

GOMTI RIVERFRONT DEVELOPMENT

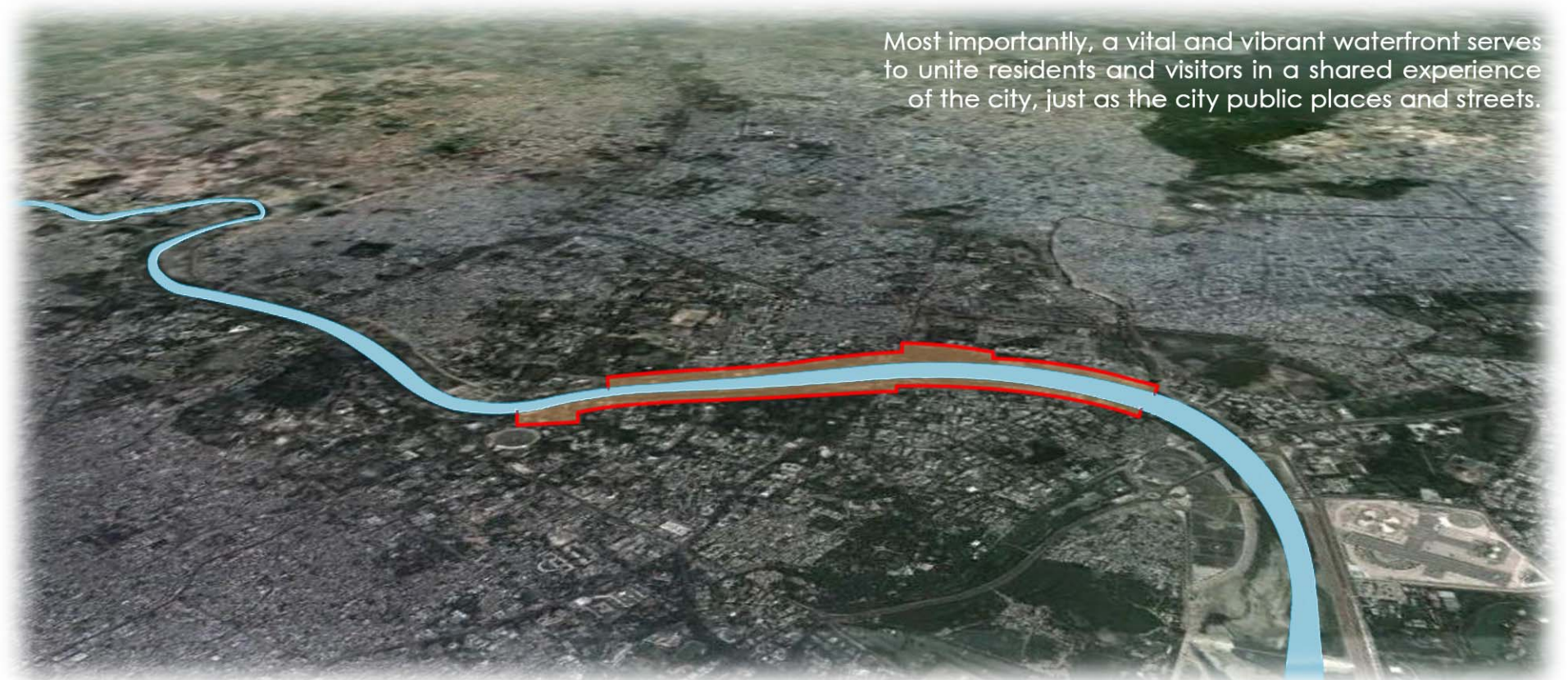
LUCKNOW, UTTAR PRADESH, INDIA

The GOMTI RIVERFRONT DEVELOPMENT is an initiative introduced to bring back life to the river passing through the city of LUCKNOW, situated in north India. The river GOMTI, that was the very reason for the origin of this city, now lies surrounded by vast unregulated stretches of vacant lands and dead spaces.

Gomti River Front Development plan will involve pitching throughout its 22km stretch by way of pitching on one side of the river. The focus of the proposed project is to revive the River Gomti through river cleaning water retention & interventions, aimed at enhancing the functional and scenic heritage of the river. Special attention is being laid to ensure reviving and conservation of the inner city fabric in the core city area along the river banks.

Today, everyone recognizes the value of public access to the waterfronts. A renewed waterfront offers investors a promising return on capital. Cities enjoy increased tourism, employment and growth. Residents gain new recreation opportunities and an expanded awareness of the natural aspects of river life.

Most importantly, a vital and vibrant waterfront serves to unite residents and visitors in a shared experience of the city, just as the city public places and streets.



INTRODUCTION

DESIGN COMPETITION

The project aims at developing the River side areas and provide aesthetically pleasing and highly functional spaces and activities that encourage the city dwellers to experience the beauty and serenity of the river side.

PROJECT LOCATION

Lucknow, India

PROJECT ORGANISER

Lucknow Development Authority

PROJECT AREA

Length of 16 KMS,
with design focus on stretch of
5 KMS near the historical city center

Total River length in city

22 KMS

SUGGESTED REQUIREMENTS

ENVIRONMENTAL

General plantation for an organized forest

Study of river pollution levels

Organic solutions for sewage treatment inlets

FUNCTIONAL

Pitching on the bank of river against erosion

Road along the river with parking provision

Street furniture and public conveniences

RECREATIONAL

An amphitheatre for cultural performances

Food Courts, Shops and Restaurants

Recreational area to include water and light fountains

Water Sports Park

LANDSCAPING

Parks and Green areas for public use

Ornamental plantations, Childrens park

Designing pathways, sit-outs, kiosks, Promenades

Sculpture Activity Areas

PROJECT DESCRIPTION

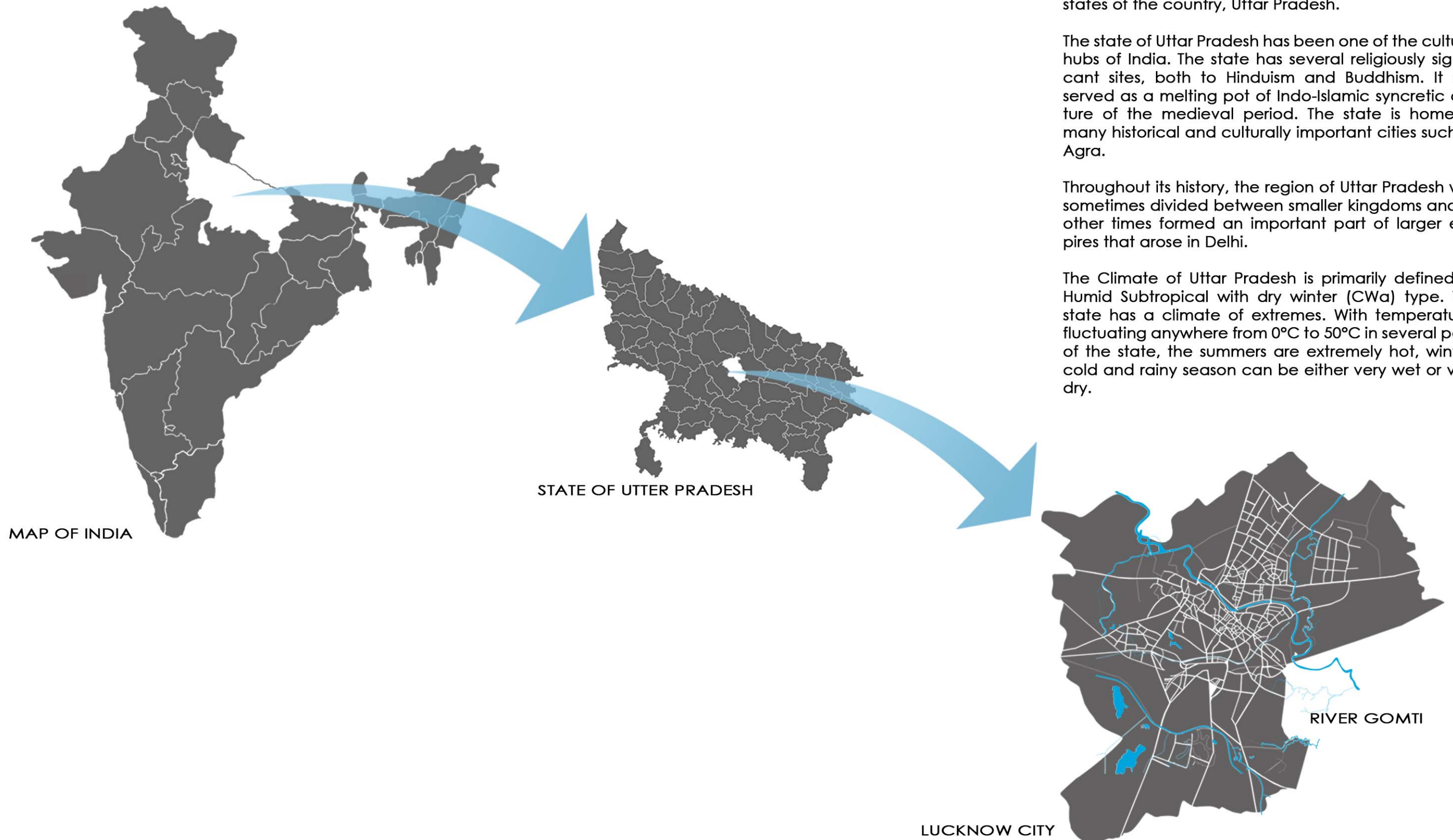
LOCATION OF THE CITY

The project is proposed in the city of Lucknow. It is the capital city of one of the politically most powerful states of the country, Uttar Pradesh.

The state of Uttar Pradesh has been one of the cultural hubs of India. The state has several religiously significant sites, both to Hinduism and Buddhism. It has served as a melting pot of Indo-Islamic syncretic culture of the medieval period. The state is home to many historical and culturally important cities such as Agra.

Throughout its history, the region of Uttar Pradesh was sometimes divided between smaller kingdoms and at other times formed an important part of larger empires that arose in Delhi.

The Climate of Uttar Pradesh is primarily defined as Humid Subtropical with dry winter (Cwa) type. The state has a climate of extremes. With temperatures fluctuating anywhere from 0°C to 50°C in several parts of the state, the summers are extremely hot, winters cold and rainy season can be either very wet or very dry.



THE STATE OF UTTAR PRADESH

The state of UTTAR PRADESH, located in northern part of India, is the second largest state in the country by geographical area, as well as the most populous state of the country.

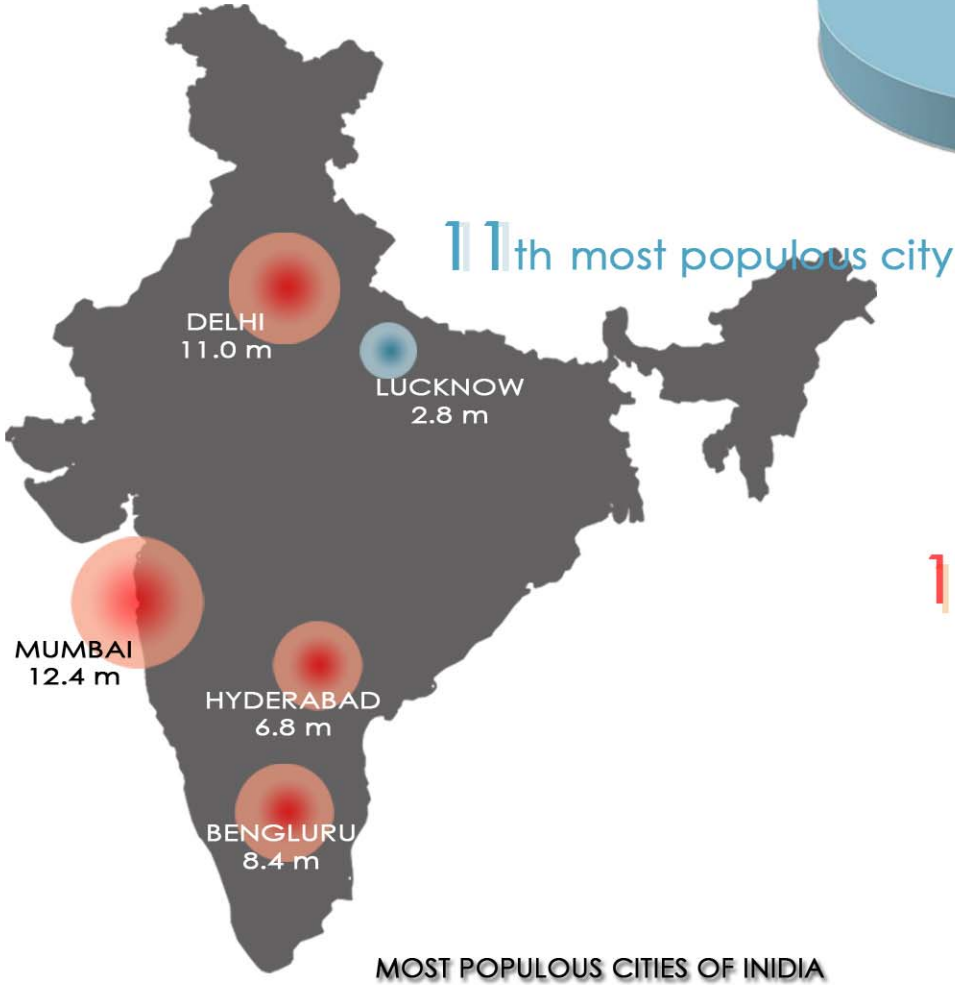
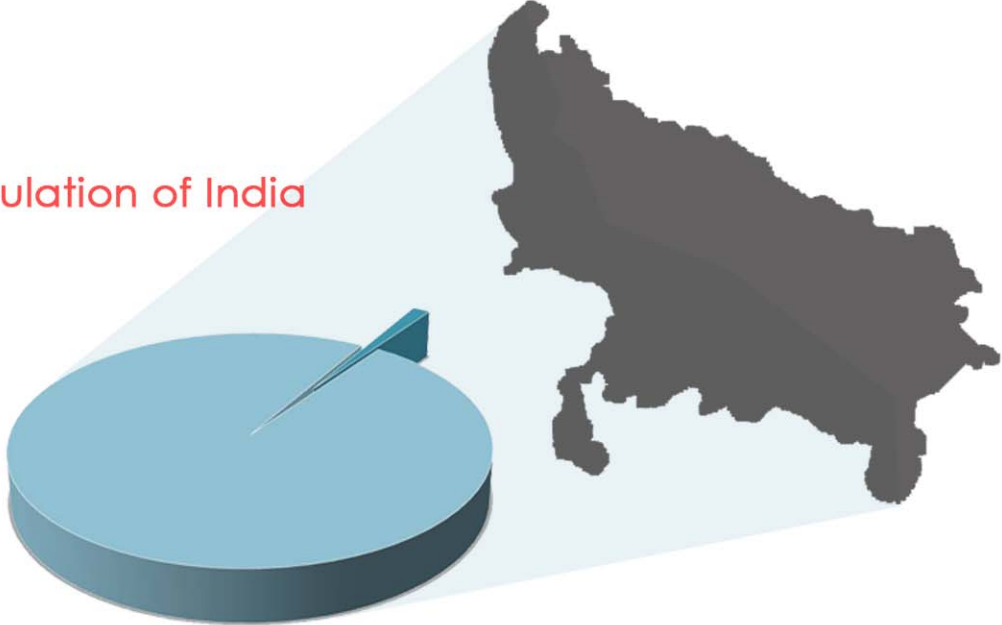
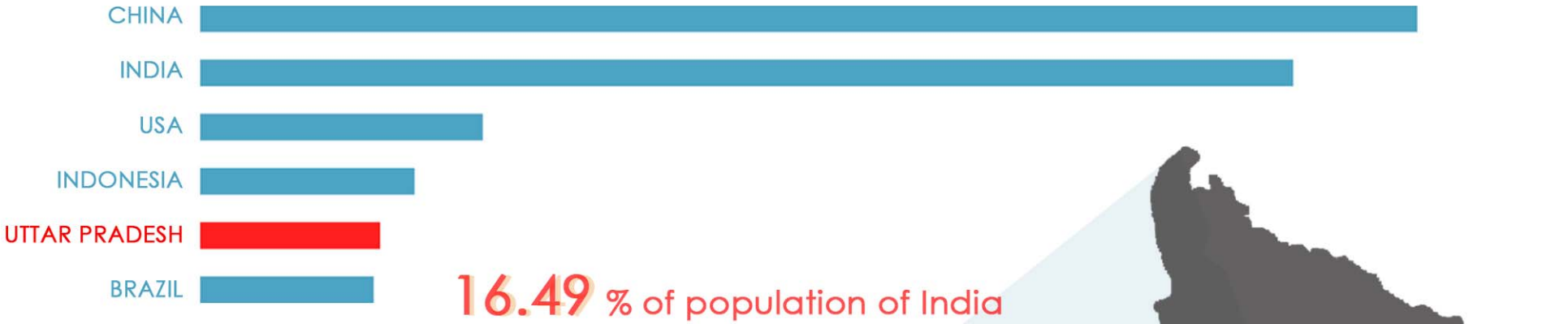
Uttar Pradesh is the second largest state-economy in India, with a GDP of \$103.5 billion in 2009. The annual per capita GDP of the state was \$1586 in 2009, on purchasing power parity basis. It contributed 8.34% to India's total GDP in the financial year 2010.

Agriculture is a significant part of the state's economy. The state was India's sixth largest producer of fruits, and became the largest producer of vegetables in 2010.

With an area of 93,933 sq mi (243,290 km²), Uttar Pradesh covers a large part of the highly fertile and densely populated upper Gangetic plain.

Historically, the state has been always been the cradle for development of Art and Architecture, Classical Music and Dance forms and other performing arts.

With a population of over 200 million people, it is India's most populous state, as well as the world's most populous sub-national entity.



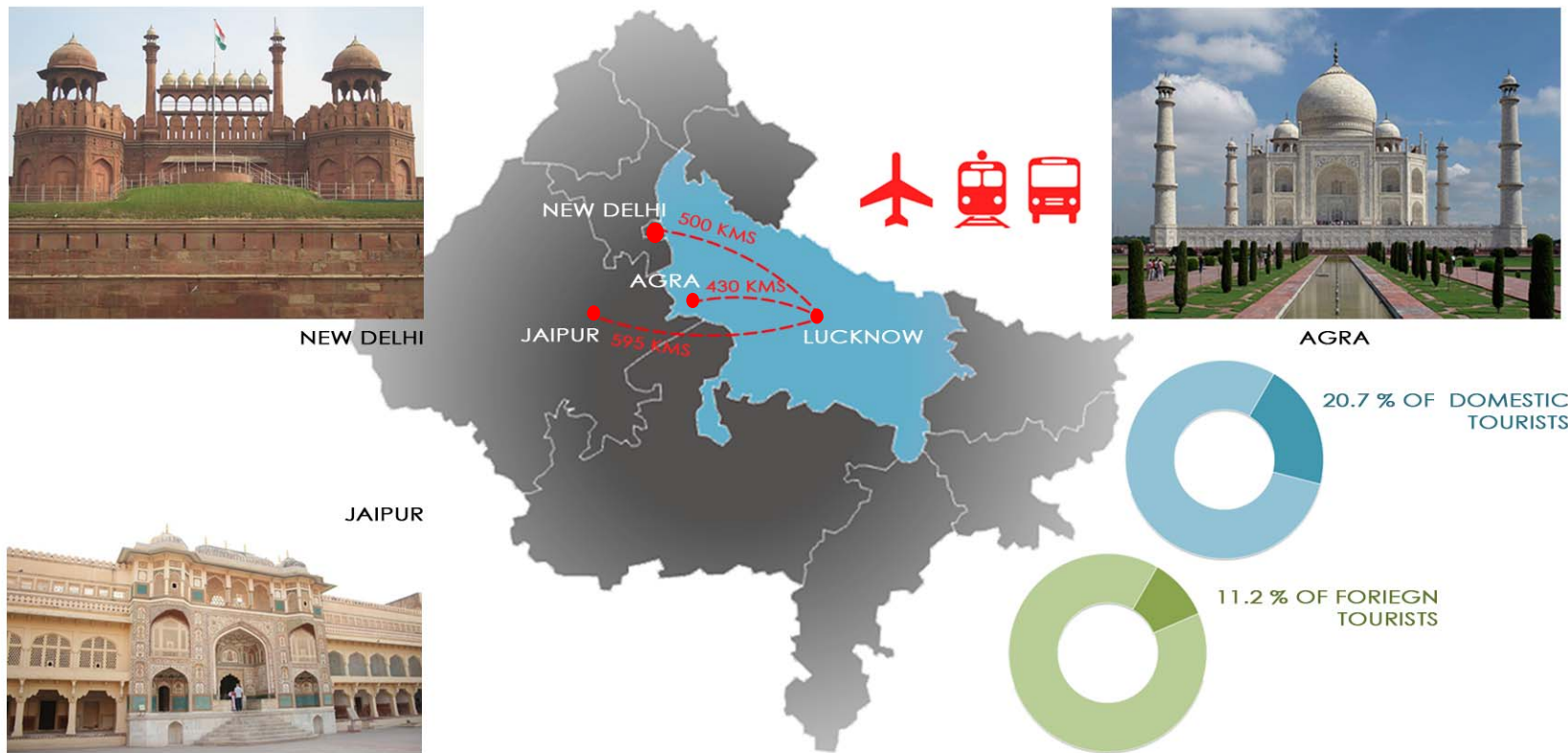
1.41 % of population of Uttar Pradesh



POPULATION DENSITIES

...the city of Lucknow

TOURISM CONNECTIONS



The city of Lucknow is the capital city of the state of Uttar Pradesh, the most populous and most politically powerful state of the country. It is situated about 500 km southeast of New Delhi in the heart of the state. The city lies at an average altitude of 110 meters above mean sea level and generally slopes to the east.

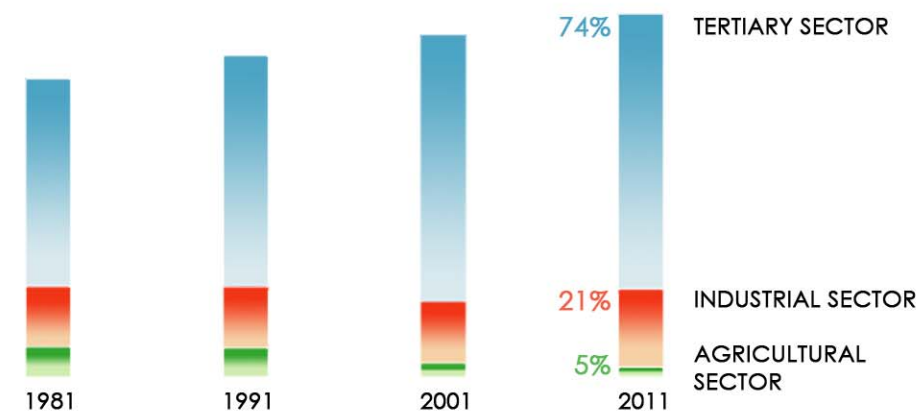
With a total population of 2.81 million people, the city continues to have very high population growth rate of population.

The City offers better employment opportunities and education facilities. Migration into Lucknow accounts for 36% increase in population over the last decade. Census 2001 estimates that in the last decade, Lucknow received 2,07,307 migrants, 56.6% of which were from rural areas.

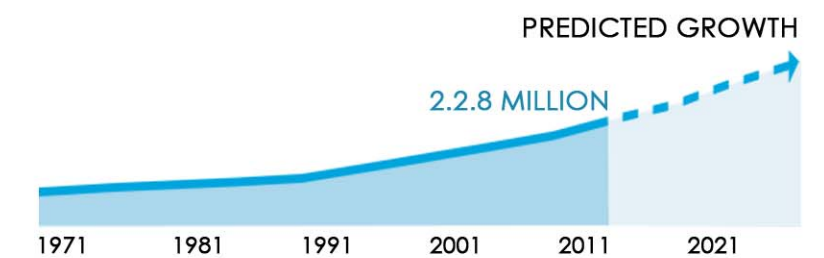
The position of the City as the only large urban centre amidst a number of small towns in the surrounding districts makes it an attractive destination for job seekers and people in need of education and health facilities. Lucknow is known for its cultural and artistic heritage.

ECONOMIC SECTORS

11th most populous city
6th fastest job creation
4th highest % in I.T. sector



POPULATION DATA



CITY ORIGIN AND DEVELOPMENT

The city of Lucknow is believed to have originated as numerous small settlements neighbouring the fertile banks of river Gomti, majorly as a trade center.

It then developed and transformed into a major political center of the region under the Islamic Rulers, before passing on to the British rulers.



1423 A.D.

Construction of various Islamic mosques including the famous Jama Masjid



1784 A.D.

Construction of a number of magnificent palaces and public buildings, enhancing the royal lifestyles and promoting classical music, dance and other art forms.



10th-11th CENT. A.D.

The city originated as a medieval trade center on the banks of river Gomti

HINDU RULERS

1350 A.D.

Change of character from trade center to political center under Delhi Islamic Dynasty (Mughal Dynasty)

1732 A.D.

Declared political capital of the independent province of Awadh

1775 A.D.

City develops as a major center for performing arts, music and culture in north India

ISLAMIC RULERS

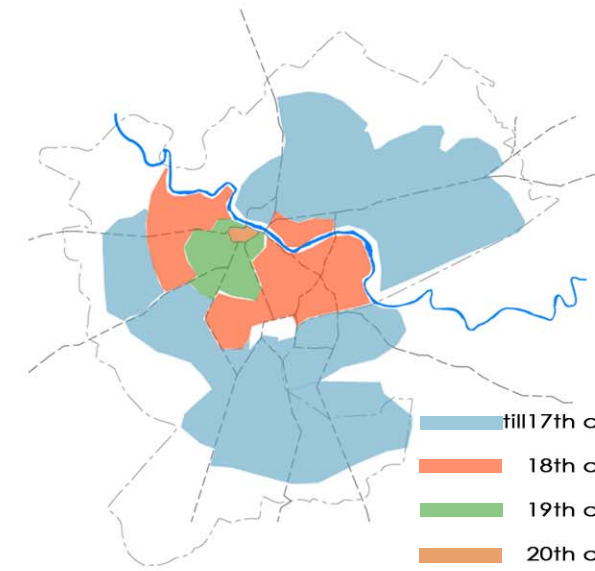
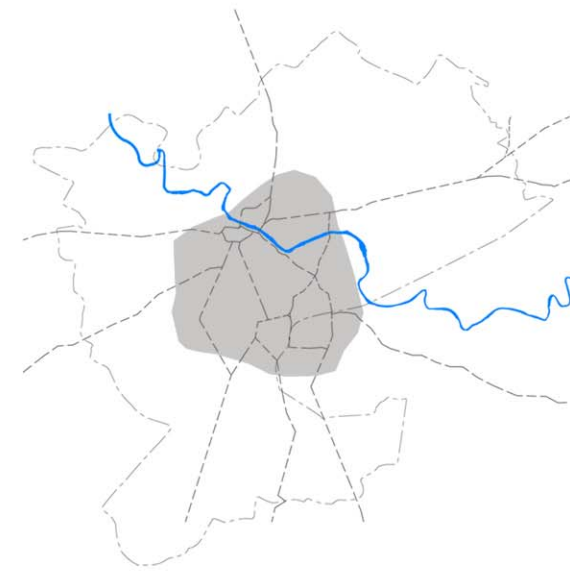
CITY ORIGIN AND DEVELOPMENT

The city developed as army and residential headquarter under the British Rule. It was a financially important hold owing to large fertile plains of the province.

The city was also the birth place of numerous freedom movements and was declared the capital of the state in independent India. It has been a politically very powerful and influential center ever since.



1816 A.D.
The British built a number of buildings required for the administration of the region, like British Residency. A number of Churches were also constructed during the reign.



Legend:
 - till 17th cent. (light blue)
 - 18th cent. (orange)
 - 19th cent. (green)
 - 20th cent. (dark orange)

<p>1801 A.D.</p>	<p>1857 A.D.-1916 A.D.</p>	<p>1947 A.D.</p>	<p>2012 A.D.</p>
<p>The city and the province, known for very high yielding agricultural areas, comes under British Rule</p> <p>BRITISH IMPERIALIST ERA</p>	<p>Initiation of the freedom struggle movements and armed mutinies in the British Indian Armies</p>	<p>Declared political capital of the state of Uttar Pradesh</p>	<p>The city is one of the major political center of the region</p> <p>INDEPENDENT INDIA</p>

CITY IMAGES

Lucknow has always been a multicultural city, and flourished as a cultural and artistic capital of North India in the 18th and 19th centuries. Courty manners, beautiful gardens, poetry, music, and fine cuisine patronised by the Persian-loving Shia Nawabs of the city are well known amongst Indians and students of South Asian culture and history.

Lucknow is popularly known as 'The City of Nawabs', (City of Royals). It is also known as the Golden City of the East, Shiraz-i-Hind and The Constantinople of India.



HERITAGE



RECREATIONAL

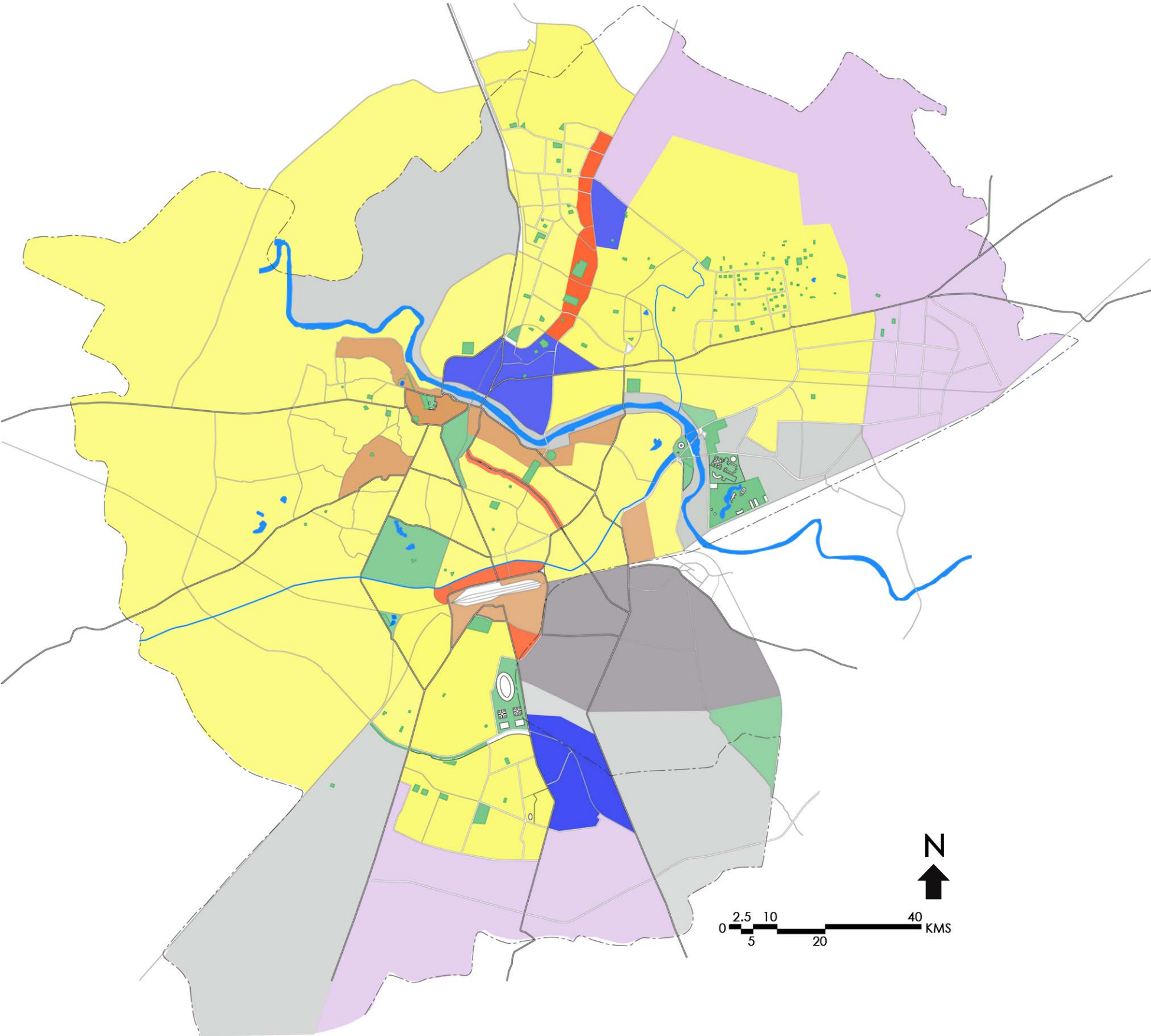


RELIGIOUS



CITY LAND USE ZONING PLAN

Lucknow has always been a multicultural city, and flourished as a cultural and artistic capital of North India in the 18th and 19th centuries. Courty manners, beautiful gardens, poetry, music, and fine cuisine patronised by the Persian-loving Shia Nawabs of the city are well known amongst Indians and students of South Asian culture and history. Lucknow is popularly known as The City of Nawabs. It is also known as the Golden City of the East, Shiraz-i-Hind and The Constantinople of India.



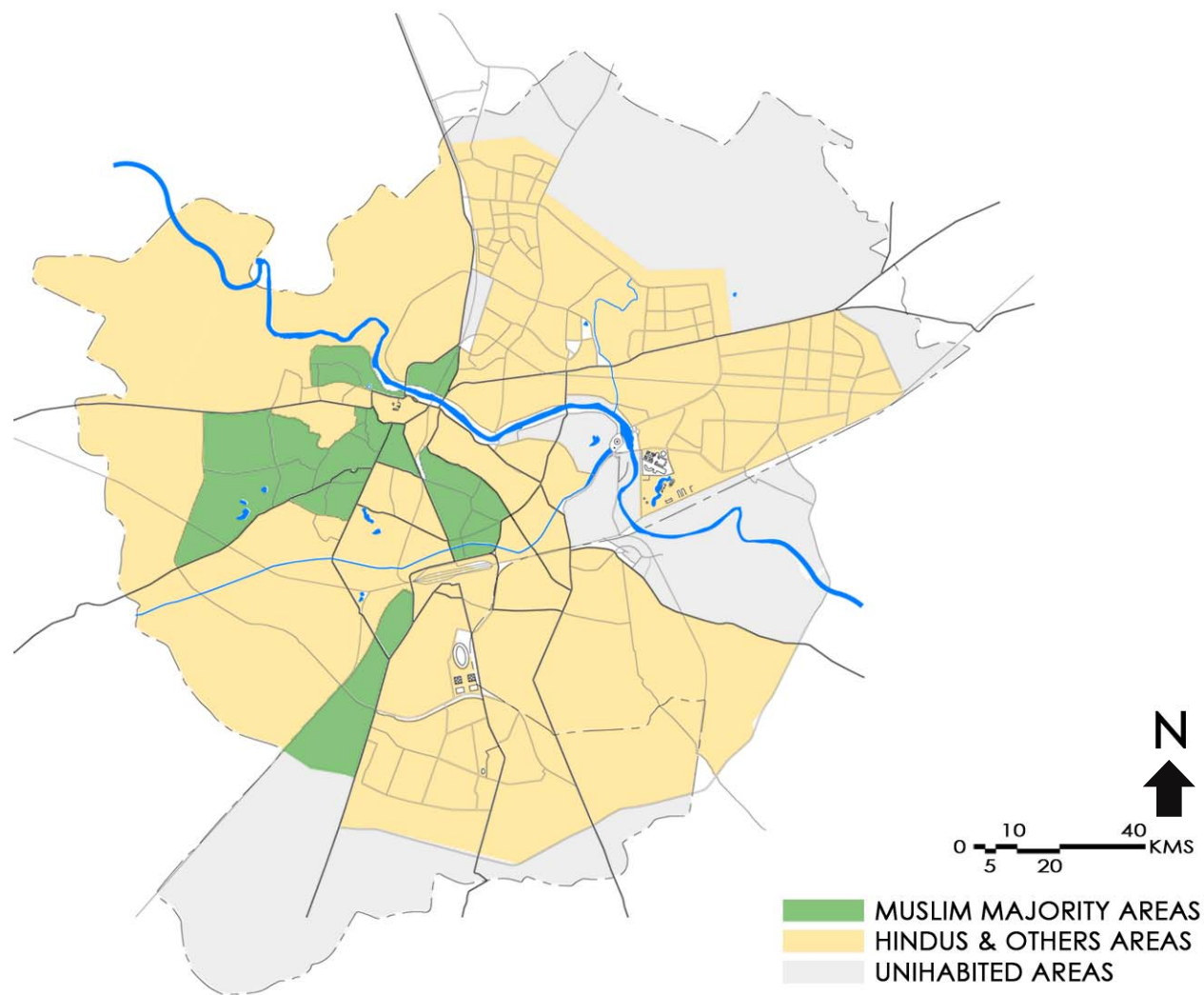
- RESIDENTIAL
- COMMERCIAL
- INSTITUTIONAL
- PARKS
- TRAFFIC
- PUBLIC SERVICES
- WATER BODIES
- OPEN LANDS
- HERITAGE ZONE

UNDERSTANDING THE CITY

RELIGIOUS DISTRIBUTION

Lucknow has very particular Muslim dominant areas, which include Muslim Universities, Residences, and Worship places. These pockets are characterized by dense population, thin streets and very dense historical market places.

The rest of the city is evenly occupied by Hindus and other religions. Most of the newer developments and constructions are taking place in the rest of the areas only.

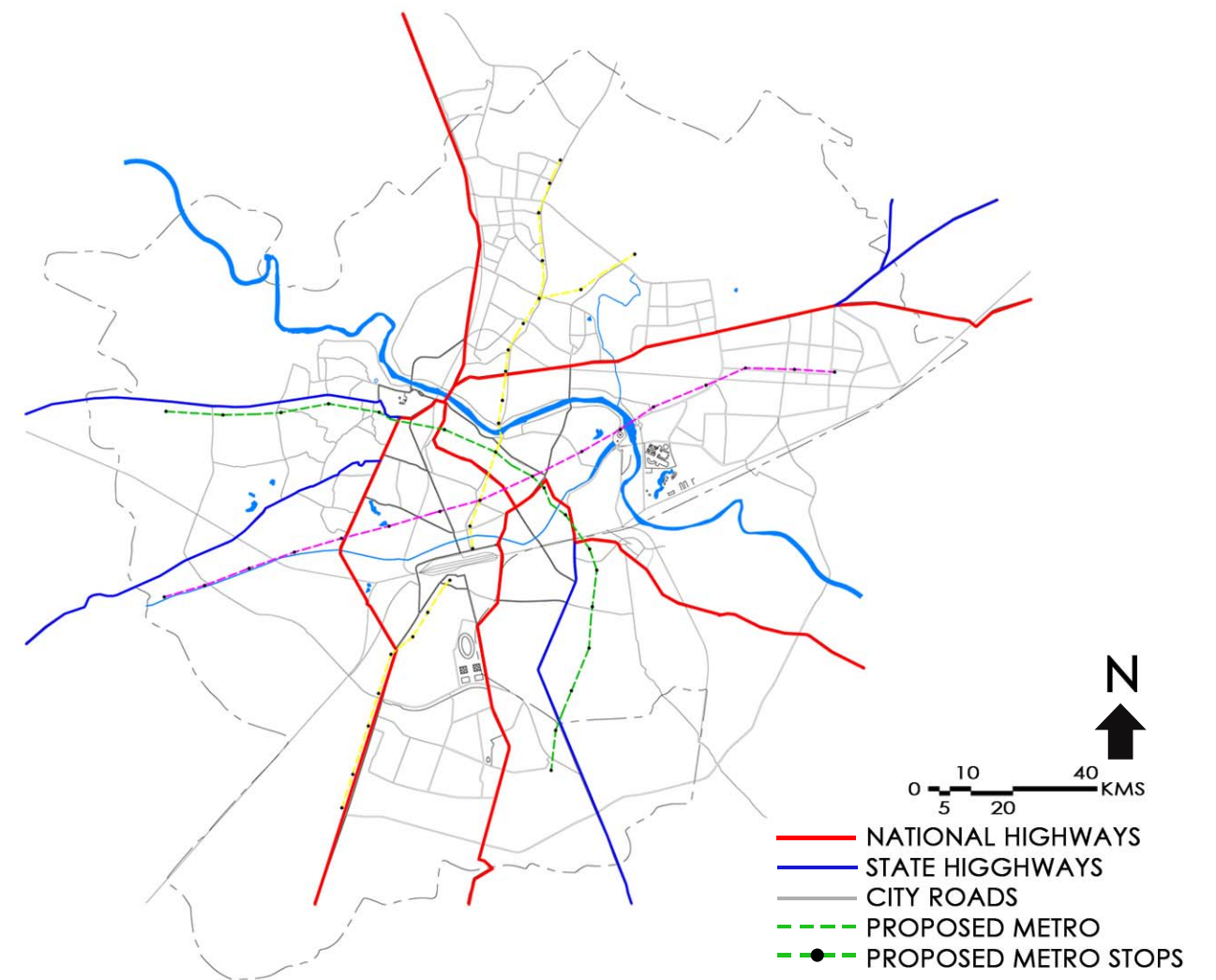


TRANSPORTATION SYSTEM

The city has 3 major National Highways passing through it, connecting it with major regional centers as well as New Delhi.

The city also has numerous State Highways passing through it. The street roads in most of the areas are very wide. But in densely populated areas of the old city center, they are very narrow. In all cases, all streets have very high traffic owing to the large population.

There is also a proposed metro system for which the excavation works have already been initiated.



...role of rivers in India



The rivers of India have been the main source of living of the Indian people over history. Specially in Hinduism, the rivers are considered goddesses and worshipped. Most river are flanked by temples and GHATS, stepped platforms, on the banks, from where religious followers present offering to the river.

There are some major Rivers in India like, Ganga, Yamuna, Narmada, Mahanadi and Brahmaputra. The Himalayan Rivers are best for white water sports like rafting and other river sports. The seven rivers are counted as the holy rivers of India, one of the most holiest river in India is Ganga or The Gange. Rivers are India's lifeline and enjoy a special place in prayers and its traditional practices. Most of the holy places in India like, Varanasi, Haridwar, Talakaveri, Nasik, Ujjain and Patna are situated along with the bank of seven holy rivers.

The River Gomti, is also believed to be one of the most sacred and holy river.

EXAMPLES OF GHATS IN OTHER CITIES

PUSHKAR GHAT



HARIDWARGHAT



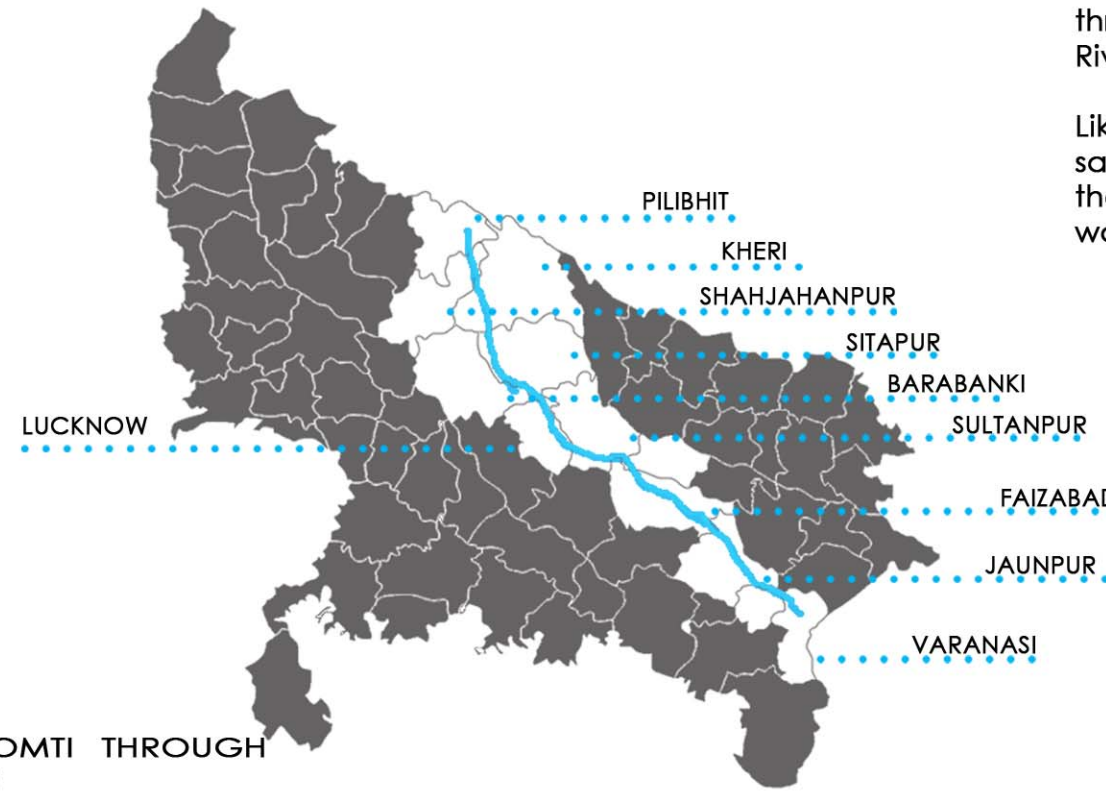
VARANASI GHAT



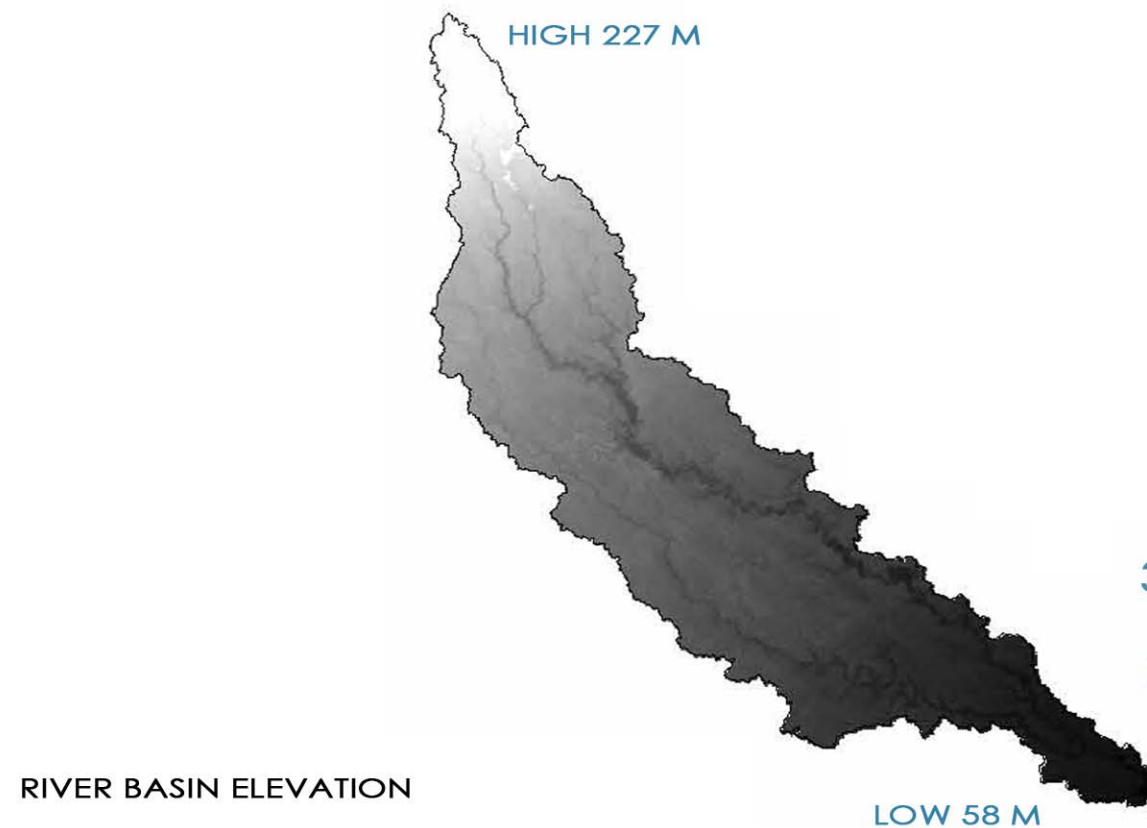
GOMTI RIVER BASIN

The river Gomti originates from in a lake named, Gomat Taal, situated in northern part of the state of Uttar Pradesh, India. It extends 900 km (560 mi) through Uttar Pradesh and then meets the Ganges River.

Like Ganges, the river Gomti is also considered as a sacred river. According to Hindu mythology the river is the daughter of Sage Vashist, and bathing in the waters of the Gomati can wash away one's sins.

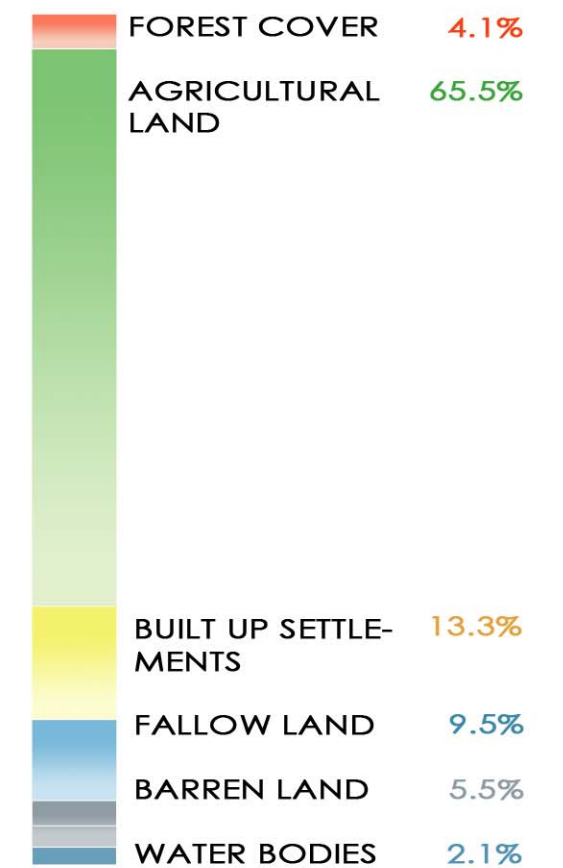


DISCHARGE TO GANGA	7,390 MN CU. M.
RIVER LENGTH BEFORE LUCKNOW CITY	240 KMS
RIVER LENGTH IN CITY URBAN LIMIT	14 KMS



BASIN AREA
30,407.20 KM²

MEAN SLOPE
.027 %



GOMTI RIVER IN LUCKNOW CITY



D. AMBEDKAR PARK
 27 ACRES OF PUBLIC PARK WITH
 LARGE GREEN AREAS AND
 HARD LANDSCAPE



A. KUDIYA GHAT
 RECREATIONAL AREA DEVELOPED IN TRADITIONAL STYLE WITH STEPPED LANDSCAPE LEADING TO THE RIVER WATER



B. LAL PULIYA (RED BRIDGE)
 HISTORICAL BRIDGE CONSTRUCTED IN THE YEAR..... DURING THE BRITISH RULE, STILL USED BY REGULAR TRAFFIC

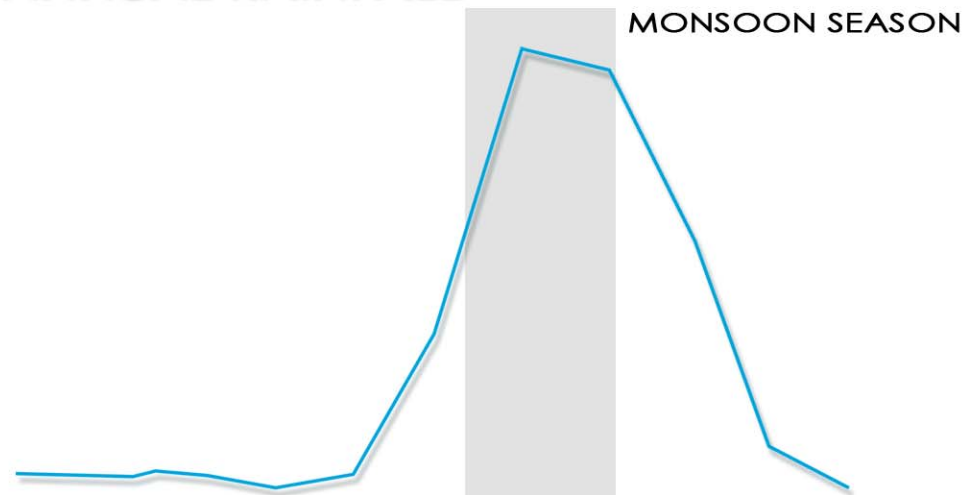


C. CHHATAR MANZIL (WIND PALACE)
 BUILT BY THE BRITISH RULERS AS THEIR RESIDENCE BY THE RIVER SIDE TO AVOID THE HOT SUMMERS

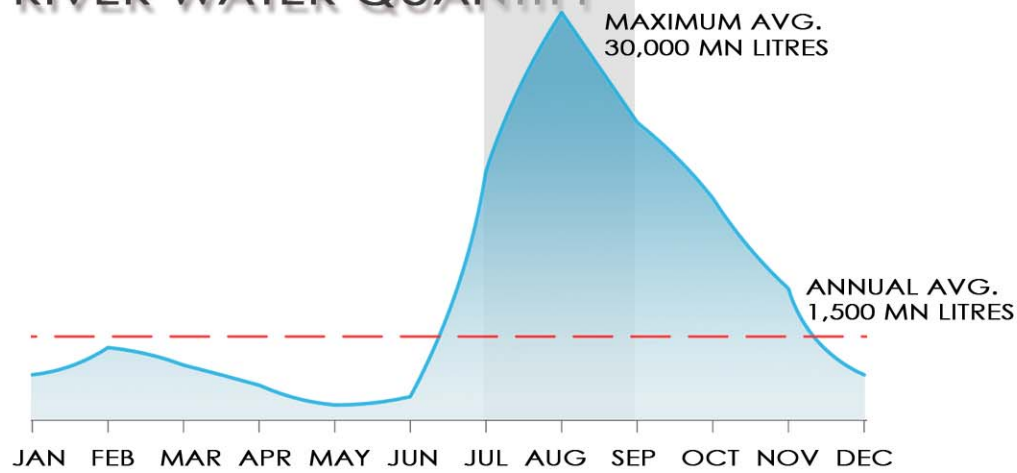


RIVER WATER INFORMATION

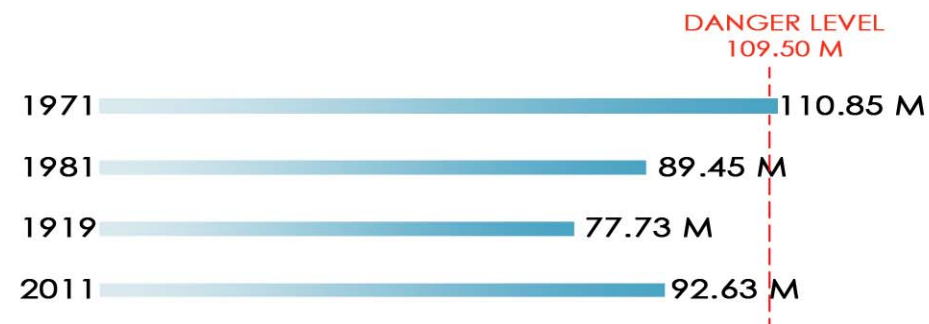
ANNUAL RAINFALL



RIVER WATER QUANTITY



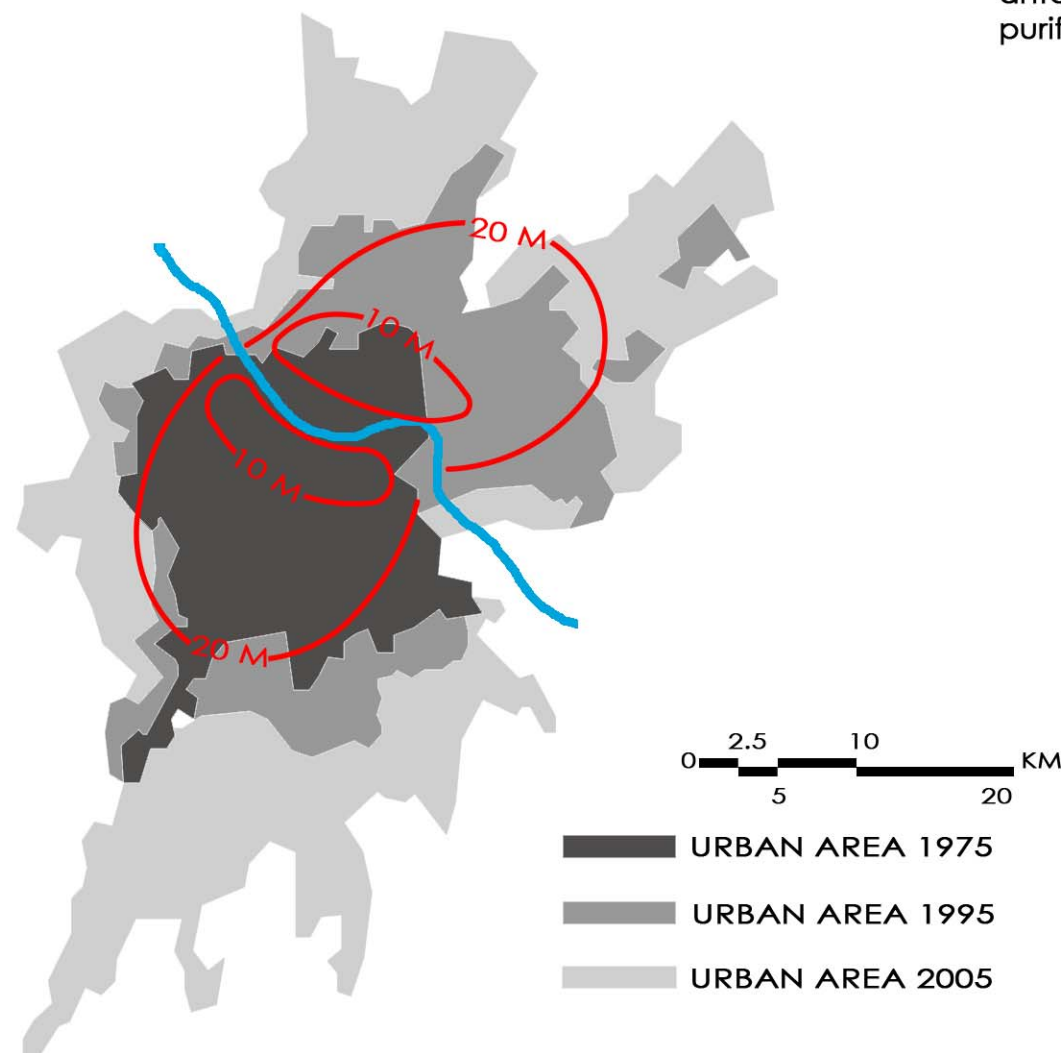
RIVER WATER LEVELS



CITY WATER CONSUMPTION



GROUND WATER TABLE



Total length of the river is about 940 Km. and it flows in Uttar Pradesh state. River Gomti has 22 tributaries and Sai river is its major tributary.

After 240 kms, the river enters Lucknow, through which it makes a curve of about 14 km. The river quenches the thirst of the city at the entrance point where City's water supply systems are installed. Near Gomti Nagar, the Gomti barrage impounds the river providing it a look of a beautiful blue water lake.

Historically, Gomti River has served as a waterway, a source of fishing and provided livelihood to dwellers all along the region's fertile plains. Due to this important role, a number of big and small towns developed and thrived on the banks of the river.

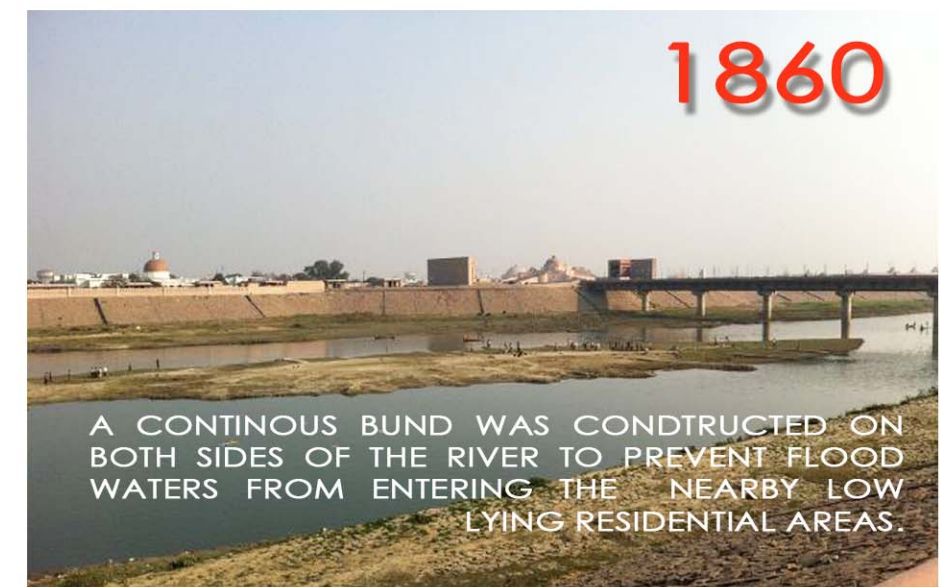
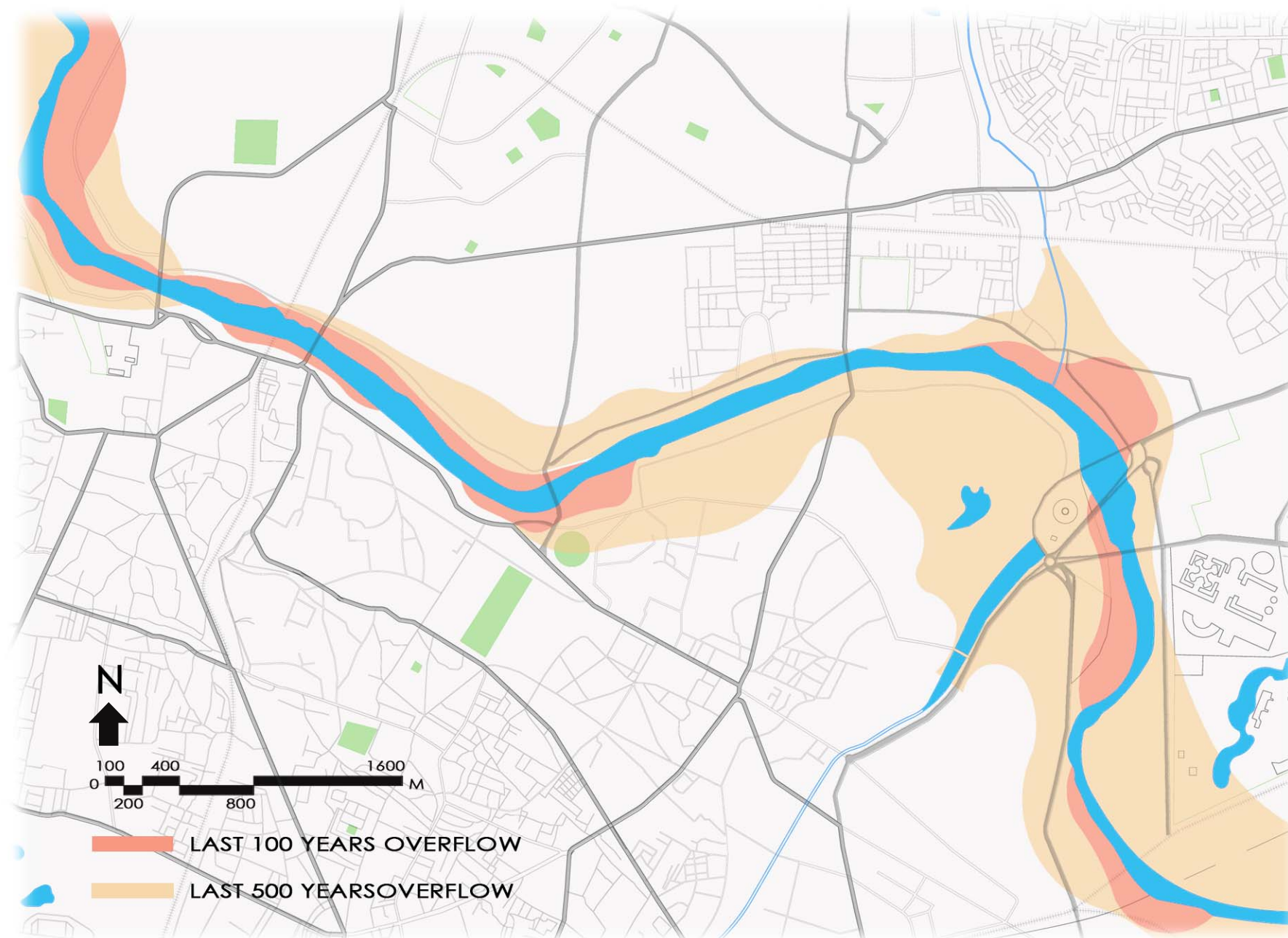
The ever-growing population has resulted in increased water withdrawal from the river as well as from the surrounding ground water. Also, growing inflow of pollutants in the river is now destabilising the self-purification mechanism of the river.

RIVER FLOODING INFORMATION

The river Gomti is basically a meandering river, flowing in the Gangetic plain region, thus it is subject to frequent flooding during the monsoon season.

The earliest Flood Prevention measures included 8-10 M high BUNDS on both sides of the river within the city limits, by the British. After which they also built a number of buildings close to the banks of the river.

The Lucknow Barrage was built in 1975 at the end of the city Urban limit and has been provided with large spaces for overflow.

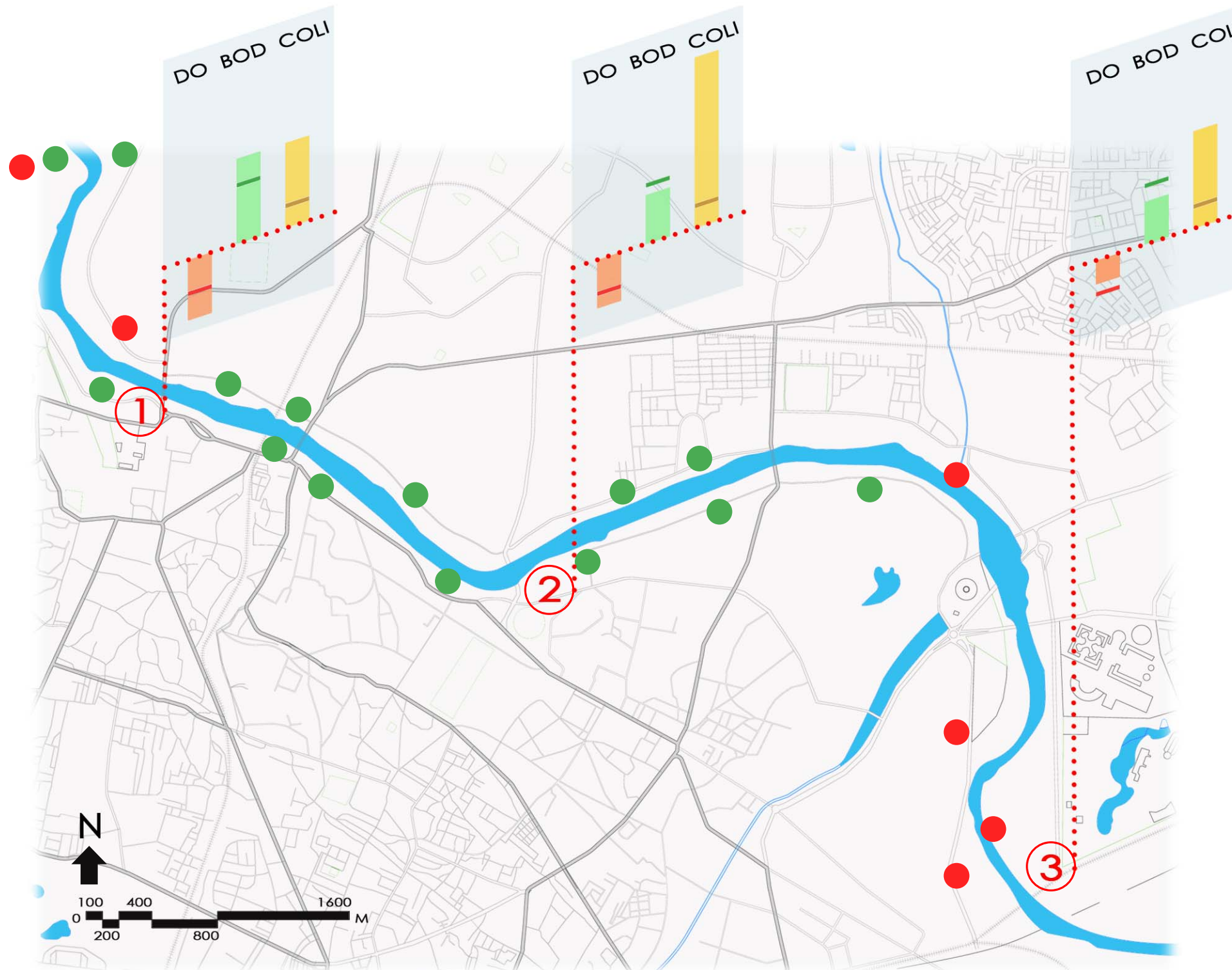


RIVER POLLUTION

The river has been facing serious pollution issue in the last few years, specially near big cities like Lucknow. The local government bodies have been taking strict actions in this regards.

Untill 2005, there were 25 sewage outlets, with in Luc-know city, that drained untreated domestic waste into the river directly. Out of these, 18 outlets have been completely closed and diverted to nearest Sewage Treatment Plants. Remaining inlets, though smaller in quantity still continue to flo into the city.

The river water is now considered safe for drinking before it enters the Lucknow city. As it leaves the city, it continues to be safe for other domestic activities, but unfit for drinking purposes. The local administration is planning to employ natural and organic means of water purification for the remaining sewers.



POLLUTION CONSTITUENT LEVELS

	BOD (mg/l)	DO (mg/l)	COLI. mpn/100ml	RATING
STATION 1	5.5	6.6	2300	B
STATION 2	4.1	3.8	4400	C
STATION 3	2.6	2.4	3200	C

RECOMMENDED LEVELS

<3	<5	500	B
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Though there are some differences observed in levels of Dissolved Oxygen (DO) and Biochemical Oxygen (BOD), the most prominent difference is readable in the amount of Coliform, thus justifying the need for ORGANIC TREATMENT Methods to counter the microorganisms.

● OPEN SEWER INLET ● CLOSED SEWER

SITE AND ITS SURROUNDINGS



SITE ANALYSIS

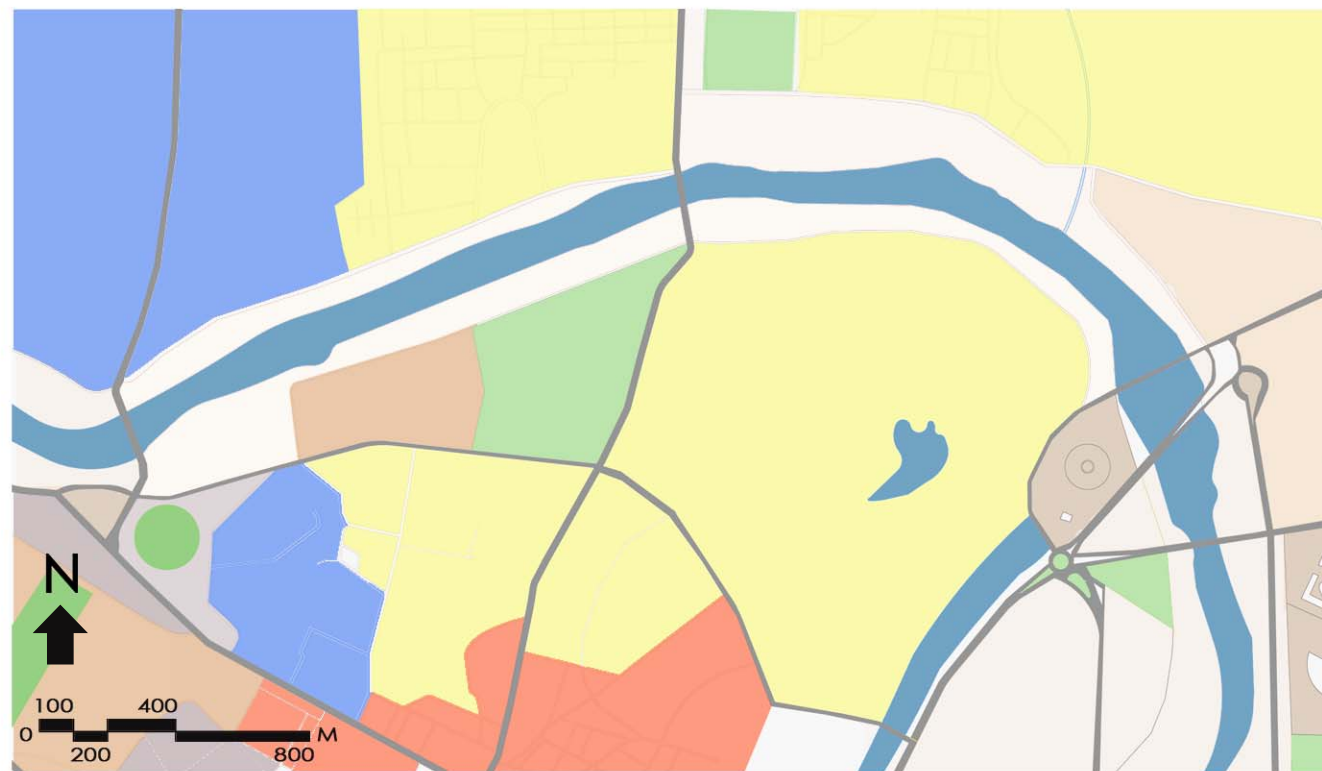
SITE ATTRIBUTES

EXISTING LAND USE

The site is majorly surrounded by Residential Areas, with clear lack of Green open public spaces. There is also the University campus in the north and the southern road connects to the main Commercial Area of the city.

On the right side, beyond the site are the newly developed public parks but they are mostly done in hard landscaping. Some heritage buildings also fall very close to the site.

- | | |
|---|---|
| RESIDENTIAL | HERITAGE |
| INSTITUTIONAL | OPEN AREAS |
| COMMERCIAL | PUBLIC SERVICES |

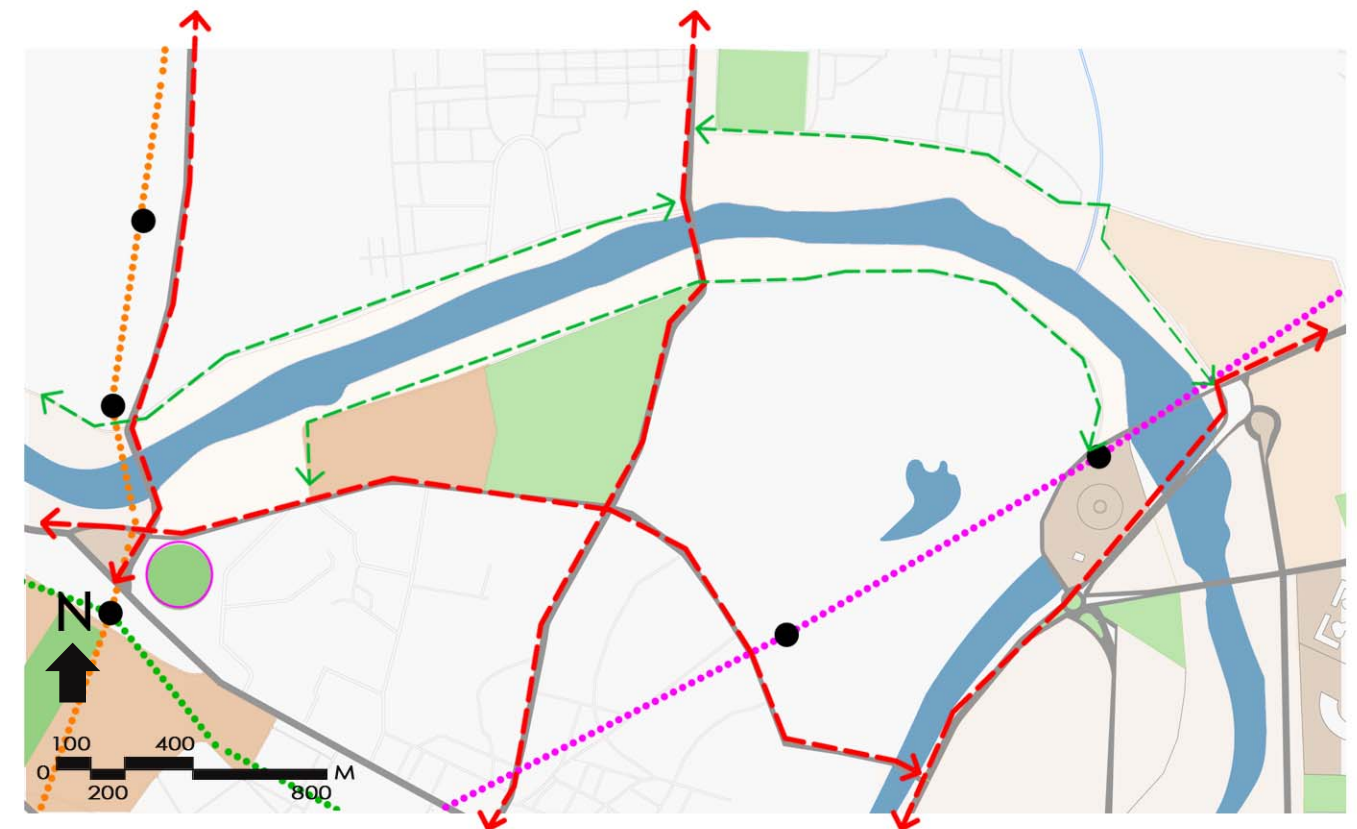


EXISTING CIRCULATION SYSTEM

The entire city has extremely congested traffic situation. This is due to both very high population as well as no segregation of different type of vehicles.

The site has main vehicular roads passing through it. There are also proposed metro line and metro station that fall on the site.

- | | |
|--|--|
| MAIN CITY ROADS | PROPOSED METRO LINE |
| ROAD ON BUNDS | PROPOSED METRO STATION |

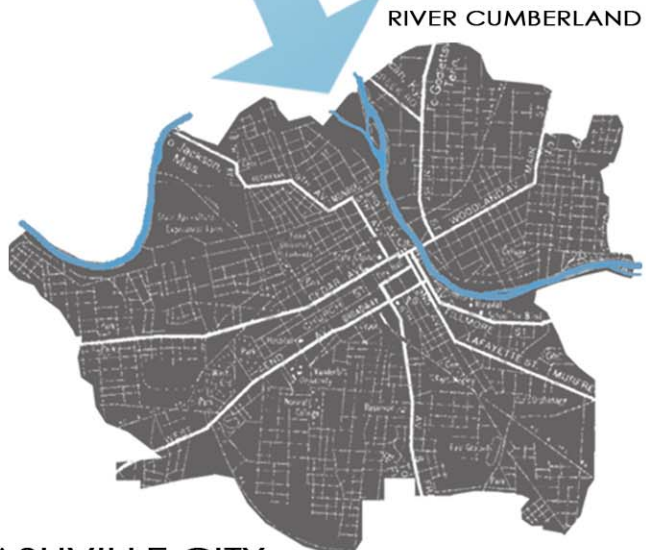


NASHVILLE RIVERFRONT DEVELOPMENT

Nashville, Tennessee, USA



MAP OF U.S.A.



NASHVILLE CITY

MASTER PLAN WITH PROVIDED FUNCTIONS



- 1. Broadway Overlook
- 2. Walk on Water
- 3. River Overlook & Pvillion
- 4. Nabrico Gardens
- 5. Esplanade & Wetlenads
- 6. River Ramp
- 7. Cove
- 8. Urban Forest
- 9. Play Plaza
- 10. Gteway Bridge Walk
- 11. Cayce Landing
- 12. Pioneer Trail
- 13. Publib Square Amphitheatre
- 14. Woodland St. Bridge Walk
- 15. River Lawn
- 16. Decks
- 17. City Wharl & Terraces
- 18. Church St. Pier
- 19. Commerce St. Pier
- 20. Demenhreun St. pier

Evolving out of an extensive community visioning process, the New Riverfront Park Plan proposes to improve and extend the existing Riverfront Park to both the East and West Banks of the Cumberland River between the Woodland Street Bridge and the Korean Veteran's War Memorial Bridge in downtown Nashville.

The New Riverfront Park aspires to;

"Transform Nashville's downtown riverfront into a distinctive, active, lively and sustainable destination that connects people to the river and becomes a vital part of city life"

NASHVILLE RIVERFRONT DEVELOPMENT

Nashville, Tennessee, USA

INNOVATIVE PROVISIONS

STRENGTH

- USE OF EXISTING INFRASTRUCTURE
- INNOVATIVE SOLUTIONS
- PUBLIC PARTICIPATION
- DEVELOPMENT IN PHASES

LACK OF DEFINED SPACES FOR PUBLIC CONGREGATION AND FESTIVALS

WEAKNESS

POSSIBLE NEGLECT OF LARGE GREEN SPACES

THREATS

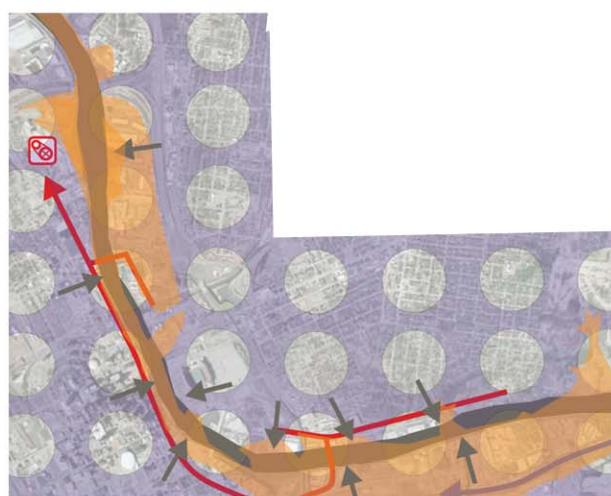
OPPORTUNITIES

- RECREATIONAL ZONES IN CITY CENTER
- JOB CREATION

ISSUES ANALYSED AND STUDIED



GREEN OPEN SPACES



100 YEAR FLOODING EVENTS



BOATING-RECREATIONAL FACILITIES



PEDESTRIAN-VEHICULAR MOVEMENTS



URBAN FORESTS, COVES AND WALKWAYS



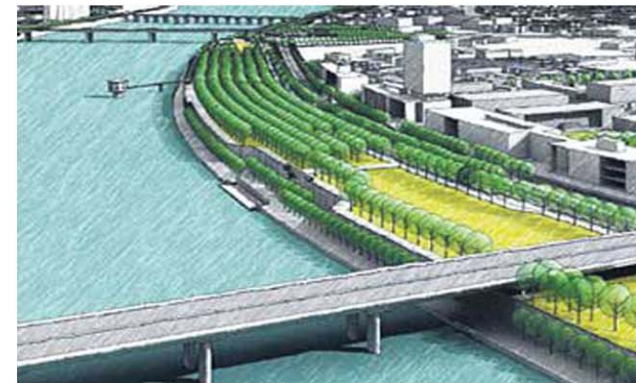
OVERLOOKING PIERS



CAYCE LANDING DECKS

SABARMATI RIVERFRONT DEVELOPMENT

Ahmedabad, Gujrat, India

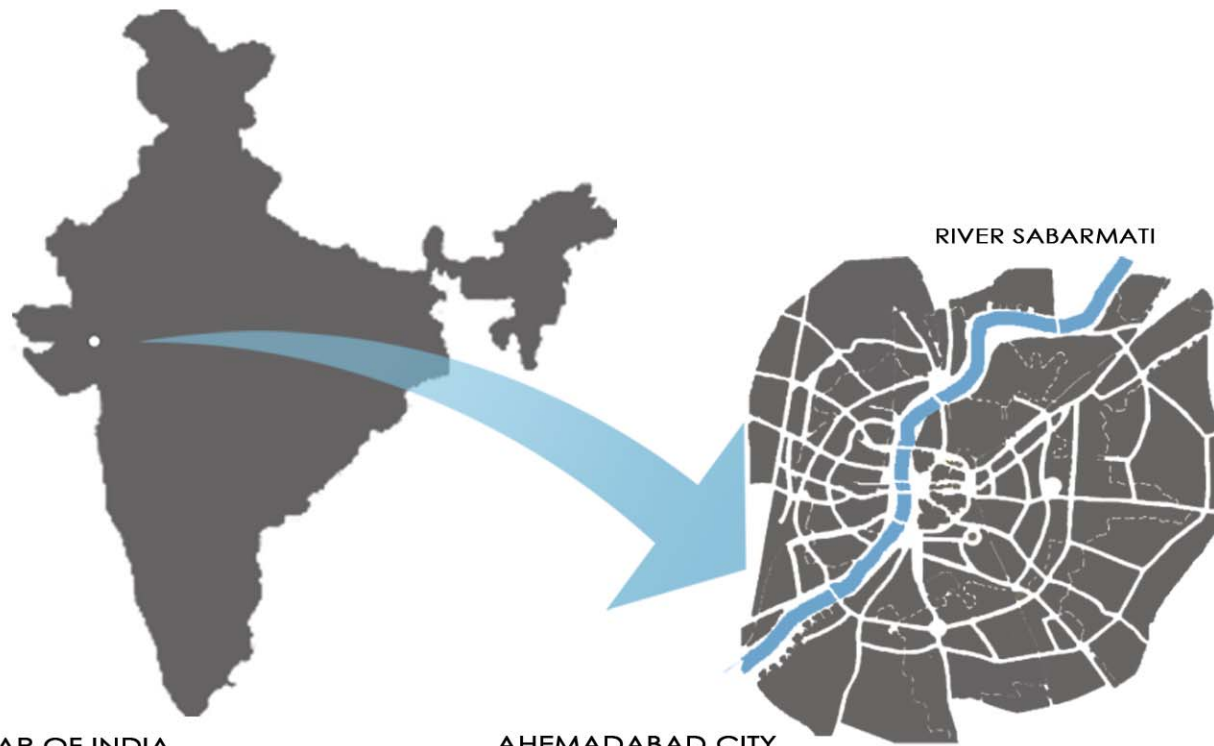


The Sabarmati Riverfront Development Project is an initiative by the Ahmedabad Municipal Corporation to develop the Sabarmati riverfront in the city of Ahmedabad, India.

It is being developed in the historical city of Ahmedabad, renowned for various historical monuments and events related to the freedom movement introduced by Mahatma Gandhi.

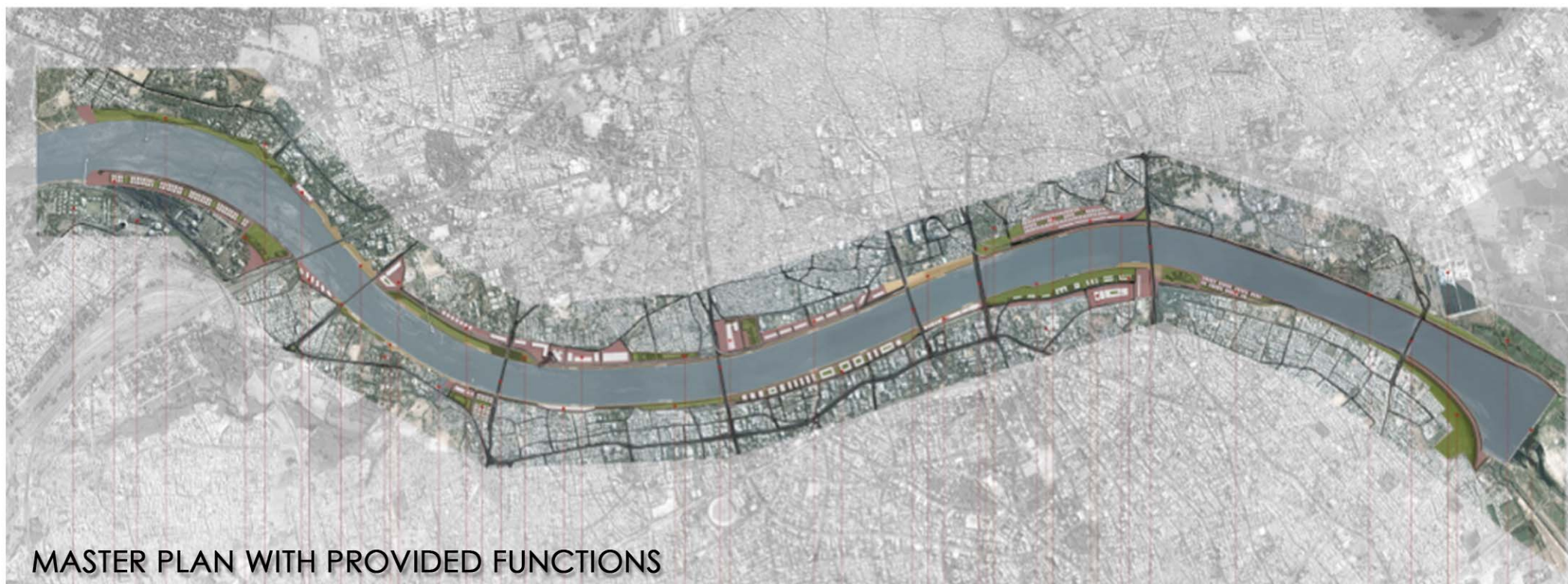
The project extends over a stretch of approx. 10.6 kms. The first phase of the project is completed while the second phase has already been initiated. The first phase has witnessed an investment of Rs.250 crores.

The major work undertaken include the construction of 2 feet thick and 40-55 feet deep 'Diaphragm' to separate 30 feet wide walkway or Promenade. Almost 70% work on laying the interceptor sewers on either side has been completed. These sewers would transfer the sewage from the city to the sewage treatment plants, thereby keeping the river clean.



MAP OF INDIA

AHEMADABAD CITY

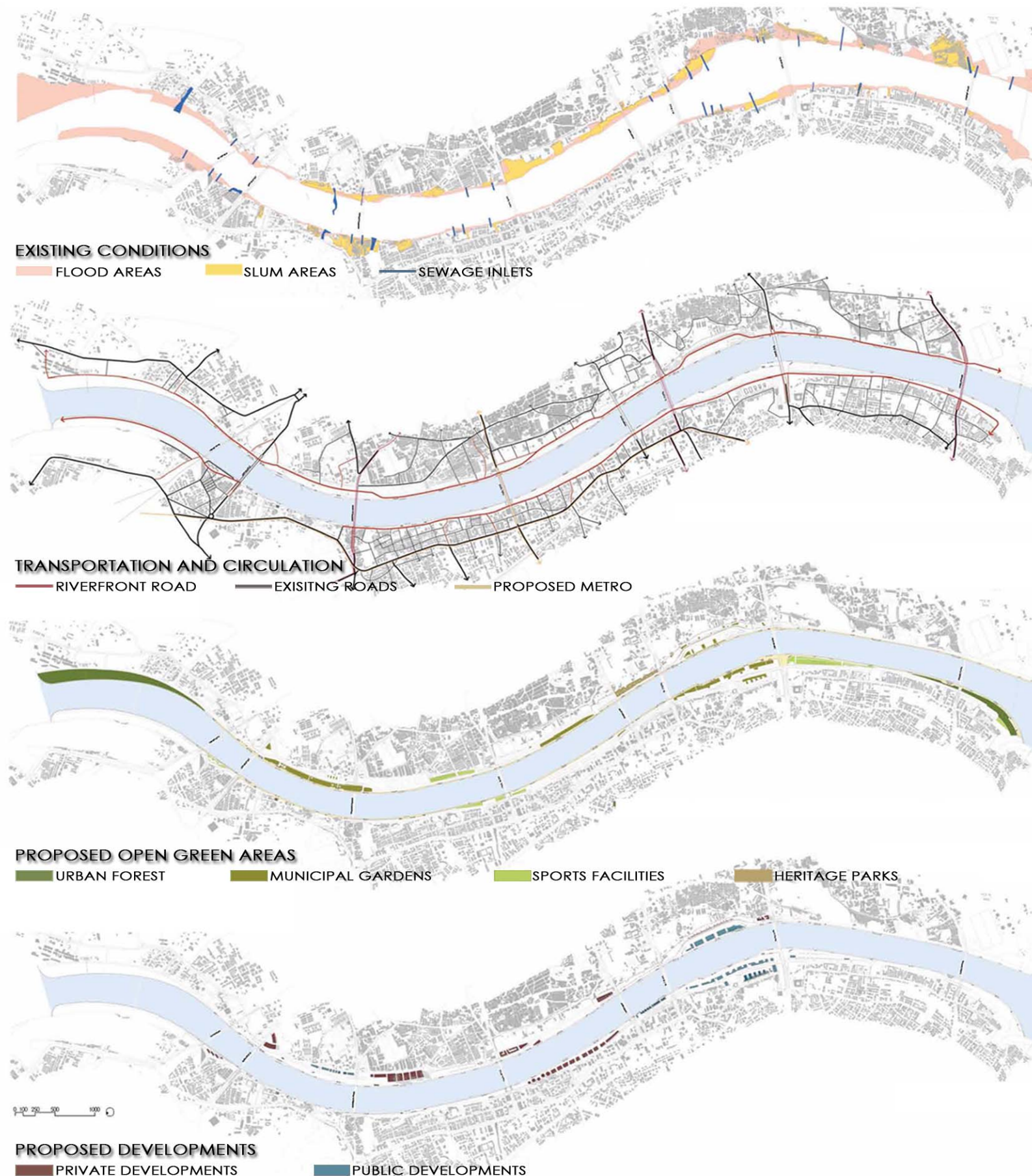


MASTER PLAN WITH PROVIDED FUNCTIONS



SABARMATI RIVERFRONT DEVELOPMENT

Ahmedabad, Gujrat, India



Ahmedabad is the fifth largest city and seventh largest metropolitan area of India, with a city population of approximately 5.6 million and metropolitan population of 6.4 million. In 2010, Ahmedabad was rated as the fastest-growing city in India, and third in the world.

The total investment in the two phases is expected to reach Rs.700 crores. The investment is self-financed, hence the expenditure is to be met by selling portion of the reclaimed land for commercial, recreational and residential purpose.

The total cost of the project is estimated at Rs 777 crore. The designing of the river front and the socio-economic survey of the slum-dwellers residing in the river bed has already been completed at an estimated cost of Rs 180 crore.

The Sabaramati river front development project was originally conceived in the early 1960s by Bernard Cohen, the French architect. But, the project failed to take off as it involved the rehabilitation of slum-dwellers. The project was also opposed by some NGOs. In the 1990s, the project was revived when the Sabarmati River Front Development Corporation Ltd was formed, in 1997, to design, plan, strategise, finance and execute the project.

SLUM RELOCATION INITIATIVE

The project has a very important social implication. It involved the relocation of Slum Dwellers. Almost 1400 families are being relocated under the project, out of which more than half have already been shifted to LOW INCOME HOUSING SCHEME, on the outskirts of the city, with better living conditions.



WUSONG RIVERFRONT WATER PARK

Kunshan, China



MAP OF CHINA

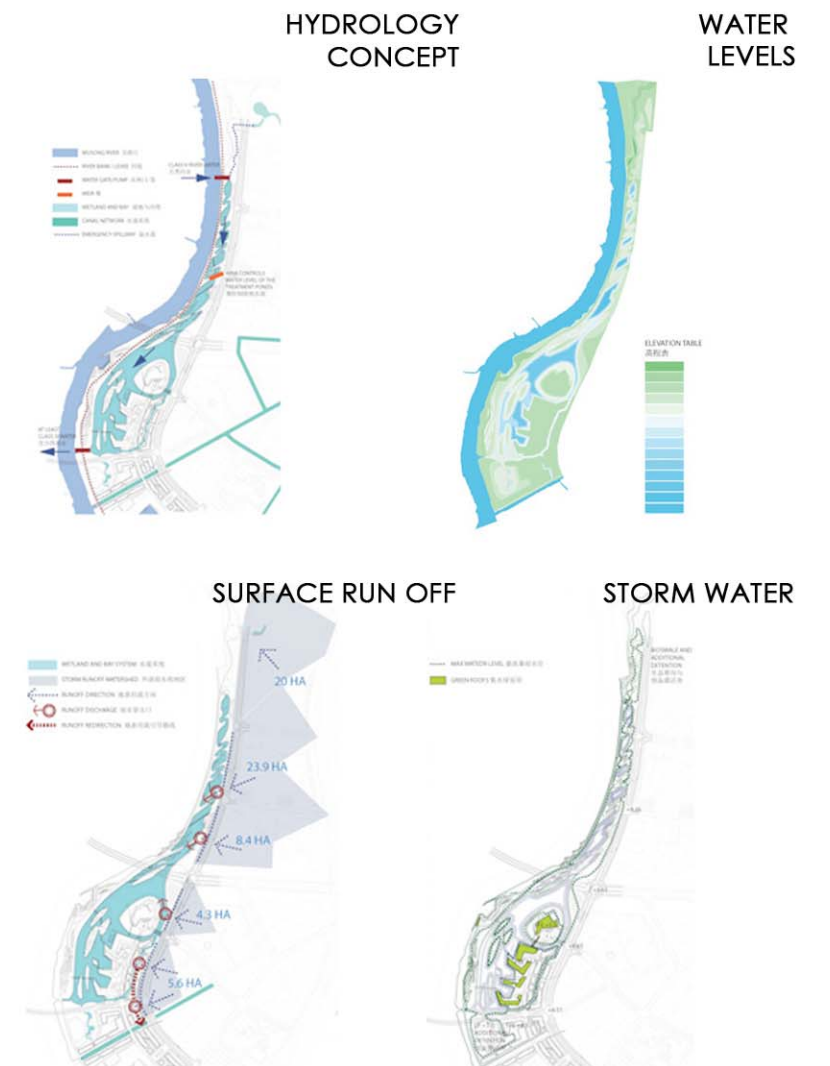


Huaqiao International Service Business Park is developing portions of the Wusong River waterfront with an emphasis on incorporating low impact development (LID) and natural resource elements. Herrera collaborated with SWA Group, the project's landscape architect, to design a wetland park that will treat water from the Wusong River upstream of the development.

Treated water will enter an interior embayment adjacent to a mixed-use commercial and residential area and the wetland park will use both physical (aeration) and biotic (native plant and biofilm) processes to remove excess nutrients from the water. The goal is to provide the new waterfront development with Chinese Class III water quality.

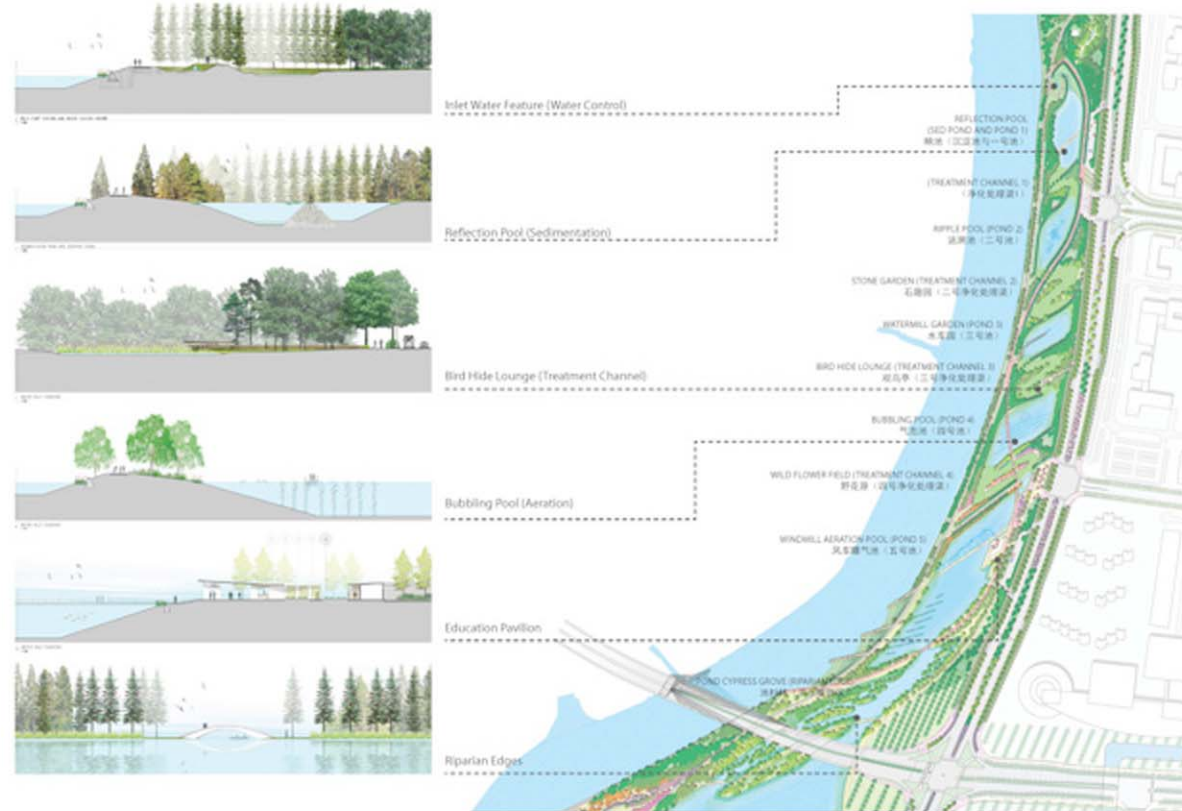


PROPOSED MASTER PLAN



WUSONG RIVERFRONT WATER PARK

Kunshan, China

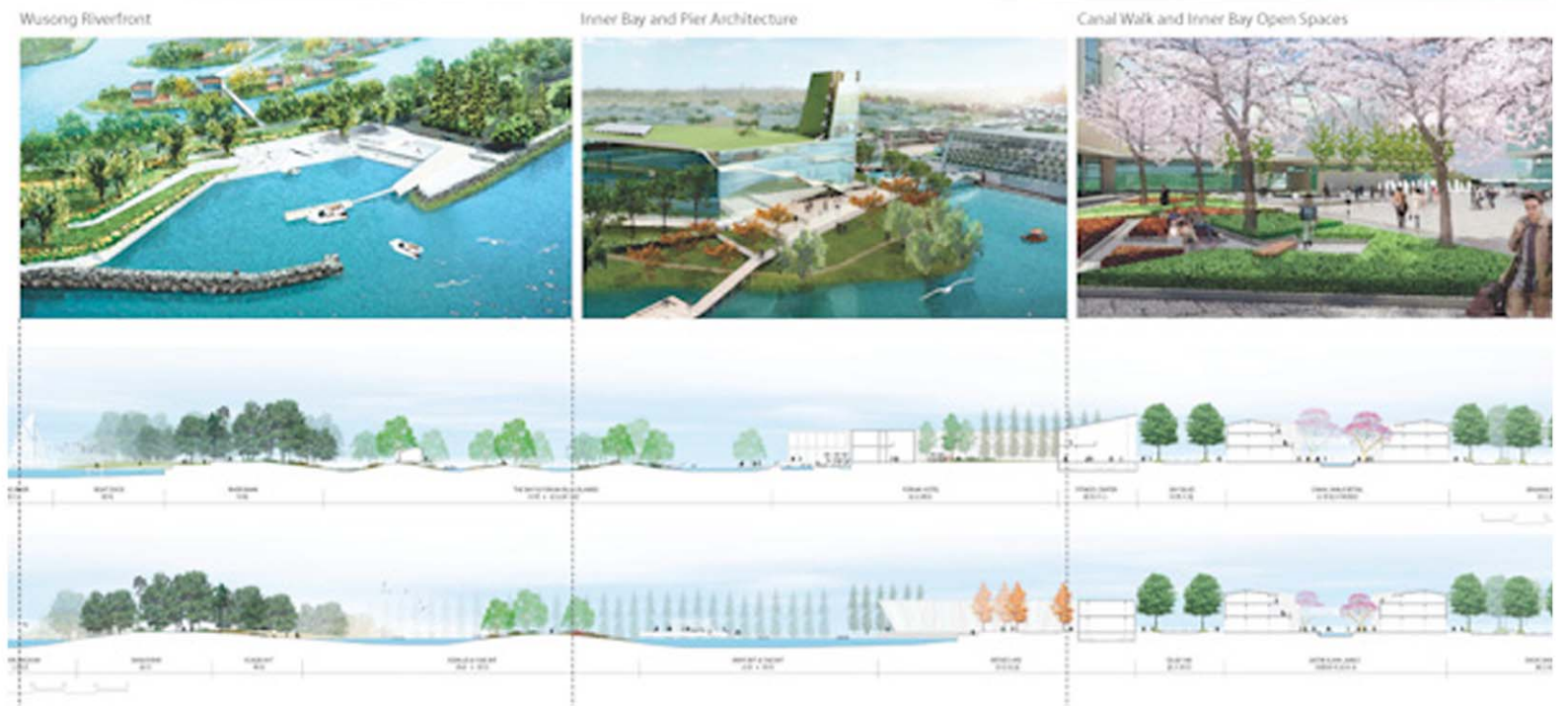


PROPOSED SECTIONS

LOW INTENSITY

MID INTENSITY

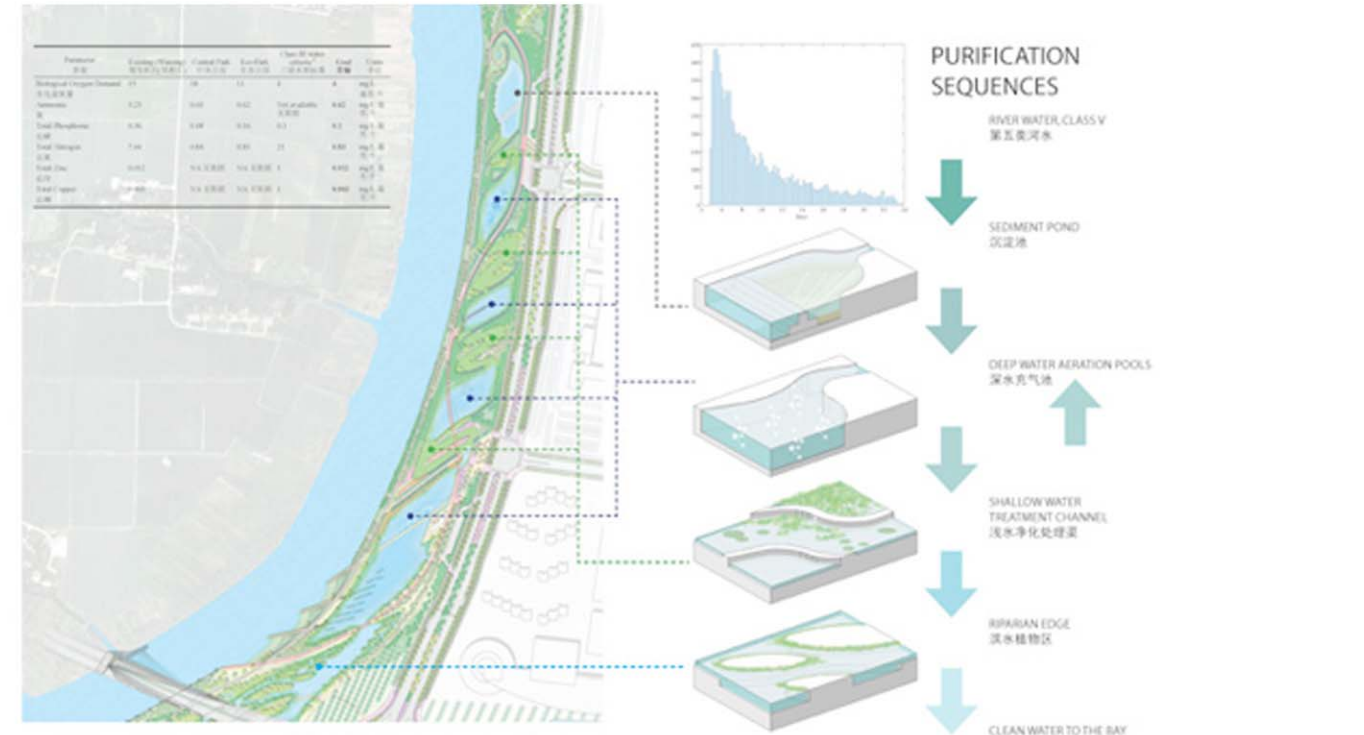
HIGH INTENSITY



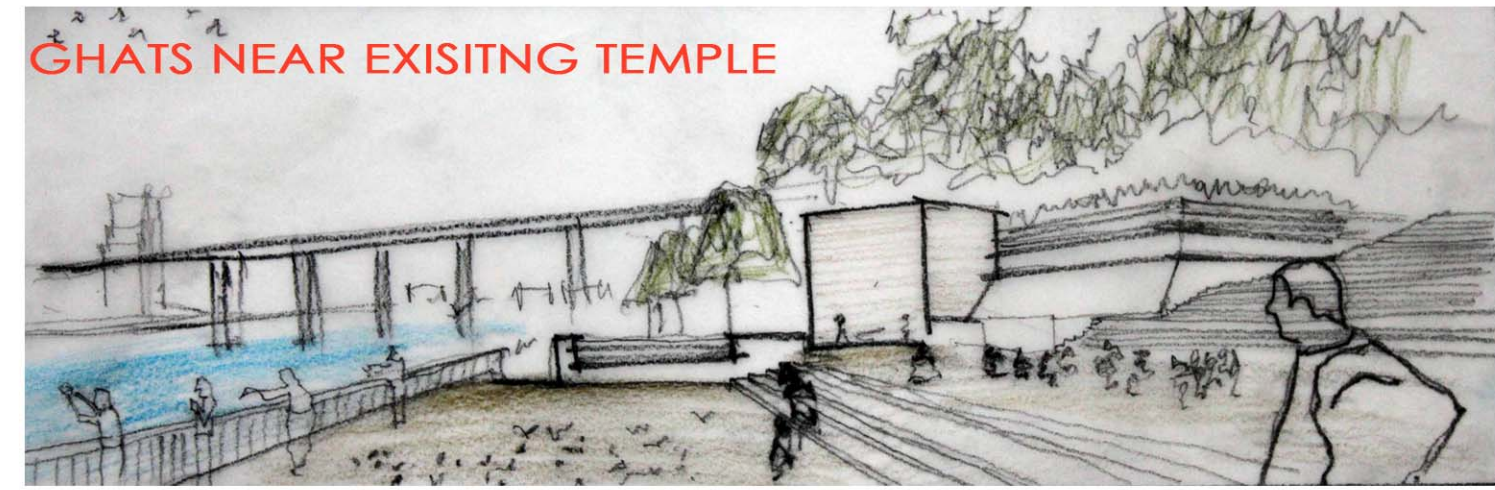
PROPOSED SITE SECTIONS



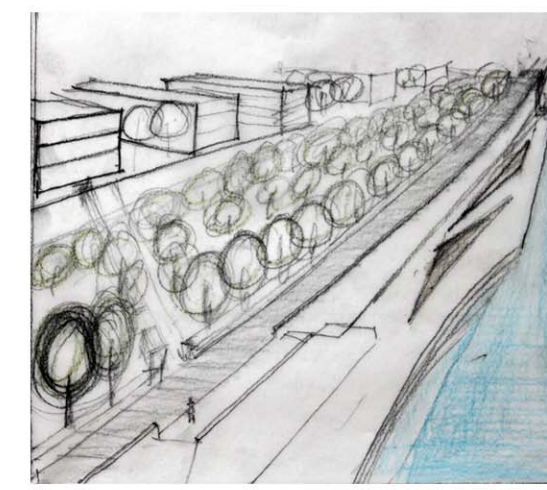
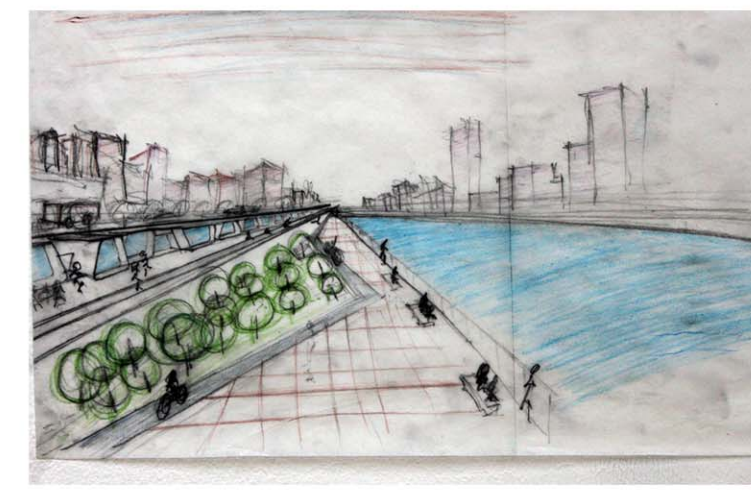
PROPOSED SECTIONS



FLOW SYSTEM FOR WATER PURIFICATION



GHATS NEAR EXISTING TEMPLE



URBAN FORESTS AND PARKS

LANDSCAPED AREA

SERIES OF PATHWAYS AND CYCLING TRACKS ALONG WITH SIT OUTS AND GREEN AREAS, IN PROXIMITY TO EXISTING RESIDENTIAL AREAS

PROPOSAL OF COMMERCIAL ACTIVITIES FOR REVENUE GENERATION AND INCREASING POROSITY OF THE EXISTING BUNDS

RELIGIOUS GHATS

DEVELOPMENT OF GHATS, A TRADITIONAL INDIAN RELIGIOUS CONCEPT

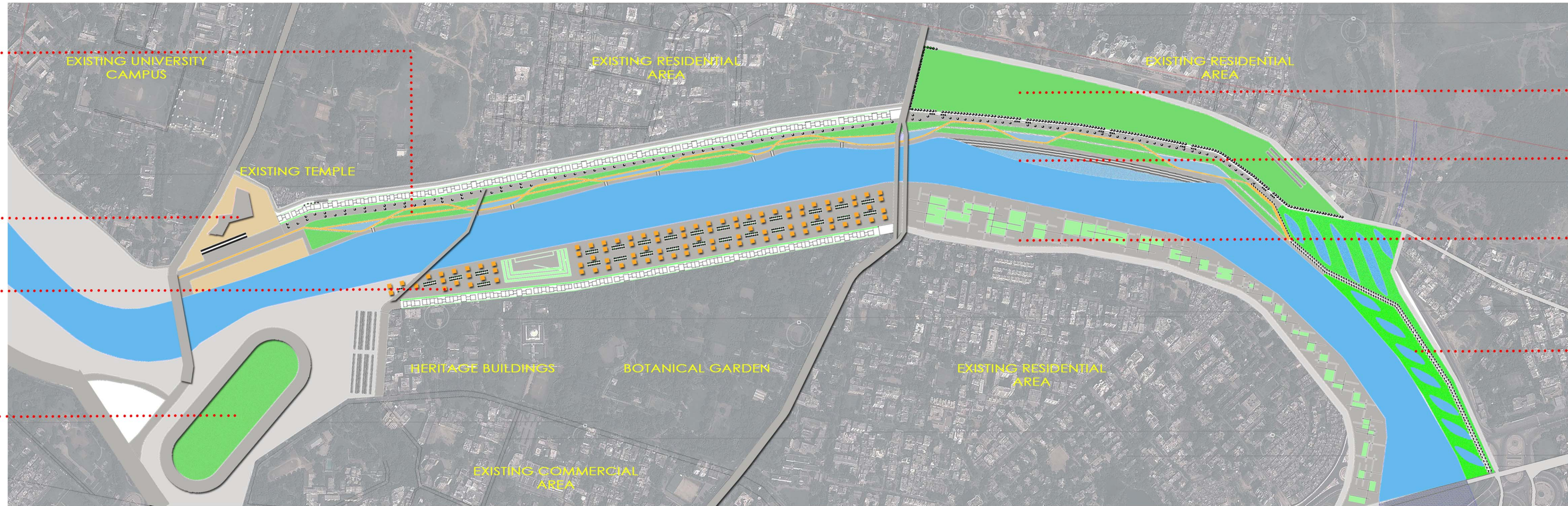
FAIR GROUND

DEVELOPMENT OF EXISTING FAIR GROUND WITH KIOSKS AND PERFORMANCE AREAS

SPORTS ZONE

REDEVELOPMENT OF EXISTING CRICKET STADIUM

PROPOSED OPEN AIR THEATRE WITH PARKING FACILITIES



URBAN FOREST

REORGANISATION AND DEVELOPMENT OF EXISTING FOREST

WATER ACTIVITY ZONE

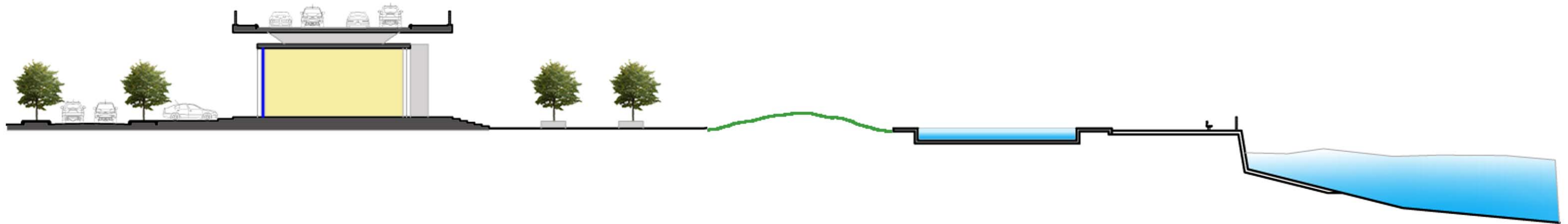
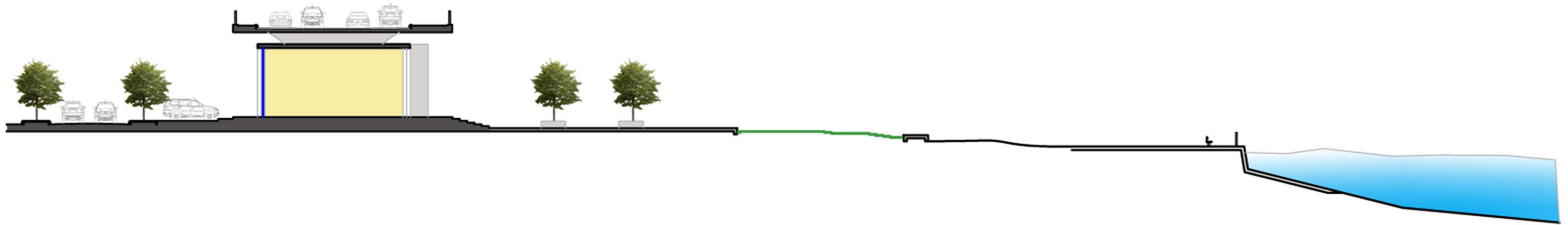
PROPOSAL FOR WATER POOLS, SUBMERGED PLATFORMS WITH BOATING ACTIVITIES

ART EXHIBITION ZONE

OPEN AIR ART WORKSHOPS AND DISPLAY AREAS, ALONG WITH CHILDREN'S ACTIVITY PARKS

SEWAGE TREATMENT ZONE

SERIES OF WATER PONDS ALONG WITH REED PLANTATIONS FOR PASSAGE AND TREATMENT OF EXISTING SEWER INLET, BEFORE ENTERING THE RIVER FLOW



PROPOSED SECTIONS THROUGH THE
LANDSCAPE ZONE

