors.

v. Changing of land use type can be done to increase the efficiency of the land



3. VIEW, VISTA,SKYLINE AND LANDMARK

i. Enhancing the existing vistas and view and new view and vista should be created wherever possible

ii. Template has to be designed for adversiment boards, billboards etc.

III. New landmarks should be created keeping the imagibility of the area intact.

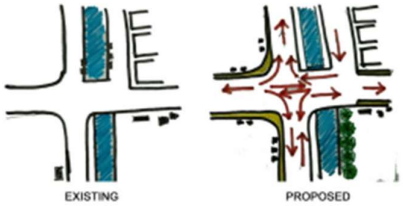
4. NODES AND LANDMARKS

i. All major nodes should be free from any chaos with respect to movement and unnecessary activities.

ii. Important nodes should be designed with landmark features to enhance zonal characters.

iii.Infrastructure in existing nodes should be upgraded.

iv. to develop the nodes with adequate space and make it comfortable for all user group.



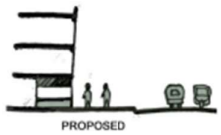
5. ACTIVITY

i. Public realm should be created at open spaces in the parcel of vacant lands in the neighbourhood.

ii. Mix use development should be encouraged along the local roads.

iii. Space for vendor should be provided along the road to encourage economic development.

iv. Two storied building blocks adjacent to the canal and high rises will be behind. the low height buildings along the pedestrian spine helps to give it more local character and make the place more humane in nature.



v. Different order social nodes act as a link between most private and most public space.

6. ARCHITECTURAL FEATURES

I. The uniform character of the building should be maintained for better streetcape.

ii. The ground floor along the arterial road and feeder roads must be used for commercial purpose.

A Post Graduate thesis by Reshmi Raha, Department of Architecture, Jadavpur University

GUIDELINES FOR MERGING OF NEIGHBOURING PERI URBAN AREA WITH IMMEDIATED SUBURBAN AND URBAN AREA- CASE EXAMPLE AT KHODAR BAZAR UNDER BARUIPUR SUBDIVISION, WEST BENGAL

PARAMETERS OF DESIGN

- **IMAGE OF THE CITY:** Must preserve the original character of the site.
- **FORM AND ORIENTATION:** Design intervension must give away to creation of focal points, vistas and interesting skyline.
- **MAGNET AND GENERATORS:** Additional elements that would attract.
- **HISTORICAL CONTEXT:** Relevance is key. cultural, traditional and social norms should be conserved.

REHABILITATION OF RESIDENTIAL AREA
ASSEMBLY AREA
BUSINESS AREA
ROADS AND PATHWAYS
RECREATIONAL AREA

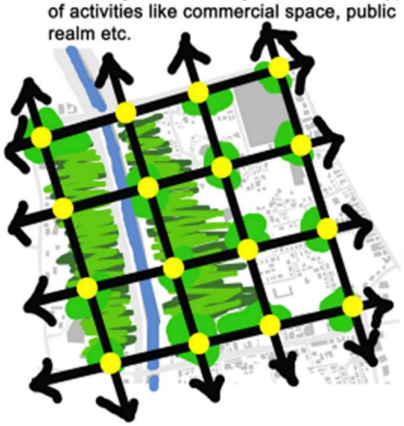
THE PATHWAYS ARE LAID IN DIRECTION OF THE ARROWS ACCORDINGLY THE BASIC ZONING OF THE SITE IS DONE. CROSS LINKS PROVIDED TO INCREASE THE PERMEABILITY OF THE PLACE.

THE ARROWS DENOTES THE DYNAMISM OF FLOW OF POPULATION , RESOURCES, ESTABLISHMENT OF VARIOUS NATURE FROM TWO SIDES :-
1. URBANISED AREA TO PERI URBAN
2. RURAL TO PERI URBAN AREA

DESIGN STRATEGIES

- Conserving the peri-urban area along the canal by creating a green buffer zone.
- Activating the canal edge with different types of activities like commercial space, public realm etc.

IDENTIFYING THE GREEN SPACE TO ACITVATE THE CANAL EDGES



THE GREEN SPACES PROVIDED AT CROSS LINKS TO STRENGTHEN THE NODES

- Providing community facilities along the open spaces.
- Enhancing and strengthening neighbourhood level nodes.
- Public spaces at nodes to strengthen cross links

THE LOGO SYMBOLISES THE TO AND FRO MOVEMENT OF POPULATION

LOGO OF DELHI TRANSPORT CORPORATION

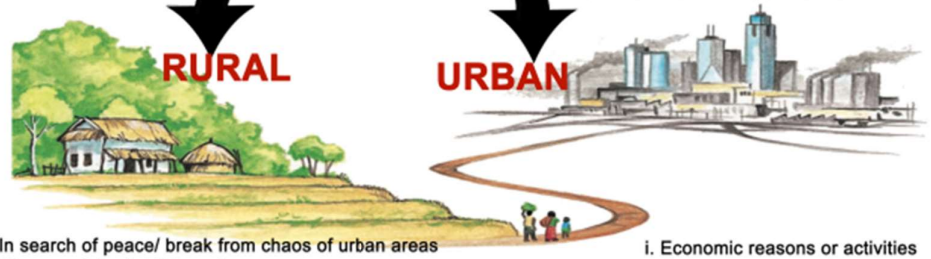
According to Le Chatelier's Principle,
"A system at equilibrium will respond to a stress in a way that redices stress"

A+B ⇌ AB
Catalyst are used to increase or decrease the rate of reaction

PERI - URBAN

(BUFFER ZONE)

BUFFER ZONE MAINTAINS THE EQUILIBRIUM OF THE PLACE JUST LIKE IN CHEMEICAL EQUATION.



i. In search of peace/ break from chaos of urban areas
ii. Commercial establishment.
iii. Residential settlement due to lack of land in urban areas
iv. Mass agriculture/ mass orchard/ poltry

RURAL ⇌ **URBAN**

i. Economic reasons or activities
ii. Relocation of people in quater settlements
iii. Land speculation.
iv. Poor Living condition

A Post Graduate thesis by Reshmi Raha, Department of Architecture, Jadavpur University

GUIDELINES FOR MERGING OF NEIGHBOURING PERI URBAN AREA WITH IMMEDIATED SUBURBAN AND URBAN AREA- CASE EXAMPLE AT KHODAR BAZAR UNDER BARUIPUR SUBDIVISION, WEST BENGAL

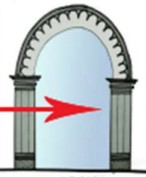
ARCHITECTURAL FEATURE USE IN DESIGN

These arches are found in Baruipur Raj Bari which was built almost 300 years back and is conserved till now. This building is still in use during festivals for religious activity which encourage public gathering.

The most common architectural feature found in this area which is used to keep the imageability of the place same.

PUNCTURES ON THE WALL PROVIDED TO MAINTAIN POROSITY OF THAT AREA

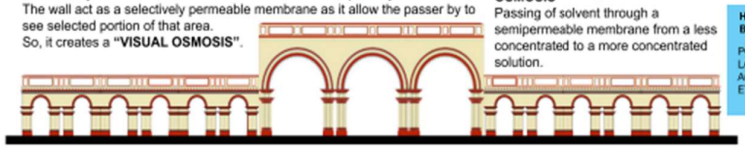
BARUIPUR RASHMANDAP



ARCH

PUCTURES ON THE WALL SURFACE creates
- curiousity in one's mind.
- maintain the level of porosity.

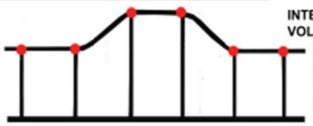
The wall act as a selectively permeable membrane as it allow the passer by to see selected portion of that area.
So, it creates a **"VISUAL OSMOSIS"**.



ELEVATION OF THE WALL

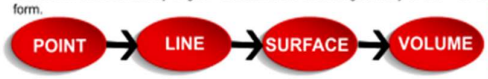
OSMOSIS
Passing of solvent through a semipermeable membrane from a less concentrated to a more concentrated solution.

A FILTERED VISION can help in demonstrating the **ARCHITECTURAL AND URBAN DESIGN experience of the park.**
1. From the top a series of **POINTS** are visible- the focus of something visual to draw attention. Joining those points evolve **LINES**. Parallel lines running along thepoints describes the form of the structure.
2. From side lines are also visible. Joining those lines **SURFACES** are created. it is the primary instrument of identity and engagement with its surroundings.
3.Surfaces joins together to create **VOLUME**. When an object has volume, it has a form charaterized by angles -determins the exterior geometry of the form.



FILTERED VISION

Filtered meaning removal of unwanted materials. Similarly the unwanted ornamentation is removed to explain the urban design experience

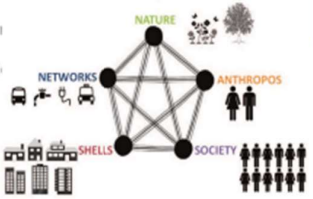


POINTS LINE

SURFACE

C.A. DOXIDIS SAID THAT,

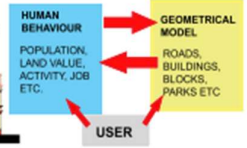
The 5 elements of human settlements are Man, Society, Natu Shell and Networks.
To satisfy a man's need-economic, social, political, technologi and cultural aspects are to be considered.
He derived 5 principles:
1. Maximum contact
2. Minimum effort
3. Optimum space
4. Quality of the environment
5. Optimum in the synthesis of all principles.



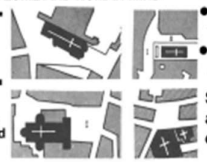
RELATIONSHIP BETWEEN 5 ELEMENTS OF EKESTICS

INTERACTIVE (INTER+ACTIVE) VOLUMES IN CREATION OF PLACE

Increasing elements of suspense, pleasure, learning, changing behavior and enriching the users' sensory experience and interaction through the five senses, to achieve an enjoyable experience and a good function that is easy to use.
VOLUME creates the sense of enclosure which enables human mind to feel safe and secure in that particular environment.



INTERACTION BETWEEN VOLUME AND HUMAN MIND



WORK OF CAMILLIO SITTE
Top left: Piazza degli Eremitani, Padua. Top right:Piazza del Duomo and Piazza Minerva , Syracuse. Bottom left: Piazza del Duomo, Padua. Bottom right:Piazza S.-Francesco, Palermo.

VOLUME

INTERACTIVE (INTER+ACTIVE) PLANES IN CREATION OF PLACE

ACCORDING TO THE DESIGN PRINCIPLES OF MIGUEL ANGEL ROCA,
- Urban scale is an important aspect for wider vision.
- Enhancing one's awareness of physical surroundings -natural/man-made.
- Diversity in use of material, geometric forms and colour - unconventional look.
- Culture - strong enough to create "identity" in an urban environment.

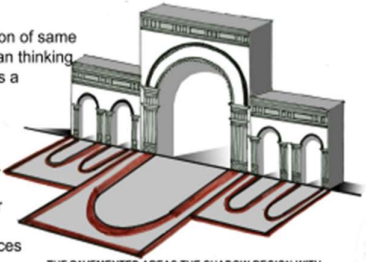
WORK OF MIGUEL ANGEL ROCA (Plaza San Martin, Cordoba, Argentina)
PLAN AS PAVEMENT

He emphasizes that " three are irreducible: matter, structure, light, but to put them into action two dimensions are necessary: feeling and thinking."

CULRURAL INTEGRITY OF THE WALL

The wall - cultural essence of that area. Relipcation of same architectural features has a great impact on human thinking process as it leads to **frequency Ilusion**, which is a phenomenon of cognitive bias.

CAMILLIO SITTEE suggest that:
- Straight lines are unnatural- do not follow terrain.
- Assymetrical and irregularity urban forms
- Deep plaza are better facing of church of slender forms
- He also made s forceful case that the public spaces should lead to church or any furnished room



THE PAVEMENTED AREAS THE SHADOW REGION WITH THE BUILDING PROFILE MARKED ON THE PAVEMENT

Similarly, in plan the main focus was the replica of Rash Mandap which is placed in such a way that it is connected to every part of the site.Again it opens up into a large a plaza , encourages public gathering.

Le Corbusier said that,

- Open spaces are generally inadequate even when an adequate size of open space is available is poorly located.
- Asthetic facilities are to be provided for accessiblity.
- The site could be set aside for weekly leisure activities which need to be well connected to the city.

Due to presence of Baruipur Bypass the site is well connected to the city.While designing the open space, aesthetic facilities are provided along with leisure activities.

WORK OF Le Corbusier
PLAN OF CHANDIGARH, PUNJAB, INDIA

PARKS OF CHANDIGARH

While designing all these principles are combined with desirability and feasibility of the social, technological, political, economical and cultural aspect to form a satisfactory development for that area and strengthening the man and nature bond.

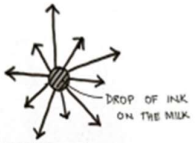
A Post Graduate thesis by Reshmi Raha, Department of Architecture, Jadavpur University

GUIDELINES FOR MERGING OF NEIGHBOURING PERI URBAN AREA WITH IMMEDIATED SUBURBAN AND URBAN AREA- CASE EXAMPLE AT KHODAR BAZAR UNDER BARUIPUR SUBDIVISION, WEST BENGAL

GROWTH PATTERN OF CITY ALONG PHYSICAL EDGES

When a city starts to grow, it grows in a radial form. The CBD area at the center around which growth takes place, just like if we split a drop of ink on the milk. It is seen that the ink spreads very slowly in radial form.The colour of the milk starts to change and finally the ink gets mixed with the milk.
Similarly, the expanded areas started developing like the urban area and converts its character into peri-urban/ suburban area and then finally into Urban area.

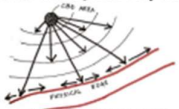
DROP OF INK ON THE MILK



GROWTH OF A CITY FROM URBAN CORE

But physical edges has a very vital role in controlling the spread of cities. due to presence of any physical edges like river, canal or road, the flow of development pattern gets interrupted and continues along the egdes where as in the opposite side the growth takes place very slowly.

SPREADING OF INK ALONG THE EDGE OF THE CONTAINER



GROWTH PATTERN OF A CITY ALONG PHYSICAL EDGES

PUBLIC SPACE ALONG PHYSICAL EDGES

It is the physical conotation of same philosophical dictom. Like the ink spread stops as it reaches the edge of the container and starts to spread along the edges.

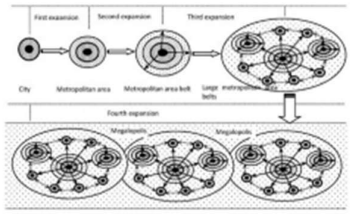
NEIGHBOURHOOD UNIT

Neighbourhood unit can be refered to regional community,village or city community. It actually refers to the scheme of arrangement for family life community. Clarence Arthur Perry introduced it and classified the services into 4 heads:-

1. Elementary School
2. Small Parks and Playgrounds
3. Local shops
4. Residential Environment

PRINCIPLES FOR NEIGHBOURHOOD DEVELOPMENT PLAN

- **SIZE:** A residential unit development should be provided for that population for which one elementary school is ordinary required
- **BOUNDARY:** Should be bounded on all sides by arterial streets.
- **OPEN SPACES:** A system of small parks and recreations space should be provided.
- **LOCAL SHOPS:** One or more shopping districts, adequate for population to be serve should be laid out in thecircumference of the unit or at node.
- **INTERNAL STREET SYSTEM:** The unit should be provided with a special street system to facilitate circulations.



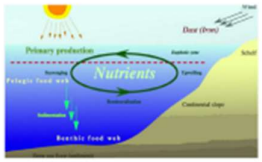
DEVELOPMENT PATTERN IN EXPANDED AREAS

DESIGN STRATEGIES

1. Keeping certain growth entities as they are.
2. Suggesting certain modification in and around an existing growth entity (a conservation surgery model application)
3. Deleting or suggesting elimination of certain existing growth entities.
4. Suggesting certain fresh incorporation of certain growth or development entities in the area
5. Pedestrianization of a district of a lucy city Conservation of an urban precient.

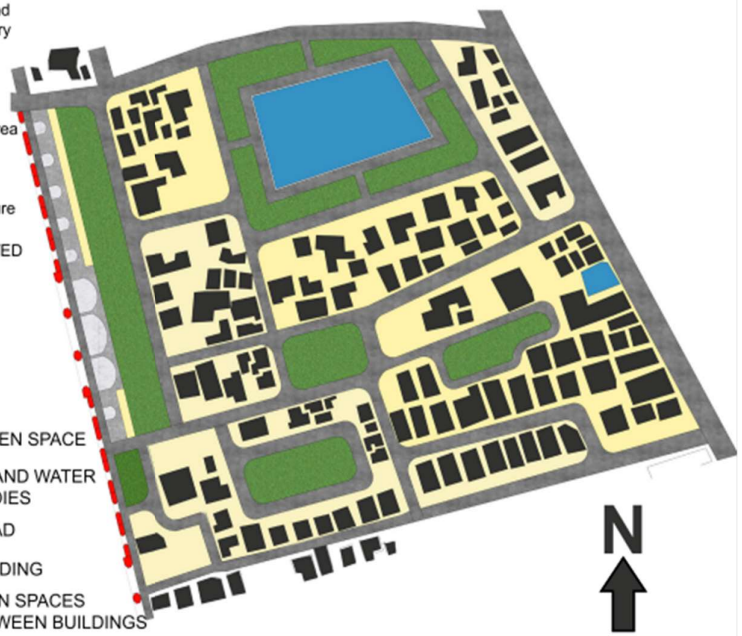
Through these process, we can control the future typology of growth pattern.

ACCORDING TO LIMNOLOGY,



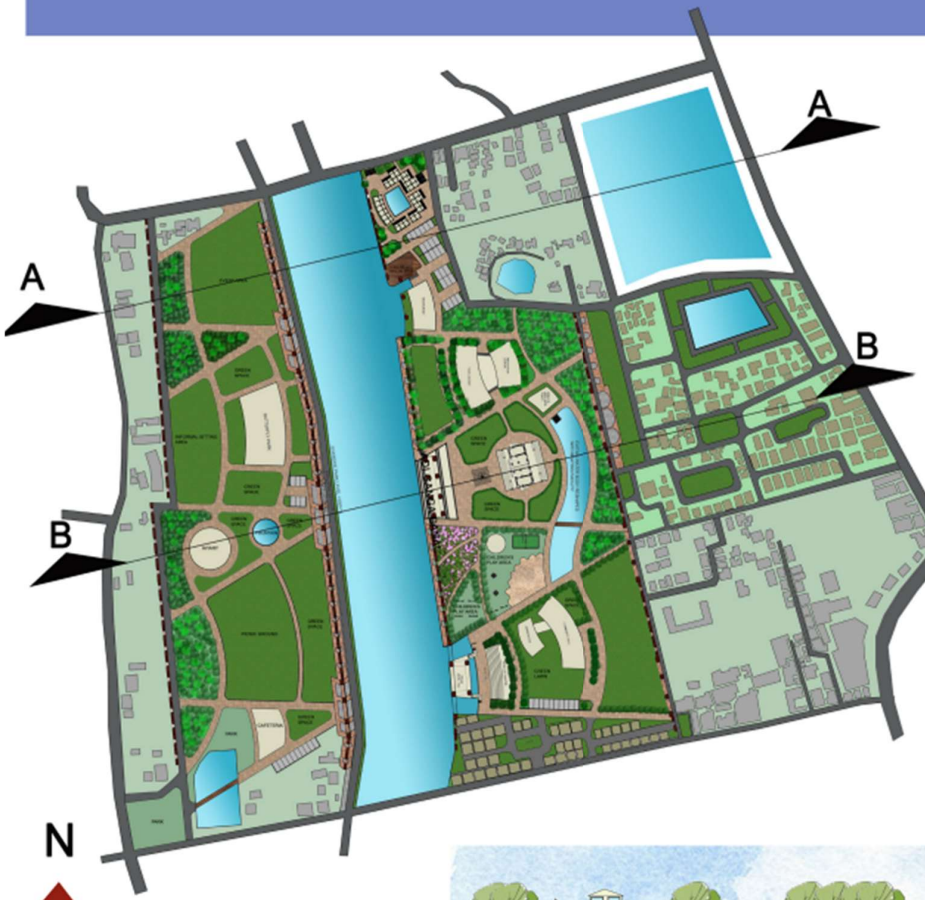
Peri-urban ponds shows signs of progressive eutrophication as urban lakes are polluted, conservation of the Peri-urban inland watsr system is an important aspect while designing. Aquatic life is also a part of our ecosystem. Lakes and ponds are used for social-economic activities. Guidelines are need to be set to arrest the fast declining water quality and rate in loss of inland water bodies.

P.K. Sikdar, a researcher at the Indian Institute of Social Welfare and Business Management (IISWBM) pointed out, "Groundwater (availability) is rapidly shrinking in the city. It might lead to land subsidence as there is a layer of around 40 metres of clay underground and then sand that might give away."



A Post Graduate thesis by Reshmi Raha, Department of Architecture, Jadavpur University

GUIDELINES FOR MERGING OF NEIGHBOURING PERI URBAN AREA WITH IMMEDIATED SUBURBAN AND URBAN AREA- CASE EXAMPLE AT KHODAR BAZAR UNDER BARUIPUR SUBDIVISION, WEST BENGAL



AREA STATE MENT:

1. AREA OF KIOSKS=(18X 29) SQ.M = 522 SQ M
2. RESTAURANT= 400 SQ.M.
3. DECK= 395 SQ.M.
4. OPEN SITTING AREA= 300 SQ.M.
5. YOGA CENTER= 365 SQ.M.
6. MEDITATION CENTER= 300 SQ.M.
7. SERVICE BLOCK= 121 SQ.M.
8. COMMUNITY HALL= 435 SQ.M.
9. AVIARY= 332 SQ.M.
10. PLAYGROUND= 535 SQ.M
11. CHILDREN'S PLAY AREA=1200SQ.M.
12. RASHMANDAP= 440 SQ.M
13. EVENT AREA= 835 SQ.M.
4. REHABLITATION AREA= 2782 SQ.M
15. EACH PLOT =30 SQ.M
16. OAT= 790 SQ.M
17. GHAT= 513 SQ.M
18. NO OF CAR PARKING= 70
19. PICNIC AREA- 2250 SQM.
20. CAFETERIA- 305 SQ M.
21. PARK- 600 SQ M.

The area provides beautiful view due to presence of the canal but the canal front park is not maintained. In this area this park encourages public realm.

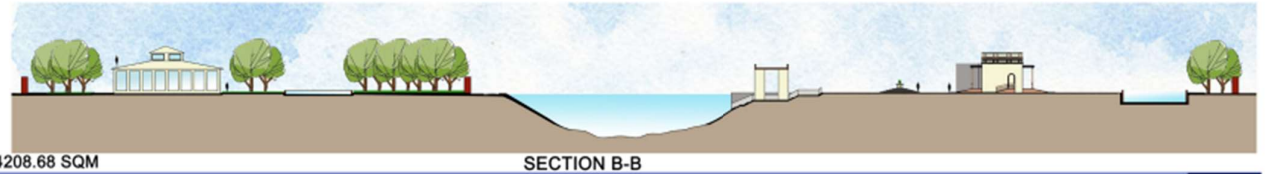
DESIGN APPROACH

- The intersecting visual axis creates different focal point at different places helps in creating curiosity in human mind.
- These imaginary lines helps in connecting object in that area.
- Different views and vista from different focal points along side the road. strengthening cross linkages.
- Existing water bodies and greeneries are concerved and reshaped so that the essence of the peri urban area is not lost.
- Pathways are laid along the axis.
- The pathways divides the area into small sections which are further divided into functional zones.
- Commercial zones are kept near the nodes to generate more revenue eventually helping in economic development of the are.
- Cultural resemblance has been kept so that the designed space retain the imageability of the area which also helps in socio-cultural development of that area.

SECTION A-A

AREA STATEMENT:

AREA OF RIGHT SIDE - 24832.875 SQ M.
AREA OF LEFT SIDE - 24032.547 SQ M.
AREA OF NEIGHBOURHOOD FRAGMENT-14208.68 SQM



SECTION B-B

A Post Graduate thesis by Reshmi Raha, Department of Architecture, Jadavpur University

5.5. DESIGN SHEETS

GUIDELINES FOR MERGING OF NEIGHBOURING PERI URBAN AREA WITH IMMEDIATED SUBURBAN AND URBAN AREA- CASE EXAMPLE AT KHODAR BAZAR UNDER BARUIPUR SUBDIVISION, WEST BENGAL

1.1 INTRODUCTION

1.1.1. THESIS BRIEF

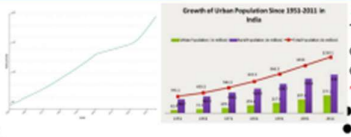
"CHILD IS THE FATHER OF THE MAN."- William Wordsworth.
It means the behavior and activities of a person's childhood goes a long way in building his personality.
Similarly, **today's peri urban can develop into a suburban area or urban area in course of time.**
The development of peri-urban area around the big cities is unregulated.

- relocation of population driven by economic reasons
- caused by land speculations

Due to migration and emergence of new activities has been transforming the area -

- changes in land use pattern,
- occupational pattern
- growth in built structure.

While India is urbanizing, the scarcity of land in megacities results in pressure on peri-urban areas which will only grow further. This brief calls on to formulate or evolve design guidelines for planning spatial growth in peri- urban areas to ensure sustainable development of that growth.



PERI URBAN AREA

URBAN AND SUBURBAN AREA

1.1.2. DEFINITION OF KEYWORDS

1. PERI URBAN AREA

Peri-urban areas are zones of transition from rural to urban land uses which are located at the periphery of the city.

Peri-urban areas can also be described as fringe areas of cities or adjoining rural areas, which are intrinsically linked with the city economy, experience constant transformation which are characterized by a mix of rural and urban activities

2. SUBURBAN AREA

Suburban areas are the mixed-use zone, primarily residential that are not densely compacted and located near an urban area.

3. URBAN AREA

Urban areas are the region surrounding a city with high population density. Most inhabitants of urban areas have non-agricultural jobs. These areas are well developed in terms of infrastructure such as roads, bridges, railways, sewerage networks, houses, commercial spaces, etc.

4. GUIDELINES

Guidelines are set of recommendations which suggest how to apply design principles to provide a positive user experience. It can also be defined as rules of thumb for the designer to work with efficiency.

DESIGN GUIDELINES HELP IN POSITIVE EXPERIENCE OF THAT AREA.

YEAR	POPULATION
1991	3732
2001	4997
2011	6360

CENSUS REPORT OF POPULATION OF KHODAR BAZAR

1.1.3. RELEVANCE OF THE THESIS

THESE ARE THE FEW NEWSPAPER CUTTINGS WHICH SHOWS RELEVANCE FOR SOUTH EAST GROWTH OF KOLKATA.

1.1.4. AIM

To formulate guidelines which can improve the development pattern in the peri-urban areas through urban design and also investigate way through which the dynamic changes can be controlled so that the essence of that area is not lost.

1.1.5. OBJECTIVE

- Identify and study the urban development process of an peri-urban area.
- To study and establish the relationship between urban development and the physical resources.
- To formulate and implement evolve design guidelines for the future urban development based on the study- to enhance the imageability of peri-urban area.
- To provide alternative urban development solution for peri-urban area

1.1.6. SCOPE

- Creating sets of design guidelines for new urban development to resist uncontrolled development growth.
- Implementation of design guidelines to create alternative proposals.
- Designing new public spaces for interaction and other public facilities to create imageability character of peri urban areas.
- Preserving and upgrading the existing facilities and land-use of intervention areas.

1.1.7. LIMITATION

- Work is done on a selected area which is a small part of entire area.
- In the selected area it is found that growth is in process but not development due to various forces. So academic inputs play an important role. Moreover, the design will be a prototype of a large area.

1.1.8. SELECTION OF SITE LOCATION

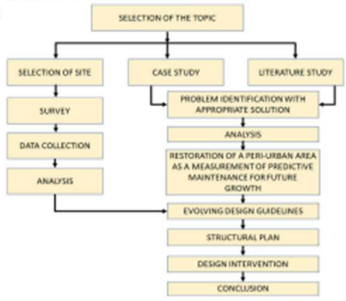
Khodar Bazar -peri-urban area -dependent on Kolkata. KMDA has declared Khodar bazar as a peri- urban area. Situated on the banks of Tolly Canal,also known as Adi Ganga Canal -under Baruipur Subdivision.
Area - 0.88 sq.km. Population-6360 (2011 census)

LOCATION MAP OF KHODAR BAZAR

1.1.7. HISTORY AND EVOLUTION OF SITE

- Baruipur started with a ghat on the southern coast of Tolly Canal also known as Adi Ganga River.
- In 1800s, zamindari and weekly market one of the important cause for evolution of settlement- continued till 1882.
- With the establishment of the railway station, there was a sudden shift in growth epi-centre to the station. From 1965 the immigrants came into Baruipur and settled there. This increased the population of that area to some extend and it continued till 1981.
- In 1982 EM bypass extended till baruipur and further strengthen the connectivity of that area. The strong connectivity and advancing public infrastructure started attracting people to settle there leading to slum formation.
- In 2010, when the metro line got connected to Garia (a neighbourhood of Southern Kolkata) from other parts of Kolkata, the area started transforming -marked by many group housing and commercial retail stores along the road.

1.1.8. METHODOLOGY



A Post Graduate thesis by Reshmi Raha, Department of Architecture, Jadavpur University

GUIDELINES FOR MERGING OF NEIGHBOURING PERI URBAN AREA WITH IMMEDIATED SUBURBAN AND URBAN AREA- CASE EXAMPLE AT KHODAR BAZAR UNDER BARUIPUR SUBDIVISION, WEST BENGAL

1. CHARACTERSTICS OF PERI URBAN AREA

i. Growth- due to decentralization of urban population
ii. the boundaries are porus and transitory as urban developement extends into rural and industrial lands.
iii. Change in land use pattern- controlled by transport and communication.
iv. Change in spatial development- increase in cost of land
v. Enivironment - dynamic in nature.
vi. Close proximity to the city

2. TYPES OF PERI URBAN AREA

According to Iaquinta and Drescher (2001), peri urban area can be classified into 5 types:-
1. Village Peri-Urban: Rural Village with urban consciousness, non- proximate to urban area
2. Diffuse Peri-Urban: Area near the city- settlement based on migrantion.
3. Chain Peri-Urban: Urban fringe area established due to chain migration process- identified as squater settlemnts around metropolitan areas.
4. In place Peri-Urban: caused by insitu urbanization- natural growth and some migration.
5. Absorbed Peri-Urban: Areas located close or within the city that have been absorbed for a long time- derved from either in place or chain peri-urban areas.

3. ISSUES RELATED TO PERI URBAN GROWTH

Due to urbanization few issues are encountered in these areas. They are as follows:
i. Uncontrolled growth and irregular development
ii. Increase in population density
iii. Construction of unauthorized buildings and land acquisition
iv. Shrinkage of open spaces
v. Poor mobility and connectivity.
vi. Insufficient public infrastructure

4. EXISTING CONCEPTS

A. MULTI- NUCLEI MODEL

- In 1945, C.D. Harris and Edward L.Ullman argued that cities have multiple growth ponit / nuclei around which growth takes place.
- Each nuclei acts as a development or growth pointfrom a particular type of land use.
- Growth occurs from each nuclei outside untill they all merge into a large urban area.
- The theory was based on the idea that people have more movement due to transport facilities and car ownership

B. DESAKOTA THEORY

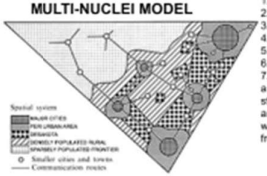
- Desakota is a term used in urban geography- describe areas in the extended surroundings of large cities in which urban agricultural forms of land use and settlement co-exist and are intensively intermingled.
- Mc Gee described defined it as "the areas surrounding cities within daily commuting distance of city core".
- He believed that 3 types of spatial economic transition are occuring in Asia:
  1. Desakota type 1: A decline in rural settlement and landuse has occured in these area and the agricultural population has migrated to urban centers.
  2. Desakota type 2: These are areas - productively gains in agriculture and industry as well as population shifts from agriculture to non- agricultural have concentrated on the core of the city and adjacent regions - rapid eco- nomic growth.
  3. Desakota type 3: High density area- slow economic growth, high level of involantary economic activities. found in secondary urban centers.
- MC Gee again classified the territorial model into 5 zones- major cities, peri-urban area, desakota region, densely populated rural area and sparsely populated frontier

PERI URBAN AREAS

Sl. no.	STRENGTH	WEAKNESS	OPPORTUNITIES	THREATS
1	High growth potential for urban development	Absence of planning and development agencies to regulate development within the area.	Promote planned development of urban district.	Large scale conversion of agricultural land into non-agricultural uses.
2	Existence of developmental major road/ rail networks	Large scale conversion of agricultural land into non agricultural uses due to lack of any legal framework.	Ensuring dispersed pattern of urban growth.	Unauthorized and haphazard growth.
3	Better option for cheaper, spacious and affordable housing.	Unauthorized and haphazard growth of development.	Creating efficient and cost effective land market.	Absence of basic infrastructure and services.
4	Easy access to urban district.	Existence of slum	Minimizing growth of slums in urban district.	Absence of traffic and transportation networks
5	Close proximity to work center.	Poor accessibility within the habitable areas.	Creating a pattern of development which is affordable, economical and user friendly.	Poor accessibility.
6	Comparatively low cost of living		Creating balance between rural and urban	Low quality of housing.
7	Availability of basic amenities and service at comparatively lower price.			

SWOT ANALYSIS ON PERI URBAN AREAS

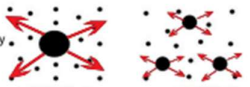
MULTI-NUCLEI MODEL



DESAKOTA THEORY

C. DECENTRALIZATION

- It may be defined as the breaking up of large cities into widely separated small towns.
- It denotes movement of industrial and residential population from the center to the periphery of the same urban mass.
- Occurs due to relocation of people or economic activities along transport corridors.

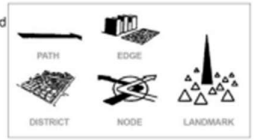


DECENTRALIZATION

5. IMAGEABILITY

- The word 'imageability' was first coined by Kevin Lynch (1959) ,- "The Image of the City."
- According to him, a city contains a set of physical elements which people use to understand the environment of the place and accordingly orient themselves inside that place.
- The five elements -node, pathways, landmarks, edge and district- helps to evoke a strong image of the place by any observer.
- High imageable city contains distinct paths that can be instantly recognizable.

INTERACTION BETWEEN OBSERVER AND ENVIRONMENT IN CREATING COGNITIVE MAP



FIVE ELEMENTS OF IMAGEABILITY

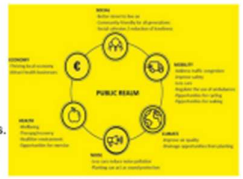
6. PUBLIC REALM

- Publicly owned places and spaces that belong to and are accessible by everyone.
- EXAMPLE: streets, lanes, squares, plazas, sidewalks, trails, parks, open spaces, waterfront, public transit systems, conservation areas and civic buildings and institutions.

PUBLIC → Concerning the people as a whole

REALM → A field of activity or interest.

So, collectively we can say Public Realm symbolizes that area which is not private and is accessible by everyone and can be treated as a common ground with shared activities.

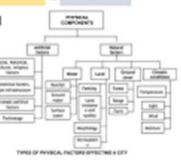


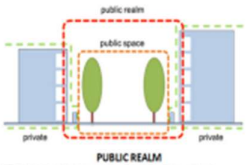
BENEFITS OF PUBLIC REALM

PLACE + ACTIVITY + BUILT FORM = PUBLIC REALM

7. PHYSICAL COMPONENTS

- The physical components of a city -the street, buildings and side walks within and around parks and open space provide the lungs of the city.
- The key element for any urban design intervention in a city.
- Citywide urban design recommendations are necessary to ensure that the built environment as a unique living environment.
- Physical dimension is one of the important components for sustainability. -city, type of neighbourhood and also types of buildings or structure pre dominant at that area.





PUBLIC REALM

5. EXISTING GUIDELINES FOR PERI-URBAN AREAS

According to National Building Code,

Low income habitat planning norms of National Building Code 2005, are suggested to be followed in peri -urban areas. the states may develop further specific guidelines for such settlements based on their growth trend and economic base. Low income habitat planning norms area as following:
1. Plot size: Minimum 805qm.
2. Density: maximum 60 plots per ha
3. Minimum Frontage: 6m
4. Ground Coverage: 33%(subject to a maximum of 50%)
5. FAR: Maximum 200
6.Open Spaces: 1.21 ha open space for a village with 200 houses.
7. If required, facilities like branches of co-operative bank , fertilizer depot, a veterinary hospital, market place and a branch of co-operative consumer store besides facilities for educational and health care should be available within maximum distance of 5 km from any settlement

According to URDPFI,

Community facilities that are to be provided in a peri –urban region are as follows: -
1.A community hall/ baraat ghar
2.Rural development centre shall include Panchayat ghar
3.A Mahila Kendra that may also serve as a vocational training centre
4.School 5. Health Centre
6.Post Office 7.Police Post
8.Shopping 9. Work sheds for the artisans
10.Telephone facilities

Road Type	Road Description	Road width	Function/ Remarks
R1	Road which connects village to nearby areas	9 m	Widest road
R2	Road which take major traffic to village	6m	Axis in village roads with drain on both sides to facilitate drainage system of the village
R3	Internal Village road	4.5 m	Other village roads
R4	Internal Village road	3 m	Village lanes

Settlement Type	Persons per Hectare(pph) in	
	Plain Areas	Hill Areas
Small Towns	75-125	45-75
Medium Town	100-150	60-90
Large Cities	125-175	60-90
Metropolitan Cities	125-175	100-150
Megapolis	More than 200	--

A Post Graduate thesis by Reshmi Raha, Department of Architecture, Jadavpur University

GUIDELINES FOR MERGING OF NEIGHBOURING PERI URBAN AREA WITH IMMEDIATED SUBURBAN AND URBAN AREA- CASE EXAMPLE AT KHODAR BAZAR UNDER BARUIPUR SUBDIVISION, WEST BENGAL

CASE STUDY ON GOMTI NAGAR , LUCKNOW, UTTARPRADESH, INDIA

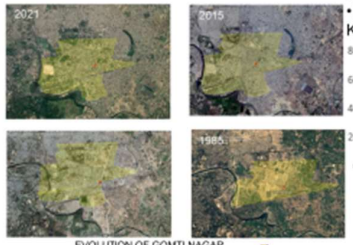
1. LOCATION

Gomti Nagar is a peri-urban area located in north eastern part of Lucknow in Uttar Pradesh. This area is under Lucknow Municipal Corporation. Gomti Nagar is one of the largest and most preferred commercial destinations in the city along with abrupt residential development.

LOCATION OF GOMTI NAGAR

2. HISTORY AND EVOLUTION

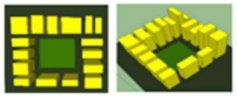
The neighbourhood has attracted a large no of migrants from smaller towns and villages of the state who were in search of employment, education and a better life style. This migrant started to settle in this area as it is in close proximity to Lucknow city which is rapidly growing. The agricultural lands around the built-up areas of the neighbourhood slowly converted into land for urban use. Though some of the conversion is planned growth, rest is haphazard which is being carried out by private developers, property agents, land speculators and individual owners. In 1980 Lucknow Development Authority organized the settlement and fulfill the growing demand of housing in the state.



EVOLUTION OF GOMTI NAGAR

3. SHAPE AND PATTERN

- Roads are laid in Grid –iron pattern.
- Rectangular building blocks are found mostly. Helps in generation of effective geometry in between spaces.



AERIAL VIEW

SECTION THROUGH SUB-ARTERIAL ROAD

4. ROUTES AND PATHWAYS

- The main arterial roads are :-
  1. Lucknow- Faizabad Highway
  2. Ring Road (NH30)
- The area is well connected by rail routes as well. Gomti Nagar Railway station is being redeveloped under NBCC and RLDA.
- The streets have narrow footpath varying from 900mm to 1200mm wide with no guard rail to avoid visual barrier.
- The internal roads are 10 m wide.
- Trees are planted along the streets for shading purpose.
- Urban roads are classified into following five categories on the basis of their uses and importance arterial, sub-arterial, local roads, streets and pathways .

SECTION THROUGH ARTERIAL ROAD

5. NODES AND LANDMARKS

- The important nodes are Husariya Chauraha,Patrakarpuram market Chowk and Shaheed Chandrasekhar Azad Chowk.
- The nodes have chamfered edges for better visibility and car movement.
- Chowks and parks are used as landmarks

6. VIEW, VISTA AND SKYLINE

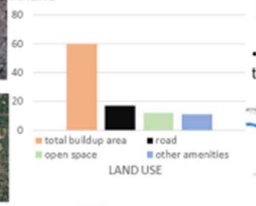
- Building height is mostly G+1 and G+2. Few G+3 are found.
- Few high rise are found which shows abrupt changes in skyline.
- Billboards and poles destroy the vista of the place.
- Important landmarks are Ambedkar Park, Janeshwar Mishra Park and Ram Manohar Lohia Park.

AERIAL VIEW

BILLBOARDS DESTROYING THE VIEW AND VISTA OF THE AREA AND NO ABRUPT CHANGE IN SKYLINE

7. LAND USE

- The development of Gomti Nagar is divided into 3 parts-
  1. Gomti Nagar- Phase- I 2. Gomti Nagar- Phase -II 3. Gomti Nagar Extension.
- It covers an area of 1080Ha or 10.8 sq km and divided into 26 sectors. Each sector are known as 'khands' which starts with alphabet 'V'.
- Mix land use
- Total Build up Area- 3,800,000 sq m. (60%)
  Road Area= 9,40,000 sq m. (17%) , Open space = 9,00,000 sq m.(12%)
  Other amenities = 6,00,000 (11%)
- LIG and EWS housing are mostly located Vinay Khand and HIG colonies in Vipul Khand



LAND USE

8. OPEN SPACES

- The colonies in Gomti Nagar are based on maximum open space concept hence most of the plots/ houses and apartments are park-facing.

RESIDENTIAL APARTMENTS ARE PARK FACING OR ROAD FACING

9. LANDFORM AND NATURE

- Gomti River basin is predominantly agricultural more than 80% of the crops in the basin are grown under full or supplementary irrigation.
- Gomti Nagar is being developed in the Trans-Gomti river area, which is very low lying and marshy land.

AMBEDKAR PARK

PARKS AND CHOWKS ENCOURAGES PUBLIC REALM

JANESHWAR MISHRA PARK

RAMMANOHAR LOHIA PARK

10. CLIMATE AND ORIENTATION

- Gomti Nagar has a humid subtropical climate. Therefore enhances more outdoor activities.
- The buildings blocks are oriented perpendicular to the street grid which helps to create uniform elevational corridor.

11. ACTIVITY

- Patrakarpuram is one of the major markets in Gomti Nagar.
- Gomti Nagar consist of important office buildings, IT hubs etc.
- Parks and Chowks are the gathering places which encourage Public Realm.

A Post Graduate thesis by Reshmi Raha, Department of Architecture, Jadavpur University

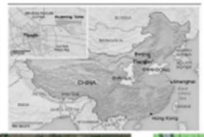
GUIDELINES FOR MERGING OF NEIGHBOURING PERI URBAN AREA WITH IMMEDIATED SUBURBAN AND URBAN AREA- CASE EXAMPLE AT KHODAR BAZAR UNDER BARUIPUR SUBDIVISION, WEST BENGAL

CASE STUDY ON HUAMING ZHEN TOWN, TIAJIN, CHINA

1. LOCATION

Huamingzhen Township is located in the Dongli district of east suburban of Tiajin city.

LOCATION OF THE TOWNSHIP



2. HISTORY AND EVOLUTION

Huamingzhen Township was featured at the 2010 Shangai Expo under the slogan "same land and different life". Huamingzhen has experienced a major change since 2005 as urbanization started with a Municipal Government document which approved the approach of exchanging Traditional village resident land plot for new housing in the township seat village. The project took a period less than 20 months. Redevelopment started in April 2006 and relocation of farmers were done in 2007

1985

2015

BEFORE

AFTER

3. SHAPE AND PATTERN

- Roads are laid in Grid –iron pattern.
- Rectangular building blocks are found mostly. Helps in generation of effective geometry in between spaces

AERIAL VIEW

4. ROADS AND PATHWAYS

- The important roads in the northern side is the Jing Han Road and Beiyang Road on the west.
- The major arterial road that is the Jinghan Road caters most of the vehicular movement.
- Wide pathways are provided with greenery
- Proper parking area is also provided so that the arterial road does not gets narrow.

PATHWAYS WITH GREENARY

WIDE ROADS

5.LANDFORM AND NATURE

- The town was developed on the banks of Beitang Drainage River.
- Low lying area mostly agricultural lands

BEITANG RIVER

6. NODE

- Chamfered nodes for better visibility and car movement.

7. VISTA AND SKYLINE

- High rise buildings are present mainly G+4, G+5, G+6

N

ROAD LAYOUT

9. OTHER AMENITIES

- Paved street, public parks, gardens and well maintained open spaces are also provided.
- Drainage system and sewerage system are provided.

HONGSHUN AVENUE

HONGGUAN AVENUE

PARKS PROVIDED

Display map showing the twelve villages that people were relocated from to the new centrally located town of Huaming.

8. LAND USE

Total land area is 5618280.9 sqm. which is divided into three different functional zones:
1. Relocation of housing area = 2400120 sqm.
2. New urban resident area = 1962098 sqm.
3. Business and shopping area = 1322732.8 sqm.

IMAGE FROM SHANGAI EXPO 2010

LAND USE MAP

Relocation of housing area | New urban resident area | Business and shopping area

- The guiding principles are:
I. Improve the living environment of local farmers
II. To reduce residential land waste occupied by traditional houses through market operation.

N

CONCLUSIONS

A. CASE STUDY 1- GOMTI NAGAR, LUCKNOW, UTTAR PRADESH, INDIA

1. Creation of Public Realm with in Residential Zones by maximum open space concept hence most of the plots/ houses and apartments are park-facing.

2. The nodes have chamfered edges for better visibility and car movement.

3. The streets have narrow footpath varying from 900mm to 1200mm wide with no guard rail to avoid visual barrier.

4. Roads are classified into following five categories on the basis of their uses and importance arterial, sub-arterial, local roads, streets and pathways.

5. Parks are used as landmarks of that area.

B. CASE STUDY 2 - HUAMINGZHEN, TIAJIN, CHINA

1. To reduce residential land waste occupied by traditional houses through market operation.

2. Proper parking area is also provided so that the arterial road does not gets narrow.

3. Wide pathways are provided with greenery.

4. The redevelopment project involves the building of a new town- the Huamingzhen model town and relocation of residents from 12 traditional villages.

A Post Graduate thesis by Reshmi Raha, Department of Architecture, Jadavpur University

GUIDELINES FOR MERGING OF NEIGHBOURING PERI URBAN AREA WITH IMMEDIATED SUBURBAN AND URBAN AREA- CASE EXAMPLE AT KHODAR BAZAR UNDER BARUIPUR SUBDIVISION, WEST BENGAL

CASE STUDY ON SABARMATI RIVERFRONT DEVELOPMENT

1. LOCATION

The Sabarmati a riverfront is located at Gandhinagar, Ahmedabad, Gujrat. KPMG (Klynveld Peat Marwick Goerdeler) regenerated Sabarmati River front under. Ahmedabad Municipal. Corporation. The project consists both banks. of Sabarmati Rives. It creates a public edge along the river banks on both eastern and western side. It is 263m nude and stretches up to 11.25 km covering land area of 204.91 hectares.

LOCATION MAP

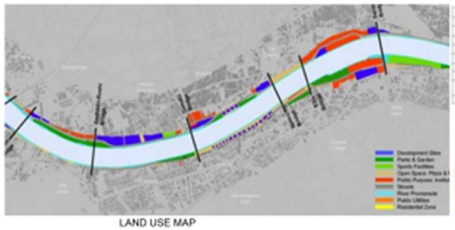
2. HISTORY

Sabarmati is one of the important rivers of Gujrat and also considered to be sacred. According to National Water Quality programme which was led. by Central "Pollution Control Board (CPCB), Sabarmati River is one of the most polluted rivers in India. This is when the A Gujrat Government has undertaken the most ambitious project of developing the Sabarmati Riverfront to enrich the economy. In 1960, a French Architect Bernard Kohn proposed an ecological valley in Sabarmati Basin stretched from Dharbi Dam to Guy of Combay. Thereafter, in 1964 an Integrated Planning and Development of Sabarmati Riverfront was proposed by him, reclaiming 30 hectares as 74 acres The project get approved in 1966 by Gujrat government. In 2005. Construction of this riverfront started and was inaugurated by the 15th Hon'ble Chief Minister of Gujrat on 15th August 2012.

MAP OF SABARMATI IN ANCIENT TIMES

3. LANDUSE

The Riverfront project creates a public edge along the river on the eastern and western banks. channeling the river to a constant width of 263m, riverbed land of 204.91 hetares has been reclaimed. The public riverfront extends up to a length of 11.25 kilometers within the city on either banks.The main considerations in allocating land uses for the reclaimed portions have been existing land uses along the river; extent, location and configuration of reclaimed land available; potential for development; the structural road network and form of the city; bridges proposed in the Ahmedabad Development Plan; and the possibility of providing adequate infrastructure in the new development.



LAND USE MAP

PARKS AND SIDE WALKS

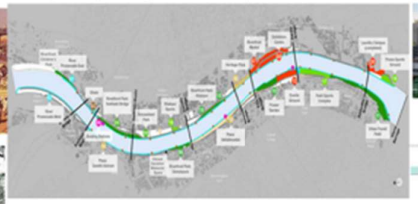
4. STREET LAYOUT

- North south linkages strengthen the existing transport network of city.
- A number of streets leading up to the river are provided for better access to the riverfront.
- New streets are also provided which are designed with width footpath & designated cycle tracks to encourage pedestrian access to the river.

STREET LAYOUT PLAN

5. PROMENADE

- Two level, continuous promenades provided at the water edges along each bank of the river -11.5km long pedestrian walkway -in centre of the city.
- Ghats are punctuated at lower level of promenade at planned interval to provide better access to the river.
- Boating Station enables water recreation at lower Level and also offers water-based that public transportation.
- Many new parks, gardens and sport facilities 4 are also provided on the reclaimed land.



BEFORE

AFTER

6. HOUSING AND REHABILITATION

- A small portion of the reclaimed land to considered for commercial development, to generate sufficient resources for developing the riverfront and maintaining it, the private developments were controlled by volumetric regulations. to ensure that the built environment along the is harmonious and skyline is riverfront constant.
- Provision for markets, vending area, laundry facilities, trade and fair facilities are also considered.
- 1200 that hutments on both side of river bank that covered nearly 20% of the area.
- 10,000 families are arrested with houses for resettlement.
- Each house is 26.77 sqm carpet area. After relocation, 70 sqm area is covered where 1600 vendors can accommodate out of which 788 have pucca platforms and 783 with laris.

7. OTHER AMENITIES

A. Dhobi Ghat: Dhabi Ghat was constructed on the eastern bank. the river with an area of 9400 sqm approximately has utility area of about 600 Sym. 7 blocks of modern Dhobi Ghat are created. Each block has 24 units. with well-developed water supply and drainage. system with a water meter for inlet watering.

B. Event Area: Event area has been redesigned. with an cultural area events of 60 sqm for hasting different. such as marathon, cyclothon kite festival, Garib Kalyan Mela etc.

BEFORE

AFTER

BEFORE

AFTER

C.Urban Forestry: Urban forestry. 1 lakh sqm area. from Gujrat developed over with different plant species. including certain rase species.

BEFORE

AFTER

D. Drainage System: 36 drainage point directly falls into the river that makes water dirty earlier. After development, sewage goes to a for transformation. pumping station for transformation.

E. Public Garden: Public Gardens and flower gardens are created with 27% of the whole project land.

A Post Graduate thesis by Reshmi Raha, Department of Architecture, Jadavpur University

GUIDELINES FOR MERGING OF NEIGHBOURING PERI URBAN AREA WITH IMMEDIATED SUBURBAN AND URBAN AREA- CASE EXAMPLE AT KHODAR BAZAR UNDER BARUIPUR SUBDIVISION, WEST BENGAL

CASE STUDY ON GOMTI RIVER FRONT DEVELOPMENT, LUCKNOW, UTTAR PARADESH

1. LOCATION

Gomti River flows through the middle of Lucknow. it is newly constructed park with some excellent aesthetic attraction positioned in Lucknow, Uttar Pradesh. it was inaugurated by honorable Chief Minister of Uttar Pradesh on 16th October, 2016. It is one of the largest eco-friendly projects and has no parallel anywhere else on the country.

LOCATION MAP

2. HISTORY

The orientation of historic Lucknow was towards Gomti Riverfront with monumental architecture of mosques, mausoleums and palaces which was concentrated on the southern banks. in 18th and 19th centuries bank of Gomti River flourished with Landscape and palaces. But on course of time this riverfront transformed into backwaters and disappeared from the public eye. After that this river started getting depleted as the area of the city of Lucknow increased by 60% from 1987 to 2005. this led to massive flooding as the embankments were interrupts the natural drainage of the city and rainwater. The Uttar Pradesh Government responded to the situation by initiating riverfront development from April 2015 to March 2019.

3. ISSUES

Gomti river has been stressed with 3 major issues in and around Lucknow. They are as follows:

a. EMBANKMENT- High embankments were built to protect from flood during 1970.

b. POLLUTION- The Gomti has 40 natural drains of which 23 are major. The drain used to carry surplus water during monsoon and helped in recharge of ground water, reduced due to sewage from residential and industrial into the river.

c. DEVELOPMENT- The river's flood plains and fertile land got covered with residential areas such as Gomti Nagar and started receding during late 1970s.

ISSUES FACED BY GOMTI RIVER

MAP OF GOMTI NAGAR RIVERFRONT

GOMTI RIVER IN HISTORIC TIMES

4. DEVELOPMENTS MADE ALONG THE RIVERFRONT (LAND USE)

PICTURES AFTER DEVELOPMENT

- Gomti Riverfront span across 14km from Pucca Pull to Shaheed Path and divided into 3 zones- heritage quarter, Lucknow lifestyle parklands and southern greens.
- Gomti Riverfront Park spreads over 2 km along the banks of River Gomti. It was created to conserve and develop the Gomti River which is considered as the life line of Uttar Pradesh.
- It turned into built with the concern of renovation and development of River Gomti which is taken into considerations.
- The lush green surroundings across the bank of Gomti River for around 15kms long has been created as in keeping with International Standards.
- Its predominant enchantment is the musical fountain which is very massive and can be seen from both side of the river.
- This musical fountain attracts 200-300 people on a regular basis.
- Many types of trees are grown in the wetlands in which the chirping of birds fascinates the visitors.
- Amphitheaters (2000-person capacity), biking area, walking tracks and jogging tracks, boating facility, play region for kids are also provided.
- Public Toilet, portable drinking water and parking area is provided at every 500 m.
- Place for yoga, wedding ground, stadium for playing football and cricket is also provided.
- A diaphragm wall has been constructed on both the banks of Gomti for connecting water ways.
- Lucknow Eye – a 100-m-high giant ferry wheel patterned on London Eye on Thames River. Riding the giant wheel, people can enjoy a bird's eye picture of the city.

LAND USE MAP

5. ACTIVITY

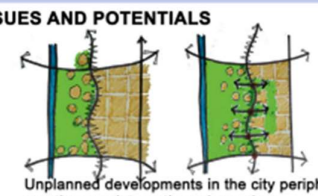
- Visitors experience the splendor of River Gomti as it is a peaceful area for individual, friends and family.
- Many parks are provided along the river like butterfly park, Gomti Riverfront Park.

A Post Graduate thesis by Reshmi Raha, Department of Architecture, Jadavpur University

GUIDELINES FOR MERGING OF NEIGHBOURING PERI URBAN AREA WITH IMMEDIATED SUBURBAN AND URBAN AREA- CASE EXAMPLE: KHODAR BAZAR,BARUIPUR SUBDIVISION, WEST BENGAL

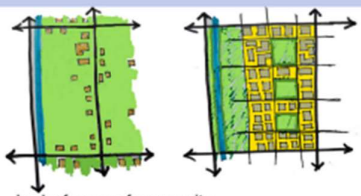
SURVEY

ISSUES AND POTENTIALS



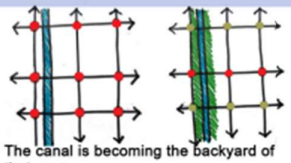
Unplanned developments in the city periphery creating non interactive urban edges

1 Strengthening the cross linkages by introduction of Public spaces



Lack of sense of community

2 Creating a strong sense of place by building the imageability of the place



The canal is becoming the backyard of that area

3 Activating canal by assigning functional role to it.

JUSTIFICATION FOR SELECTION OF SITE

- This area is selected by its spatial activities - dependent on municipal area for resources.
- Baruipur Municipal Area is getting congested- people are trying to settle around or near it - marked by many housing groups.
- Population increased by 27% approximately (2011 census).
- The unregulated growth in this area - need to be controlled.

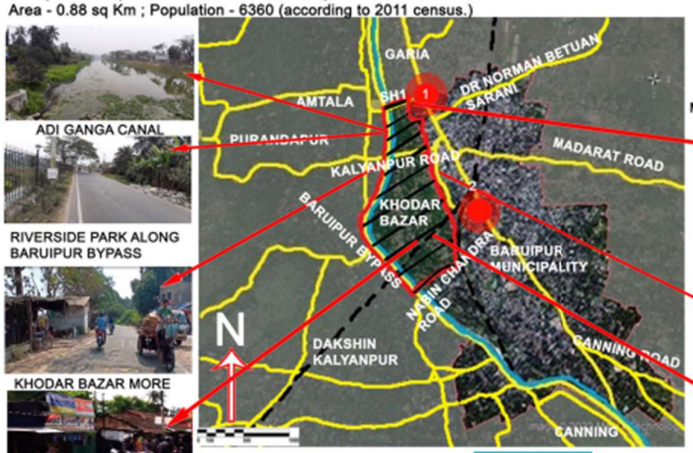
THE MAIN CONCERN OF THIS TOPIC IS:

1. To study and analyze the development pattern in peri-urban area and formulate additional guidelines to resist the uncontrolled growth.
2. Design intervensions required in upgrading the existing infrastructure along with providing new infrastructure which act as landmarks.

1. EDGES

Khodar Bazar, South 24 Parganas is one such example lies at the western side of Baruipur Municipal Area under Kolkata Metropolitan Area.
Area - 0.88 sq Km ; Population - 6360 (according to 2011 census.)

MAP SHOWING KHODAR BAZAR



ADI GANGA CANAL

RIVERSIDE PARK ALONG BARUIPUR BYPASS

KHODAR BAZAR MORE

RAILWAY CROSSING


STATE HIGHWAY 1


VIEW ALONG BARUIPUR KULPI ROAD


MORNING FRUIT MARKET

2. ROADS, PATHWAYS AND MOVEMENT


NARROW LANES


NARROW LANES BOTTLE NECK AT TURNS


OPEN DRAINS

MAIN ARTERIAL ROAD — LOCAL ROADS
RAILWAY TRACK — PATHWAYS
NEIGHBOURHOOD ROADS — CANAL

INFERENCE:

1.Maximize the effective road width by providing sufficient space for informal activities along the connector road.
2.Mixed activities along the railway route needs intervention.
3.The width of the footpath should be made consistent.
5.Feeder roads needed to be made wider.
7. Hierarchy of roads needs to be maintained.


ON STREET PARKING ALONG BARUIPUR KULPI ROAD

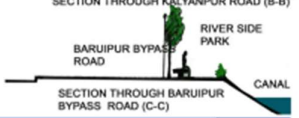
OBSERVATION:

- Major arterial roads-SH1 & Baruipur Bypass along with Kulpi Road -passes through Baruipur Municipal Area.
- Nearest railway station-Shasan Road railway station
- Neighbourhood Roads and Footpaths - inconsistent and occupied by the construction material, parkings and hawkers
- The Narrow and single lane feeder roads and secondary roads-creates bottle neck at turns - discourages vehicular mobility.
- Poor connectivity


INSUFFICIENT AND INCONSISTANT WIDTH OF FOOTPATH ALONG WITH STORAGE


SECTION THROUGH KULPI ROAD (A-A)


SECTION THROUGH KALYANPUR ROAD (B-B)



SECTION THROUGH BARUIPUR BYPASS ROAD (C-C)

A Post Graduate thesis by Reshmi Raha, Department of Architecture, Jadavpur University

GUIDELINES FOR MERGING OF NEIGHBOURING PERI URBAN AREA WITH IMMEDIATED SUBURBAN AND URBAN AREA- CASE EXAMPLE :KHODAR BAZAR , BARUIPUR SUBDIVISION, WEST BENGAL

3. NODES AND LANDMARKS


MAJH KALYANPUR MORE


BISHAR PARA RAIL CROSSING


MORNING FRUIT MARKET


PADMAPUKUR MORE

NODE

NODE 1- MAJH KALYANPUR MORE
NODE 2- PADMAPUKUR MORE
NODE 3- KHODAR BAZAR MORE
NODE 4- BISHARPARA MORE

INFERENCE:

1. Node must be designed with activities around and must be designed with adequate space depending upon the vehicular load.
2. Activities around the node must be regularized through design intervention.
3. New landmarks needed to be created with design intervention.

OBSERVATION:

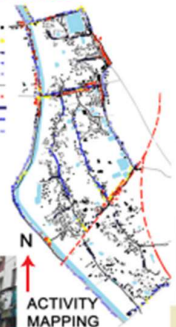
- The two major nodes - Khodar Bazar, and Majh Kalyanpur More.
- The landmarks - Riverside Park,Krishna Cinema Hall and Baruipur Surgical Industry.
- No infrastructure is provided along the nodes.
- No proper safety signages .

4. VISTA, SKYLINE AND ACTIVITIES

OBSERVATION:

- The skyline- consistent.Maximum building height -G+3, few G+4
- Electric wires, billboards and electric posts disturbs the skyline.
- The major activities are along the feeder roads.
- Mostly agricultural land. Fruits like guava, mango, banana are famous..
- The wholesale Fruit market (6am-9am) - creates chaos along the station road.
- The Riverside park is the only gathering place along Adi Ganga Canal.


BILLBOARDS AND ELECTRIC POLES DESTROING THE VISTA OF THE PLACE



ACTIVITY MAPPING


River Side Park is one of the major landmark of this area which is not maintained. No parking space provided for the visitors,results either in on-street parking or they take their vehicle inside the park.

Lack of open space within municipal area force people to move towards the river edge at the outskirts, which act as a social ground for the people to interact in presence of nature.

INFERENCE:

1.Creation of more public spaces and activity.
2.Redeveloping the Riverside Park with adequate facilities.
3.A wholesale market needed to be designed as the wholesale market starts from 6am till 9am in the morning along the station road.

5. LANDUSE


DETACHED HOUSING


SEMI PUCCA HOUSE


APARTMENTS


APARTMENTS

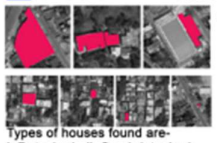

LESS SPACE PROVIDED BETWEEN BUILDINGS

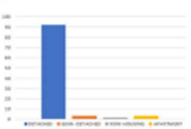

PARCEL OF LAND LEFT VACANT DUE TO UNORGANIZED GROWTH


Vacant lands are used as garbage dumping area which creates pollution.


APARTMENTS

AGRICULTURAL
INDUSTRIAL
COMMERCIAL
RESIDENTIAL
MIX USE
ROAD
CANAL
RAILWAY TRACK

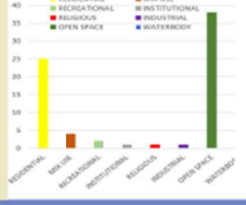




Types of houses found are-
i. Detached, ii. Semi-detached,
iii. Row housing, iv. Apartments.

INFERENCE:

1.Restrict and control the development of unauthorized structures.
2. Formulate the strategic framework to keep balance between open space and built form.
3.Intervention needed to create space for public realm .



OBSERVATION:

- Very less public space.
- This area consist of vacant land and agricultural fields with less built forms.
- Density of houses along the arterial road is more
- Types of houses found are :- detached, semi-detached, row housing, apartments.
- Due to unorganized growth ,few parcel of lands which are not connected to the arterial road, left vacant.

WATER BODY
ROADS / PATHWAYS
BUILD-FORMS
VACANT LANDS/ AGRICULTURAL LANDS

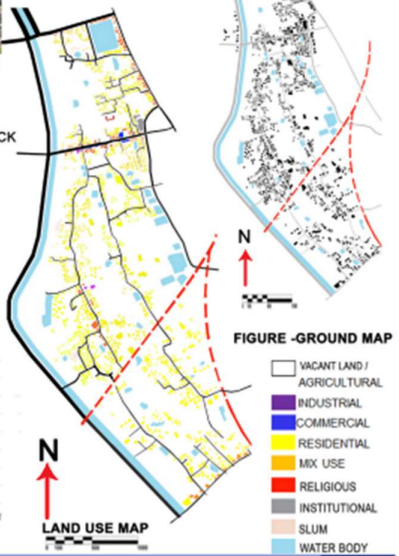


FIGURE -GROUND MAP

VACANT LAND / AGRICULTURAL
INDUSTRIAL
COMMERCIAL
RESIDENTIAL
MIX USE
RELIGIOUS
INSTITUTIONAL
SLUM
WATER BODY

A Post Graduate thesis by Reshmi Raha, Department of Architecture, Jadavpur University

GUIDELINES FOR MERGING OF NEIGHBOURING PERI URBAN AREA WITH IMMEDIATED SUBURBAN AND URBAN AREA- CASE EXAMPLE : KHODAR BAZAR, BARUIPUR SUBDIVISION, WEST BENGAL

IDENTIFICATION OF PROBLEMS FROM AREA LEVEL STUDY

- Unorganized and unregulated growth of built forms
- Weak Infrastrure like open drains, narrow roads etc.
- No bus stops provided at the nodes.
- Hierchy of roads not maintained.
- No proper disposal of garbages.
- The landscape interface between the rural—urban transition zone where urban and rural uses mix and often clash is not well defined.

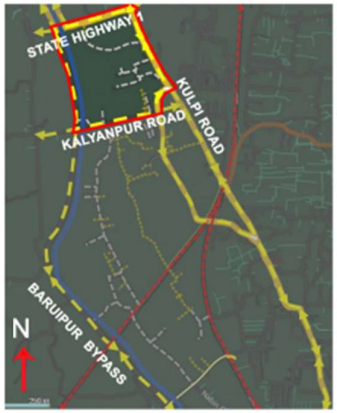
OPEN DRAINS AND NARROW NEIGHBOURHOOD ROADS

NO PROPER DISPOSAL AREA OF GARBAGES

IDENTIFICATION OF AREA OF STUDY

BASED ON THE STUDY DONE IT IS ESTABLISHED THAT THE SELECTED AREA HAS MOST POTENTIAL TO BE DEVELOPED THROUGH DESIGN INTERVENTION AND IT SHOWS THE CHANGING DYNAMICS MERGING OF PERI-URBAN AREA WITH IMMEDIATE SUBURBAN AREA.

The study will be done on same parameters as done in Area Level Study



SELECTED AREA OF STUDY

DESCRIPTION OF STUDY AREA

STATE HIGHWAY 1

BARUIPUR BYPASS

BARUIPUR BYPASS

KALYANPUR ROAD

1.The eastern side is bounded by Baruipur Municipal area which is the major source of livelihood for the people living in this area and Kulpi Road acts as the major commercial corridor for this area.
2. On the northern side, State Highway 1 acts as the strong connectivity.
3. On the western side runs the B aruipur Bypass Road which con-nects the area to the further south, along with runs the Adi Ganga Canal.
4. The whole area is residential zone with few commercial built form along the feeder roads and mix use buildings along the Kulpi Road.

RIVER SIDE PARK ALONG ADI GANGA

1. ROADS, PATHWAYS AND MOVEMENT

PRESENCE OF OPEN DRAINS ALONG ROADS

INCONSISTENCY OF FOOTHPATH

TEMPORARY STRUCTURES FOUND AT KHODAR BAZAR ROAD JUNCTION.

OBSERVATION:

- The roads and pathways are not laid in any geometric pattern.
- The hierarchy of roads is not maintained in the neighbourhood.
- Internal roads - 1.2 m to 3 m.
- The road percentage - 5.36%.
- Not connected well pathways
- Open drainage system along the pathway may lead to accidents
- Inconsistency in footpath-1.2 m to 1.8 m
- Storage of construction materials and 2-wheeler & 3-wheeler parking on the footpath results in interrupted pedestrian movement.

MAIN ARTERIAL ROAD
NEIGHBOURHOOD ROADS
LOCAL ROADS
PATHWAYS
CANAL

NAME OF ROAD	WIDTH OF ROAD
STATE HIGHWAY 1	5 M (SINGLE LANE)
BARUIPUR BYPASS	5 M (2-LANE)
KALYANPUR ROAD	4 M (SINGLE LANE)

INFERENCE

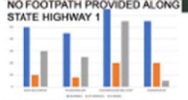
1.Hierarchy of roads should be maintained according to IRC.
2.Strategical location to be designed for informal vendors.
3.Internal roads needs to be widen for uninterrupted pedestrian movement

2. NODES AND LANDMARKS

KALYANPUR ROAD VARIES FROM 5M TO 7.2M

MAJH KALYANPUR MORE

NO FOOTPATH PROVIDED ALONG STATE HIGHWAY 1



IT IS OBSERVED THAT THE MAXIMUM FOOTFALL IS RECORDED IN THE MORNING HOURS AND EVENING HOURS

NODE

NODE 1- MAJH KALYANPUR MORE
NODE 2- PADMAPUKUR MORE
NODE 3 -KHODAR BAZAR MORE
NODE 4 -KACHARI BAZAR BUS STOP

OBSERVATION:

- The important nodes - Majh Kalyanpur More, Khodar bazar more and Kachari Bazar Bus Stop.
- Majh kalyanpur - busiest node.
- Riverside Park - major landmark,
- No proper signage, parking, space for vendor and bus bay at the node.

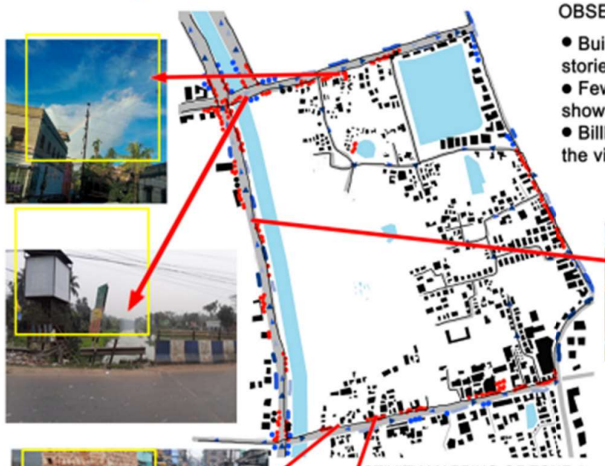
INFERENCE:

Node must be designed with activities around and must be designed with adequate space depending upon the vehicular load.

A Post Graduate thesis by Reshmi Raha, Department of Architecture, Jadavpur University

GUIDELINES FOR MERGING OF NEIGHBOURING PERI URBAN AREA WITH IMMEDIATED SUBURBAN AND URBAN AREA- CASE EXAMPLE : KHODAR BAZAR ,BARUIPUR SUBDIVISION, WEST BENGAL

3. VISTA, SKYLINE AND ACTIVITY



ACTIVITY MAPPING OF ZONE 1

OBSERVATION:

- Building height -mostly 2-storied. Few G+3 are found.
- Few high rise are found which shows abrupt changes in skyline.
- Billboards and poles destroy the vista of the place.

RIVER SIDE PARK

N

Permanent Stalls
Portable Stalls
Two wheeler
Car and Auto
Heavy vehicle
Pedestrian Movement
Pausing Activity
Heavy Vehicle
Car, Auto parking
Two Wheeler

The Riverside Park is one of the important landmark of this area. Due to lack of open space in the municipal area, people are driven to come there.

Aerial view showing abrupt changes in height due to presence of apartments.

GHATS PROVIDED AT THE PLACES OF THE BANK OF THE RIVER

Due to lack of parking in the park people park there vehicles inside the park

UNAUTHORIZED STRUCTURE ALONG THE ROAD

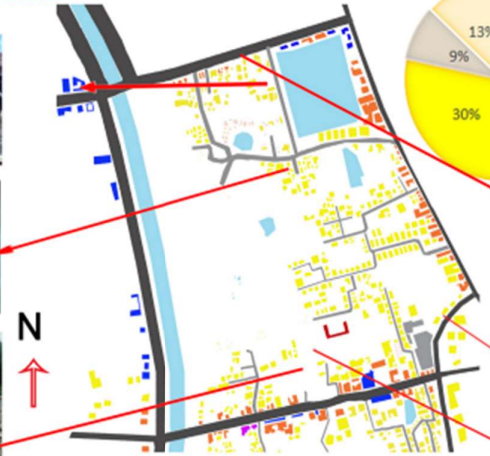
Few street furniture and lighting arrangements are provided

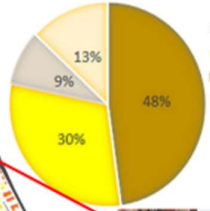
ONSTREET PARKING DUE TO LACK OF DEDICATED PARKING SPACE.

INFERENCE:

1.The major road is almost linear, vista must be enhanced by design measurements.
2. In some areas, contrast can be created to break the monotony in skyline.
3. Creation of more public spaces and activity. Potential area for new public realm intervention.

4. LANDUSE





N

TYPE OF BUILDING	AREA (SQ KM.)	PERCENTAGE
RESIDENTIAL	0.1064	38
MIX USE	0.0168	6
SLUM	0.0084	3
INSTITUTIONAL	0.0056	2
RELIGIOUS	0.0056	2
RECREATIONAL	0.0086	3
OPEN SPACE	0.0784	28
WATER BODY	0.0336	12
ROAD	0.0168	6

IDENTIFICATION OF PROBLEMS

1.Open drains along the road creates unhygienic environment.
2. Width of the roads are insufficient.
3. Dedicated pathway for pedestrian movement are occupied by vendors, on street parking and storage.
5. Less Internal pathways
6. The infrastructure of nodes are not upgraded.
7. No landmark and signages provided.
9. The electric poles and billboards destroys the vista of the place.
10. Most of the land are left vacant - used as dumping ground and creates unhygienic environment.
13. The water bodies - not maintained.
14. Very less commercial built form.

OBSERVATION:

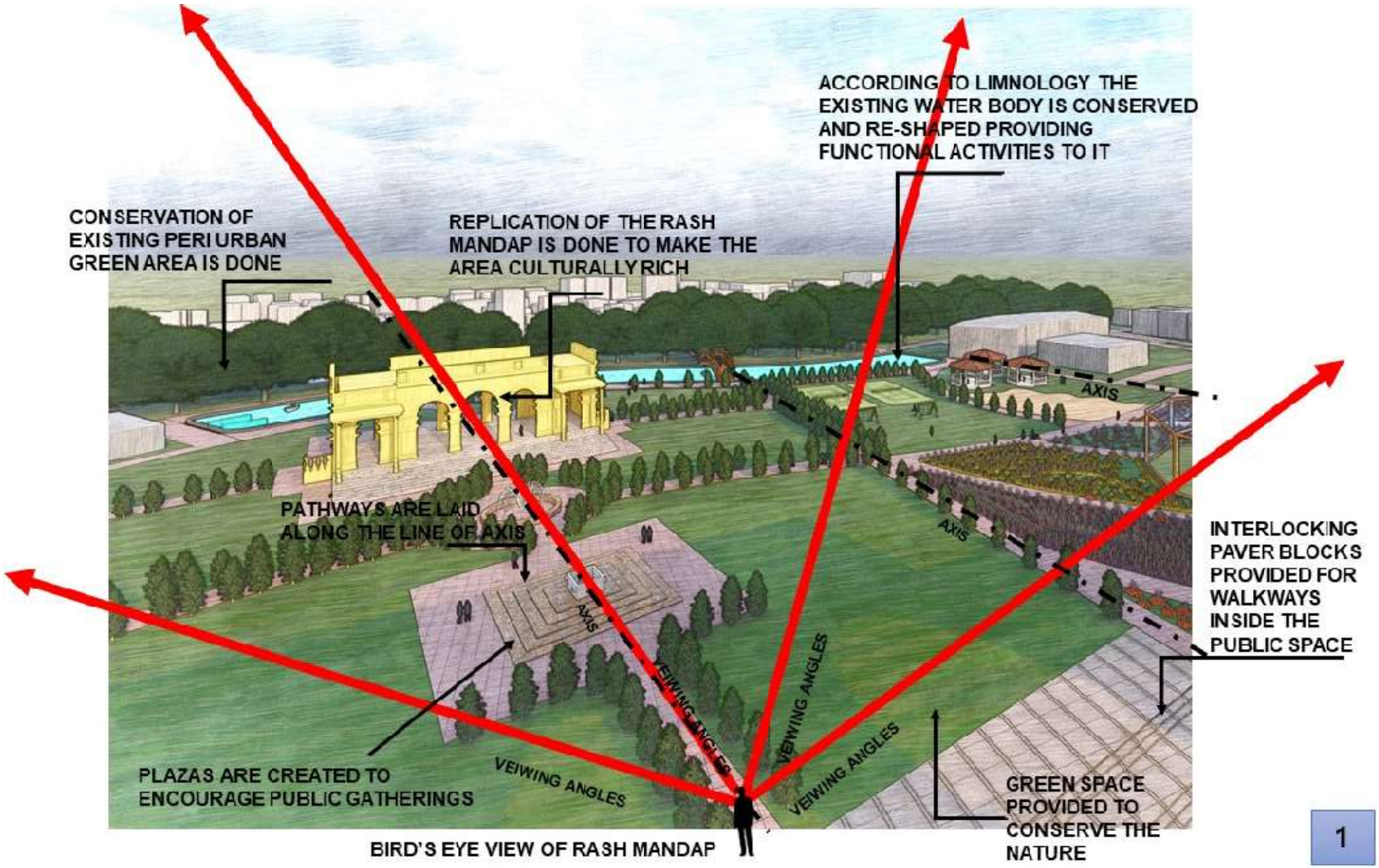
- Mostly residential buildings present.
- Due to unplanned growth- slum areas are seen.
- Commercial build form i-along the Kalyanpur Road and State Highway 1.
- The open spaces are not maintained which pollutes the environment.
- Front open space is not maintained
- Parcel of land in between buildings are left vacant.
- Change in land use is observed over the years.

INFERENCE:

Pockets of land which are left vacant can be developed in spaces for public realm.
Open spaces must be protected from damages and mis use.
Mix use buildings can make the space vibrant.
Intervention needed in slum areas.

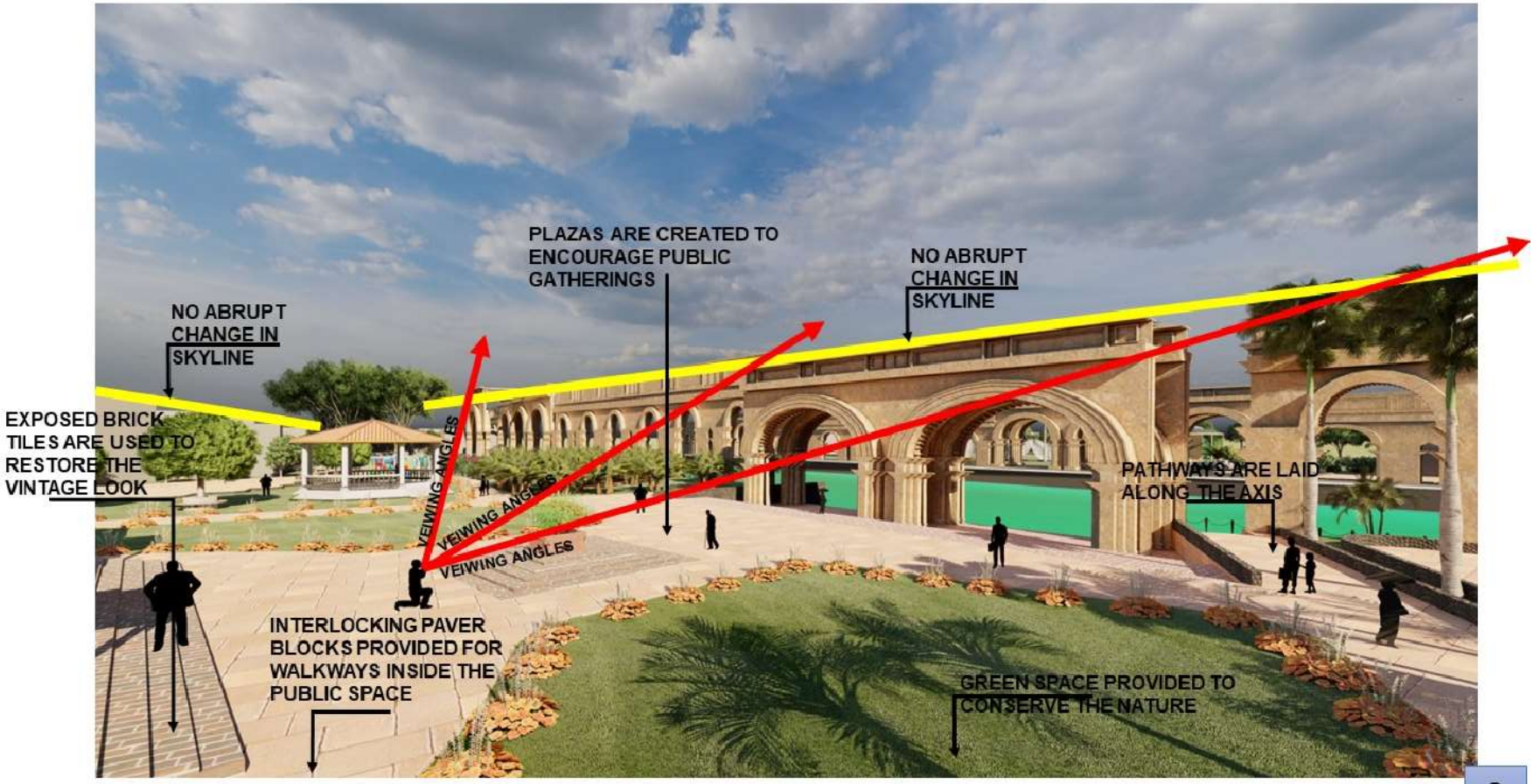
A Post Graduate thesis by Reshmi Raha, Department of Architecture, Jadavpur University

5.6. 3D VIEWS



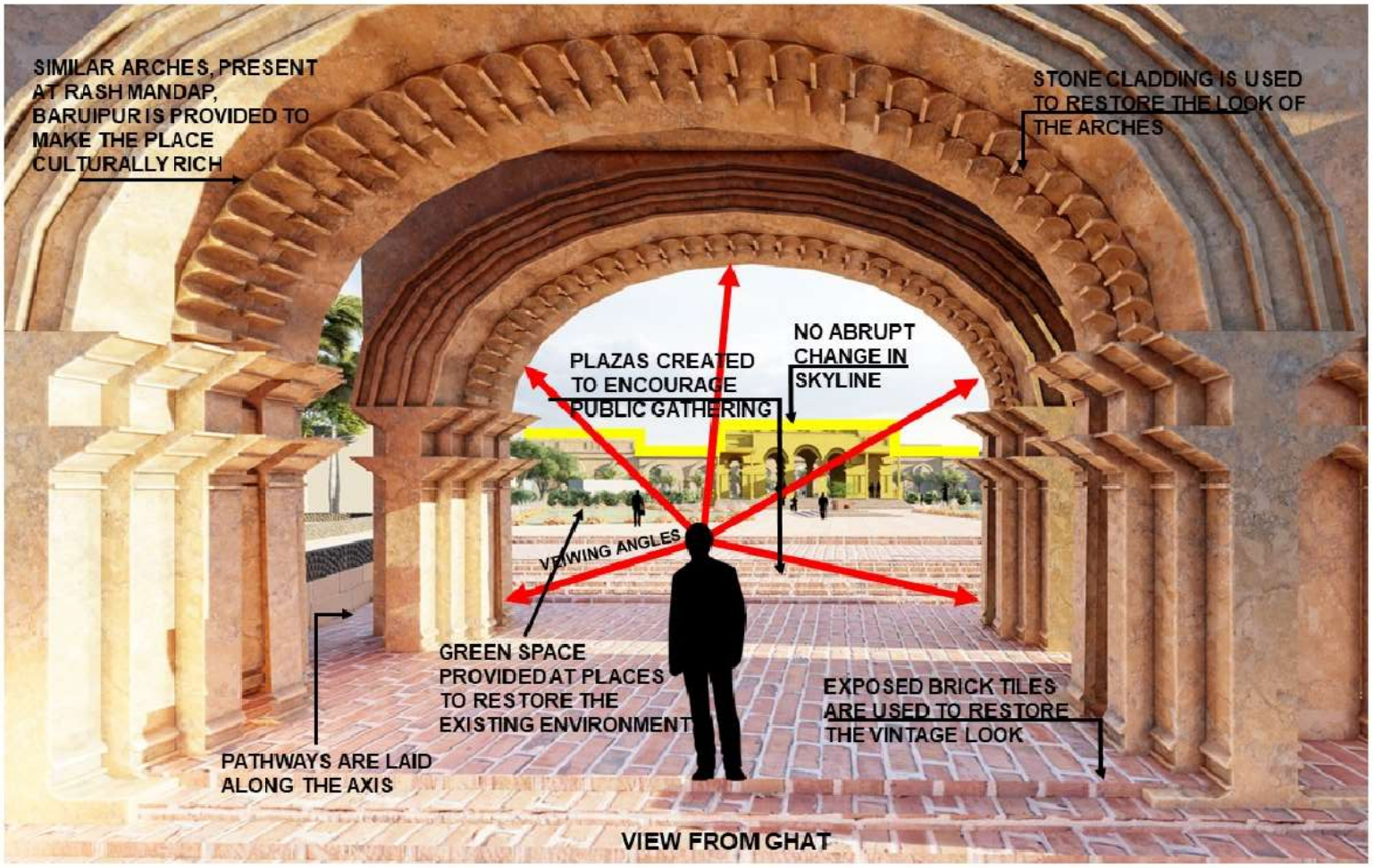
BIRD'S EYE VIEW OF RASH MANDAP

1

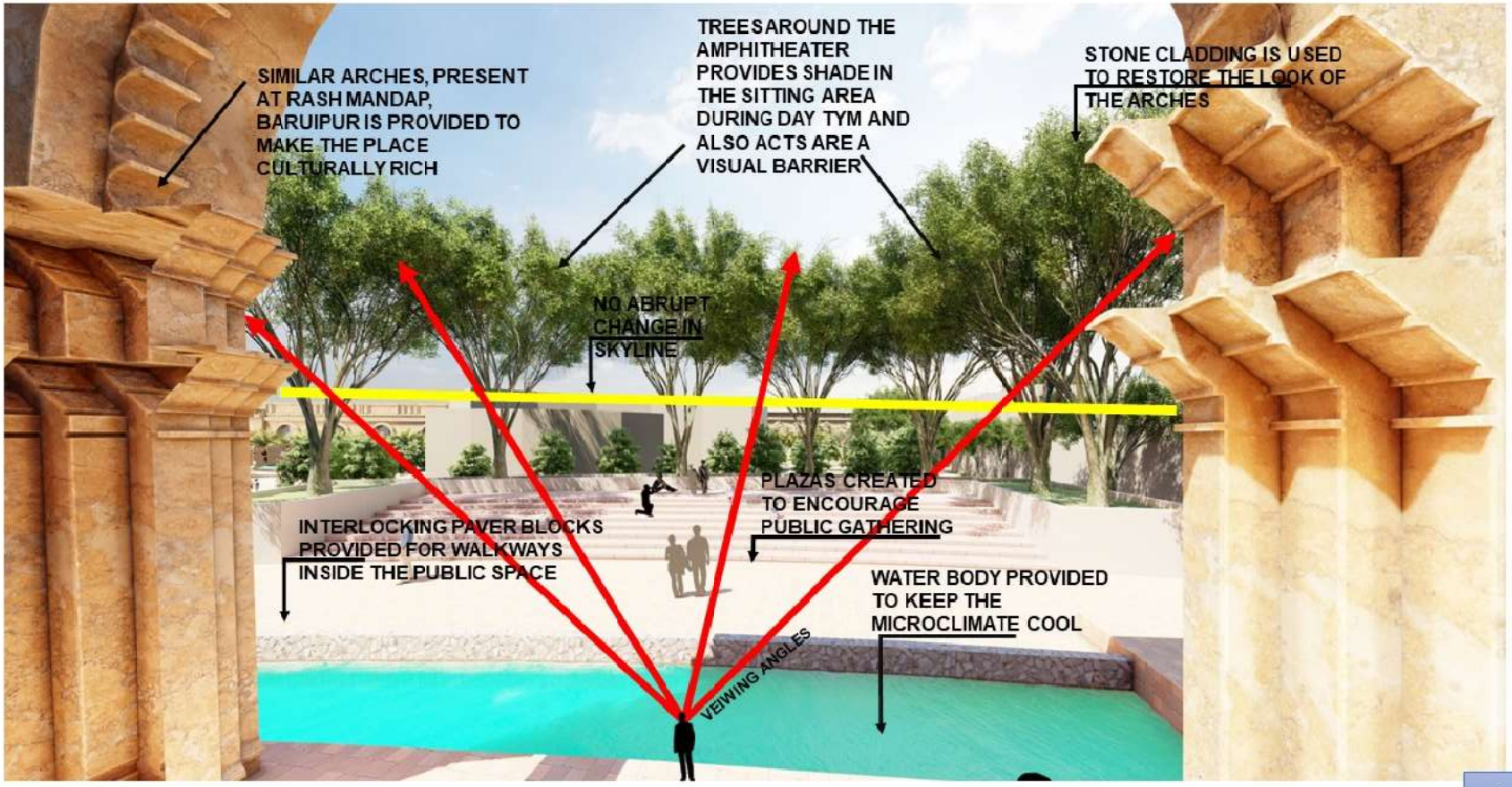


VIEW TOWARDS GHAT

2

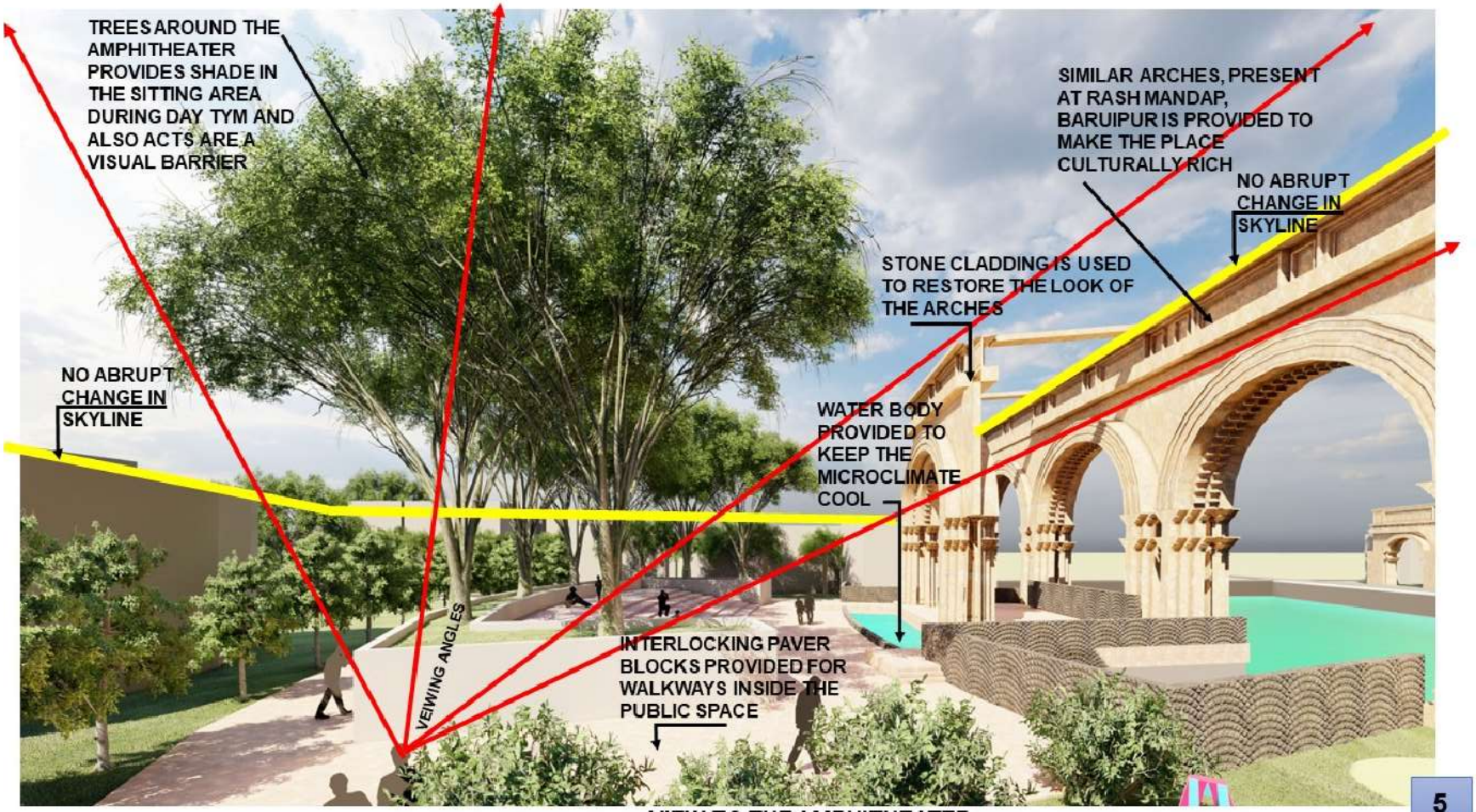

SIMILAR ARCHES, PRESENT AT RASH MANDAP, BARUIPUR IS PROVIDED TO MAKE THE PLACE CULTURALLY RICH
STONE CLADDING IS USED TO RESTORE THE LOOK OF THE ARCHES
NO ABRUPT CHANGE IN SKYLINE
PLAZAS CREATED TO ENCOURAGE PUBLIC GATHERING
VIEWING ANGLES
GREEN SPACE PROVIDED AT PLACES TO RESTORE THE EXISTING ENVIRONMENT
EXPOSED BRICK TILES ARE USED TO RESTORE THE VINTAGE LOOK
PATHWAYS ARE LAID ALONG THE AXIS
VIEW FROM GHAT

3



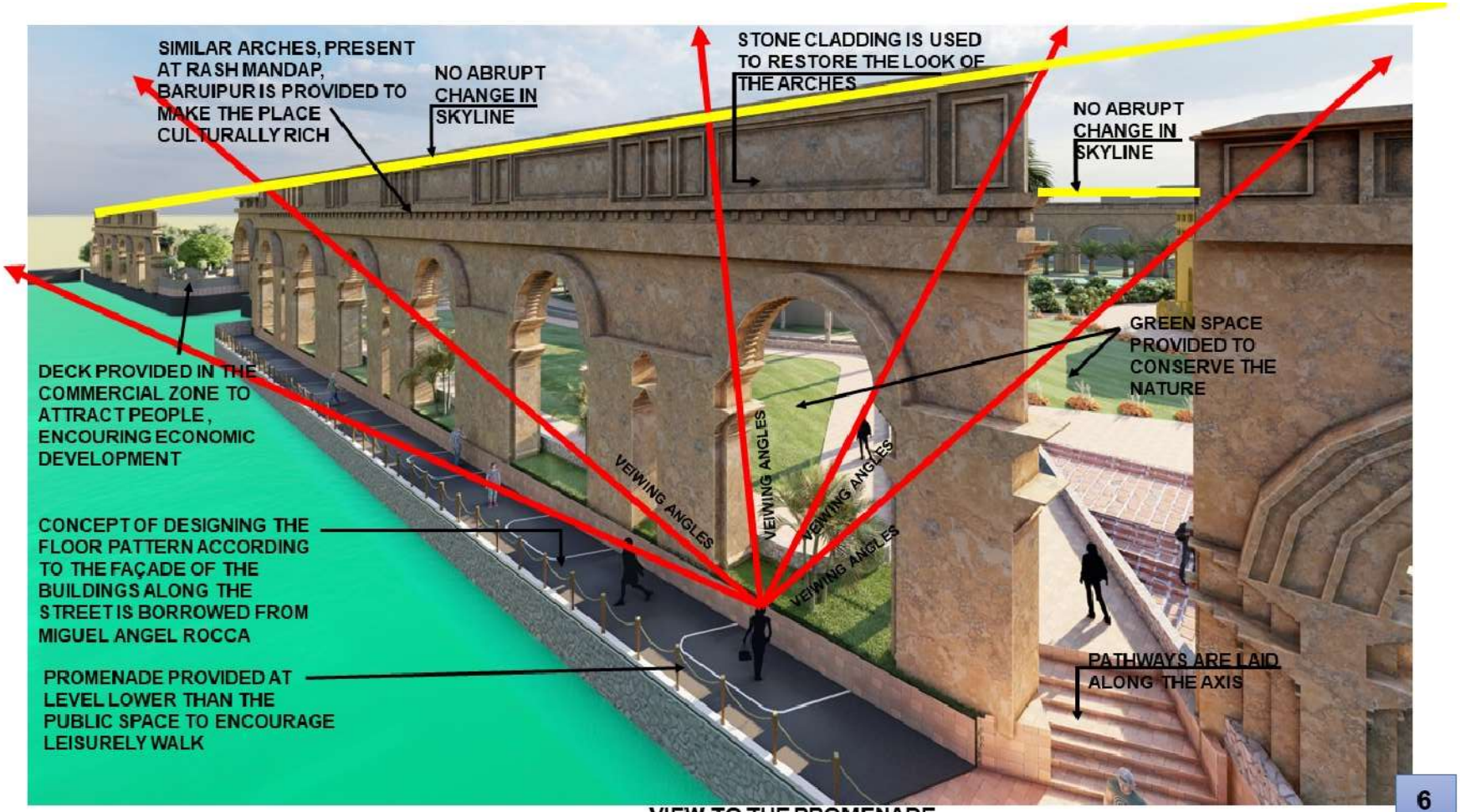
VIEW FROM STAGE

4



VIEW TO THE AMPHITHEATER

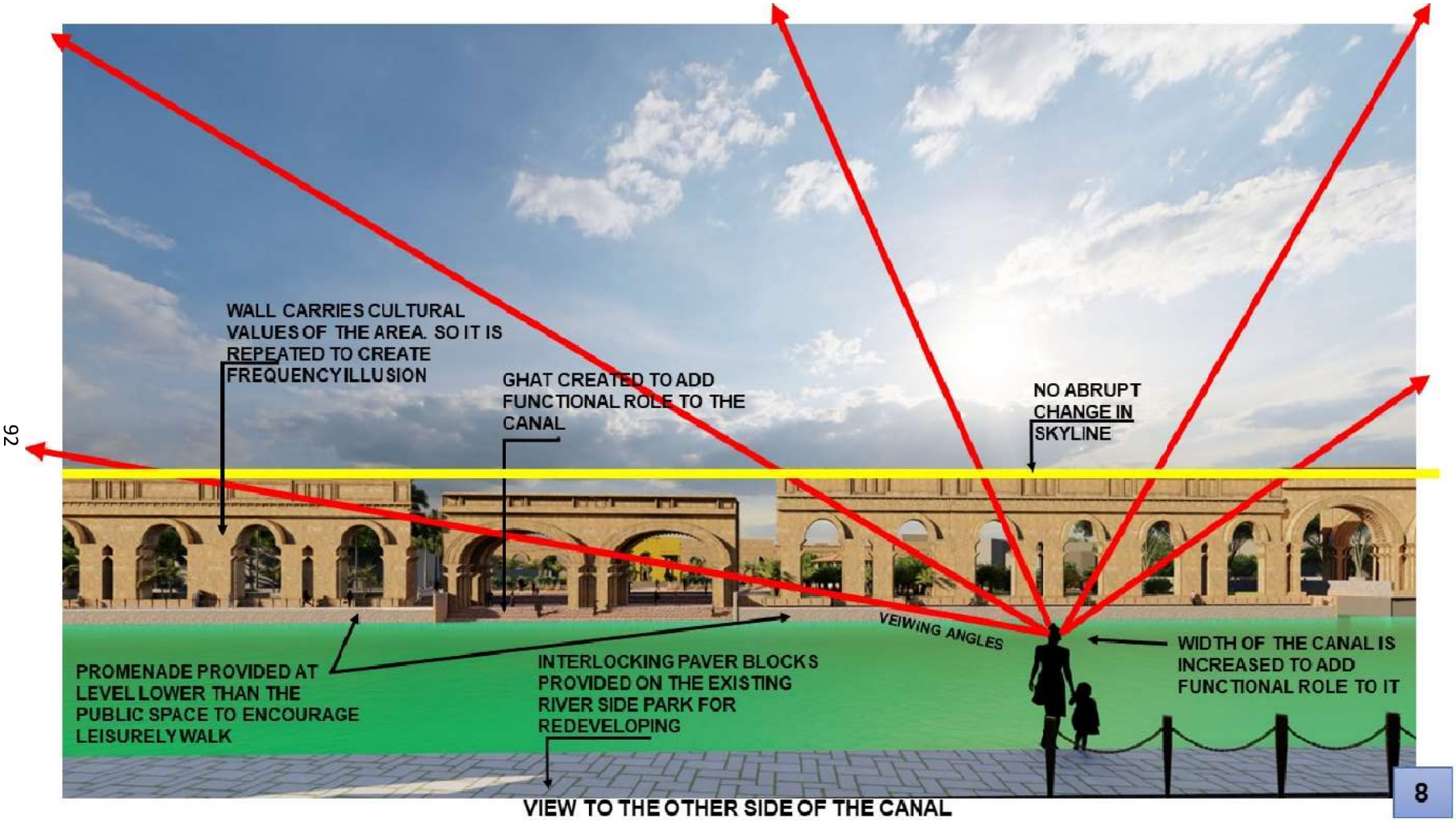
5



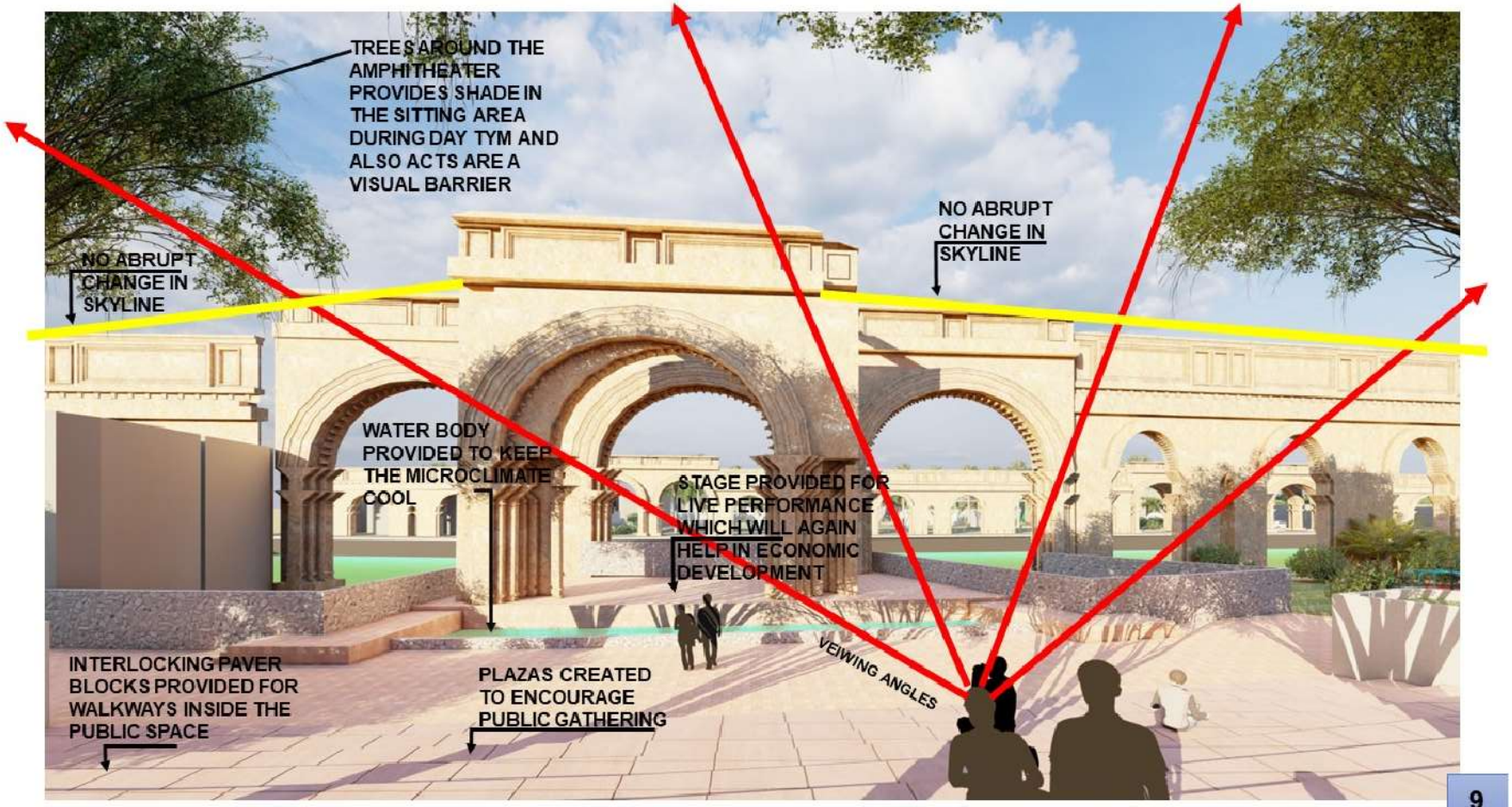
VIEW TO THE PROMENADE

6

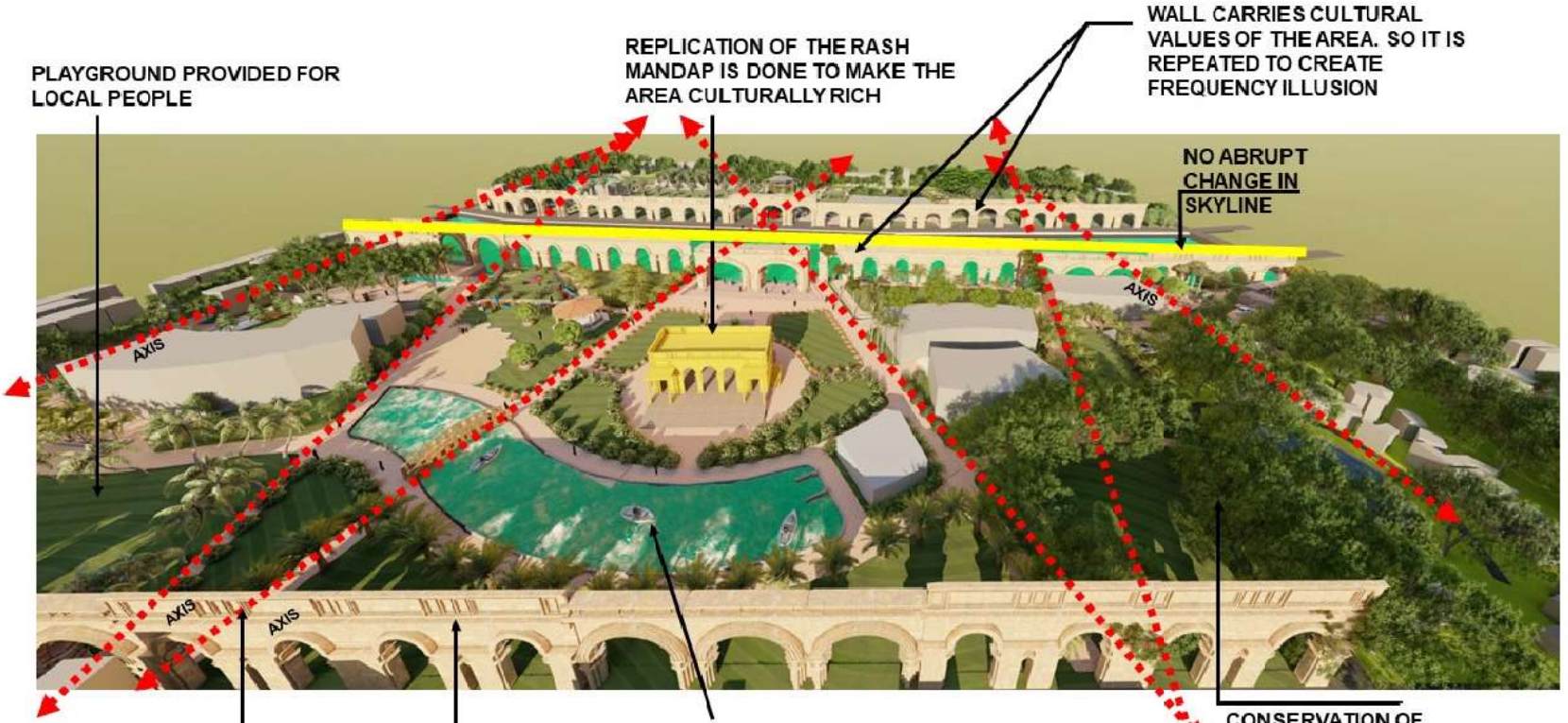
VIEW TO THE DECK



VIEW TO THE OTHER SIDE OF THE CANAL

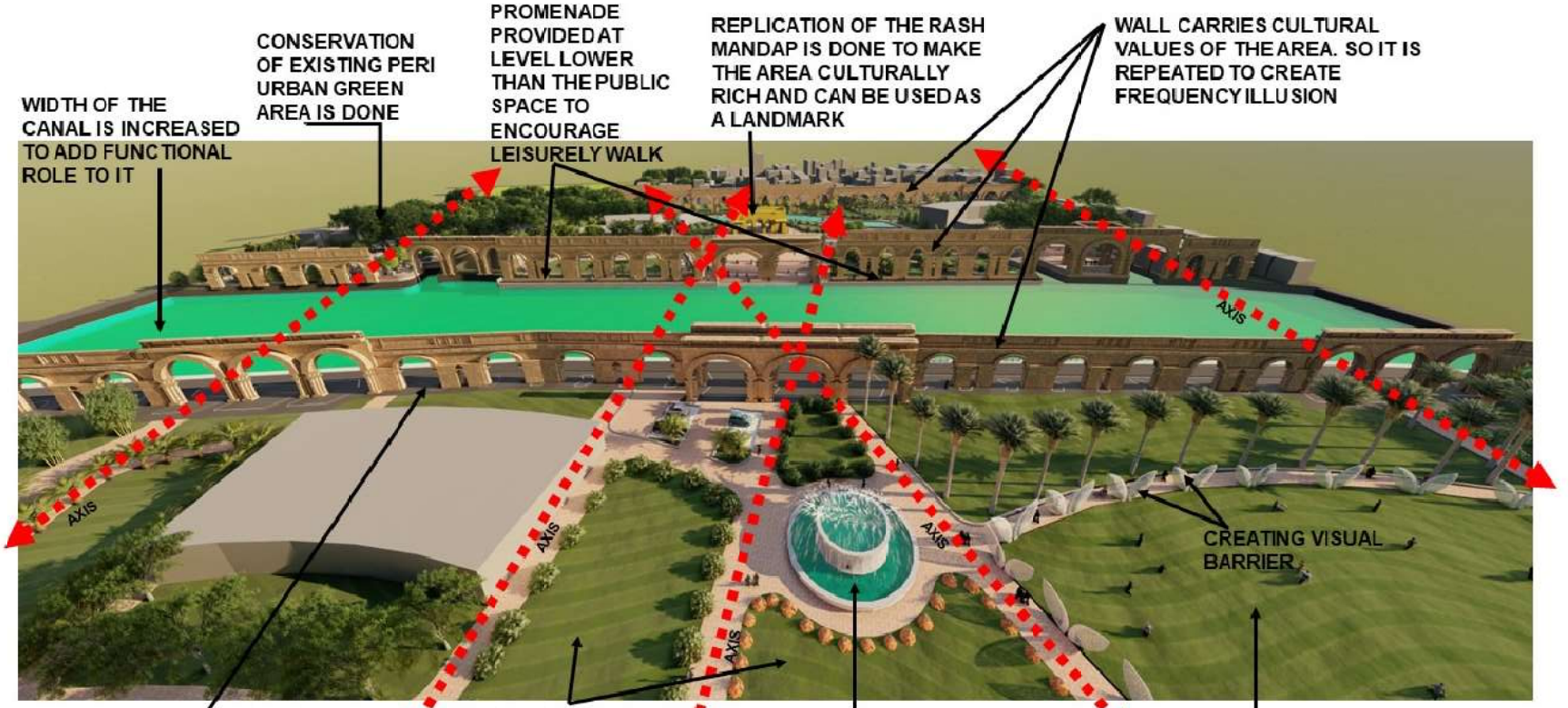

TREES AROUND THE AMPHITHEATER PROVIDES SHADE IN THE SITTING AREA DURING DAY TYM AND ALSO ACTS ARE A VISUAL BARRIER
NO ABRUPT CHANGE IN SKYLINE
NO ABRUPT CHANGE IN SKYLINE
WATER BODY PROVIDED TO KEEP THE MICROCLIMATE COOL
STAGE PROVIDED FOR LIVE PERFORMANCE WHICH WILL AGAIN HELP IN ECONOMIC DEVELOPMENT
VEIWING ANGLES
INTERLOCKING PAVER BLOCKS PROVIDED FOR WALKWAYS INSIDE THE PUBLIC SPACE
PLAZAS CREATED TO ENCOURAGE PUBLIC GATHERING

9



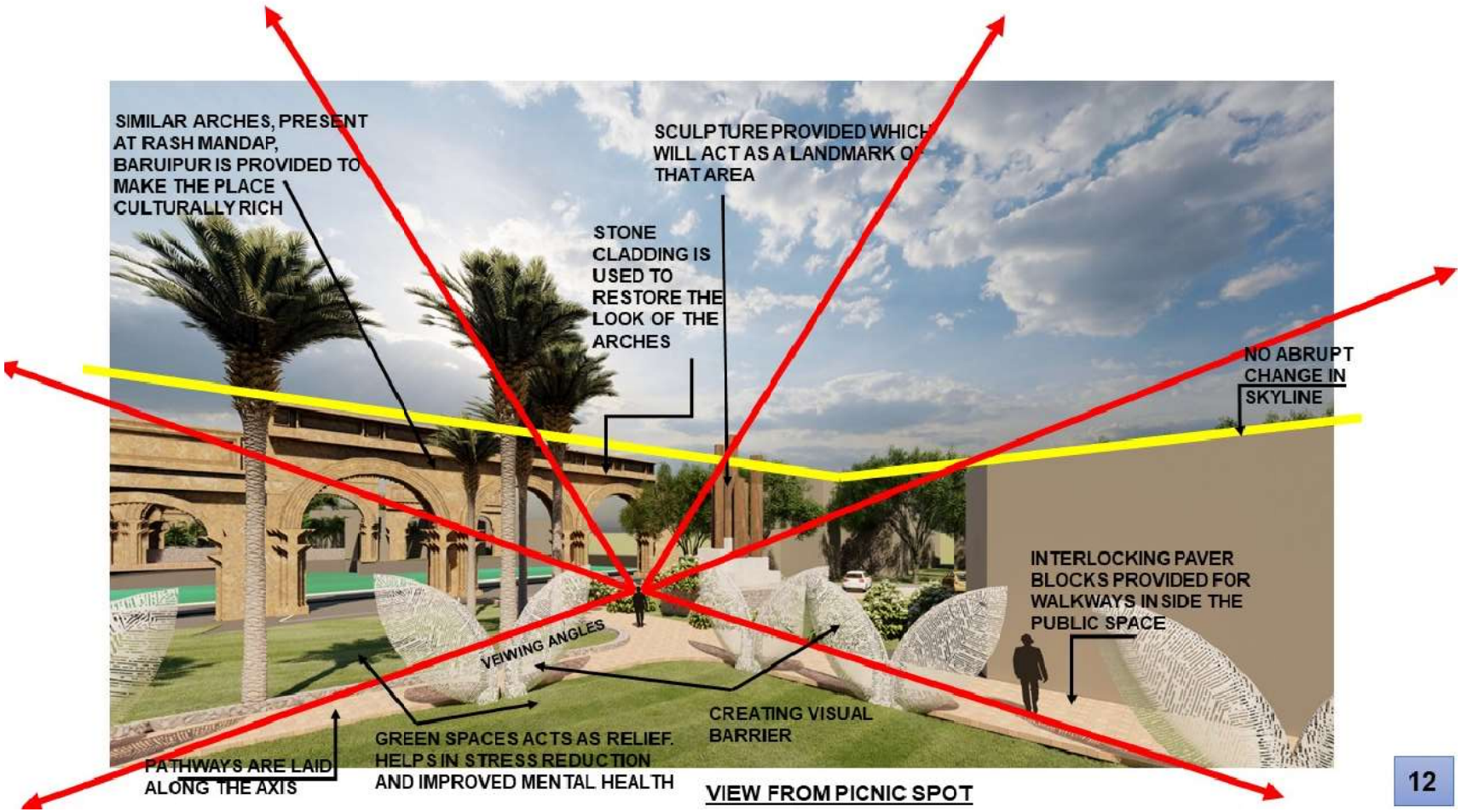
BIRD'S EYE VIEW

10



BIRD'S EYE VIEW

11



VIEW FROM PICNIC SPOT

12

REFERENCES

1. :Kolkata Population 2021 (Demographics, Maps, Graphs) (worldpopulationreview.com)
2. IB # 285-new text (orfonline.org)
3. : (unesco.org)
4. : https://www.researchgate.net/publication/258136752
5. India's peri-urban regions: The need for policy and the challenges of governance | ORF (orfonline.org)
6. urban area | National Geographic Society
7. : What are Design Guidelines? | Interaction Design Foundation (IxDF) (interaction-design.org)
8. https://dailyhive.com/vancouver/coronation-park-wesgroup-inlet-centre-station-port-moody-ocp-amendment
9. South-east shift to Kolkata expansion | Kolkata News - Times of India (indiatimes.com
10. Seven smart cities to be developed in West Bengal: Mamata Banerjee - The Economic Times (indiatimes.com)
11. Urbanize fast for high growth: India's land policies are at the bottom of its economy failing to take off (indiatimes.com)
12. Kolkata Centric Suburban Town, Baruipur | CEPT – Portfolio
13. Welcome to www.baruipurmunicipality.org.in
14. IB # 285-new text (orfonline.org)
15. Multiple nuclei model of 1945 by C.D. Harris and Edward L. Ullman (planningtank.com
16. (PDF) Fuzzy Urban Sets: Theory and Application to Desakota Regions in China (researchgate.net)
17. 17. From blueprint to action: The transformation of the planning paradigm for desakota in China – ScienceDirect
18. 18. Public Realm Definition | Law Insider
19. 190718-public-consultation-panels-low-res.pdf (southsomerset.gov.uk
20. : Ciudades a escala humana: La ciudad a pie de calle
21. https://www.cpasegypt.com/pdf/Abd_ElBaser/M.SC/003.pdf
22. Image of the city.
23. 23. Urban design and the physical environment: The planning agenda in Australia on JSTOR
24. ID216.pdf (iphs2010.com)
25. : Land and Infrastructure Development in Peri-Urban Areas: Case Study of Gomti Nagar, Lucknow, India (intechopen.com)
26. Guidelines from URDPFI
27. Guidelines from NBC
28. https://www.jstor.org/stable/resrep18460.5
29. 29.Kolkata Population 2021 (Demographics, Maps, Graphs) (worldpopulationreview.com)
30. An Insight on Urbanization, its Pros &Cons : India and World ~ SocioCosmo
31. Human Benefits of Green Spaces | Cooperative Extension | University of Delaware (udel.edu)
32. Implications of Periurban Types and Institutional Contexts for Selected... | Download Table (researchgate.net)
33. Land Reform/RéformeAgraire/ReformaAgraria 2000/2 (fao.org)
34. Sabarmati Riverfront – Sabarmati Riverfront
35. A Glimpse of The Riverfront Gomti Nagar in Lucknow | Cinematic Shots of Lucknow | Lucknow Tips
36. (PDF) The Gomti Riverfront in Lucknow, India: Revitalization of a Cultural Heritage Landscape (researchgate.net)
37. gomti river riverfront lucknow (ballotboxindia.com)
38. Time saver standard for Urban Design