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A thesis submitted to the Department of Architecture in partial  
fulfillment of the requirements for the degree of  
Bachelor of Architecture

Report on  
Resort at River Island  
Sadipur, Sylhet

By

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## **Declaration**

It is hereby declared that,

1. The thesis submitted is my own original work while completing degree at BRAC University.
2. The thesis does not contain material previously published or written by a third party, except where this is appropriately cited through full and accurate referencing.
3. The thesis does not contain material which has been accepted, or submitted, for any other degree or diploma at a university or other institution.
4. I have acknowledged all main sources of help.

**Student's Full Name & Signature:**

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## **Approval**

The thesis/project titled “Resort at River Island, Sadipur Sylhet” submitted by Sumaiya Afreen (18308014) Of Summer, 2023 has been accepted as satisfactory in partial fulfillment of the requirement for the Bachelor of Architecture degree on 09-0109-23.

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## **ABSTRACT**

This project explores the delicate synergy between nature, rural life, and sustainable tourism in the pristine island of Sadipur, Sylhet, Bangladesh. Nestled in an agricultural haven, this resort is envisioned as a harmonious blend of tranquility and environmental preservation. The aim is to maintain the island's untouched, serene ambiance while integrating a rural-themed resort that seamlessly coexists with the existing village. The focus is on preserving the island's natural beauty, safeguarding its calm and quiet environment, and respecting the cultural integrity of the village.

This project delves into the design and planning strategies that facilitate the coexistence of nature, the resort, and the village, ensuring a sustainable, unspoiled paradise for all.

**Keywords:** Nature, Tourism, Ecology, Flora and Fauna, Outdoor, Landscape

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# **CHAPTER 1: INTRODUCTION**

## **1.1. Project Brief:**

Title: Resort at River Island

Type: Tourism

Location: Sadipur, Sylhet

Site area: 30.5 acre

Total Built area: 97,349 sqft

Client: Raihan and Mostafiz Private Limited

## **1.2. Project Background:**

"Exploring natural places, often through outdoor activities that are sustainable in terms of their influence on the environment," is what nature tourism refers to. Since the satisfaction, safety, and enjoyment of customers are particularly important to the businesses in the tourism sector, it is a dynamic and competitive sector that necessitates the ability to adapt continuously to consumers' changing wants and preferences.

One of the most popular tourist destinations worldwide is Bangladesh. If you want to visit somewhere unique, consider Bangladesh. The distinctive features of Bangladesh's diverse array of tourism spots will wow even the most discriminating visitors. The best manner feasible during your vacation to explore Bangladesh's natural tourism attractions. Tourists can go fishing, water skiing, river cruises, hiking, rowing, yachting, and swimming in the sea.

There are numerous natural tourism destinations in the north-eastern region, in the Sylhet division. This project can investigate a brand-new, scenically appealing natural site for visitors. Local crafts, migratory birds during the winter, and the peace of the Kushiya Dead River are all present. The initiative may give people the chance to take in the area's natural beauty and live in a healing atmosphere.

### **1.3 Project Rationale and Site Description:**

A project based on hospitality and tourism is the Resort at Kushiya River. The initiative focuses on ecotourism, which can explore the location's beautiful splendour. An important part of this project to create a healing environment by healing and river-based activities.

Tourists can take part in local cultural activities and learn about local handicraft. The most important local craft at this location is "Shital pati." It is a part of Bangladesh's cultural heritage. the project's essential components. The local economy will grow as a result of this project, which also benefits the national economy.

The location is on Sadipur, and Kushiya Dead River surrounds it. A subsidiary road links the location to the Dhaka-Sylhet highway. One of its two parts is connected to a secondary road. And the river provides access to the other portion. The website is very well suited for accessibility. The river that surrounds the project site may help with the landscape architecture that would generate leisure area.



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## 1.4 Project Goal and Objections

The project's objective is to create a sustainable nature-based leisure resort that considers the region's beautiful attractiveness. And cultivate a healing atmosphere with river-focused activities.

The main purposes are,

- Create a recreational atmosphere for the resort using a range of amenities and features.
- Create a healing environment with therapeutic pursuits like yoga, meditation, gardening, and spa treatments.
- Give visitors the chance to participate in volunteer gardening and farming projects. And that will facilitate recovery.
- Embrace regional culture and work to preserve it.
- Promote regional handicrafts and establish a visitor education center.
- Offering various forms of lodging in accordance with the desired vantage point and location.
- Offer tourists new experiences by offering river-focused recreational facilities.
- Nurture the local biodiversity so that visitors can learn about it.
- Provide a location in a natural setting for business meetings and seminars.
- Economic prospects for the local community will result from the construction of tourist resorts.

- The construction of the multipurpose tourist resort would also benefit the local and national economies.
- Through Eco sensitive design, address the climatic and energy consumption issues brought up by contemporary architecture.

## **CHAPTER 2: LITERATURE REVIEW**

### **2.1 Tourism**

Traveling away from home and staying in locations outside of one's typical environment for leisure, business, or other reasons is referred to as tourism. It is in the business of luring, reserving, and amusing travelers. The World Tourism Organization defines tourism more broadly as "people traveling to and staying in places outside their usual environment for not more than one consecutive year for leisure and not less than 24 hours, business and other purposes" (Organization, 1995). This definition goes "beyond the common perception of tourism as being limited to holiday activity only. "Western Europe saw the emergence of tourism in the 17th century.

### **2.2 Tourism in Bangladesh**

Bangladesh has several beautiful natural areas that are popular travel destinations for travelers. Historical sites, resorts, beaches, picnic areas, woods, tribal people, and a wide variety of wildlife are among Bangladesh's tourism attractions. One of the most popular tourist destinations worldwide is Bangladesh. Numerous domestic and international tourists travel to the nation and its tourist destinations to explore the beauty of nature.

According to World Travel and Tourism Council (WTTC) report (2014), The total contribution of travel and tourism was 4.4% of GDP in 2013 and is expected to grow 7.9% to 4.5% of GDP in 2014. It is forecasted to rise by 6.5% per annum to 4.7% of GDP by 2024. Notable that, total contribution consists of direct, indirect and induced contribution (tourism, 2014).

Travel and Tourism generated 1,328,500 jobs directly in 2013 and this is forecasted to grow by 4.0% in 2014. This includes employment by hotels, airlines, travel agents and other passenger transportation services. It will increase by 2.7% per annum on average over the next ten years. The total contribution of Travel and Tourism to employment was 2.8% of total employment in 2013. This is forecasted to rise to 3.9% of total employment in 2014. By 2024, travel and tourism are forecasted to support 4.2% of total employment (tourism, 2014).

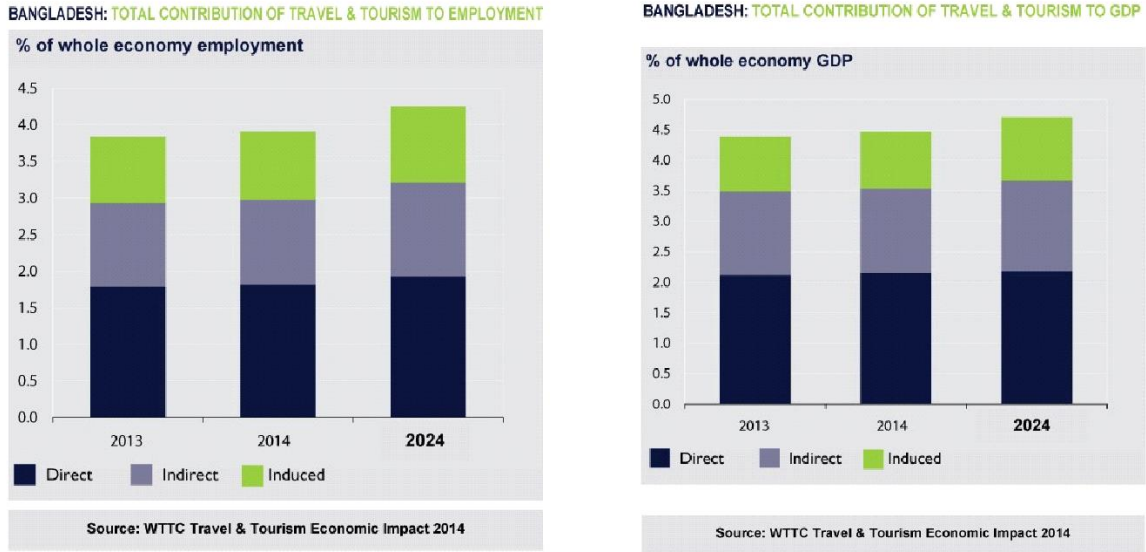


Fig 2.1: Percentage of whole economy employment. Fig2.2: Percentage of whole economy GDP.

Source: WTTC Travel & tourism economic impact 2014

### 2.3 Tourism in Sylhet

Sylhet is renowned for its abundant natural beauty, drawing a substantial number of tourists annually. The region boasts lush tea plantations covering picturesque hillocks, captivating, reserved forests, and the allure of migratory birds during winter, particularly in the haor areas.

Sylhet's numerous rivers enhance its scenic appeal, with well-known destinations such as Bichnakandi, Jaflong, Madhobpur Lake, Ratargul Swamp Forest, and others, being major tourist attractions. Furthermore, there are undiscovered natural sites that offer tourists opportunities to explore additional scenic wonders, ultimately contributing significantly to the region's economy. Data on Sylhet's tourism, as per Haque (2018), supports this assertion.

### Sylhet compared to other tourist places

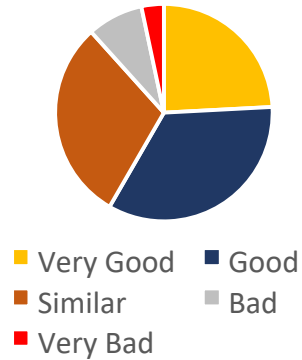


Fig2.3: Pie chart of Sylhet compared to another tourist place.

### Types of Transportation

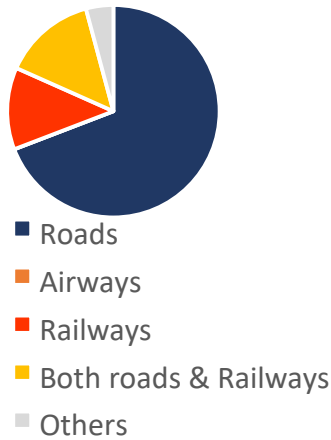


Fig2.4: Pie chart of types of transportation

Source: Article of Problems and Prospects of Tourism Industry at Sylhet Region in Bangladesh.

### 2..3.1 Tourists spot in Sylhet

**Bichnakandi:** Bichnakandi, situated in the Rustompur Union of Gowainghat Upazila within the Sylhet District, has experienced a surge in tourist visits, primarily drawn to its river in recent years.

**Madhobpur Lake:** Madhobpur Lake, located in Srimangal within the Maulvi Bazar District of Bangladesh, is a highly popular tourist destination in the country.

**Jaflong:** Jaflong, positioned in the Gowainghat Upazila of Sylhet District, is a renowned hill station and sought-after tourist attraction within the Sylhet Division of Bangladesh. It shares its border with the Indian state of Meghalaya and is characterized by its stunning natural scenery, nestled amid subtropical mountains and rainforests. Jaflong is particularly famous for its unique stone collections and is also home to the Khasi community (Nawaz, 2014).

**Ratargul Swamp Forest:** Ratargul Swamp Forest, located in Gowainghat, Sylhet, is a distinctive freshwater swamp forest and the sole one of its kind in Bangladesh. It is also one of the few

freshwater swamp forests in the world. This forest is naturally conserved under the Department of Forestry, Government of Bangladesh. The lush evergreen forest sits adjacent to the Goain River and is connected to the Chengir Khal channel. Predominantly, the forest is populated by the *Millettia pinnata* trees. During the rainy season, it gets submerged under 20-30 feet of water, while for the remainder of the year, the water level remains at approximately 10 feet (Hassan, 2016).

Lalakhal: Lalakhal is a broad channel within the Sharee River, located near the Tamabil road in Sylhet. The river's depth is not considerable, but it is a vital source of sand in the Sylhet region. What sets it apart is the remarkable variety of water colors it exhibits, shifting from blue to green to crystal clear at different points (Kabir, 2013).

## **2.4 Resort Definition**

People typically travel to resorts for leisure and relaxation. It is a self-sufficient location that can meet all of the demands of visitors in one place. Without leaving the site, visitors can enjoy food, drinks, entertainment, shopping, and other activities.

A resort is a full-service lodging establishment that offers or offers access to a variety of amenities and recreational activities with an emphasis on leisure. Resorts are the main providers of the guest experience, frequently offer services for business or gatherings, and are typically situated in settings that are designed for vacations. Minimum Requirements (Das, n.d.):

- Serve five more secondary recreational, leisure, or entertainment opportunities.
- Serve one hallmark amenity or anchor attribute.
- Bed-base must contain short-term or overnight housing.
- There must be a minimum of 25 rooms or other accommodations (exceptions to the requirement apply to properties with two signature amenity/anchor features).

- 
- Highlight your experience in a recreational or retreat setting.

### **Signature Amenity:**

Be regarded as a resort The most significant amenities are signature ones. The trademark facility is an amenity, an attraction, or a regionally prominent attribute. These include marina, tennis, water park, golf, ski/mountain, beach/ocean, lakeside, casino/gaming, all-inclusive, spa/health/wellness, and beach/ocean/lake. To qualify as a hallmark facility, property-generated or man-made amenities must be full-service (Brey, 2011).

### **Anchor Attribute:**

Anchor qualities that create a trademark amenity are secondary resort amenities and attributes. A minimum of five recreational, leisure, or entertainment activities connecting to a similar topic must be provided in order for an attribute to be recognized as an anchor attribute. Couples, family, educational, tropical, and dude ranch are a few of these (Brey, 2011).

### **Recreation/leisure/entertainment experiences (RLE-E):**

A secondary amenity that enhances the resort experience is a recreation, leisure, or entertainment activity.

Activities for leisure or recreation, such as organized children's activities or beach volleyball, are regarded as RLE-E. Although RLE-E is not regarded as a primary resort feature, they are crucial in setting the right mood and offering a variety of activities for visitors for them to engage in (Brey, 2011).

### **Full Service:**

To meet the interests and demands of the consumer, full-service offers a variety of amenities and services. A restaurant that offers two or more meal services each day, a range of amenities and activities, and improved service are examples of this (Brey, 2011).

## **2.5 Classification basis on these four properties**

### **Destination Resort:**

Have a reputation for having high levels of service and serve as the main incentive to travel to a destination.

Throughout a visitor's stay, properties offer most or all amenities and give them access to a sizable recreation or leisure area. Frequently, properties meet the minimal resort requirements, have meeting/business capabilities, and offer:

- Four signature/anchor amenities
- Fifteen or more unique secondary RLE-E
- Three or more restaurants and bars
- Spa and leisure facilities
- Several stores
- A range of housing alternatives

### **Intermediate Resort:**

Visitors may have other motivations for visiting the resort in addition to the main purpose for going there. Properties that are accessible to a lot of recreational and leisure space are usually



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located away from big population areas. With the exception of their constrained range of signature or anchor amenities, they are quite comparable to properties at destination resorts. These properties provide the following features in addition to meeting the minimal resort requirements:

- Two or more food and beverage establishments.
- ten or more distinctive secondary RLE-E

### **Intermediate-Access Resort:**

These properties are often found in heavily populated locations, which are popular tourist destinations.

They provide access to regionally significant signature attractions like ski, beach, etc. and are typically grouped together. Properties offer enough opportunities for leisure, entertainment, and recreation. The following amenities must be offered by these resorts in addition to meeting the minimal resort requirements:

- At least ten different secondary RLE-E
- Two or more food and beverage establishments
- Direct access to outdoor sports and leisure activities

### **Specialized Resort:**

- Serve tourists a concentrated experience centered on a single signature amenity or anchor feature. These can be located anywhere. Size is typically smaller. These facilities could be the main draw for visitors.
- The following minimal resort standards must be met by these properties:

- Provide five secondary RLE-E in addition to one distinctive amenity or anchor characteristic.
- Provide one full-service restaurant and bar.
- Requirement of 25 rooms or other accommodations (exception to requirement for properties with two signature amenity/anchor features).
- Bed-base must include short-term or overnight lodging.
- Place a focus on experiences in a leisure or retreat environment.

## **2.5 Resort History**

### **2.5.1 Roman Empire: Baths**

The ancient Romans pioneered the concept of public leisure facilities called Baths, which served dual purposes, offering both therapeutic healing and recreational enjoyment. These Baths closely resembled contemporary resorts due to the extensive range of amenities available in one place. The origins of modern resorts can be traced back to these Roman Baths, which emerged around the 2nd century B.C.

Initially, these Baths were relatively small and strictly segregated by gender. However, as time passed, they expanded in size, grandeur, and inclusivity, often funded by the public or wealthy emperors seeking to make a statement. While most Baths were accessible to the public for free, a few required a nominal entrance fee.

These remarkable establishments boasted a plethora of facilities, including gyms, libraries, snack bars, restaurants, shops, lounges, taverns, museums, and theaters, catering to diverse needs. Roman Baths played multifaceted roles, serving purposes related to health, recreation, and social gatherings. Notably, their architectural influence persisted and significantly shaped the designs of Western architects during the 19th and 20th centuries, as documented by J. Towner in 1991.



Fig2.5: Roman bath house.

Source: Google

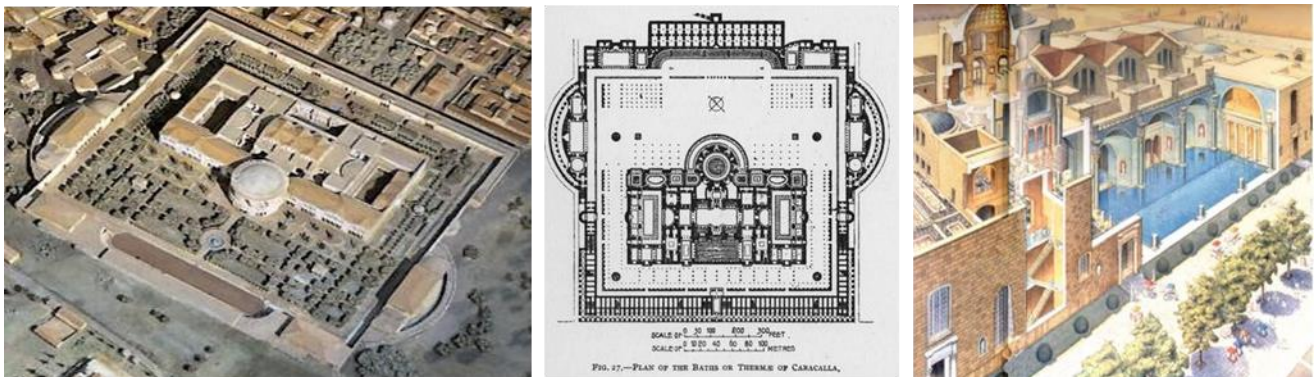


Fig2.6: The bath of Caracalla (212-216/217 AD)

Source: Google

### 2.5.2 Switzerland

In the 1800s the development of exclusive resort facilities offered more privacy to the visitors. Tourists wished for private resort facilities. Switzerland's resort industry developed for the need of private resort facilities. At first Switzerland's resorts were seen as summer places and skiing became popular.



Fig2.7: Switzerland SKI resort

Source: Google

### 2.5.3 Asia

#### Chinese mountain resort

Chengde Mountain Resort, constructed between 1703 and 1792 during the Qing Dynasty, marked China's inaugural resort. Spanning an expansive area of 5.9 square kilometers, this resort was not open to the public. Its primary purpose was to serve as a place for spiritual rejuvenation and recovery, adhering to Feng Shui principles in its construction. Additionally, it became a significant center for both relaxation and political affairs, essentially becoming China's "second

Resort at River Island

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political center." Comprising palaces and gardens, this resort's layout set a precedent that continues to influence resort design to this day (Momin, 2018).

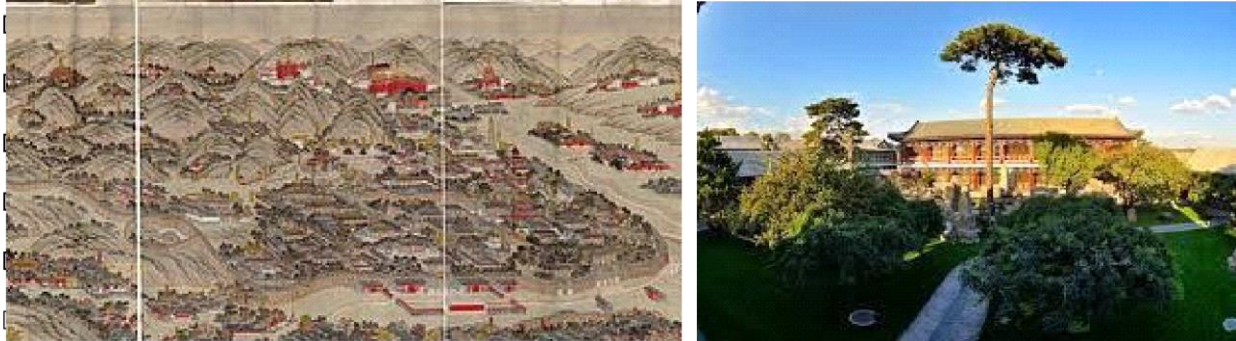


Fig2.8: Mountain Resort of Chengde

Source: Google

## 2.7 Resorts in Sylhet

**There are 29 resorts in Sylhet.**

### **Srimangal**

1. The Palace Luxury resort
2. Dusai resort and spa
3. Grand sultan tea resort and golf
4. Srimangal tea resort and museum

5. Novem eco resort
6. Nissorgo Nirob eco resort
7. Nissorgo Lichchibari eco resort
8. Nissorgo taraff hill eco resort
9. Swiss vally resort
10. Rangauti resort
11. Lemon garden resort
12. Amtali natural resort
13. Green leaf eco resort (sanitary)

### **Sylhet**

1. Nazimgarh garden Resort
2. Nazimgarh Wilderness resort
3. Nazimgarh Tent camp resort
4. Excelsior hotel and resort
5. Shuktara natural resort
6. Zainta hill resort
7. Jalalabad green vally resort
8. Grand sylhet 5-star hotel and resort
9. Zstast holiday resort
10. Aftabnagar park and resort

<b>Destination Resort</b>	<b>Intermediate Resort</b>	<b>Intermediate-Access Resort</b>	<b>Specialized Resort</b>
1. The Palace Luxury resort	1. Grand sultan tea resort and golf	1. Nazimgarh wilderness Resort	1. Novem eco resort
2. Dusai resort and spa	2. Nazimgarh garden resort	2. Zstast holiday resort	2. Amtali natural resort
	3. Jalalabad green vally resort	3. Nazimgarh Tent camp resort	3. Swiss vally resort
	4. Shuktara natural resort	4. Zainta hill resort	4. Lemon garden resort
	5. Excelsior hotel and resort	5. Grand sylhet 5 star hotel and resort	5. Mou vally resort
	6. Srimangal tea resort and museum		6. Rainforest resort
			7. Rangauti resort

Table : Classifications of Resorts in Sylhet Source  
Source: Author

## 2.8 Bamboo

### 2.8.1 Introduction

Bamboo stands as one of the most ancient and adaptable building materials, finding diverse applications in construction, especially in developing nations. It possesses the qualities of strength and lightness, often requiring minimal processing or finishing. Across tropical and subtropical regions worldwide, bamboo boasts a rich tradition as a construction material. Notably, bamboo represents a sustainable and versatile resource, making bamboo structures easy to erect, resilient against elements like wind and earthquakes, and readily repairable if damaged. Moreover, ancillary bamboo products play essential roles in the construction process. Nevertheless, there are several key factors that currently restrict the universal use of bamboo in construction:

1. **Durability:** Concerns about the long-term resilience of bamboo in various conditions.
2. **Jointing:** Challenges related to creating secure and lasting connections between bamboo components.
3. **Flammability:** Considerations regarding bamboo's susceptibility to fire.
4. **Lack of design guidance and codification:** The absence of standardized guidelines and regulations for bamboo construction.

### 2.8.2 Bamboos of Bangladesh

In Bangladesh, there is a diverse presence of bamboo, comprising 26 species and one variety, spanning seven genera. These bamboo species can be found in both natural habitats and cultivated environments. Among the bamboo species thriving in forested areas are *Bambusa burmanica*, *B. polymorpha*, *B. nutans*, *B. tulda*, *Dendrocalamus hamiltonii*, *D. longispathus*, *Melocanna baccifera*, and *Schizostachyum dullooa*. Notably, *M. baccifera* predominantly grows in dense stands, while the others are scattered in small patches within these forested regions, primarily located in the eastern hill areas of the country.

In rural areas and villages, several common bamboo varieties are prevalent, including *Bambusa balcooa*, *B. cacharensis*, *B. comillensis*, *B. jaintiana*, *B. nutans*, *B. salarkhanii*, *B. tulda*, *B. vulgaris*, and *Thyrsostachys oliveri*. These bamboos have a dual mode of propagation, spreading through both seeds and vegetative methods. When bamboo undergoes the flowering process, it typically produces seeds, although *B. balcooa* and *B. vulgaris* are exceptions to this pattern. These mature seeds can naturally germinate in their habitat or be cultivated in nurseries (Banglapedia, 2015).



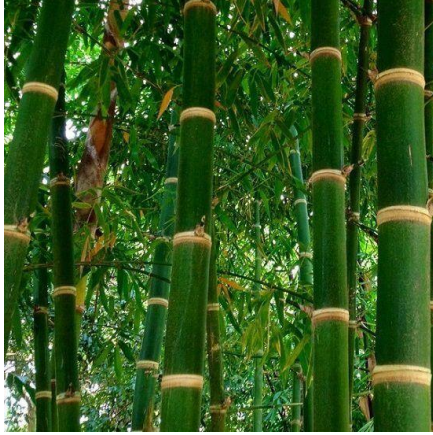


Fig 2.9: Muli Bash

Source: Google



Fig 2.10: Kala Bash

Source: Google

### **2.8.3 Natural Durability**

Like all types of wood, bamboo's longevity is determined by its exposure to the environment and its inherent durability. Typically, untreated bamboo can last anywhere from 1 to 3 years when directly exposed to soil and the elements. When used in covered or sheltered settings, the lifespan of bamboo can extend to 4 to 7 years. Under highly favorable conditions, such as when employed as rafters and internal framing, bamboo can endure for as long as 10 to 15 years. It's important to note that the natural durability of bamboo varies depending on the species. For instance, *Dendrocalamus strictus* is known to be less resistant to termite damage compared to *Dendrocalamus longispathus* (DL Jayanetti, 1998).

### **2.8.4 Protection in harvesting**

Removing soluble sugars from bamboo significantly reduces the risk of decay. Various methods are used for this purpose, including harvesting during seasons with low sugar content, using mature bamboo, post-harvest transpiration, and water soaking. Combining these methods, such as harvesting mature culms during winter and soaking them for 4-12 weeks, offers the best protection.

### **2.8.5 Construction Methods**

## Foundation

For bamboo foundations, different types include direct ground contact, placement on rock or preformed concrete footings, integration into concrete footings, composite bamboo/concrete columns, and bamboo-reinforced concrete bamboo piles.

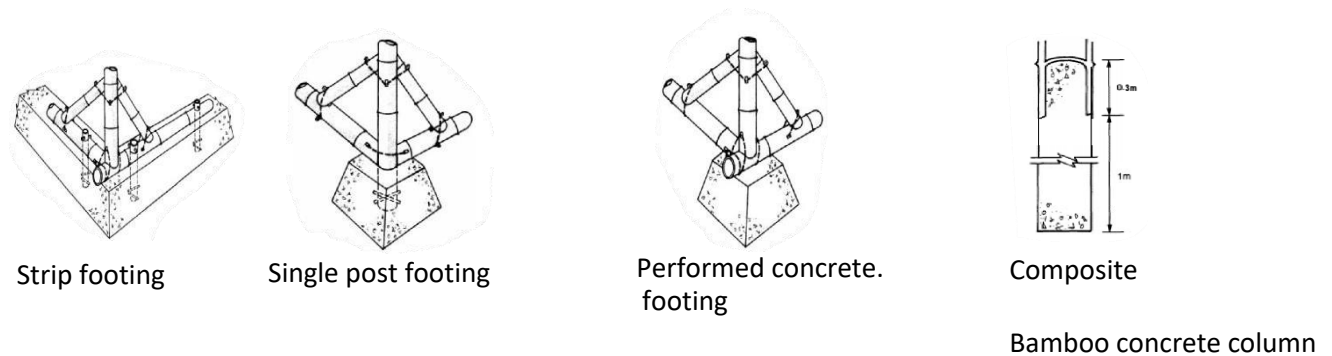


Fig2.11: Types of bamboo foundation

Source: <http://naturalhomes.org/img/bamboo-in-construction.pdf>

## Wall

Bamboo is extensively used in constructing walls and partitions, with posts and beams forming the structural framework. Infill is added to protect against elements, provide privacy, offer bracing for stability against horizontal forces, and allow for light and ventilation. Various infill forms are used, including whole or halved bamboo culms, split or flattened bamboo with mats or plaster, bajareque, wattle (e.g., wattle and daub), woven bamboo, and bamboo panels.

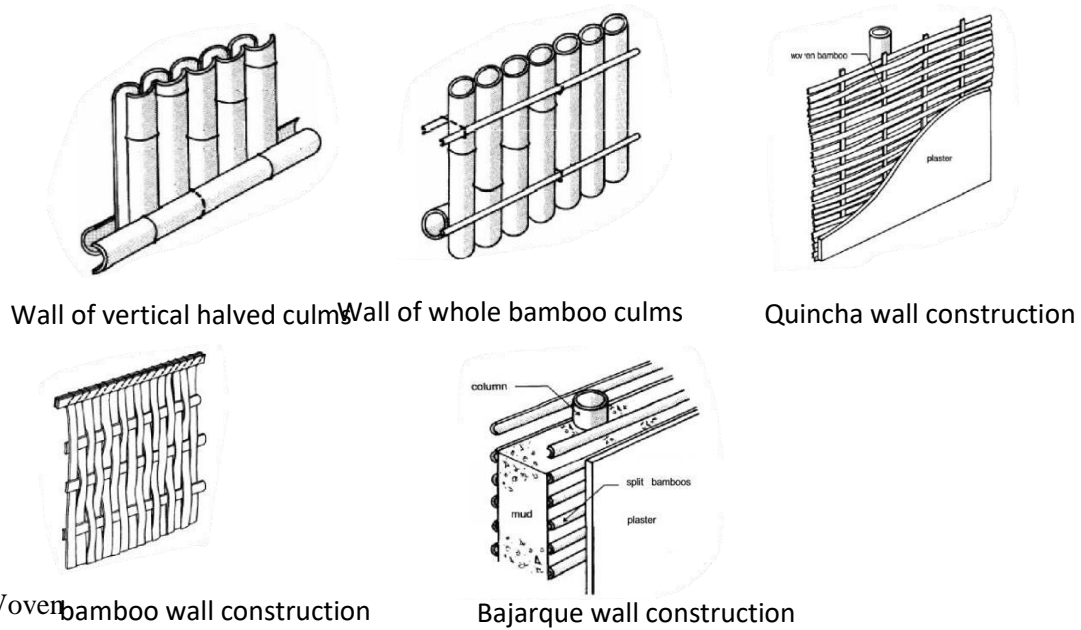


Fig2.12: Types of bamboo wall  
 Source: <http://naturalhomes.org/img/bamboo-in-construction.pdf>

### Trusses

Trusses have advantages over traditional construction, such as efficient material use, larger span capabilities, use of shorter components to counteract deformities, and prefabrication. Truss types include king post truss (4m span), fink truss (4m span), and Janssen truss (8m span with improved jointing).

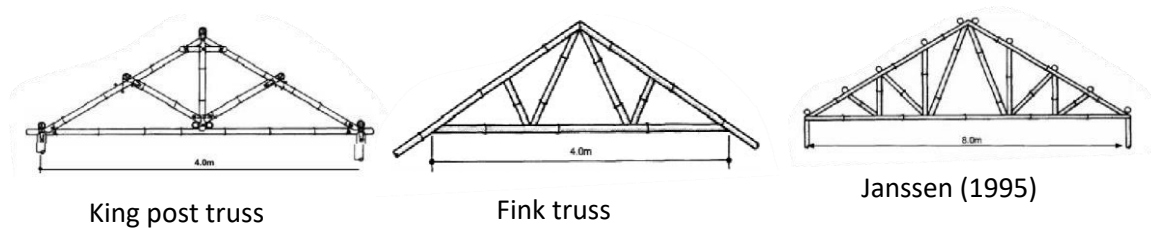
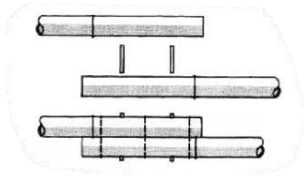


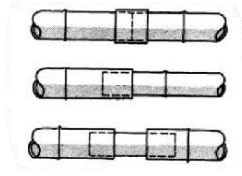
Fig2.13: Types of bamboo Truss  
 Source: <http://naturalhomes.org/img/bamboo-in-construction.pdf>

**Joining Techniques:** Traditional methods of joining primarily involve the use of lashing or tying, with or without the inclusion of pegs or dowels. These methods encompass several fundamental joint types:

1. **Spliced Joints:** Splicing is typically accomplished in one of four ways, which include full lapping, half lapping, butt joints with side plates, as well as the use of sleeves and inserts.



Full lapped splice joint

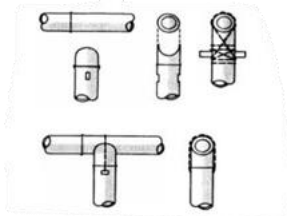


Sleeves and inserts

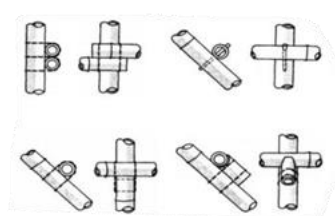
Source: <http://naturalhomes.org/img/bamboo-in-construction.pdf>

2. **Orthogonal Joints:** These are the most common types of joints, where two or more members intersect or cross at right angles. The fundamental configurations include:

- Butt joints
- Crossover joints



Butt joint



Crossover joint

Source: <http://naturalhomes.org/img/bamboo-in-construction.pdf>

Fig 2.14: Joint Techniques

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3. **Angled Joints:** Angled joints are created when two or more members intersect or cross at angles other than right angles.

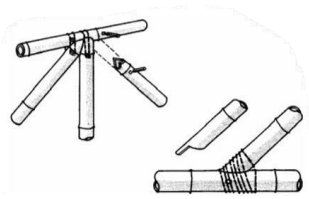
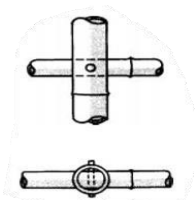


Fig 2.15: Angled joints with integral tenons

Source: <http://naturalhomes.org/img/bamboo-in-construction.pdf>

4. **Through Joints:** Joining members of different diameters can be achieved by passing the smaller member through a hole drilled in the larger one.



Through joint

Fig2.16: Types of bamboo joints

Source: <http://naturalhomes.org/img/bamboo-in-construction.pdf>

## **CHAPTER 3: CONTEXT ANALYSIS**

**Site Location:**

Raihan and Mostafiz Private Limited, based in Sylhet, have provided a project site situated along the Kushiara dead river in Sadipur, Sylhet. This location is approximately 35 kilometers from Sylhet city and is positioned right next to the Dhaka-Sylhet highway. The site enjoys excellent accessibility and a well-developed transportation network. It has the potential to be developed into a destination offering comprehensive tourism amenities for visitors.

## Site Appraisal

### 3.1 Site surroundings and Site Photographs

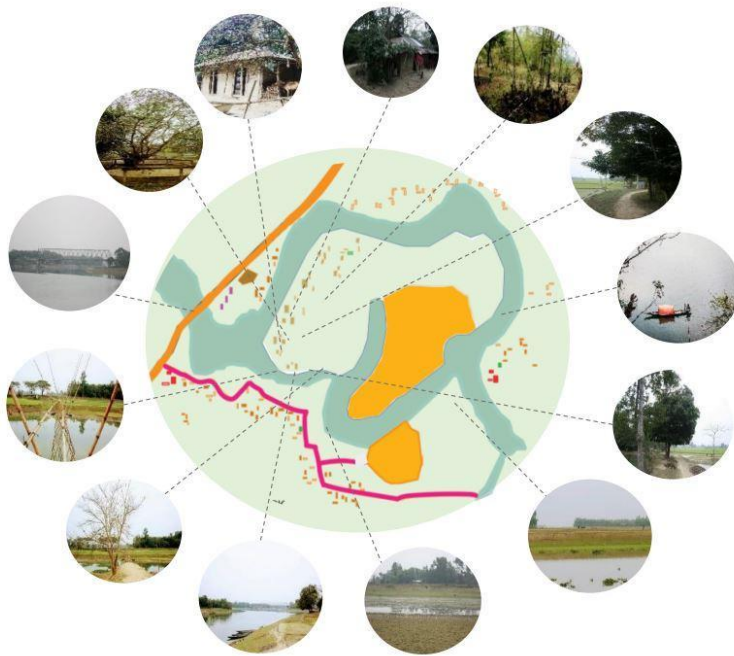


Fig 3.1: Site surrounding.  
Source: Author



Figure 3.2: Different view from site

### 3.2 Map analysis

## Hydrology map

A survey was conducted to assess the hydrology of the site, revealing three distinct water depth levels. Most of the river area features deep water, with a substantial portion surrounding the site being well-drained. However, there is a smaller area with poor to moderately well-drained conditions, which presents a challenge. The water level experiences two significant seasonal fluctuations, rising approximately five to seven feet during the rainy season. The river flows from the southeast to the northwest and connects to the main Kushiara river via two haors.



Fig3.3: Hydrology map.

Source: Author

## Findings

1. **Water Level Variability:** Managing the fluctuating water levels is a primary concern in this area.
2. **Water Flow Direction:** Design considerations must account for the direction of water flow along the river.
3. **Identification of Water Depths:** It is crucial to identify the varying water depths across the site, including the poorly drained areas.

## Land use map

In terms of architecture, the area predominantly features rural houses constructed using local materials in vernacular styles. Riverfront houses with courtyards are a common architectural form.



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Additionally, there are two educational institutions and various religious buildings within the area. However, commercial development in the region is underdeveloped.

## Findings

- Traditional river-oriented vernacular house designs prevail.
- Commercial development and employment opportunities in the area are limited.
- There is significant untapped potential for more efficient land use in the region.



Fig3.4: Land use map  
Source: Author

## 3.3 List of flora and fauna

List of Flora & Fauna



Fig : flora of the site

Fauna (birds):

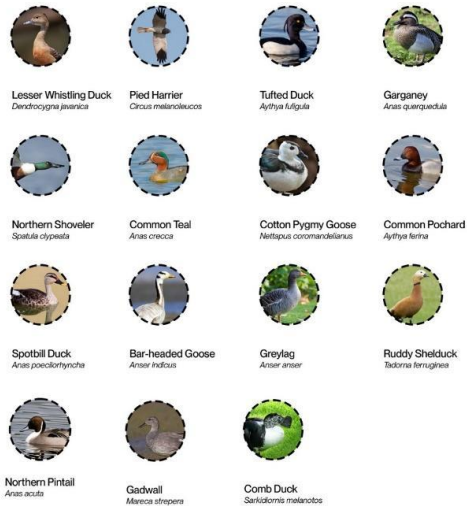


Fig : fauna (birds) of the site

Fauna (fishes) of the river:

A total of 74 pieces fish species were reported belonging to 23 taxonomic families. Among them Cyprinidae were 38%, Siliuridae 15%, Cobitidae 7%, Belontiidae 4%, Hemirhamphidae 4%, Heteropneustidae 4%, Gobiidae 3%, Channidae 3%, Clariidae 3%, Chichlidae 2%, Ospreniidae 2%, Ambasiidae 2%, Bagridae 2% and others 1% each. (MOHAMMAD AMZAD HOSSAIN\*,2019)

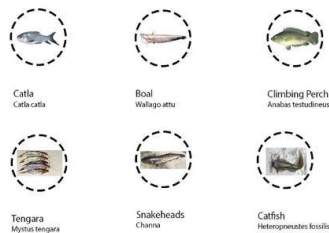


Fig3.6: Flora and Fauna

### 3.4 Climate analysis

Resort at River Island

**Climate Analysis:**

**Temperature**

	High	Minimum	Average
Temperature	28.1 degree C	18.5 degree C	20 degree C
Month	August	January	

Temperature Graph

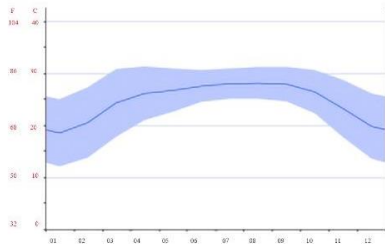


Fig: Annual Temperature Graph  
Source: Google

**Humidity Analysis:**

**Temperature**

	High	Minimum	Average
Humidity	88%	60%	80%
Month	Jul-Aug	March	

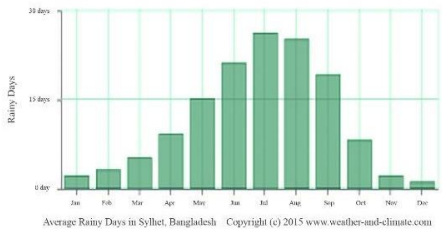
Humidity Graph



Fig: Humidity Graph  
Source: Google

**Rainfall**

	High	Minimum	Annual
Rainy Days	25 Days	1-2 days	149 days
Month	July	December	



**Wind speed**

	High	Minimum	Average
Wind Speed	2.5	0	2

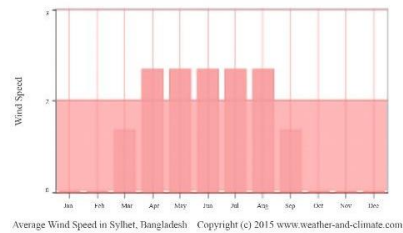


Fig3.6: Climate and Humidity Analysis

**3.5 Topographical Information:**

Site Area: 30.5 acre

Latitude: 24° 38' 35" N

Longitude: 91° 41' 14" E

Site area: The site area is flatland and surrounded by Kushiara dead river. It is 22' down from the Dhaka Sylhet highway. North, south and east side surrounded by river, There have seasonal water level change in the area. Water level change 5 feet to 7 feet. Minly change in rainy and winter season.

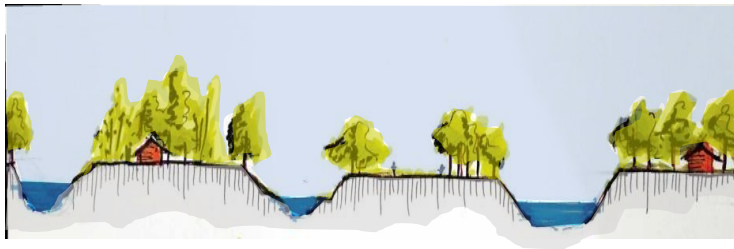


Fig3.7 : Topographical section

Source: Author

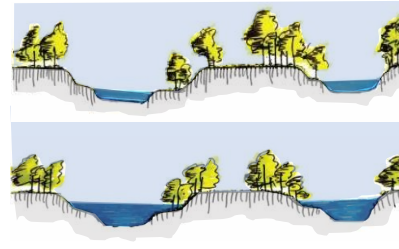


Fig3.8 : Seasonal water level change

Source: Author

### Strengths:

1. Abundant scenic beauty characterizes the site.
2. It boasts fertile agricultural land.
3. It is located far away from the hustle and bustle of urban areas.
4. The site attracts migratory birds.
5. A functional transportation system is in place.

### Weaknesses:

1. Underutilization of most vacant lands is a prevalent issue.
2. The efficient utilization of water resources is lacking.

### Opportunities:

1. There is potential to create employment opportunities for the local population.
2. The site offers significant potential for the development of water-based activities.

### Threats:

1. Inadequate maintenance could lead to future flood occurrences in the area.

## CHAPTER 4: CASE STUDY

A case study involves the thorough examination of a project, documenting it through various means like writing, sketches, diagrams, and photos. It's a method used to study similar contextual

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projects and research problems, aiming to understand the architectural concepts employed in the design and how they functioned. The research findings contribute to enriching the project's objectives.

#### 4.1 Panigram Resort

Location: Jessore, Bangladesh

Architect: Marina Tabassum

Panigram Resort is envisioned as a sustainable boutique resort featuring a spa and wellness center. Situated in a village in southern Bangladesh, just 70 km from the renowned Sundarban mangrove forest, the resort embodies a contemporary interpretation of traditional Bangladeshi architecture. Guests can enjoy activities such as boating along the meandering river, unwinding in the hammock house, swimming in the refreshing pool, or participating in classes with local artisans. For children, there are opportunities to play badminton or cricket on the lawn, use the jungle gym, or explore the treehouse. Knowledgeable guides fluent in English offer tours of the region's archaeological sites using specially designed, family-sized rickshaws. Travelers interested in community engagement have the option to participate in voluntary programs within the local village or school (Boekhoff, 2014).



Fig 4.1: Panigram resort.

Source: Panigram.com

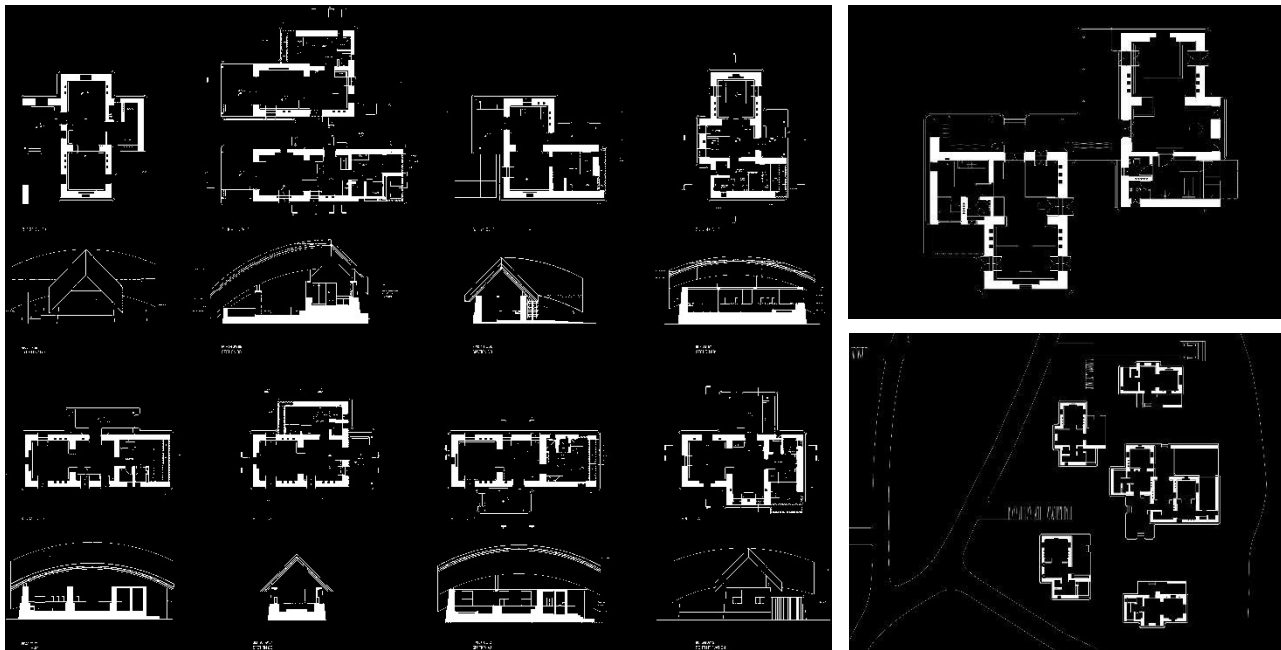


Fig 4.2: Cottage plan & section

Source: Panigram.com

### Findings:

1. **Bangla Roof:** The resort incorporates Bangla roof design in its construction.
2. **Historical Context:** The architectural inspiration draws from the historical context, including elements from the Mughal Empire and temples.
3. **Climate Suitability:** The resort's design is well-suited for the monsoon season, with efficient water drainage.
4. **Eco-Friendly:** The resort prioritizes eco-friendliness in its construction and operation.
5. **Local Workforce:** Construction involves the local community, empowering local artisans and labor.
6. **Sustainable Boutique Resort:** The resort is designed as a sustainable boutique resort with spa facilities, emphasizing a commitment to sustainability.
7. **Cottage Plan:** Figure 3.10 illustrates the cottage plan, sourced from Panigram.com.

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**Materials:**

- Roof: Bamboo, wood, thatch.
- Building: Mud mortar, mud brick.
- Wall Thickness: 30 inches.

**Cultural and Educational Aspects:**

- Local potters provide classes, offering tourists opportunities for hands-on learning.
- Specially designed local rickshaws facilitate tourist visits to the area.
- The resort's construction integrates and emphasizes the local pottery culture.

**4.2 Jean-Michel Cousteau Fiji Islands Resort**

Architect: Jean-Michel Cousteau

Site area: 17 acres.

Year :1995

Architect Jean-Michel Cousteau and his team wanted to prove that environmental responsibility and financial success were simultaneously feasible, demonstrating that the “eco” in ecology and economics were theoretically and practically compatible. The Jean-Michel Cousteau influence affected energy conservation, waste management, water conservation, landscape management, natural reserves, coastal restoration, food production, integrated pest management, interpretation for guests, and community outreach. In 2005 the Resort was selected by Conde Nast travel magazine as being the best eco-resort in the world (Bromberek, 2000).

**Master plan**



Fig 4.3: Master plan of Jean-Michel Cousteau resort.

Photo Source: Google

### Types of bungalows

1. Oceanfront bungalows
2. Dulux oceanfront bungalows
3. Point reef bungalows
4. Garden view bungalow
5. Honeymoon bungalow



Fig 4.4: Ocean view bungalow

Photo Source : Google



Fig 4.5: Garden view bungalow.

Photo Source: Google

### Landscape

Resort at River Island



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The organic garden grows some of the resort's produce, and compost from the kitchen and garden scraps are used as fertilizer. Native vegetation provides hedges, which act as both a visual and acoustic barrier between the units. 15 of 21 Mangroves, which were cut down by previous owners, are being restored to their natural state to minimize erosion.



Fig 4.6: Landscape of Jean-Michel Cousteau resort  
Photo Source: Google

## Construction & materials

Principal materials used in the development include local timbers, palm-leaf thatch, ceramic tiles, stone and concrete. The choice was guided by a number of principles: to minimize impact on the landscape, to use natural materials and systems, when possible, to use materials fabricated in an environmentally responsible manner, to minimize construction waste and, finally, to design for flexibility and implement more environmental technologies and systems as they become available. The materials and technologies used also employ local building knowledge and skills thus minimizing the need for external expertise, providing local artisans with employment as well as cultivating (www.fijiresort.com, 2018).

**Waste Management:** The resort prioritizes waste reduction, reuse, and recycling, focusing on greywater, kitchen waste, and sewage as valuable resources. Staff education and procurement practices significantly reduce packaging waste, with cardboard and metal being repurposed by local staff. Plastic waste is the primary form of waste. Local partners handle plastic bottle recycling, while recyclers in Suva manage paper and batteries. Nearly all kitchen waste is composted.

**Energy Management:** The resort relies on passive solar design, leveraging natural elements like thatched roofs, high ceilings, louvred windows, and shading vegetation for cooling and energy needs. Air-conditioning is not provided in guest rooms. Solar systems provide hot water throughout most of the year.

**Water Management:** Water conservation and pollution prevention are key strategies in water management. Used water is treated in constructed wetlands and reused for irrigation, aiming to recycle nutrients within the system instead of releasing them into the sea. Purified water is used in gardens and returns as wastewater.

**Findings:** The resort's standout feature is its strong integration with the local community, drawing on local knowledge, traditions, and building materials. Guest units are designed like traditional huts, featuring advantages like high cathedral ceilings and thatched roofs. Native vegetation serves as visual and acoustic barriers between units, with careful planning relocating dining areas and playgrounds away from residential sections.

### 4.3 Bora Bora Nui Resort & Spa

**Location:** Motu Toopua, Nunue–Bora Bora Atoll, French Polynesia

**Architect:** Pierre Lacombe

**Site Area:** 16 acres (6.3 ha)

**Number of Guest Units:** 120 villas and suites, with 84 over-water accommodations.

Situated on a volcanic islet to the southeast of the main island of Bora Bora, a mere six miles away from Motu Mute domestic airport, the Bora Bora Nui Resort & Spa stands as the epitome of luxury in French Polynesia. Featuring 84 bungalows perched over a stunningly clear lagoon, this resort establishes a new standard for sophistication and hospitality, catering to the needs of even the most discerning of travelers (Source: <https://www.conradboraboranuiresort.com/>, n.d.).

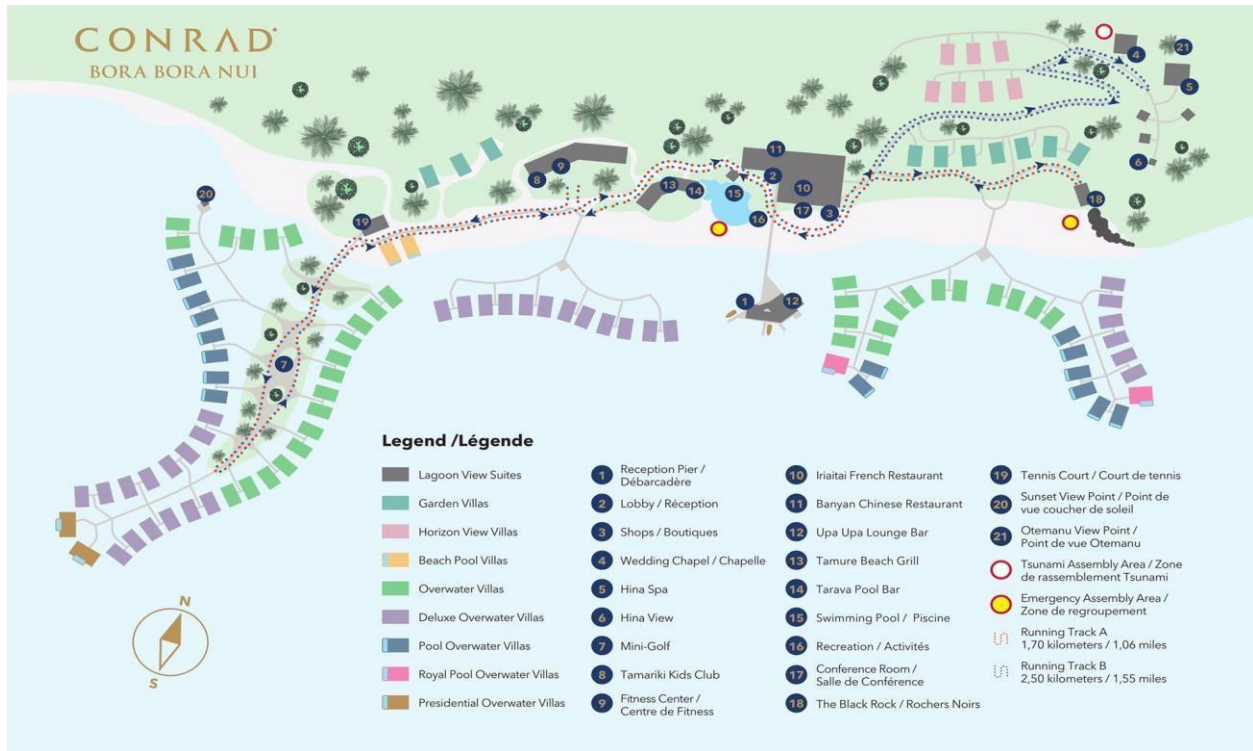


Fig 4.7: Master plan of Bora Bora Nui resort

Photo Source: Google

## Suites & Villas

Bora Bora Nui Resort & Spa is the first 'all suite' resort in French Polynesia (Bromberek, 2000).

- 82 Horizon Over-water Villas (94 sq. meters)
- 2 Horizon Over-water Royal Villas (135 sq. meters)
- 12 Beach Villas (85 sq. meters)
- Hillside Lagoon View Villas (85 sq. meters)
- 1Hillside Lagoon View Royal Villa (135 sq.meters)
- 16 Lagoon View Suites (95 sq. meters)

All villas and suites feature a very spacious bedroom and living room, separated by Japanese panels.

## Boutiques & Services

- Mandara Spa offers an extensive menu of spa treatments and services as well as four exquisite private bungalows each with its own jacuzzi, bathroom and massage table and a breathtaking view of Bora Bora. -Fully equipped fitness center
- Infinity swimming pool
- Private meeting room for up to 80 seated person
- Over-water reception, set above a natural aquarium
- Laundry
- Dry cleaning service
- Gift Boutique – Art Gallery
- Exclusive Black Pearl Boutique ‘Robert Wan Company’
- Beauty salon with manicure and pedicure
- Helipad for Tours and Private transfers
- Boat transfer between the airport and resort
- Shuttle boat service for Vaitape Village



Fig 4.8: Cottage cluster of Bora Bora Nui resort

Photo Source : Google



Fig 4.9: Cottage of Bora Bora Nui resort

Photo Source: Google

## Construction

Resort at River Island

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Principal building materials used at Bora Bora Nui Resort & Spa are balau, marumaru, kahia, coconut, teak and mahogany timber, concrete (for piling and hillside construction), maiao (pandanus) leaves (replaced on a 5-year cycle) flagstone, and ceramic tiles, both floor and wall.

### **Water management**

The resort uses water from the town mains, supplementing it with rainwater from its own storage when available. A desalination plant delivers up to 100 m<sup>3</sup> per day. All toilets are dual flush and gray water from washing is recycled in an irrigation system. External freshwater showers have automatic cut-off valves. Management plans to introduce a water-saving regime in the laundry (which is expected to save 30 percent of the currently used water). The future of the swimming pool, the largest in this part of the Pacific, is also being considered as losses due to evaporation weighing heavily on the water consumption at the resort.

### **Waste management**

Most solid waste is disposed of at the communal tip on the main island of the Bora Bora atoll Figure 4.4.11. Most plastic, glass and metal waste is sorted out and recycled through a 'green program' instigated by the local government, and organic waste is composted on site. The liquid waste is initially stored in septic tanks and later pumped and processed at a sewage plant.

### **Findings**

- There have different types of villas with different modern facilities.
- The resort, quite probably, would be able to cope with the climate, drawing on its own merits. Its site, on a windward side of the atoll, benefits from regular gentle breezes and trade winds as well as from the moderating influence of the ocean.
- The bungalows have very low thermal mass, cathedral ceilings, roof monitors for expelling hot air, wide shading eaves, polished floors that are cool to touch and many louvered windows enabling adequate cross-ventilation. They are sited over water or near the crest of a low hill with both positions well exposed to air movement all year round.
- They are built from mostly local materials and blend well with the landscape.
- Have different types of facilities for the tourists which fulfil all needs of visitors.
- All villas have exposure to the ocean and have modern facilities.



Fig 4.10: Plan of Beach Villa

Photo Source: Google



Fig 4.11: Plan of Horizon Over-water Royal Villa

Photo Source: Google

#### 4.4 Dipshikha School

Location: Rudrapur, Dinajpur, Bangladesh.

Typology: Primary school for 168 students.

Design & concept: Anna Heringer.

The METI Handmade School, a primary school for 168 students located in [Rudrapur](#) in [Dinajpur](#) district of Bangladesh, was built with the assistance of local craftsmen making use of traditional materials, primarily mud and bamboo. An example of [sustainable architecture](#), the project received the [Aga Khan Award for Architecture](#) in 2007 for its simple, humane approach and beauty, and for the level of cooperation achieved between architects, craftsmen, clients and users (Anon., 2010).

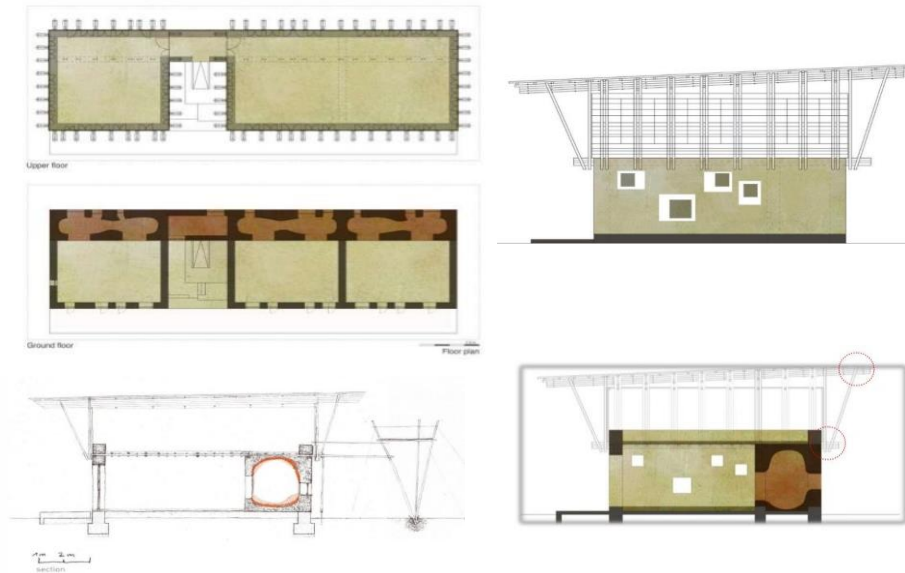


Fig 4.12: Plan & section of Dipshikha school.

Photo Source: archdaily.com

### Construction and Structural Details Findings:

- **Foundation:** The foundation is composed of 50cm deep brick masonry, covered with a facing cement plaster. In addition to this, a crucial aspect of the foundation involved the use of a damp-proof course, consisting of a double layer of locally available PE-film, which was a significant enhancement to the traditional earthen building techniques of the region.
- **Cob Walls:** The ground floor relies on load-bearing walls constructed using a technique similar to cob.
- **Lintels and Jambs:** Lintels and jambs were seamlessly integrated into the structure. Additionally, a ring beam, constructed with thick bamboo canes, serves as a wall plate for the ceiling.
- **Ceiling (Ground Floor):** The ground floor ceiling consists of a triple layer of bamboo canes. The central layer is arranged perpendicular to the layers above and below, providing both lateral stabilization and a connection between the supporting beams.
- **Bamboo Structure and Walls (Upper Storey):** The upper storey features a frame construction made of four-layer bamboo beams, with vertical and diagonal members positioned at right angles to the building.
- **Roofing:** The roofing system comprises a series of bamboo rafters placed at half the interval of the frame construction below. These rafters provide support for the corrugated

iron roof and are covered with timber paneling. Their height is adjusted to ensure proper runoff.

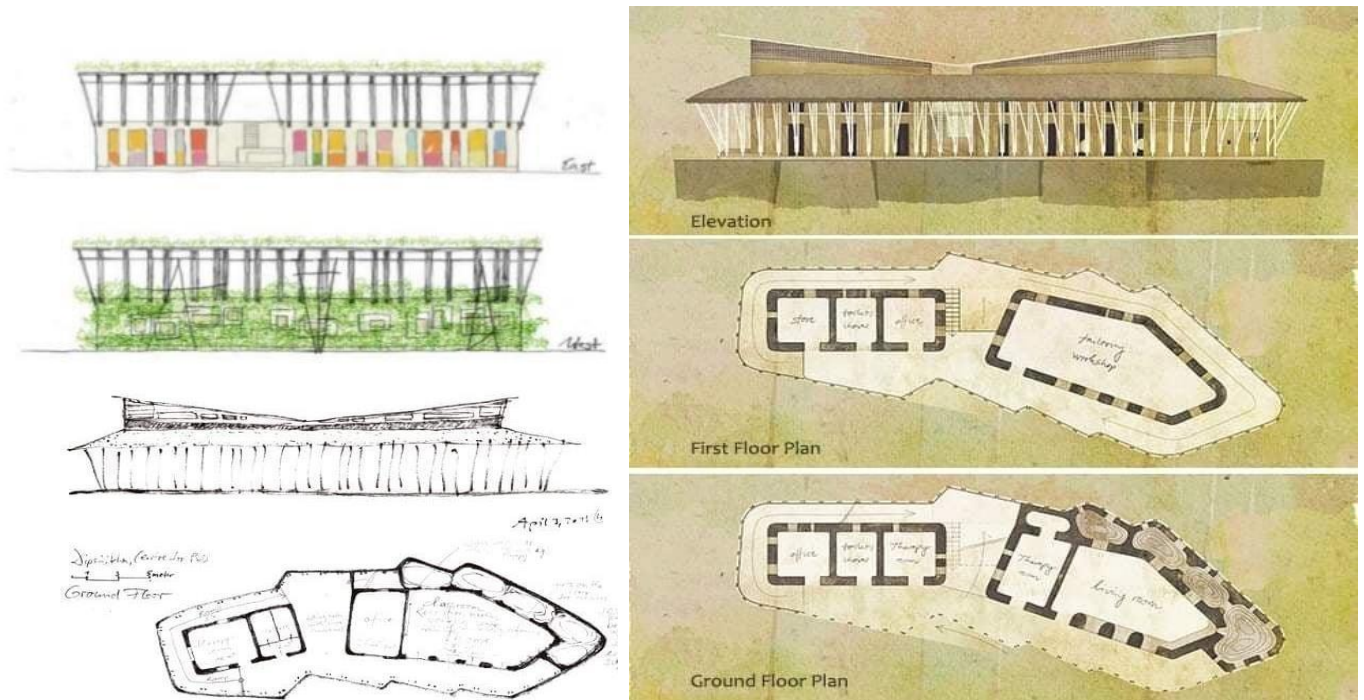


Fig 4.13: Plan, elevation & sketches of Dipshikha school.  
Photo Source: archdaily.com



## **CHAPTER 5: PRAGRAM AND PROGRAM ANALYSIS**

### **5.1 Site Location:**

The project site is situated along the Kushiara dead river in Sadipur, Sylhet. This area is surrounded by the Kushiara dead river, which ultimately connects to the main Kushiara river. It is conveniently located adjacent to the Dhaka-Sylhet highway, 35 kilometers separating it from Sylhet city. This site falls within the Balaganj upazila, and its proximity to neighboring places such as Osmaninagar, Srimangal, and Maulvibazar is notable.

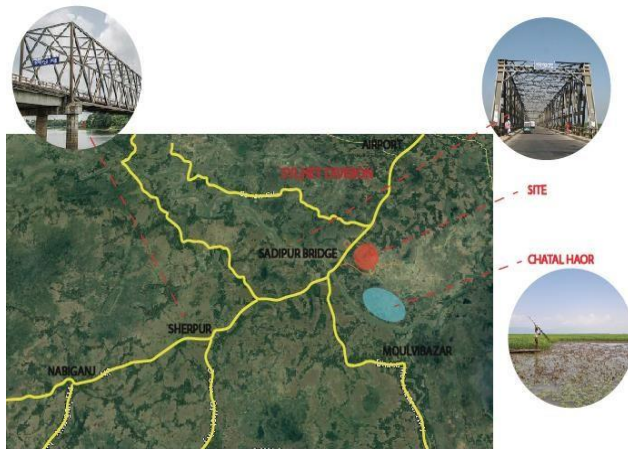


Fig 5.1: Regional Map

Source: Google



Fig 5.2: Site Location

Source: Google

### **5.2 Site Access:**

The site enjoys direct adjacency to the Dhaka-Sylhet highway, and it is also connected to the main highway via a secondary road. The site itself consists of two parts: one part is accessible directly

from the highway through the secondary road, while the other side can be reached via river vehicles.



Fig 5.3: Site accessibility



Fig 5.4: Site accessibility

Source: Author

### 5.3 Program Analysis:

Despite the programs that the client group recommended, a few programs were added and rethought as needed. These programs were created out of necessity, yet many earlier crucial tasks are sometimes ignored.

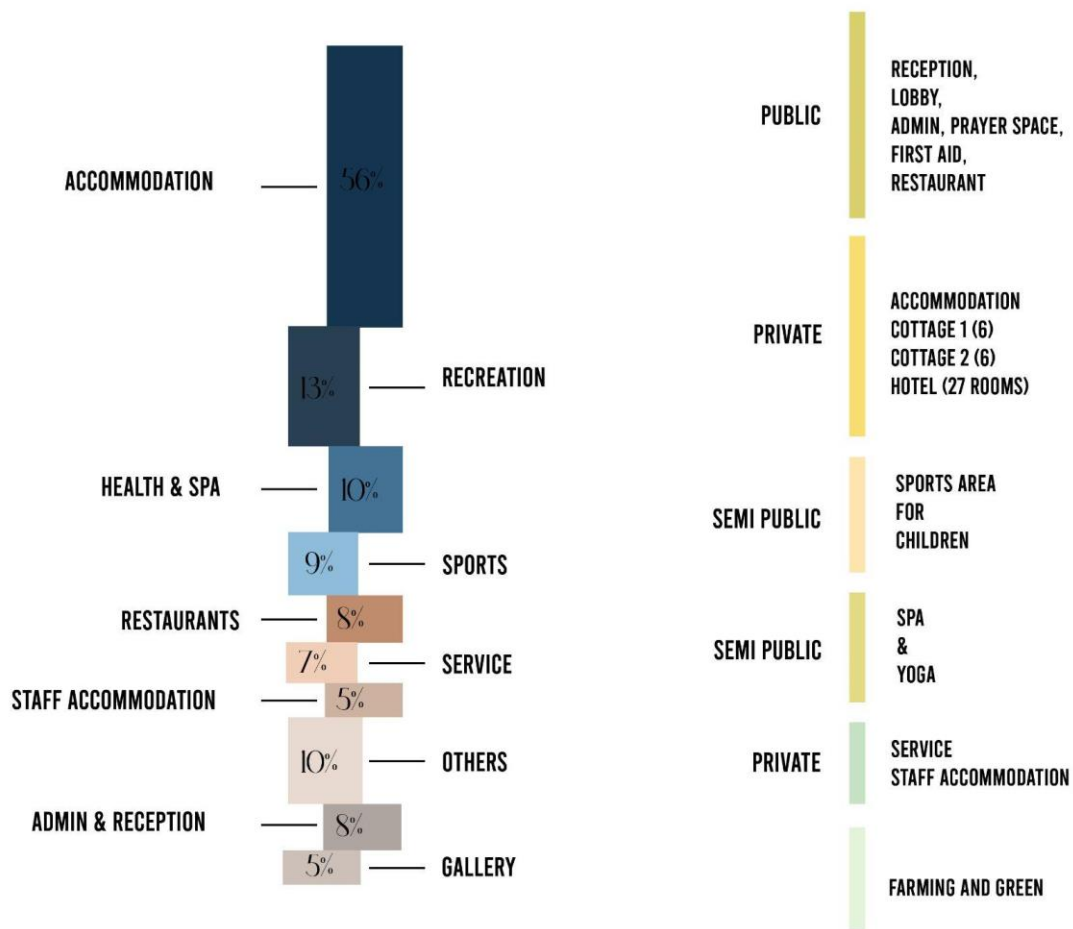


Fig 5.5: Program Analysis

### 5.3 Program Detail:

**Administration:**

SL NO	Functional Area	Total area (sft)
1.	Lobby	2920
2.	Director's office	960
3.	Front office	2900
Sub Total		6780
Total (with 30% circulation)		8814

**Service:**

SL. NO	Functional Area	Total area (sft)
1.	Laundry	1200
2.	Linen & house keeping	500
3.	General store	500
	Furniture repair & store	600
4.	Detergent and chemical	300
5.	Room service	500
6.	Dock area	600
7.	Food receiving & purchasing	300
8.	Garbage Disposal	300
9.	Pump House	300
Sub total		5100
Total (with 30% circulation)		6630

**Health facilities:**

Function area		Total area (sft)
REJUVENATION CENTER Spa & health facilities	Lobby & waiting	500
	Changing areas (locker & toilet)	300
	Massage room (male & female)	900 X 2
	Sauna (male & female)	1000 X 2
	Oxygen therapy	400
	Light therapy	400
	Steam bath	400
	Saloon (male & female)	300 X 2
Fitness	Reception	150
	Lounge	500
	Gym (Male & Female)	1600 X 2
Sub total		12250
Total (with 30% circulation)		15925
Activity spaces + Workshop		10000
River side yoga & Meditation		6000

**Others:**

Sl no	Functional Area	Total area (sft)
1.	Gallery/ Multipurpose	3500
2.	Library & music	500
3.	Shopping Center	1380
4.	Swimming Pool	4500

5.	Indoor Games	2000
6.	Outdoor Games	7500
Sub Total		24604
Total (with 30% circulation)		31985

**Accommodation:**

Functional area	No	Unit area	Total area(sqft)
Cottage (Type 1)	6	970	5820
Cottage (Type 2)	6	1100	6600
Dorm	3	1000	3000
Hotel	1(27 Rooms)	400	15000
Tent	7	500	3500
House Boat	10	1000	10000
Total	33	4970	43920

## **CHAPTER 6: DESIGN DEVELOPMENT**

### **6.1. Concept:**

One single rationale underlies all of my ideas for how to approach the design process: I prefer to protect the ecology as it already exists. Many recognized and unrecognized species have their habitat in the area, which is covered by a continuous ecology. On the other hand, where nature is pristine, any living being living in there heals by harmonizing themselves with the nature. Experiencing the untouched natural beauty and being a part of it was the aim of the whole project.

Site surrounding of Shadipur Island village is a pristine area that is disconnected to the area. The only way to get into the area is to get in by a boat or a bridge called 'shako'. Beside that, the area is full of natural elements, surrounded by water makes this place a great zone to visit for the birds. The villagers live on one wing of the island and the other is used for their farming.



**1. Helps elevate your mood and can even help depression** – A research team from Finland found that people began to feel psychologically restored only after 15 minutes of sitting outside in a forest. 45 minutes of strolling in the woods "increased vitality"[1]. Many studies also show that walks in calm nature can lighten feelings of depression, and spending time in nature is an efficient stress reliever.[2] Relieving stress of course has far reaching benefits such as reduced risk of strokes and heart attacks, and even reduces stress-related hair loss!



**2. Makes you naturally pretty** – Some of us need all the help we can get in this regard, and particularly one's skin can benefit from being out in the nature by reducing stress, which then reduces acne, eczema, psoriasis and itchy skin. The added benefit of clean air and oxygen improves your skin and makes you sleep better (which is a whole other conversation altogether!)[4] Who doesn't love those apple cheeks?



**3. Improves digestion and helps with weight management** – While just sitting outside might not be with this one I'm afraid, a study has found that hiking in nature is a good way to sneak in exercise which you might not register as exercise. Spending time in higher altitude can speed up metabolism and lower your appetite.



**4. Improves ability to concentrate and better memory** – So if you are stuck in a writer's block trying to finish that book you always wanted to write, or maybe you want a place to concentrate fully on a work project? Rent a cabin and do it in Lapland. Trust me, just do it. [6]



**5. Being in nature makes you more creative** – First of all, ask any national poet or painter or composer, they've all sourced their themes from their respective nation's nature. In a cross-Nordic study the researchers found that people look for aesthetic experiences in nature.[7] So if you want to boost your creativity, for which ever project that might be, start in the nature.

## 6.2 Bubble Diagram and Site Connectivity

### Bubble Diagram

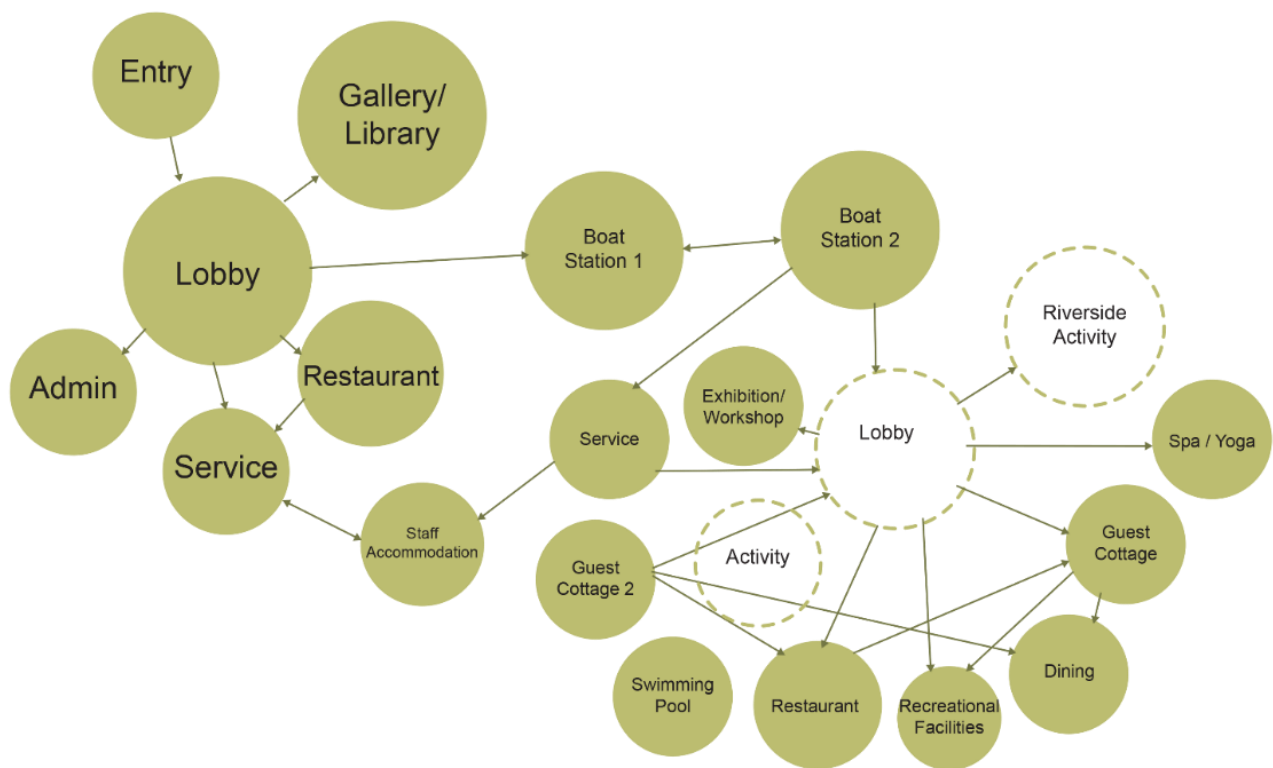
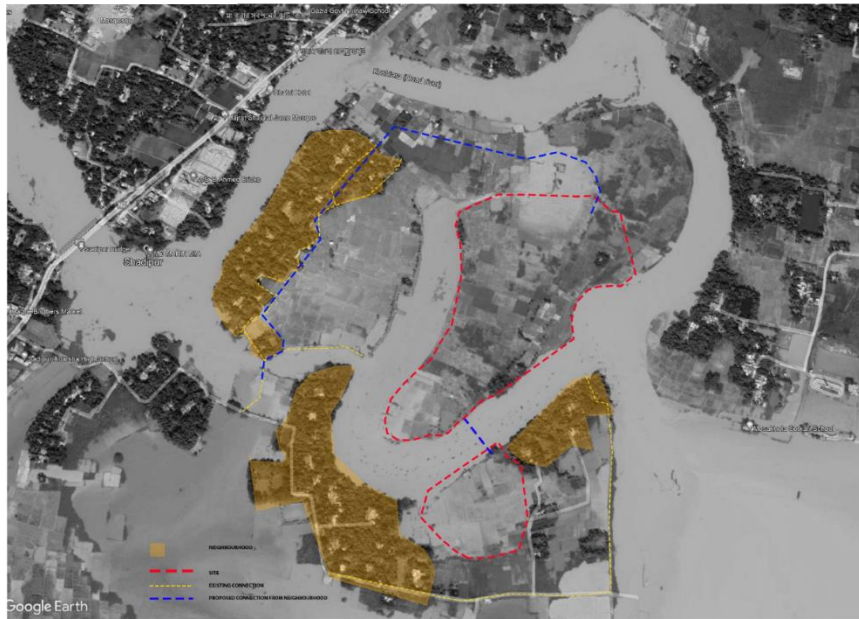
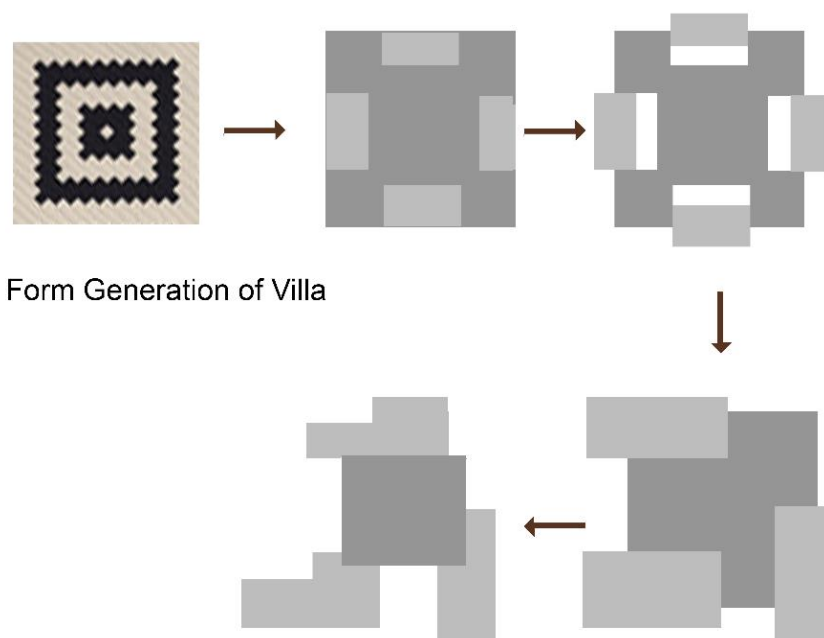


Figure 6.1: Bubble Diagram





### 6.3 Form Generation





## 6.5 Ground Floor Plan



 GROUND FLOOR PLAN  
SCALE:1:400

### 6.6 All Detail Plan

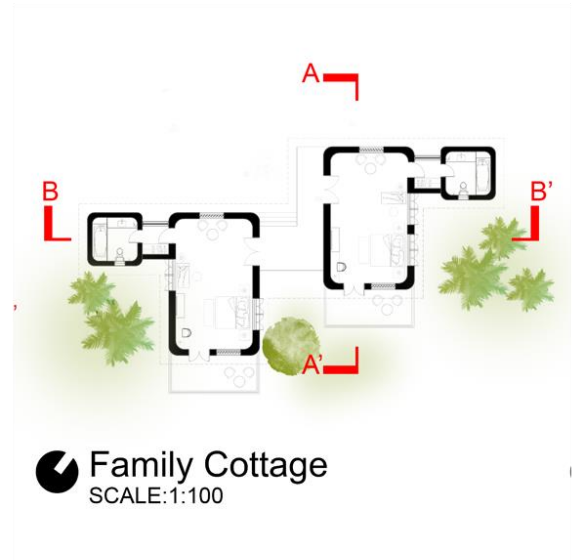
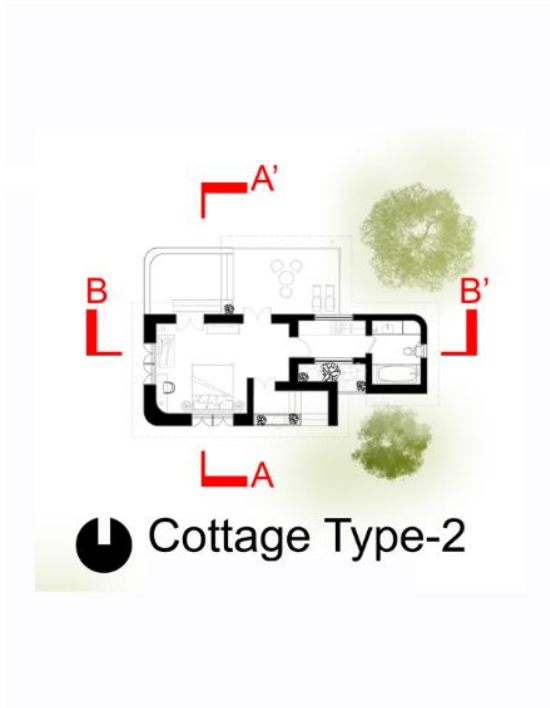
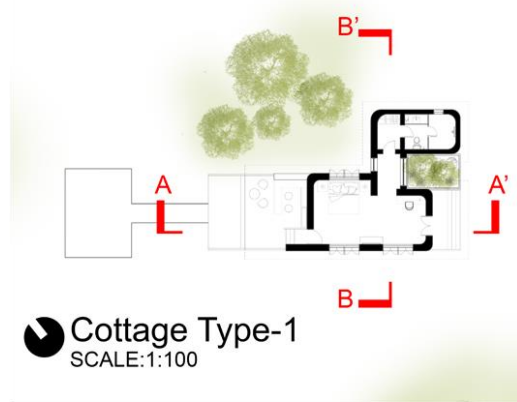
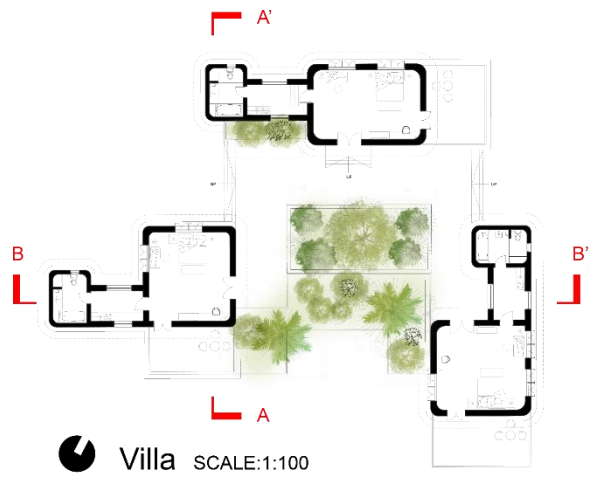


Figure 6.6: All Detail Plans

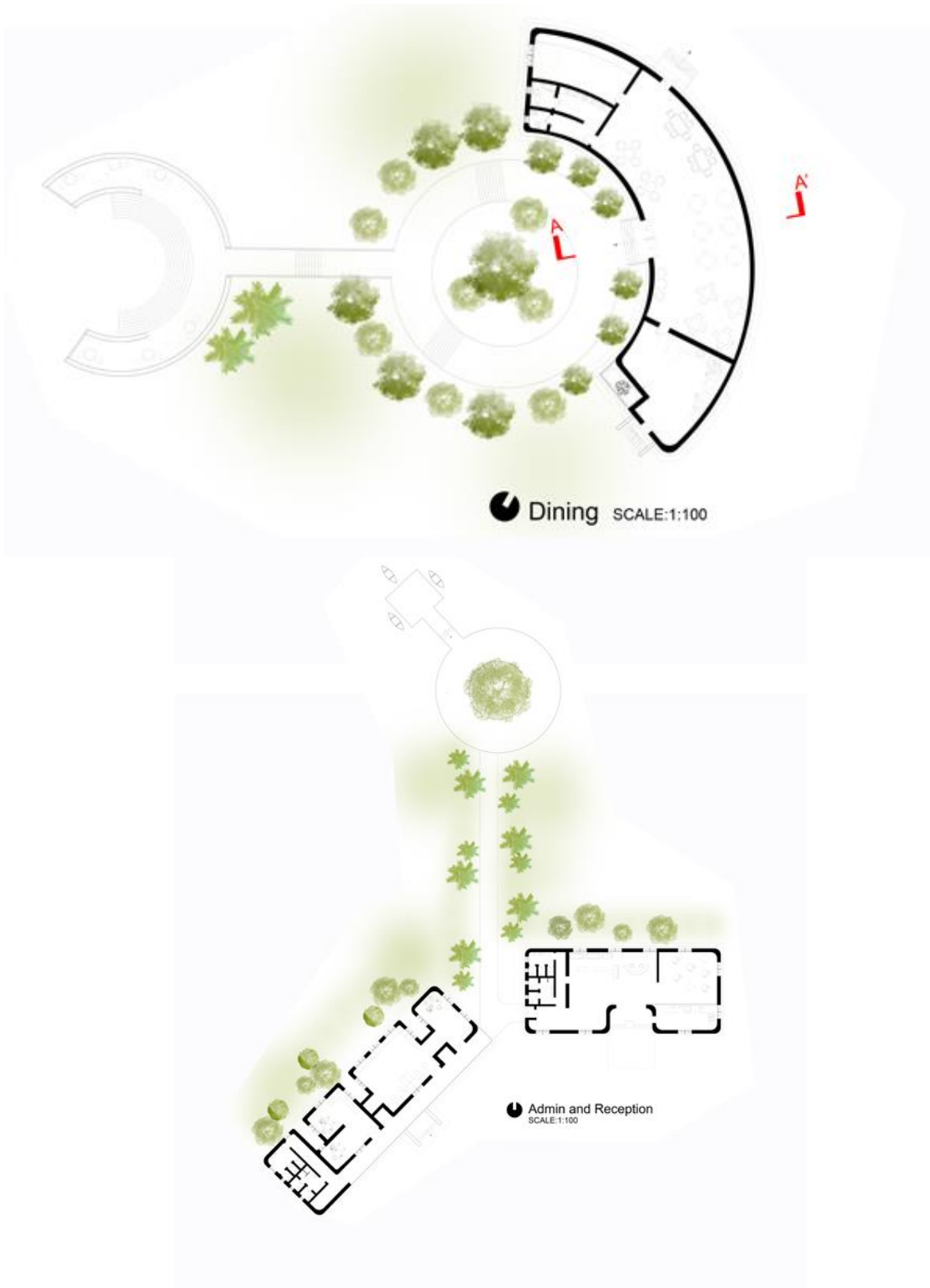


Figure 6.6: All Detail Plans

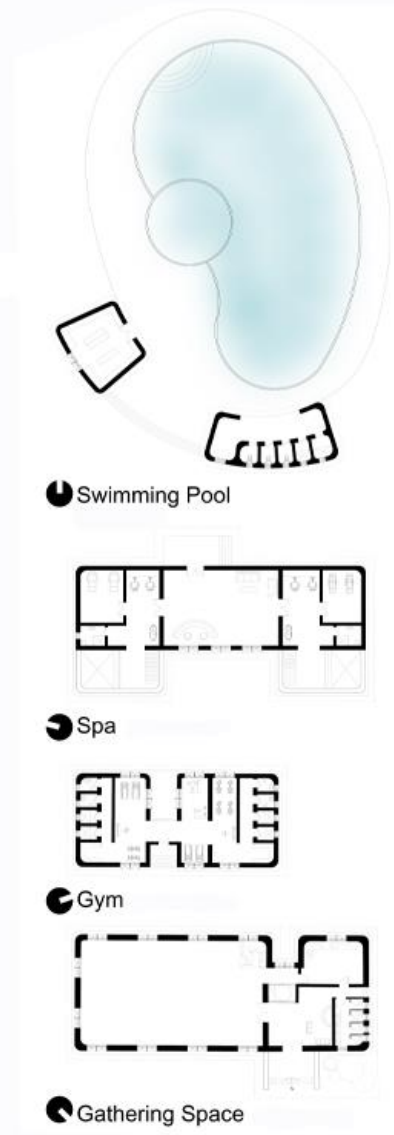


Figure 6.6: All Detail Plans

## 6.7 All Elevations



Figure 6.7: All elevation drawings

## 6.8 All Sections

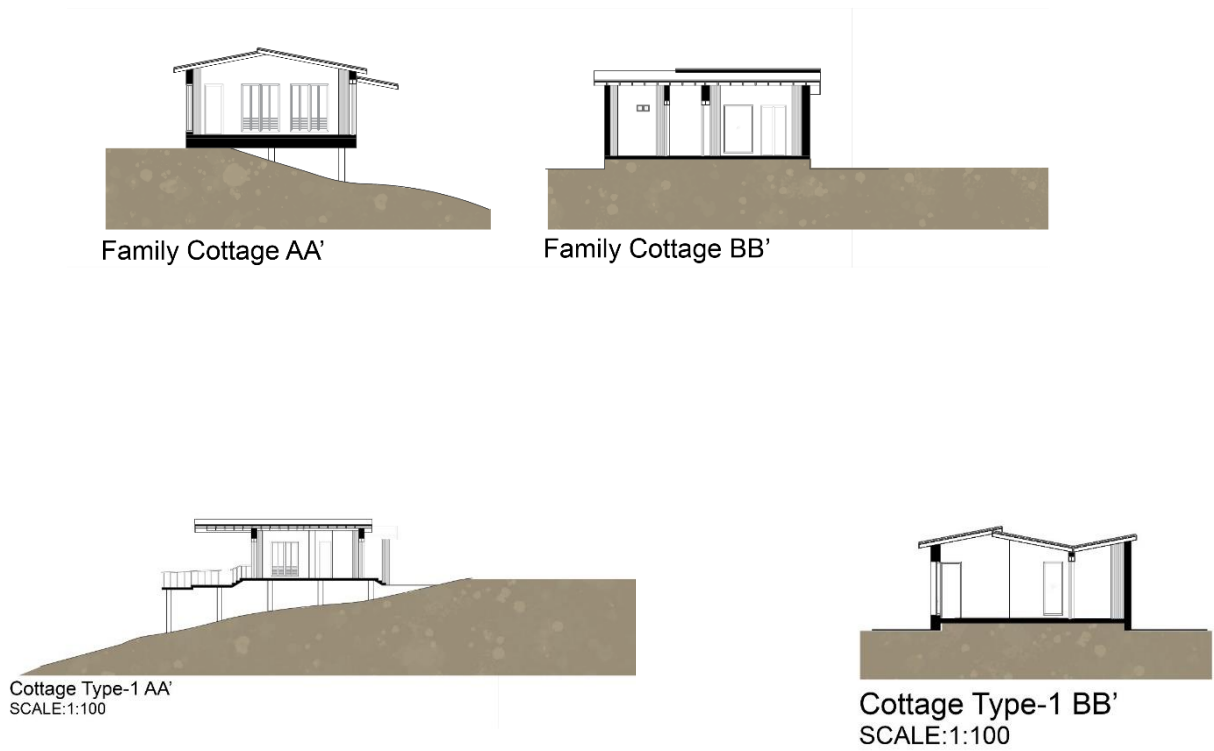
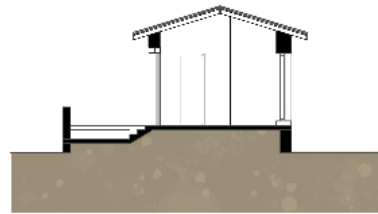
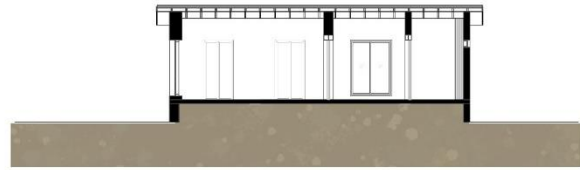


Figure 6.8: All detail sections

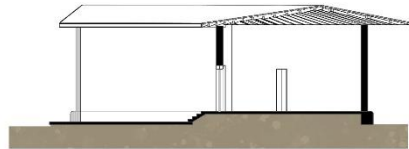




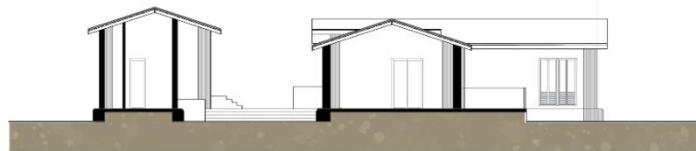
Cottage Type-2 AA'  
SCALE:1:100



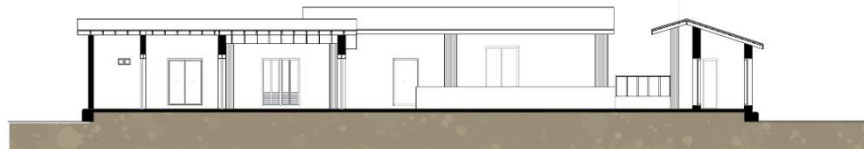
Cottage Type-2 BB'  
SCALE:1:100



Dining AA'  
SCALE:1:100



Vila AA'  
SCALE:1:100



Villa BB'  
SCALE:1:100

Figure 6.8: All detail sections

## 6.9 Exploded Axonometric

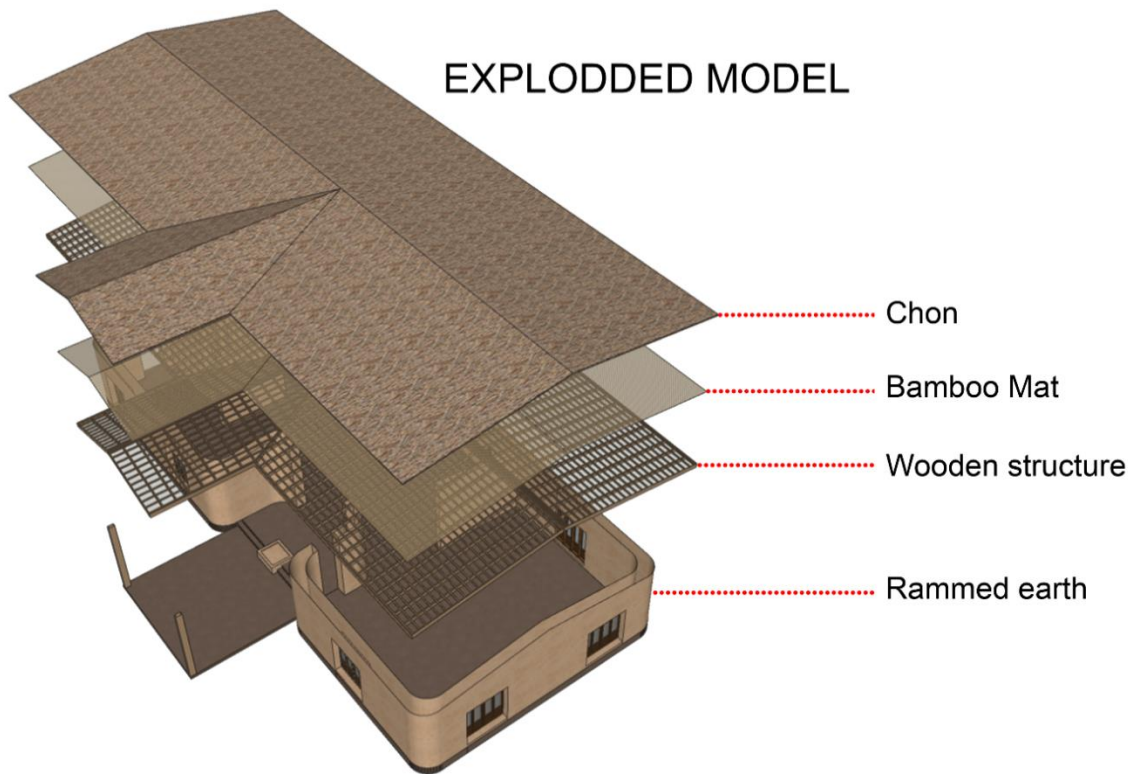
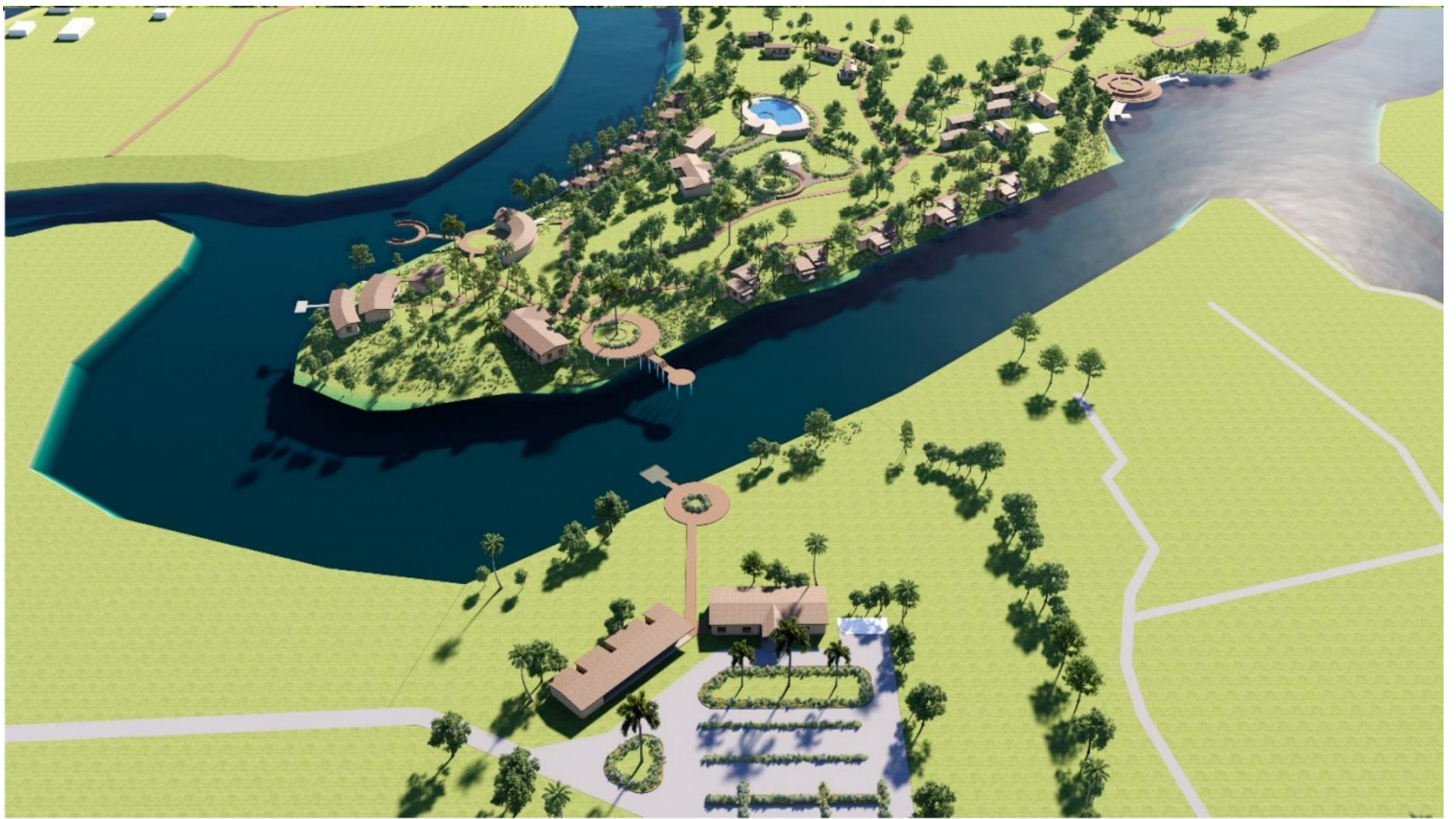


Figure 6.9: Exploded Model

**6.10. Perspectives:**





Resort at River Island





Resort at River Island

## **CONCLUSION**

In conclusion, my dedication to sustainable tourism and immersive experiences is demonstrated by the building of our eco-friendly, natural, and immaculate island resort, which was carefully planned with a deep regard for the local nature and culture. This innovative project not only provides a haven from the bustle of city life, but also combines nature, tradition, and contemporary in a beautiful way.

With a relentless dedication to preserving the island's natural integrity, I have ensured that our resort's footprint remains minimal, leaving our pristine surroundings untouched. The use of eco-friendly materials, renewable energy sources, and sustainable practices allows us to offer a luxurious yet environmentally responsible stay.

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