

URBAN REJUVENATION OF WATERFRONT IN HERITAGE TOWN:
CASE APPLICATION AT NABADWIP, WEST BENGAL

AN URBAN DESIGN THESIS REPORT
MASTER IN ARCHITECTURE (M.ARCH)
UNDER THE
FACULTY OF ENGINEERING & TECHNOLOGY
OF **JADAVPUR UNIVERSITY**

Under the guidance of

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Year: 2020-2022

August, 2022

ACKNOWLEDGEMENT

At the threshold of my work, I gratefully acknowledge the valuable guidance of my mentor and supervisor Dr. Sanjib Nag (Professor, Department of Architecture, Jadavpur University, Kolkata). His inspiring effort, valuable guidance and innovative suggestions has given me strength in every stage of this research work and our combined effort has enabled to attain the study in its present form.

I am thankful to the other teachers of my stream for their valuable advice time to time and support in my study. Architectural & Urban design studies generally involve teamwork where I was assisted by a group of my junior classmates and friends like Tamali Karan, Paushali Raha and Oindrilla Sengupta and sometimes even my classmates whose relentless effort attributed to the subtlety of the work. I would fail in my duty if I missed to deliver my thanks and gratefulness to my parents and caring spouse who have always been with me during these days and rendered me constant co-operation, hope and encouragement.

I convey my regards to Ar. Shanta Chakraborty for her motivational support and guidance.

I miss my late uncle Partha Roy, who passed away suddenly a year ago with his then unfulfilled desire to see me attaining this degree. I dedicate this work to his memory.

Above all, a silent note of appreciation to the **Absolute One** whose blessings imparted me inspirations all through the way to fulfil my dream.

Last but not the least; I owe an apology for unintentional omission of any specific person who has helped me in this study in any form.

(RADHALATA BOSE)

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1.0 INTRODUCTION

1.1 DEFINITION

1.1.1 URBAN REJUVENATION

1.1.2 WATERFRONT

1.1.3 HERITAGE TOWN

1.1.4 NABADWIP, WEST BENGAL

1.1.5 URBAN REJUVENATION, WATERFRONT,
HERITAGE TOWN & NABADWIP, WEST BENGAL

1.2 RELEVANCE

1.3 AIMS

1.4 OBJECTIVES

1.5 METHODOLOGY

1.6 SCOPE OF WORK (BROAD)

1.0 INTRODUCTION

1.1 DEFINITION

1.1.1 URBAN REJUVENATION

“**Urban Rejuvenation** is a response to the opportunities and challenges which are presented by Urban Degeneration in a particular place at a specific moment in time” (Mc Gree, 1971).

“**Urban Rejuvenation** is commonly an accepted norm in ensuring a sustainable future of historic cities in the developed countries particularly for its role in promoting Urban Tourism Development.” (Ashworth and Turnbridge [1], Prentice [2], Ashworth and Larkham [3], Morris [4], Herbert [5],2000).



Figure 1: Sprawling & scattered amenities in Bedok New Town, (Source: <https://www.google.com>)



Figure 2: The sheltered town plaza in tropical Singapore, (Source: <https://www.google.com>)

1.1.2 WATERFRONT

The word “**Waterfront**” means “the urban area in direct contact with water”, Moretti, (2008). The Waterfront is described as the conflux area of water and land, Hou (2009).

Urban Waterfronts are the interface between water and land (Wrenn et.al, 1983).

Urban Waterfront categories:

1. Urban area located on peninsula
2. Urban area located on a bay
3. Urban area located on banks of a river.

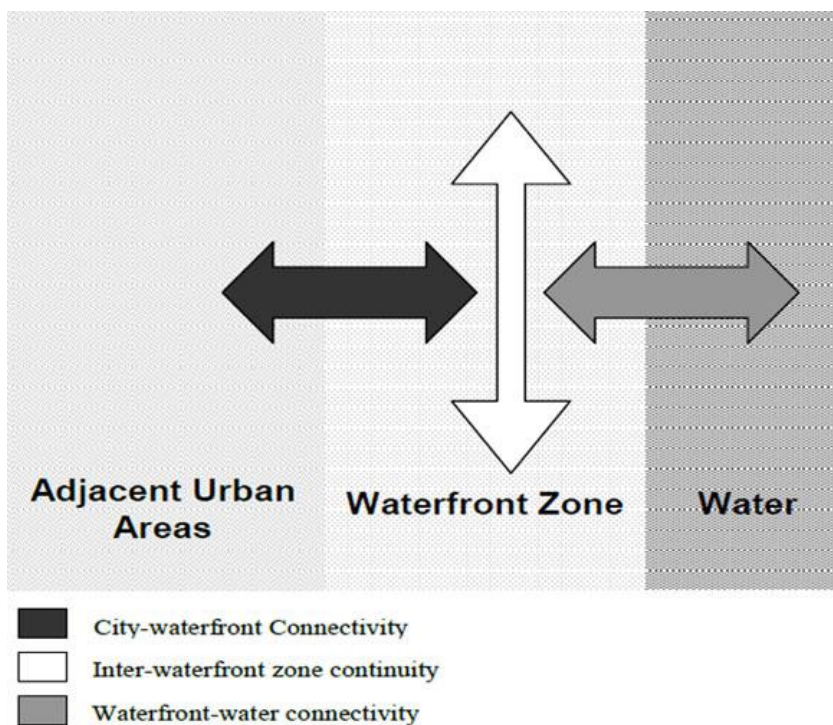


Figure 3: Waterfront Zone, (Source: <https://www.google.com>)

Breen (1996) in Shamsuddin et al. (2010) suggested that Waterfront development can be classified into six types, which includes Heritage Waterfront, Recreational Waterfront, Education, Commercial, Cultural, Environment and Transportation Waterfront.

Heritage Waterfronts are usually redeveloped as a maritime conservation and initiate adaptive reuse of heritage buildings where such developments can bring economic improvement to the locals and help in revitalizing the areas.

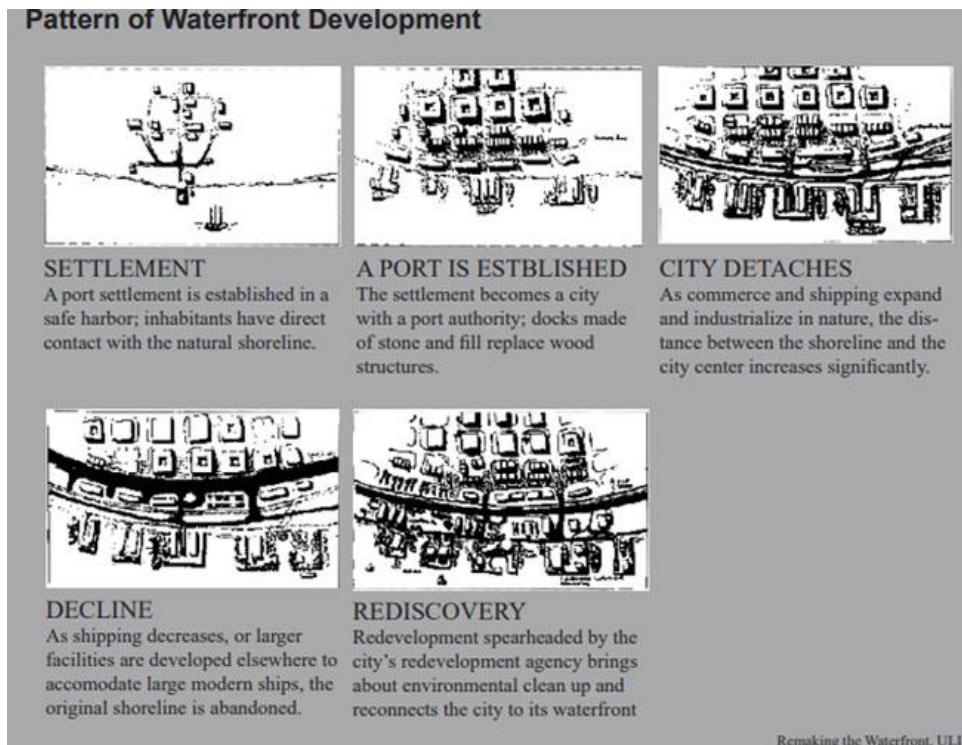


Figure 4: Pattern of Waterfront Development, (Source: <https://www.google.com>)

1.1.3 HERITAGE TOWN

Towns are all places with a municipality, corporation, cantonment board or notified town area committee, etc. with a minimum population of 5000; at least 75% of the male main working population engaged in non-agricultural pursuits; a density of population of at least 400 persons per sq.km.

Heritage Town refers to any prominent destination which is to be passed on to the future generations.



Figure 5: Heritage Towns in India, (Source: <https://www.google.com>)

1.1.4 NABADWIP, WEST BENGAL

Nabadwip is a heritage town in the Nadia district in the state of West Bengal in India.

It is located on the western bank of the Hooghly River and considered to be founded in 1063 CE. It is served as the old capital of the Sena dynasty.

The Bhagirathi river originally flowed down the west of Nabadwip in the past and formed a natural boundary between the districts of Purba Bardhaman and Nadia. It has shifted its course to where it is at present, with time, cutting the town from the remaining of Nadia district.

Nabadwip is the birth place of Shri Chaitanya Mahaprabhu.

The town has 86 heritage structures.

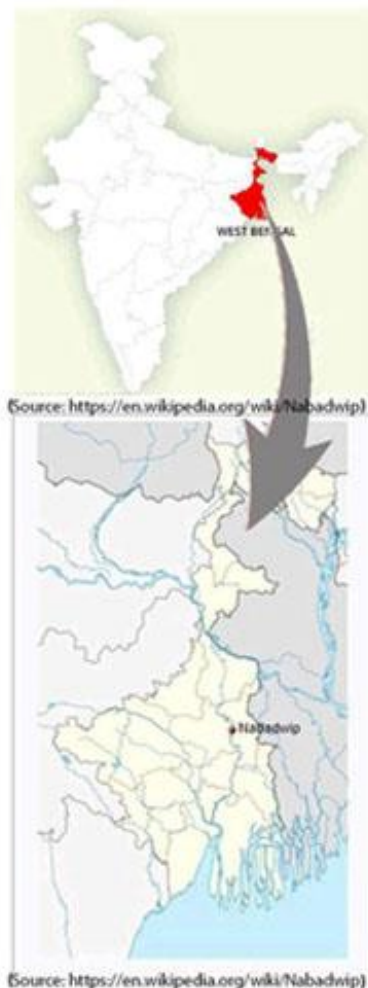


Figure 6: Location map of Nabadwip, (Source: <https://en.wikipedia.org/wiki/Nabadwip>)

1.1.5 URBAN REJUVENATION, WATERFRONT, HERITAGE TOWN & NABADWIP, WEST BENGAL

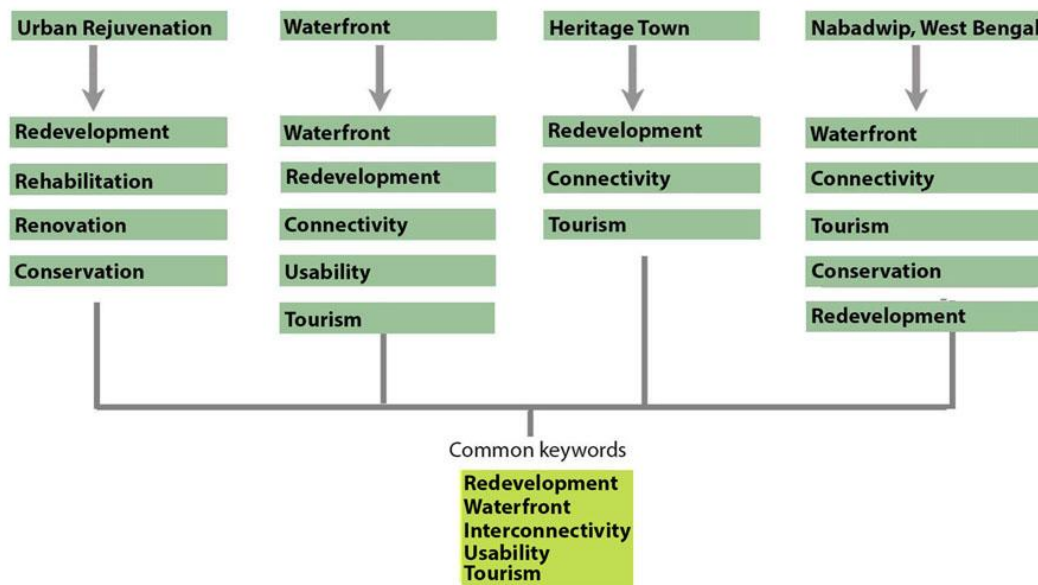


Figure 7: Linkage between the keywords

Source: author

1.2 RELEVANCE

This is a live project proposal by the Government of West Bengal.

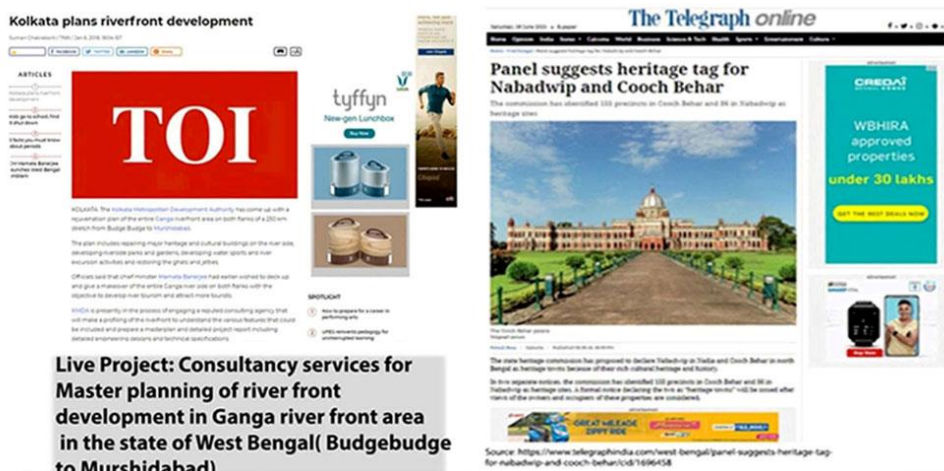


Figure 8: Government Project Proposal, (Source: <https://timesofindia.indiatimes.com/city/kolkata>)

1.3 AIM

Rejuvenating Waterfront in a Heritage Town by Connecting the Waterbody to the Town and Making the same more Usable by the Town Residents, thus Enriching Tourism Potential.

1.4 OBJECTIVES

I. To Study the **Relationship between Urban Rejuvenation, Waterfront and Heritage Town**

II. To **Identify the Parameters and Sub parameters effecting the Relationship**

III. To Study **Selected Case Examples and Case Application** based on **identified Parameters and Sub parameters**

IV. To Derive **Design Proposals based on Study**

V. To **Implement Design Proposals in Case Application**

1.5 METHODOLOGY

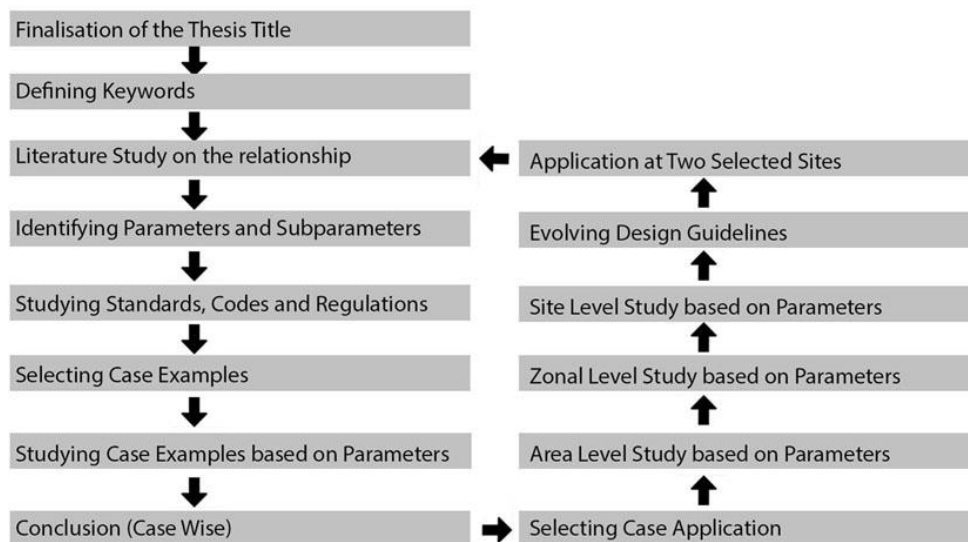


Figure 9: Methodology Flowchart

Source: author

1.6 SCOPE OF WORK (BROAD)

1. Restoration of Ghats, Jetties and other public facilities
2. Development of Riverside Amenities
3. Development of Water sports and River excursion activities to improve employment
4. Development of Tourist Attraction Sites



Figure 10: Visualisation of Scope, (Source: <https://www.google.com>)

2.0 LITERATURE STUDY

2.1 BACKGROUND

2.2 EXISTING CONCEPTS

2.3 IDENTIFICATION OF PARAMETERS

2.0 LITERATURE STUDY

2.1 BACKGROUND

In 2015, ICOMOS Netherlands published an edited and peer-reviewed volume, **Water & Heritage: Material, Conceptual, and Spiritual connections** (Willems and Van Schaik, 2015), based partly on papers presented at the 2013 conference.

History and heritage matter when we design new relationships with water. Water related heritage preserves and transmits forgotten best practices and catastrophic events. It harbours the long histories of water systems and safeguards our cultural memory for generations to come.

New investigations of water history and heritage can serve as a source of information, inspiration, and identity-building in water management, wetland recreation, and marine engineering; they are relevant to the redevelopment, redesign, and reuse of existing and ancient water systems as well as to the design of new systems.

The reuse, adaptation, or redesign of old systems can contribute to the quality of life of communities and other groups, and to their sense of place and self-identification. Finally, understanding and analysing the relationship between water and heritage can also help us refine our understanding of tangible and intangible heritage more broadly.

2.2 EXISTING CONCEPTS

1. **Tourism Development:** The ICOMOS (International Council on Monuments and Sites) defined cultural tourism as “that activity which enables people to experience the different ways of life of other people, thereby gaining at first hand an understanding of their customs, traditions, the physical environment, the intellectual ideas and those places of architectural, historic, archaeological or other cultural significance which remain from earlier times. Ddicitví and Kajzar divided cultural tourism into seven types: heritage tourism, cultural thematic routes, cultural city tourism, traditions and ethnic tourism, event and festival tourism, religious tourism, and creative tourism.

2. **Contextual Development:** When there is an urban development, new buildings are placed within historical established areas. This creates a desire for buildings with a high standard of design to fit in with the already established city area, the established context (Golding, 2001). Contextual urban design must balance a concern for both the physical and social aspects, as the former urbanist Jane Jacobs said, “New ideas really do require old buildings” (Jacobs, 1961).

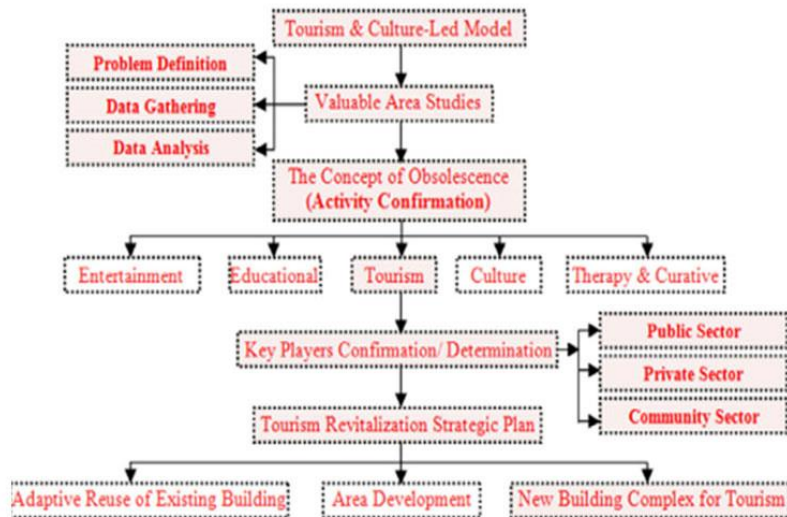


Figure 11: Tourism and culture- led revitalization Model, (Source: <https://www.witpress.com>)

2.3 IDENTIFICATION OF PARAMETERS

From the Introduction Chapter(specifically Linkage Sheet) and Literature Study Chapter, the following **Image Parameters** have been identified **with reference to ‘ The Image of The City’** by **Kevin Lynch, 1960**; **‘Townscape’** by **Gordon Cullen,1961** and the **Character Parameters** are selected **with reference to Spreiregen, 1965**.

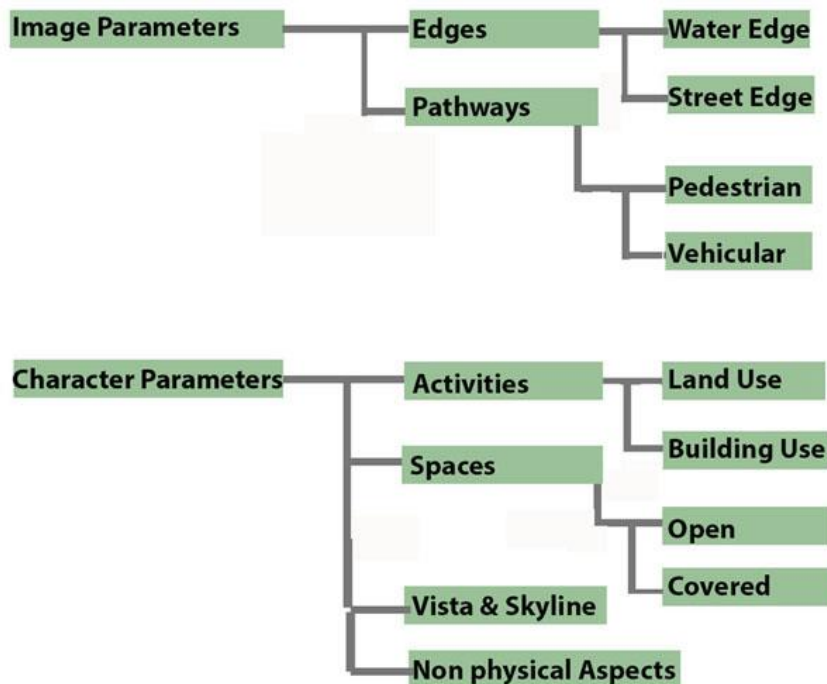


Figure 12: Identification of Parameters

Source: author

3.0 STANDARDS, CODES AND REGULATIONS STUDY

3.0 STANDARDS, CODES AND REGULATIONS STUDY

As per **Time Savers Standards For Urban Design 2011**, guidelines

The historic heritage of cities

65. Architectural assets must be protected, whether found in isolated buildings or in urban aggregations.

The life of a city is a continuous event that is expressed through the centuries by material works—lay-outs and building structures—which form the city’s personality, and from which its soul gradually emanates. They are precious witnesses of the past which will be respected, first for their historical or sentimental value, and second, because certain of them convey a plastic virtue in which the utmost intensity of human genius has been incorporated. They form a part of the human heritage, and whoever owns them or it entrusted with their protection has the responsibility and the obligation to do whatever he legitimately can to hand this noble heritage down intact to the centuries to come.

63. Roads must be differentiated according to their purposes: residential roads, promenades, thoroughways, and principal thoroughfares.

Instead of being given up to everyone and everything, roads must be governed by different rules, according to their category. Residential roads and the ground intended for collective uses require a particular atmosphere. So that dwellings and their “extensions” may enjoy the peace and calm that they need, mechanized vehicles will be channeled through special circuits. The avenues containing through traffic will have no contact with the local roads except at specified connecting points. The great principal thoroughfares, which are linked to the whole of the region, will naturally assert their predominance in the network. And promenades will also be envisaged where a reduced speed will be strictly imposed upon every type of vehicle so that pedestrians will at last be able to mingle with them without danger.

69. The destruction of the slums around historic monuments will provide an opportunity to create verdant areas.

In certain cases, it is possible that the demolition of unsanitary houses and slums around some monument of historical value will destroy an age-old ambience. This is regrettable, but it is inevitable. The situation can be turned to advantage by the introduction of verdant areas. There, the vestiges of the past will be bathed in a new and possibly unexpected ambience, but certainly a tolerable one, and one from which the neighboring districts will amply benefit in any event.

70. The practice of using styles of the past on aesthetic pretexts for new structures erected in historic areas has harmful consequences. Neither the continuation of such practices nor the introduction of such initiatives will be tolerated in any form.

Such methods are contrary to the great lesson of history. Never has a return to the past been recorded, never has man retraced his own steps. The masterpieces of the past show us that each generation has had its way of thinking, its conceptions, its aesthetic, which called upon the entire range of the technical resources of its epoch to serve as the springboard for its imagination. To imitate the past slavishly is to condemn ourselves to delusion, to institute the “false” as a principle, since the working conditions of former times cannot be recreated and since the application of modern techniques to an outdated ideal can never lead to anything but a simulacrum devoid of all vitality. The mingling of the “false” with the “genuine,” far from attaining an impression of unity and from giving a sense of purity of style, merely results in artificial reconstruction capable only of discrediting the authentic testimonies that we were most moved to preserve.

Figure 13: Time Savers Standards for Urban Design, 2011

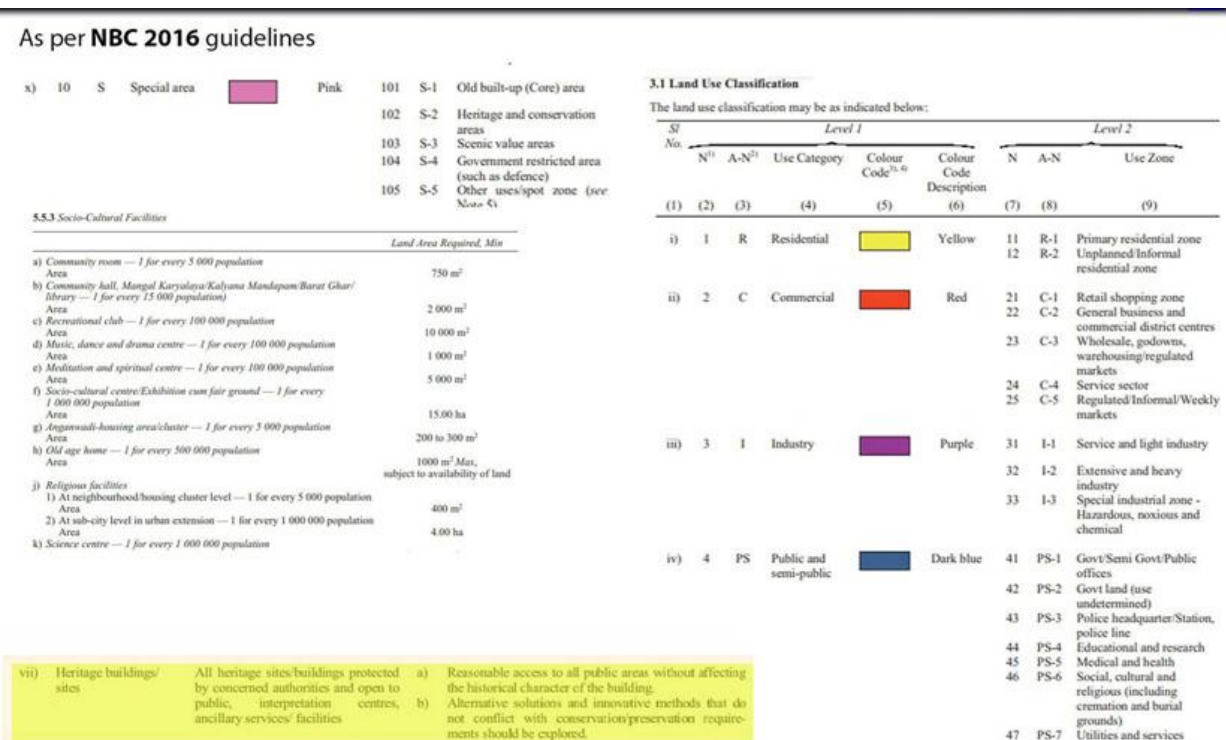


Figure 14: NBC, 2016

As per **URDPFI 2014** guidelines

5.5.4.3. Proposed Land use Structure of Heritage/ Religious/ Tourism city

Table 5.7: Land use structure for Heritage/ Religious/ Tourism City

Sl. No.	Land use Category	Percentage of Developable Area
1	Residential	35-40
2	Commercial	5-7
3	Industrial	4-5
4	Public and Semi-Public	10-12
5	Transport and Communication	12-14
6	Recreational & water bodies	10-12
7	Special areas (including heritage and religious areas)	7-10
	Total	100

Source: Modified based on the Proposed Land use Structure for Urban Centers and analysis of various case studies (including Agra, Puri, Rameshwara, Hampi, Bodhgaya etc.)

Note: The above land use distribution is indicative, which may vary as per the size of city and the economic base.

5. The tourism plan may also include:

- a. Promotion of Heritage walkway and River front walkway.
- b. Landscaping & Up-gradation of available open spaces.
- c. Revival of urban water bodies.
- d. Seasonal tourism events such as Fair and Festivals to be organised as per the approved 'Guidelines for Financial Assistance to State Government / Union Territory Administrations for Organizing Fair and Festivals and Tourism related Events'.
- e. Alternative modes of transportation to be encouraged in the tourism plan. Key nodes on transportation networks to have Tourist Information Centre/kiosk.
- f. Marketing strategies of the tourism destinations to be well-defined including generating revenue to the local population, apart from employment generation estimations. On average, Employment generation by tourism industry as direct and indirect is suggested for hotel industry (per room) by the Tourism Policy is:
 - i. Direct employment: 2 persons
 - ii. Indirect employment: 3 persons

5.5.4.4. Aspects of preservation, conservation & promotion

1. In line, with the objectives of the Ministry of Culture, (RFD 2013-14), planning for heritage cities to include- 'safeguard of various forms of Intangible Cultural Heritage and promote research through financial support to artistes, scholars and cultural organizations and Manage national monuments (Tangible Heritage) of India through Archaeological Survey of India, State Governments, Universities, Local Bodies'.
2. Special attention to be paid while planning for religious settlements along the river fronts and water bodies, where emphasis is to be laid on conservation of water bodies, reduction of pollution (due to incompatible activities), improper solid waste management and no alteration of the watershed system of the area.
3. For the application of the conservation, preservation and promotion in various zones of treatment and flow of tourist, the various planning aspects can be adopted:
 - a. Development plan should include historic & religious zones as special zones where all Development should be permitted by the competent authority.
 - b. Development controls to be based on ground realities with a separate section on urban design approach (such as facade controls) for improving aesthetics of the town at large.
 - c. Standardisation of Urban Design in the preservation and conservation zone including: Typical elevation of the houses, Building height, Elevation colour theme, Building material (Maintain and encouraging local building material use), Typical styles for column, bracket, balcony, motifs. While the usable area inside should be free from regulation.
 - d. Visibility of historical monuments and façade of the core zone to be maintained and implementation of the Ancient Monuments and Archaeological Sites & Remains Act, 2010 (AMASR).
 - e. Signages to be specified and preferably aesthetically fitted, (as given in Shimla Master Plan)
4. Formation of a Heritage Conservation Committee within the Municipality/Development Authority for the heritage cities is suggested as an implementation agency for Heritage related policies and plans. The cell to essentially consist of Planners, Conservation architects, Archaeologist, Structure (retrofitting) engineer, urban designer, Property evaluator, representative from ASI, members from revenue department, town planning department and local representatives (councillor). Its roles & responsibility may include:
 - a. Strict implementation of Central & State Government policies
 - b. Carry out Heritage related studies & surveys, categorising heritage properties and mapping

Figure 15: URDPFI, 2014

As per **The West Bengal Municipal Building Rules, 2007**, guidelines

Provided that after taking due consideration of the existing relevant Acts, the drainage, slope, slip, landslide, ecology, culture, environment, pisciculture, fire fighting or any other material consideration, and for reasons to be recorded in writing the Board of Councillors with the prior approval of the State Government, may allow any canal, pond, rivulets, streams, rivers, Hood plain area to be filled up.

(4) (a) In the case of a building in the river zone (within 15 meters from river bank) or other water fronts of large water bodies (more than 1000 acres), the maximum permissible height of a building in such zone shall be 5.00 meters of river.

(b) in the case of a building on stilts, the maximum permissible height of the building shall be 6.50 meters including the stilts, the minimum height of which shall be 3.00 meters. In such building, the stilted portion shall not be allowed to be walled up or covered along the sides;

(c) no building shall be more than 20.00 meters long alongside the river or other water fronts. There shall be a clear linear gap between the two buildings alongside the river or other water front as per following:—

- (i) 30 meters in case the river width is more than 75 meters;
- (ii) 20 meters in case the river width is between 50 and 75 meters; (iii) 15 meters in case the river width is less than 50 meters;

(d) the maximum permissible covered area of such building shall be 200.00 sq. meters;

(e) the structures for recreational purpose conforming to this sub-rule may be permitted within the adjoining land.

(2) (a) Parks and public open spaces shall be classified for the purpose of these rules into three following groups:—

- (i) the parks and public open spaces with area up to 1500 sq. m. shall be termed as small parks and public open spaces;
- (ii) the parks and public open spaces with area more than 1500 sq. m. but up to 7000 sq. m. shall be termed as medium parks and public open spaces;
- (iii) the parks and public open spaces with area more than 7000 sq. m. shall be termed as large parks and public open spaces.

Figure 16: West Bengal Municipal Building Rules, 2007

4.0 CASE EXAMPLE STUDY

4.1 SELECTION

4.2 CASE EXAMPLES INSIDE INDIA-1

4.2.1 DESCRIPTION

4.2.2 OBSERVATION AND ANALYSIS

4.3 CASE EXAMPLES INSIDE INDIA-2

4.3.1 DESCRIPTION

4.3.2 OBSERVATION AND ANALYSIS

4.4 CASE EXAMPLES INSIDE INDIA-CONCLUSION

4.5 CASE EXAMPLES OUTSIDE INDIA-1

4.5.1 DESCRIPTION

4.5.2 OBSERVATION AND ANALYSIS

4.6 CASE EXAMPLES OUTSIDE INDIA-2

4.6.1 DESCRIPTION

4.6.2 OBSERVATION AND ANALYSIS

4.7 CASE EXAMPLES OUTSIDE INDIA-CONCLUSION

4.0 CASE EXAMPLE STUDY

4.1 SELECTION

Four Case Examples have been selected, two inside India and two outside India based on the common keywords in the Linkage Sheet.



Figure 17: General Selection criteria

Source: author



Figure 18: Map showing location of Case Examples, (Source: <https://www.google.com>)

Selection Criteria:**Godavari Riverfront Development, Nanded, India**

1. Nanded is a **Riverfront Heritage City** and an important Pilgrimage Centre.
2. The **stretch of the Riverfront Project is 5 kms**, matching the stretch of the chosen Site.
3. This Site is dominated by **maximum Residential and Religious use** just like the chosen Site at Nabadwip.
4. This Site **addressed and solved problems faced by the chosen Site at Nabadwip.**

Potomac Riverfront Development, Alexandria, USA

1. Alexandria is a **Riverfront Heritage City**.
2. A unique waterfront identity is created which is grounded in **City's history**.
3. This Site **addressed and solved problems faced by the chosen Site at Nabadwip.**

4.2 CASE EXAMPLE INSIDE INDIA- GODAVARI RIVERFRONT DEVELOPMENT,**NANDED****4.2.1 DESCRIPTION**

Nanded, formerly known as 'Nanditat', is an ancient settlement rich in Hindu myth and legend and it emerged as a centre for the Sikh religion. The city is rich in rituals, tradition and ancient history; its diverse population follow a way of life which is distinct from other places in the region.

It is located on the banks of the River Godavari at an altitude 489m above mean sea level in the Marathwada region of Maharashtra state. It is a popular pilgrimage centre for Sikhs and is visited by thousands of devotees throughout the year from all over India.

The extent of the stretch is 5 kms.

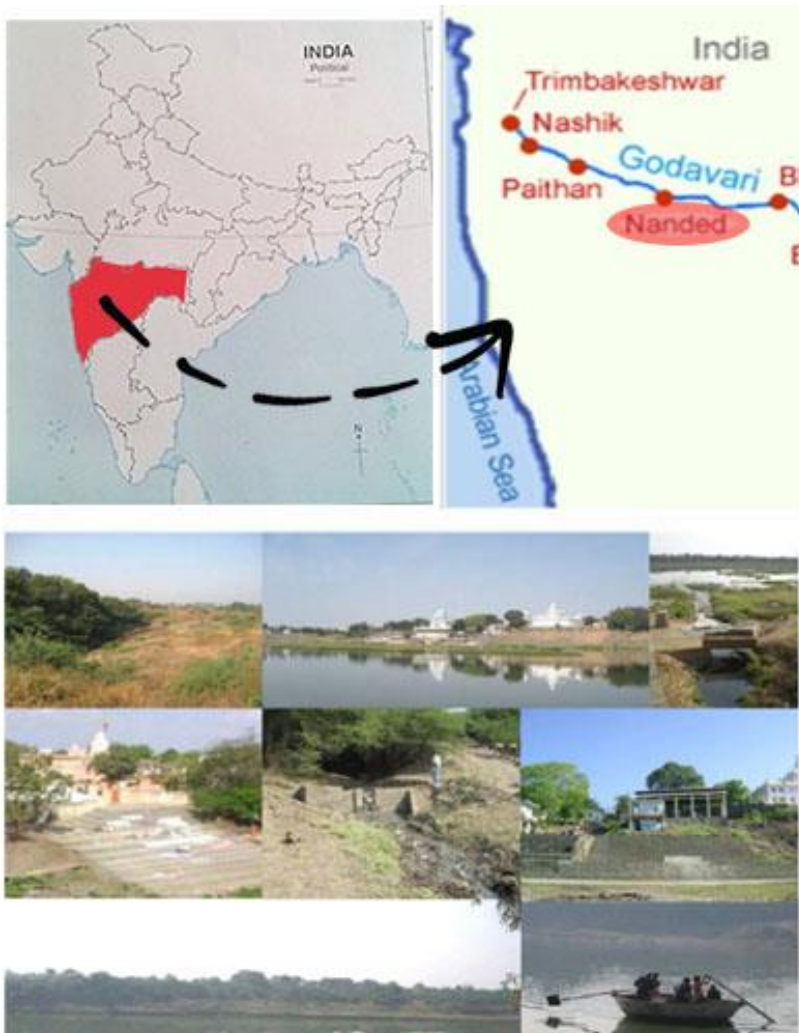


Figure 19: Godavari Riverfront Development, India, (Source: <https://www.google.com>)

4.2.2 OBSERVATION AND ANALYSIS

Image Parameter, Edge

Observation:

1. Promenade at the river edge is provided. The edges are contoured as it disappears into the flowing river. The steps cascade downwards to form a shallow submerged bathing platform for the pilgrims to bathe. New ramps for barrier free access to the river are provided as an integrated edge.
2. Street edges are amorphous, physically and visually permeable.

Analysis:

1. The edges of the promenade are contoured to soften the form.
2. The two domains, public and private are defined loosely, and an undefined area is left in between. Thus the edge has no strong definition. It appears as an amorphous edge. The edges are physically and visually permeable as they allow both physical and visual access.



Figure 20: Image Parameter, Edge, (Source: <https://www.google.com>)

Image Parameter, Pathway

Observation:

1. A submersible bridge is proposed at Navghat. Two new bridges are proposed, one at Govardhan Ghat and the other at the proposed state highway by-pass. Latur Bridge and Degloor Bridge connect North and South Banks.

2. Adequate space has been provided for the pedestrians. A separate ribbon called Multi Utility Zone (MUZ) has been provided on one or both sides of the road depending on the space available, to house Parking, Hawkers' platforms, Auto Rickshaw Stands.

Analysis:

1. The bridges are constructed to connect the city with the river, and the north and south banks.

2. The Motor Vehicle traffic is segregated from the Non-Motorised (Cycle rickshaws, hand pushed carts, vendor's carts along with cycle), to avoid traffic congestion. MUZ is developed to avoid encroachment and traffic congestion due to on street parking.

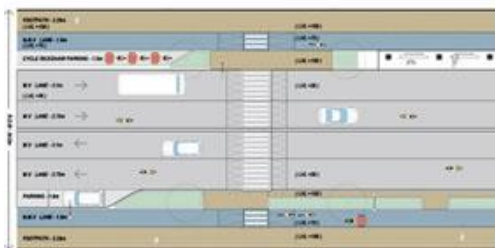


Figure 21: Image Parameter, Pathway, (Source: <https://www.google.com>)

Character Parameter, Activity

Observation:

1. A large volume of high density residential zone with open sparse green and cultivation land is spread along the river front.
2. Religious structures like the Gurudwaras, temples and mosques are built along the waterfront. Old Mondha, the main commercial with other mixed use development, is connected to the water front through the Latur Bridge road going across the river to South of Nanded.
3. Buildings are dominated by commercial use on ground floors.

Analysis:

1. Religious activities mainly attracts people to this City.
2. Activities are diversified along the riverfront to make the riverfront livelier.
3. The city is connected to the river by bridges for ease of public access.
4. Buildings have commercial use on ground floors to diversify activities.

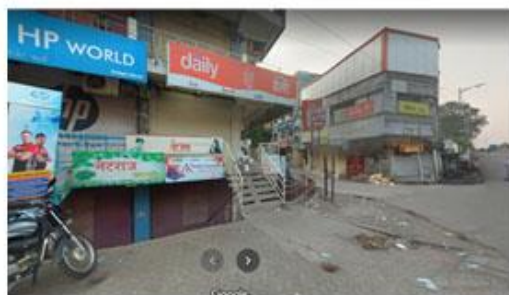


Figure 22: Character Parameter, Activity, (Source: <https://www.google.com>)

Character Parameter, Space

Observation:

1. Parks, Plazas, Food courts and recreational spaces are developed where land is available.
2. The promenade also serves as a recreational open space for playing cricket, etc.
3. Elevated platforms are provided along promenade catering to seasonal eateries.

Analysis:

1. Open spaces are developed along the riverfront to attract people towards the river by inducing recreational activities.
2. Covered spaces like food courts, eateries are developed to attract people towards the riverfront.



Figure 23: Character Parameter, Space, (Source: <https://www.google.com>)

Character Parameter, Vista and Skyline

Observation:

1. Visual corridors within the city are opened up.
2. The City is connected back to its River using public spaces.
3. Elevated steps were developed in the ghats keeping in mind the Skyline of the Riverfront City.

Analysis:

1. Visual corridors are opened up, making the riverfront more visually accessible and hence attracting people towards it.
2. The City is connected back to its River by developing public and recreational spaces, keeping in mind the view corridors and the Skyline.



Figure 24: Character Parameter, Vista and Skyline, (Source: <https://www.google.com>)

Character Parameter, Non Physical Aspect

Observation:

1. Each ghat is attached to its Gurudwara, which in turn provide all the facilities to the pilgrims.
2. The Ghat steps were integrated keeping in mind the Historical context of Gurudwaras.
3. The Religious buildings are developed along the Riverfront.

Analysis:

1. Visual corridors are opened up, making the riverfront more visually accessible and hence attracting people towards it.
2. The City is connected back to its River by developing public and recreational spaces, keeping in mind the view corridors and the Skyline.



Figure 25: Character Parameter, Non Physical Aspect, (Source: <https://www.google.com>)

4.3 CASE EXAMPLE INSIDE INDIA- HOOGHLY RIVERFRONT DEVELOPMENT, DAKSHINESHWAR

4.3.1 DESCRIPTION

Dakshineswar is a **Heritage Town** in the North 24 Parganas under the Kolkata Metropolitan Development Authority and is **nearby Kolkata, West Bengal**.

It is the most important International Pilgrimage centre in the district. This place is historically famous for Dakshineswar Kali Temple, locally known as Maa Bhabatarini Mandir.

It is surrounded by Alambazar, Baranagar (separated by Belghoria Expressway) in South, Ariadaha in North, Dunlop in East and Ganges River (locally called Hooghly River) in West.

Because of a large number of temples in the town and the Ganges River flowing by, it is also regarded as a **twin town of Varanasi**.

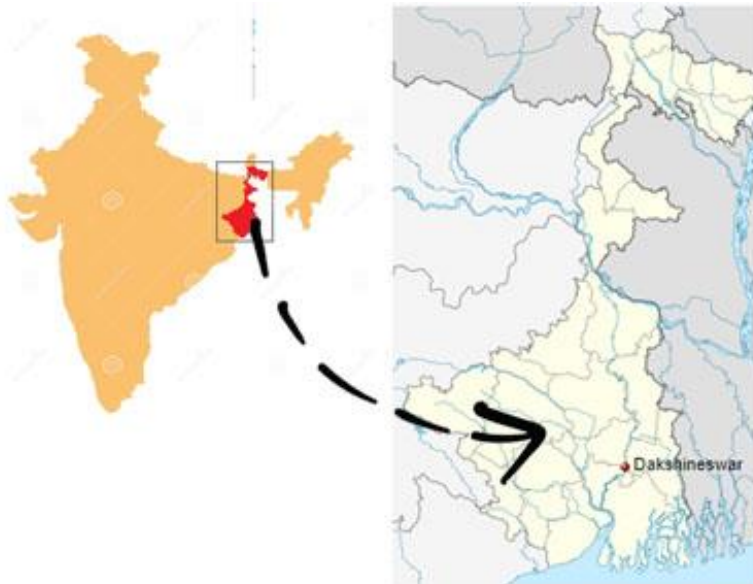


Figure 26: Location, (Source: <https://www.google.com>)

4.3.2 OBSERVATION AND ANALYSIS

Image Parameter, Edge

The Ghats are closer to the Temple Complex and consist of steps leading to the River, well developed.

Image Parameter, Pathway

The Sky Walk aims to provide a dynamic solution to the site's problems: it proposes to segregate pedestrian and vehicular traffic, while ensuring means of livelihood for the street vendors.

Character Parameter, Activity

There is full of Temples and Tourist Facilities like shopping stalls near the Temple Complex. The Skywalk also consist of shopping vendor stalls.

Character Parameter, Space

Parks like Panchavati Parks lie closer to the Riverfront.

Character Parameter, Vista and Skyline

The Skyline tells us that the main focus of the Town is the Kali Temple.

Character Parameter, Non Physical Aspect

The Town is developed keeping in mind the Historical Character of the City.



Figure 27: Observation and Analysis, (Source: <https://www.google.com>)

4.4 CASE EXAMPLE INSIDE INDIA- CONCLUSION

Image Parameter, Edge

1. The Edges of the Promenade are contoured to soften the form.
2. The Amorphous, Physically and Visually Permeable Street Edges only allow Temporary Parking and avoid Encroachments.

Image Parameter, Pathway

1. The bridges are constructed to connect the City with the River, and the north and south banks.
2. The Motor Vehicle traffic is segregated from the Non-Motorised to avoid traffic congestion. MUZ is developed to avoid traffic congestion and Encroachments.

Character Parameter, Activity

1. Activities are diversified along the Riverfront to make the Riverfront livelier.
2. Buildings have Commercial use on ground floors to diversify Activities.

Character Parameter, Space

1. Open spaces are developed along the Riverfront to attract people towards the river by inducing Recreational Activities.
2. Covered spaces like Food Courts, Eateries are developed to attract people towards the Riverfront.

Character Parameter, Vista and Skyline

Visual Corridors are opened up, making the Riverfront more visually accessible and hence attracting people towards it.

Character Parameter, Non Physical Aspect

The Riverfront City is developed keeping in mind the Historical and Religious Character of the City.

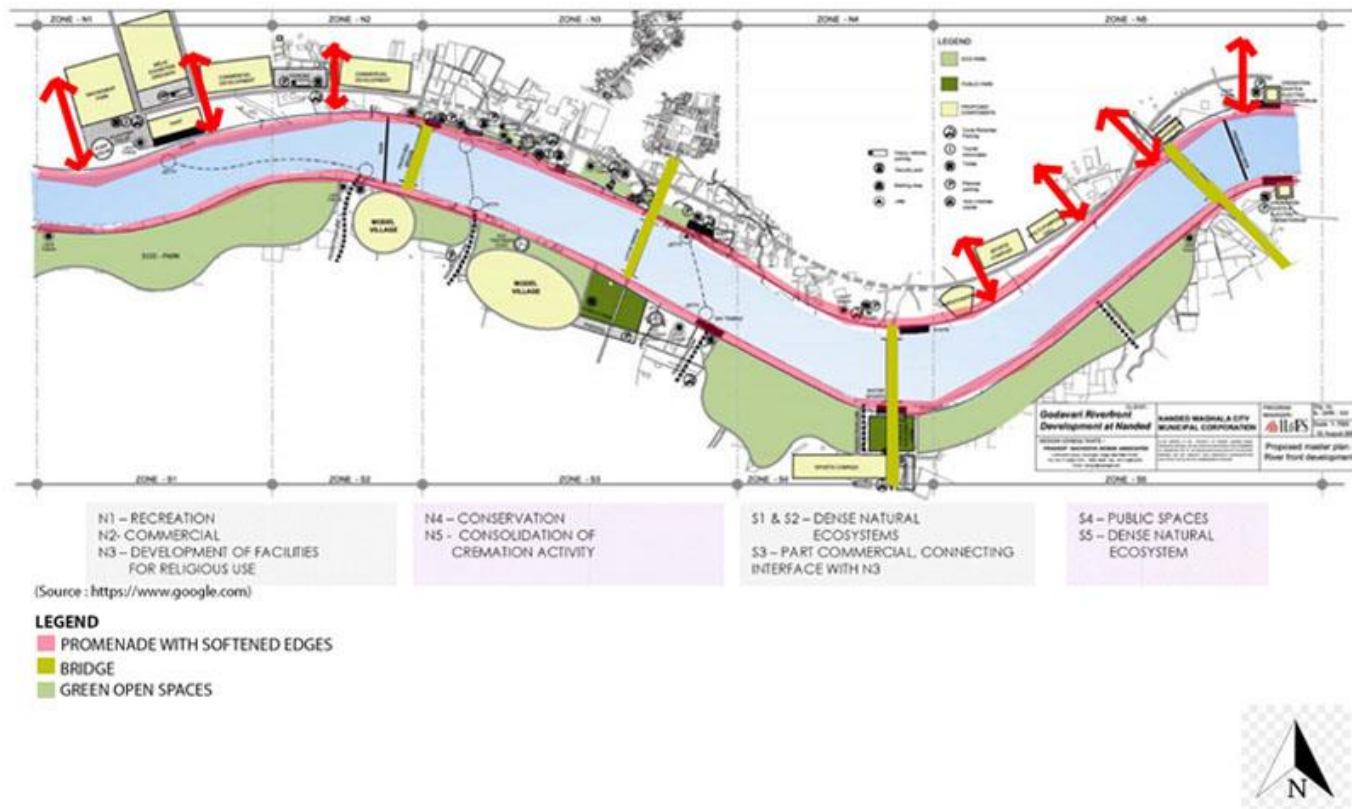


Figure 28: Site plan of Godavari Riverfront Development, (Source: <https://www.google.com>)

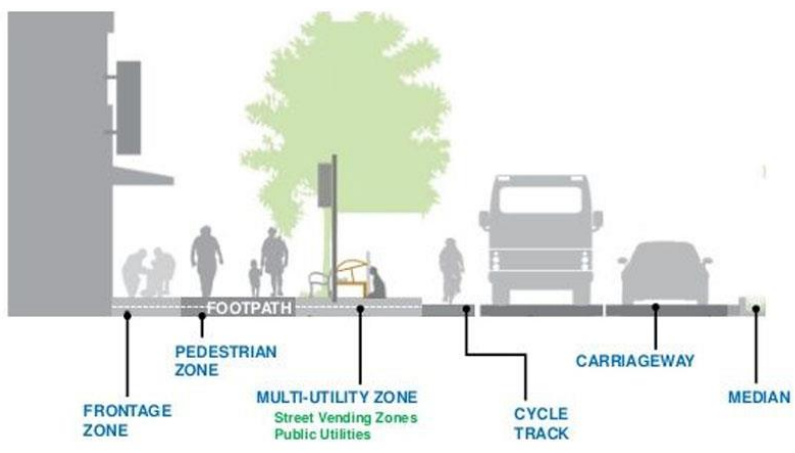


Figure 29: Multi Utility Zone of Godavari Riverfront Development, (Source: <https://www.google.com>)

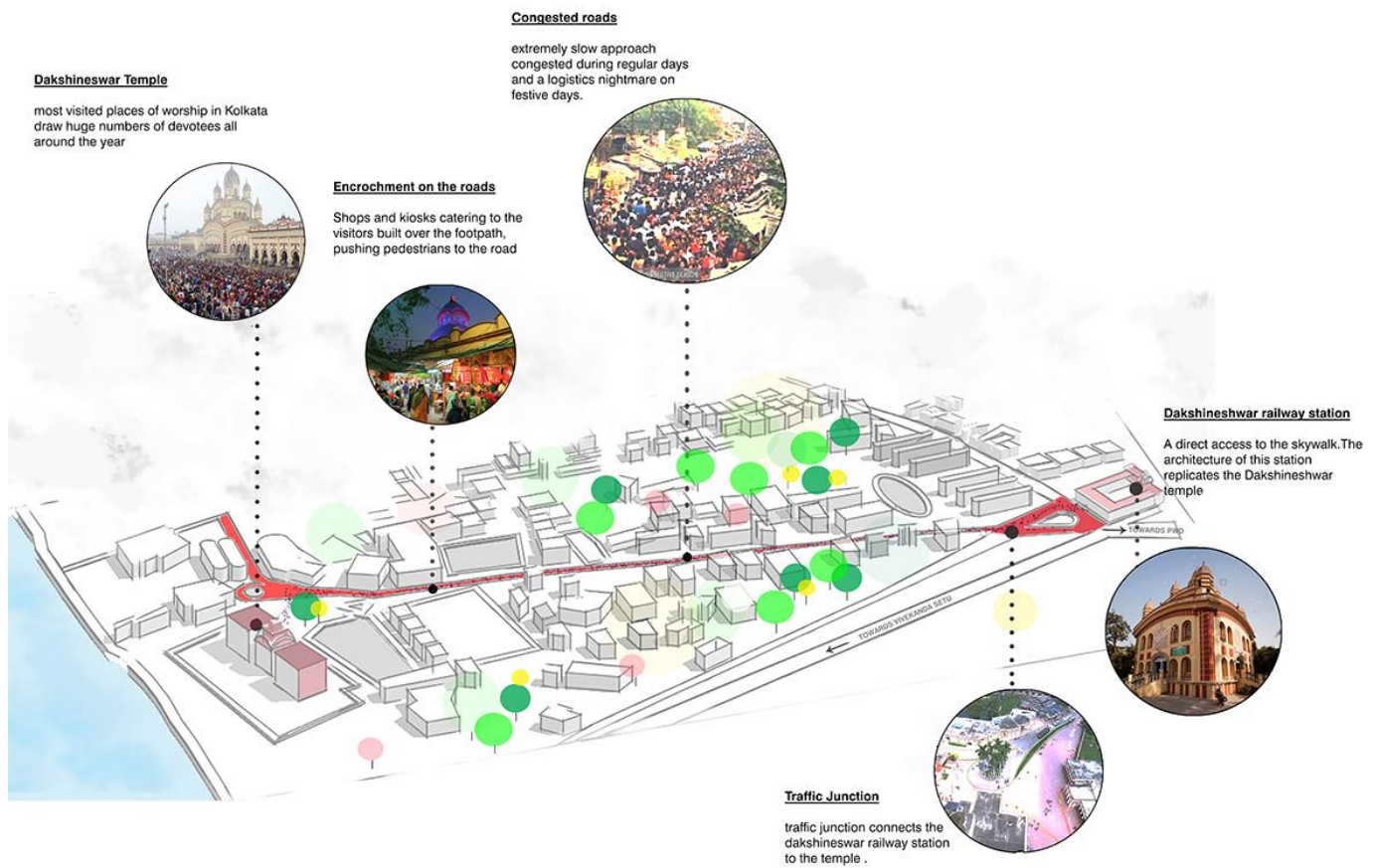


Figure 30: Concept of Hooghly Riverfront Development, (Source: <https://www.google.com>)

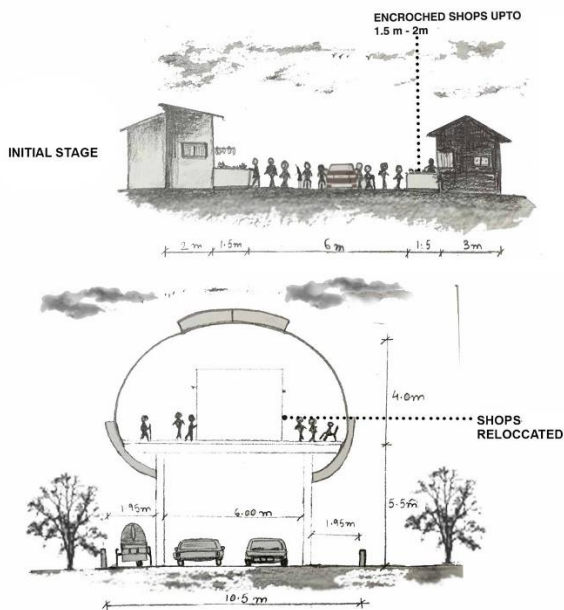


Figure 31: Concept of Hooghly Riverfront Development, (Source: <https://www.google.com>)

4.5 CASE EXAMPLE OUTSIDE INDIA- POTOMAC RIVERFRONT DEVELOPMENT, ALEXANDRIA

4.5.1 DESCRIPTION

Alexandria, Virginia, is a city on the Potomac River, just south of Washington, DC., USA.

The boundaries of the Planning Area extend from Daingerfield Island in the north to Jones Point Park in the south, between the western side of North Fairfax Street and South Union Street to the west and the Potomac River to the east, in Old Town Alexandria.

Total Population is 1.58 lakhs (2019).



Figure 32: Location Map of Potomac Riverfront Development, (Source: <https://www.google.com>)

4.5.2 OBSERVATION AND ANALYSIS

Image Parameter, Edge

Observation:

1. The streets are aligned straight and end through a curving walkway which provides continuous access along the waterfront. The natural landscape consists of a curvilinear line of pathways and plantings at water's edge that together embrace the length of the river. These fluid lines soften the jagged edges of the existing shoreline and they echo the form and scale of the river itself.

2. The street edges are distinctly defined, physically and visually permeable.

Analysis:

1. The curvilinear walkways are in rhythm with the shoreline to unify and pull visitors towards the river.

2. The two domains, private and public are defined distinctly. Thus the edge has a strong definition and it appears as distinctly defined edge. The edges are physically and visually permeable as they allow both physical and visual access.

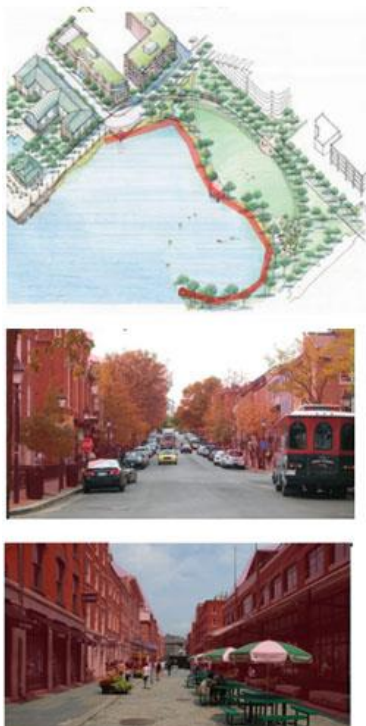


Figure 33: Image Parameter, Edge, (Source: <https://www.alexandriava.gov>)

Image Parameter, Pathway**Observation:**

1. Continuous pedestrian access is provided along the entire Waterfront. Continuous north-south bicycle access is provided.
2. Visual cues and sight lines for pedestrians, bicycles, and vehicles on all grid streets and alleys and accessibility for pedestrians, bicycles and, as appropriate, vehicles is increased.
3. Pedestrian and vehicular conflicts is minimised.
4. The plan provides arrangement for off street parking.

Analysis:

1. Continuous pedestrian access is provided along the entire Waterfront to attract people towards the Waterfront.
2. Pedestrian and vehicular conflicts is minimised to avoid congestion.
3. Plan implementation includes initiatives to fully use and to increase parking garage capacity. The Plan also balances parking supply and demand by encouraging land uses that minimize parking demand (such as hotels) and by encouraging visitors to arrive by means other than the automobile.



Figure 34: Image Parameter, Pathway, (Source: <https://www.alexandriava.gov>)

Character Parameter, Activity

Observation:

1. Residential and office development are in the north Waterfront area. Hotel/motel conference facilities are there in the north riverfront area.
2. The North Waterfront calls for Waterfront mixed use development, preservation of open space and a continuous promenade and bicycle path.
3. The Central Waterfront with the Torpedo Factory complex and King Street calls for redevelopment of the Torpedo Factory.

Analysis:

1. Activities are diversified along the riverfront to make the riverfront livelier.
2. Mixed use development along the riverfront to pull people towards the river.



Figure 35: Character Parameter, Activity, (Source: <https://www.alexandriava.gov>)

Character Parameter, Space

Observation:

1. The City's Open Space Master Plan, which was adopted in 2003 seeks to enhance and grow the City's open space network through a strategic framework of 15 goals.
2. Public access and spaces are expanded, enhanced and maintained.
3. Covered spaces like the waterfront Food court is redesigned.

Analysis:

1. Open spaces are expanded to attract people towards the river by inducing recreational activities.
2. Food court is redesigned to attract people towards the river.



Figure 36: Character Parameter, Space, (Source: <https://www.alexandriava.gov>)

Character Parameter, Vista and Skyline

Observation:

1. View corridors, when possible, are strengthened.
2. Overlooks are created with views to the Water and the City.

Analysis:

1. Visual corridors are opened up, making the riverfront more visually accessible and hence attracting people towards it.
2. The City is connected back to its River by developing public and recreational spaces, keeping in mind the view corridors and the Skyline.



Figure 37: Character Parameter, Vista and Skyline, (Source: <https://www.alexandriava.gov>)

Character Parameter, Non Physical Aspect

Observation:

1. The City's historic shoreline is expressed.
2. Historic alleyways are recreated.
3. All of the historic buildings on the waterfront are restored and they are opened to the public.
4. Locations for a history centre and other cultural anchors are identified.
5. Identified historic buildings are adaptively reused.

Analysis:

1. The broad history and culture of the Alexandria Waterfront from, from prehistory to now is celebrated and honoured.
2. The scale and fine grain of Old Town is respected.
3. Identified historic resources, archaeological resources, and cultural resources, including buildings and sites are protected.

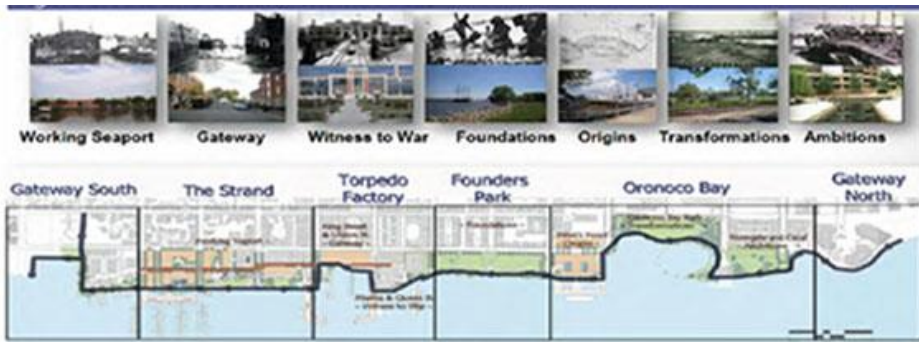


Figure 38: Character Parameter, Vista and Skyline, (Source: <https://www.alexandriava.gov>)

4.6 CASE EXAMPLE OUTSIDE INDIA- GEORGE TOWN WATERFRONT

DEVELOPMENT

4.6.1 DESCRIPTION

George Town is the **Capital Heritage City of the Malaysian state of Penang**. It is Malaysia's third most populous City. It is a **UNESCO World Heritage site**.

It is located on the Malaysian Island of Penang and is known for **its British Colonial buildings, Chinese shop houses and Mosques, Temples and Churches**.

The advancement of modern urban infrastructures like modes of transportation and roadways has moved Central Business Districts, often located close to the Waterfront into inner lands. The shift of inner heritage areas has left many old city centres into economic depression, losing their local identity and finally facing abandonment. The decline of port cities has created the idea to **revitalize the development along the Waterfront areas**.



Figure 39: Location map, (Source: <https://www.google.com>)

4.6.2 OBSERVATION AND ANALYSIS

Image Parameter, Edge

A pleasant Waterfront promenade runs along Gurney Dr. for ~2 km, with nice water views.

Image Parameter, Pathway

1. The road networks are developed by Light from Fort Cornwallis towards the inner city.
2. Some parts of the Waterfront have been reclaimed to develop Parking space and Bus terminal.

Character Parameter, Activity

Mixed Land use, Restored colonial buildings line the older parts of the city overlooking the Straits of Melaka. Mosques, Churches and Temples sit side by side elsewhere.

Character Parameter, Space

Road Markets, Botanical Gardens are developed which attract people towards the Waterfront.

Character Parameter, Vista and Skyline

A mix of architectural styles has developed in George Town, both Historical and modern. The oldest portion of the city centre is a UNESCO World Heritage Site, while the modern Cityscape built all over the city.

Character Parameter, Non Physical Aspect

Some of the building façades at the Heritage Area are modified to cater development needs. All Heritage buildings have been preserved, and any changes are restricted.



Figure 40: Observation and Analysis, (Source: <https://www.google.com>)

4.7 CASE EXAMPLE OUTSIDE INDIA- CONCLUSION

Image Parameter, Edge

1. The Curvilinear Walkways are in rhythm with the Shoreline.
2. The Physically and Visually Permeable Street Edges only allow temporary Parking and avoid Encroachments.

Image Parameter, Pathway

1. Continuous Pedestrian Access is provided along the entire Waterfront to attract people towards the Waterfront.
2. Pedestrian and Vehicular conflicts is minimised to avoid congestion.
3. Existing Parking Spaces are utilised instead of new ones.

Character Parameter, Activity

1. Activities are diversified along the Riverfront to make the Riverfront livelier.
2. Mixed Land use is developed to induce more Activities.

Character Parameter, Space

1. Open spaces are developed along the Riverfront to attract people towards the River by inducing Recreational Activities.
2. Covered Spaces like Food Courts are redesigned to attract people towards the Riverfront.

Character Parameter, Vista and Skyline

Visual Corridors are opened up, making the Riverfront more Visually Accessible and hence attracting people towards it.

Character Parameter, Non Physical Aspect

Visual Corridors are opened up, making the Riverfront more Visually Accessible and hence attracting people towards it.



Figure 41: Observation and Analysis, (Source: <https://www.alexandriava.gov>)

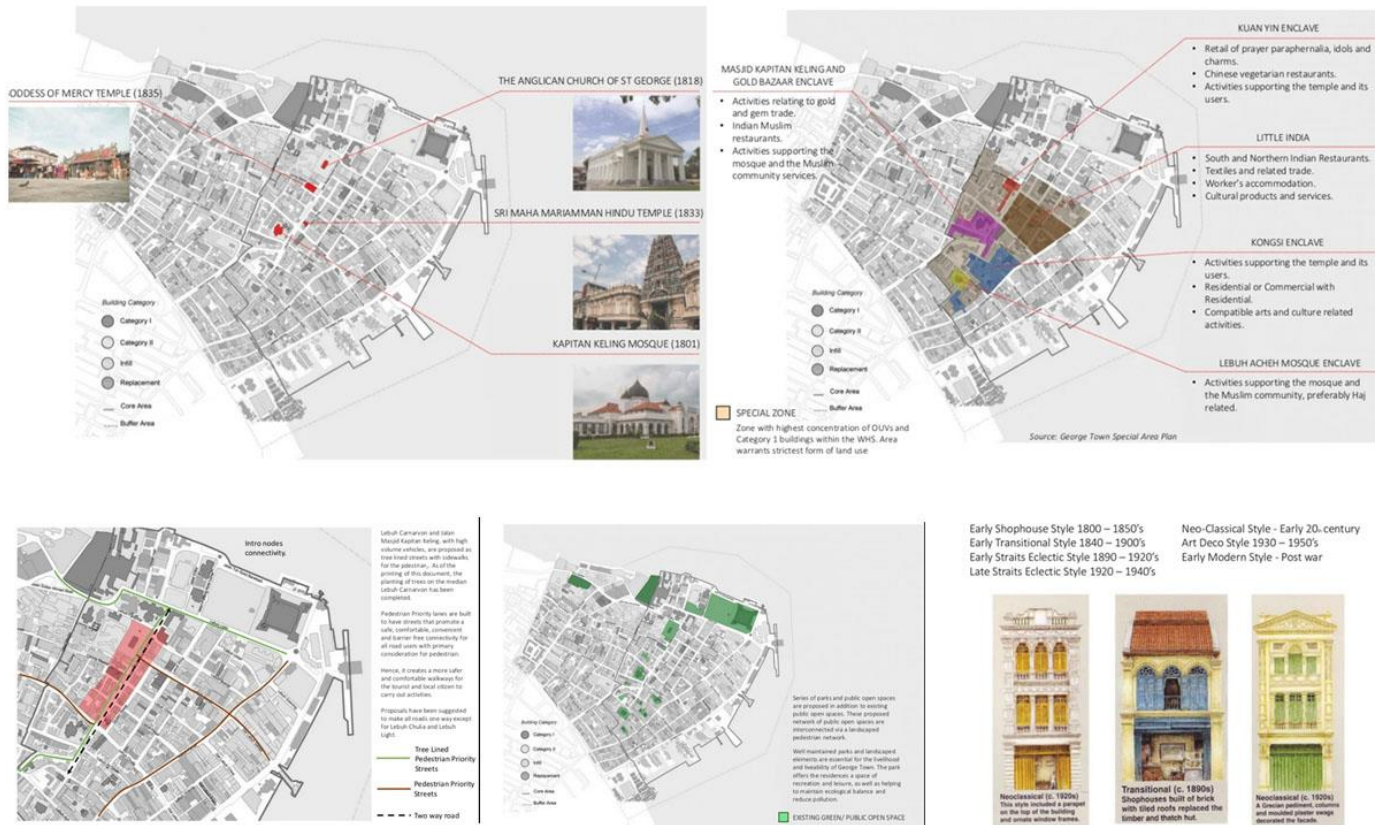


Figure 42: Conclusion outside India, (Source: <https://www.slideshare.net/douglasloon>)

5.0 CASE APPLICATION STUDY

5.1 SELECTION

5.2 AREA LEVEL STUDY

5.2.1 DESCRIPTION

5.2.2 DELINEATION

5.2.3 OBSERVATION AND ANALYSIS

5.2.4 PROPOSALS

5.2.5 IDENTIFICATION OF ZONES

5.3 ZONAL LEVEL STUDY-ZONE 1

5.3.1 DESCRIPTION

5.3.2 DELINEATION

5.3.3 OBSERVATION AND ANALYSIS

5.3.4 PROPOSALS

5.3.5 IDENTIFICATION OF INTERVENTION SITES

5.4 ZONAL LEVEL STUDY-ZONE 2

5.4.1 DESCRIPTION

5.4.2 DELINEATION

5.4.3 OBSERVATION AND ANALYSIS

5.4.4 PROPOSALS

5.4.5 IDENTIFICATION OF INTERVENTION SITES

5.5 SELECTION OF SITES

5.6 SITE LEVEL STUDY-SITE 1

5.6.1 DESCRIPTION

5.6.2 DELINEATION

5.6.3 OBSERVATION AND ANALYSIS

5.6.4 DESIGN GUIDELINES

5.7 SITE LEVEL STUDY-SITE 6

5.7.1 DESCRIPTION

5.7.2 DELINEATION

5.7.3 OBSERVATION AND ANALYSIS

5.7.4 DESIGN GUIDELINES

5.8 SUMMARY OF DESIGN PROPOSALS

5.0 CASE APPLICATION STUDY

5.1 SELECTION

- There is a live proposal by the Government of West Bengal under K.M.D.A. for Riverfront Development under Ganga Riverfront area from Budgebudge to Murshidabad. This stretch includes Nabadwip.
- The West Bengal Government is also thinking to rejuvenate the Ghats of Nabadwip namely the Ranir Ghat, the Prachin Mayapur Ferry Ghat, Sribas Angan Ghat.
- This proposal is taken up and the work will be done through different level of study and analysis i.e. Area level, Zonal level, Site level Study and Proposals.
- This study will be based on Image and Character Parameters as selected and identified earlier.
- Nabadwip represents a beautiful example of Multiple Nuclei Development as the historical events forced it to grow around several nuclei.
- Nabadwip is an unplanned town which has grown spontaneously since 1869, i.e. from the colonial period.
- Out of the total geographical area of Nabadwip town, more than 75 % is under non commercial and residential area and various industries and commercial establishments occupy 7 %.
- The fundamental problem hindering the progress of heritage tourism of Nabadwip is the absence of good quality and efficient transportation system. The town itself lacks proper planning. Overcrowding during the festive season is another problem.

5.2 AREA LEVEL STUDY

5.2.1 DESCRIPTION

The extent of this area is about 5 km stretch of the Hooghly River and covers about 1720 acres.

This area stretches from Prachin Mayapur Ferry ghat to the Nabadwip Railway Bridge.

This area consists of various ghats, heritage temples and Ashrams like Jal Mandir, Puri Mandir, Birthplace of Chaitanya, Baladeb Jew temple etc.

This area consists of Radhabazaar More which faces so much congestion. This is the main problematic zone of this area. This faces the problem as discussed earlier.

The Government of West Bengal is thinking to rejuvenate the ghats like Ranir ghat, Prachin Mayapur ghat, Sribas Angan ghat etc.

This area also consists of Gourango Setu for connecting the banks on the east and west of the Hooghly River.

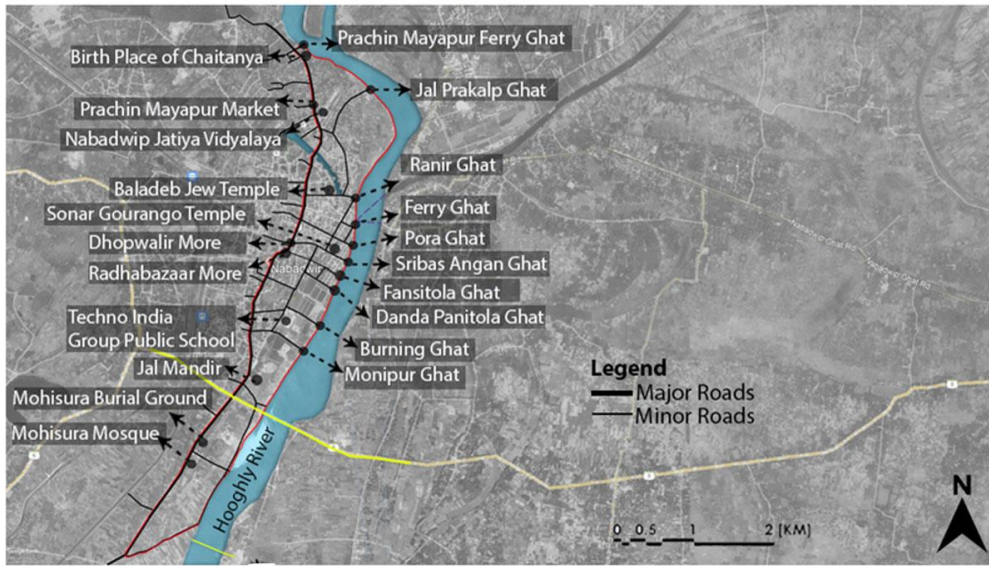


Figure 43: Area level Plan

Source: author

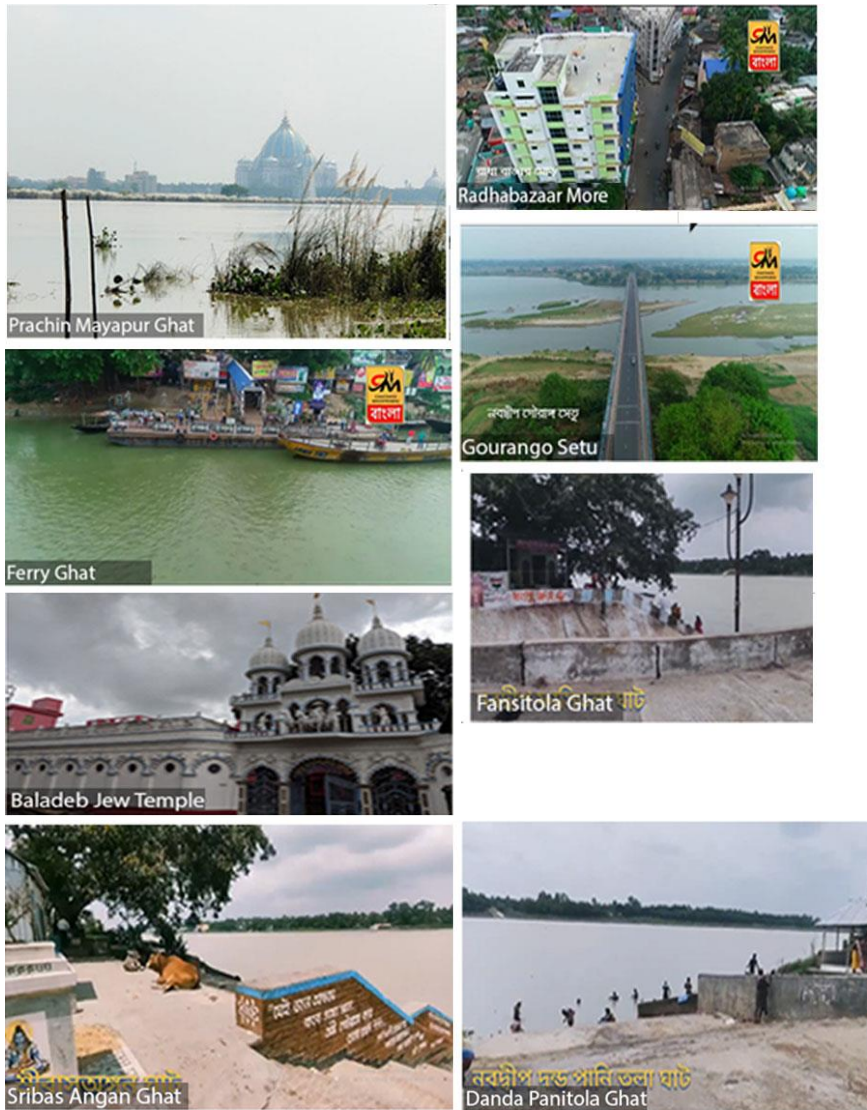


Figure 44: Area level description, Source: author

5.2.2 DELINEATION

The delineation has been done through road network on the west and south edge ghats and green spaces on the east and north edge.

The delineated area has mainly residential use in the western periphery in between the stretches. Mixed use, institutional and religious uses are present. The roads forming the boundary are Mohisura Road, Nabadwip Main Road, Poramatola Road., Prachin Mayapur Ferry Road and road towards Kalinagar.

There are green spaces in the western and southern fringes. There are ghats with religious use on the western fringe.

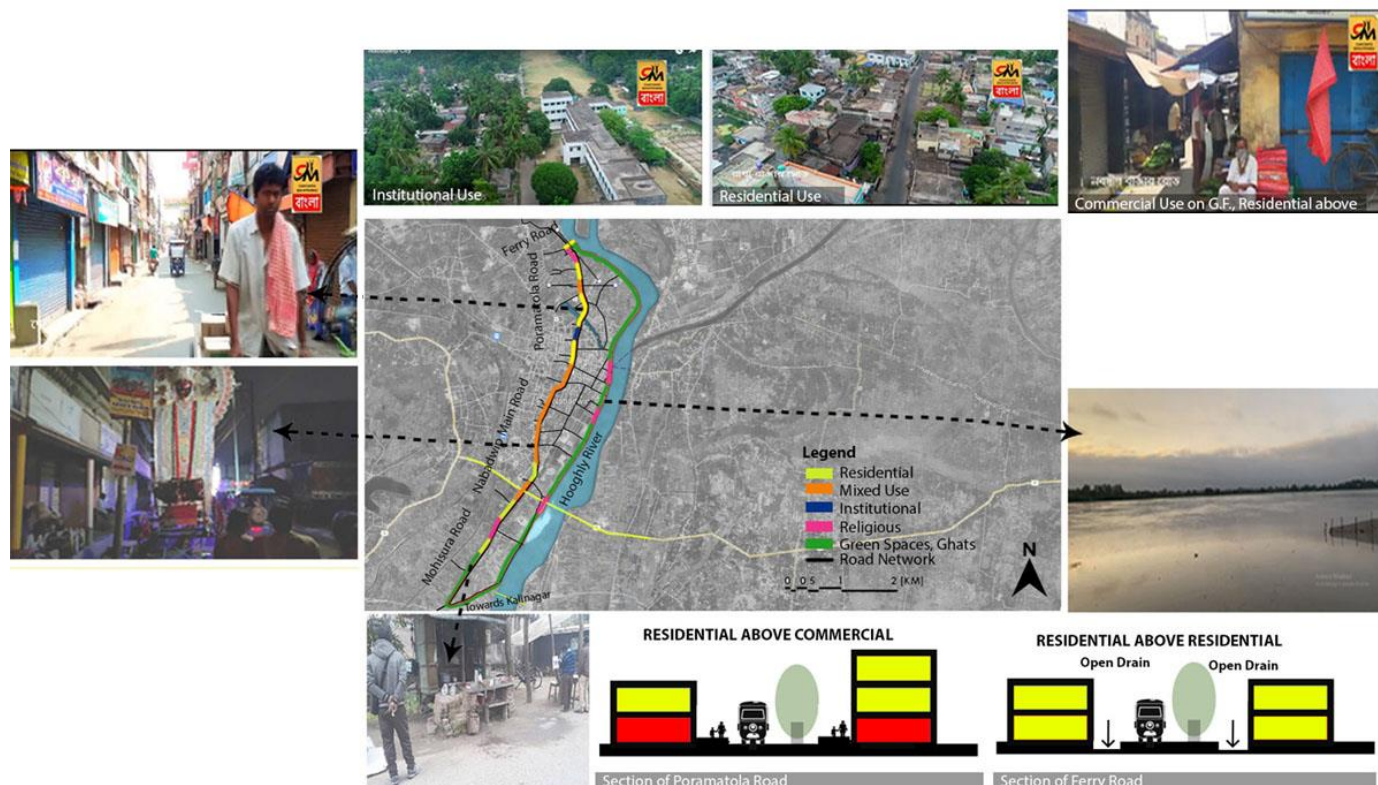


Figure 45: Area level delineation, Source: author

5.2.3 OBSERVATION AND ANALYSIS

Image Parameter, Edge

Observation:

1. The river edge on the eastern and northern fringe of the area is not well maintained and in poor condition.
2. The ghats are not connected with each other.
3. The river edge is not properly utilized and very uninteresting.
4. Majorly the Residential Edge differentiate the public and private sectors on the western fringe.
5. The Street Edge are very uninteresting, resulting in dumping of garbage and on street parking.

Analysis:

1. The River Edge has no proper pedestrian walkway or promenade.
2. The ghats lack connectivity with each other due to absence of pedestrian walkway or promenade.
3. Lack of public, recreational and tourist facilities make River Edge uninteresting.
4. Mainly residential use dominates the Street Edge, though other uses are also present.
5. The Street Edges are not physically and visually permeable resulting in on street parking.

Conclusion:

A continuous promenade connecting the ghats will make River Edge interesting and usable.



Figure 46: Image Parameter, Edge, Source: author

Image Parameter, Pathway

Observation:

1. This area faces traffic congestion daily in peak hours of 11 a.m. and 4 p.m.
2. The public park their vehicles illegally on road.
3. Lack of proper geometry in roads such as restricted sight distance, carriageway alignment intersections on various roads.
4. This area consists of Radha bazaar More.

Analysis:

1. The traffic congestion happen due to narrow width of roads and encroachments along the roads.
2. Traffic congestion happens also due to on street parking and lack of parking spaces.
3. There is no segregation of vehicular and pedestrian movement.
4. This area consists of important nodes like Dhopwalir More and Radha Bazar More which faces all these problems.
5. This area also consists of Gourango Setu connecting both the banks.

Conclusion:

Segregation of vehicular and pedestrian movement will reduce traffic congestion.

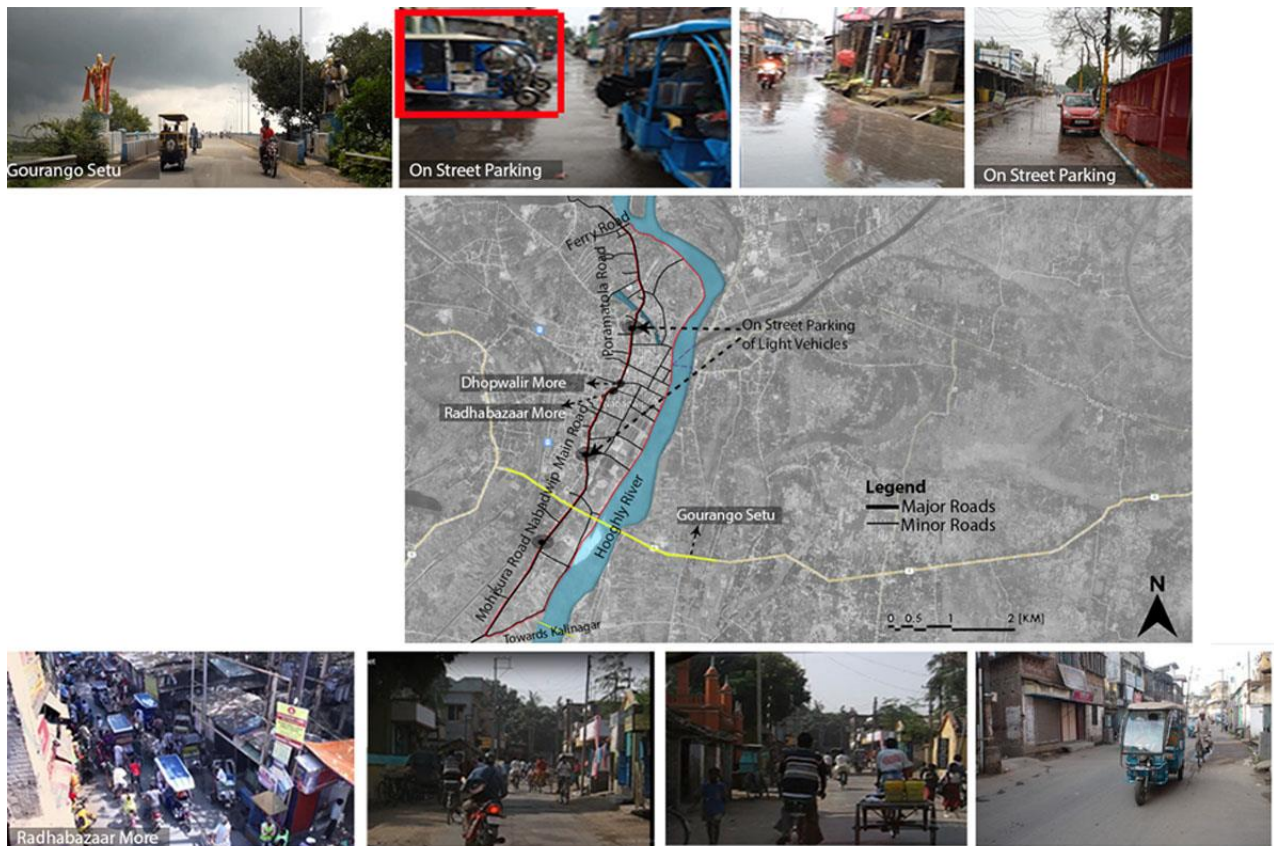


Figure 47: Image Parameter, Pathway, Source: author

Character Parameter, Activity

Observation:

1. This area is dominated by residential use.
2. Mixed use, Institutional and religious uses are also present.
3. Green open spaces and water bodies are very less.
4. Lack of quality tourist facilities.

Analysis:

1. The commercial spaces are the bazaar areas like the Radhabazar area, Prachin Mayapur Bazar, Ranichara Bazar etc.
2. Nabadwip is a religious heritage town, thus this area consists of heritage temples and ashrams.
3. This town grew in an unplanned way, resulting in scarcity of tourist facilities.

Conclusion:

Provision of tourist facilities like libraries, shopping arcade, public toilet etc. will induce activities and attract people towards the riverfront.

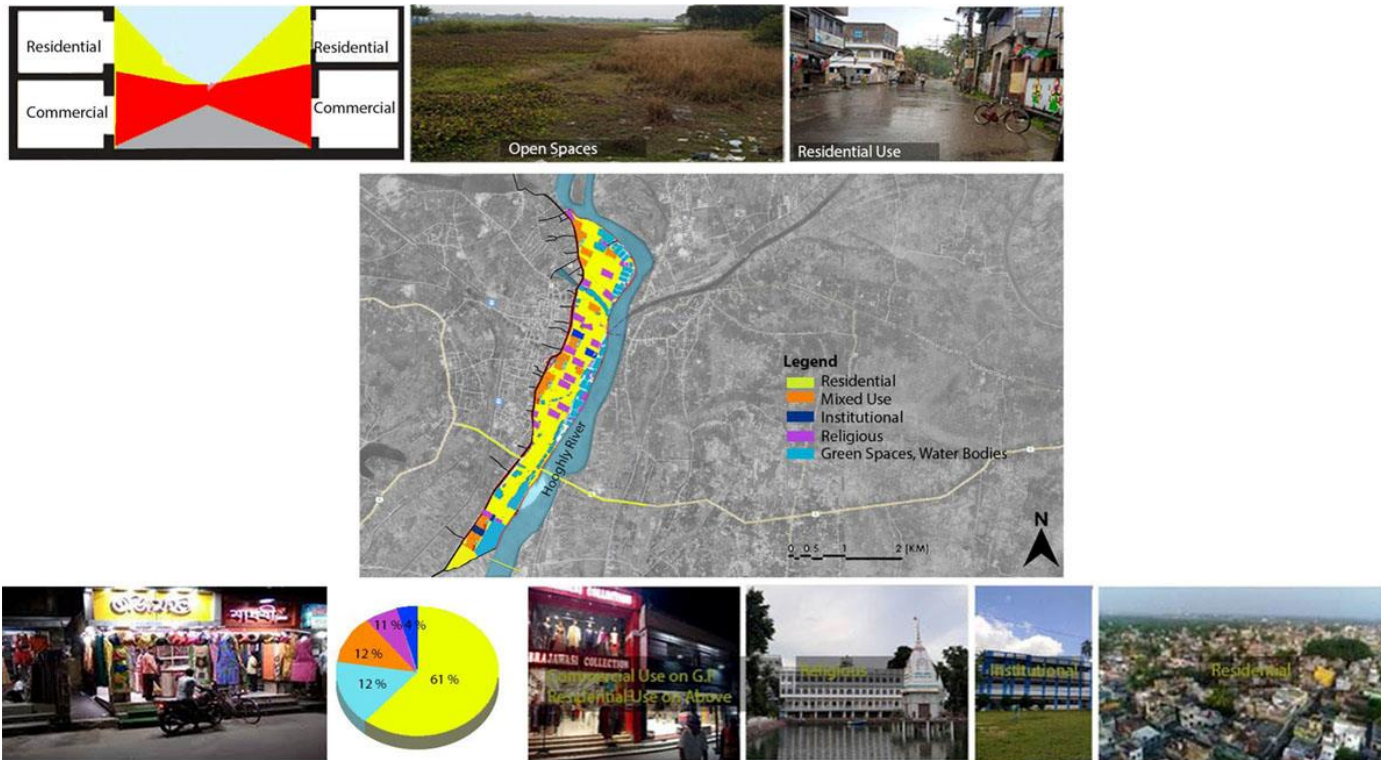


Figure 48: Character Parameter, Activity, Source: author

Character Parameter, Space

Observation:

1. Lack of open spaces
2. Lack of recreational spaces
3. Presence of few water bodies.

Analysis:

1. The town grew in an unplanned way resulting in scarcity of open spaces.
2. Due to evolution of old town in an unplanned way there is scarcity of recreational spaces.

Conclusion:

Provision of open spaces like parks, gardens, plazas will make the River Edge interesting and attract more people towards the river.

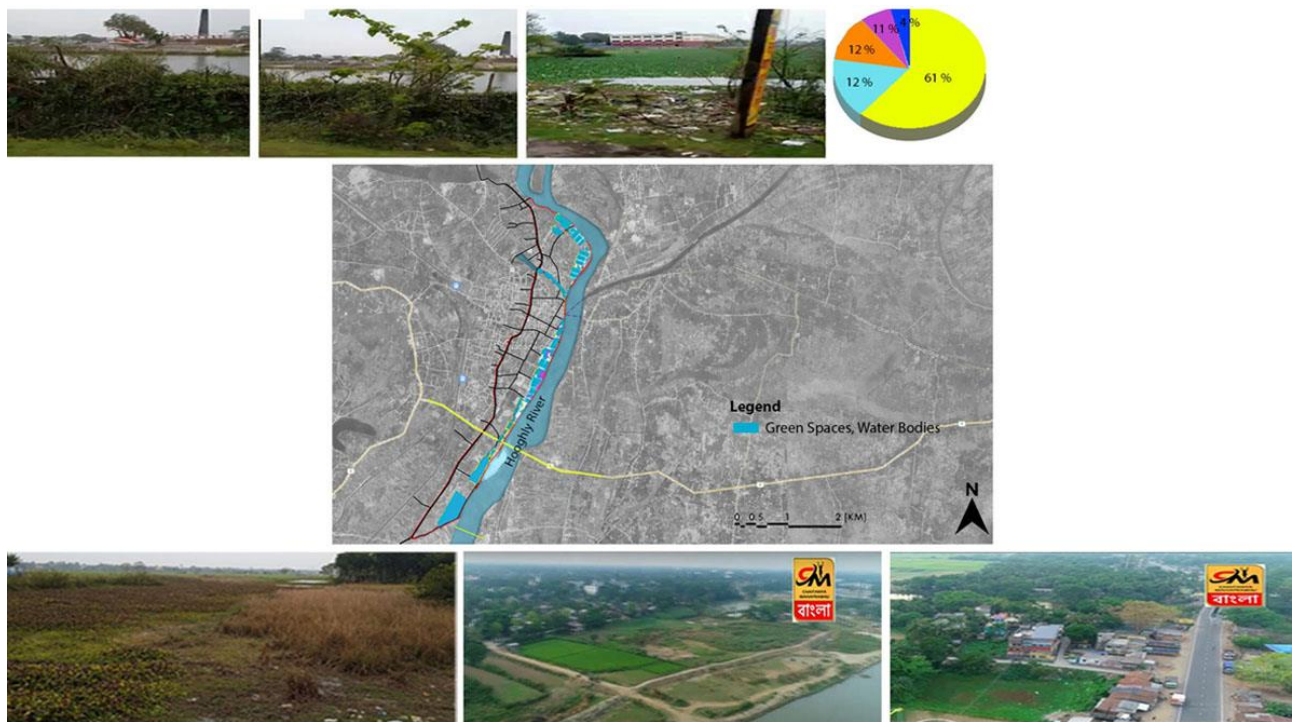


Figure 49: Character Parameter, Space, Source: author

Character Parameter, Vista and Skyline

Observation:

1. Absence of view corridors from the river to the heritage sites.
2. Very haphazard skyline, not similar to a heritage town.
3. Straight roads bounded by buildings on both sides, thus no views are created.

Analysis:

1. The old town grew in an unplanned way, thus leading to absence of view corridors.
2. Views are also majorly blocked by trees.
3. The buildings developed haphazardly, leading to haphazard skyline.
4. From the skyline it is clear that the town lacks urban aesthetics, and no pinnacle of temple is highlighted.

Conclusion:

Strengthening the view corridors from the heritage sites to the river will rejuvenate the area.

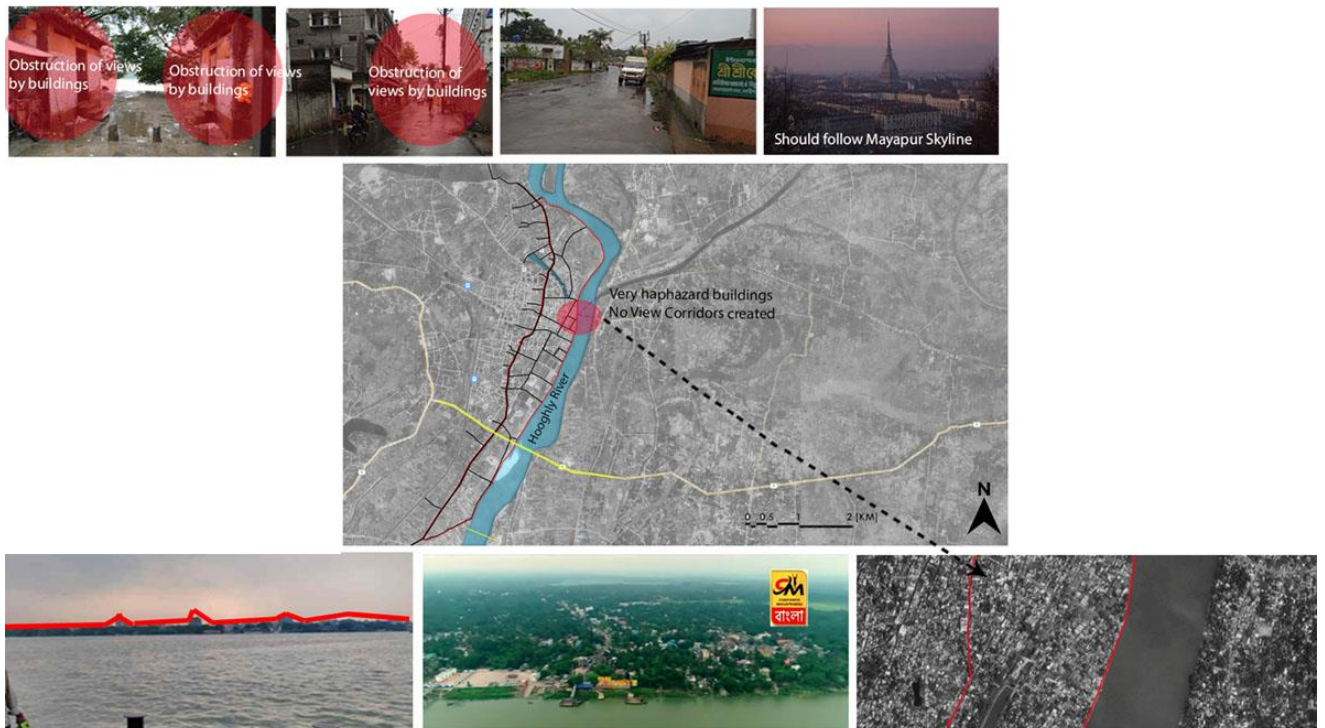


Figure 50: Character Parameter, Vista and Skyline, Source: author

Character Parameter, Non Physical Aspect

Observation:

1. Some small religious temples are not well maintained.
2. Lack of visual connectivity from the temples to the river.
3. Lack of physical connectivity from the temples to the river.
4. Overcrowding during the festive season is a problem.

Analysis:

1. The old town grew in an unplanned and haphazard way leading to poor condition of most temples.
2. Lack of urban aesthetics leading to lack of visual connectivity.
3. As Nabadwip is a religious heritage town, overcrowding takes place during Gaura Purnima, Rasa Purnima etc.

Conclusion:

Provision of Riverfront Fairgrounds, Exhibition Grounds and Dharmashalas will attract people towards the riverfront.

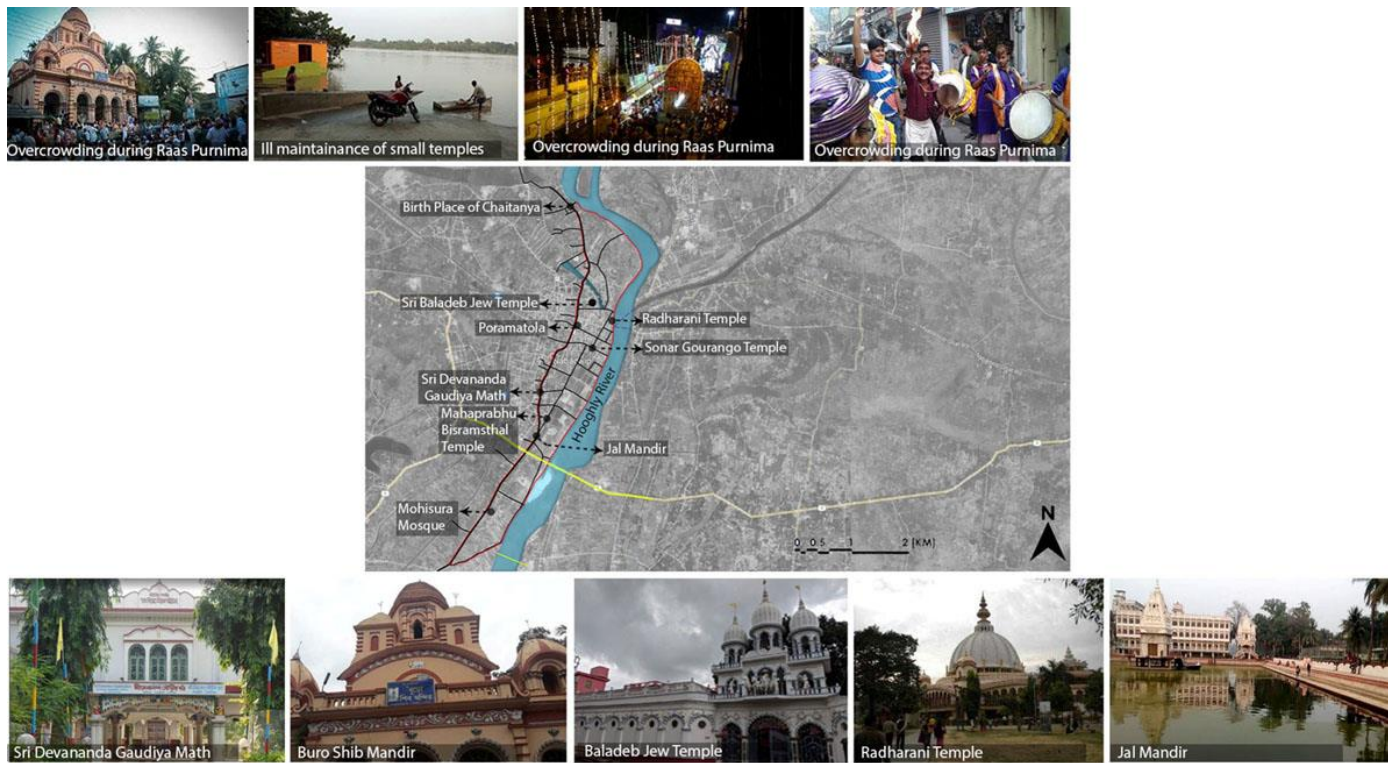


Figure 51: Character Parameter, Non Physical Aspect

Source: author

5.2.4 PROPOSALS

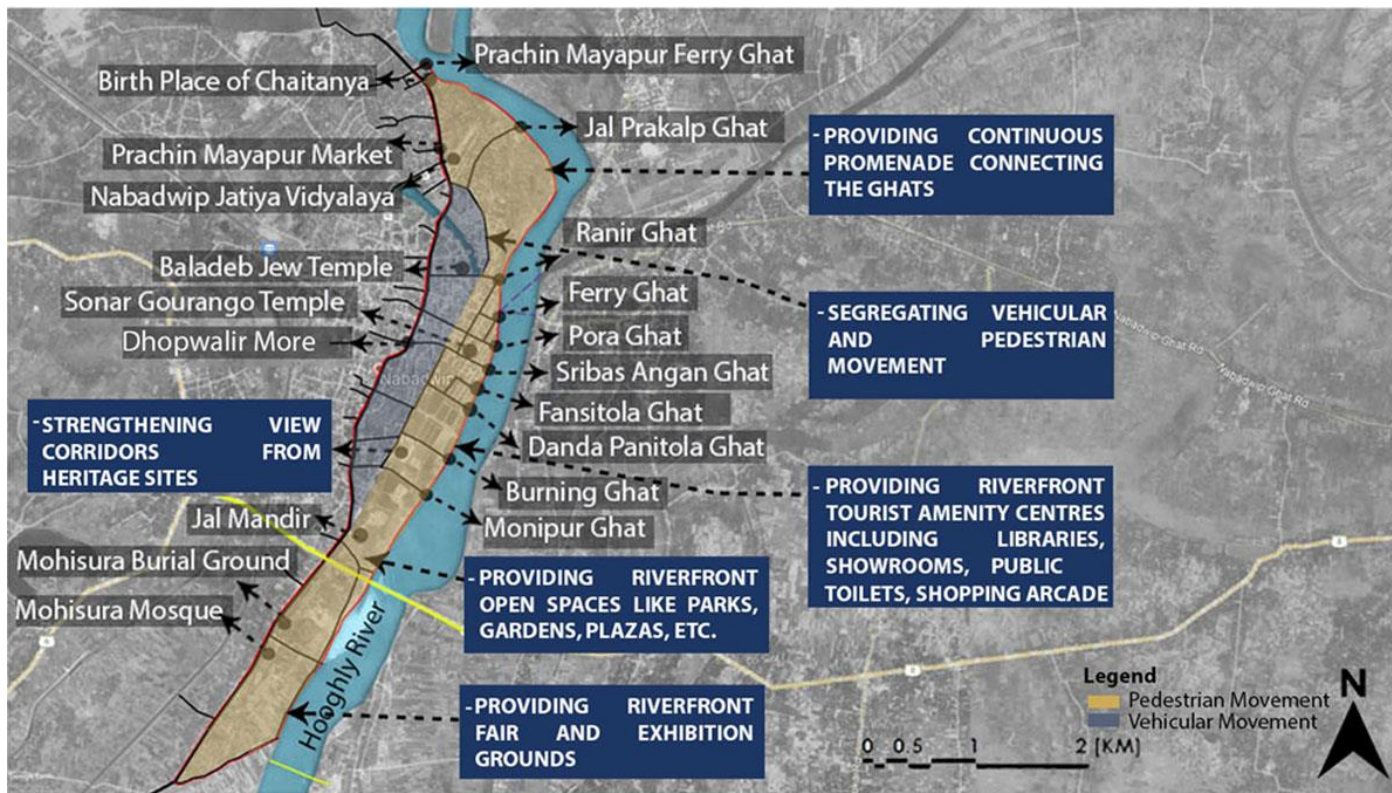


Figure 52: Area Level Proposals

Source: author



Figure 54: Zone 1 Description, Source: author

5.3.2 DELINEATION

This zone is delineated by the ghats with religious use on the east, Poramatola road on the west, Ferry road on the north and Sribas Angan ghat road on the southern fringe.

The delineated area has mainly residential use though mixed use (commercial below and residential above) and religious uses are also present.

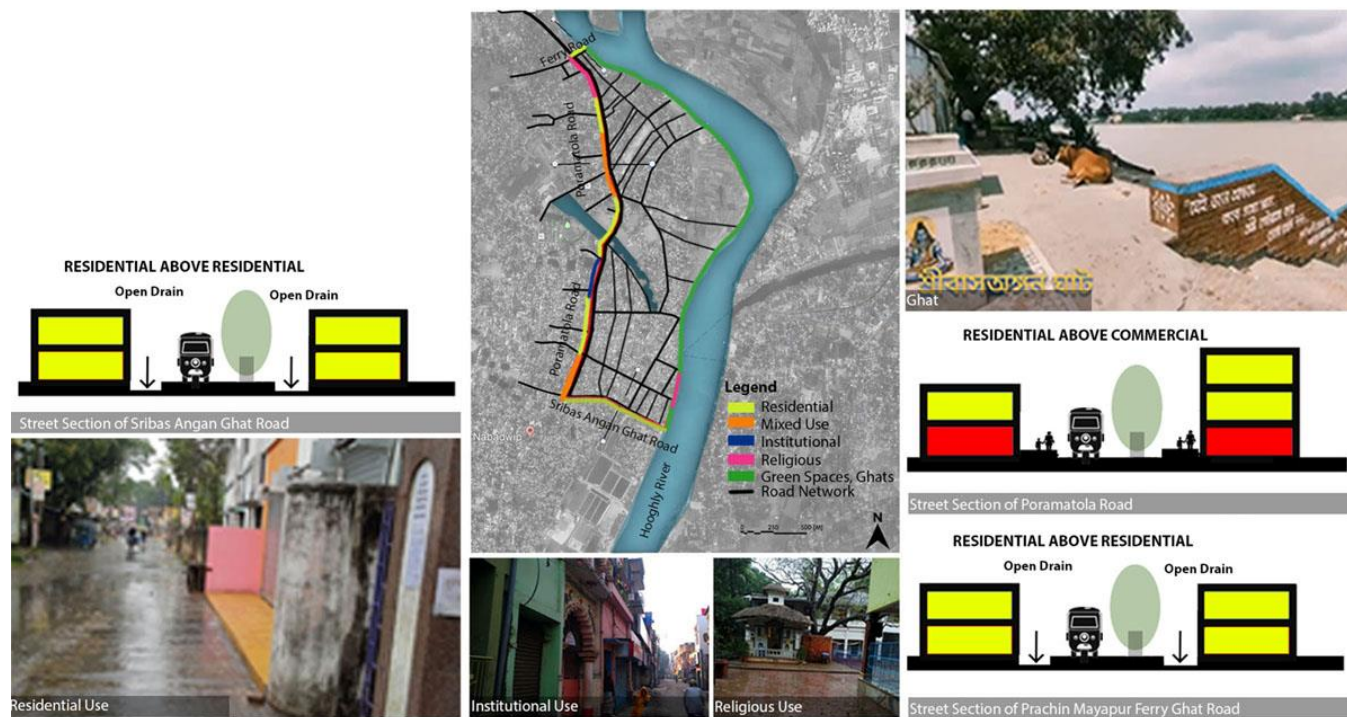


Figure 55: Zone 1 Delineation, Source: author

5.3.3 OBSERVATION AND ANALYSIS

Image Parameter, Edge

Observation:

1. The Edge of Mayapur Prachin ghat is not connected with other ghats.
2. The ghats are not well maintained leading to dumping of garbage.
3. The River Edge lack public facilities (even changing rooms).
4. Majorly the Residential Edge differentiate the public and private zones on the western fringe.
5. The Street Edges are very uninteresting resulting in dumping of garbage, on street parking and open drains.

Analysis:

1. The River Edge has no proper pedestrian walkway or promenade.
2. The ghats lack connectivity with each other due to absence of proper pedestrian walkway or promenade.
3. Lack of public, recreational or tourist facilities make River Edge uninteresting.
4. Mainly residential use dominates the Street Edge, though other uses are also present.
5. The Street Edges are not physically and visually permeable resulting in on street parking.

Conclusion:

Provision of a continuous promenade having only pedestrian access, connecting Prachin Mayapur ghat, Jal Prakalp ghat, Ranir ghat, Ferry ghat, Pora ghat and Sribas Angan ghat will make the River Edge interesting and usable.



Figure 56: Image Parameter, Edge, Source: author

Image Parameter, Pathway**Observation:**

1. The roads are so narrow that the main mode of transport is Toto or motorcycle.
2. On Street parking of totos and two wheelers.
3. Lack of proper geometry in roads such as restricted sight distance, carriageway alignment intersections on various roads.
4. The roads vary from 6ft. to 12ft. in width, surrounded on both sides by buildings and consist of open drains.
5. The important nodes are Dhopwalir More and BowBazar More.

Analysis:

1. The traffic congestion happen due to narrow width of roads and encroachments along the roads.
2. Traffic congestion happens also due to on street parking and lack of parking spaces.
3. Water logging takes place due to slightest rain and open drains make the area dirtier.
4. Dhopwalir More and Bow Bazar More are the major problem areas, facing all these problems.
5. There is only water way route to go to from Nabadwip to Mayapur.

Conclusion:

Segregation of routes for light vehicles and pedestrian is required.

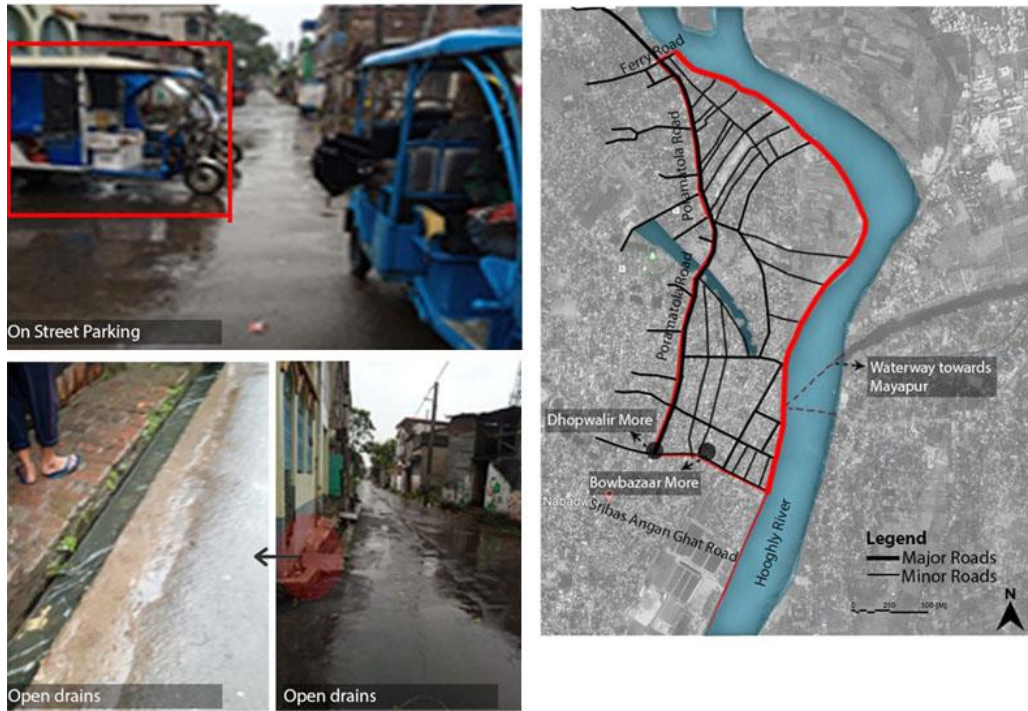


Figure 57: Image Parameter, Pathway, Source: author

Character Parameter, Activity

Observation:

1. This area is dominated by residential use and open spaces
2. Mixed use, Institutional and religious uses are also present.
3. Lack of public facilities, the women have to change clothes in adjacent houses for bathing in the ghats.
4. Lack of tourist facilities.

Analysis:

1. The commercial spaces are the Prachin Mayapur Bazar, Ranirchara Bazar, Radha Bazar More.
2. This zone consists of the birth place of Sri Chaitanya, Sonar Gourango temple and Radharani temple. But due to lack of public facilities, the tourists are only interested to go towards Mayapur.

Conclusion:

Provision of public amenities like public toilets, changing rooms, museum etc. will attract more people towards the river.

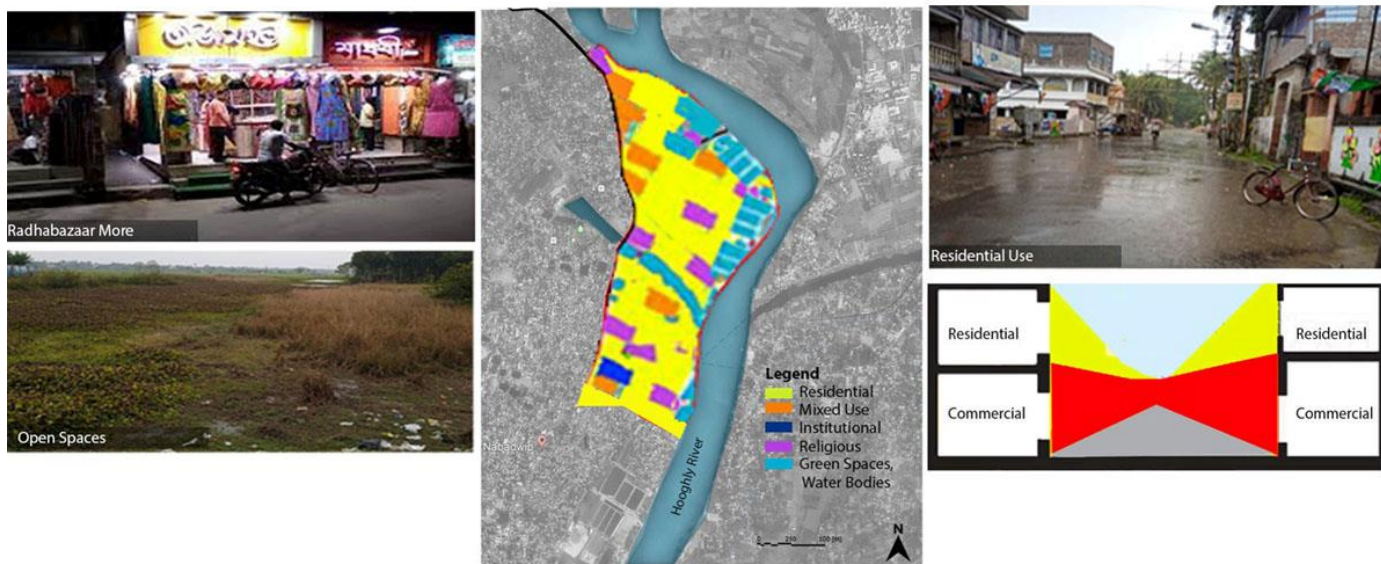


Figure 58: Character Parameter, Activity, Source: author

Character Parameter, Space

Observation:

1. Lack of open spaces
2. Lack of recreational spaces
3. Presence of few water bodies

Analysis:

1. The town grew in an unplanned way resulting in scarcity of open spaces.
2. Due to evolution of old town in an unplanned way, there is scarcity of recreational spaces.

Conclusion:

Provision of open spaces like riverfront parks and gardens, along the ghats will attract more people towards the river.



Figure 59: Character Parameter, Space

Character Parameter, Vista and Skyline

Observation:

1. Absence of view corridors from the river to the heritage sites.
2. Straight roads bounded by buildings on both sides, thus no views are created.

Analysis:

1. The old town grew in an unplanned way, thus leading to absence of view corridors.
2. Views are also majorly blocked by trees.
3. The buildings developed haphazardly, leading to obstruction of views.

Conclusion:

Strengthening the view corridors from the heritage sites to the river will rejuvenate the zone and attract more people towards the riverfront.

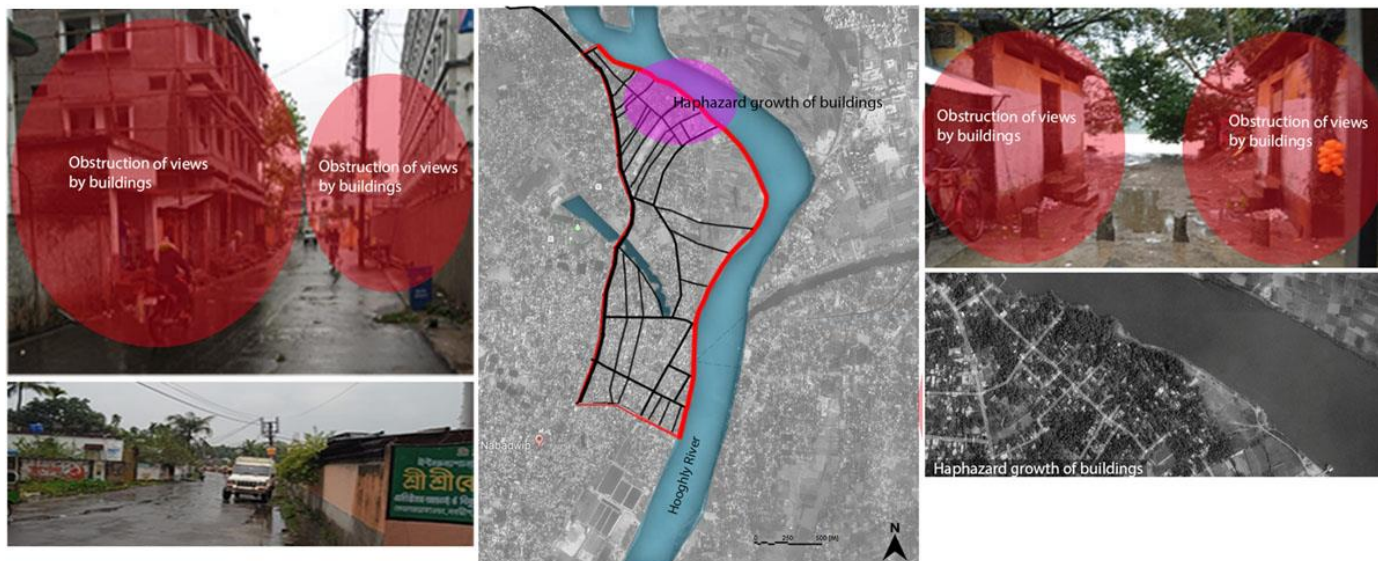


Figure 60: Character Parameter, Vista and Skyline, Source: author

Character Parameter, Non Physical Aspect

Observation:

1. Some small religious temples are not well maintained.
2. Lack of visual connectivity from the temples to the river.
3. Lack of physical connectivity from the temples to the river.
4. Overcrowding during the festive season.

Analysis:

1. The old town grew in an unplanned and haphazard way leading to poor condition of most temples.
2. Lack of urban aesthetics leading to lack of visual connectivity.
3. As Nabadwip is a religious heritage town, overcrowding takes place during Gaura Purnima, Rasa Purnima etc.

Conclusion:

Provision of Riverfront Dharmashalas will rejuvenate the zone and attract more people towards the river.

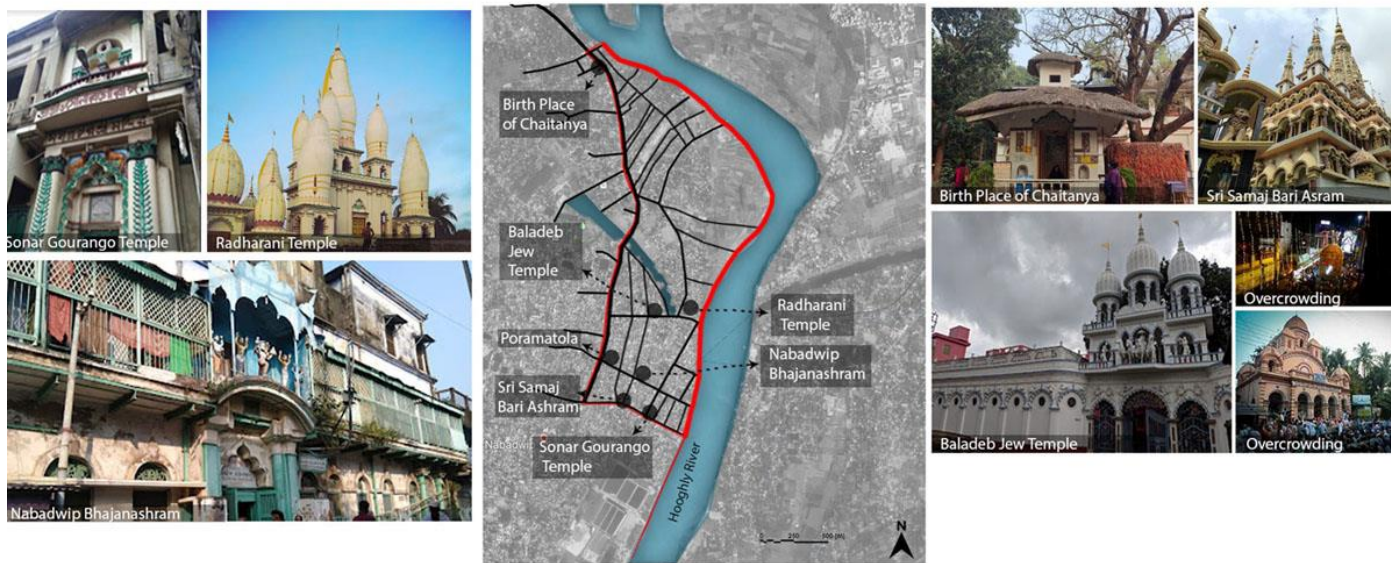


Figure 61: Character Parameter, Non Physical Aspect, Source: author

5.3.4 PROPOSALS

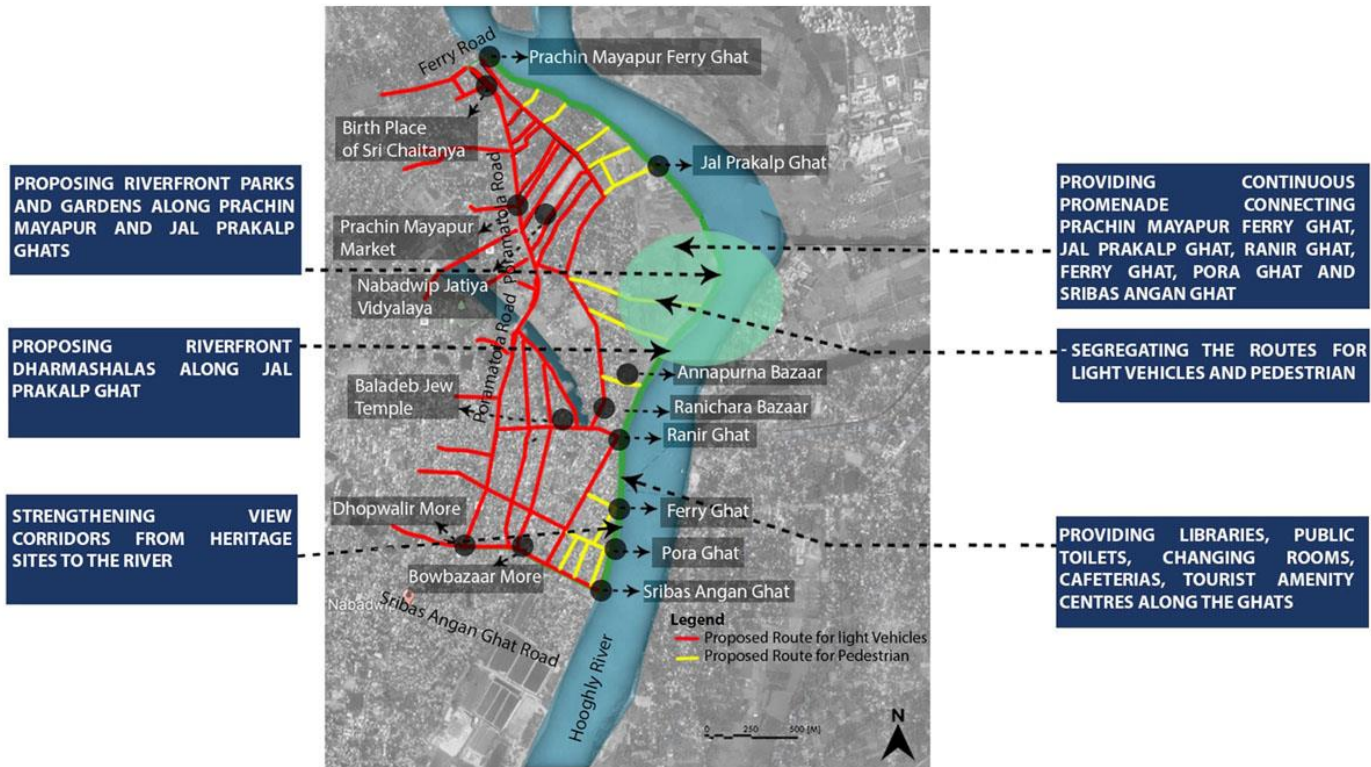


Figure 62: Zone 1 Proposals

Source: author

5.3.5 IDENTIFICATION OF INTERVENTION SITES

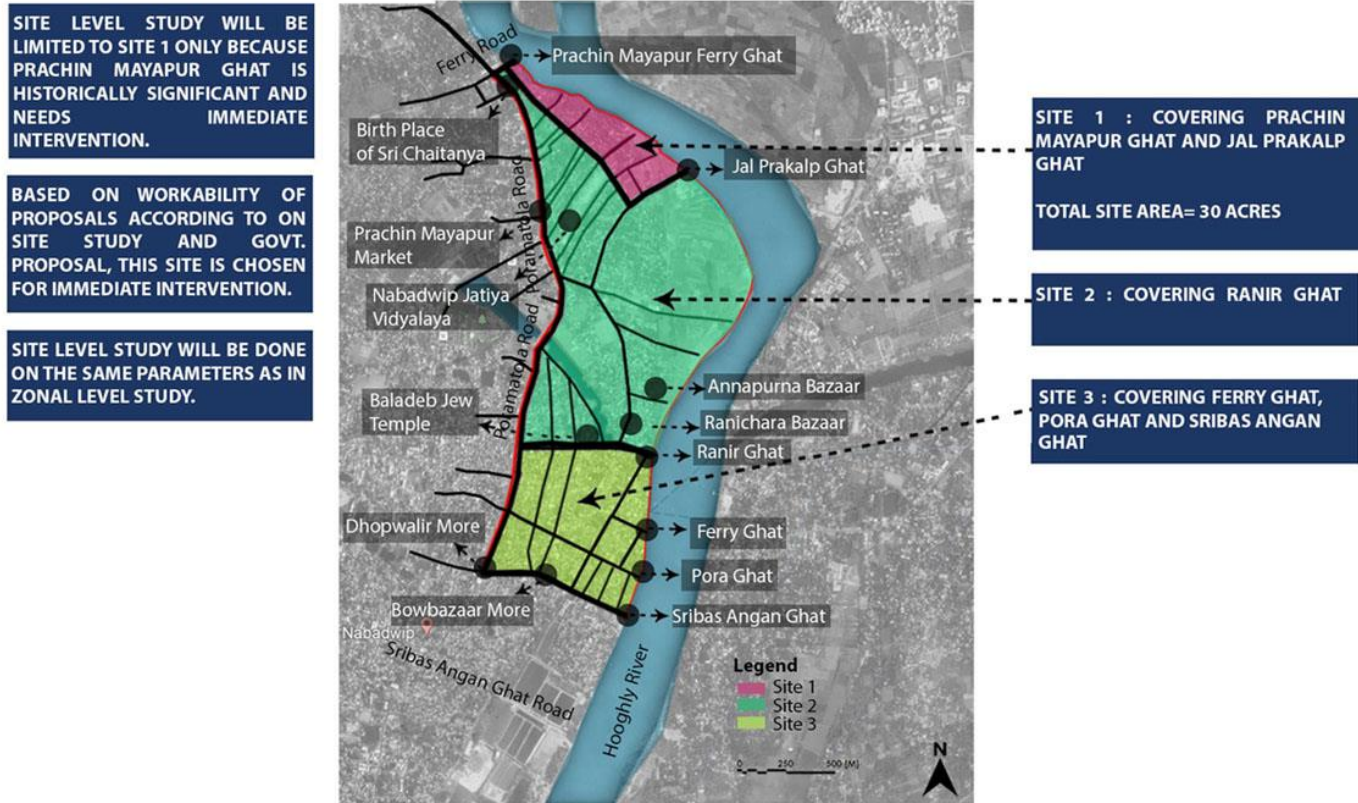


Figure 63: Identification of Intervention Sites: Zone 1

Source: author

5.4 ZONAL LEVEL STUDY- ZONE 2

5.4.1 DESCRIPTION

This zone covers Danda Panitola Ghat. Burning Ghat and Monipur Ghat.

There are various other temples in this zone like Sri Sri Anu Maha Prabhu Mandir, Jal Mandir etc.

This zone also covers Gourango Setu connecting both the banks.

This zone also covers Mohisura mosque and burial ground.

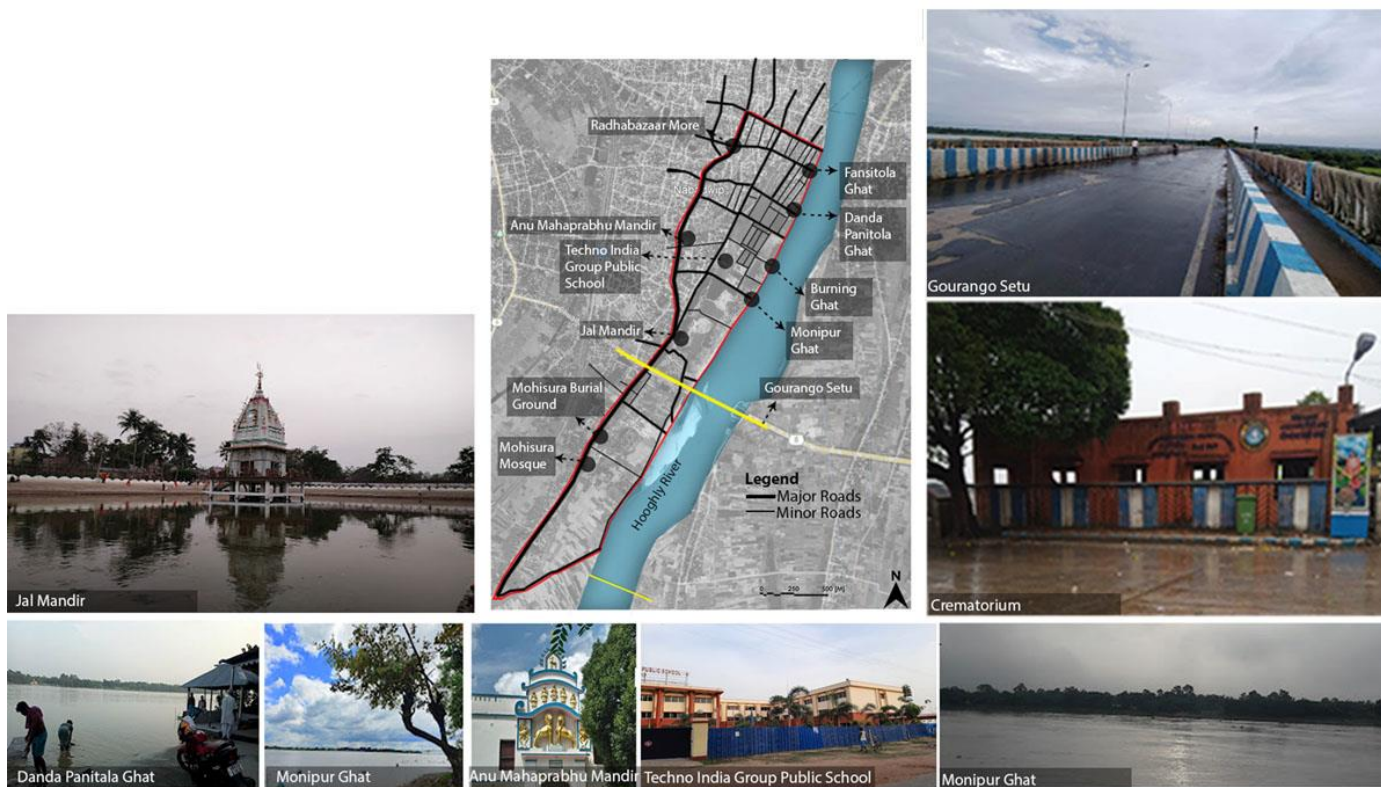


Figure 64: Zone 2 Description, Source: author

5.4.2 DELINEATION

This zone is delineated by ghats for religious use on the east, Nabadwip Main road and Mohisura road on the west, Sribas Angan Ghat road on the north and road towards Kalinagar on the southern fringe.

The delineated area has residential use, mixed use, religious use and open spaces.

There are also religious uses along the ghats.



Figure 65: Zone 2 Delineation, Source: author

5.4.3 OBSERVATION AND ANALYSIS

Image Parameter, Edge

Observation:

1. The ghats are connected by narrow lanes from inside, but not connected continuously along the river edge.
2. There is a lot of open spaces in some of the ghats along the river edge.
3. Majorly the Residential Edge differentiate the public and private sectors on the western fringe.
4. The street edges are very uninteresting resulting in dumping of garbage, on street parking and open drains.

Analysis:

1. The River Edge has no proper pedestrian walkway or promenade.
2. The ghats lack connectivity with each other due to absence of proper pedestrian walkway or promenade.
3. Some ghats are virgin, having lots of open spaces.
4. Mainly residential use dominates the Street Edge, though other uses are also present.
5. The Street Edges are not physically and visually permeable resulting in on street parking.

Conclusion:

Provision of a continuous promenade connecting Fansitola Ghat, Danda Panitola Ghat, Burning Ghat, Monipur Ghat and beneath will make the river edge interesting and useable.

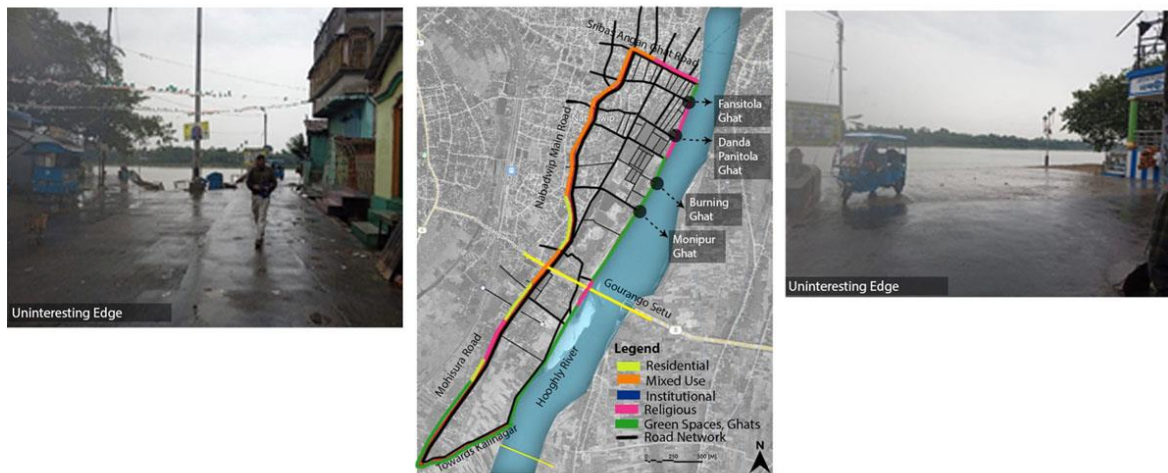


Figure 66: Image Parameter, Edge, Source: author

Image Parameter, Pathway

Observation:

1. The roads are so narrow that the main mode of transport is toto or motorcycle.
2. On Street parking of totes and two wheelers. There is a parking space near the burning ghat.
3. Lack of proper geometry in roads such as restricted sight distance, carriageway alignment intersections on various roads.
4. The roads vary from 6ft. to 12ft. in width, surrounded on both sides by buildings and consist of open drains.

Analysis:

1. The traffic congestion happen due to narrow width of roads and encroachments along the roads.
2. Traffic congestion happens also due to on street parking and lack of parking spaces.
3. This zone is relatively elevated than Zone 1, still during rainy season water logged streets and open drains make the situation worse.
4. This zone has important node like Radha bazar More which faces these problems.

Conclusion:

Segregation of routes for light vehicles and pedestrian is required.



Figure 67: Image Parameter, Pathway, Source: author

Character Parameter, Activity

Observation:

1. This Zone is dominated by residential use, open spaces and water bodies.
2. Religious uses and mixed uses are also present.
3. Lack of public facilities, the women have to change clothes in adjacent houses for bathing in the ghats.
4. Lack of tourist facilities.

Analysis:

This zone consists of Sonar Gourango temple and other temples. But due to lack of public facilities, the tourists are only interested to go towards Mayapur.

Conclusion:

Provision of public amenities like Shopping Arcade, Cafeteria etc. will rejuvenate the Zone and attract more people towards the river.

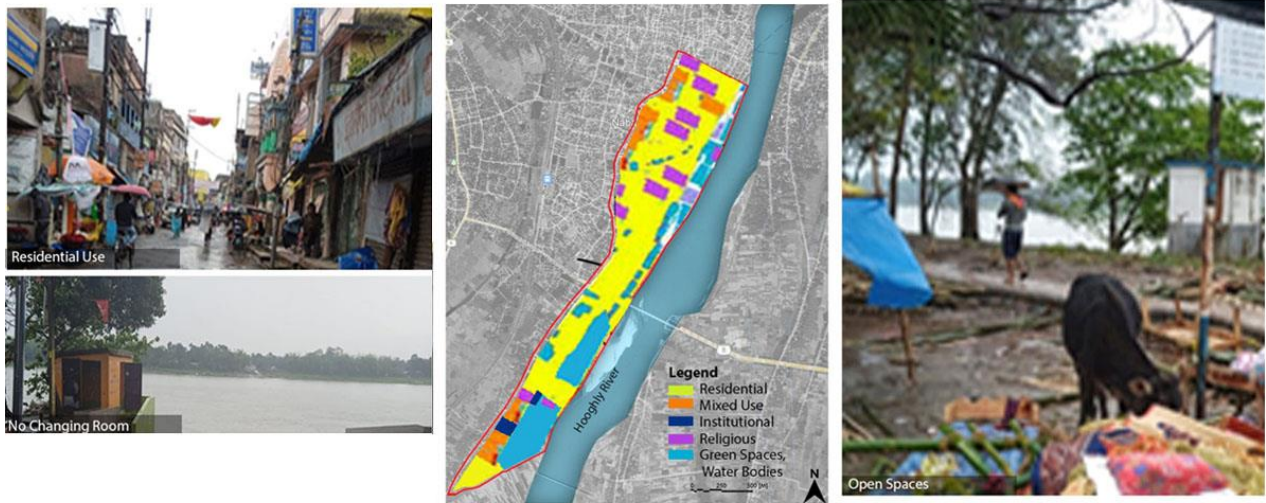


Figure 68: Character Parameter, Activity, Source: author

Character Parameter, Space

Observation:

This zone consists of relatively more open spaces and water bodies. Thus there is scope for development.

Analysis:

This zone consists of Sonar Gourango temple and other temples. But due to lack of public facilities, the tourists are only interested to go towards Mayapur.

Conclusion:

Provision of riverfront plazas and parks will induce recreational activities and will attract people more towards the river.



Figure 69: Character Parameter, Space, Source: author

Character Parameter, Vista and Skyline

Observation:

1. Absence of view corridors from the river to the heritage sites.
2. Straight roads bounded by buildings on both sides, thus no views are created.

Analysis:

1. The old town grew in an unplanned way, thus leading to absence of view corridors.
2. Views are also majorly blocked by trees.
3. The buildings developed haphazardly, leading to obstruction of views.

Conclusion:

Strengthening the view corridors from the heritage sites to the river will rejuvenate the zone and attract more people towards the riverfront.



Figure 70: Character Parameter, Vista and Skyline, Source: author

Character Parameter, Non Physical Aspect

Observation:

1. This zone consists of Jal Mandir etc.
2. Lack of visual connectivity from the temples to the river.
3. Lack of physical connectivity from the temples to the river.
4. Overcrowding during the festive season.

Analysis:

1. The old town grew in an unplanned and haphazard way leading to poor condition of most temples.
2. Lack of urban aesthetics leading to lack of visual connectivity.
3. As Nabadwip is a religious heritage town, overcrowding takes place during Gaura Purnima, Rasa Purnima etc.

Conclusion:

Provision of Riverfront Exhibition Grounds and Fair Grounds will rejuvenate the zone and attract more people towards the river.



Figure 71: Character Parameter, Non Physical Aspect, Source: author

5.4.4 PROPOSALS

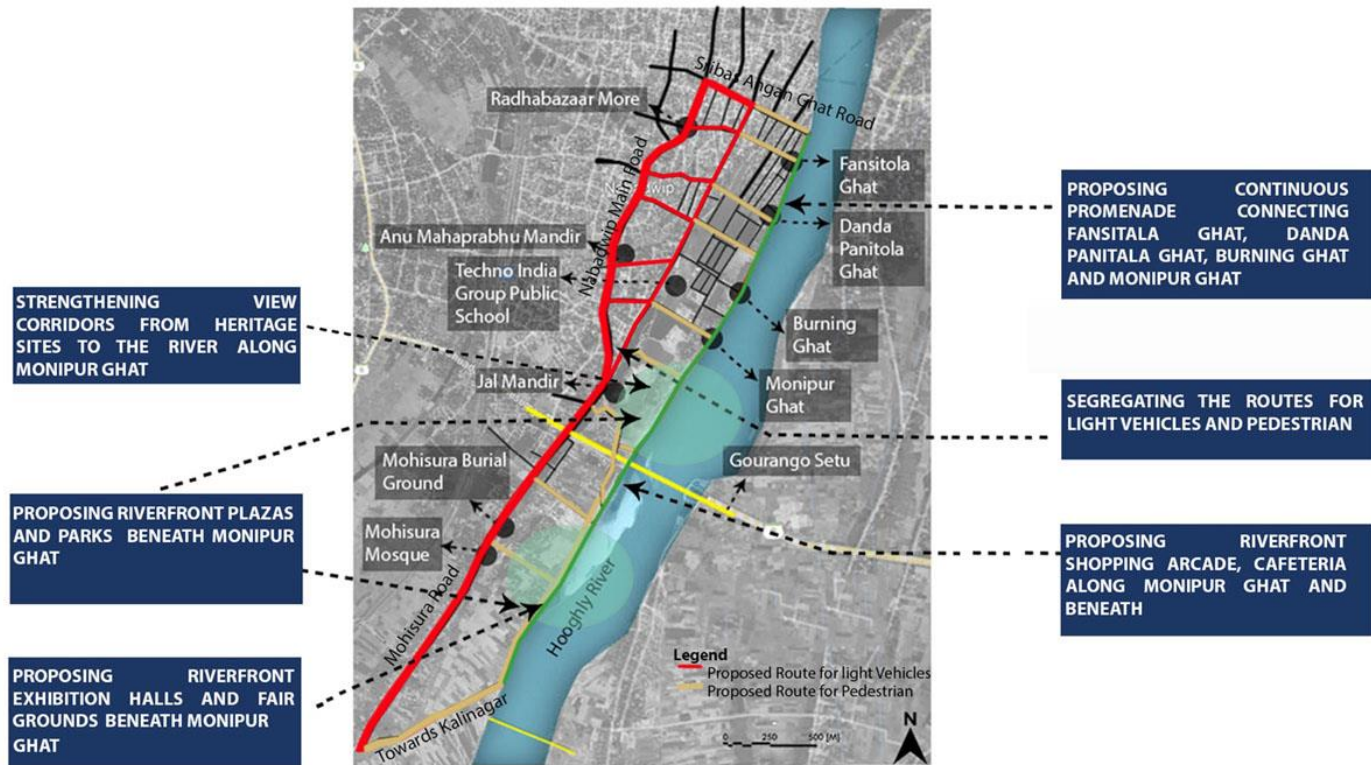


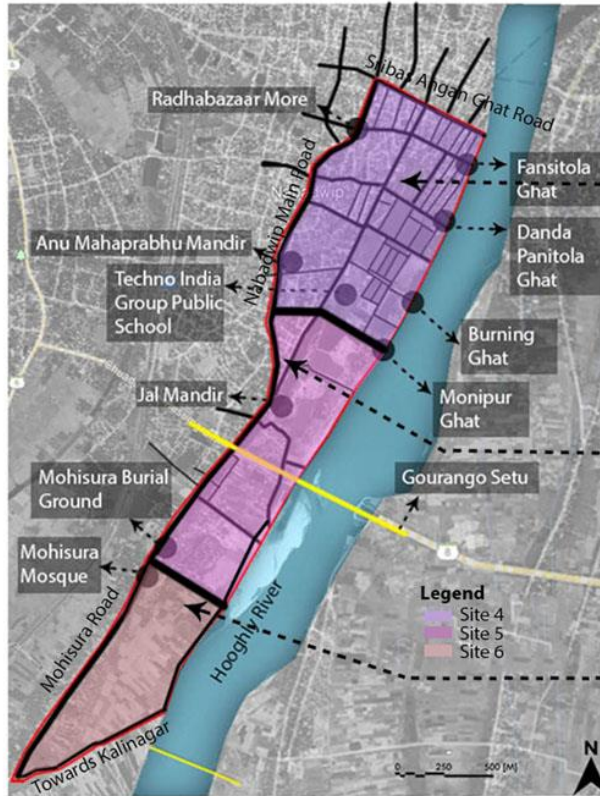
Figure 72: Zone 2 Proposals, Source: author

5.4.5 IDENTIFICATION OF INTERVENTION SITES

SITE LEVEL STUDY WILL BE LIMITED TO SITE 6 ONLY BECAUSE THERE IS NO GHAT THERE AND DESIGNING NEW GHAT WILL ENHANCE THE REDEVELOPMENT OF ZONE 2.

BASED ON WORKABILITY OF PROPOSALS ACCORDING TO ON SITE STUDY AND GOVT. PROPOSAL, THIS SITE IS CHOSEN FOR IMMEDIATE INTERVENTION.

SITE LEVEL STUDY WILL BE DONE ON THE SAME PARAMETERS AS IN ZONAL LEVEL STUDY.



SITE 4 : COVERING FANSITALA GHAT, DANDA PANITALA GHAT, BURNING GHAT AND MONIPUR GHAT

SITE 5 : COVERING GOURANGO SETU

**SITE 6 : COVERING MOHISURA MOSQUE
TOTAL SITE AREA = 160 ACRES**

Figure 73: Identification of Intervention Sites: Zone 2, Source: author

5.5 SELECTION OF SITES

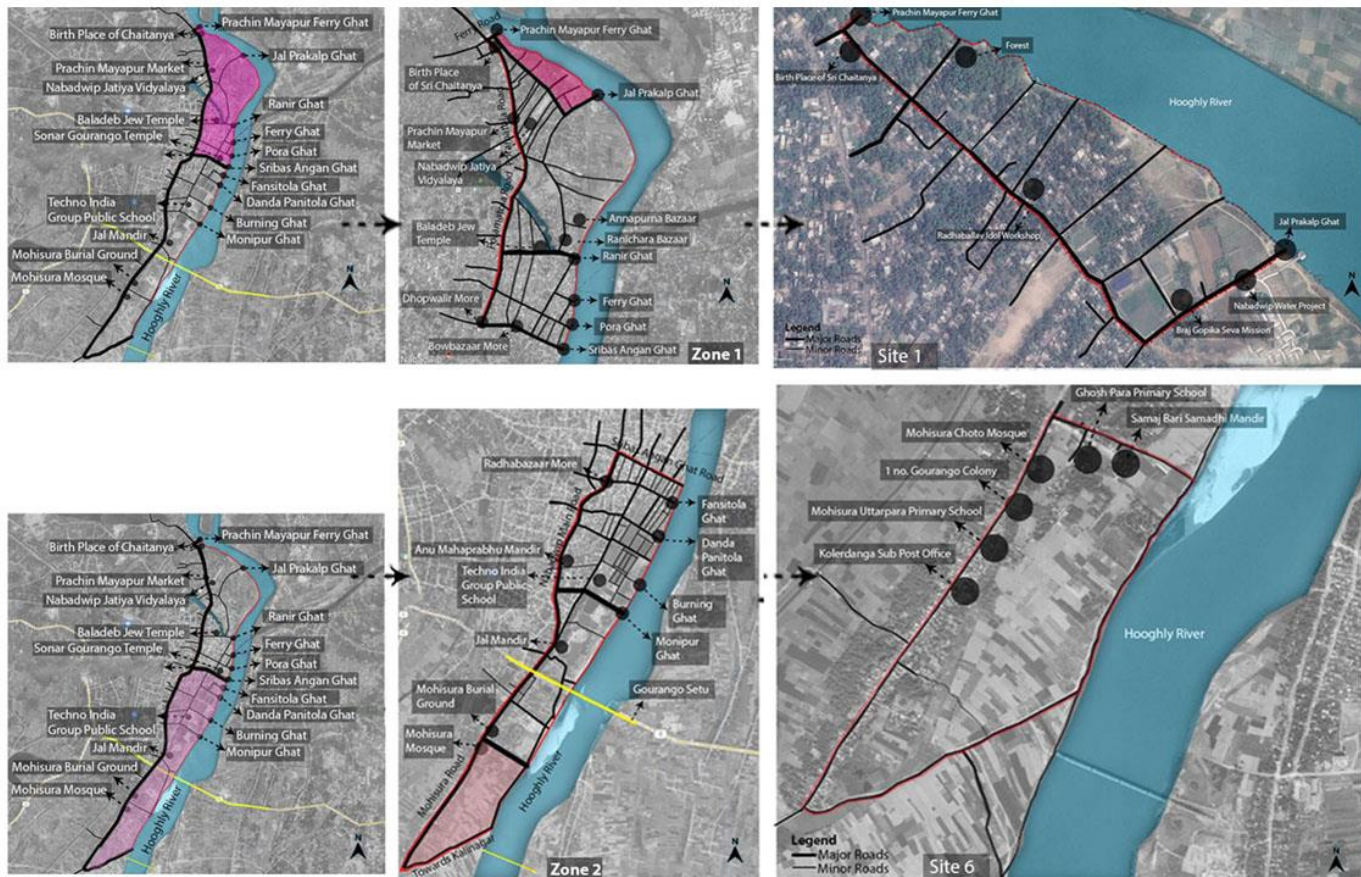


Figure 74: Selection of Sites, Source: author

5.6 SITE LEVEL STUDY- SITE 1

5.6.1 DESCRIPTION

The site covers Prachin Mayapur Ferry Ghat, Jal Prakalp Ghat and Ranir Ghat.

The area of the site is 38 acres.

K.M.D.A is already thinking to rejuvenate the Prachin Mayapur Ferry Ghat.

This site also covers Ferry Ghat Forest, Nabadwip Water Project, Braj Gopika Mission etc.



Figure 75: Site 1 Description, Source: author

5.6.2 DELINEATION

This site is delineated by the ghats on the east, Jatiya Vidyalaya Road on the west, Ferry Road on the north and 2 no. Haldar Para lane on the southern fringe.

The delineated area has mainly ghats and open spaces on the northern, north eastern and north western fringes. Mixed uses and religious uses are also present.

This site has lots of open spaces compared to other sites. There is also Nabadwip Water Project here. This site has also a forest.

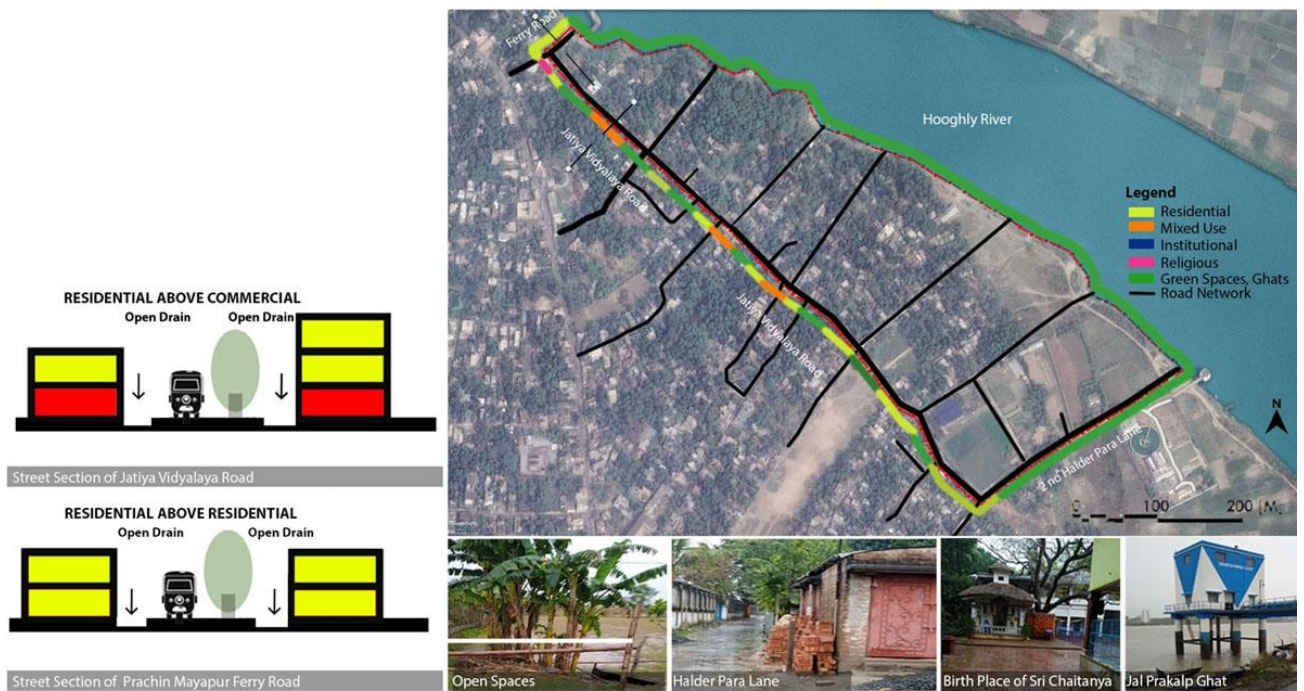


Figure 76: Site 1 Delineation, Source: author

5.6.3 OBSERVATION AND ANALYSIS

Image Parameter, Edge

Observation:

1. The edge of Mayapur Prachin Ghat is not connected with Jal Prakash Ghat.
2. Prachin Mayapur Ferry Ghat is not well maintained leading to dumping of garbage.
3. The river edge lack public facilities (even changing rooms).
4. The Street edges are very uninteresting leading to dumping of garbage, on street parking and open drains.

Analysis:

1. The River Edge has no proper pedestrian walkway or promenade.
2. Prachin Mayapur Ferry Ghat and Jal Prakash Ghats lack connectivity with each other due to absence of proper pedestrian walkway or promenade.
3. Lack of public, recreational or tourist facilities make the river edge very uninteresting.
4. The Street Edges are not physically and visually permeable resulting in on street parking.

Conclusion:

To provide continuous promenade for pedestrian movement and to provide seating arrangements.



Figure 77: Image Parameter, Edge, Source: author

Image Parameter, Pathway

Observation:

1. The roads are 6 ft. in width.
2. This site is in lower elevation leading to water logged roads.
3. The roads are surrounded on both sides by buildings and consist of open drains.

Analysis:

Water logging takes place due to slightest rain and open drains make the area very dirty.

Conclusion:

To segregate pedestrian and vehicular movement by bollards and keeping the distance up to pedestrian passage.

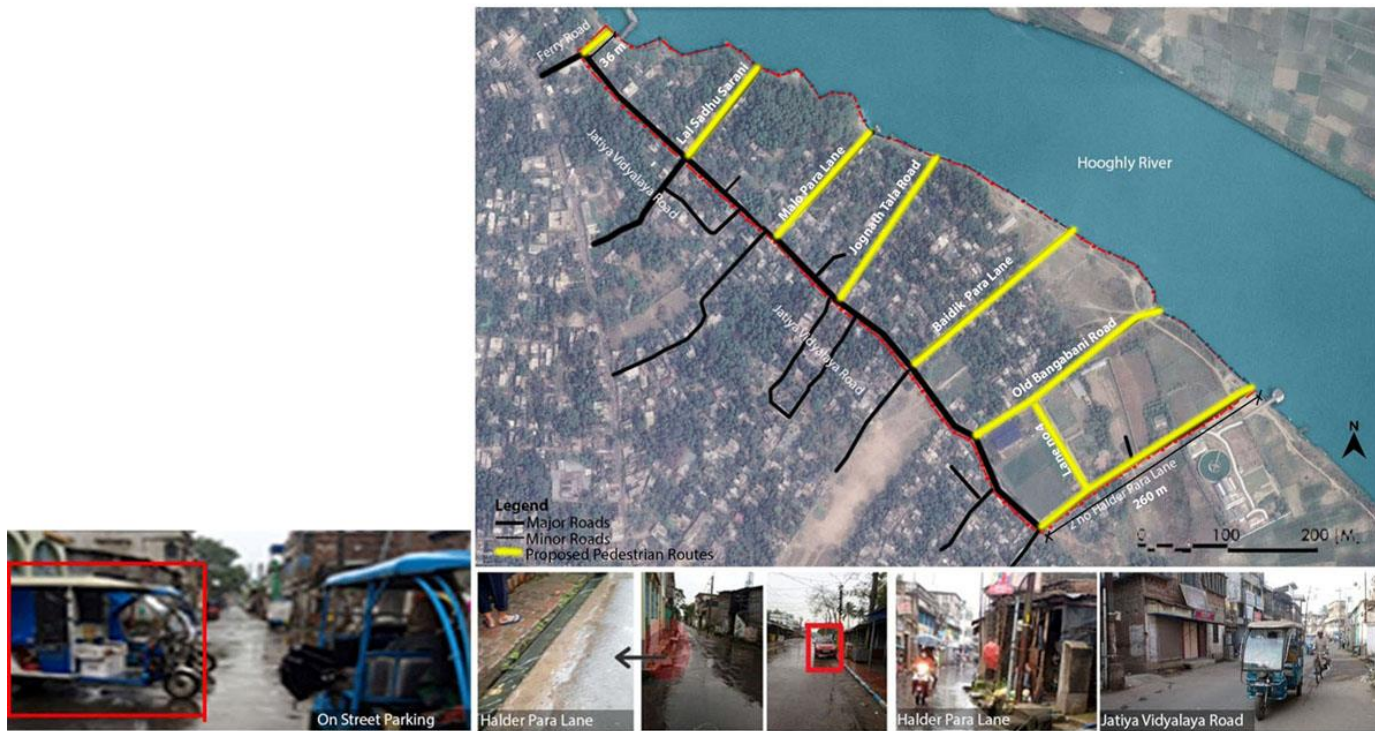


Figure 78: Image Parameter, Pathway, Source: author

Character Parameter, Activity

Observation:

1. This site is dominated by residential use and open spaces.
2. Mixed use and religious uses are also present.
3. Lack of public facilities, the women have to change clothes in adjacent houses for bathing in the ghats.

Analysis:

Due to lack of public facilities, the tourists are only interested to go towards Mayapur.

Conclusion:

To provide public amenities like changing rooms, toilets, library etc.



Figure 79: Character Parameter, Activity, Source: author

Character Parameter, Space

Observation:

1. Lack of open spaces.
2. Lack of recreational spaces.
3. Presence of few water bodies.
4. Lack of tourist facilities.

Analysis:

1. The town grew in an unplanned way resulting in scarcity of open spaces.
2. Due to evolution of old town in an unplanned way there is scarcity of recreational spaces.

Conclusion:

To provide recreational spaces like riverfront parks and gardens along the ghats.



Figure 80: Character Parameter, Space, Source: author

Character Parameter, Vista and Skyline

Observation:

1. Absence of view corridors from the river to the heritage sites.
2. Straight roads bounded by buildings on both sides, thus no views are created.

Analysis:

1. The old town grew in an unplanned way, thus leading to absence of view corridors.
2. Views are also majorly blocked by trees, buildings are developed haphazardly with no dedicated roads.

Conclusion:

To strengthen view corridors from the heritage sites to the river.



Figure 81: Character Parameter, Vista and Skyline, Source: author

Character Parameter, Non Physical Aspect

Observation:

1. Some small religious temples are not well maintained.
2. Lack of visual connectivity from the temples to the river.
3. Lack of physical connectivity from the temples to the river.

Analysis:

1. The old town grew in an unplanned and haphazard way leading to poor condition of most temples.
2. Lack of urban aesthetics leading to lack of visual connectivity.
3. As Nabadwip is a religious heritage town, overcrowding takes place during Gaura Purnima, Rasa Purnima etc.

Conclusion:

To provide dharmashalas along the river edge.

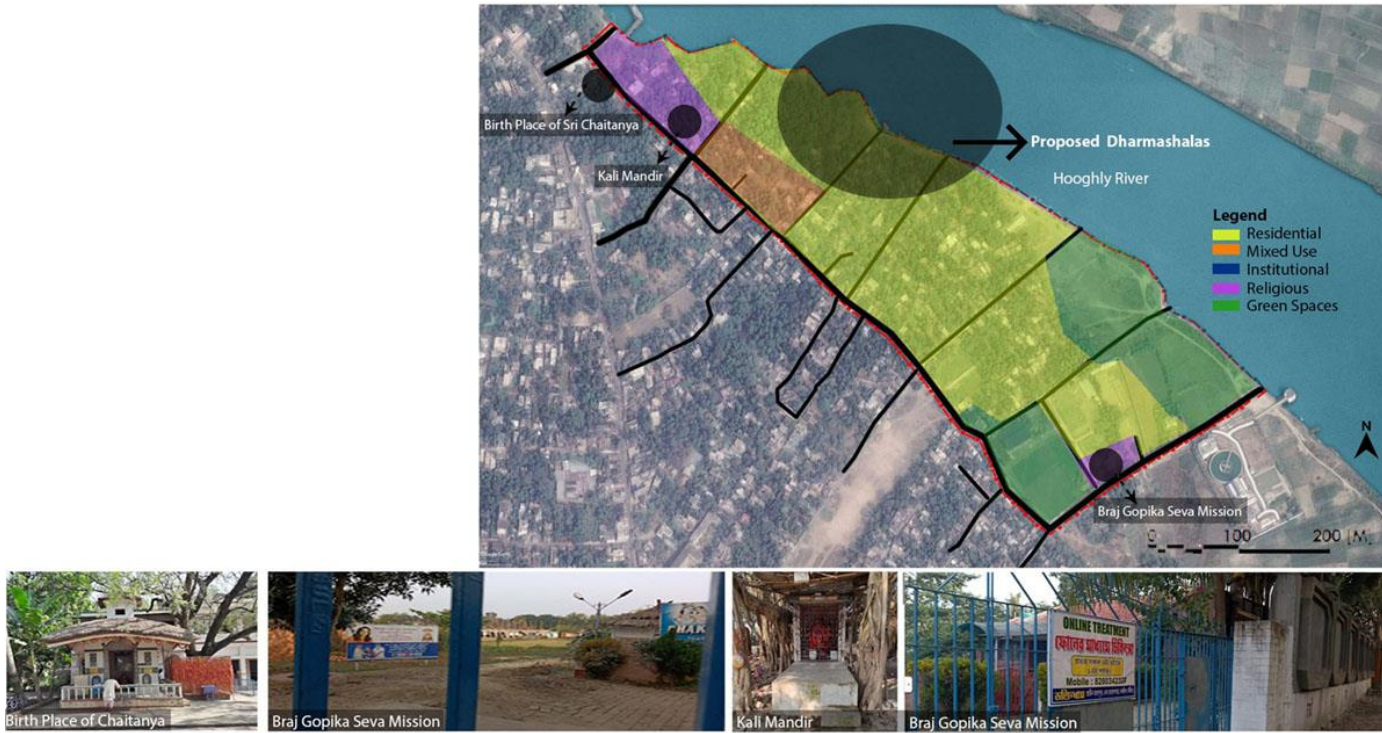


Figure 82: Character Parameter, Vista and Skyline, Source: author

5.6.4 DESIGN GUIDELINES






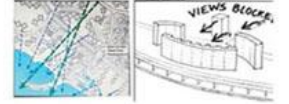
EDGE	TO PROVIDE A CONTINUOUS PROMENADE FOR PEDESTRIAN MOVEMENT AND TO PROVIDE SEATING ARRANGEMENTS	
PATHWAY	TO SEGREGATE PEDESTRIAN AND VEHICULAR MOVEMENT BY BOLLARDS AND KEEPING THE DISTANCE UPTO PEDESTRIAN PASSAGE	
ACTIVITY	TO PROVIDE PUBLIC AMENITIES LIKE CHANGING ROOMS, TOILETS, LIBRARY, ETC.	
SPACE	TO PROVIDE RECREATIONAL SPACES LIKE RIVERFRONT PARKS, ETC.	
VISTA AND SKYLINE	TO STRENGTHEN VIEW CORRIDORS FROM HERITAGE SITES TO THE RIVER	
NON PHYSICAL ASPECT	TO PROVIDE DHARMASHALAS ALONG THE RIVER EDGE	

Figure 83: Site 1: Design Guidelines, Source: author

5.7 SITE LEVEL STUDY- SITE 6

5.7.1 DESCRIPTION

The site has no defined ghat.

The area of the site is 160 acres.

The site covers Mohisura mosque and Mohisura burning ground.

The site has lots of open spaces and it is closer to Nabadwip Railway Bridge, thus has potential for development.

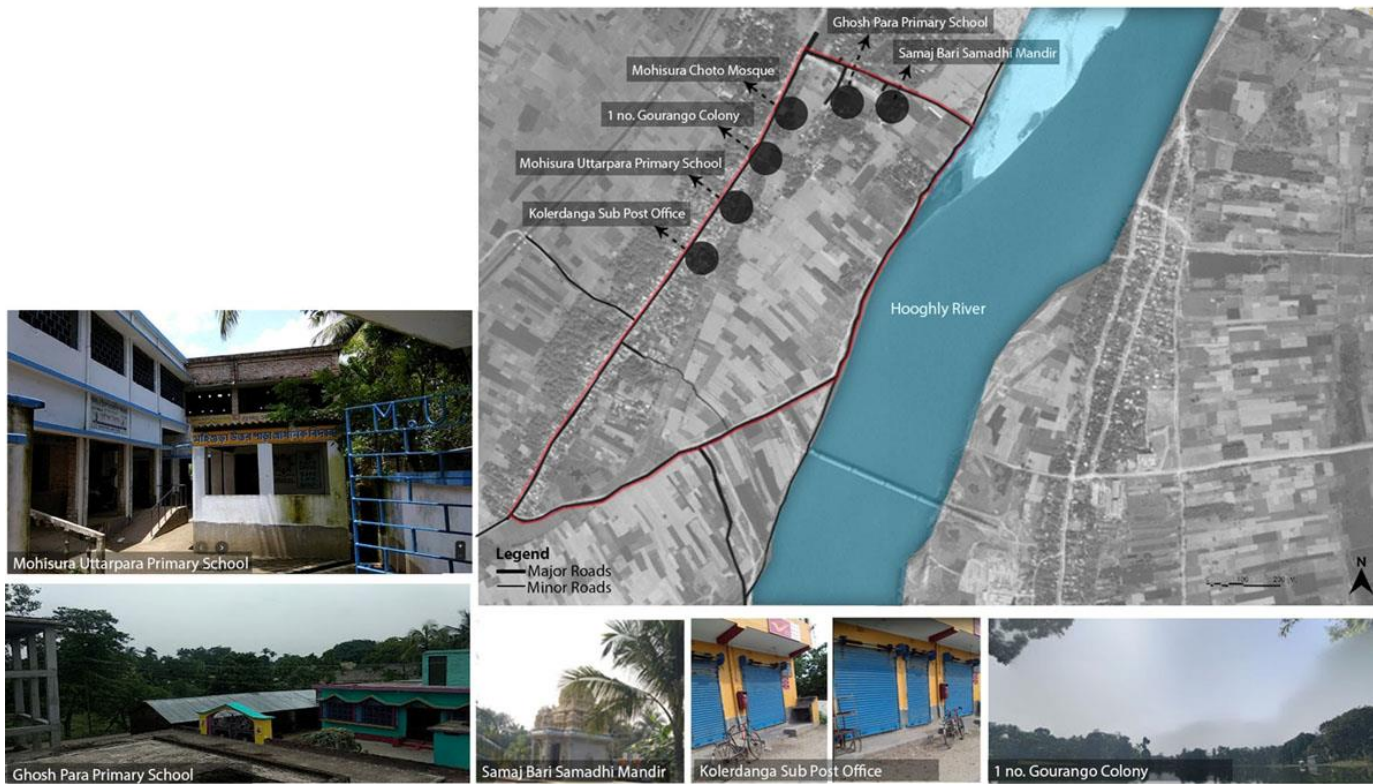


Figure 84: Site 6 Description, Source: author

5.7.2 DELINEATION

The site is delineated by religious, residential uses and open spaces on the western fringe.
 The site is delineated by open spaces on the eastern and southern fringe.
 The site is delineated by open spaces and residential use on the northern fringe.
 The roads forming the boundary are Mohisura Road on the west, unnamed roads on the east, north and south.

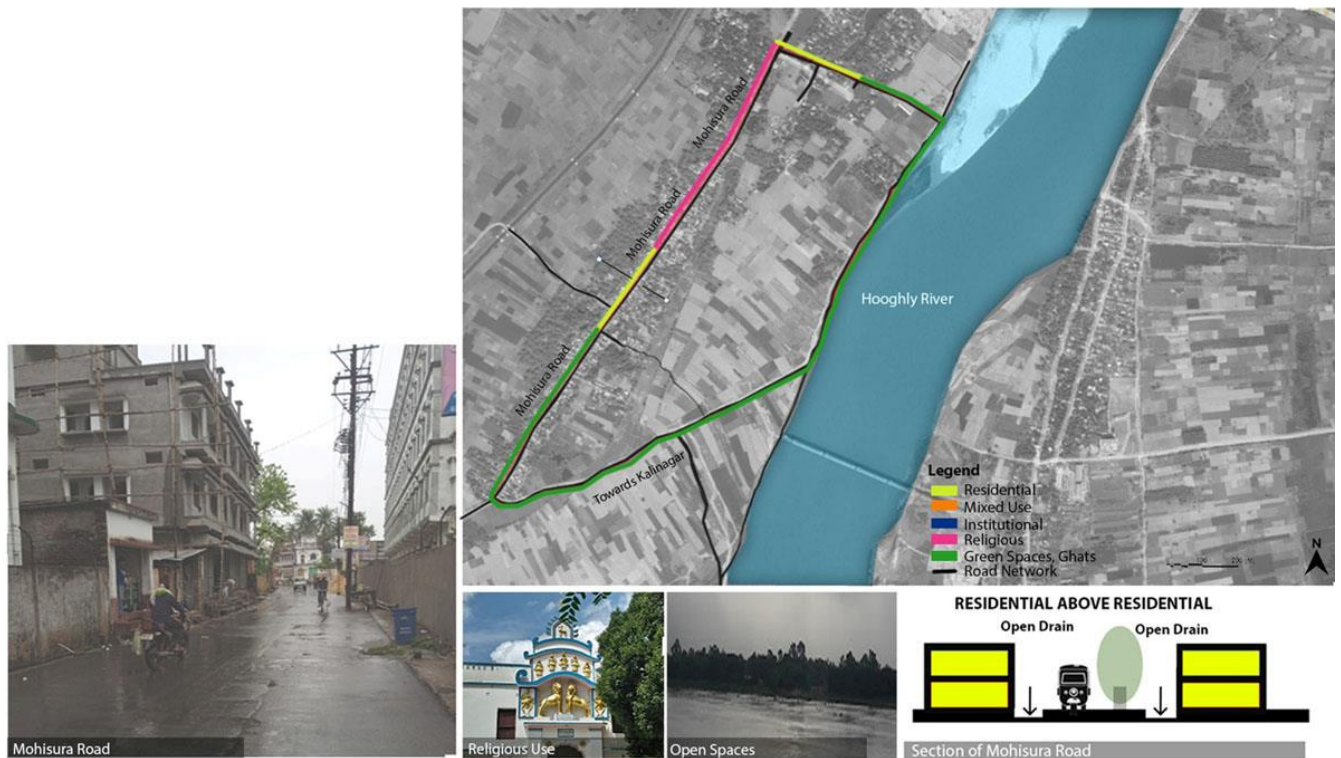


Figure 85: Site 6 Delineation, Source: author

5.7.3 OBSERVATION AND ANALYSIS

Image Parameter, Edge

Observation:

1. There is no defined ghat and the river edge is not well connected.
2. The river edge is not well maintained leading to dumping of garbage.
3. The river edge lack public facilities (even changing rooms).
4. The Street edges are very uninteresting leading to dumping of garbage, on street parking and open drains.

Analysis:

1. The River Edge has no proper ghat or promenade.
2. Then river edge lack connectivity due to absence of proper pedestrian walkway or promenade.
3. Lack of public, recreational or tourist facilities make the river edge very uninteresting.
4. The Street Edges are not physically and visually permeable resulting in on street parking.

Conclusion:

To propose new ghat and to provide a continuous promenade with seating arrangements.

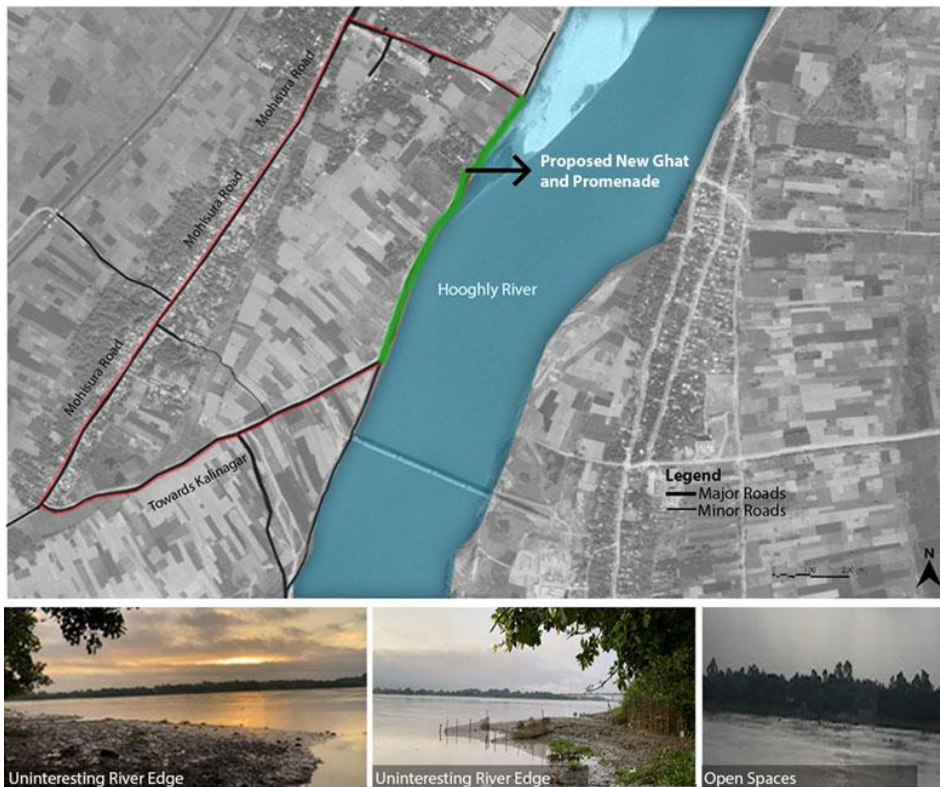


Figure 86: Image Parameter, Edge, Source: author

Image Parameter, Pathway

Observation:

1. Lack of roads, internal roads and kutchra roads.
2. On street parking of totos and two wheelers.
3. Lack of proper geometry in roads such as restricted sight distance, carriage way alignment, intersections on various roads.
4. The roads vary from 6ft to 12 ft. in width, surrounded on both sides by buildings and consist of open drains.

Analysis:

1. The traffic congestion happen due to narrow width of road and encroachments along the roads.
2. Traffic congestion happen also due to on street parking and lack of parking spaces.
3. This site is relatively elevated than site 1, still during rainy season water logged streets and open drains make the situation worse.

Conclusion:

To re design roads and segregate them according to movement.



Figure 87: Image Parameter, Pathway, Source: author

Character Parameter, Activity

Observation:

1. This site is dominated by residential use and open spaces.
2. Mixed use, religious uses and institutional uses are also present.
3. Lack of public facilities, the women have to change clothes in adjacent houses for bathing in the ghats.

Analysis:

1. The institutional spaces are Mohisura Uttarpara primary school, Ghosh para primary school, Kolerdanga sub post office etc.
2. The religious spaces are Samaj Bari Samadhi Mandir, Mohisura Choto Mosque etc.
3. Due to lack of public facilities, the tourists are only interested to go towards Mayapur.

Conclusion:

To provide public facilities like shopping arcade, hotels, lodges etc.

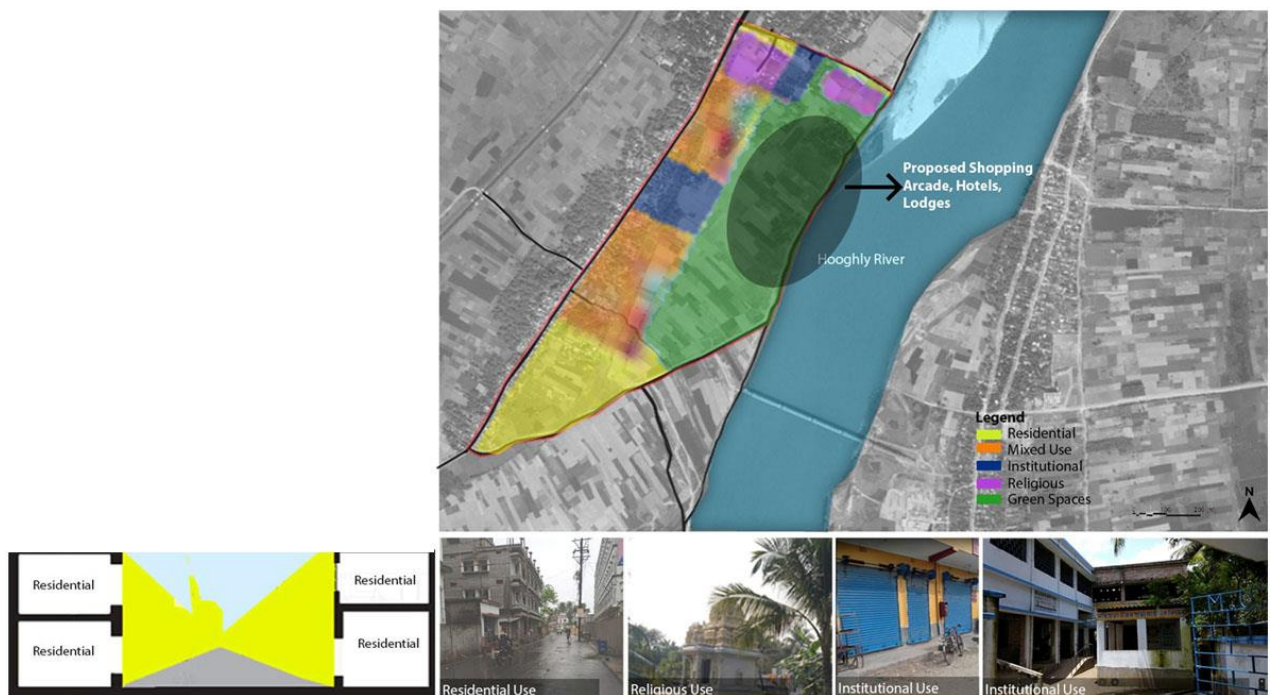


Figure 88: Character Parameter, Activity, Source: author

Character Parameter, Space

Observation:

This zone consists of relatively more open spaces and water bodies, thus there is scope for development.

Analysis:

1. The town grew in an unplanned way resulting in scarcity of open spaces.
2. Due to evolution of old town in an unplanned way there is scarcity of recreational spaces.

Conclusion:

To provide recreational spaces like riverfront plazas and parks.

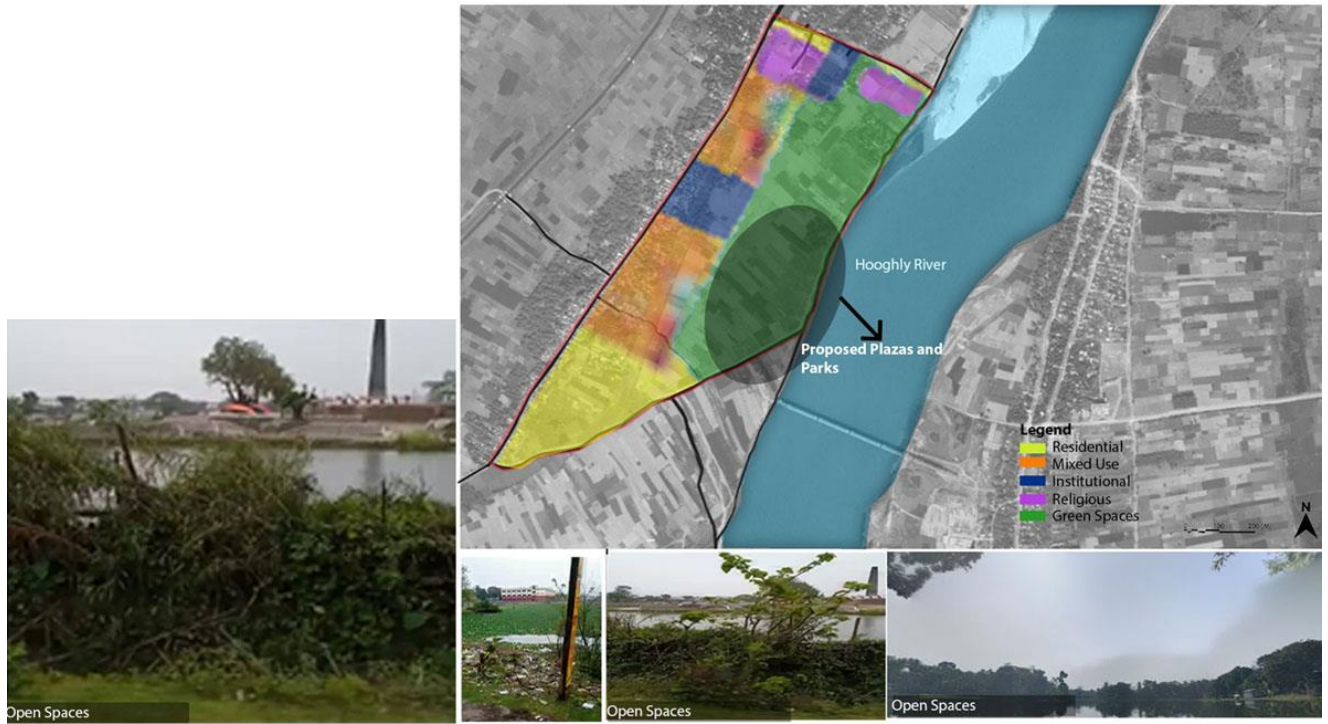


Figure 89: Character Parameter, Space, Source: author

Character Parameter, Vista and Skyline

Observation:

1. Absence of view corridors from the river to the heritage sites.
2. Straight roads bounded by buildings on both sides, thus no views are created.

Analysis:

1. The old town grew in an unplanned way, thus leading to absence of view corridors.
2. Views are also majorly blocked by trees.
3. The buildings are developed haphazardly leading to obstruction of views.

Conclusion:

To strengthen view corridors from the heritage sites to the river.



Figure 90: Character Parameter, Vista and Skyline, Source: author

Character Parameter, Non Physical Aspect

Observation:

1. This site consists of Samaj Bari Samadhi Mandir and Mohisura Choto Mosque.
2. Lack of visual connectivity from the temples to the river.
3. Lack of physical connectivity from the temples to the river.

Analysis:

1. The old town grew in an unplanned and haphazard way leading to poor condition of most temples.
2. Lack of urban aesthetics leading to lack of visual connectivity.

Conclusion:

To provide exhibition and fair grounds along the river edge.

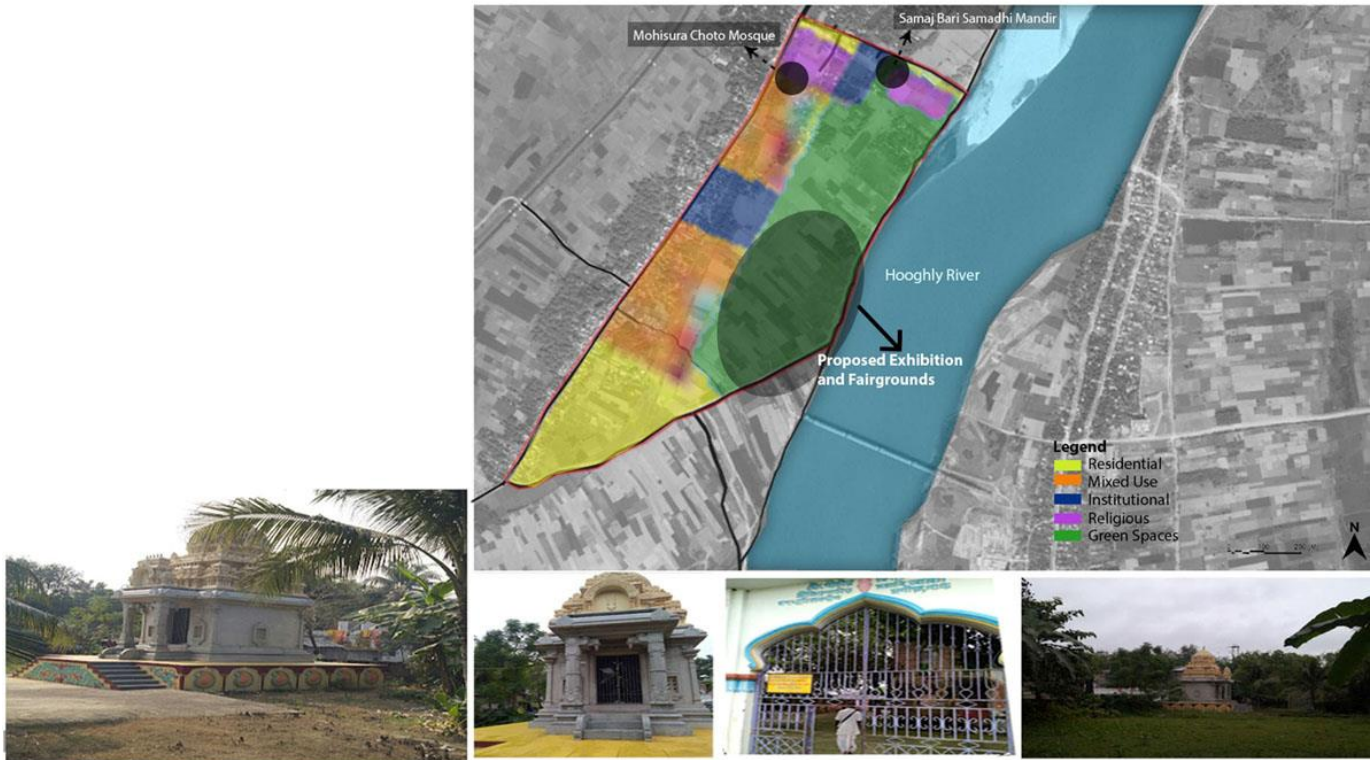


Figure 91: Character Parameter, Non Physical Aspect, Source: author

5.7.4 DESIGN GUIDELINES




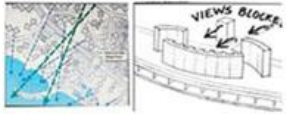
EDGE	TO PROPOSE NEW GHAT AND TO PROVIDE A CONTINUOUS PROMENADE WITH SEATING ARRANGEMENTS	
PATHWAY	TO REDESIGN ROADS AND SEGREGATE THEM ACCORDING TO MOVEMENT	
ACTIVITY	TO PROVIDE PUBLIC FACILITIES LIKE SHOPPING ARCADE, HOTELS, LODGES, ETC.	
SPACE	TO PROVIDE RECREATIONAL SPACES LIKE RIVERFRONT PLAZAS AND PARKS	
VISTA AND SKYLINE	TO STRENGTHEN VIEW CORRIDORS FROM HERITAGE SITES TO THE RIVER	
NON PHYSICAL ASPECT	TO PROVIDE EXHIBITION AND FAIRGROUNDS ALONG RIVER EDGE	

Figure 92: Site 6: Design Guidelines, Source: author

5.8 SUMMARY OF DESIGN PROPOSALS

	AREA	ZONE 1	SITE 1
EDGE	TO PROVIDE A CONTINUOUS PROMENADE CONNECTING THE GHATS	TO PROVIDE A CONTINUOUS PROMENADE CONNECTING PRACHIN MAYAPUR, JAL PRAKALP, RANIR GHAT, FERRY GHAT, PORA GHAT AND SRIBAS ANGAN GHAT	TO PROVIDE A CONTINUOUS PROMENADE CONNECTING PRACHIN MAYAPUR AND JAL PRAKALP GHATS
PATHWAY	TO SEGREGATE VEHICULAR AND PEDESTRIAN MOVEMENT	TO SEGREGATE THE ROUTES ACCORDING TO MOVEMENT AS SHOWN IN MAP	TO SEGREGATE THE ROUTES ACCORDING TO MOVEMENT BY BOLLARDS AND KEEPING THE MAX DISTANCE UPTO 260 M AS SHOWN IN MAP
ACTIVITY	TO PROVIDE TOURIST FACILITIES LIKE LIBRARY, SHOPPING ARCADE, PUBLIC TOILETS, ETC.	TO PROVIDE LIBRARY, PUBLIC TOILETS, CHANGING ROOMS ALONG PRACHIN MAYAPUR, JAL PRAKALP AND SRIBAS ANGAN GHAT	TO PROVIDE LIBRARY, PUBLIC TOILETS, CHANGING ROOMS ALONG PRACHIN MAYAPUR AS SHOWN IN ZONING MAP
SPACE	TO PROVIDE RECREATIONAL SPACES LIKE PARKS, PLAZAS AND GARDENS	TO PROVIDE RIVERFRONT PARKS AND GARDENS ALONG PRACHIN MAYAPUR AND JAL PRAKALP GHATS	TO PROVIDE RIVERFRONT PARKS AND GARDENS ALONG PRACHIN MAYAPUR AS SHOWN IN ZONING MAP
VISTA AND SKYLINE	TO STRENGTHEN VIEW CORRIDORS FROM HERITAGE SITES TO THE RIVER	TO STRENGTHEN VIEW CORRIDORS FROM HERITAGE SITES TO THE RIVER	TO STRENGTHEN VIEW CORRIDORS FROM HERITAGE SITES TO THE RIVER
NON PHYSICAL ASPECT	TO PROVIDE RIVERFRONT EXHIBITION AND FAIRGROUNDS, DHARMASHALAS	TO PROVIDE DHARMASHALAS ALONG PRACHIN MAYAPUR AND JAL PRAKALP GHATS	TO PROVIDE DHARMASHALAS ALONG PRACHIN MAYAPUR AS SHOWN IN ZONING MAP

Figure 93: Summary of Design Proposals, Source: author

	AREA	ZONE 2	SITE 6
EDGE	TO PROVIDE A CONTINUOUS PROMENADE CONNECTING THE GHATS	TO PROVIDE A CONTINUOUS PROMENADE CONNECTING FANSITOLA, DANDA PANITALA, BURNING, MONIPUR GHATS AND BENEATH	TO PROPOSE NEW GHAT AND TO PROVIDE A CONTINUOUS PROMENADE WITH SEATING ARRANGEMENTS
PATHWAY	TO SEGREGATE VEHICULAR AND PEDESTRIAN MOVEMENT	TO SEGREGATE THE ROUTES ACCORDING TO MOVEMENT AS SHOWN IN MAP	TO REDESIGN ROADS AND SEGREGATE THEM ACCORDING TO MOVEMENT
ACTIVITY	TO PROVIDE TOURIST FACILITIES LIKE LIBRARY, SHOPPING ARCADE, PUBLIC TOILETS, ETC.	TO PROVIDE SHOPPING ARCADE, HOTELS, LODGES, CAFETERIA, ETC. ALONG MONIPUR GHAT AND BENEATH	TO PROVIDE SHOPPING ARCADE, HOTELS, LODGES, CAFETERIA, ETC. ALONG NEWLY PROPOSED GHAT
SPACE	TO PROVIDE RECREATIONAL SPACES LIKE PARKS, PLAZAS AND GARDENS	TO PROVIDE RIVERFRONT PARKS AND PLAZAS BENEATH MONIPUR GHAT	TO PROVIDE RIVERFRONT PARKS AND PLAZAS AS SHOWN IN ZONING MAP
VISTA AND SKYLINE	TO STRENGTHEN VIEW CORRIDORS FROM HERITAGE SITES TO THE RIVER	TO STRENGTHEN VIEW CORRIDORS FROM HERITAGE SITES TO THE RIVER	TO STRENGTHEN VIEW CORRIDORS FROM HERITAGE SITES TO THE RIVER
NON PHYSICAL ASPECT	TO PROVIDE RIVERFRONT EXHIBITION AND FAIRGROUNDS, DHARMASHALAS	TO PROVIDE RIVERFRONT EXHIBITION HALLS AND FAIR GROUNDS BENEATH MONIPUR GHAT	TO PROVIDE RIVERFRONT EXHIBITION HALLS AND FAIR GROUNDS AS SHOWN IN ZONING MAP

Figure 94: Summary of Design Proposals, Source: author

6.0 DESIGN IMPLEMENTATION

6.1 SITE-1

6.1.1 DESIGN CONCEPT

6.1.2 EXISTING PLAN, SECTION AND VIEWS

6.1.3 PROPOSED PLAN, SECTION AND VIEWS

6.2 SITE-6

6.2.1 DESIGN CONCEPT

6.2.2 VISUALISATION

6.0 DESIGN IMPLEMENTATION

6.1 SITE 1

6.1.1 DESIGN CONCEPT

AIM: Rejuvenating Waterfront in a Heritage Town by connecting the waterbody to the town and making the same more usable by the town residents, thus enriching tourism potential.

PROPOSING 900M LONG GHATS WITH PROMENADE ALONG THE RIVER EDGE, WIDTH OF GHATS= 20 M, WIDTH OF PEDESTRIAN PROMENADE = 10 M

PUBLIC ZONE: TWO WHEELER PARKING = 1M X2.5 M PER UNIT
 OPEN AIR THEATRE =500 SEATER
 PARK = 8 ACRES
 FOOD COURT (TAKING 1.2 SQ.M. AREA PER PERSON AND DESIGNING FOR 300-500 CAPACITY)
 CAFETERIA
 PUBLIC TOILET

SEMI PUBLIC ZONE: MUSUEM CUM LIBRARY

PRIVATE ZONE: YOGA GARDEN
 DHARMASHALA
 HOUSING FOR MONKS

Figure 95: Zoning of Site 1, Source: author

- To develop site 1 specifically for religious minded people.
- This site has birth place of Sri Chaitanya and this makes it significant from religious point of view.

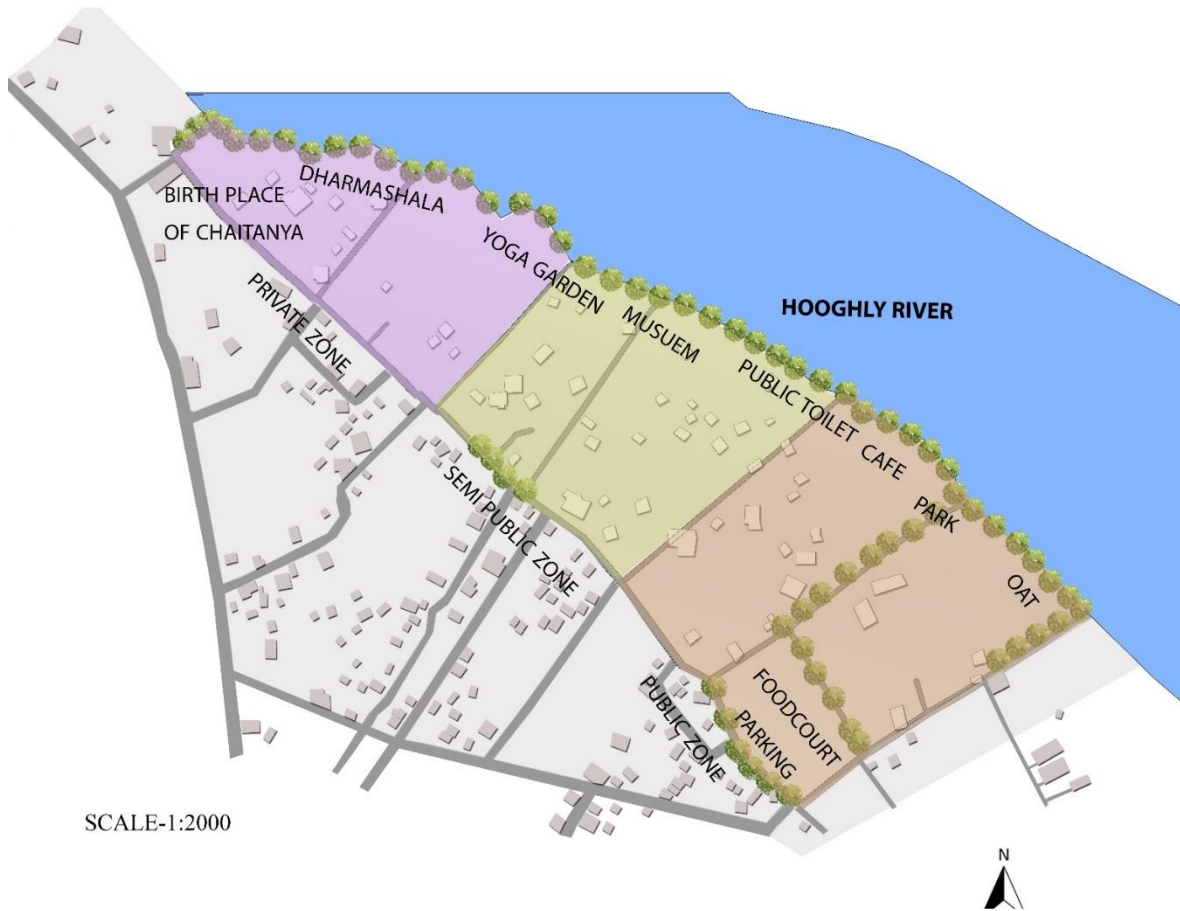


Figure 96: Concept of Site 1, Source: author

6.1.2 EXISTING PLAN, SECTION AND VIEWS

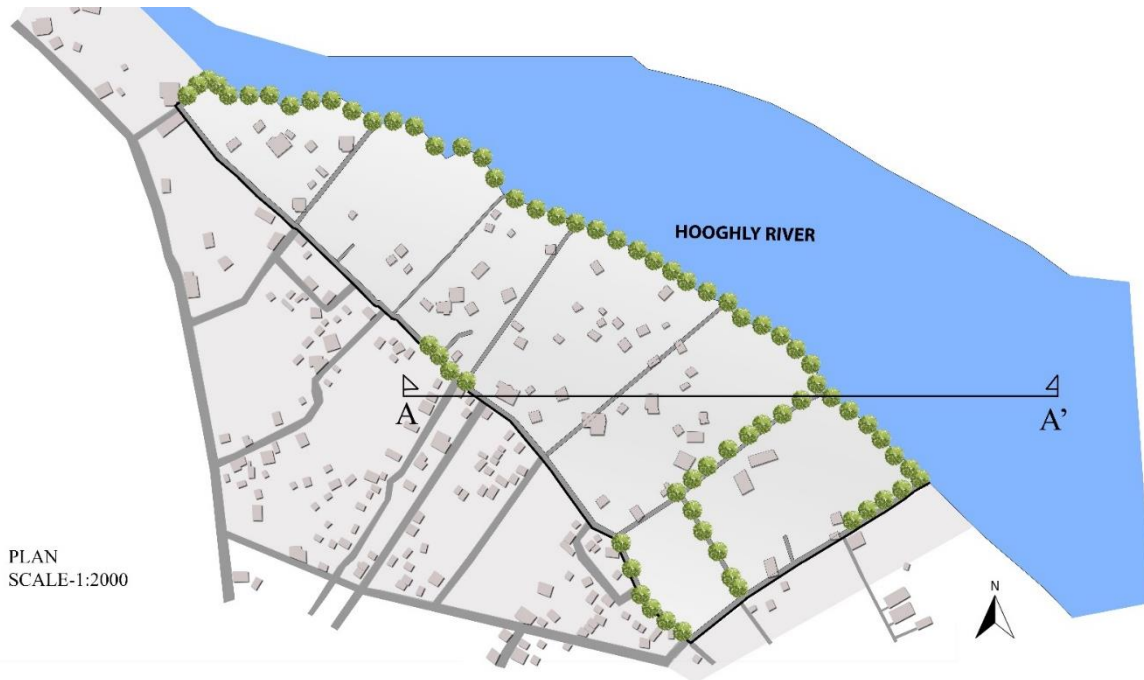


Figure 97: Site 1 – Existing Plan, Source: author



Figure 98: Site 1 – Existing Section A-A', Source: author

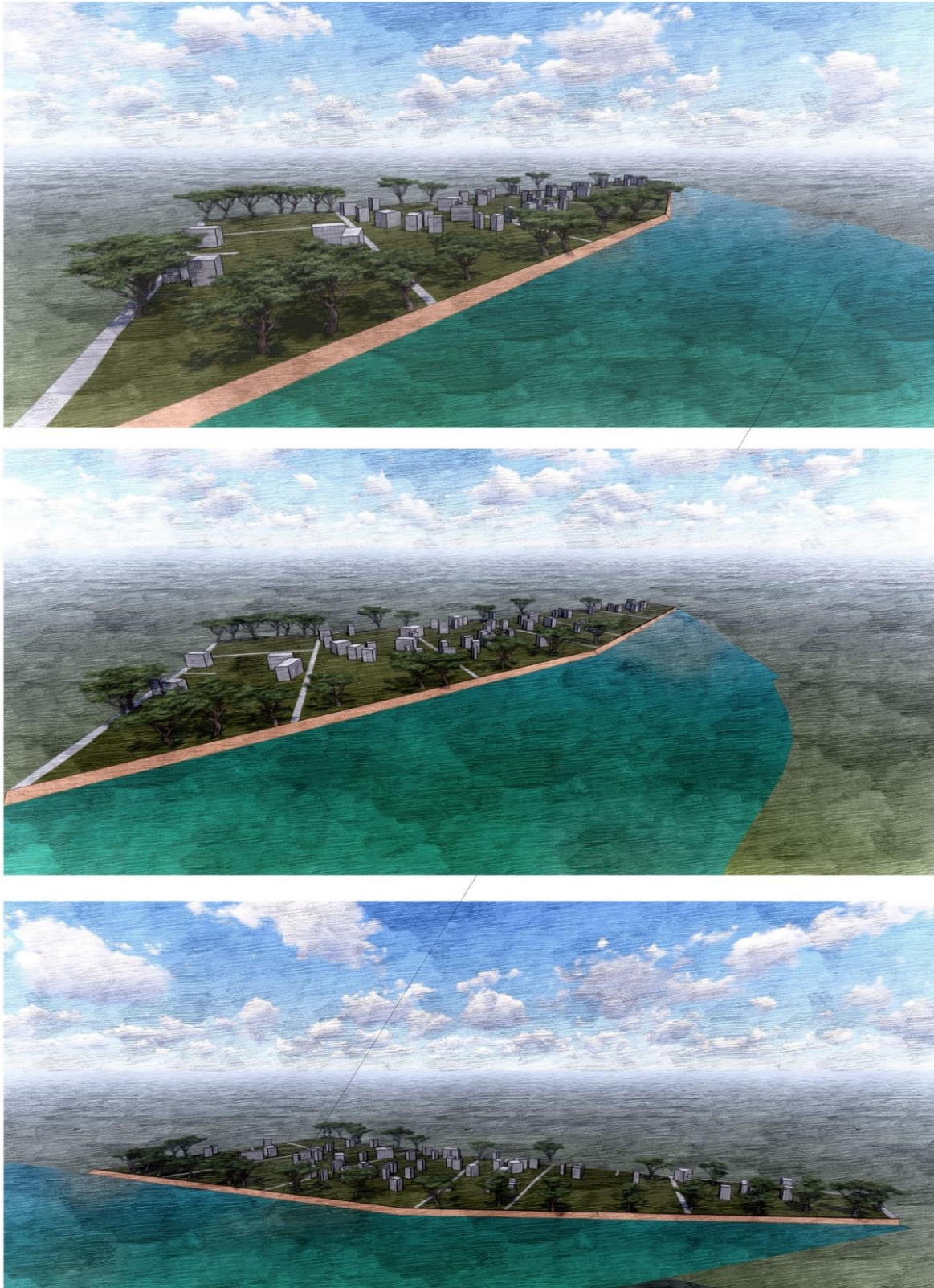


Figure 99: Site 1 – Existing Views, Source: author

6.1.3 PROPOSED PLAN, SECTION AND VIEWS



Figure 100: Site 1 – Proposed Plan, Source: author

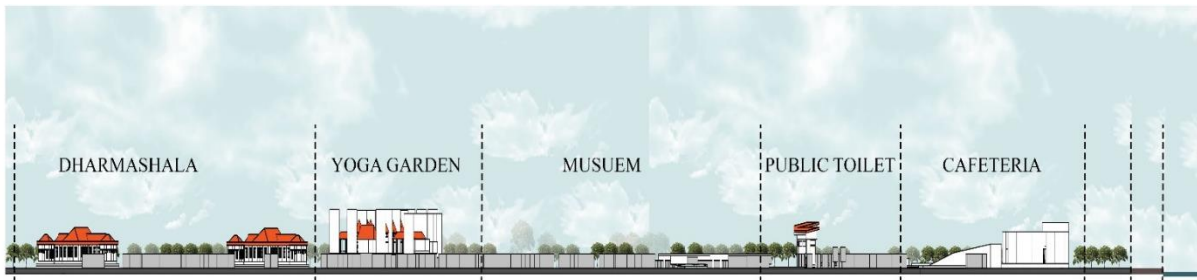


Figure 101: Site 1 – Proposed Section A-A', Source: author

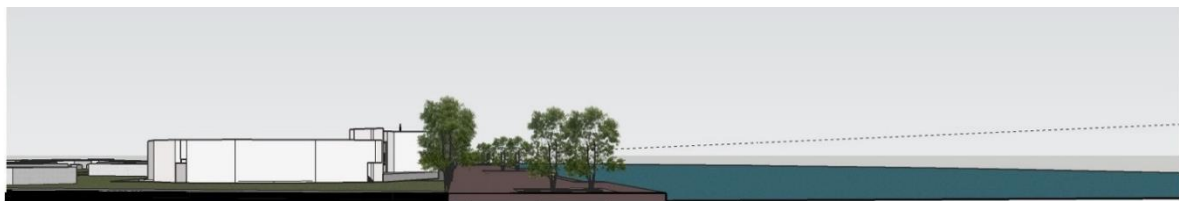


Figure 102: Site 1 – Proposed Promenade Section, Source: author



Figure 103: Site 1 – Proposed Views, Source: author



Figure 104: Site 1 – Proposed Views, Source: author

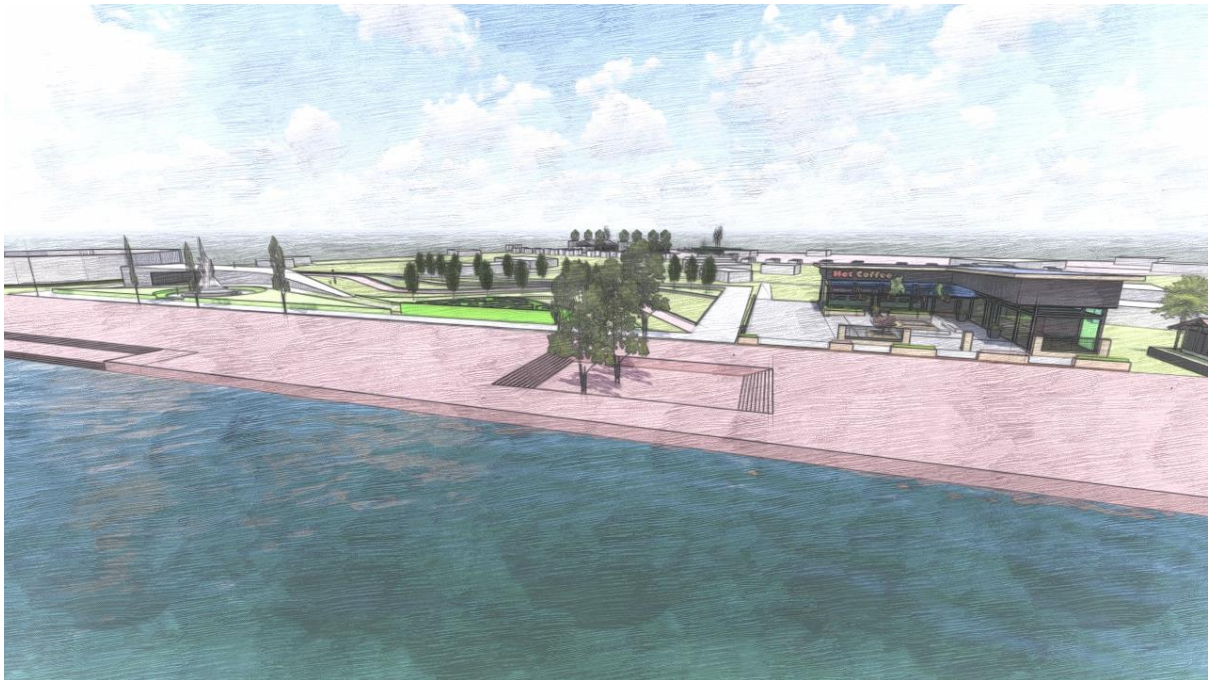


Figure 105: Site 1 – Proposed Views, Source: author

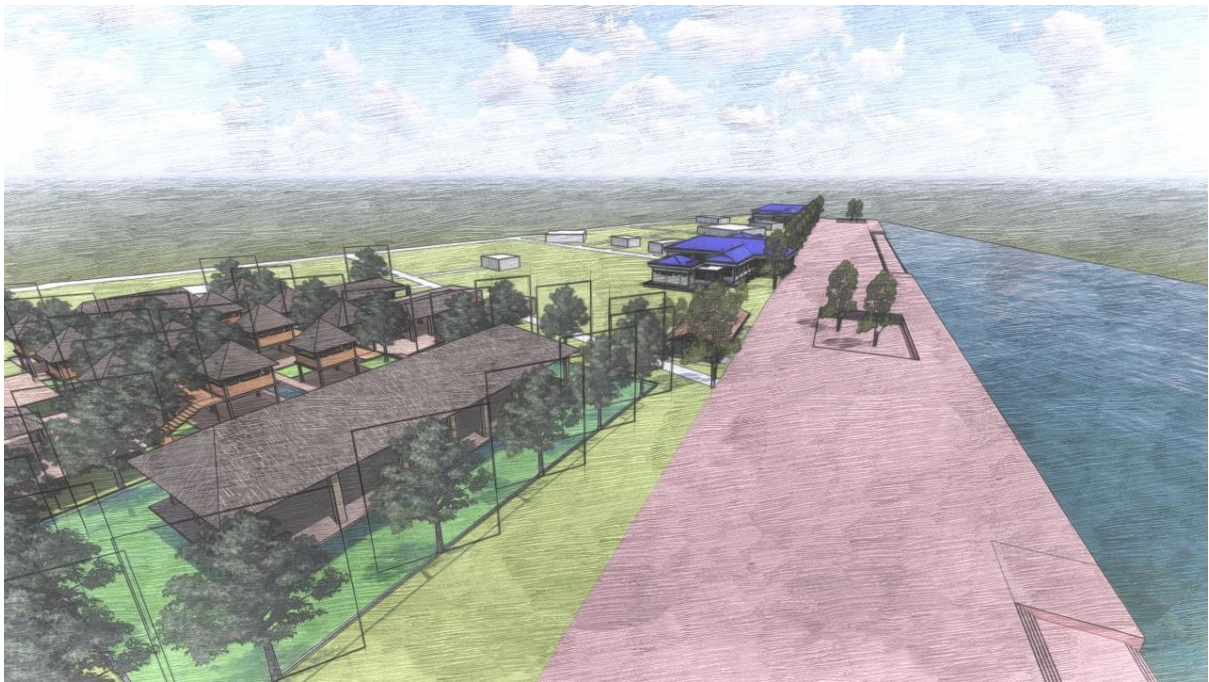


Figure 106: Site 1 – Proposed Views, Source: author

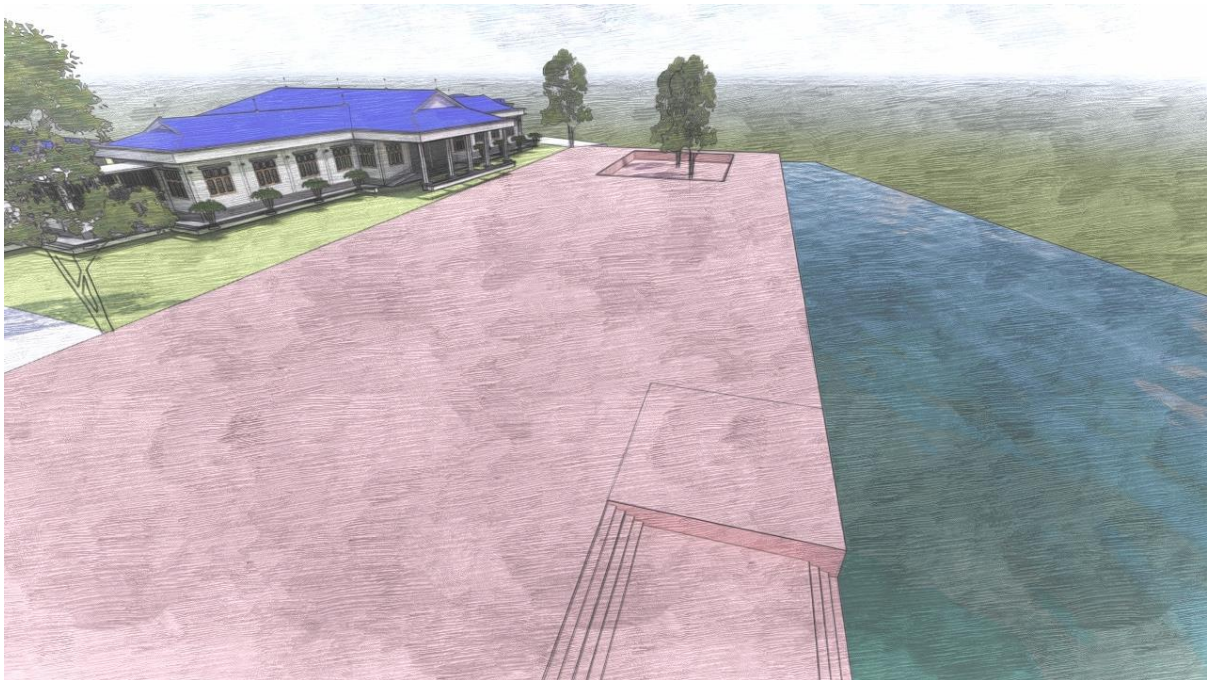
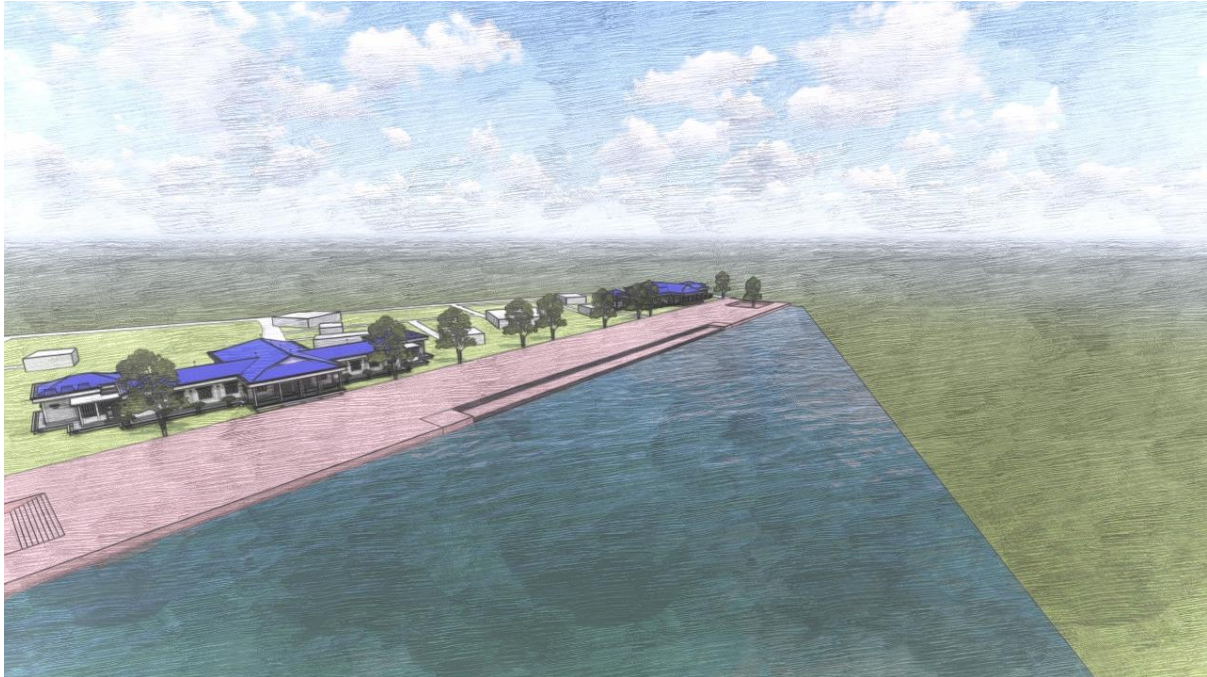


Figure 107: Site 1 – Proposed Views, Source: author

6.2 SITE 6

6.2.1 DESIGN CONCEPT

AIM: Rejuvenating Waterfront in a Heritage Town by connecting the waterbody to the town and making the same more usable by the town residents, thus enriching tourism potential.

- To develop site 6 for all categories of tourists and as a commercial site just like Mayapur.
- To develop this site as the entry point of Nabadwip.
- Housing for locals is also provided as slum rehabilitation.

PROPOSING 900M LONG GHATS WITH PROMENADE ALONG THE RIVER EDGE, WIDTH OF GHATS= 20 M, WIDTH OF PEDESTRIAN PROMENADE = 10 M

PUBLIC ZONE: BUS STOP AND TOTO PARKING
PLAZAS
PARKS
EXHIBITION GROUNDS = 3400 SQ.M.
DHABAS AND SHOPS
HOUSING FOR LOCALS

SEMI PUBLIC ZONE: SHOPPING ARCADE
RESTAURANTS
CAFETERIAS
HOUSING FOR LOCALS

PRIVATE ZONE: HOTELS = 1600 SQ.M. PER BLOCK
LODGES
HOUSING FOR LOCALS
SHOPS

Figure 108: Zoning of Site 6, Source: author

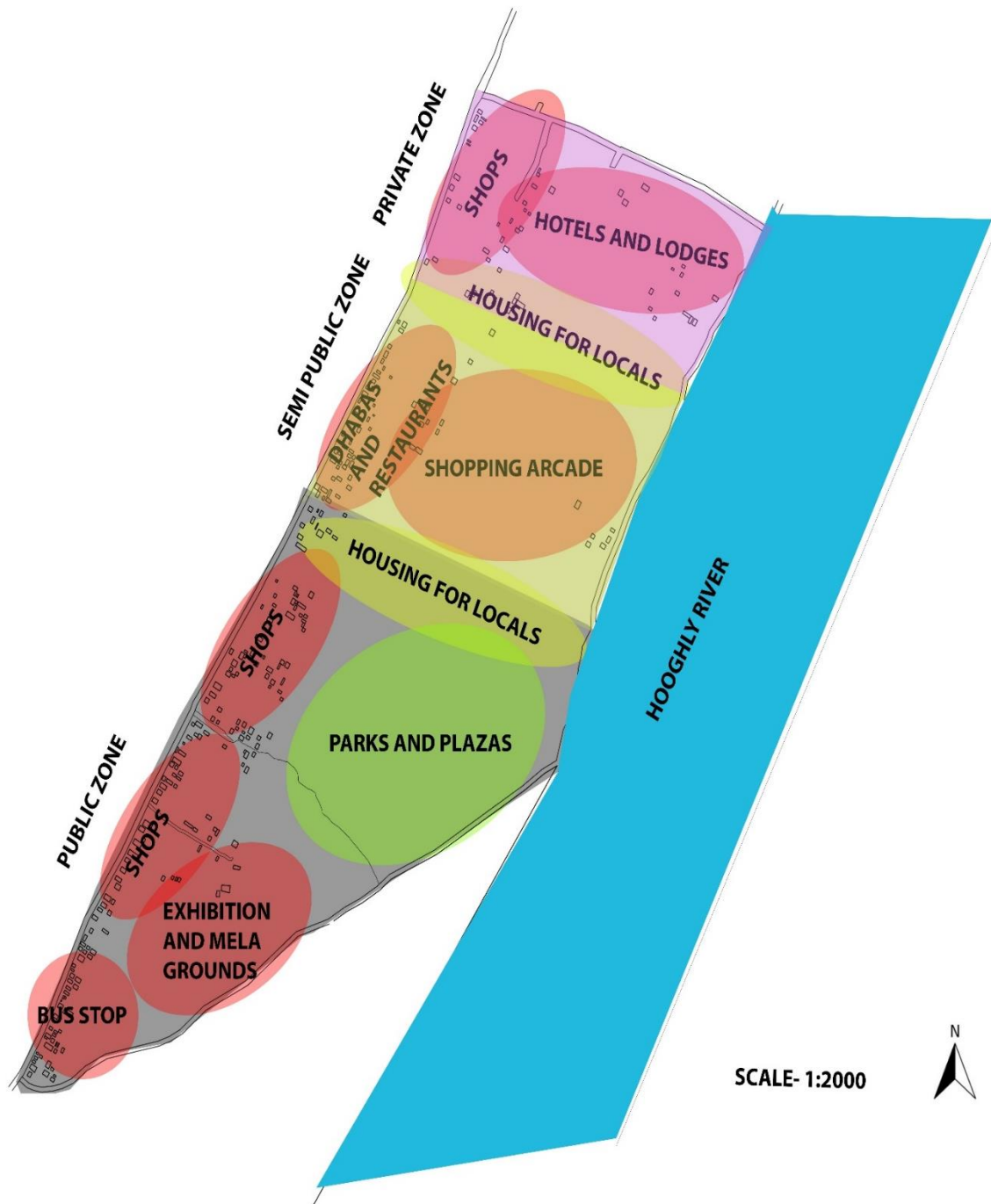
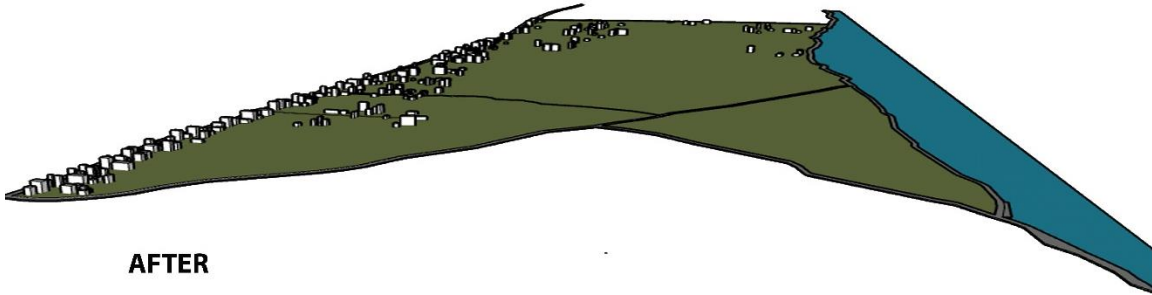


Figure 109: Concept of Site 6, Source: author

6.2.2 VISUALISATION

BEFORE



AFTER

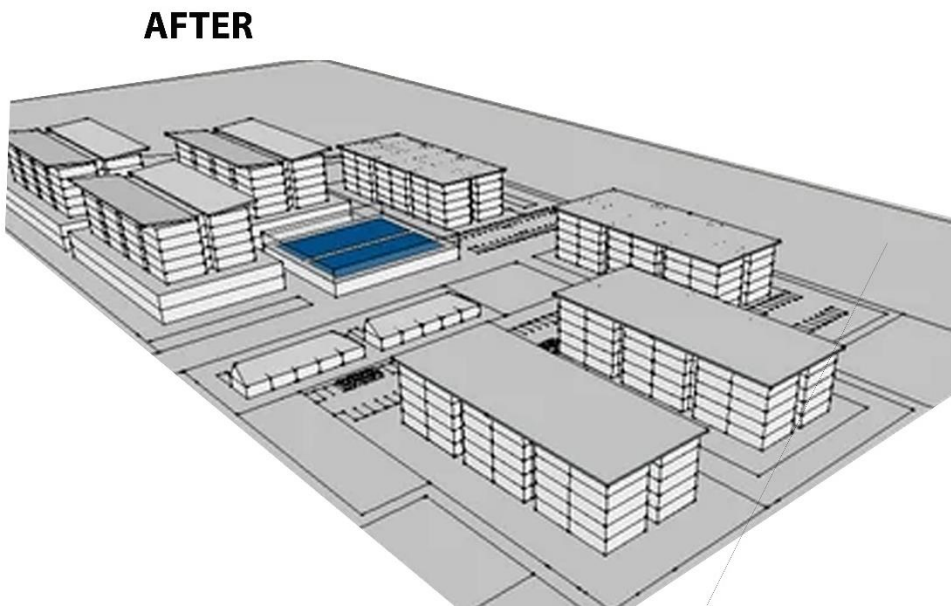


Figure 110: Site 6 – Proposed Lodging Layout Visualisation, Source: author

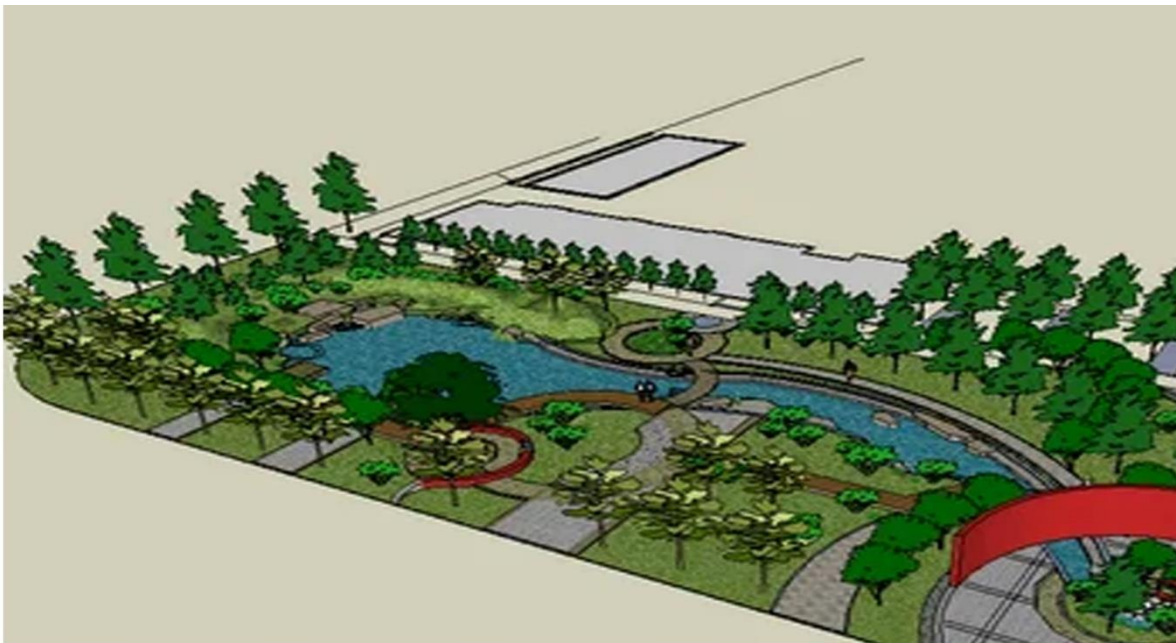


Figure 111: Site 6 – Proposed Public and Semi-Public Zones Visualisation, Source: author

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