

# BRIDGING THE CITIES

Rejuvenate the Godavari river front



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# 1

## Introduction

Location

Historical and Religious Aspects

Regional Networks

Rajahmundry city

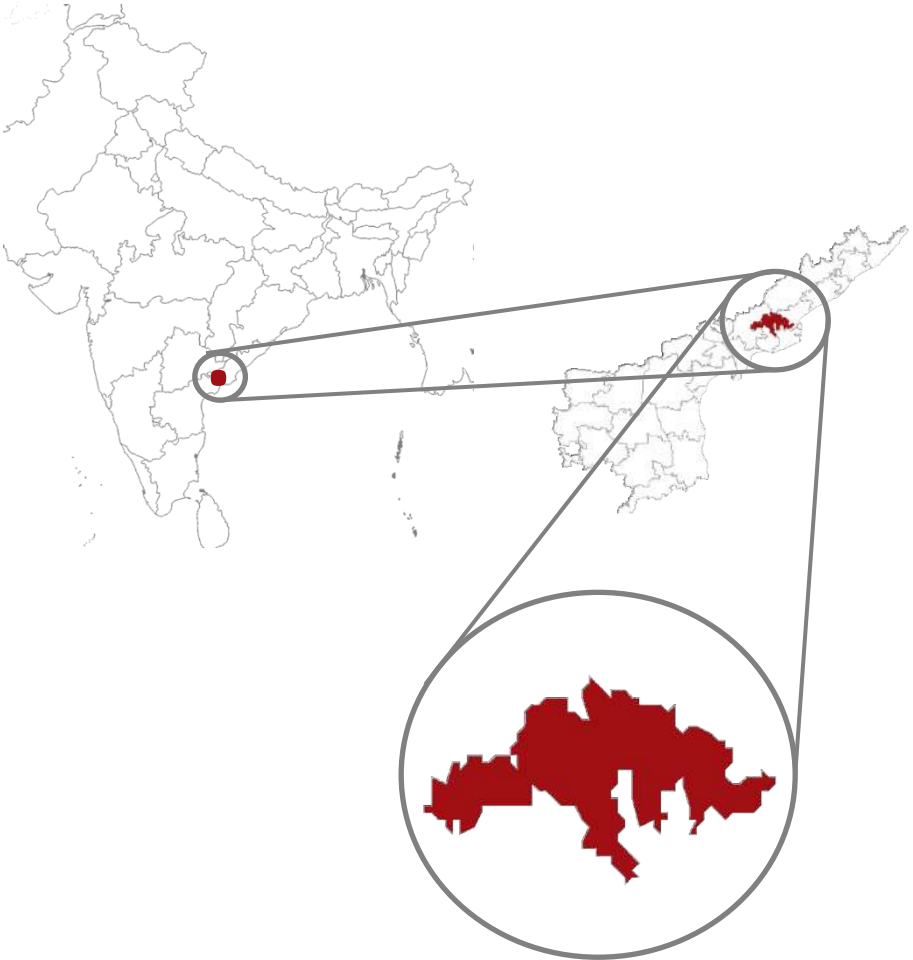
The conservation and reuse of the 100-year-old railway bridge by developing as a new pedestrian civic centre for the city.







## 1.1 LOCATION



Rajahmundry is located on the banks of Godavari River in East Godavari district of Andhra Pradesh state in India. The city is known for its Versatile Vedic Culture and intellect, hence making it as Cultural Capital of Andhra Pradesh. It is not only one of the historical cities, where literacy activities flourished but also famous for its political, economic, social and agricultural background.

Rajahmundry was one of the biggest cities in South India in the 19<sup>th</sup> century. It is a commercial hub for both east and west Godavari districts, well known for destination for cloth and bullion business.

Havelock Bridge (project site) is built over Godavari river connecting Rajahmundry and Kovvur in East and West Godavari district respectively, which passes over an island in the river.

Country	India
State	Andhra Pradesh
District	East Godavari
City Area	164.23 sq km
City Population	540,825

### Urban Growth



## 1.2 HISTORICAL AND RELIGIOUS ASPECTS

### Historic

The Havelock Bridge is a decommissioned bridge that spans the Godavari River in Andhra Pradesh, India. Commissioned in 1900, it is the earliest of three bridges that span the Godavari River at Rajahmundry and is one of the most recognized symbols of the city.

The bridge was constructed with stone masonry and steel girders. Having served its full life span of 100 years, it was decommissioned in 1997.

Initially, the present owners of the bridge, the Indian Railways, conceived of a program to dismantle the decommissioned bridge and to dispose the scrapped steel in a public auction. However, when the news became public and the people of Rajahmundry city who have come to identify this bridge as their best identity came to know of the plans of the Indian Railways, there was absolute opposition to the step, and the Railways had to back-track. The residents of Rajahmundry simply refused to let go of their identity.

This proposal is a fair and befitting way to handle this engineering masterpiece, and to offer a new and enhanced identity to the people of Rajahmundry by reconstituted bridge which would not only be conserved, but also offer an extremely large civic and commercial space for a variety of uses, not to mention a top class pedestrian retreat to the people of both, Rajahmundry and Kovvur. It would be a one-of-a-kind Project, especially at this scale, and would open new window to tourism in the state.

### Religious

Pushkaram also known as Pushkaraluis an Indian festival dedicated to worshipping of rivers. It is celebrated at shrines along the banks of 12 major sacred rivers in India. The celebration happens annually, once in 12 years along each river for 12 days with the last in July 2015, whenaround 100 million took bath. Each river is associated with a zodiac sign, and the river for each year's

festival is based on which sign Jupiter is in at the time. Due to regional variations, some of the zodiac signs are associated with multiple rivers.

## Pushkaram celebrations



Reverence of  
Ancestors



Spiritual  
Discourses



Devotional Music and  
Cultural Programs.



Snana  
(Bath in The River)



Dana(Cha  
rity)



Japa  
(Recitation of Mantras)



Archana and Dhyana  
(Meditation)

The Ministry of Tourism, Government of Andhra Pradesh proposed to develop the prestigious First Godavari Bridge located across Holy river Godavari situated between Godavari and Kovvur stations as a tourist destination and decided to convert it to tourist spot by developing with temporary stalls proposing renovation before forthcoming Godavari Pushkarams.

## 1.3 REGIONAL NETWORKS

Rajahmundry is an important city of Andhra Pradesh, for many reasons. It's an important business Centre, it is situated right on the banks of one of India's holiest rivers, the Godavari, and plays host to the PUSHKARAM assembly every 12 years, where millions of people come together at its Ghats for a holy dip. Rather than the pushkaram, there are many events which happen along the bank of Godavari throughout the year. Rajahmundry being the main city, it invites people from the surrounding cities for all the events. This will be the main potential for developing the design.

The Havelock Bridge has come to be a long standing identity of this city! Like all human settlements that begin to prosper, the people need their space to enjoy the bounties of life. This huge space of almost 2.7 kilo meters can provide the same once it is converted a prime civic & commercial arena as described ahead.

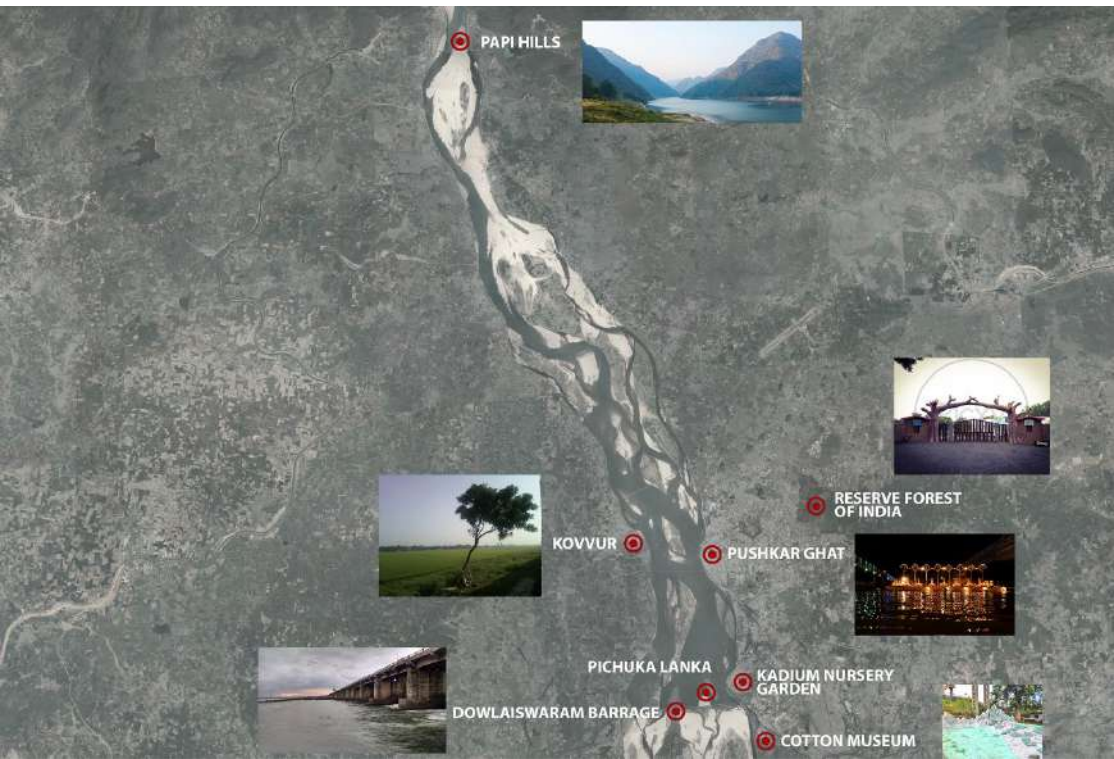
Urban pattern map  
Water connection  
Ecological connection  
Surrounding cities maps





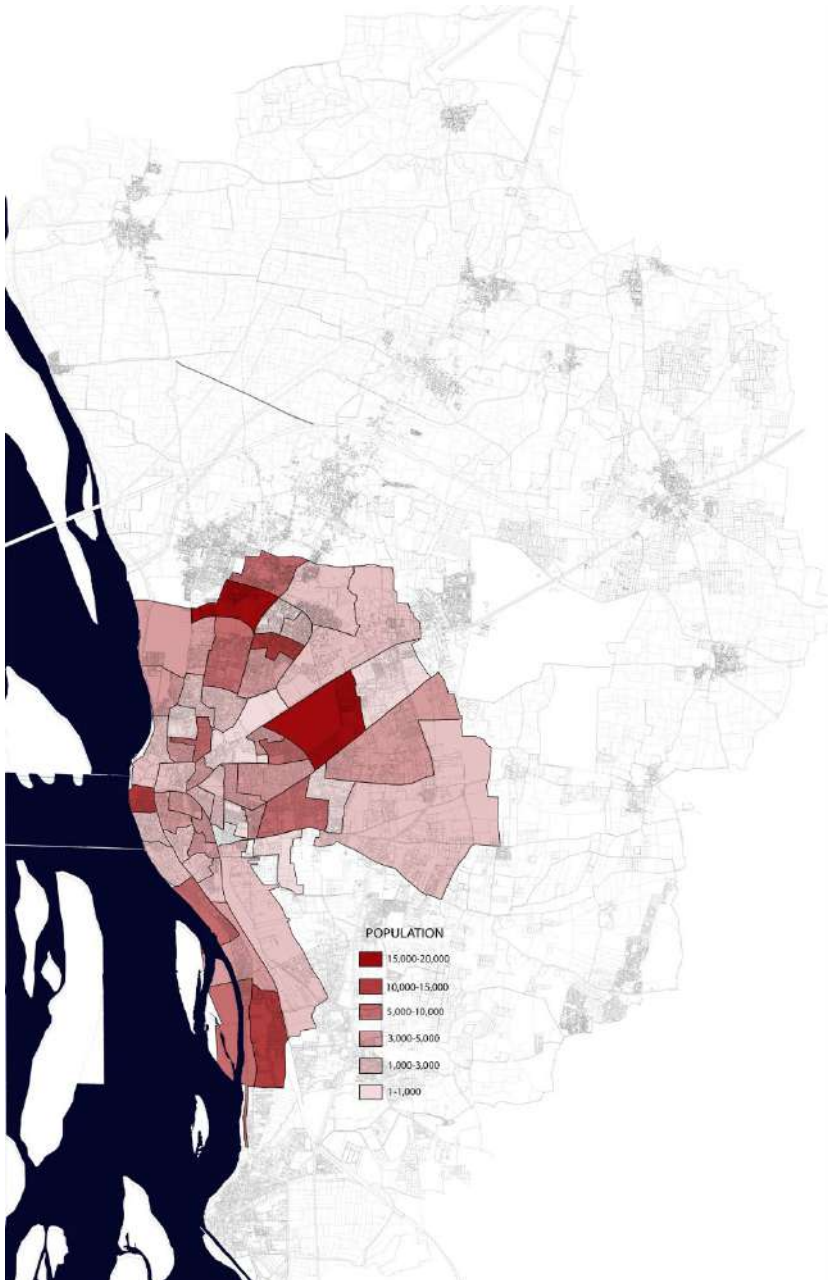
## Road Connection

## Tourism

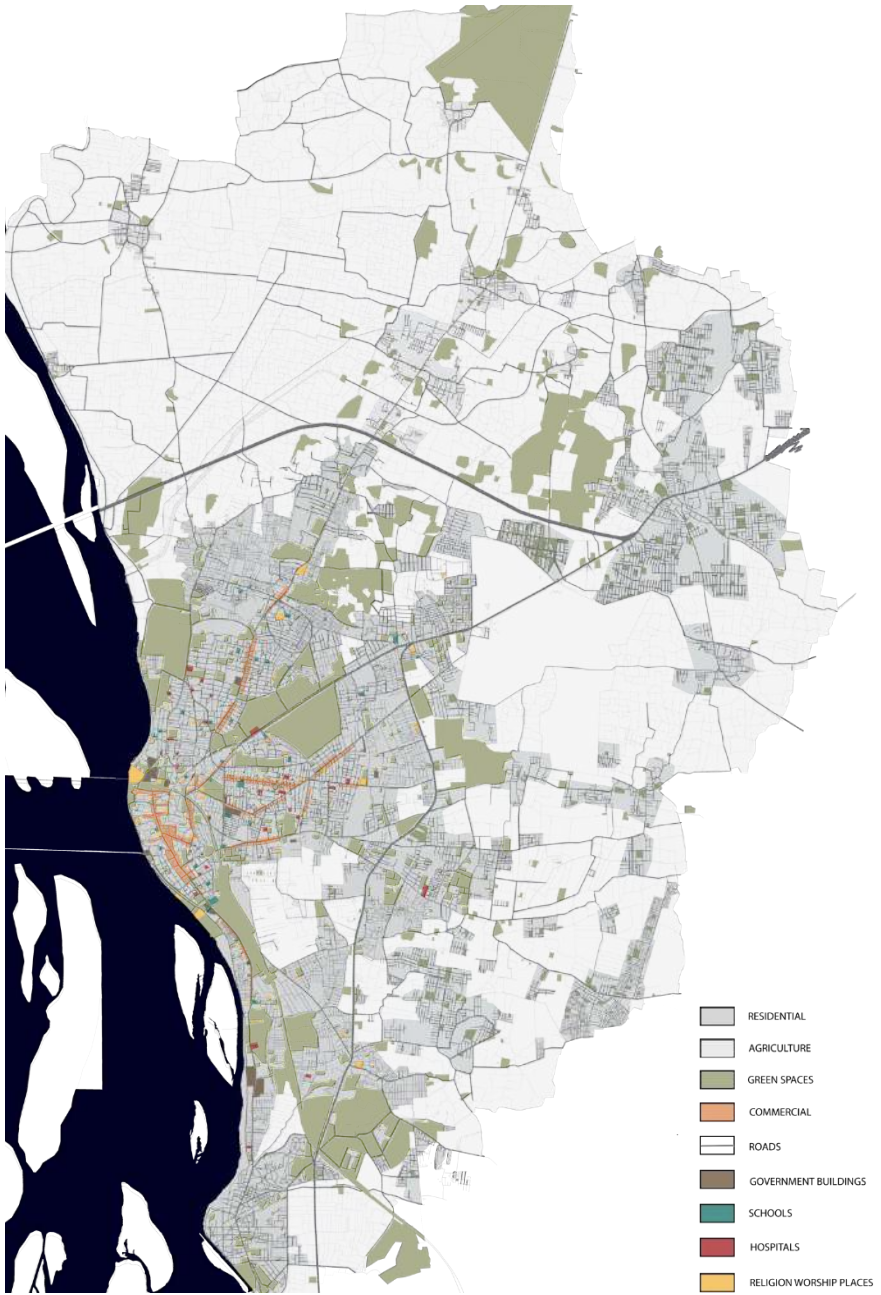




## 1.4 RAJAHMUNDRY CITY



Population



Landuse



Soil Map



# 2

## Importance of the project

Life in the River Banks

Importance of River in the Indian Community

Project Potential

SWOT Analysis

Conservation of a magnificent piece of engineering feat in the form of a decommissioned railway bridge, which have become the identity of the city serving for the past one century.

## 2.1 LIFE IN THE RIVER BANKS

Water has been a valuable natural resource from the time of the growth of early settlements up until the present day. When considering its various functions, for example for transportation and trading, for agricultural production and as natural defense, water has long been recognized as a most important natural resource for human life, for the environment and for national development. Therefore, in many countries around the world, the water edge areas developed earlier than other areas and became a favorable location for the development of cities.

Waterfront redevelopment over the decades has changed waterfronts in terms of layout, function, uses and social patterns. Increasing demand for recreational activities became a determinant in the development of waterfronts, and waterfronts were mostly designed as new public open spaces of cities that were totally different from their former structures.

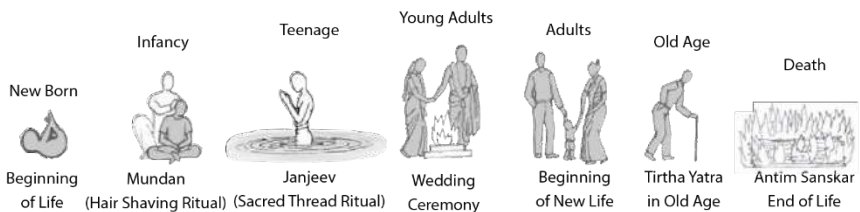
The waterfront is a zone of interaction between urban development and the water and waterfront area is considered to be a unique and irreplaceable resource where it interfaces between land, water, air, sun and productive plants. Moreover, waterfronts are characterized as a place integrating land with water and having a natural attraction to people. In fact, water edges are most attractive water features for human settlement and in most countries the land in front of water developed earlier than the inland areas.



## 2.2 IMPORTANCE OF RIVER IN THE INDIAN COMMUNITY

The rivers of India play an important role in the lives of the Indian people. The river systems provide irrigation, potable water, cheap transportation, electricity, as well as provide livelihoods for a large number of people all over the country. This easily explains why nearly all the major cities of India are located by the banks of River. The Rivers also have an important role in Hindu mythology and are considered holy by all Hindus in the country.

Hindu tradition dictates that its followers connect with the River at several significant stages of their life, whether it's the anointment of a newborn with the river's holy water, the initiation into the faith through the Janeev (sacred thread) ritual, an individual's wedding ceremony, or their eventual cremation at its banks.



### Life Cycle near Godvari River





Pushkaralu happens in every 12 years which doesn't satisfy the need for the river front development. Hence, the following picture shows the different festivals happening in the entire year and its relation to the river. The circle shows the usage of river by the people during the festivals. The circle is directly proportional to the usage so if the circle is darker which means that during that particular month of the year the river side is used more. The red color is the time of floods, where the water level of the river varies. So as per the records noted, the river experiences more water during the months of July and August. The normal water level is marked as 10m from the ground level. So, because of the Dowleswaram barrage the flood is not increased to more than 13.5m this is an average removed after many records in every year until 2018.

## 2.3 PROJECT POTENTIAL



Havelock is more than century old Rail Bridge with which Rajahmundry identifies itself. Maintaining this structure of heritage value is thus an important aspect.

### LOCAL IDENTITY



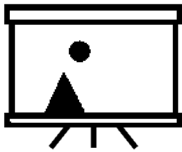
An over-the-river boulevard style walkway with places to sit, shop and eat is not present anywhere in a country and, thus, this project is a unique opportunity to create this identity.

### UNIQUE



LOCAL ATTRACTION

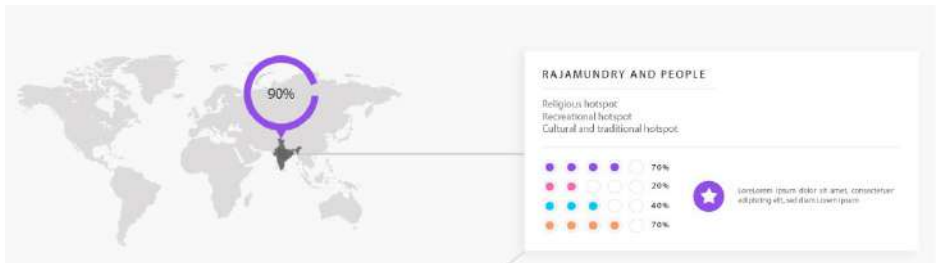
East and West Godavari are being developed as backwater destinations in India. River Godavari, understandably, is a main attraction hence the renovated bridge would be a major attraction for residents and tourists coming to Rajahmundry.



VISUAL APPEAL

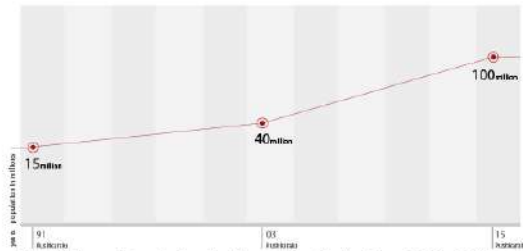
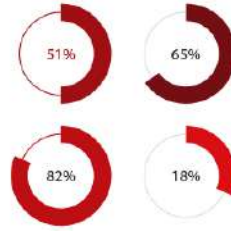
This will be one of a kind attraction in the country, and shall be a visual treat, whether seen from a passing train or from the bridge itself. The design will contribute to make it fascinating.

## 2.4 SWOT ANALYSIS



## Demographics of Rajmundry

The existing number of elderly, and youngsters are distributed evenly along with the



Population data during Puskaram Festivals since 1991-2015

## Strength

- 1. Existing Ghats -near Rajahmundry city
- 2. Active functional spaces -in and around river front in Rajahmundry
- 3. The bridge -connection between Rajahmundry and Kovvu
- 4. Kadiyam nursery -availability of suited tree species

## Weakness

- 1. Lack of proper services (toilets, changing rooms, parking, etc.)
- 2. Pushkaralu -uses the serenity of the space and livelihood
- 3. Bridge length -connecting Rajahmundry and Kovvu
- 4. Accessibility -has handicap friendly zones

## Opportunity

- 1. Connecting riverfront and user group -Possibility to distribute the user group of Kovvu Riverfront.
- 2. Addition of functions -to the existing palette
- 3. To boost development -of Kovvu village.

## Threats

- 1. Figure ground -ratio for Kovvu.
- 2. Literacy -institution
- 3. Connectivity through bridge in a proper accessible way

- 5. Pushkaralu - Key Pilgrim event happening every 12 years.
- 6. Aboundand spaces -Availability of spaces in the city
- 7. Pulsa -Well-known fish

✓

- 6. Connectivity -between city & Ghats
- 7. Lack of Green spaces
- 8. Soil erosion of island and connectivity from land and island
- 9. Street furniture -Lack of appropriate infrastructure

✗

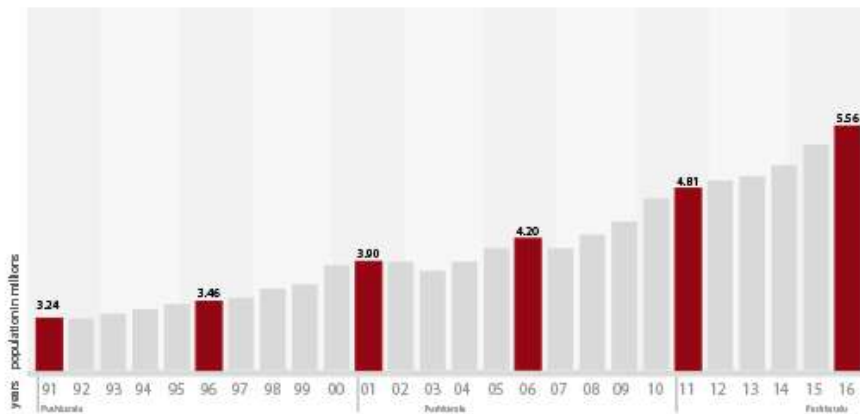
- 4. Structural stability -of existing bridge
- 5. Kadiyam bridge -usability in design
- 6. Pushkaralu -Employment increase ratio
- 7. Island -usability -recreational-biodiversity
- 8. Paper Industry -production of material

↑

- 4. High flood island can be submerged

↓

The ratio of people is directly proportional to time. Where the accessibility is increasing gradually and these places are flooded with people, making it a touristic and pilgrimage attractions, and now seeking a major infrastructure as well as the revenue.



Population data in ranjamundry since 1991-2015

# 3

## Strategy

City Expansion  
Biological Diversity  
New Connection

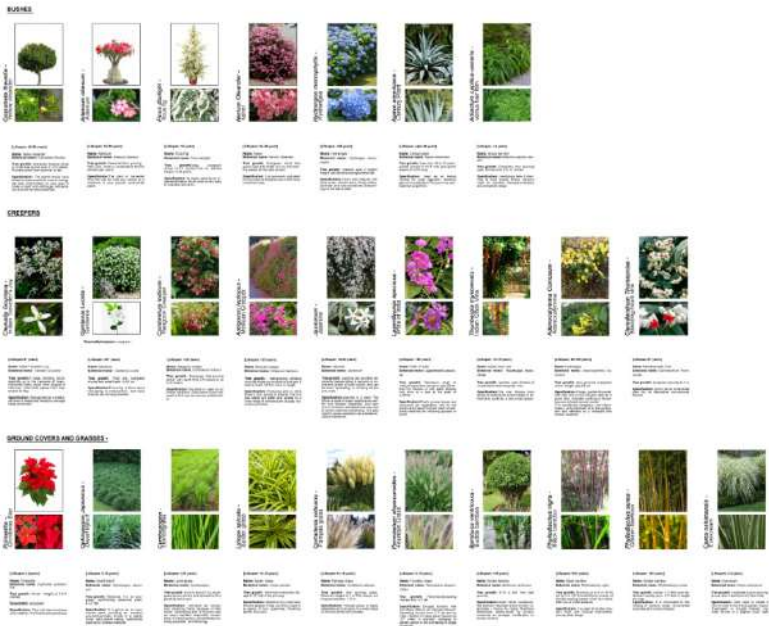
For its Adaptive Re-use by using fully reversible procedures in keeping with established covenants & treaties with respect to Heritage structures worldwide.

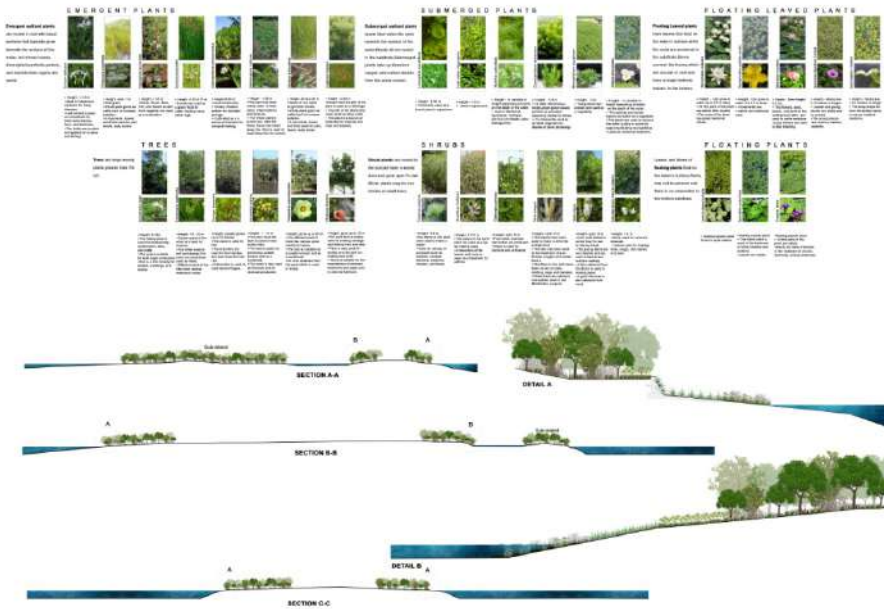
# 3.1 CITY EXPANSION

Rajamundry – the cultural capital has a lot of scope for the expansion. After the division of the state, many small cities have got opportunities to expand and Rajahmundry is one of them. The bridge can act as an expansion tool for both the cities

# 3.2 BIOLOGICAL DIVERSITY

There are many islands formed in the river from years and these islands have strong potential to become ecological friendly and improve the biodiversity of the surroundings, which in turn will improve the micro climate of the area and vitalize the river and human ecosystem.

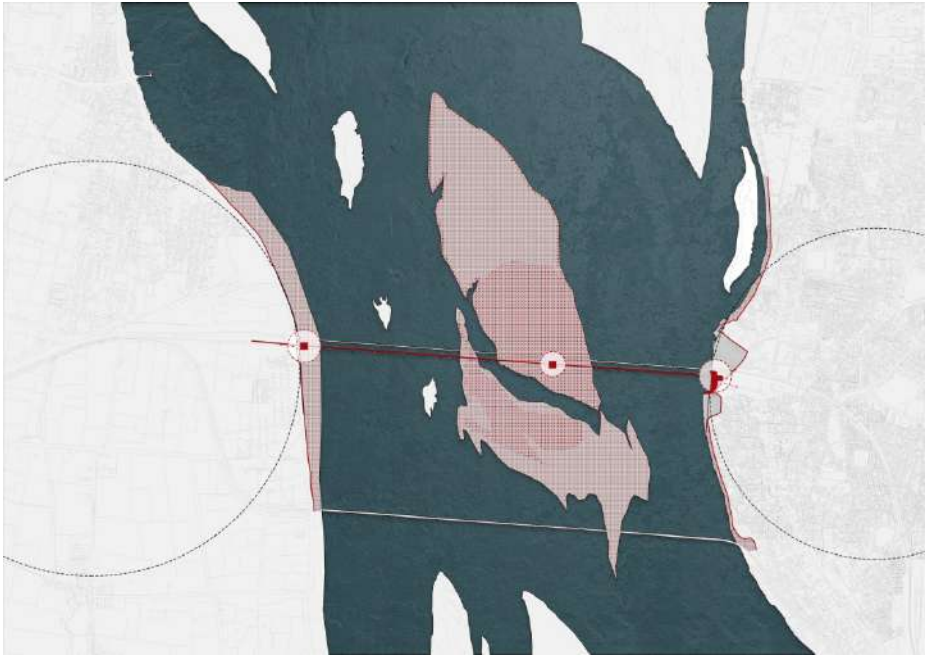




### 3.3 NEW CONNECTION

The Havelock Bridge connects Rajahmundry and Kowur which is very strong connection for both the sides of the river. As the river divides the districts into two parts East and west Godavari, hence this bridge can act as the New Connection between the two districts. The bridge has lot of potential to develop as after its 100 years of construction it's still stable and strong.





The strategy shows the scope of development and expansion of the two cities. The red line depicts the limit of the project and in-between spaces are the interval of the intervention including the island which will be acting as the biological diversity.

There are three important nodes forming within the strategy, one at the connection of bridge to Rajahmundry city and other at the Kovvur city. The third one is the connection of bridge to the island which is going to be vertical connection from the bridge.

The strategy is to connect the two cities of different districts divided by the river Godavari and making the two junctions very strong and the third one as more like a transitional node for the other two ends.



# 4

## Concept

Thought Process  
Master Plan

The whole idea is to fuse together a civic & commercial space to deliver a vibrant connection between the two districts of East & west Godavari, and their cities of Rajamundry & Kovvur.

## 4.1 THOUGHT PROCESS



Initial ideas during the thought process.

## 4.2 MASTER PLAN



The master plan is developed by following the principles of strategy. The Rajahmundry side is more populated than compared to Kovvur. Hence the scope of development at river front is less when compared to Kovvur. Rajahmundry as mentioned above welcomes lot of people during the pushkaralu event so when we connect the Kovvur with the bridge then there is a lot of scope for the development of Kovvur and the movement of the people will also distribute freely.

# 5

## Design

River front  
Bridge  
Wetland

The Bridge is for everybody, sans any criteria for age or origin. It is perceived to be a platform that is in a constant celebratory environment, and shall offer the people who choose to be there, a good time and lasting memories.



## 5.1 RIVERFRONT DEVELOPMENT



Masterplan of Rajamundry Riverfront



Ghats Detail – Rajahmundry and Havelock Connection Detail



Kayak Center Detail



Ferry Terminal 1 Detail





Wooden Bridge Detail



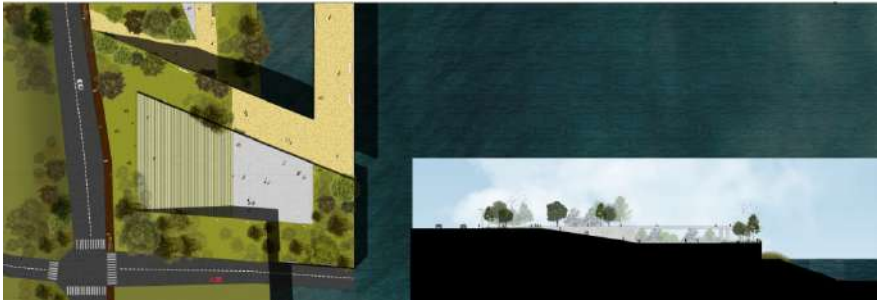
Central Ferry Terminal Detail



Masterplan of Kovvur Riverfront



Ghats Detail



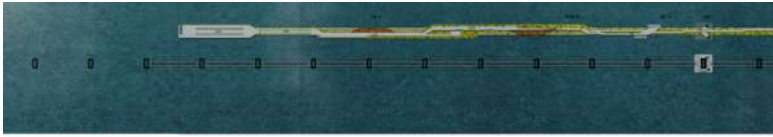
Kovvur and Bridge Junction Detail AND Open Air Theatre Detail



Hotel Detail



## Bridge Part 1



## Bridge Part 2

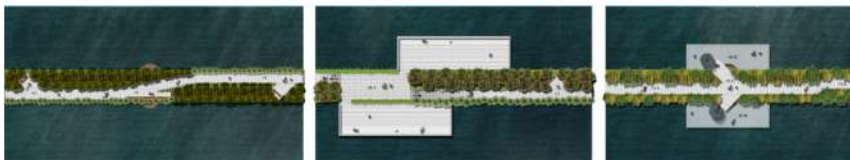
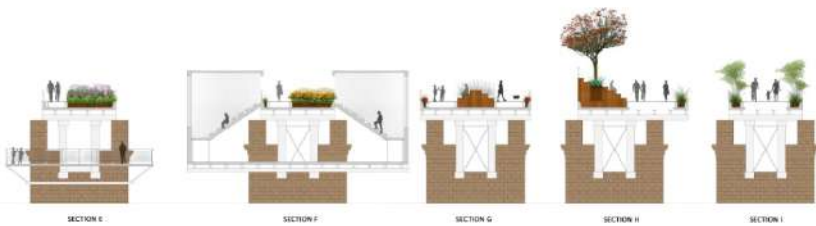




### Bridge Part 3



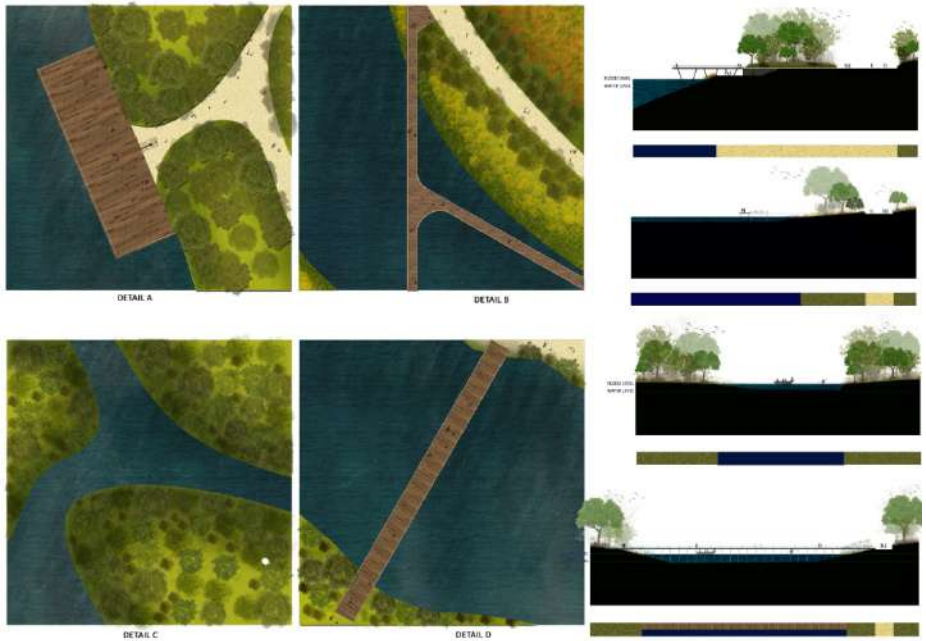
### Bridge Part 4



# Island Masterplan



# Island Sections

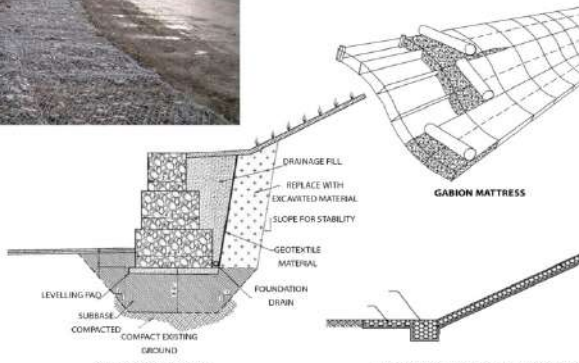


# Gabion System

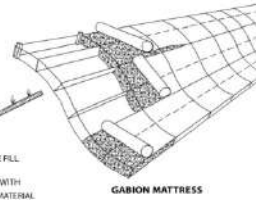
## GABION RETAINING WALL



GABION RETAINING WALL SECTION



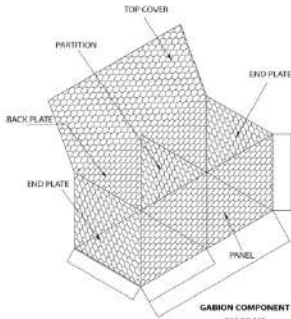
GABION RETAINING WALL GALVANIZED PLASTIC GYPSUM DETAIL



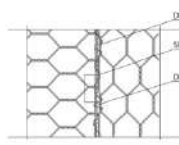
GABION MATTRESS



GABION MATTRESS FOR SLOPE PROTECTION



GABION COMPONENT DIAGRAM

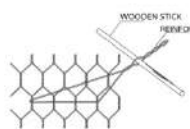


TWISTED SCHEMATIC

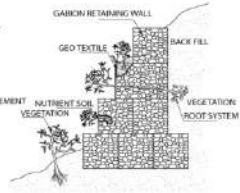


MESH SCHEMATIC

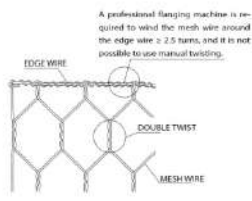
The open grid "T" refers to the distance between the axes of two consecutive stranded wires. The tolerance is determined by the distance between two consecutive twisted sizes, taking the average of ten consecutive grids.



PANEL RIB OPERATION DIAGRAM



GABION RETAINING WALL



MECHANICAL FLANGE

A professional flanging machine is required to wind the mesh wire around the edge wire  $\geq 2.5$  times, and it is not possible to use manual twisting.