

# Communicate with Nature

**Brazil, Rio de Janeiro, Nova Iguazu**

**Superior:** Prof. Antonella Contin, Prof. Alessandra Pandolfi  
**Tutor:** Federico Misto, Valentina Galiulo **Student:** Xinyu Zhao (Id.938840)

# Abstract

Rio de Janeiro is one of the fastest growing cities. Therefore, it is imperative any project development in this area focuses on a balance between social integration, economic growth, cultural production, and field of research. In regard to our particular site, I chose to focus on protective efforts for the environment, quality assurance through economic and social approaches, as well as a balance between the cost benefits of environmental presentation and cost/incomes of economic systems. As a result, I began by identifying the ecosystem dynamics, which led us to a deeper understanding of the typology of interactions between the environment and the metropolitan factors at play. Thus, I formulated a strategy that would assist in the process of maintenance, improvement, and ultimately transformation of the area. As my ideas took shape, and our strategies developed, I focused more and more on the inter-scalar aspects of our site, in connection to the Nova Iguacu municipality, in connection to the city of Rio de Janeiro, and in connection to the state of Rio de Janeiro. Three major components comprise the structuring and development of our site. The Blue, Green, and Grey Infrastructure are profoundly interrelated.

The urban fabric developed according to the natural topography, while the diverse network of rivers and tributaries weave in and out of both the urban fabric and vegetation. Understanding the relationship between these three infrastructures proved essential in order to conceptualize a sustainable and integrated design plan. I began with the blue infrastructure, as it posed the greatest strengths and weaknesses to our site. Understanding the flood patterns, how they effect the existing urban areas, and how we can use regular inundation to our advantage led us to believe that water retention, management, and sanitation would need to be a primary goal. Secondly, the green infrastructure was in need of revitalization. Particular areas of the site are currently destroyed by the regular inundation patterns, costing wildlife their home, and causing greater flood damage to occur. Therefore, I sought to analyze the areas most in need of reforestation and revegetation efforts. By reinvigorating vegetation, I can reduce the amount of soil erosion, which will ultimately assist in the water treatment process. Lastly, in order for my project to be a success, it is of utmost importance that the local and surrounding communities be involved with the development and maintenance of the site. Our site can encourage the local population to protect the natural environment, in return for the natural environment protecting them. Creating a connection between the two bordering communities, establishing a network of community gardens and agricultural areas enables the people living in this area access to nature, as well as a means of surviving from their surrounding environment.

After completing the overall planning, a middle school was selected for renovation. This middle school is close to the entrance to the northwest and is easy for people to reach near the main road. The topography is relatively special. The site is surrounded by mountains and surrounded by lakes to further explore how local buildings coexist with floods. The first is the drainage channel, which is higher than the water level and can balance the overall water level in time during floods. Then the location of the building is located on a high ground, and the location of the building is higher than the flood level. It is built on the hillside. The scenery is beautiful and the surrounding trees can also provide cool shade in the hot summer. When planning the school, students' entertainment and leisure and basic safety are also taken into consideration. Underwater protection nets are set up at the edge of the lake, and dense shrubs are planted to prevent students from accidentally falling near the dangerous lake. It also provides a series of entertainment facilities, a wide football field with a lawn, and a safe shallow swimming pool. It is hoped that after the floods are resolved, the local students will be left with beautiful campus memories.

## **Chapter One. Analyzes**

- 1.1 Introduction
- 1.2 SWOT Analyzes
- 1.3 Design Proposal

## **Chapter Two. Sketches**

- 2.1 Entrance Part Design
- 2.2 Masterplan
- 2.3 Sections
- 2.4 Views
- 2.5 Activities
- 2.6 Zoom In Areas

## **Chapter Three. Final Mapping**

- 3.1 Green and Blue
- 3.2 Waterway
- 3.3 Entrance
- 3.4 Masterplan
- 3.5 Whole View
- 3.6 River
- 3.7 Details
- 3.8 Activities
- 3.9 Middle School Design

## **Bibliography**

## **Chapter One. Analyzes**

- 1.1 Introduction
- 1.2 SWOT Analyzes
- 1.3 Design Proposal

## **Chapter Two. Sketches**

- 2.1 Entrance Part Design
- 2.2 Masterplan
- 2.3 Sections
- 2.4 Views
- 2.5 Activities
- 2.6 Zoom In Areas

## **Chapter Three. Final Mapping**

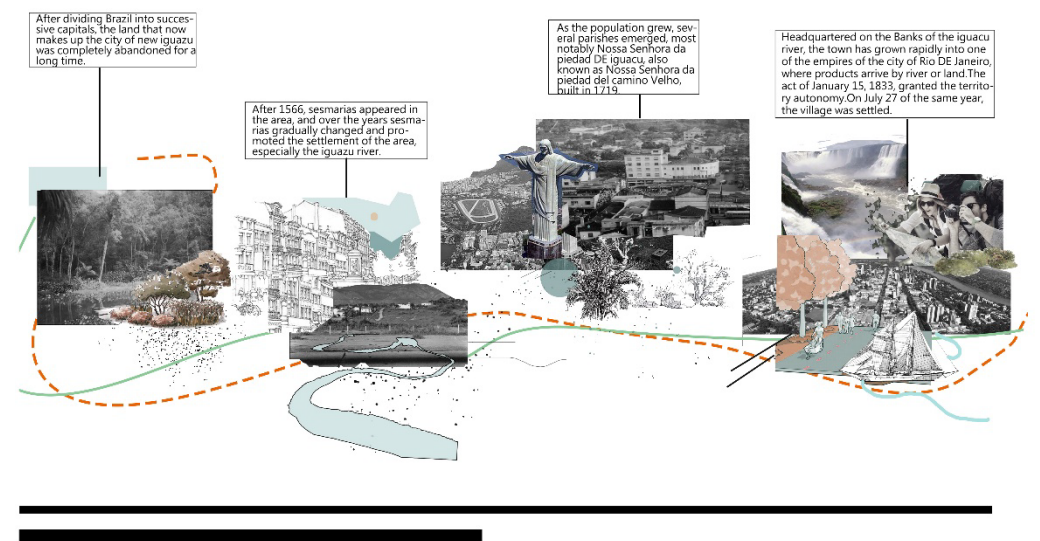
- 3.1 Green and Blue
- 3.2 Waterway
- 3.3 Entrance
- 3.4 Masterplan
- 3.5 Whole View
- 3.6 River
- 3.7 Details
- 3.8 Activities
- 3.9 Middle School Design

Bibliography

# 1.1 Introduction



## Historical Evolution



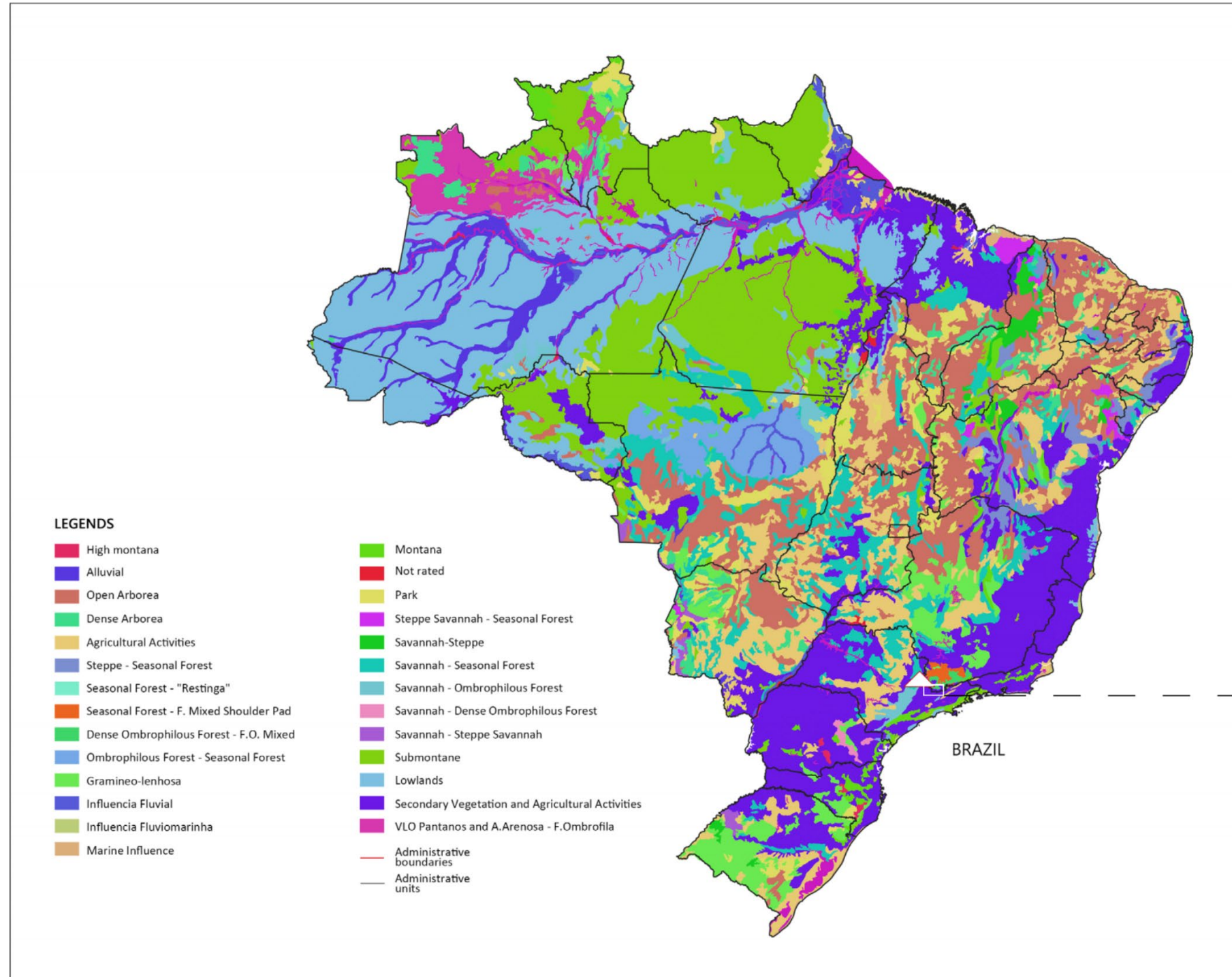
Nova Iguaçu (Portuguese: Nova Iguaçu) is a Brazilian city located in the southeast of the country and administered by the state of Rio de Janeiro. It was founded on January 15, 1833. It covers an area of 523.88 square kilometers and is 25 meters above sea level.

## Design objective

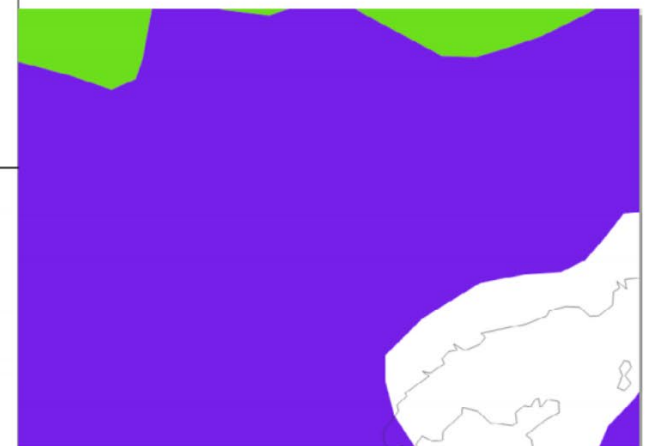
The proposal concerns the possibility of regenerating portions of the city of Nova Iguaçu through a project for a common or public space based on green armour. Our design creates natural boundaries to limit urban expansion, addresses urban and site water management, basing on citizens and try to create spaces where people and nature coexist.

# map

## Vegetation index

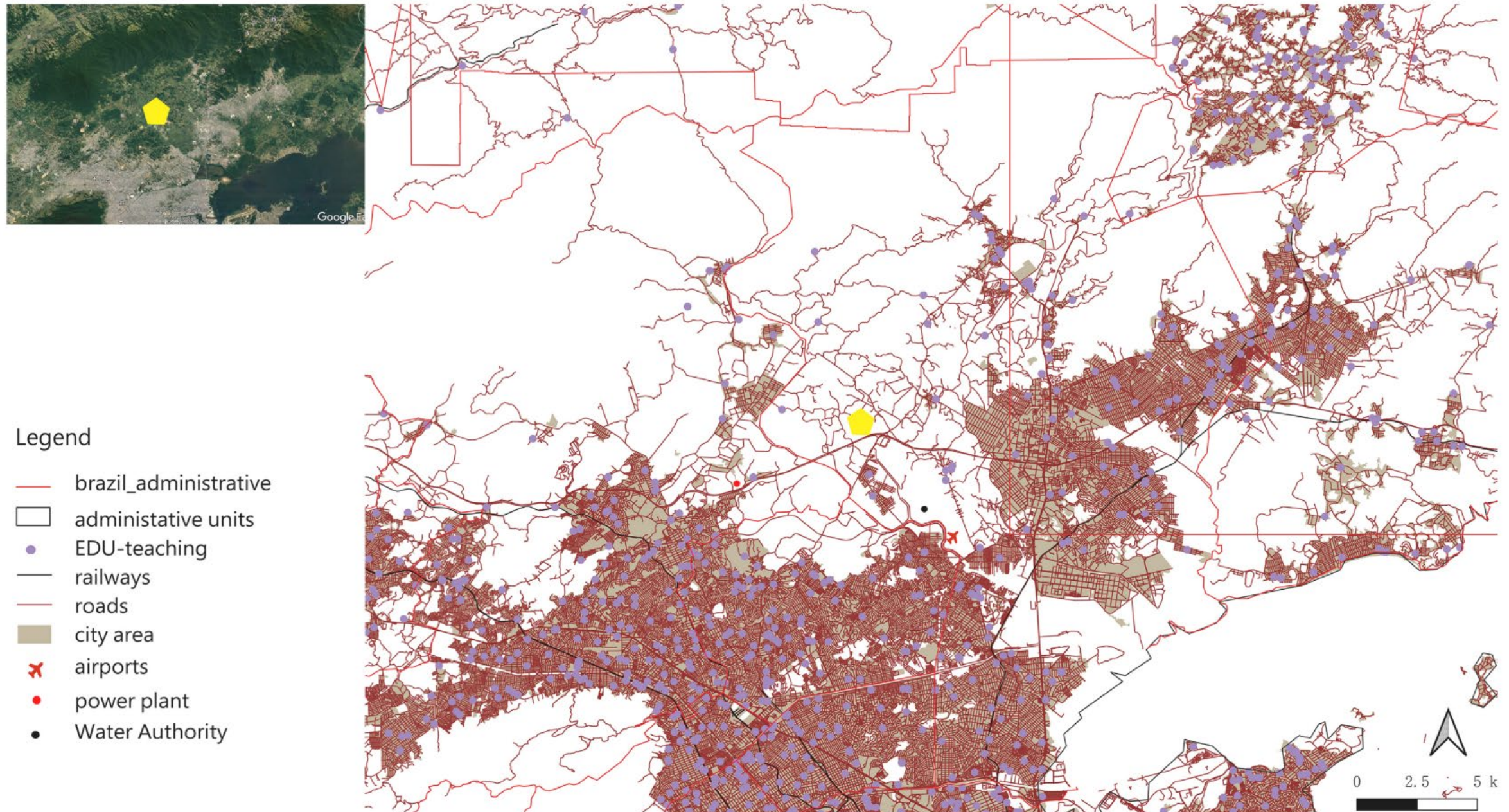


Brazil is rich in vegetation and widely distributed. The main vegetation types on the site are Secondary Vegetation and Agricultural Activities.



## 1.3 SWOT Analyzes

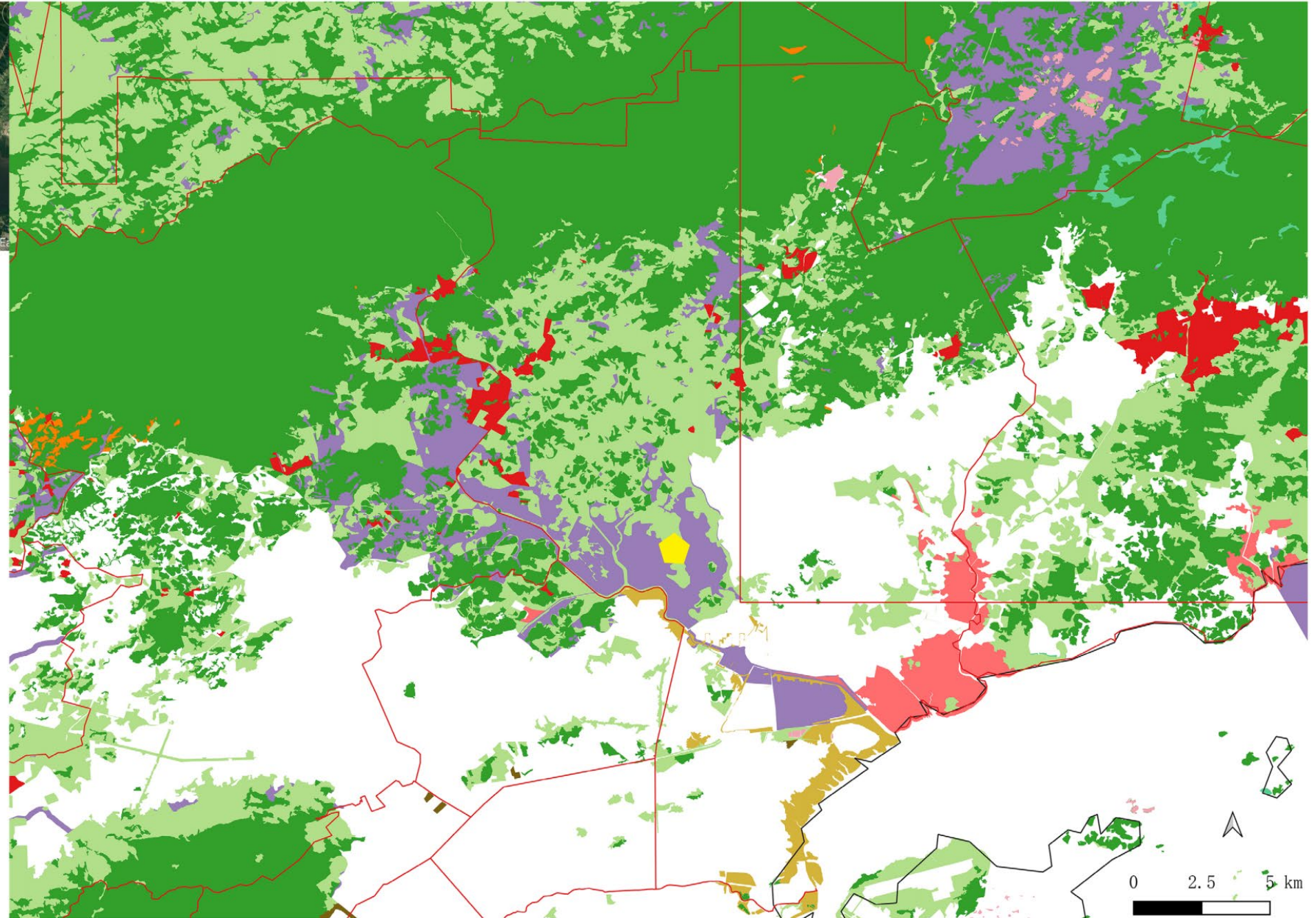
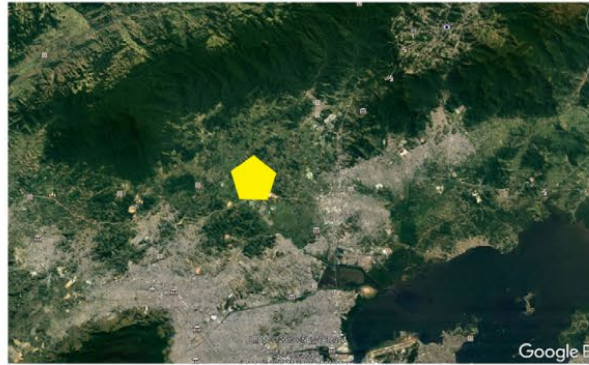
### Strengths



1.Great accessibility. Aeroclub De Nova Iguaçu, which are located 30mins car ride away from Nova Iguaçu connects the suburban area to the metropolis of Rio De Janeiro by small aircraft.

2.In Rio, there are 1,033 primary schools with 25,594 teachers and 667,788 students (1995). There are 370 secondary schools with 9,699 teachers and 227,892 students. There are 53 college preparatory schools with 14,864 teachers and 154,447 students. The city has six major universities and 47 private schools of higher learning.

# Strengths

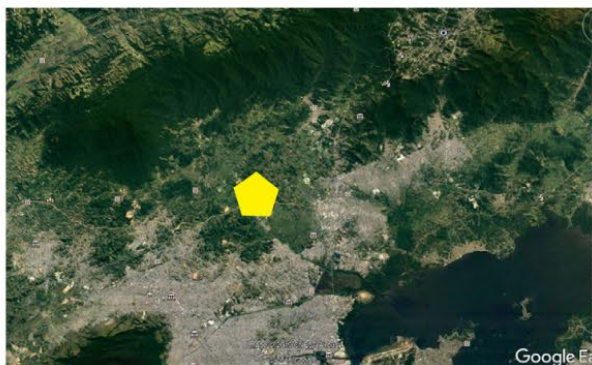


## Legend

- brazil\_administrative
- administrative units
- brazil\_natural
- sandbank
- cultivated
- mango
- forest
- countryside
- swamp
- biological reserve
- enviromental protection area
- park

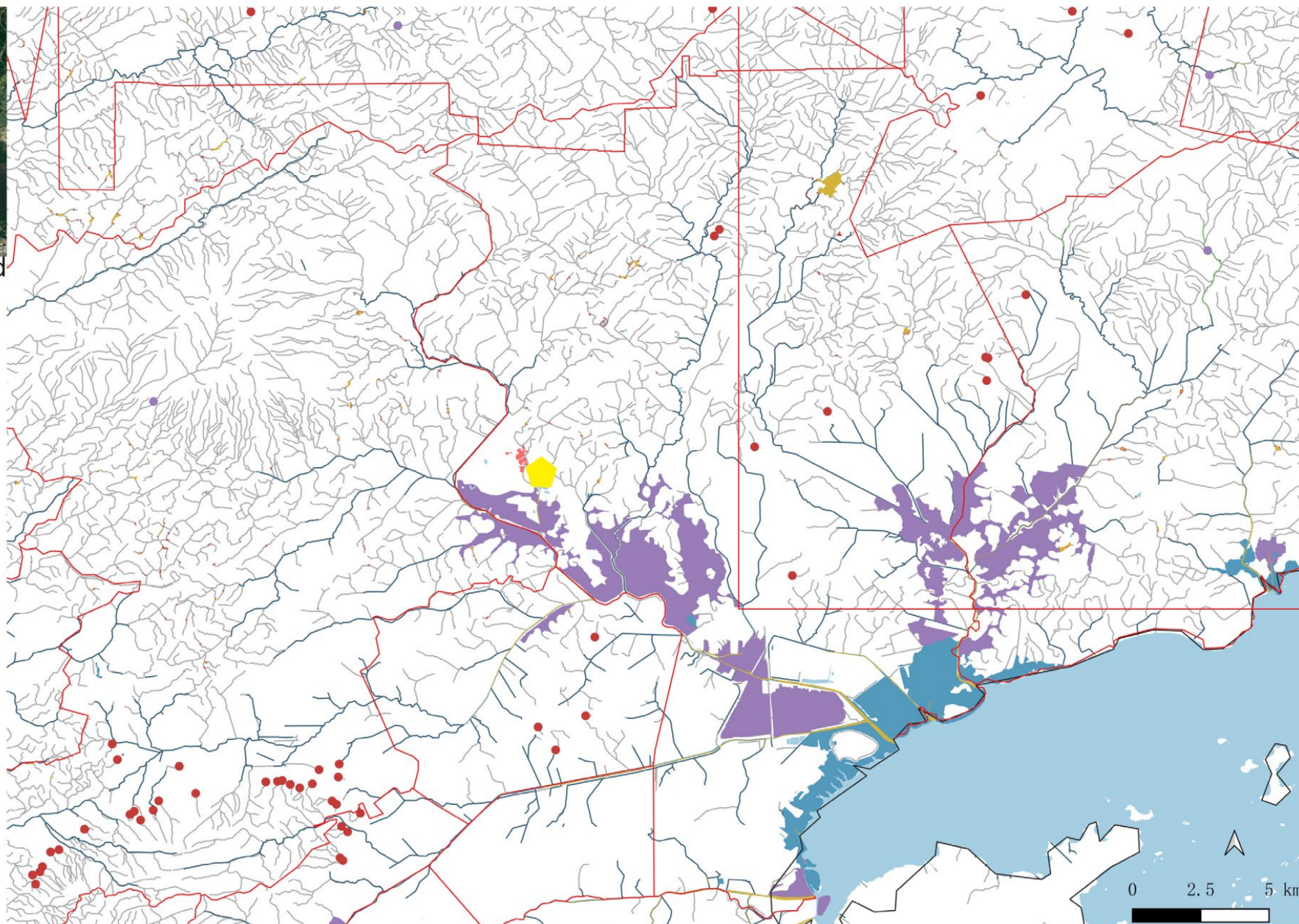


# Strengths

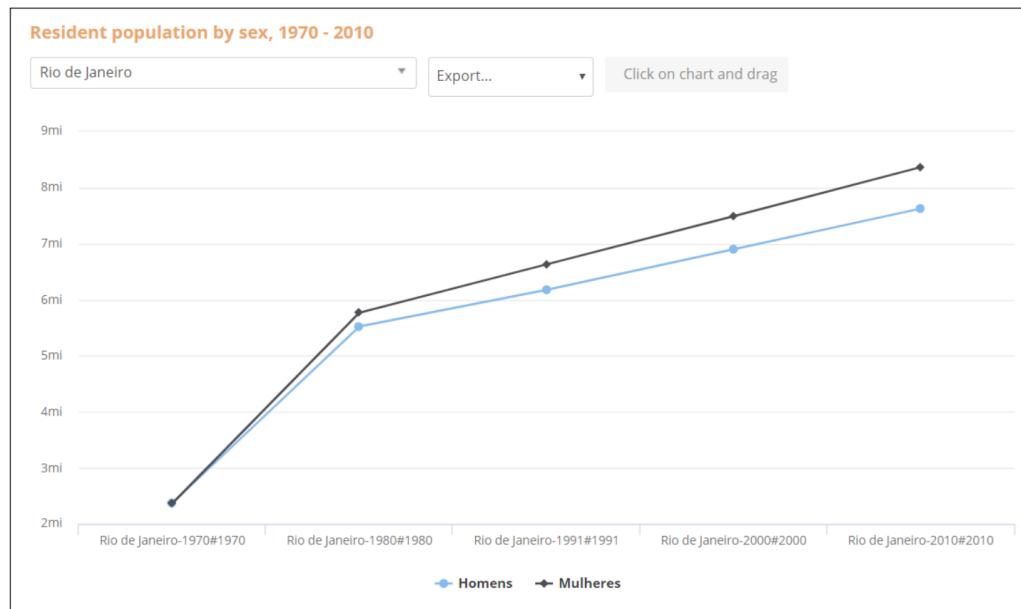


Legend

- brazil\_administrative
- administrative-united
- Passage Water Mass
- Terrain Subject Flood
- Spillway
- Water Drop Point
- Water Drop Area
- Oceans
- Dam
- Band Sand
- Lakes
- Waterways
- Stretch Drainage



## Weakness



- The existing borders/ boundary lines are limiting the effectiveness of existing urban policy.
- Space Immobility: due to majority of population being considered low skilled labor, it is cause for precarious employment.
- High production cost.
- High taxes.
- The truth is that after nearly 120 years of favelas being permitted to develop into the primary vehicle for social housing in Brazil, the nation has established relatively strong squatter' s rights. And yet, Brazil bears fame as one of the countries with the worst land inequality in the world.
- Due to poverty in some areas most of the youth chose to work instead of going to school.
- Social issues caused by the huge wealth gap.
- Gender inequality and population ageing.

- 
- Nova Iguaçu neighborhood is connected to the greater metropolitan network by a single infrastructure system. Car and 1 bus service are the only method to reach the neighborhood from Nova Iguacu. (50mins from Nova Iguaçu - Nova Iguacu, 2hrs Nova Iguaçu - Rio by car)
  - Transportation facilitates and service are imperfect.
  - Inefficient transportation and inadequate infrastructure.
  - Absence of health facilities and general lack of services.
  - At all stages, school days typically last between 3 and 4 hours, primarily due to a lack of space.
  - Forest Fragmentation and Degradation.
  - Macro Water Supply Systems are standardized and have weak adaptability.
  - Water circulation acts as a political construct: the water is tied to money, it has become a commodity, taking on capital and political connotations, and is now being used as a power relation in a capitalist climate.
  - Water pollution.
  - Flooding and possibility of drought.

## Opportunity

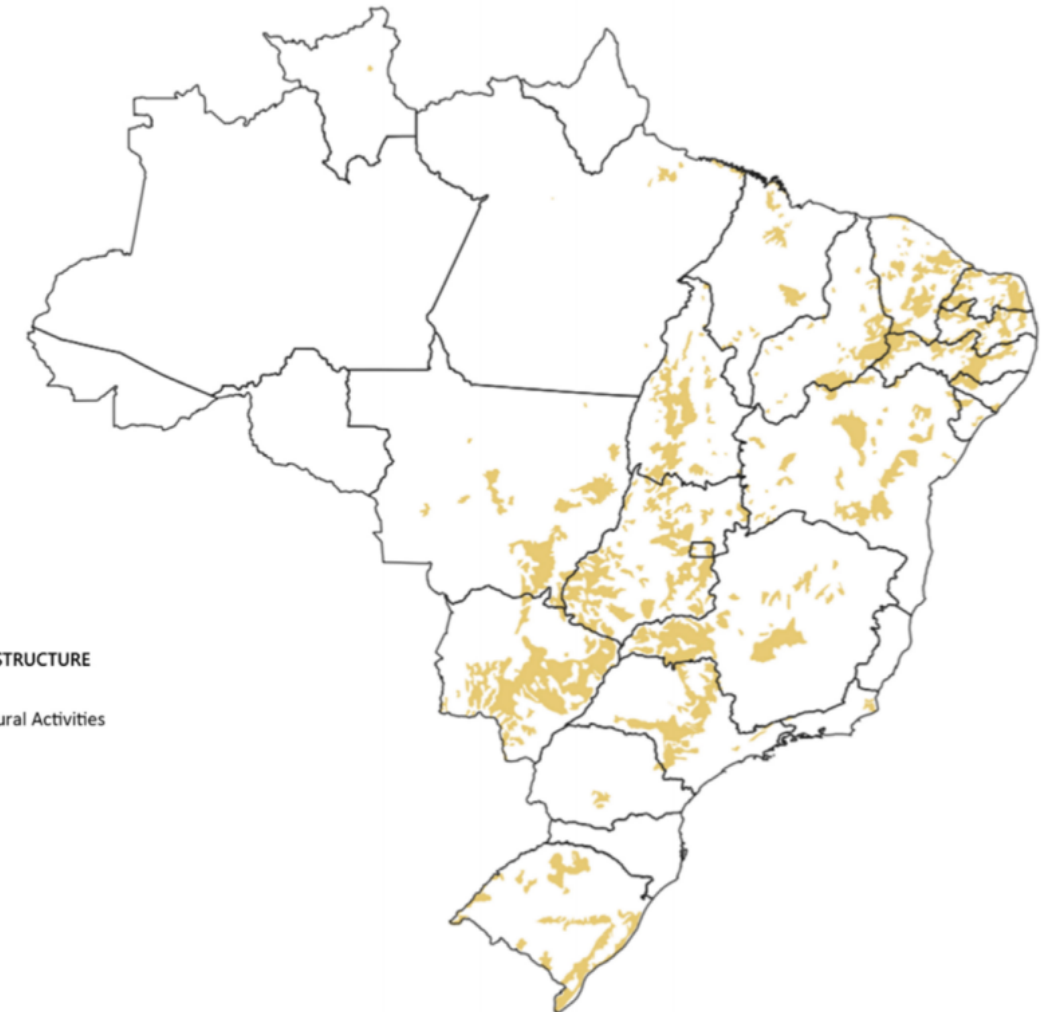
- Municipalities: Rio de Janeiro Municipality has had an increase in professional and specialized workers, which if accessible, can help sustain our project by integrating the local community.
- Water Decontamination Technology has improved immensely making Hydraulic Micro drainage and biofilters easy to implement and at a lower cost.
- Utilizing the practice of Urban Intervention.
- Nova Iguaçu is on the edge of the city, with Nova Iguaçu Biological Reserve inside, which makes it has a better environment than city center. We say this is great opportunity to attract investors to produce a brand-new Eco-friendly city.
- More job opportunities because of tourism and conservation for residents.
- More Public services.
- Nearly has a high level of urbanization.
- Large population base.
- Tingua biological reserve and presence of existing smallholder farmers creates opportunity for development of eco-tourism and agri-tourism.
- Over the last 60 years, there have been attempts to upgrade favelas through a number of public policy programs with ambitious, unattained goals.
- The Institute for Research and Administration in Education (IPAE) recommended reforms, which include lengthening the school day, investing in technology, providing job stability for teachers, increasing efficiency in school management, and proper policy implementation from federal to municipal to individual school levels.
- More social capital network based on new and sustainable farming.

## POPULATION

Sinopse do Censo Demográfico 2010  
Tabela 1.4 - População nos Censos Demográficos, segundo as Grandes Regiões e as Unidades da Federação - 1872/2010

Grandes Regiões e Unidades da Federação	População nos Censos Demográficos											
	01.03.1872 (1)	31.12.1890 (1)	31.12.1900 (3)	01.09.1920 (1)	01.09.1940 (1)	01.07.1950 (1)	01.09.1960 (2)	01.09.1970 (2)	01.09.1980 (2)	01.09.1991 (3)	01.09.2000 (3)	01.09.2010 (3)
Brasil	9.930.478	14.333.915	17.438.434	30.635.605	41.236.315	51.944.357	70.992.343	94.508.583	121.150.573	146.917.459	180.590.693	190.755.739
Sudeste	4.016.922	6.104.384	7.834.011	13.654.934	18.345.831	22.548.454	31.062.878	40.331.989	52.980.627	62.660.700	72.297.351	80.364.410
Minas Gerais	2.039.735	3.154.099	3.594.471	5.888.174	6.763.368	7.782.198	9.990.040	11.945.096	13.651.852	15.731.961	17.695.402	19.597.330
Espírito Santo	82.137	135.997	209.783	467.328	790.149	957.238	1.418.348	1.617.857	2.063.679	2.588.505	3.094.380	3.514.952
Rio de Janeiro	1.057.690	1.389.536	1.737.478	2.717.244	3.611.988	4.674.840	6.709.891	9.110.324	11.489.797	12.783.701	14.307.083	15.989.929
São Paulo	937.354	1.384.759	2.282.279	4.892.188	7.180.316	9.134.429	12.974.699	17.868.690	25.375.199	31.546.473	36.999.476	41.262.199

Fonte: IBGE, Censo Demográfico 1872, 1890, 1900, 1920, 1940, 1950, 1960, 1970, 1980, 1991, 2000 e 2010.  
(1) População presente; (2) População recenseada; (3) População residente.



## Threat

- Climate “Stressors” : environment variability and extreme hydrological events.
- Rapid deforestation.
- Environmental governance is a long-term process.
- Residence invading into Tingua Biological Reserve threatening the biological diversity of the Atlantic Forest.
- Water contamination and spread ability.
- Weakening of water security.
- Funding: Rio Reconstruction Program (funded by International World Bank) Lack of funding (97 million spent to date).

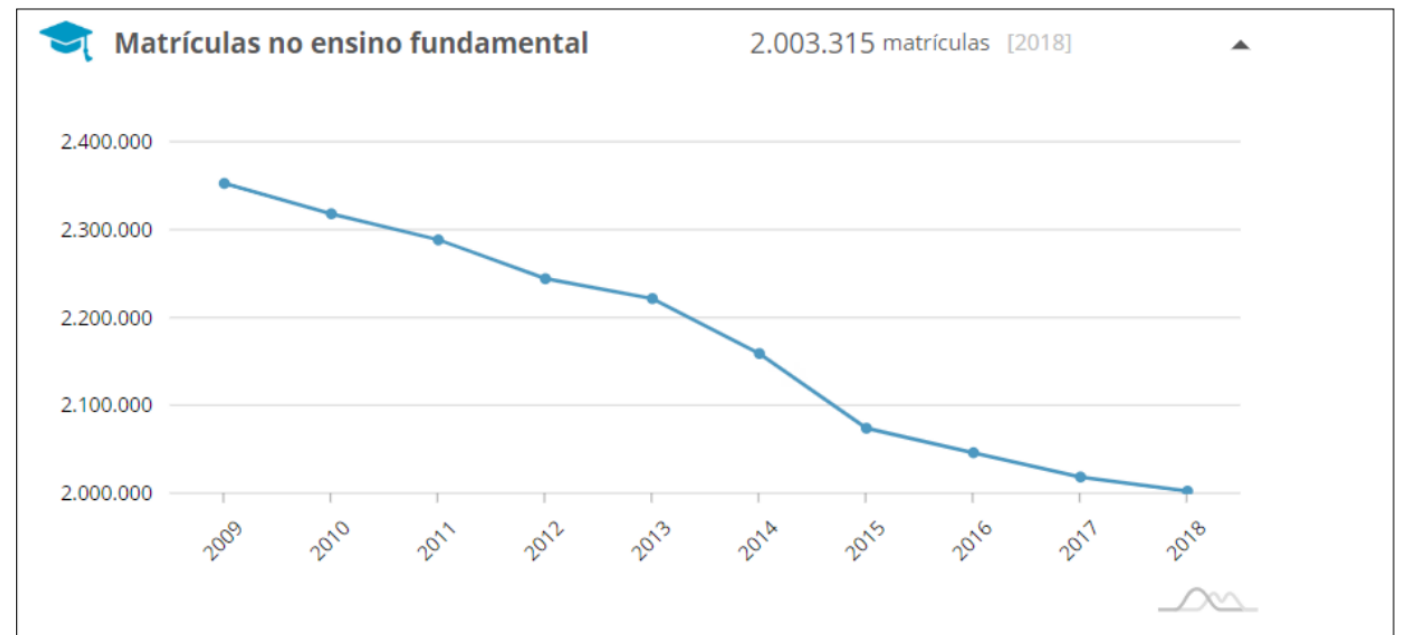
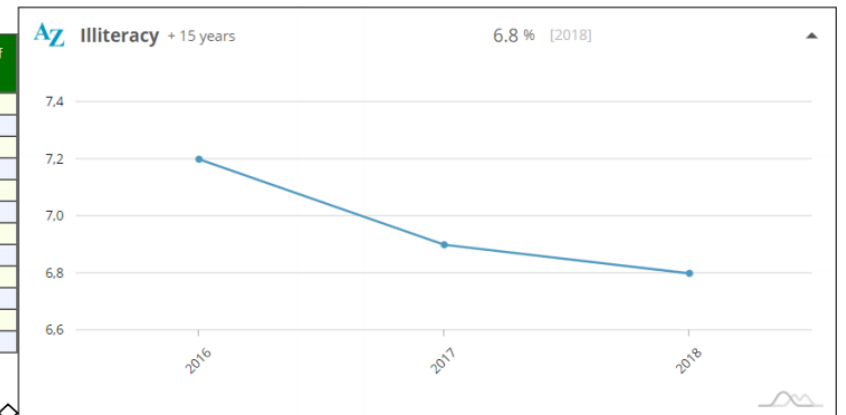
• Infrastructure system in Nova Iguaçu is necessary to be upgrading, while a new town set up, more and more people will come and the Eco-system could be influenced.

•Despite Public efforts, more and more illegal settlers come to the City to start a new life. Starting with literally nothing, they illegally settle on such areas that apparently are protected. Uncontrolled, they often time are the reason for higher crime rate in Rio de Janeiro and even polluting the areas they’ re settling in.

•Many children in the favelas do not go to school, and thousands of homeless children lack any opportunity to better their lives. Despite quality of education being one of the main points in Brazil’ s 2014 National Educational Plan (PNE) and a 121% increase in investment in public education between 2000 and 2008 alone, as of yet there have been no signs of improvement.

Climatological Information

Month	Mean Temperature °C		Mean Total Rainfall (mm)	Mean Number of Rain Days
	Daily Minimum	Daily Maximum		
Jan	23.3	29.4	114.1	12
Feb	23.5	30.2	105.3	9
Mar	23.3	29.4	103.3	9
Apr	21.9	27.8	137.4	10
May	20.4	26.4	85.6	8
Jun	18.7	25.2	80.4	6
Jul	18.4	25.3	56.4	6
Aug	18.9	25.6	50.5	6
Sep	19.2	25	87.1	9
Oct	20.2	26	88.2	10
Nov	21.4	27.4	95.6	11
Dec	22.4	28.6	169	13



On March 16, 2021, severe flooding submerged cars and streets in Nova Iguaçu, Rio de Janeiro, Brazil.

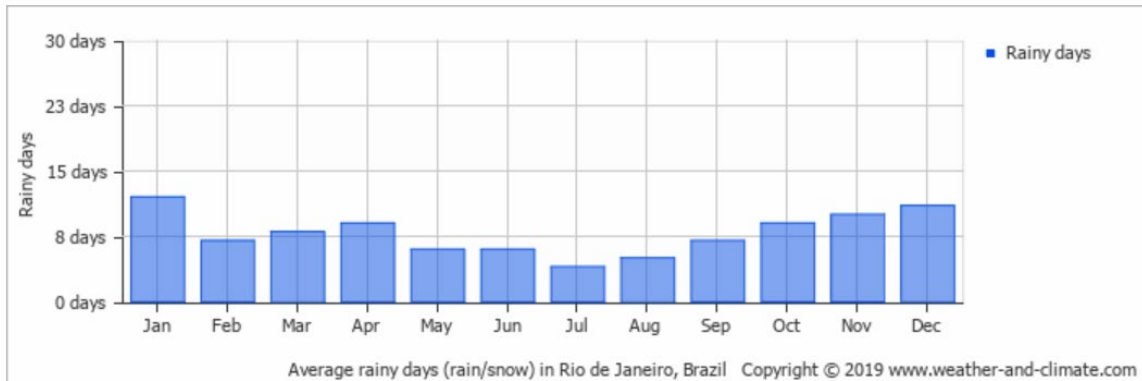
<https://www.youtube.com/watch?v=uVmAhjQat5U>

1 in = 2.54 cm

7.8 in = 19.812 cm

### Monthly rainy days

The average number of days each month with rain, snow, hail etc.



93°F ≈ 34.28°C

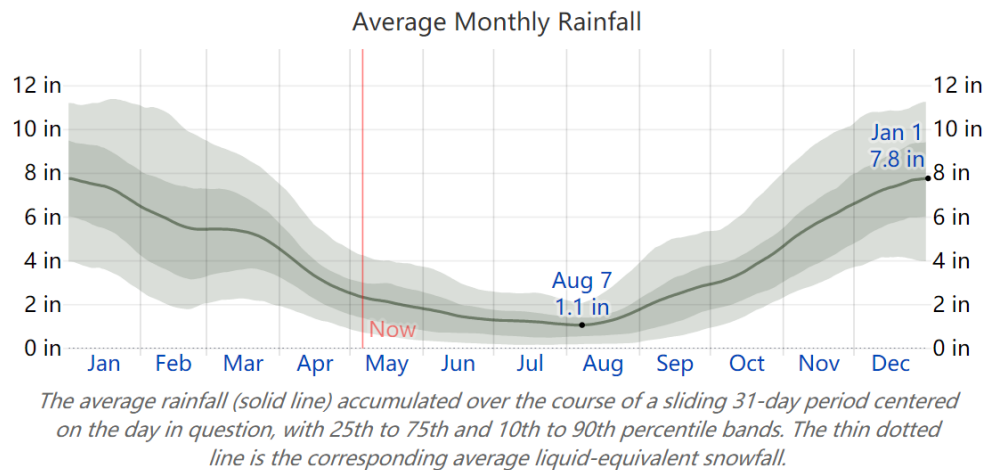
61°F ≈ 15.56°C

### Rainfall

To show variation within the months and not just the monthly totals, we show the rainfall accumulated over a sliding 31-day period centered around each day of the year. Nova Iguaçu experiences extreme seasonal variation in monthly rainfall.

Rain falls throughout the year in Nova Iguaçu. The most rain falls during the 31 days centered around January 1, with an average total accumulation of 7.8 inches.

The least rain falls around August 7, with an average total accumulation of 1.1 inches.

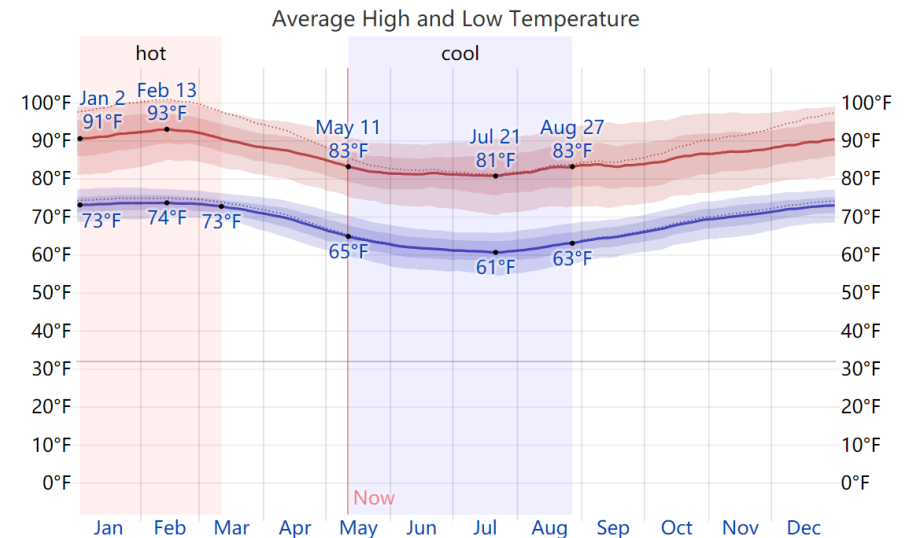


The average rainfall (solid line) accumulated over the course of a sliding 31-day period centered on the day in question, with 25th to 75th and 10th to 90th percentile bands. The thin dotted line is the corresponding average liquid-equivalent snowfall.

### Temperature

The hot season lasts for 2.3 months, from January 2 to March 11, with an average daily high temperature above 91°F. The hottest day of the year is February 13, with an average high of 93°F and low of 74°F.

The cool season lasts for 3.5 months, from May 11 to August 27, with an average daily high temperature below 83°F. The coldest day of the year is July 21, with an average low of 61°F and high of 81°F.



The daily average high (red line) and low (blue line) temperature, with 25th to 75th and 10th to 90th percentile bands. The thin dotted lines are the corresponding average perceived temperatures.

# 1.4 Design Proposal

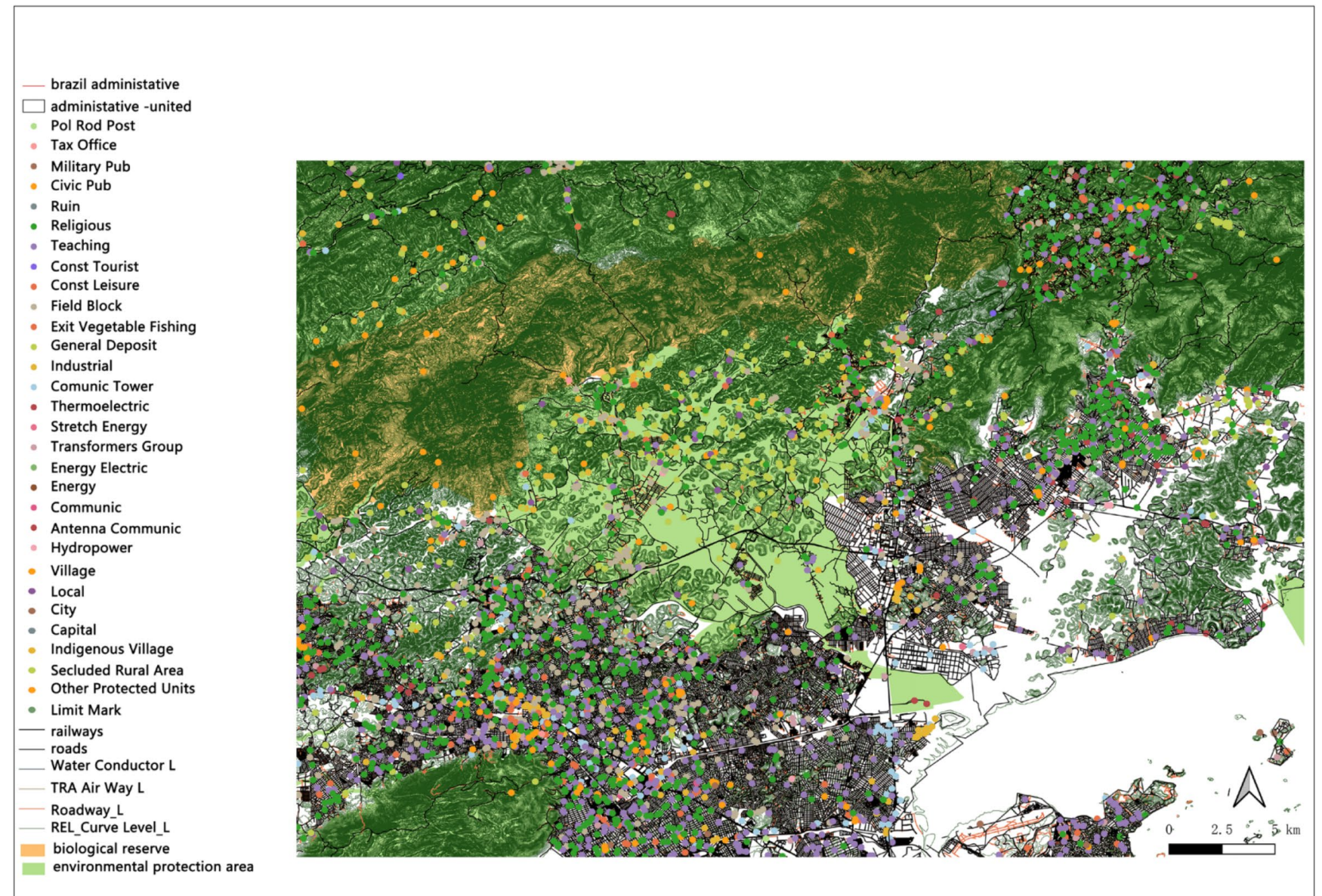


it is a suburb of Rio de Janeiro under the influence of the capital – to which tens of thousands of workers and students commute daily, or visit regularly for options in culture, entertainment, goods, health care, etc. There are a few historical and ecotouristical attractions in the municipality.

The city expands towards the forest, and the two are adjacent to the non-transition zone. The urban expansion leads to the decreasing forest area and the ecological balance is destroyed. Nature reserves account for a relatively large proportion of the forest area and are also threatened by urban expansion.

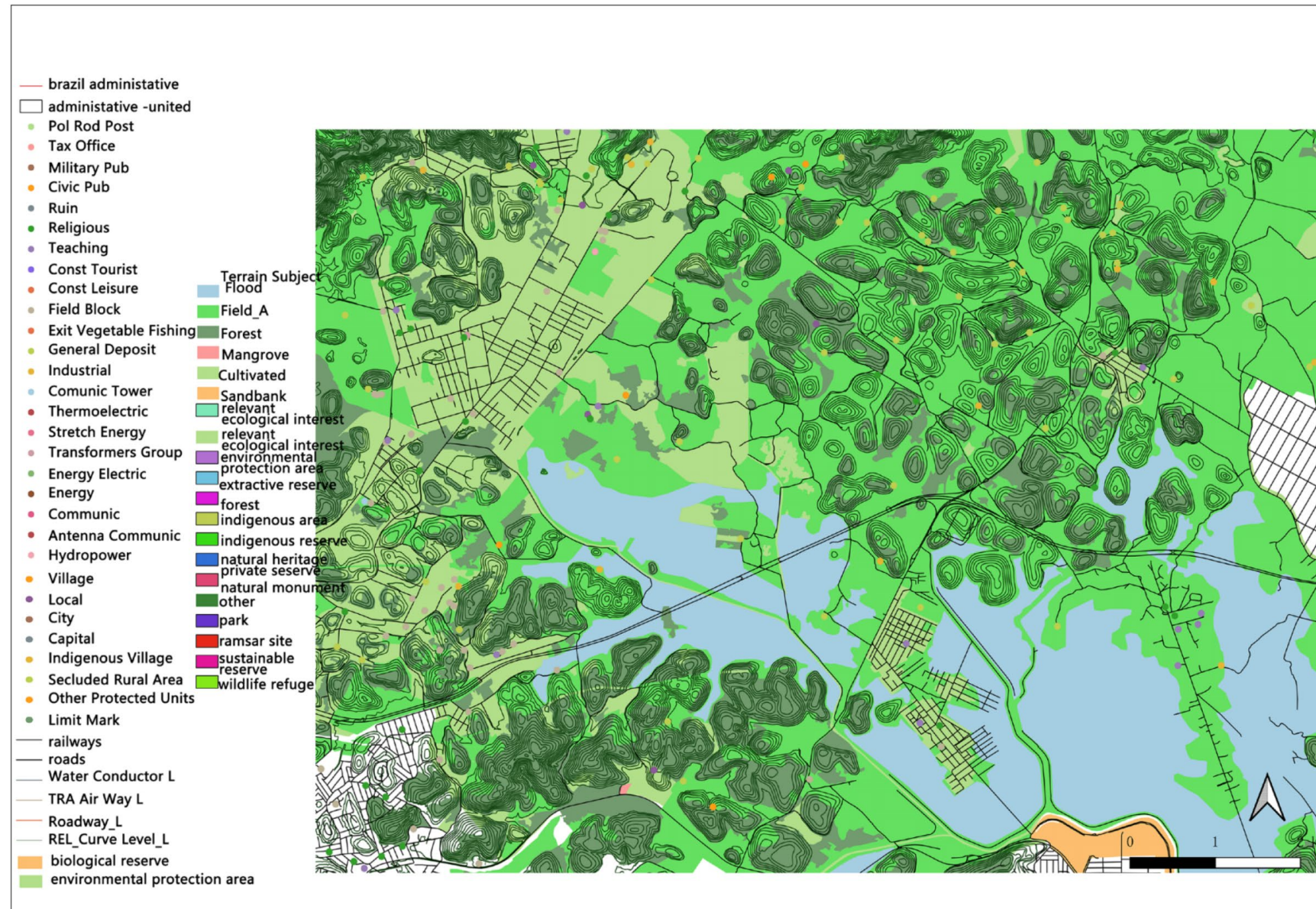
## map

*Buildings and roads*      *Natural areas for protection*  
*Topography*



# map

Buffer zone Buildings and roads  
Vegetation



The flood spread from the southeast to the northwest and affected the surrounding towns.

The purple areas shown are buffer zones. In order to solve the problem of the transition zone between the city and nature, the flood zone is the first task. The rich vegetation and high coverage have played an important role in surrounding ecological regulation and flood control.



# map

*Lakes and river*   *Stretch Drainage*   *Buffer zone*  
*Roads*

The buffer zone is located in a densely populated area and is accessible by a stretched drainage network. The river Tingua upstream from the site flows from the northwest to the southeast, and is adjacent to the periphery of the new Iguazu city. There are many scattered lakes and rivers in the forest area.

Our design is based on water management to solve various water problems such as urban water shortage, rain and flood.





Although our site is physically contained by topographical boundaries, it is evident there are profound connections at the regional, metropolitan, and municipal scale.

**Therefore,**

Looking to the geography, history, and geometry of our site in relation to the greater Rio de Janeiro area proved necessary for our design to not only take form, but to make a **sustainable impact and have a lifetime duration.**

## **Chapter One. Analyzes**

- 1.1 Introduction
- 1.2 SWOT Analyzes
- 1.3 Design Proposal

## **Chapter Two. Sketches**

- 2.1 Entrance Part Design
- 2.2 Masterplan
- 2.3 Sections
- 2.4 Views
- 2.5 Activities
- 2.6 Zoom In Areas

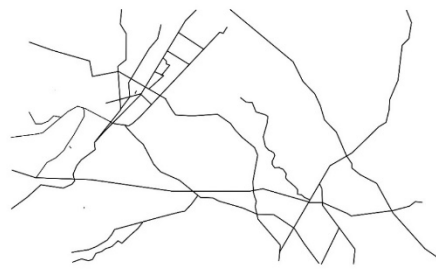
## **Chapter Three. Final Mapping**

- 3.1 Green and Blue
- 3.2 Waterway
- 3.3 Entrance
- 3.4 Masterplan
- 3.5 Whole View
- 3.6 River
- 3.7 Details
- 3.8 Activities
- 3.9 Middle School Design

Bibliography

Development

1985



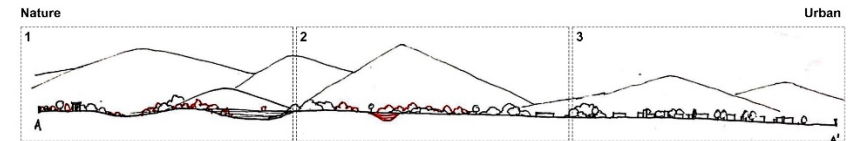
2004



2020



Section A-A'



1 Nature



2 Nature + Urban



3 Urban



Section B-B'

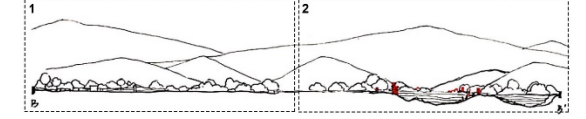
1 Urban



2 Nature



Urban



Nature

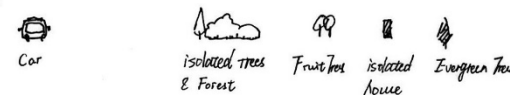
Existing Entrances



Section C



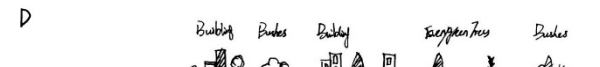
C



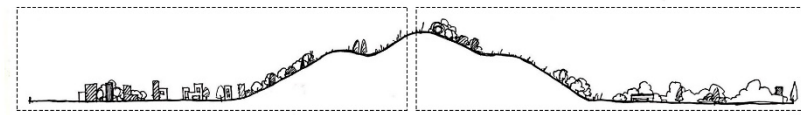
C'



Section D

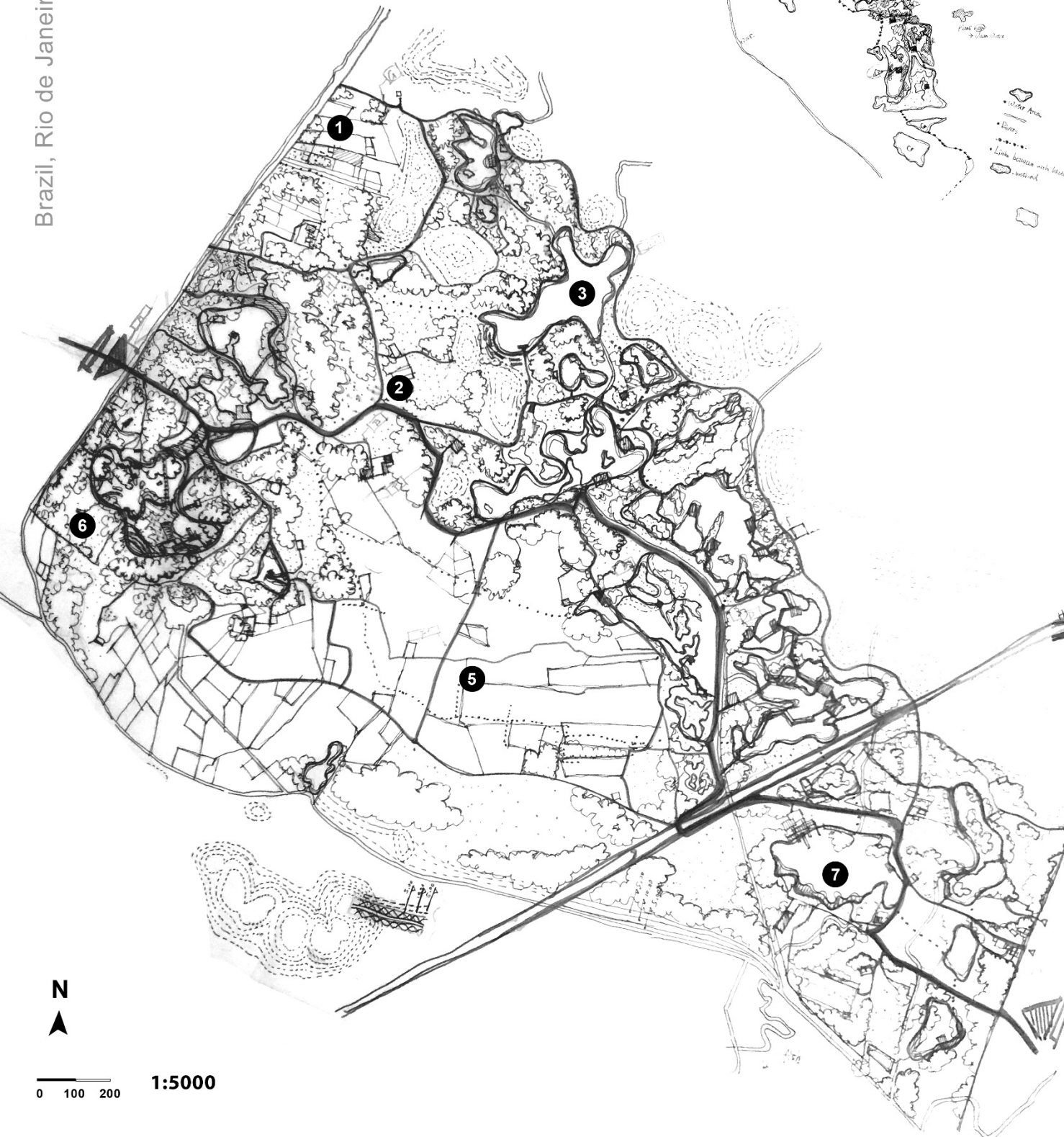


Urban

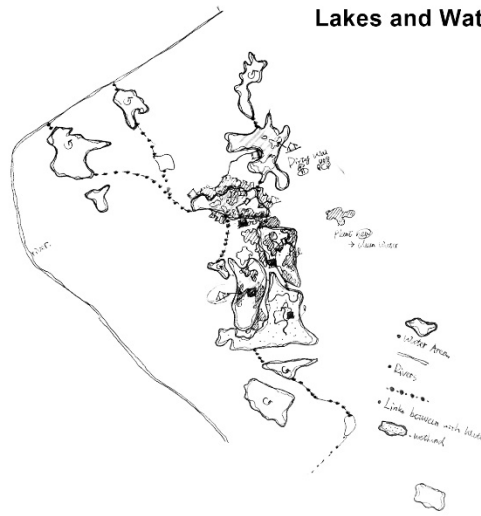


Nature

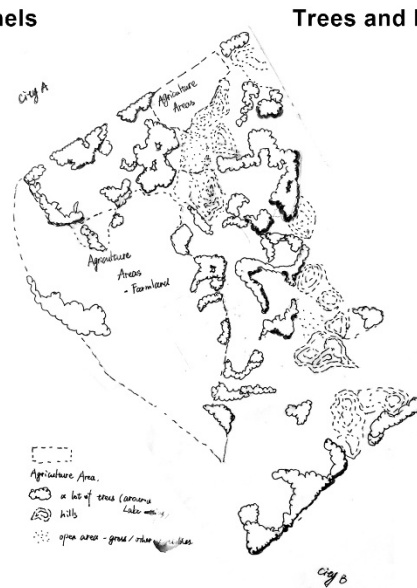
Entrances Design



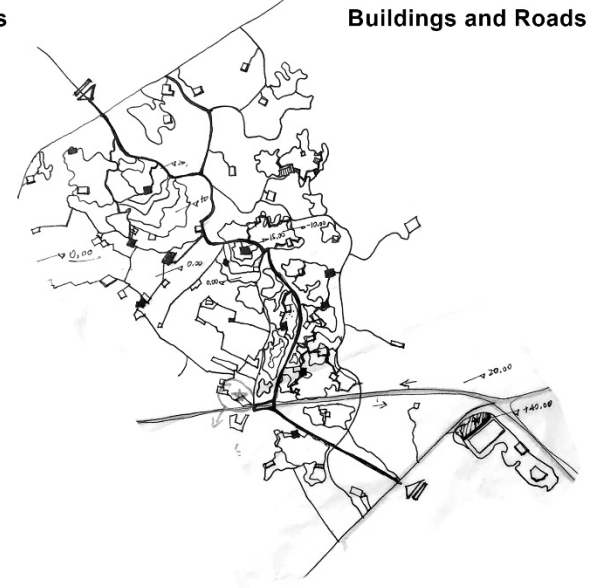
Lakes and Water Channels



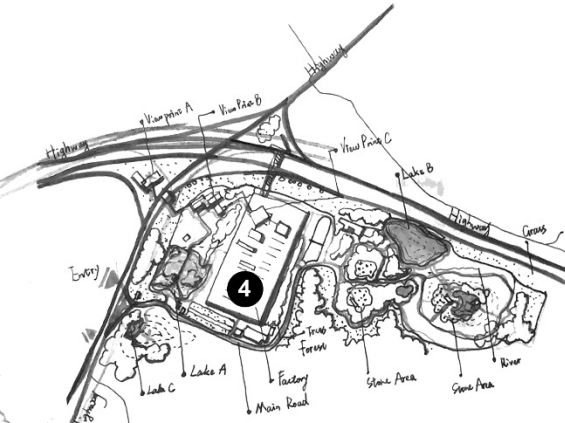
Trees and Hills



Buildings and Roads

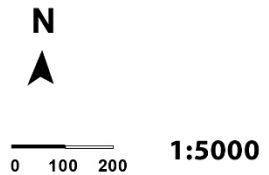


Activities



- 1 Land Art
- 2 Public Green Spaces
- 3 Wetland Areas
- 4 Landmark
- 5 Land Art
- 6 Educational Park
- 7 Water Park

LEGEND



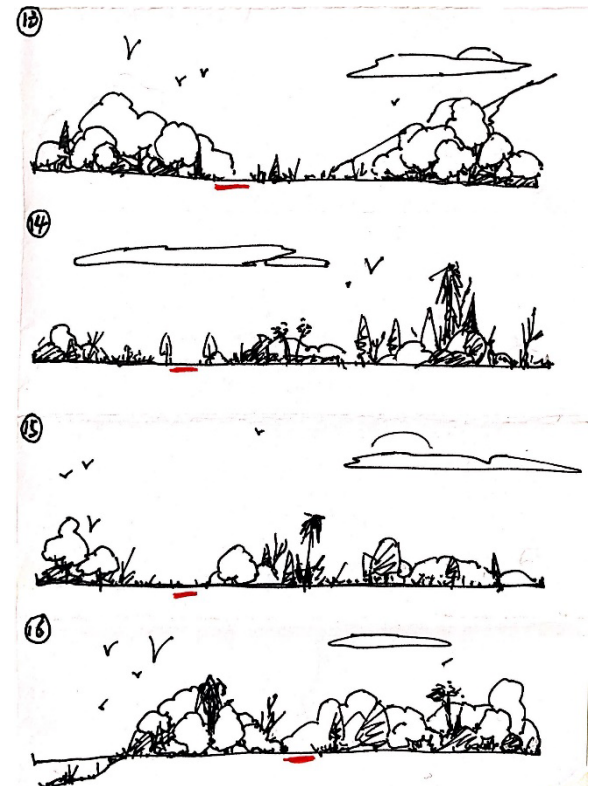
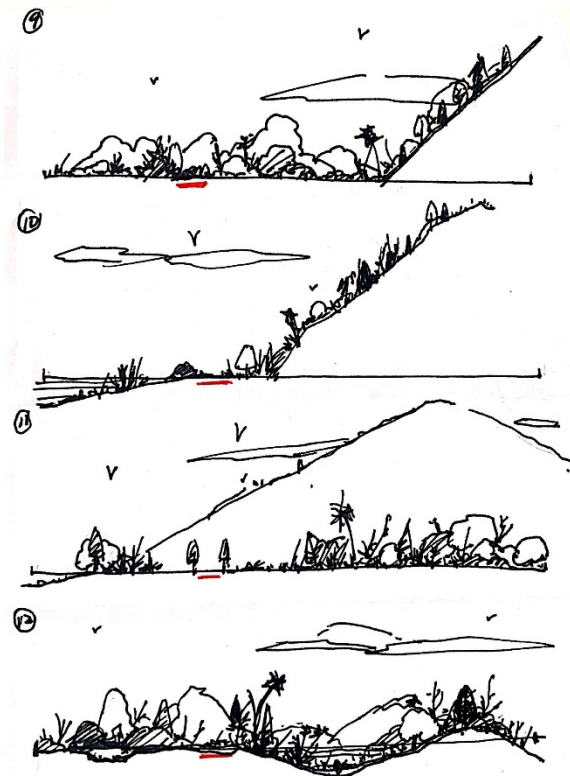
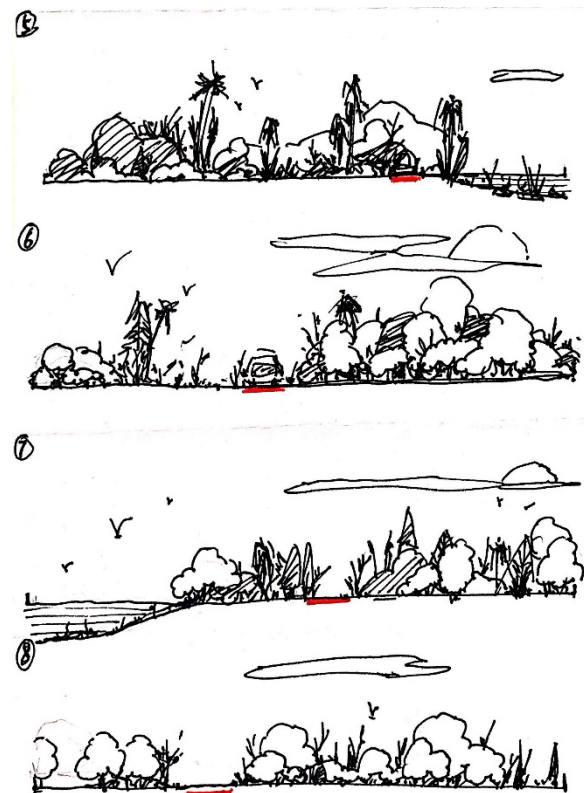
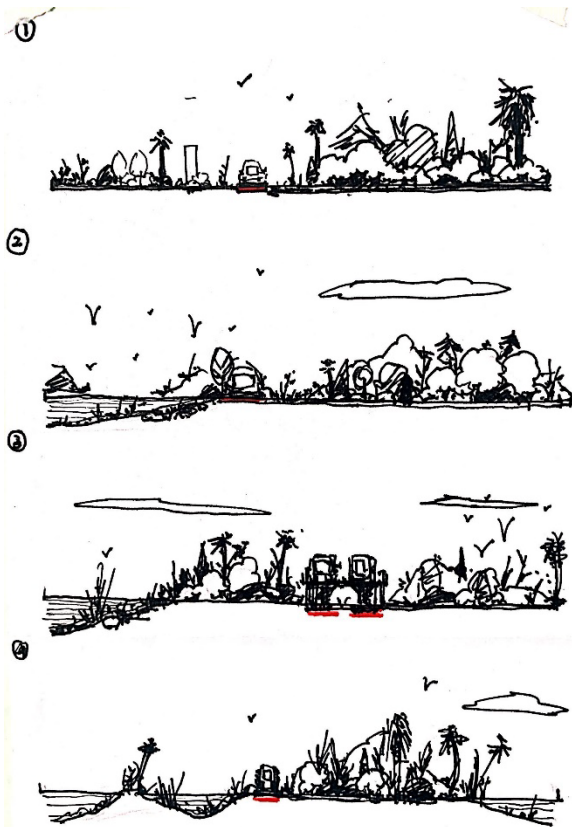
Masterplan of Design Solution

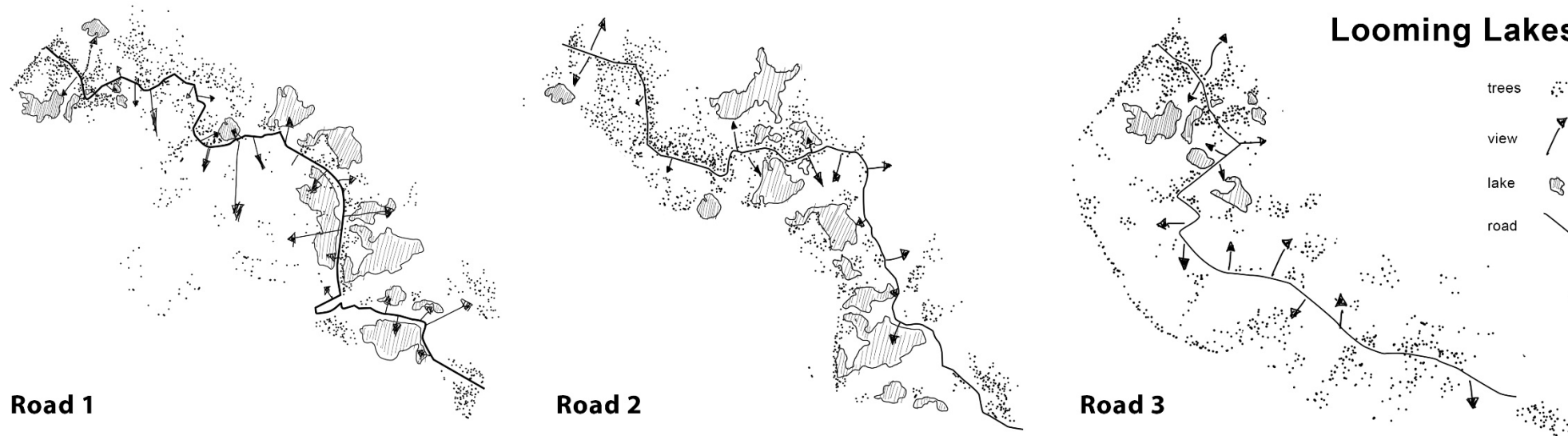


Locations

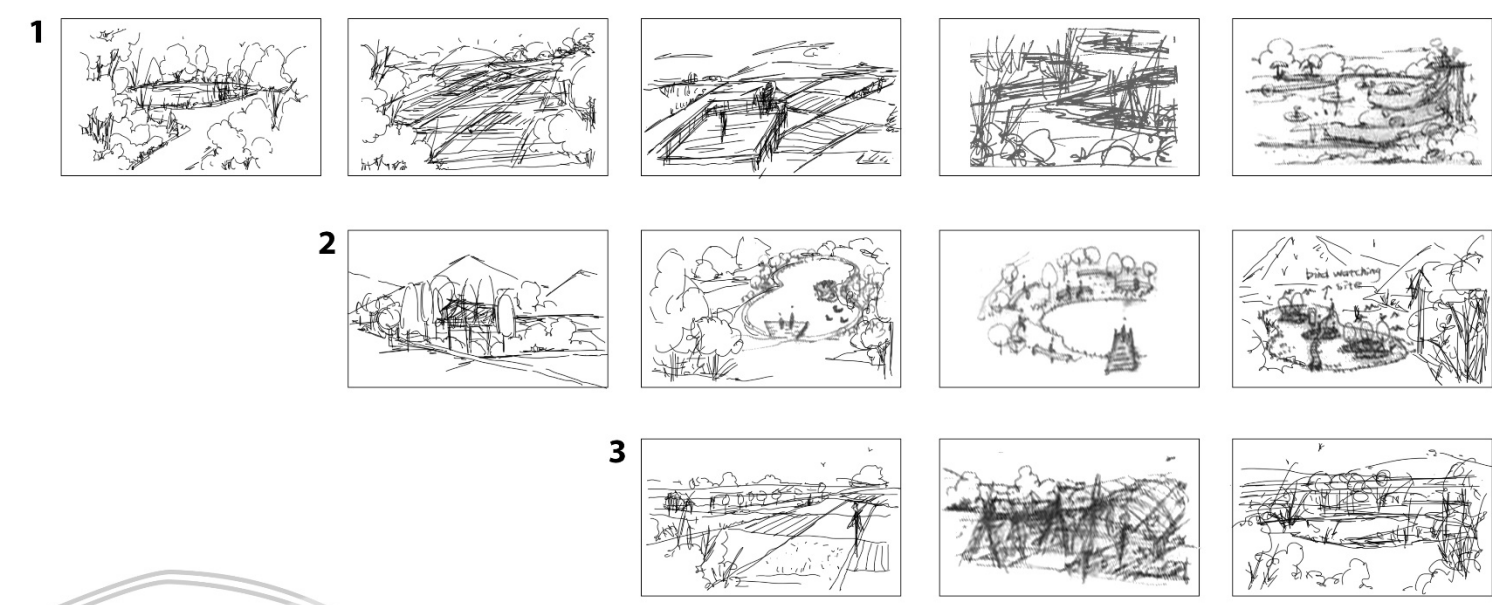


Sections





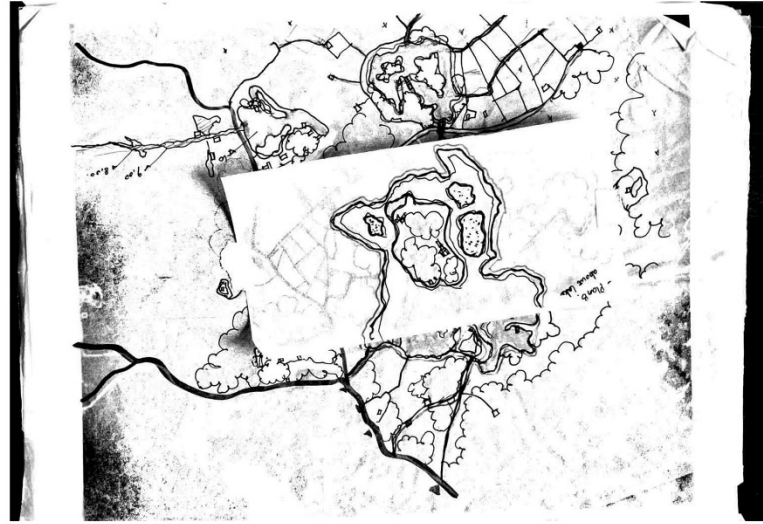
**Perspective Views**



When driving on the road, the surrounding scenery is hidden from time to time due to the shelter of trees. The lake is a valuable resource and the main line also guides people on this road.

**Beautiful Views along Roads**

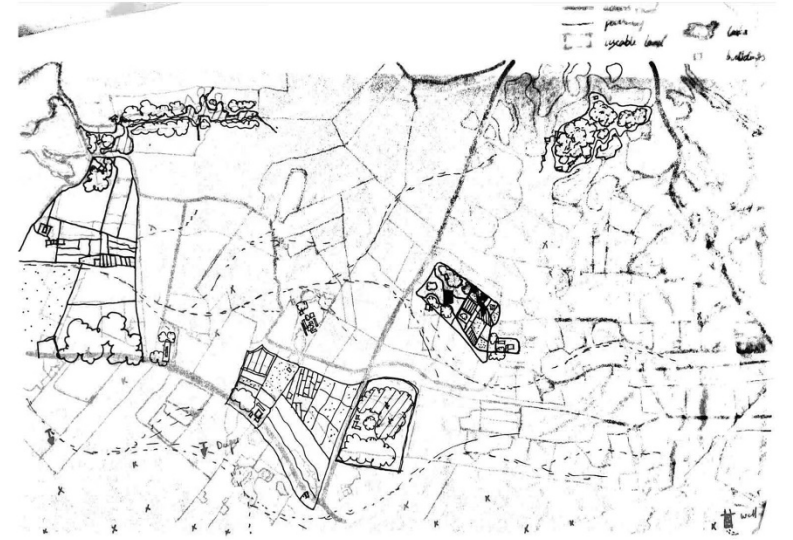
### Educational Park



### Land Art



### Land Art



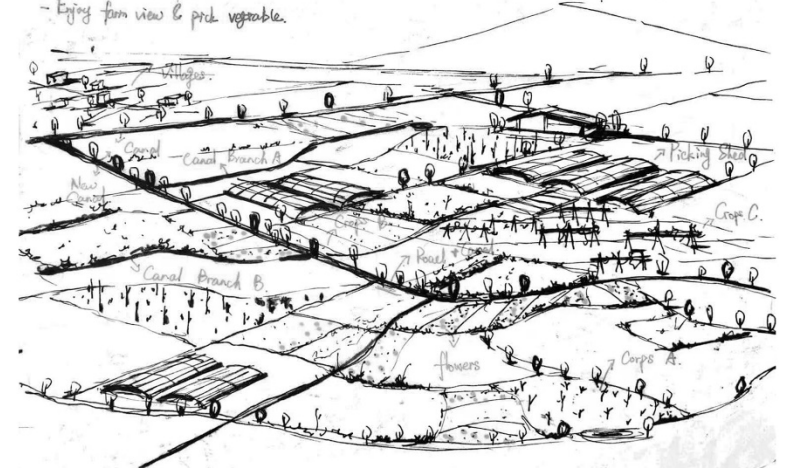
### Educational Park



### Public Green Spaces



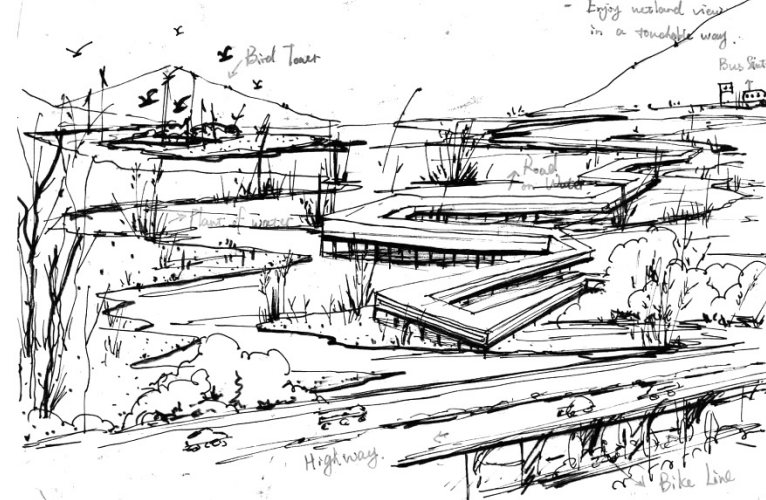
### Land Art



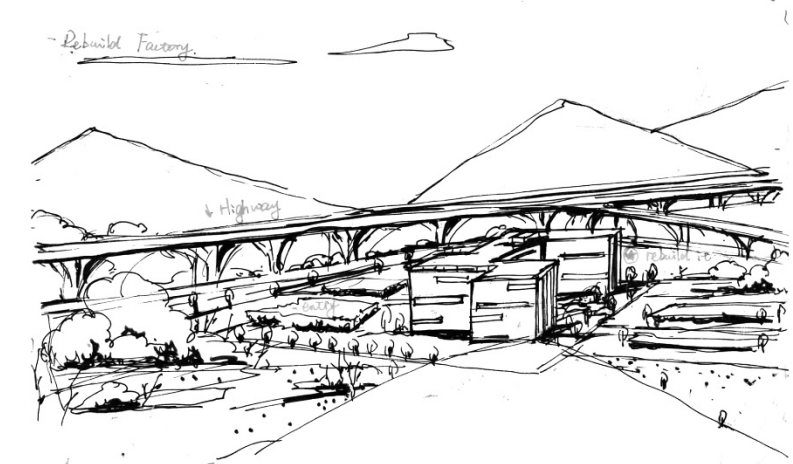
### Water Park



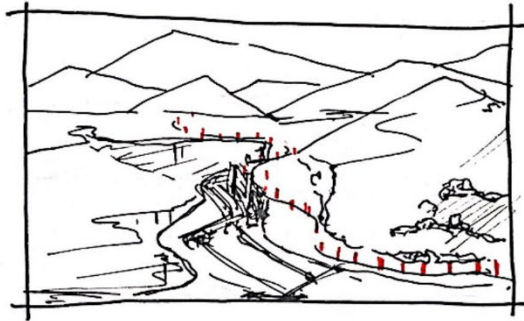
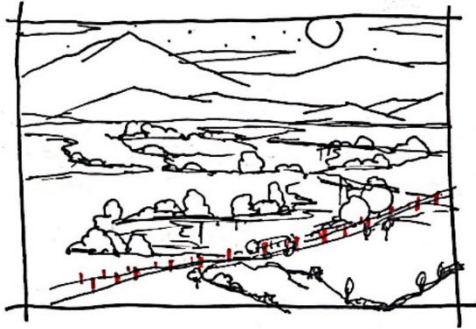
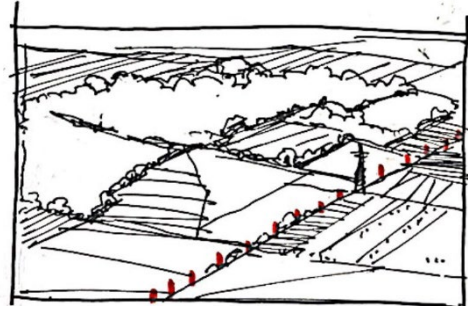
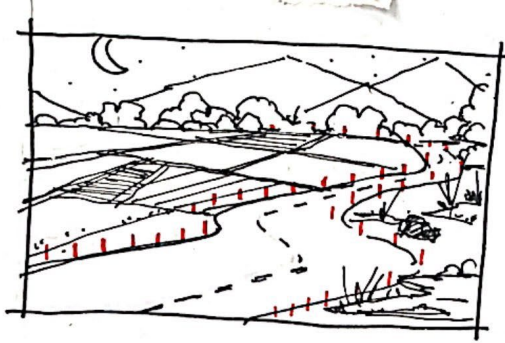
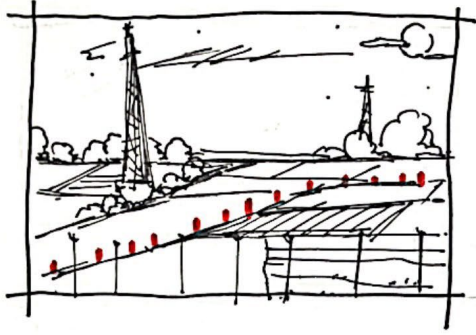
### Wetland Areas



### Landmark



## Perspective Views

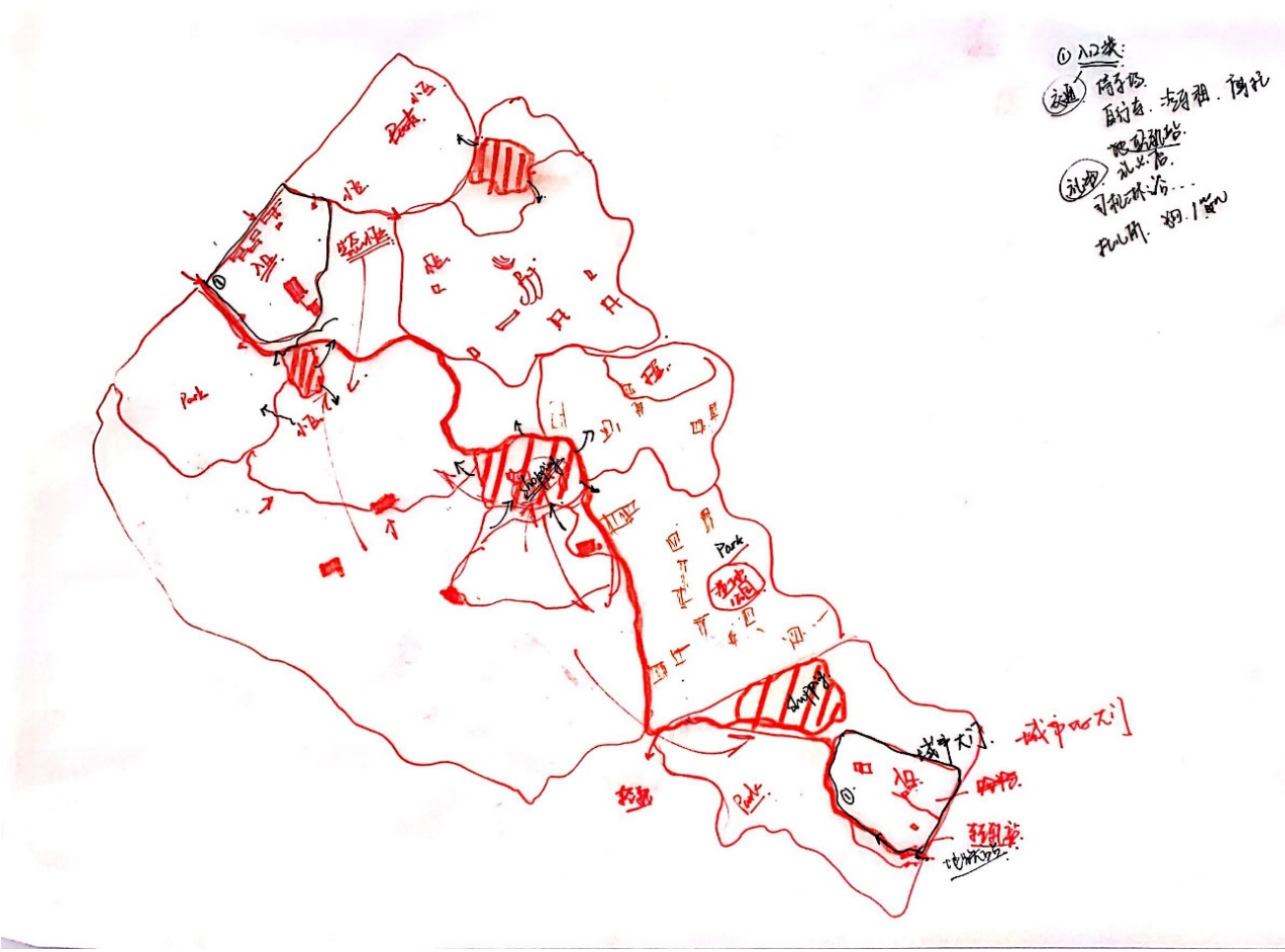


Lights at Night

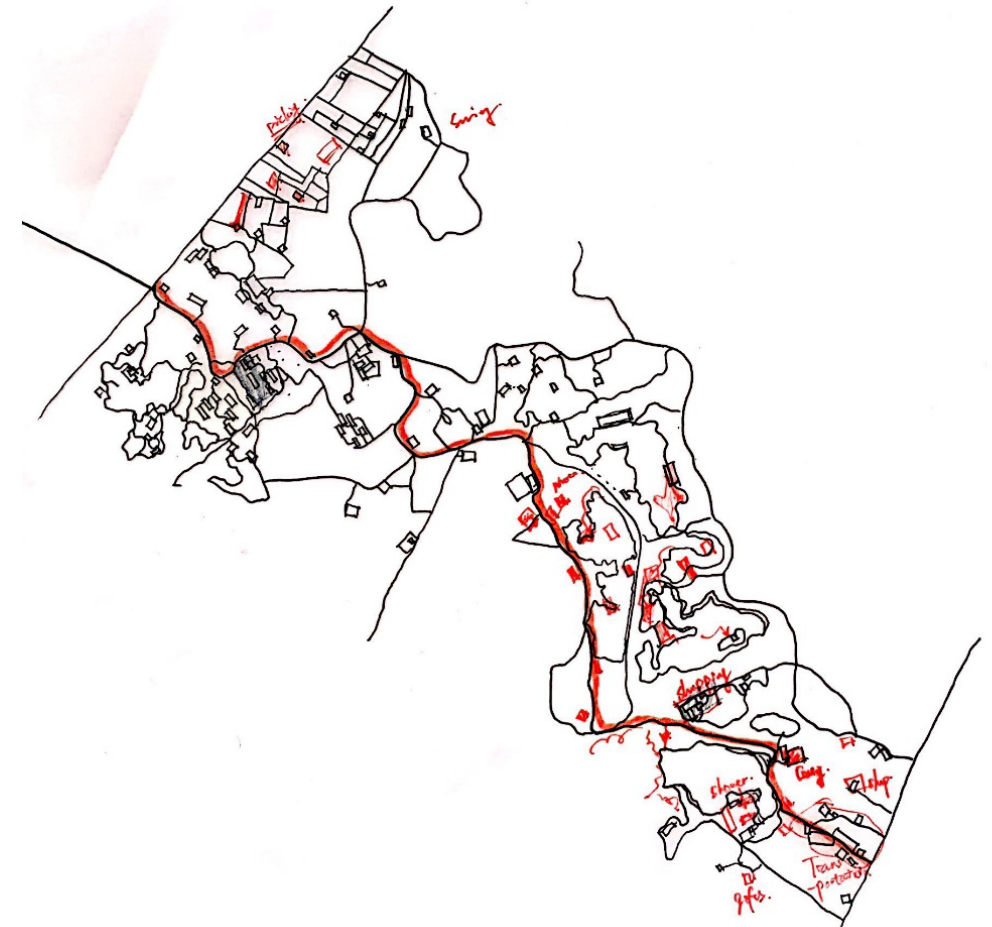


# IDEAS

Regarding people's activities, considering **various groups of people**, the middle class, the elderly, and the young, provide them with various designs to meet **different needs**. First of all, from the entrance, people can take a variety of **transportation at the entrance** to facilitate them to reach different places in the site. Then it is to provide people with **various entertainment needs** such as purchase and viewing.



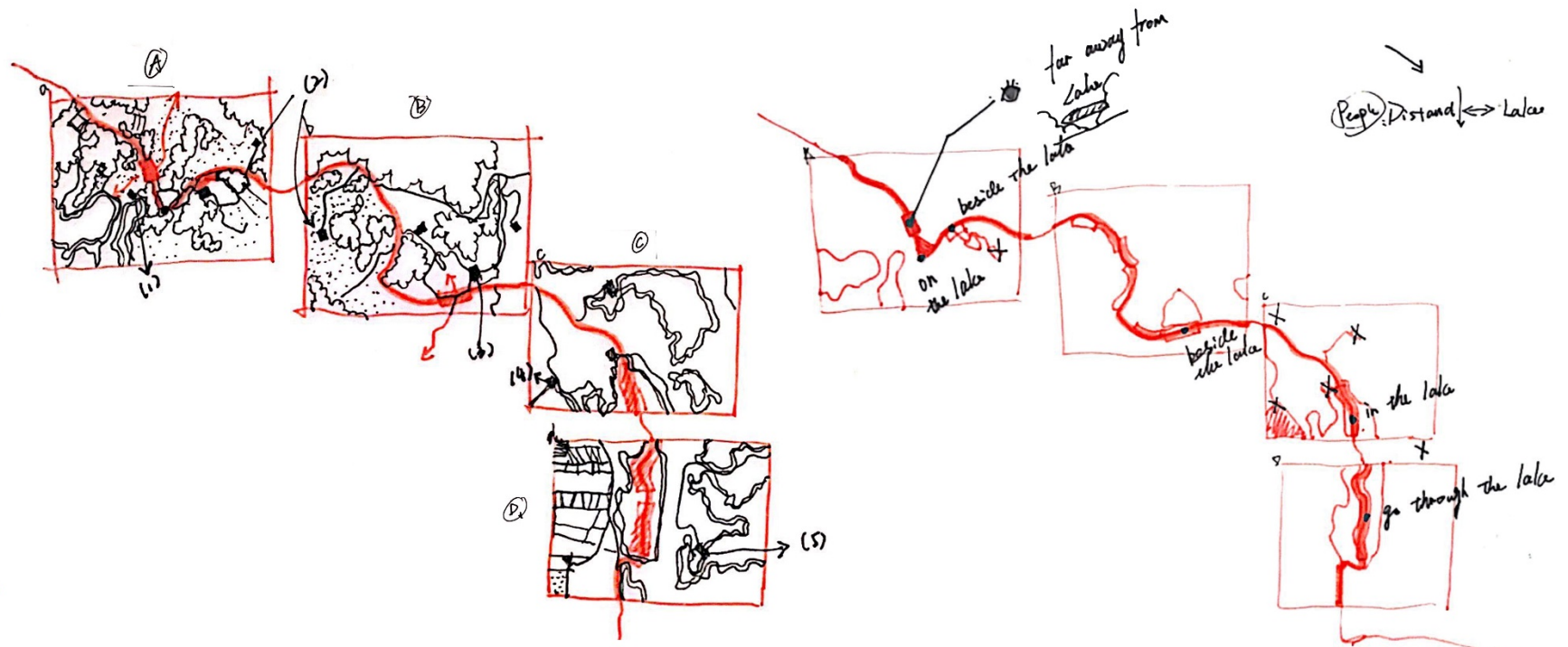
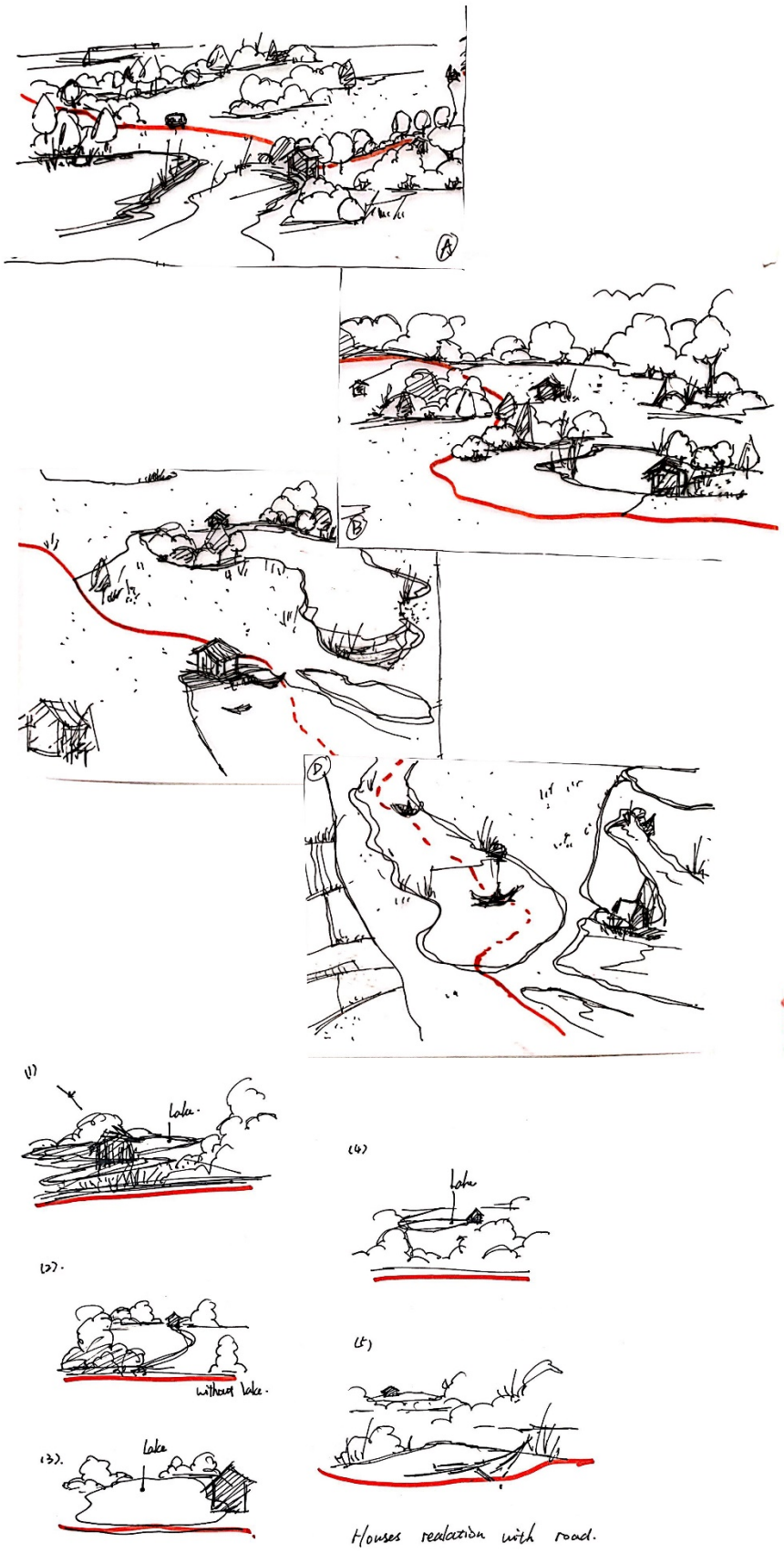
Music gathering centers, florists, markets, public kitchens... Explore what people want and like in life?



In addition, people can engage in various recreational activities here, for example, there are **parking lots, gardens, care centers** for dogs and infants, and **vegetable communities**. When going to the center of the site, people can **buy some agricultural products** produced on the farmland or buy some souvenirs in the **gift shop** on the site. In these small parks, there are also some roads where people can take **a walk, outdoor exercise, ride a bicycle, or sit under a tree, read and eat food**.

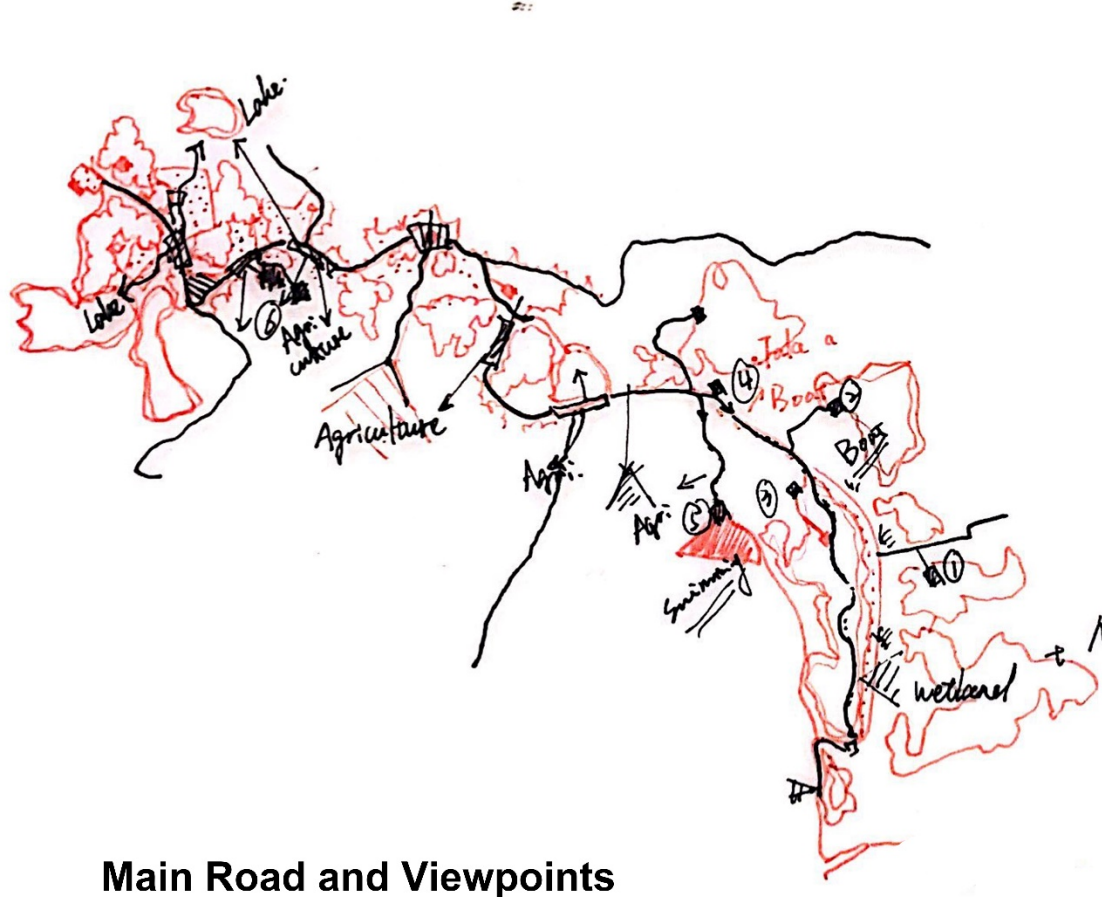
For **the school** at the northern entrance, the nearby area may provide more **libraries and sports venues**. In the central area of natural ecology, there are **some greenhouse water purification facilities**, and people will also provide some **resting places such as bars and cafes** while watching the purified water source. Set up **an open-air cinema, outdoor exploration play area, children's play area, fitness garden grass bowling alley**, etc. in the open and open space.

**Main Road and Houses**

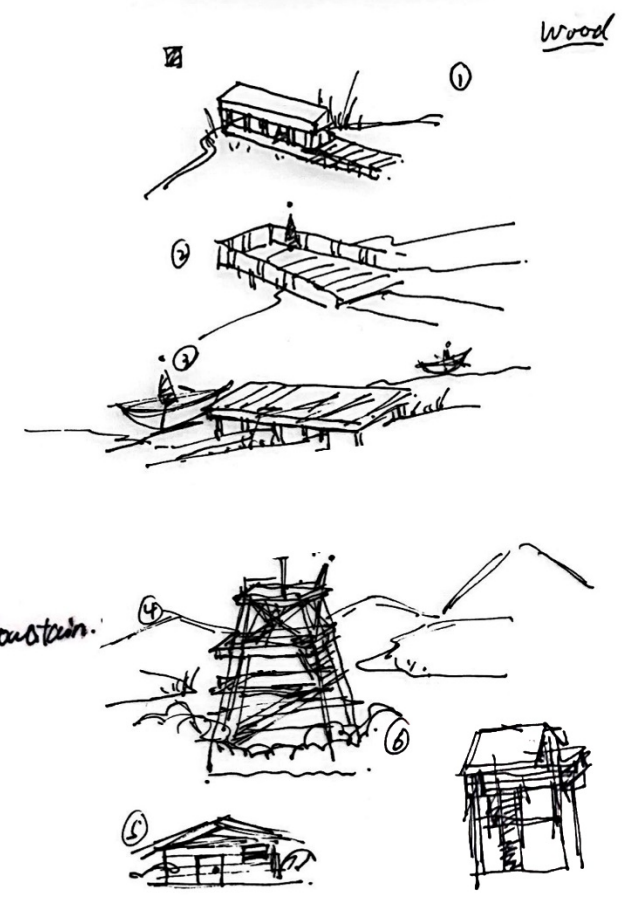


 **Main Road and Houses**

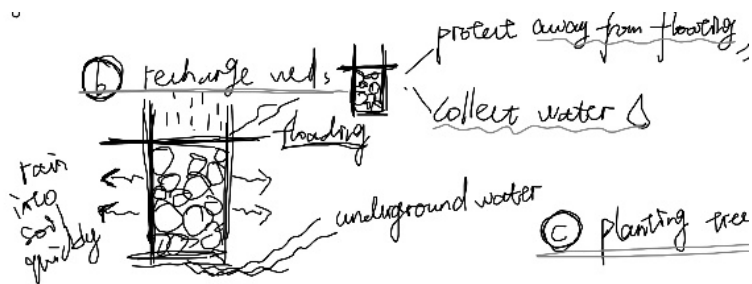
 **Main Road and Lakes**



**Main Road and Viewpoints**



Wood

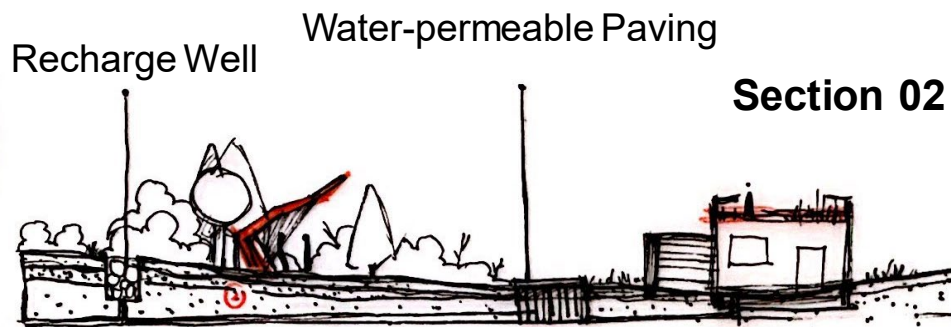
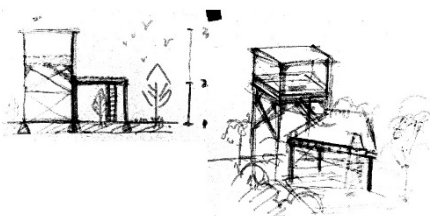


## Recharge Well

This type of well is covered with **stones**. The upper layer is mainly composed of large **rocks**, the lower layer is composed of **small rocks**, and the last layer is composed of **fine sand**. Playing some such sceneries in the grassland or forest will **improve rainwater infiltration** during flood disasters, which not only can **increase the storage of groundwater**, but also **solve flood disasters**

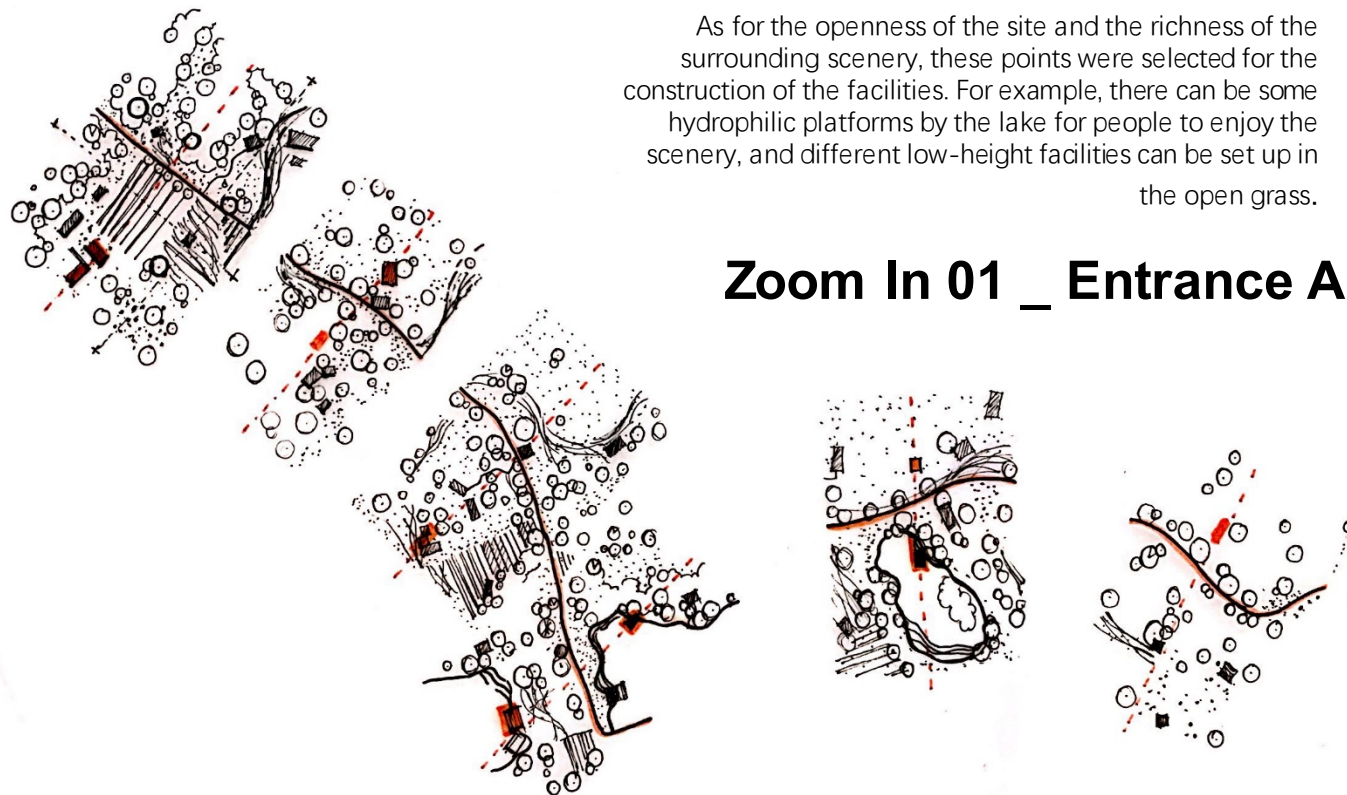
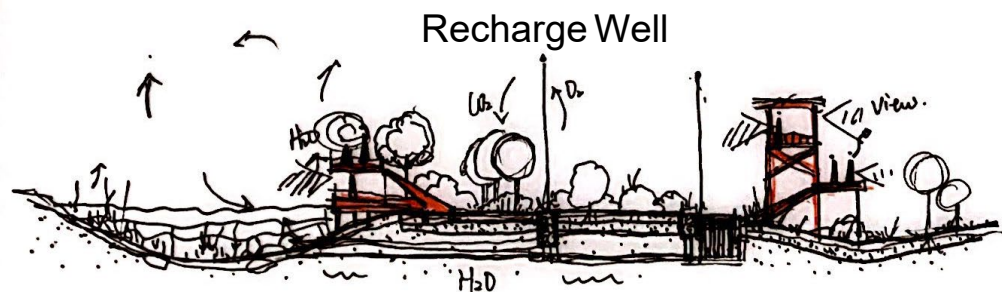


## Watch Tower



## Section 05

Water-permeable Paving

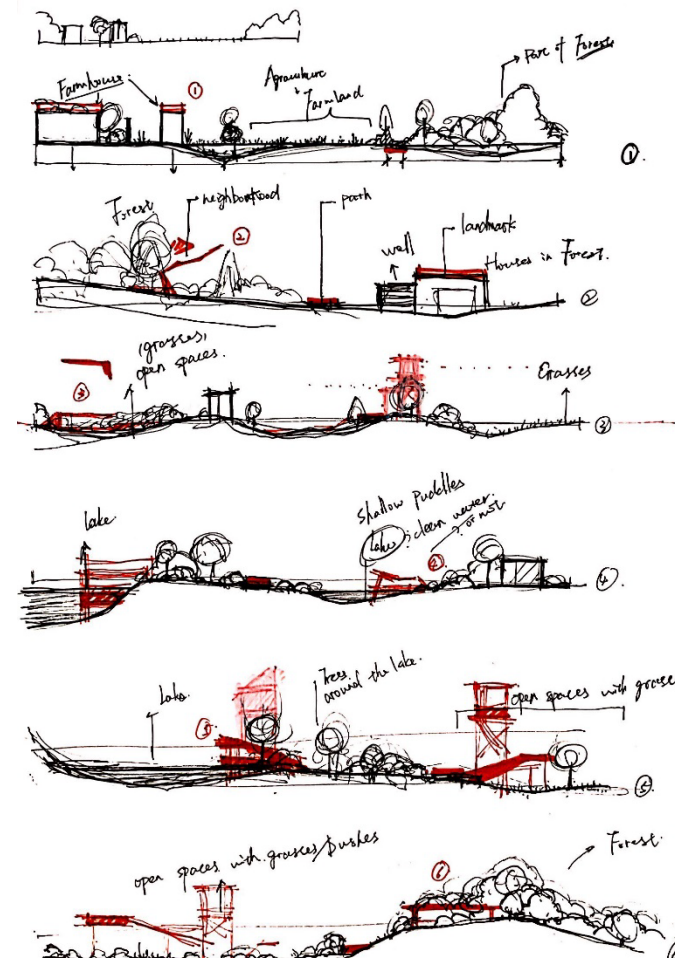
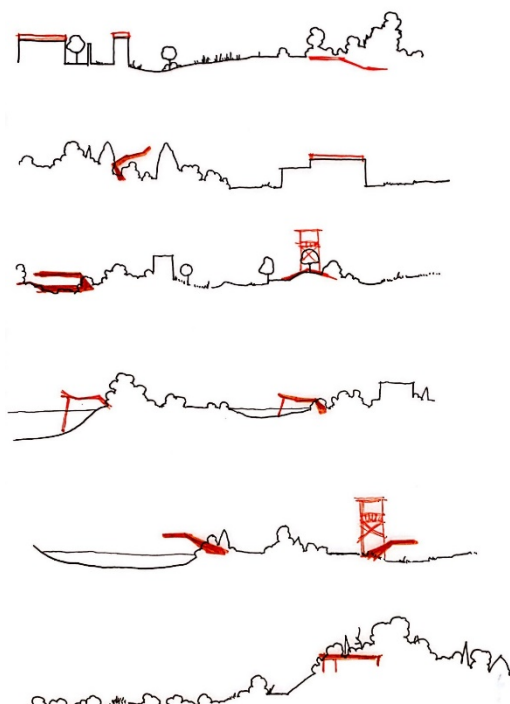


As for the openness of the site and the richness of the surrounding scenery, these points were selected for the construction of the facilities. For example, there can be some hydrophilic platforms by the lake for people to enjoy the scenery, and different low-height facilities can be set up in the open grass.

## Zoom In 01 \_ Entrance A

## Entrance A Sections

This picture shows the various forms of structures from the ground. People can enjoy the natural scenery from different angles and different environments by using these structures along the road





## B Survival Challenge Games and Planting Experience

The north of the site is **densely forested**, and some **outdoor adventure activities** can be carried out. Adventure activities are divided into **different levels**, from easy to difficult, people can choose their own suitable level **for safe** outdoor adventure. There are **some farming areas** in the south of the site and in the center of the site to provide people with a planting experience, and people can choose to **build their own garden**.



## C Outdoor Plants Science Museum

There are **polluted lakes** in the site itself. In order to make people aware of the importance of environmental protection, while **treating lake water purification**, people are also **encouraged to grow their own plants** and feel the significance of environmental protection with a sense of participation. At the same time, **selling tree species** and planting these behaviors can **promote local economic development**. When you bring your children to plant, help them popularize some knowledge of local plants



## D Outdoor Animal Science Museum

**The water quality** in this area is **high-quality**, and there are native and beautiful wetland scenery. The marshes here may stop **a variety of birds**. This will be a good opportunity for tourists and local children to pass the vote. Feel the nature in various ways such as **feeding or watching**. At the same time, the tourism industry promotes the development of the local economy.



## E Movable Installation Area in the Forest

This will be **another important entrance**, connecting with the southern city center. According to the situation of this site itself prone **to flood disasters**, a **large area of tree planting** will be carried out in the future to prevent flood disasters. But because it **is adjacent to where people live** in the city, it also provides a variety **of movable stalls, trolleys**, etc. It is convenient for people to enjoy the fun of purchasing mobile facilities, and they can **purchase** a variety of local **specialty products**, crops, or local wooden leather products, etc.

## **Chapter One. Analyzes**

- 1.1 Introduction
- 1.2 SWOT Analyzes
- 1.3 Design Proposal

## **Chapter Two. Sketches**

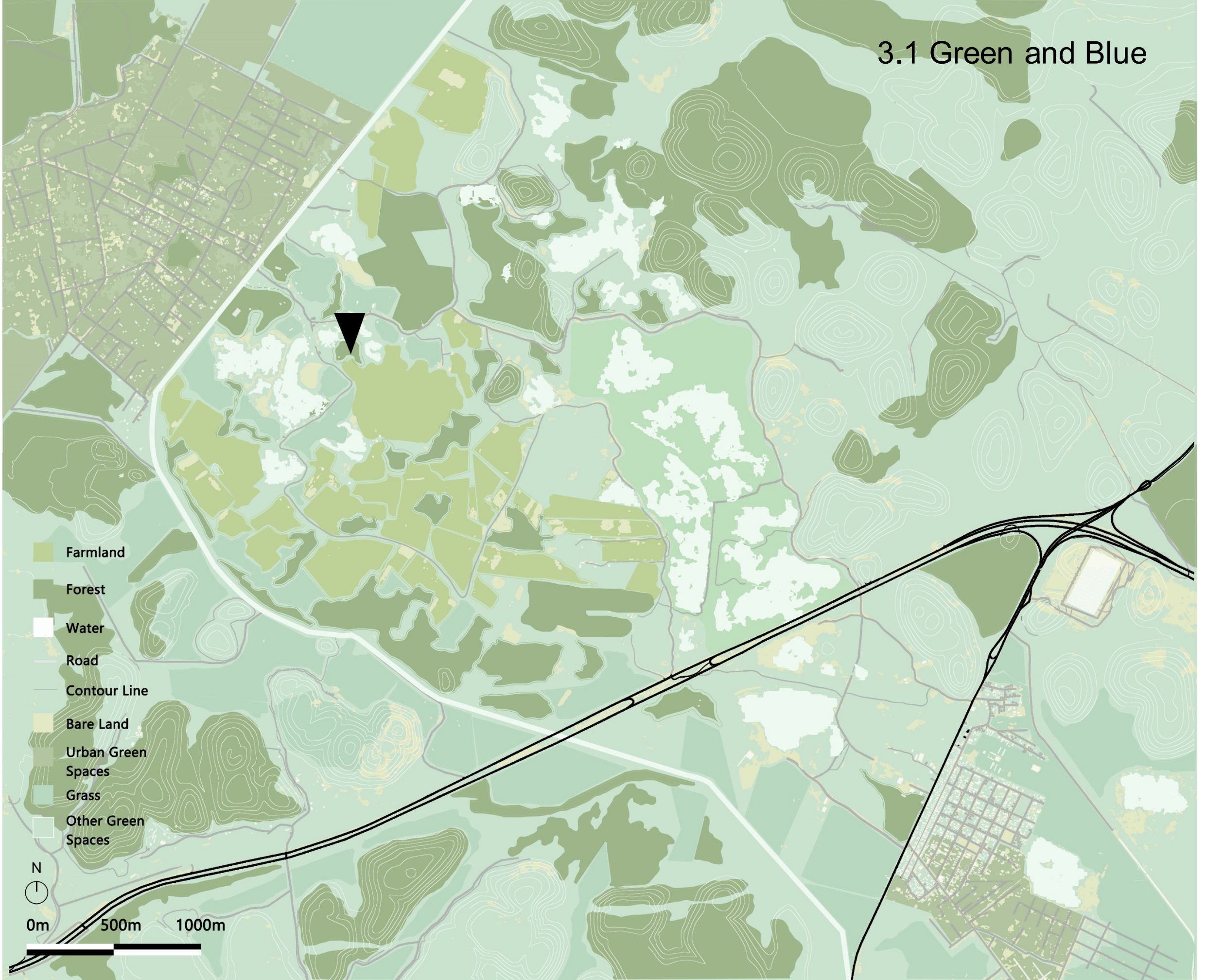
- 2.1 Entrance Part Design
- 2.2 Masterplan
- 2.3 Sections
- 2.4 Views
- 2.5 Activities
- 2.6 Zoom In Areas

## **Chapter Three. Final Mapping**

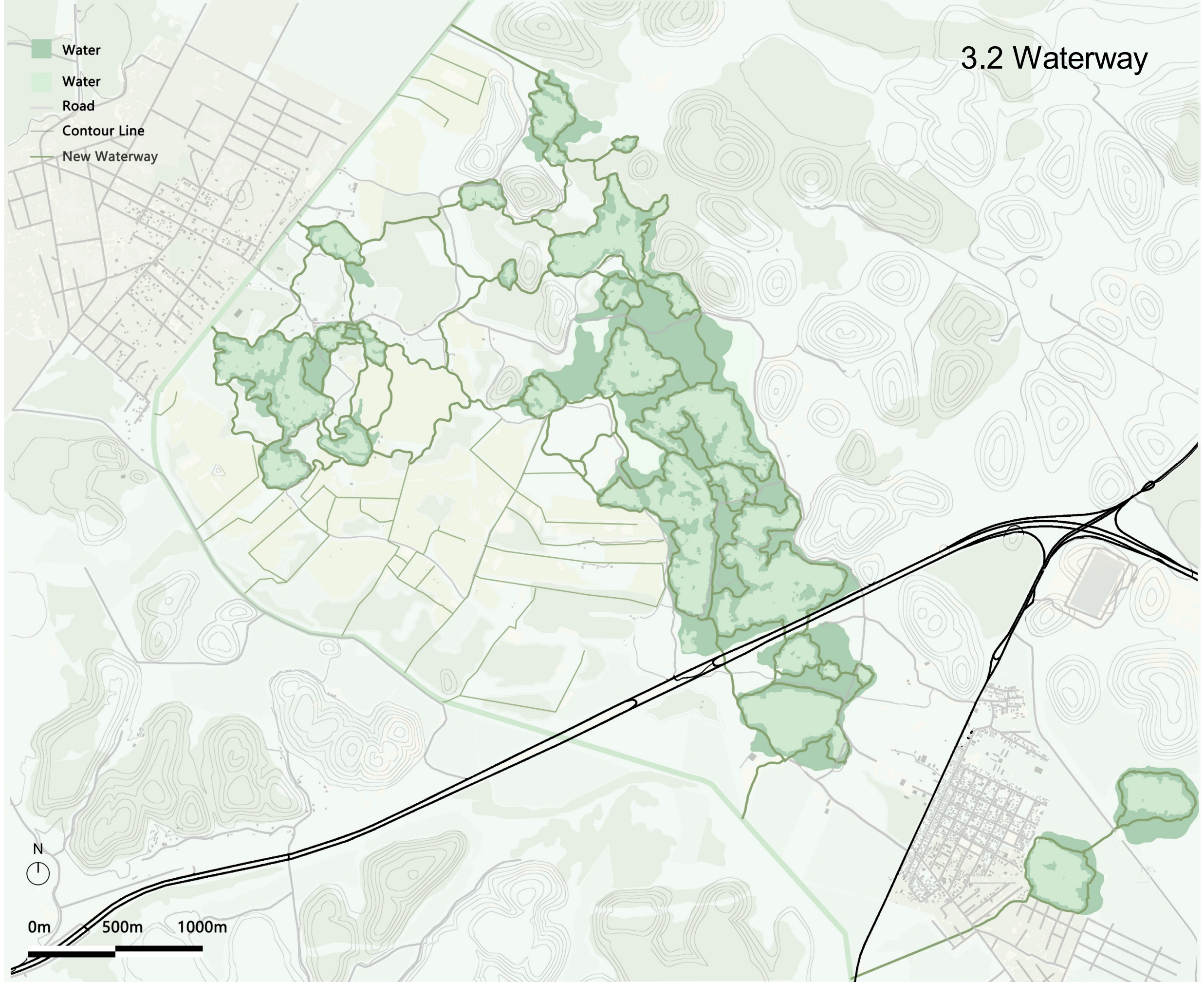
- 3.1 Green and Blue
- 3.2 Waterway
- 3.3 Entrance
- 3.4 Masterplan
- 3.5 Whole View
- 3.6 River
- 3.7 Details
- 3.8 Activities
- 3.9 Middle School Design

Bibliography

### 3.1 Green and Blue



# 3.2 Waterway



### 3.3 Entrance



Museum Park



Elastic Park

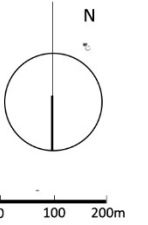
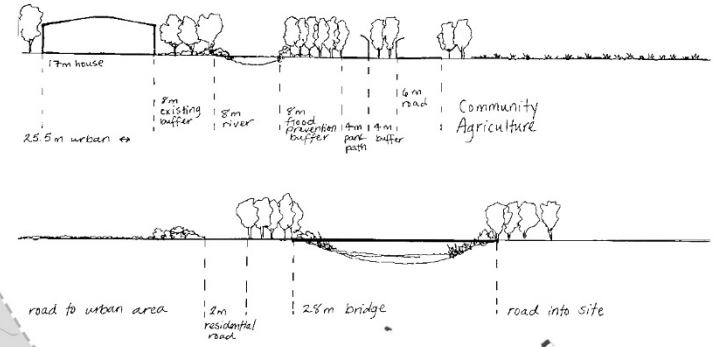


# 3.4 Masterplan



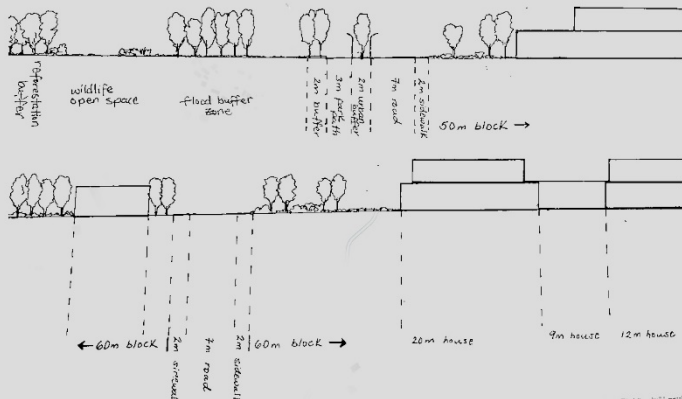
NORTH BORDER

1cm:3m

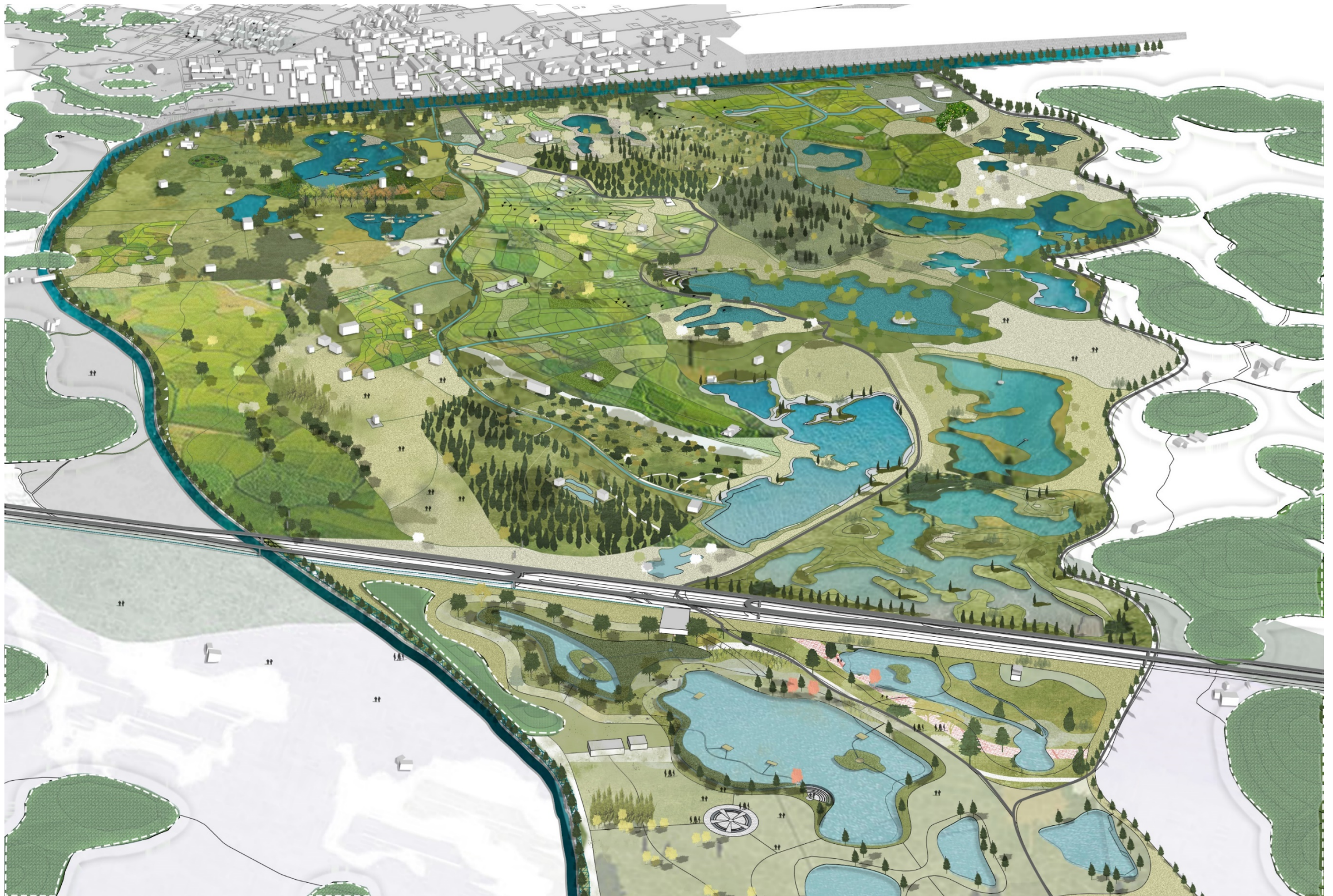


SOUTH BORDER

1cm:3m



### 3.5 Whole View

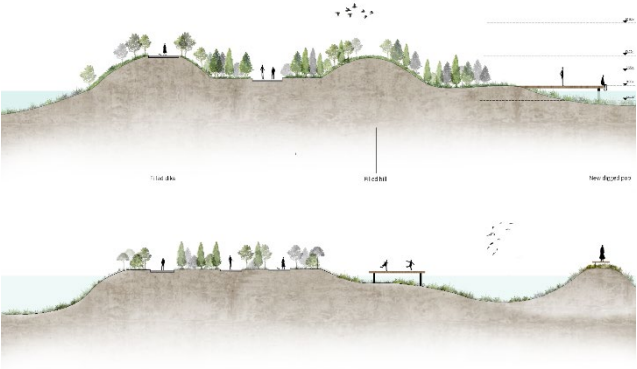
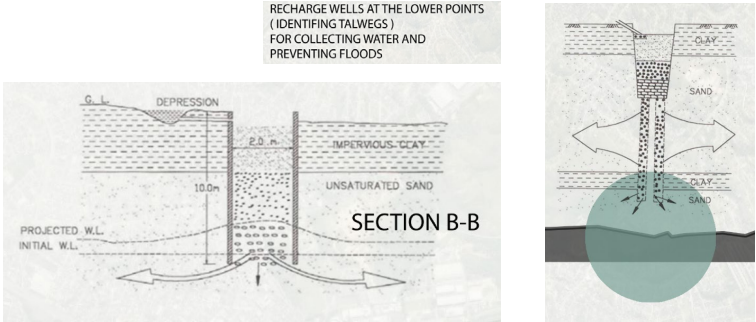




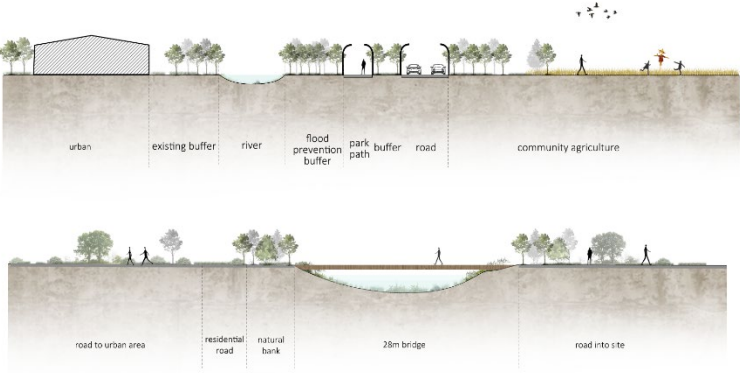
## River

Create some waterways to use rain water in river into farmland

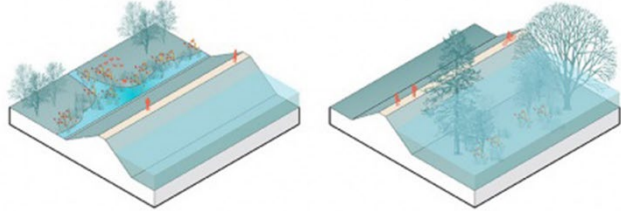
# 3.7 Details



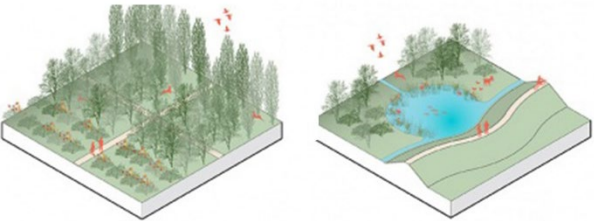
GUARDIAN STRATEGY



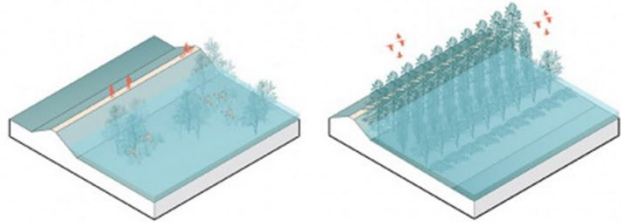
ECOLOGICAL STRATEGY



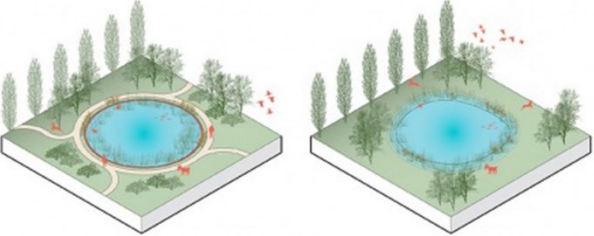
CREAT DIKE ZONE



PURIFICATION OF LARGE PLANTS

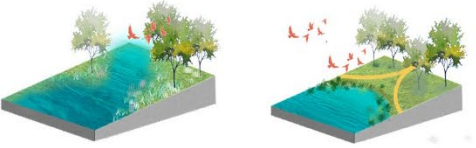


DECREASE FLOW SPEED

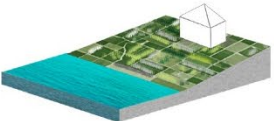


ECOLOGICAL AND ENTERTAINMENT PARK

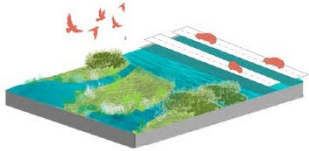
Ecological wetland



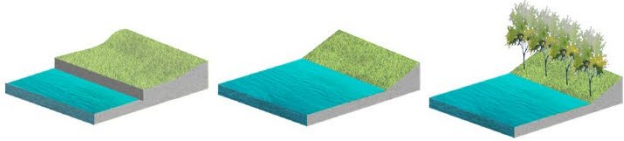
Agricultural landscape



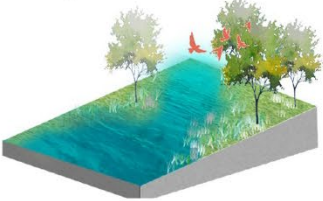
Traffic landscape



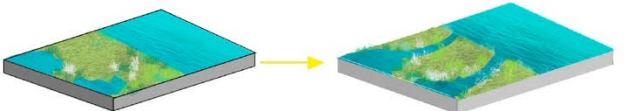
Flood control area



Water storage area



Drainage zone





Farm Houses



Wetland

Roads  
besides Hills



Bike Line

Children Area



Water Theme  
Park



FARM HOUSES

Picking Areas

-You also can pick vegetables and fruits on agriculture services.

FLOWERS

HIVES

WETLAND



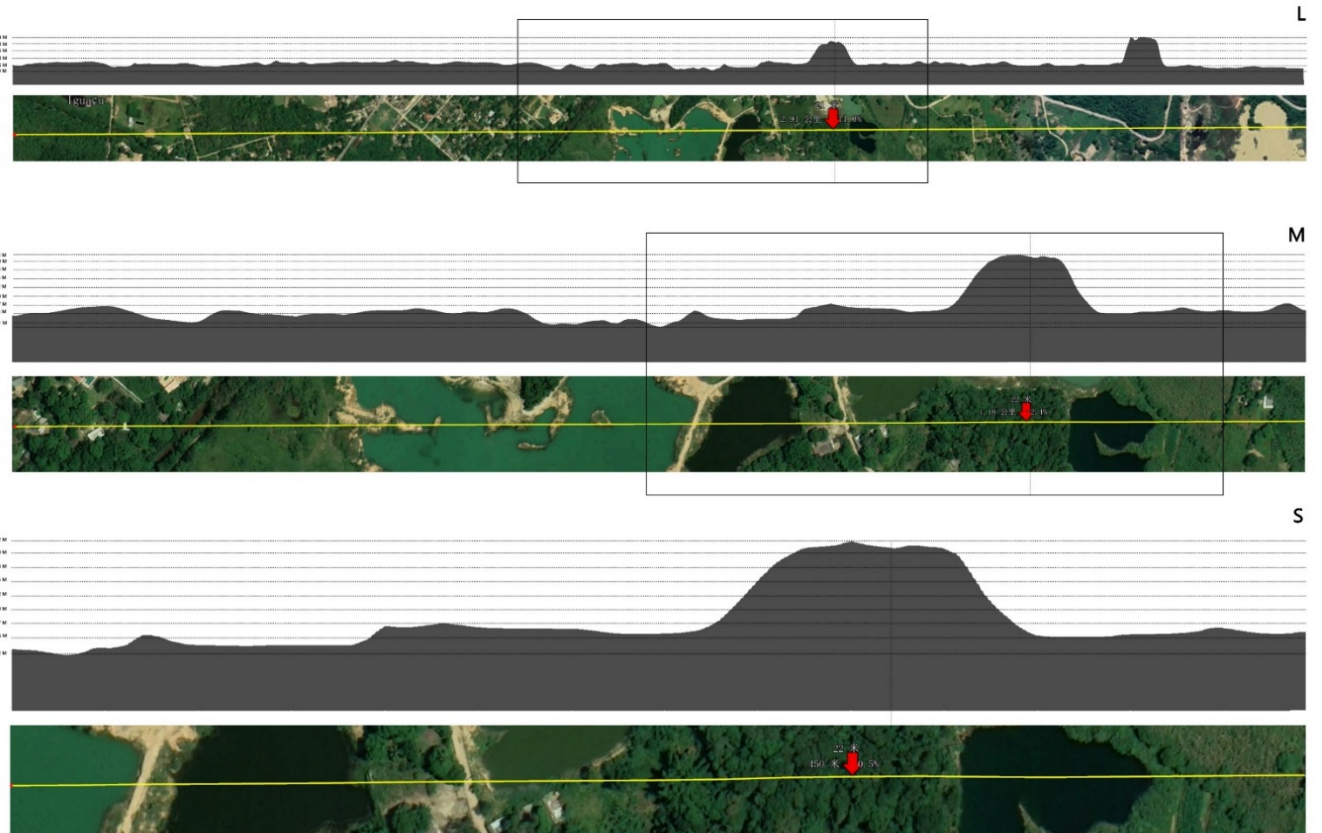
RECLEAN WETLAND

INTRUSIVE  
VIEW

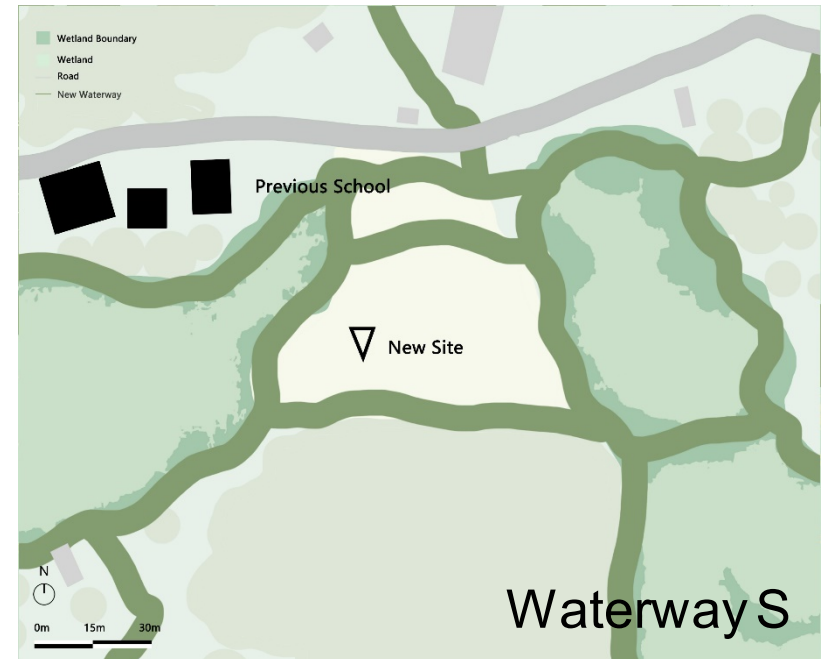
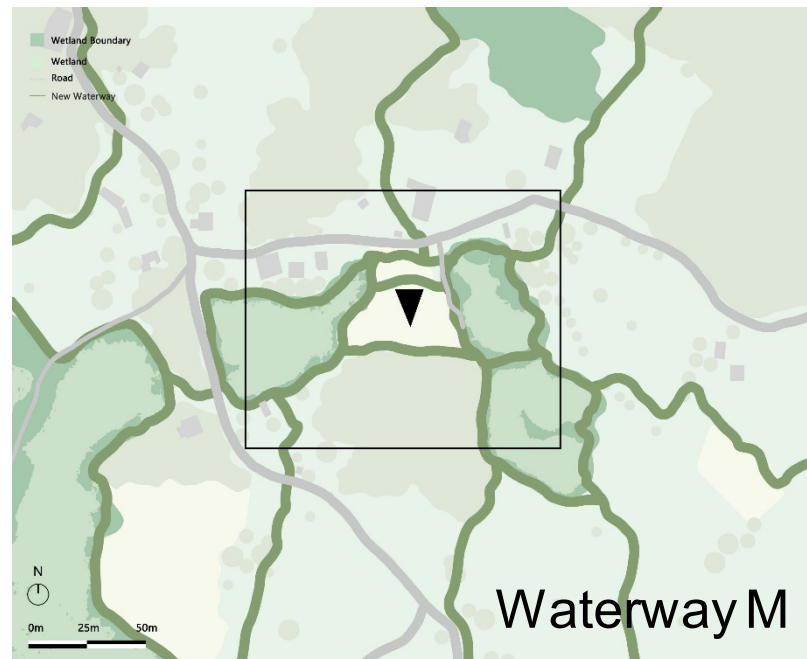
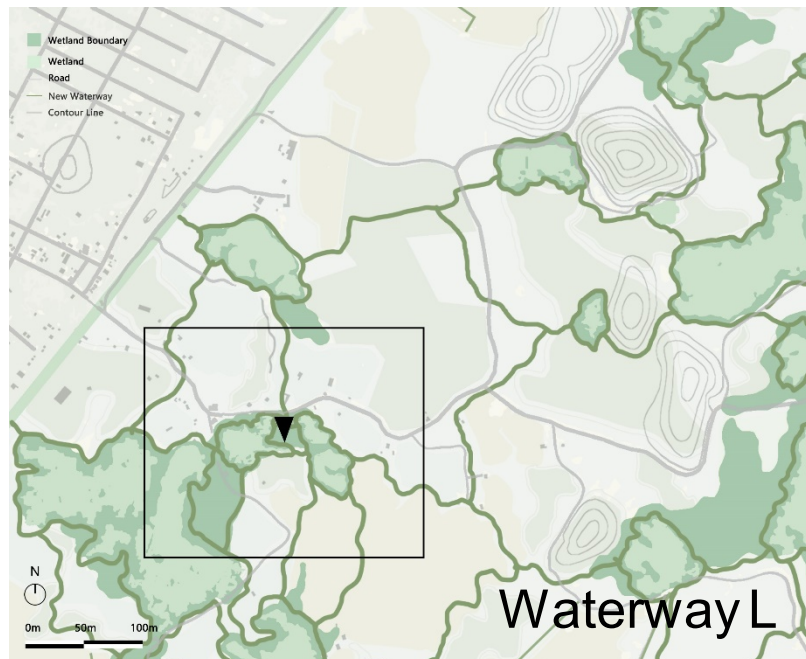
TELESCOPE

### 3.8 Activities

# 3.9 Middle School Design

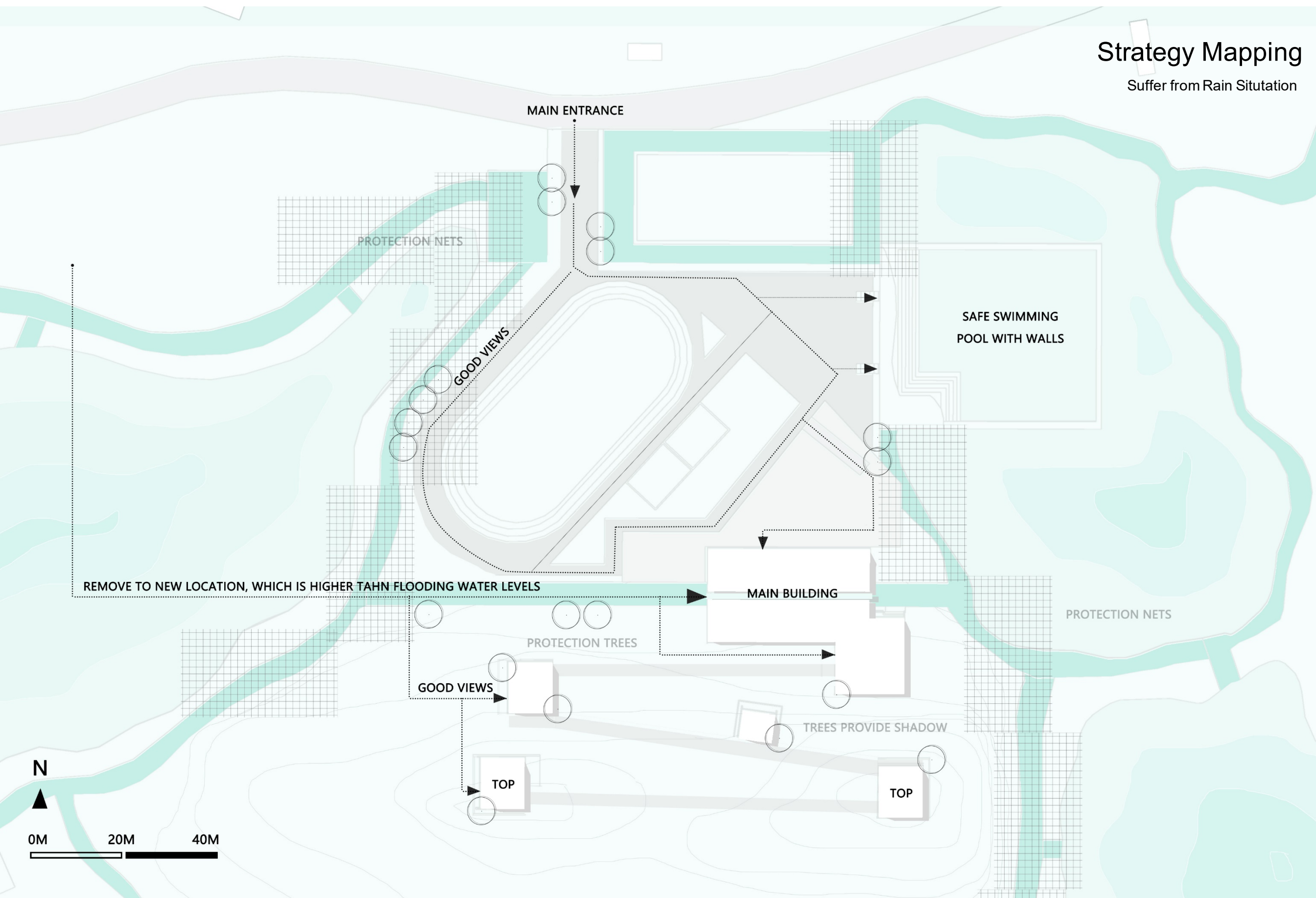


Section

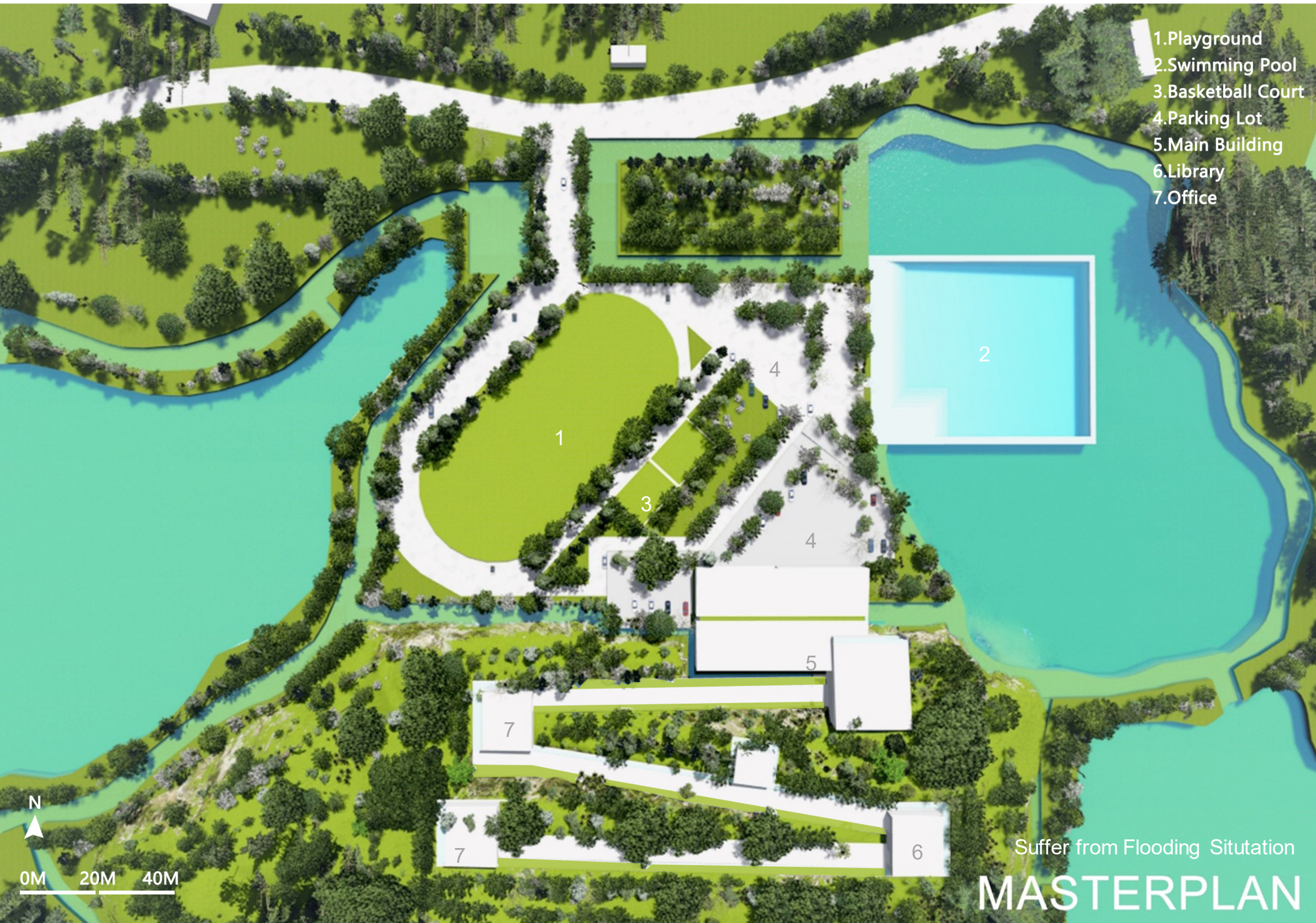


# Strategy Mapping

Suffer from Rain Situation



- 1. Playground
- 2. Swimming Pool
- 3. Basketball Court
- 4. Parking Lot
- 5. Main Building
- 6. Library
- 7. Office



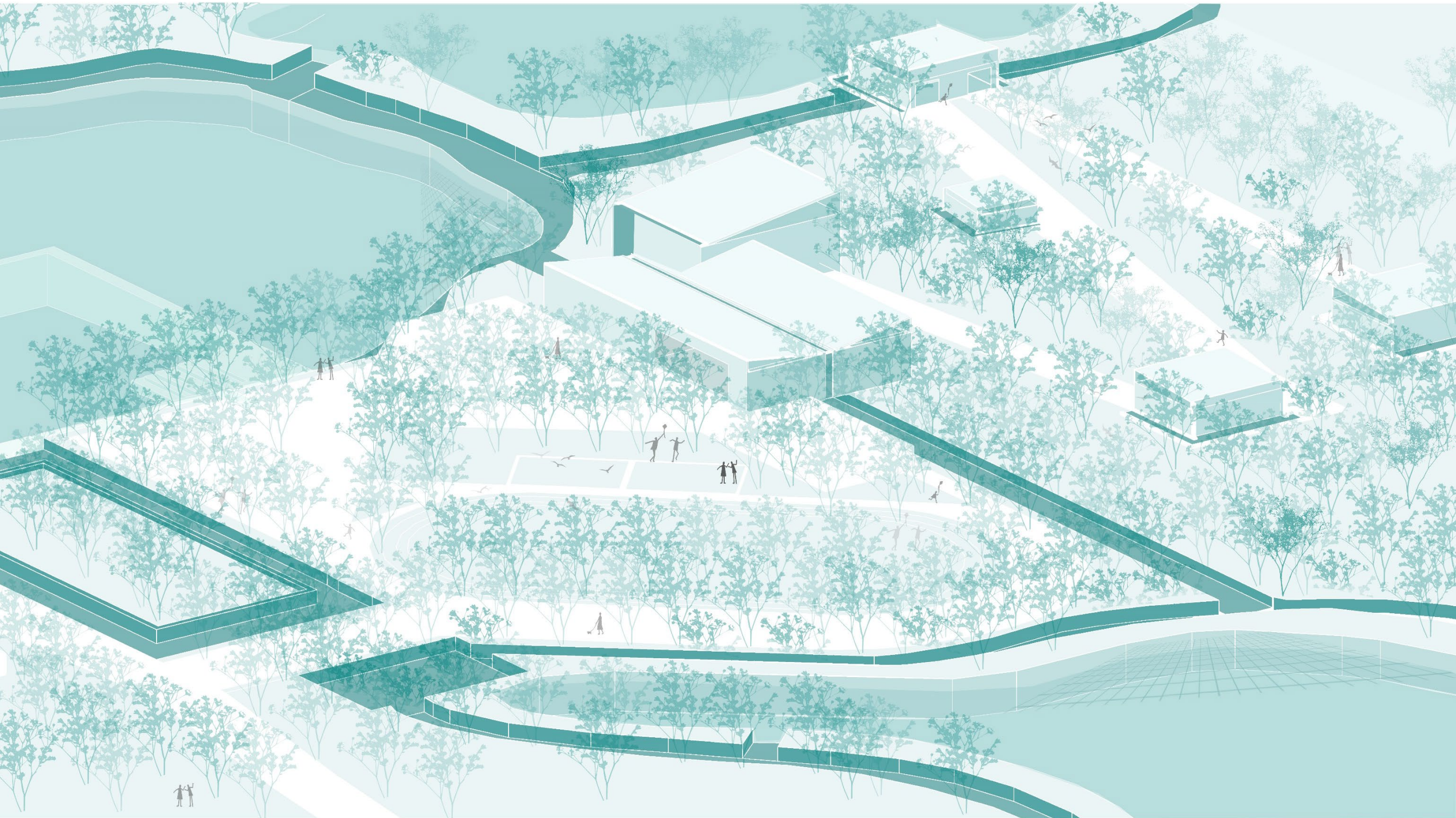
Suffer from Flooding Situation

# MASTERPLAN



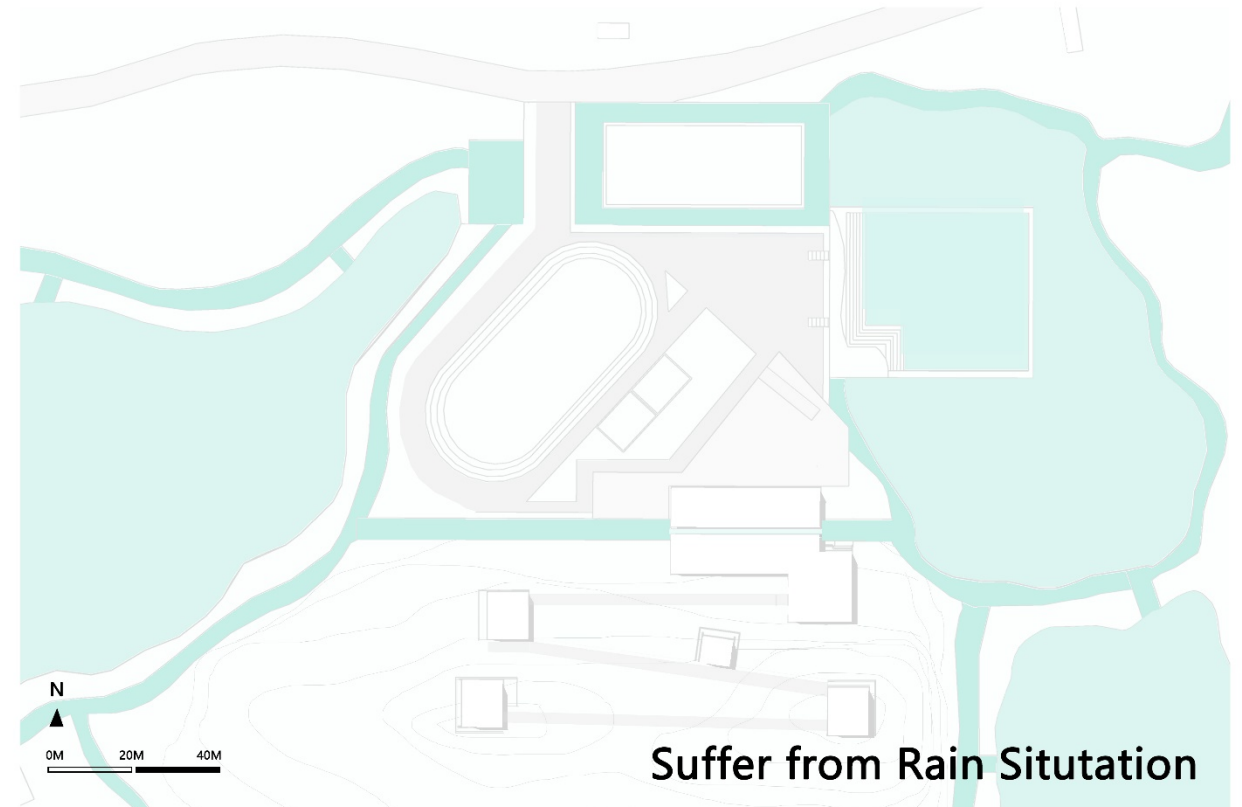
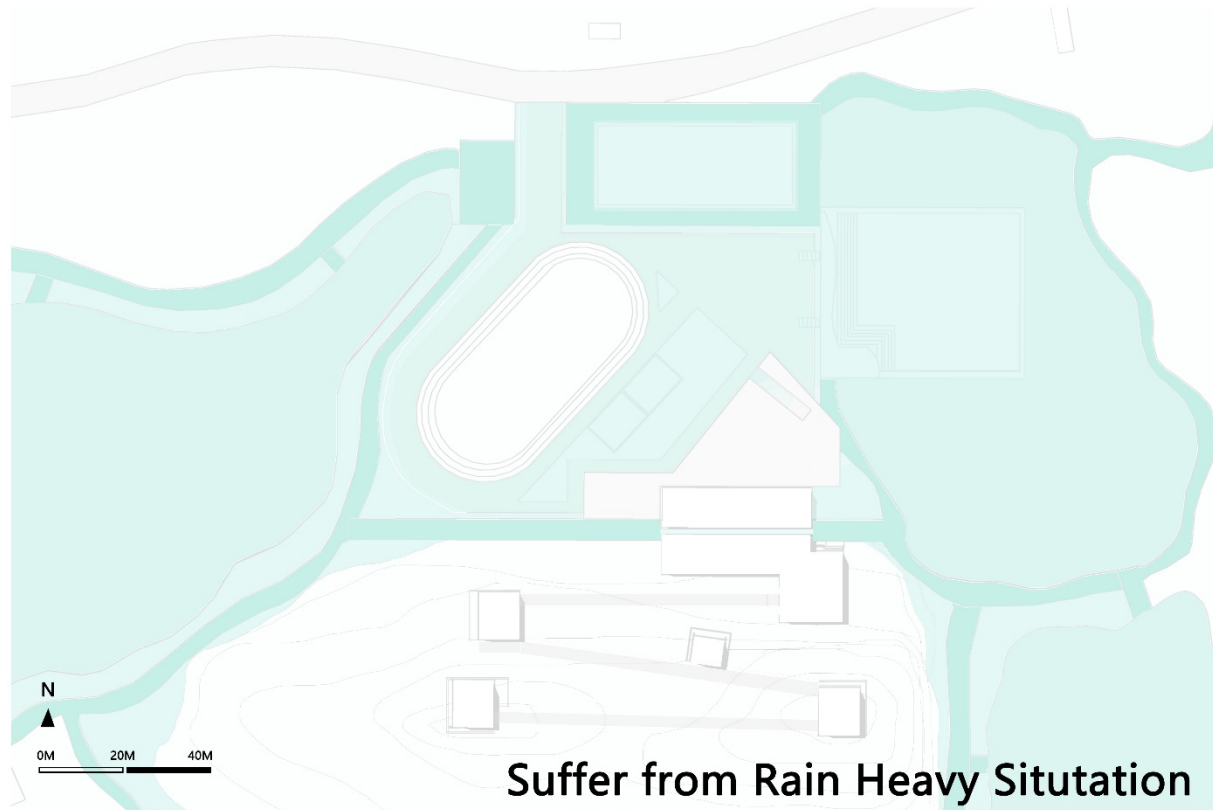
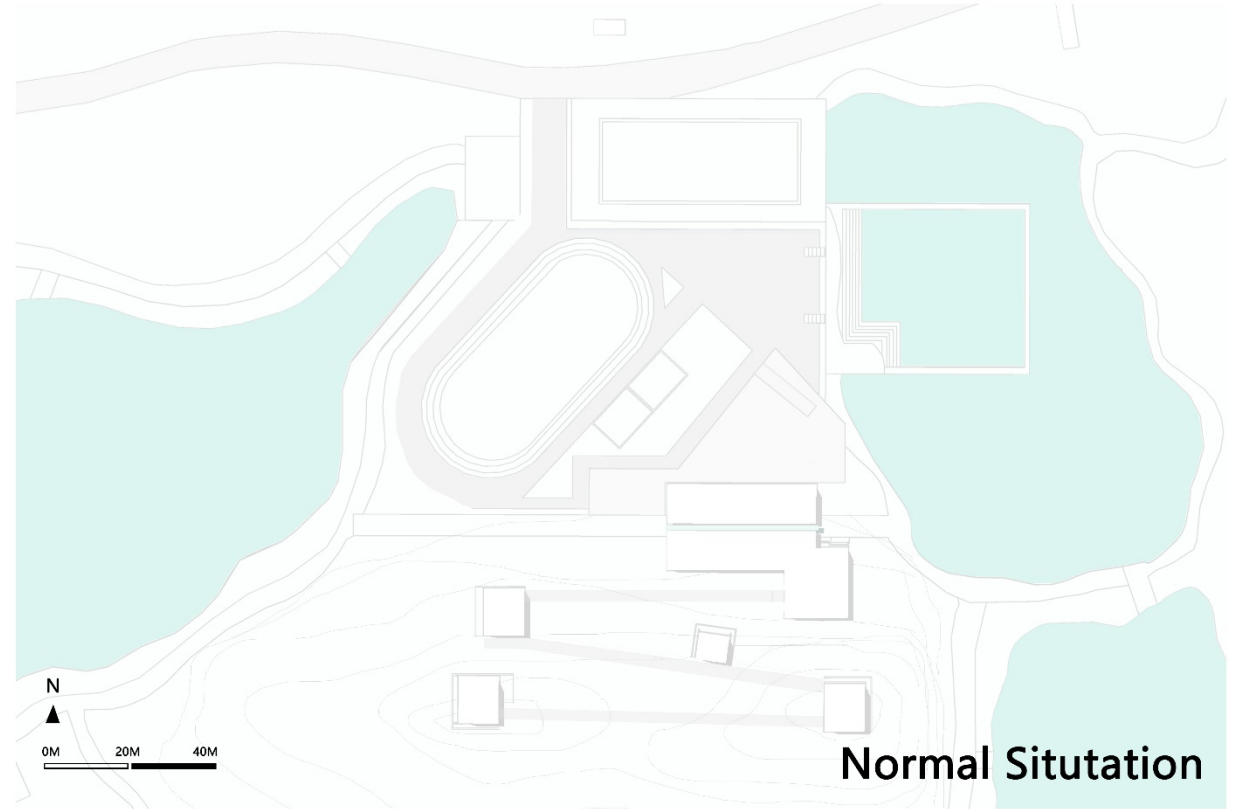
# Aerial View

Suffer from Rain Situation



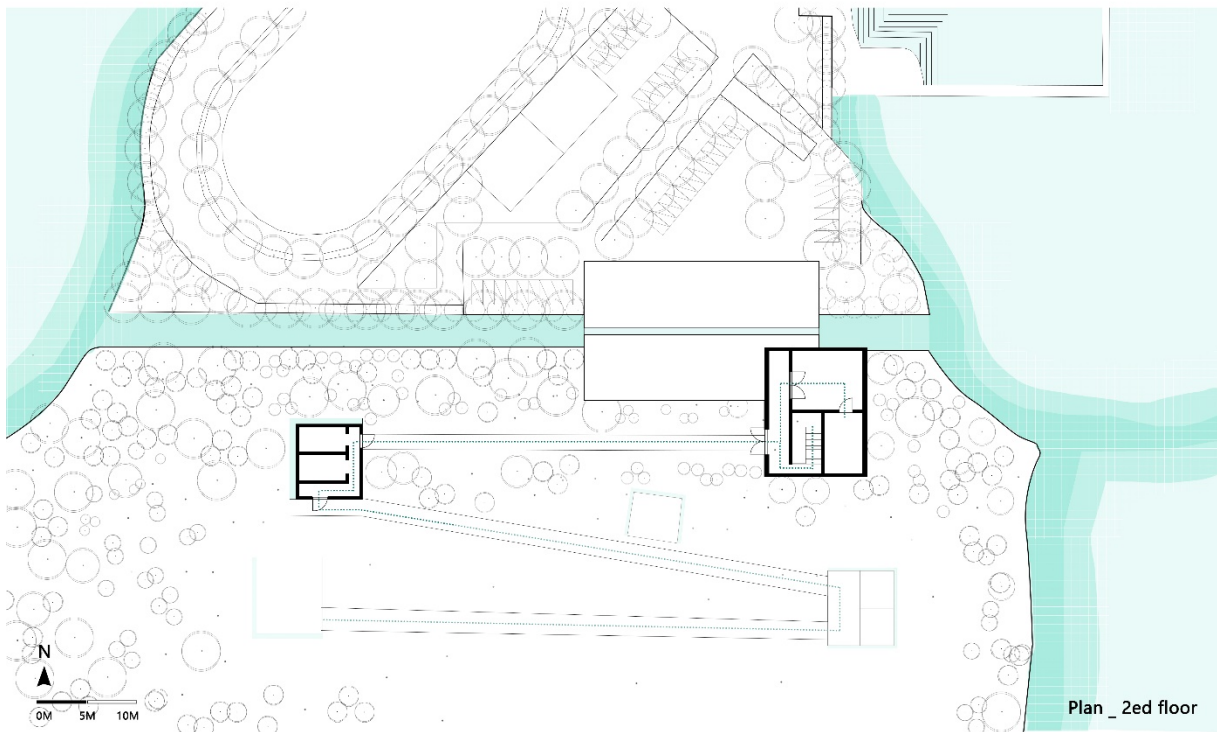
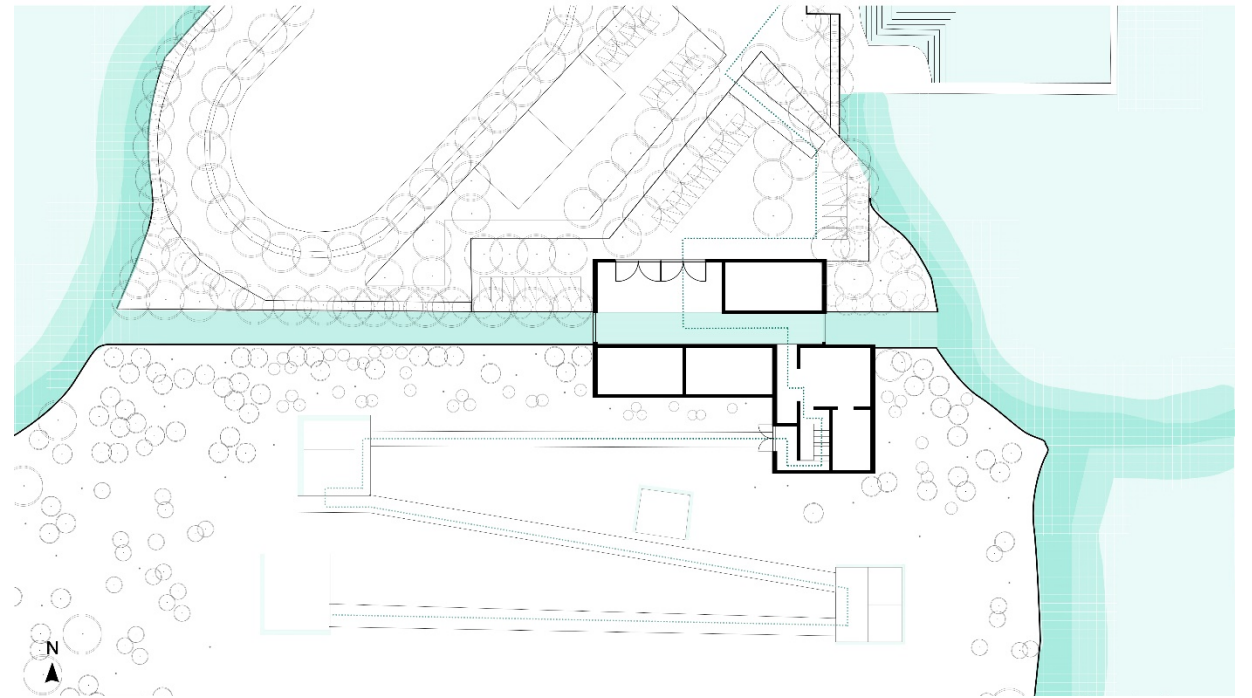
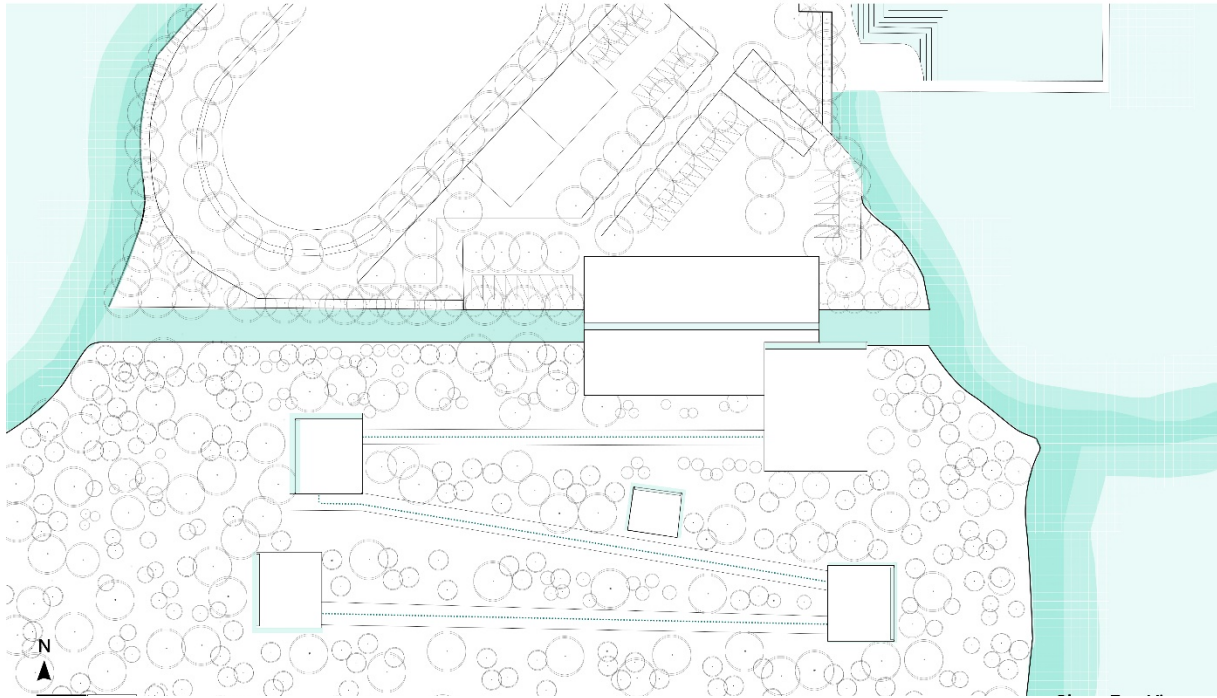
# Water Level Mappings

Drainage channels can be used during floods, and the school building built on the mountain will not be submerged even if it encounters a heavy rain

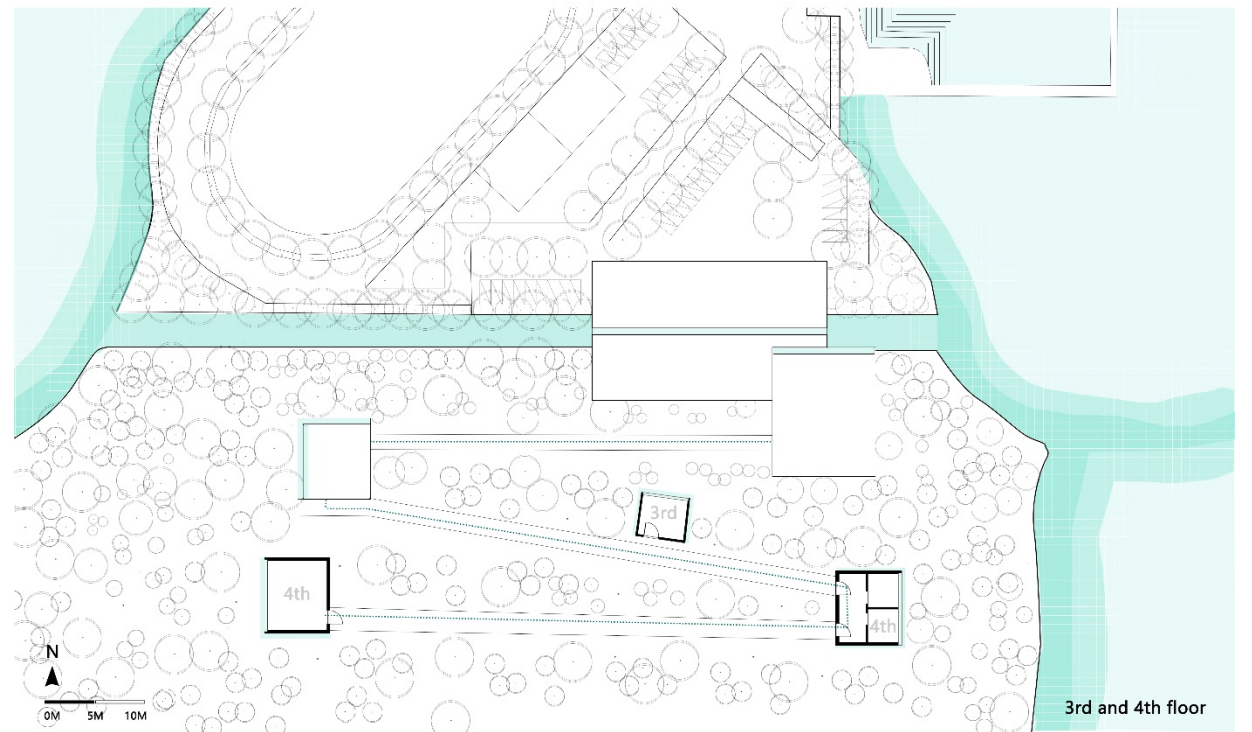


# Floors Plans

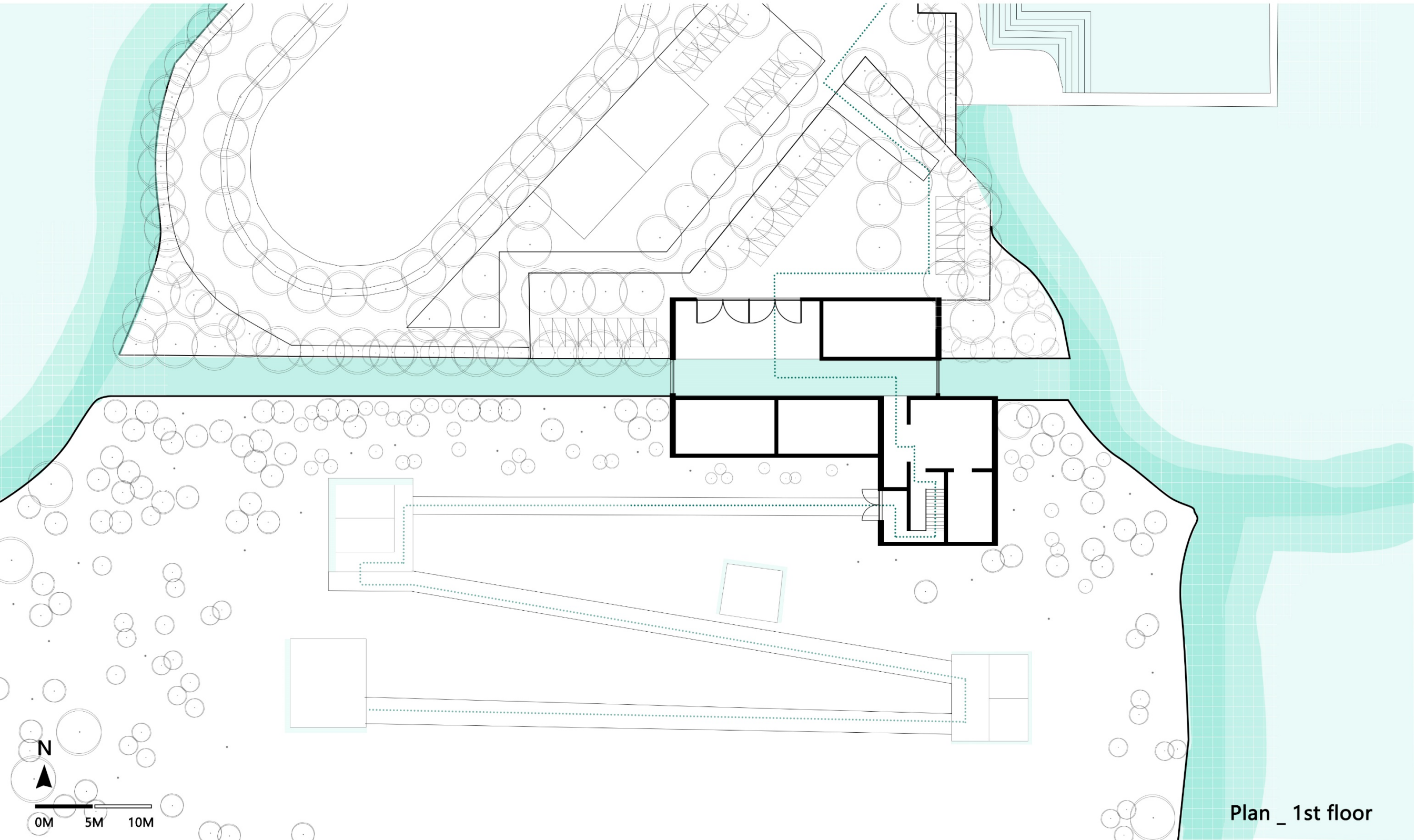
Suffer from Rain Situation



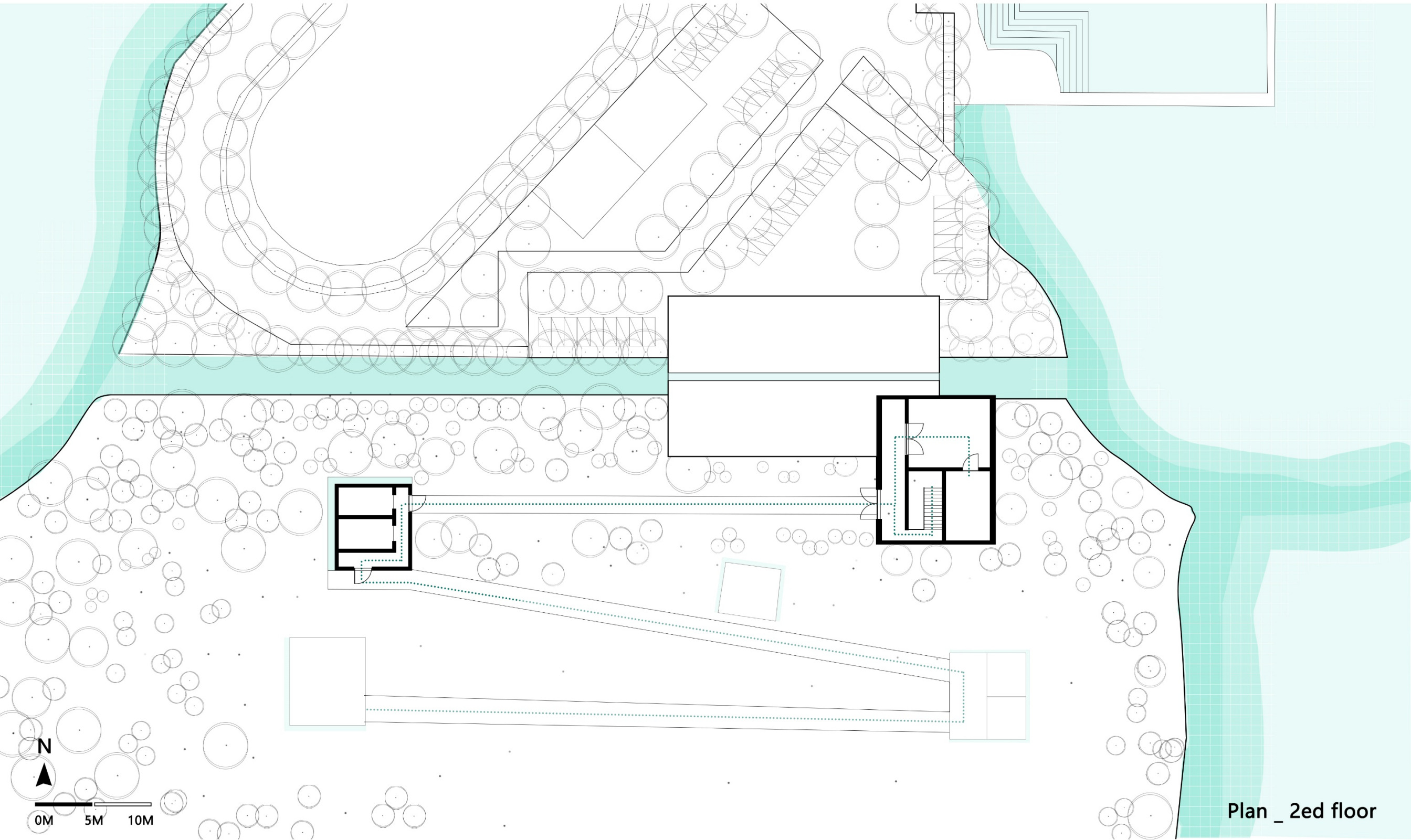
Plan \_ 2ed floor



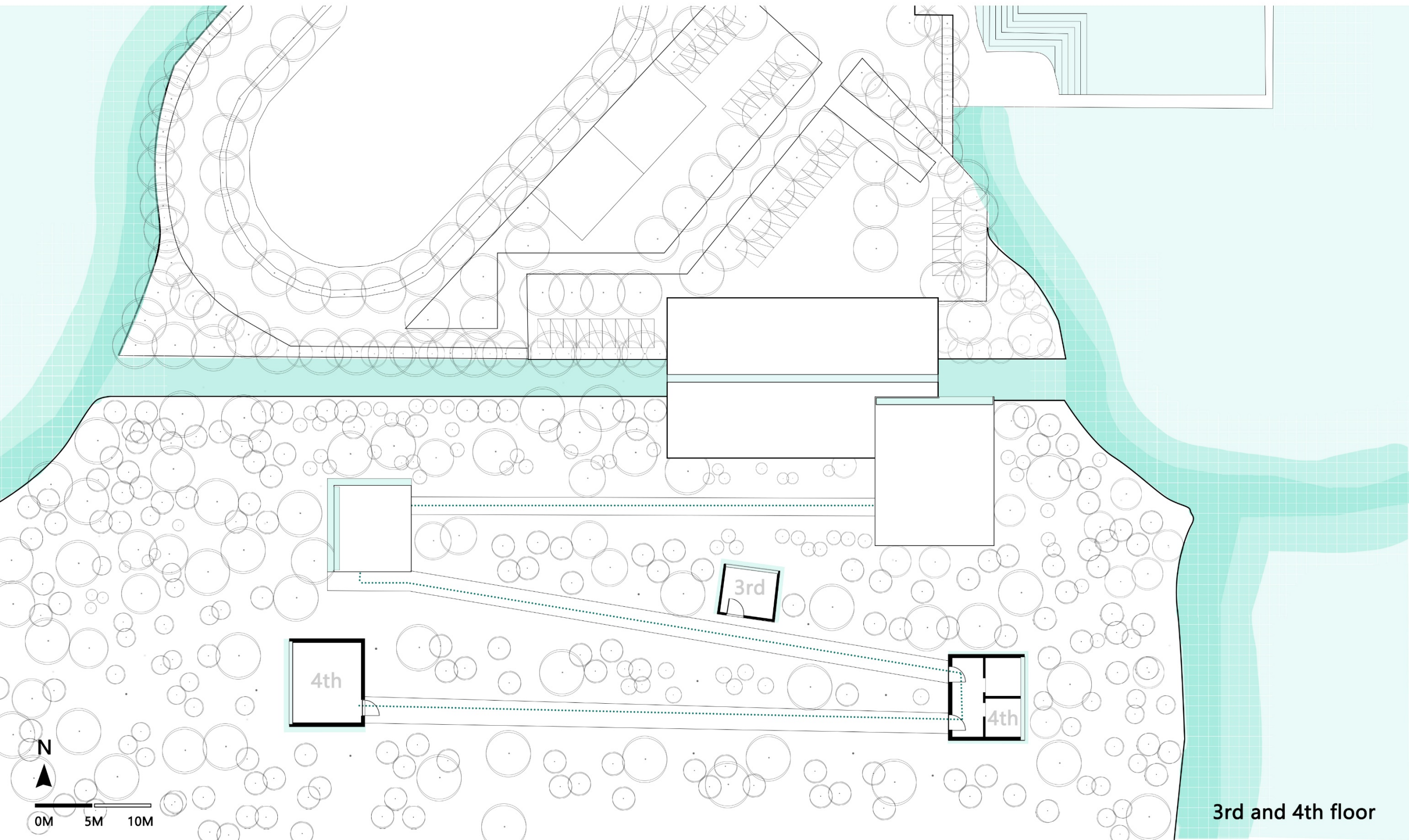
3rd and 4th floor



Plan \_ 1st floor



Plan \_ 2ed floor



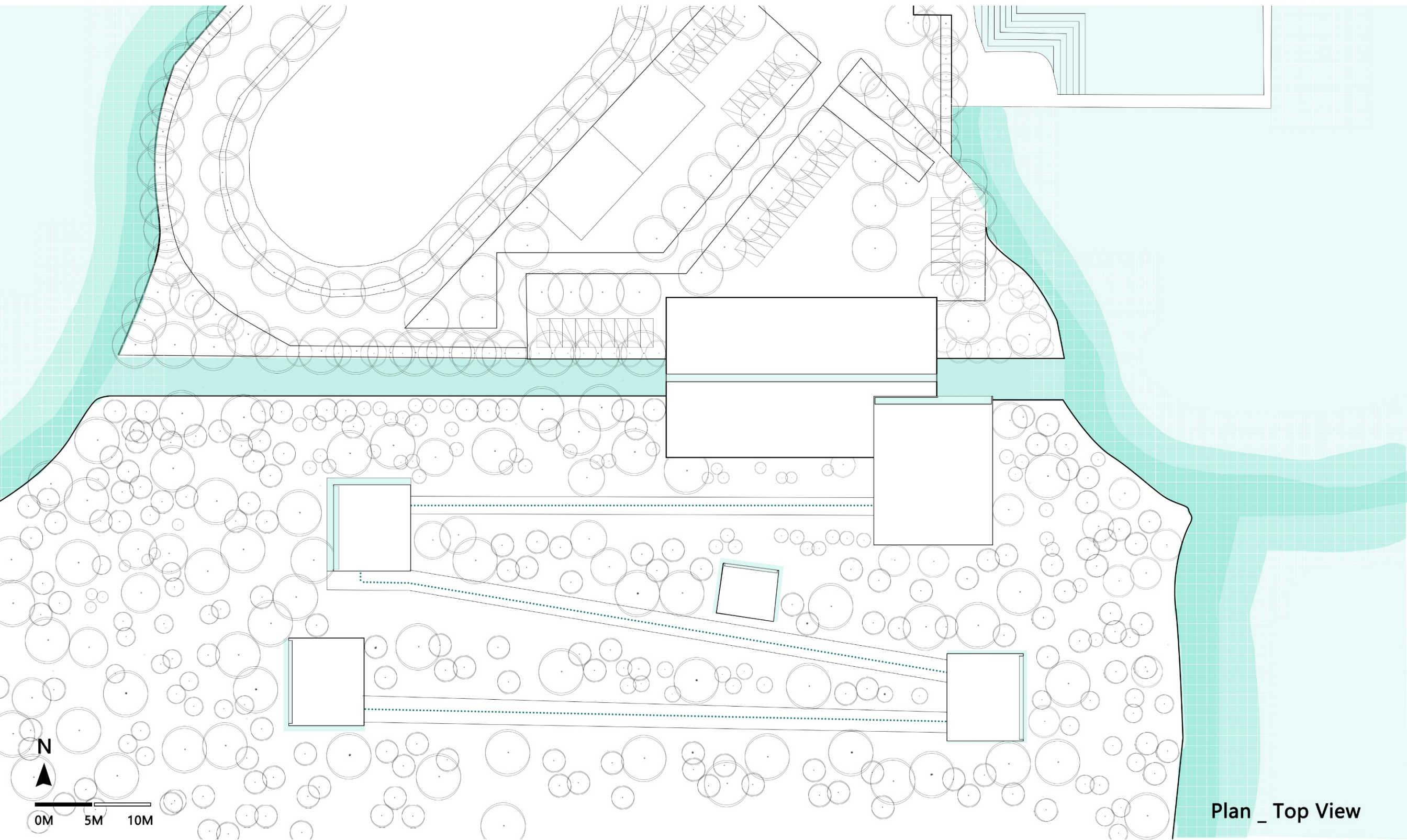
0M 5M 10M

4th

3rd

4th

3rd and 4th floor

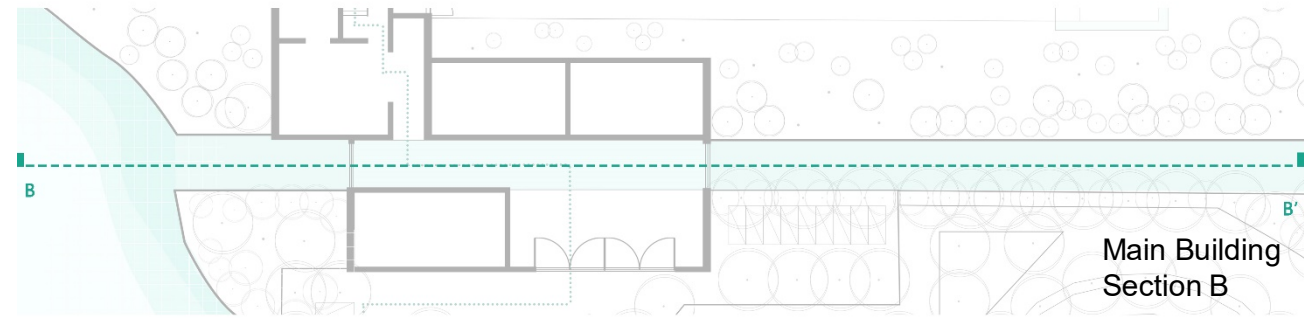
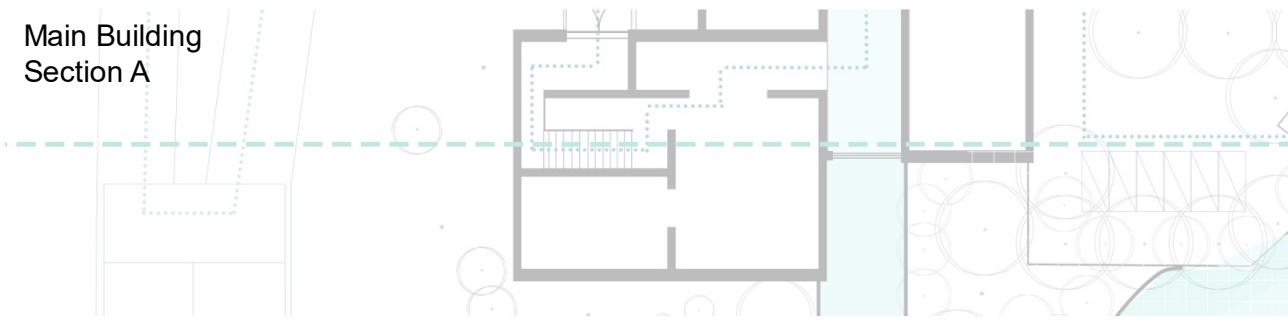


Plan \_ Top View

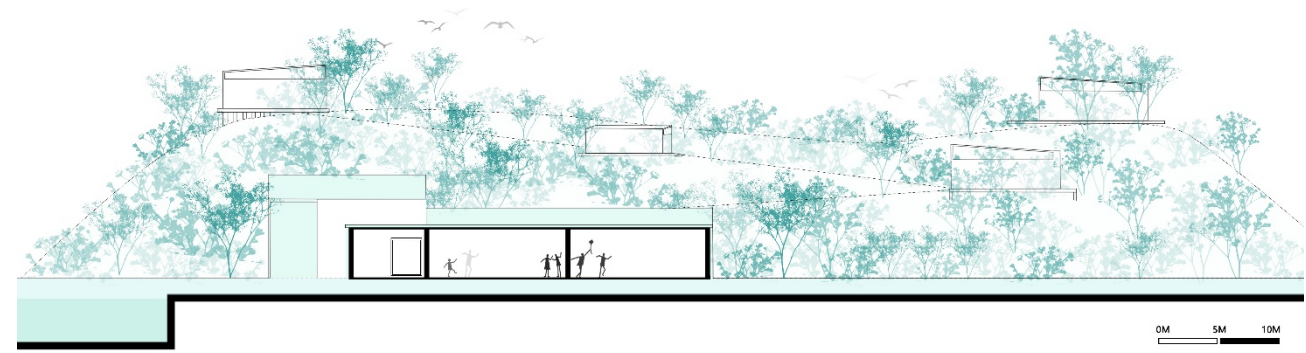
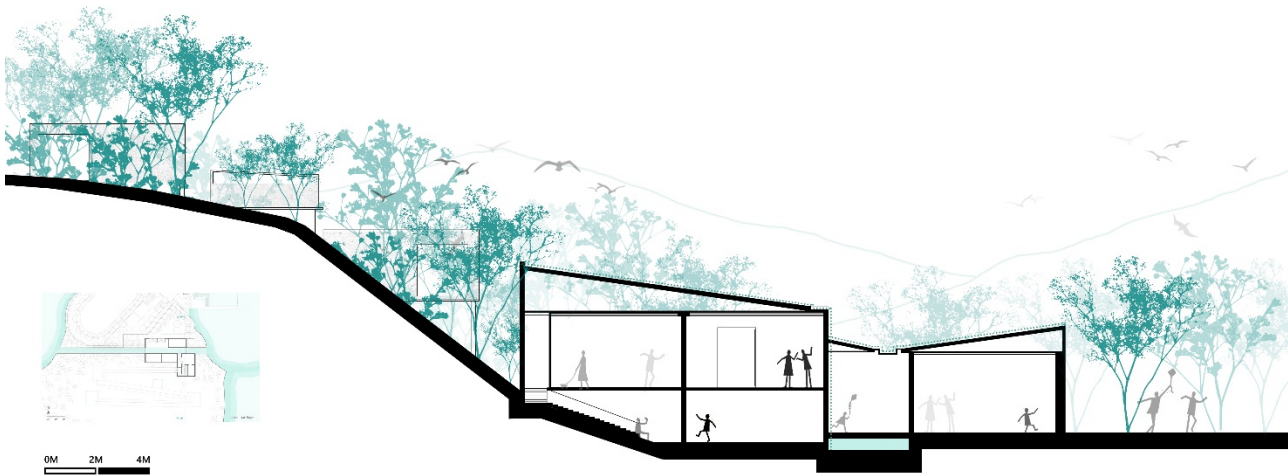
# Floors Sections

Suffer from Rain Situation

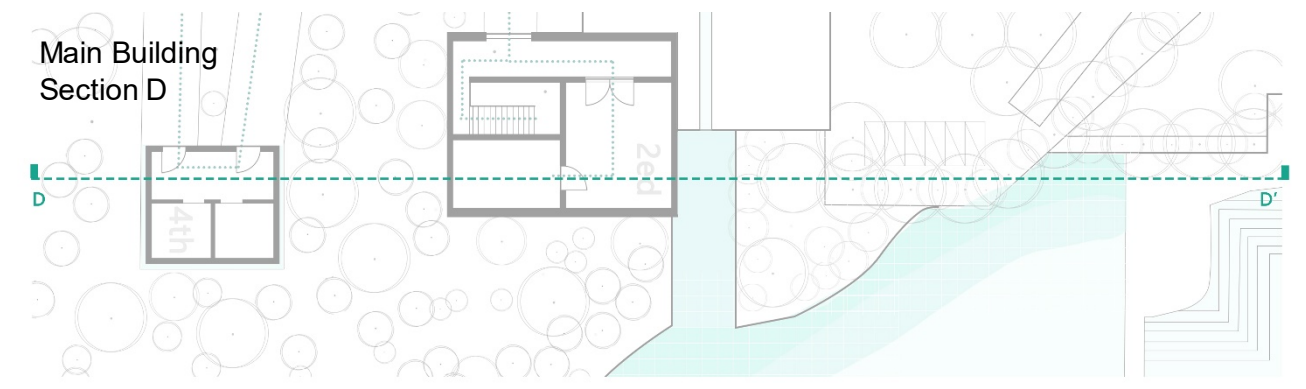
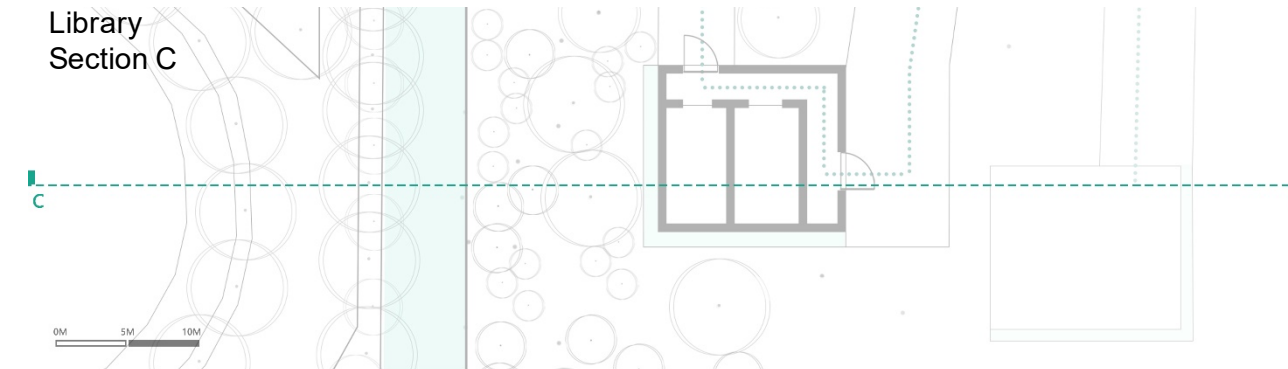
Main Building  
Section A



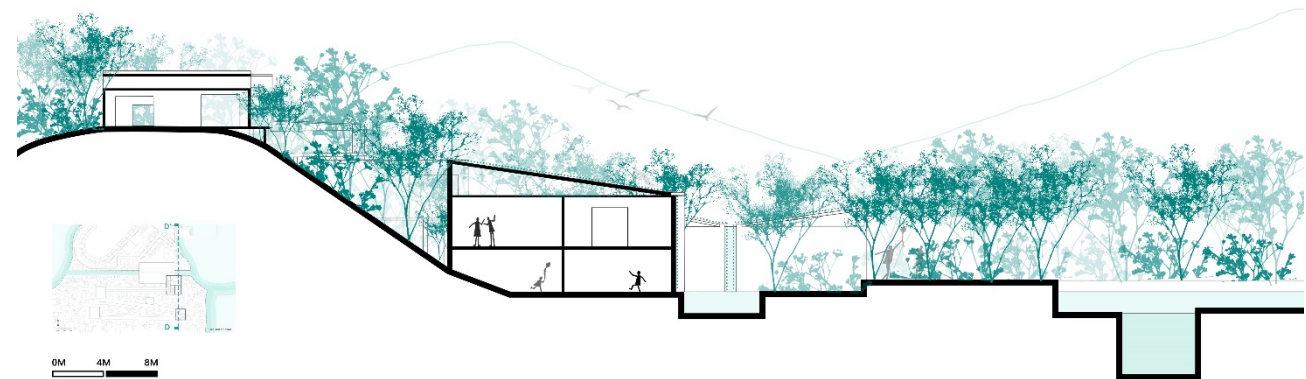
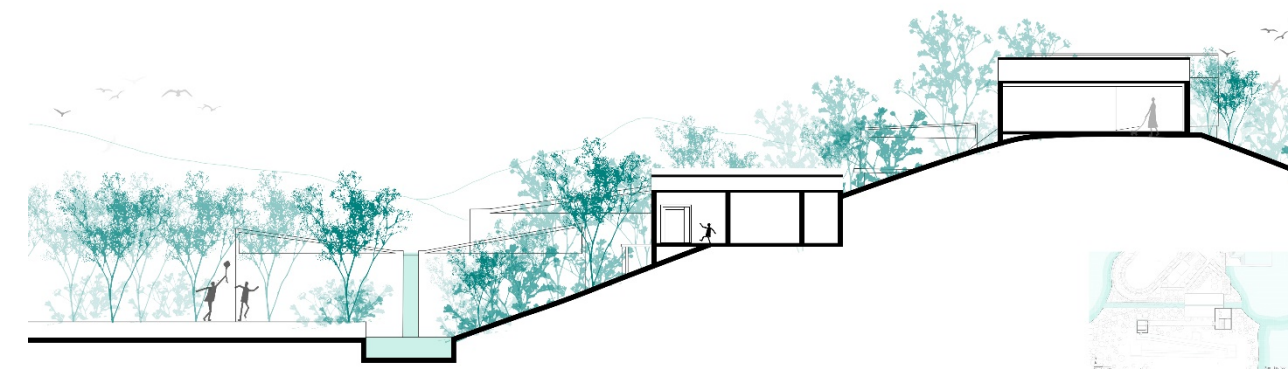
Main Building  
Section B



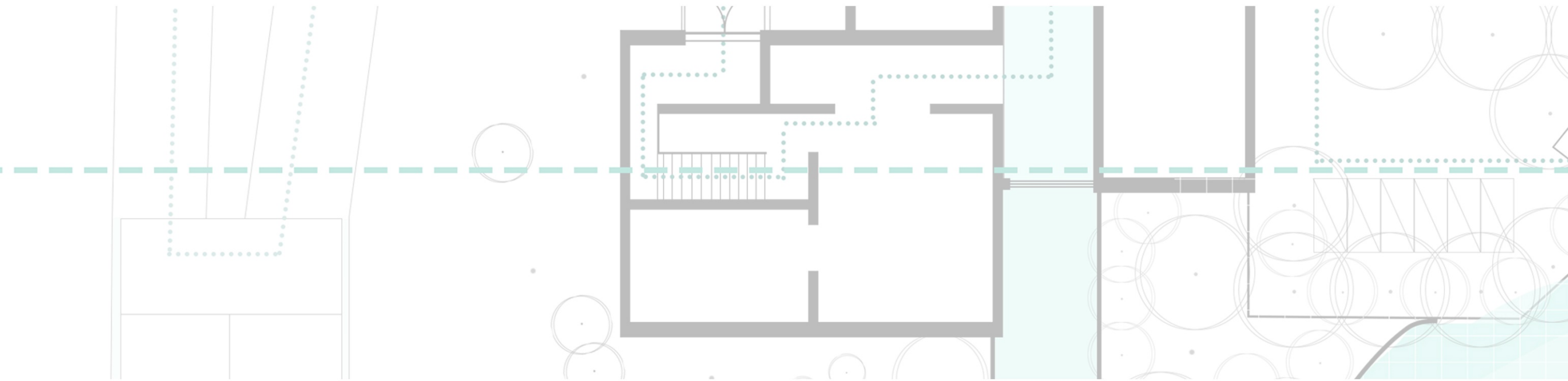
Library  
Section C



Main Building  
Section D

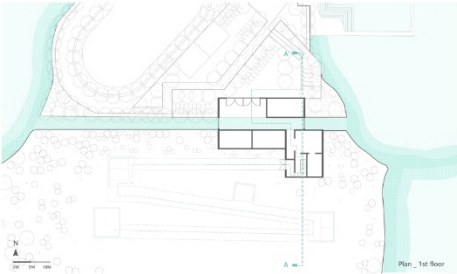
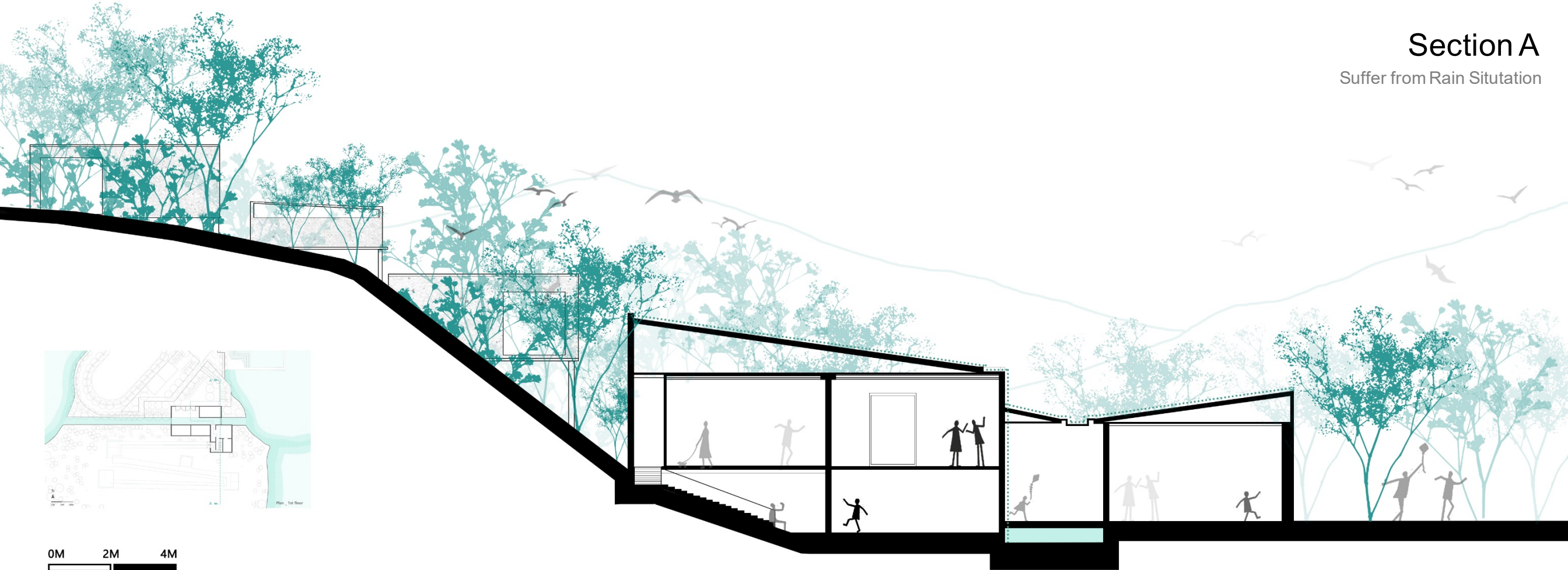






# Section A

Suffer from Rain Situation

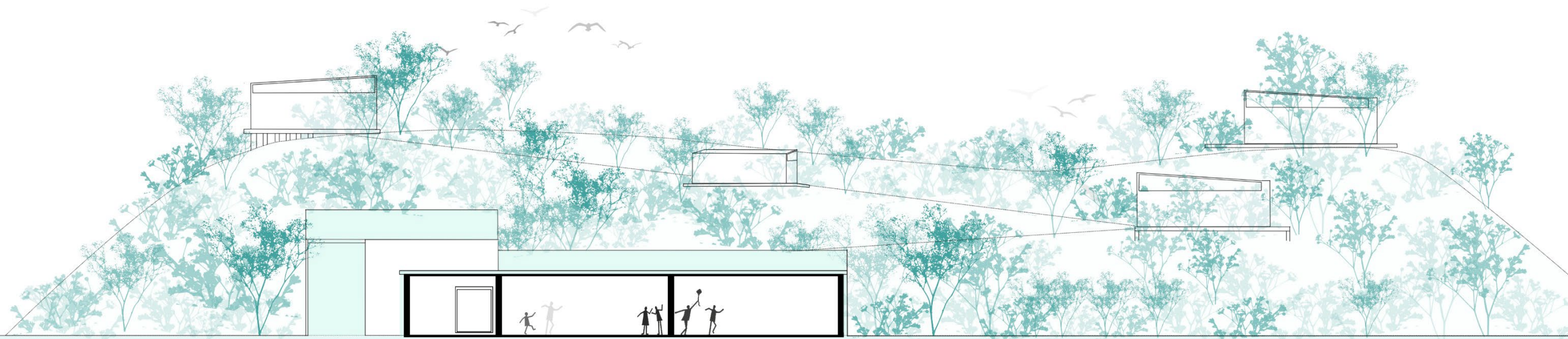
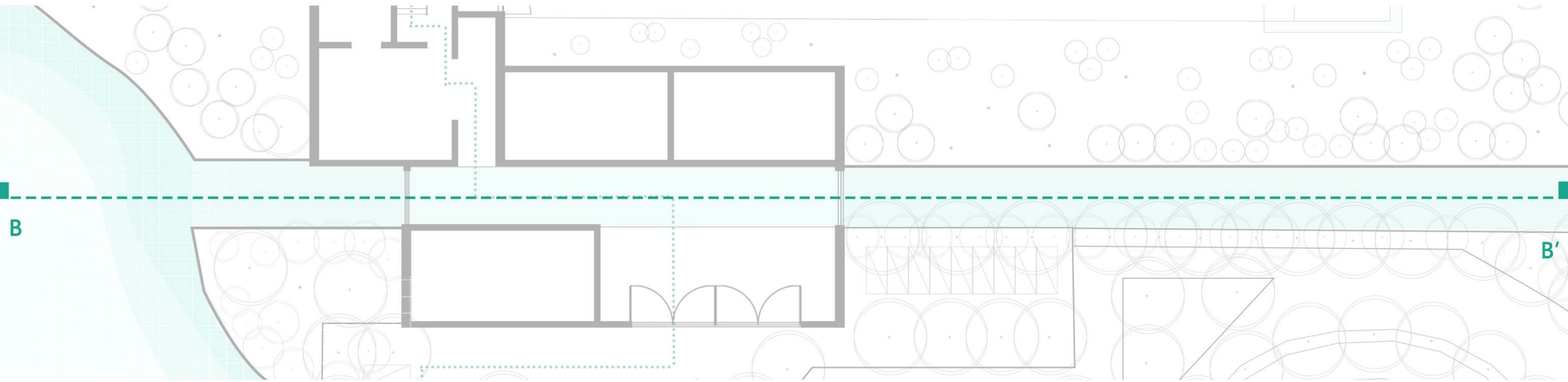


0M 2M 4M



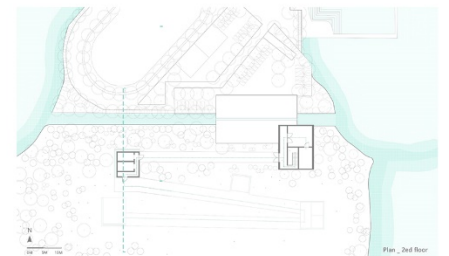
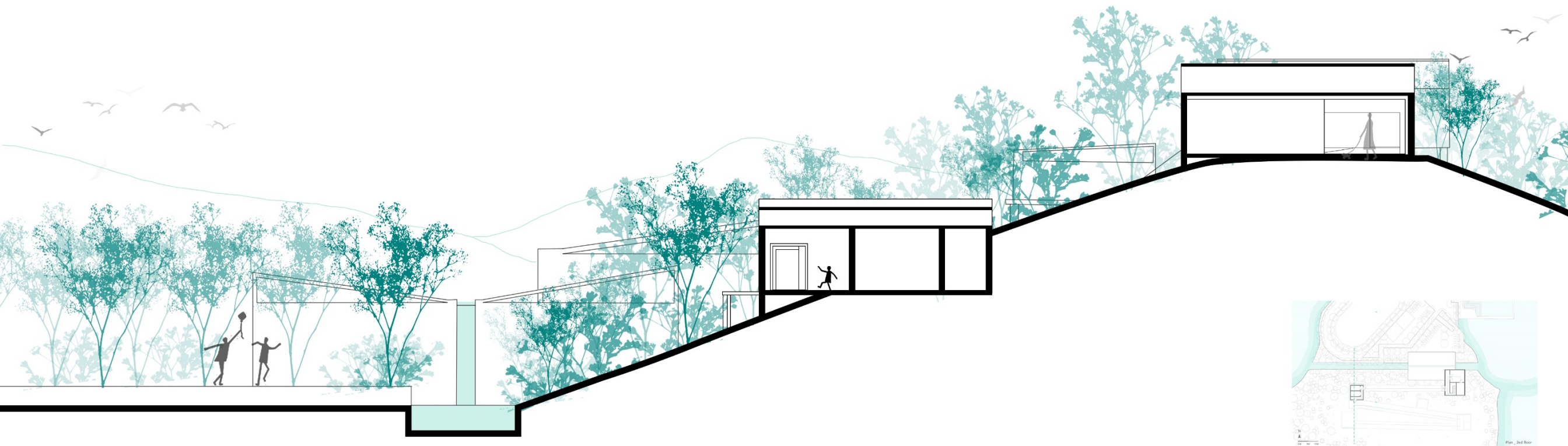
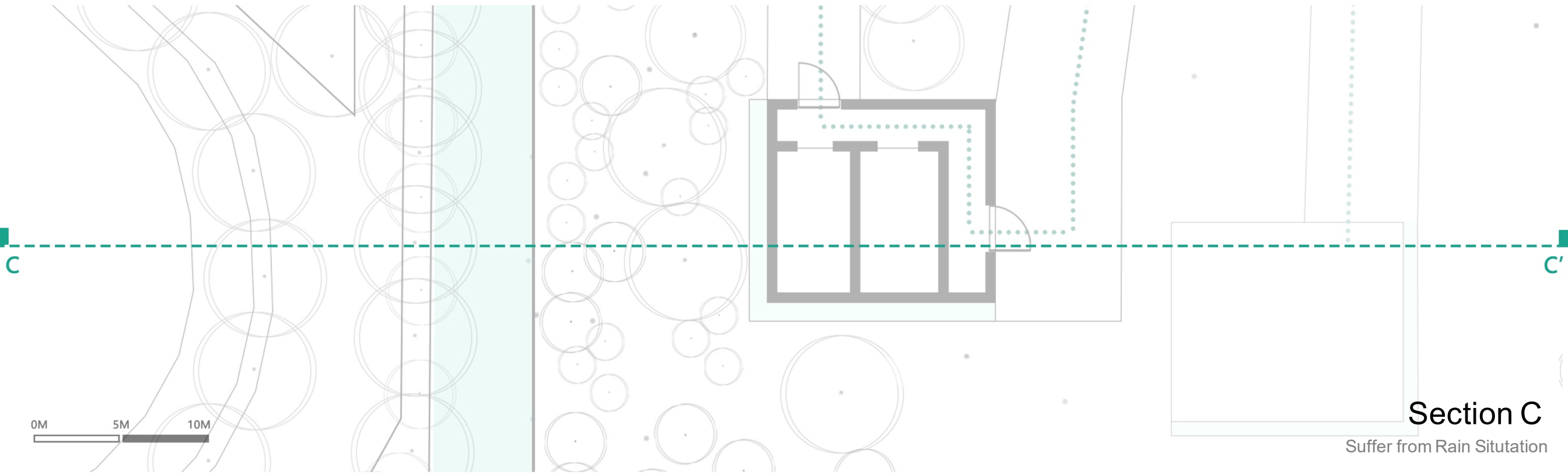
# Section B

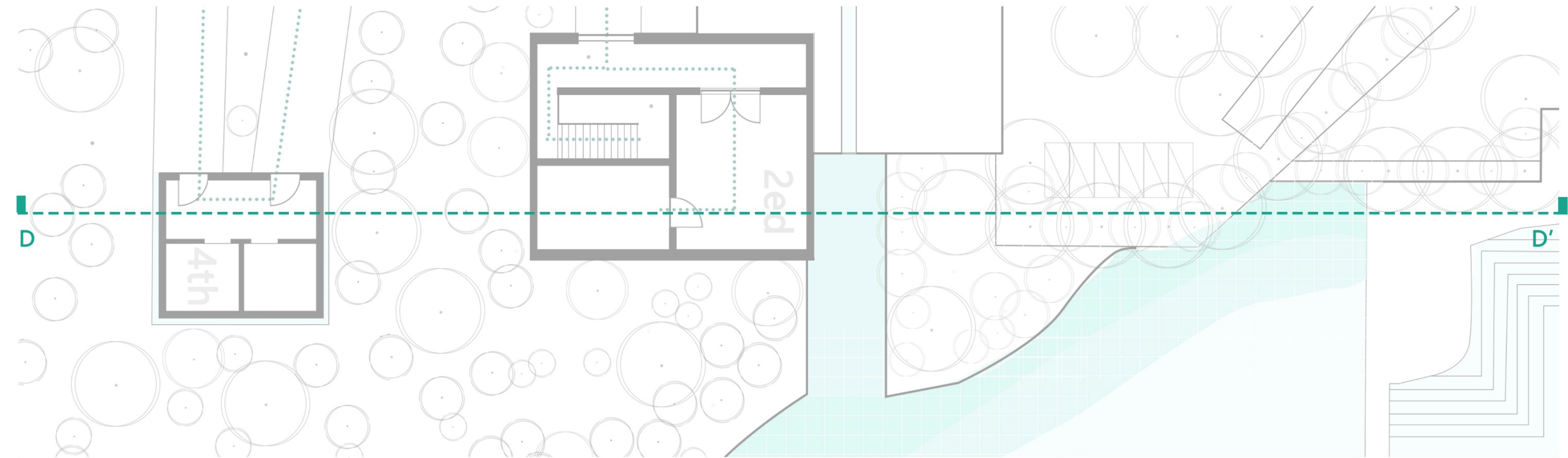
Suffer from Rain Situation



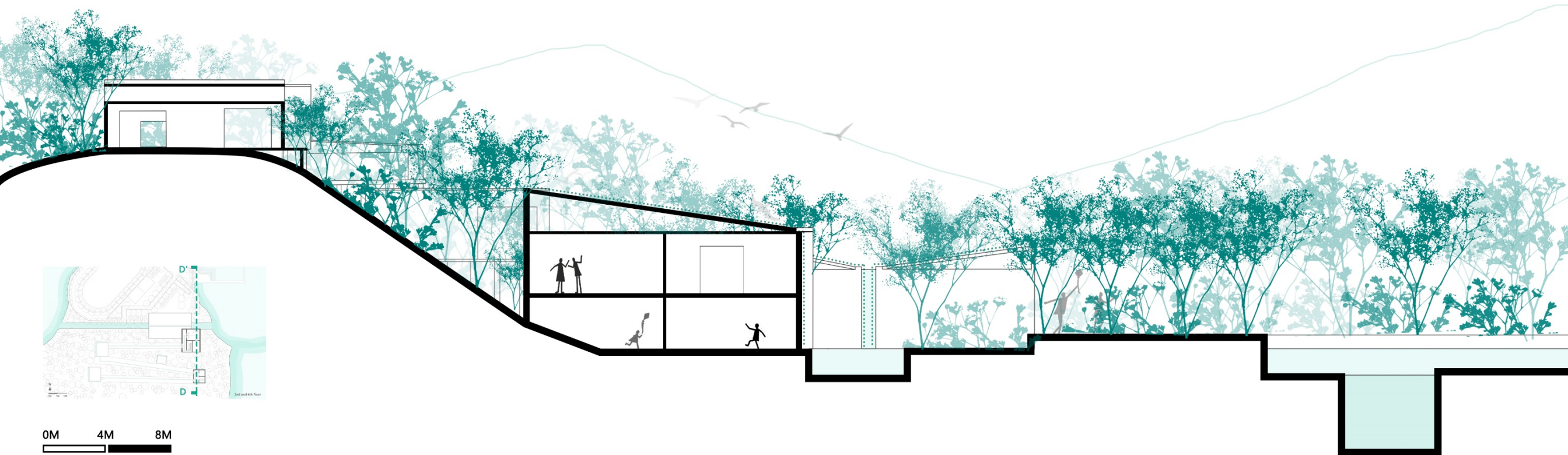
0M 5M 10M



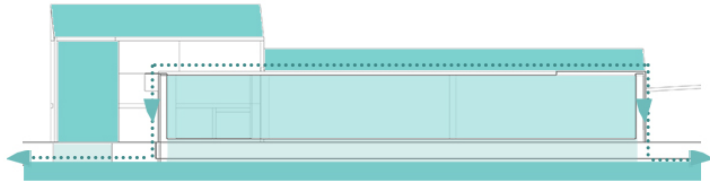




**Section D**  
Suffer from Rain Situation

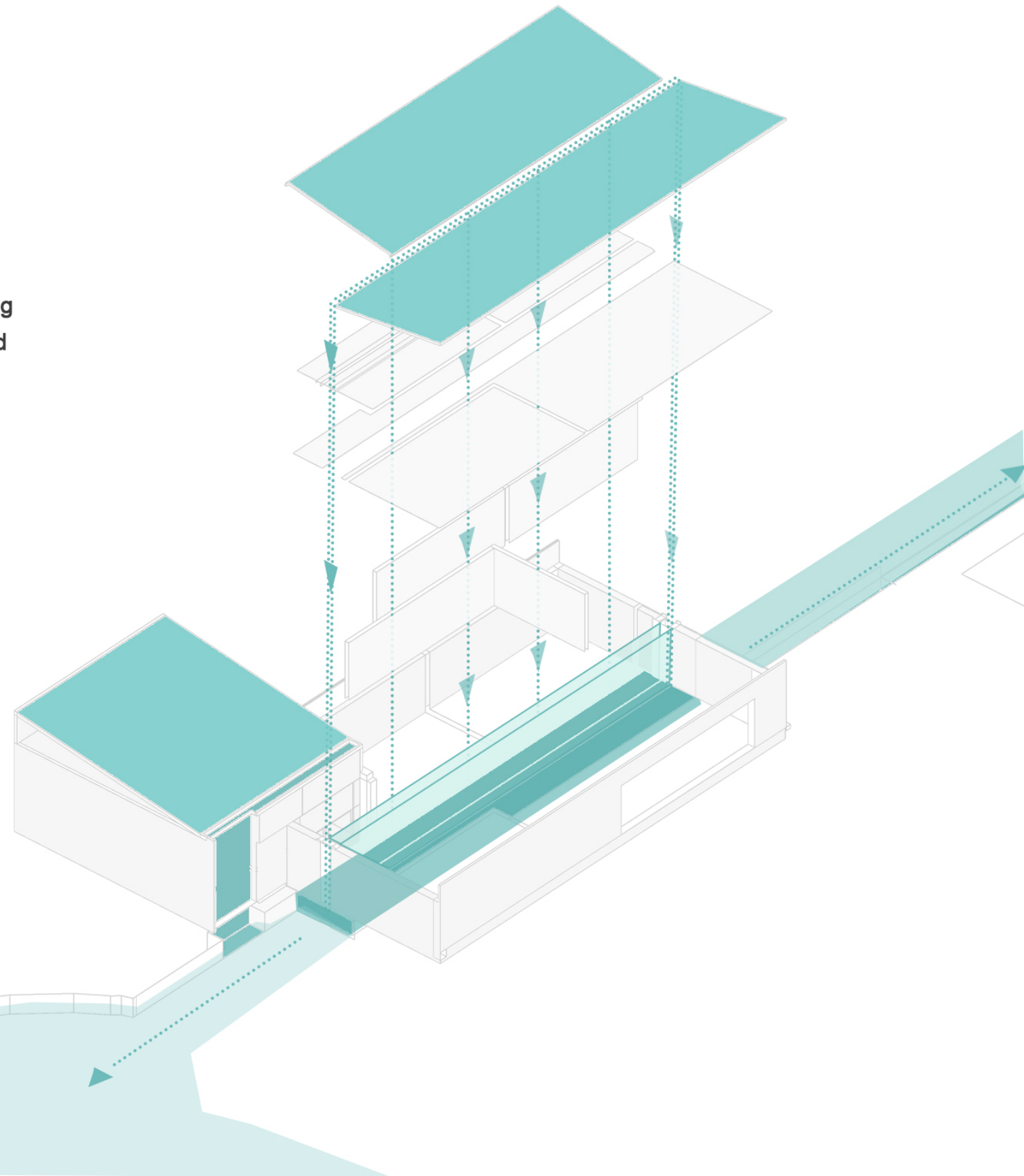
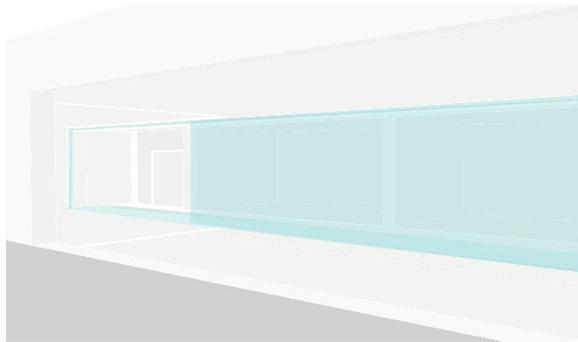


0M 4M 8M

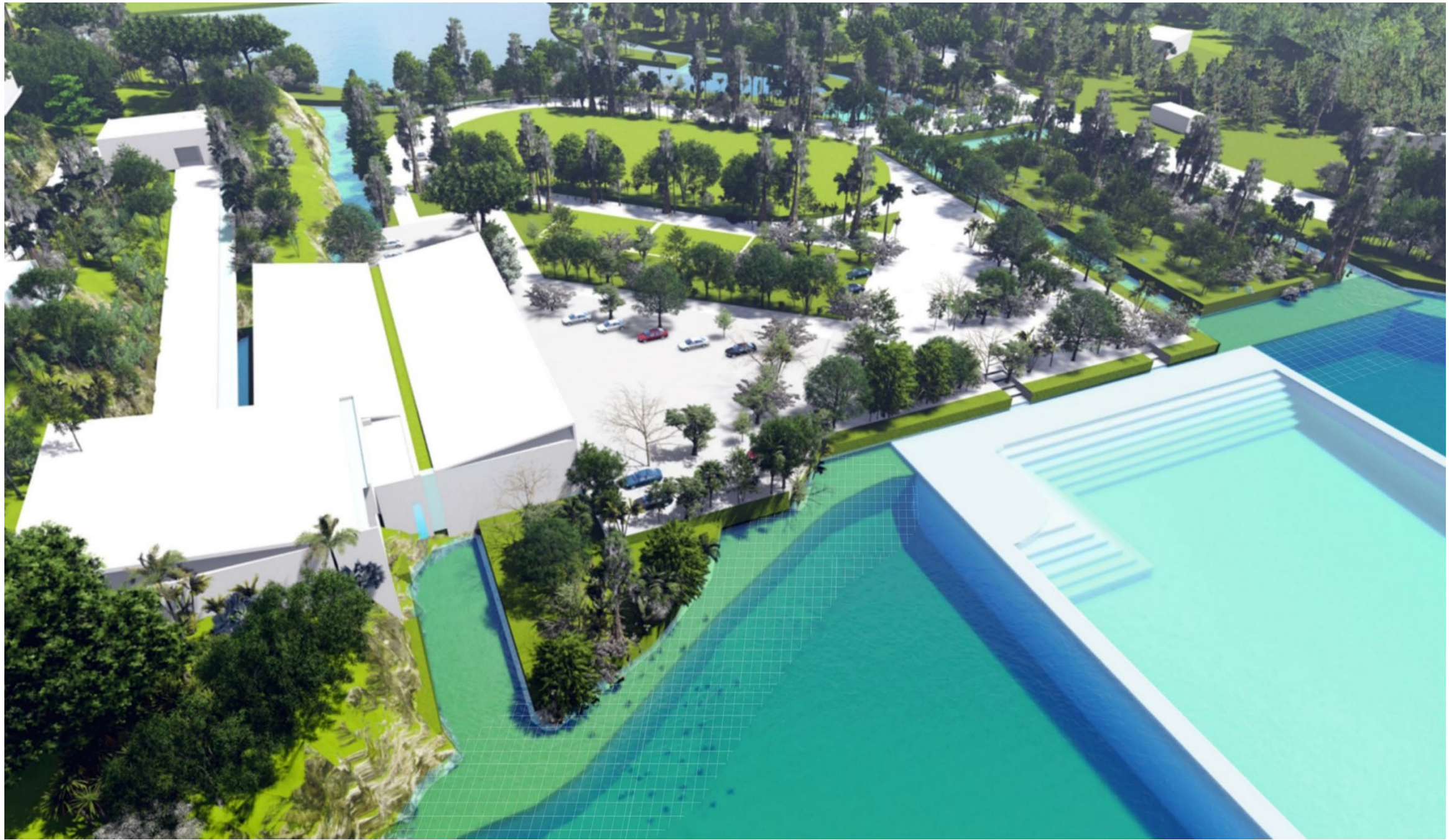


### **BLUE WALL INSIDE THE BUILDING**

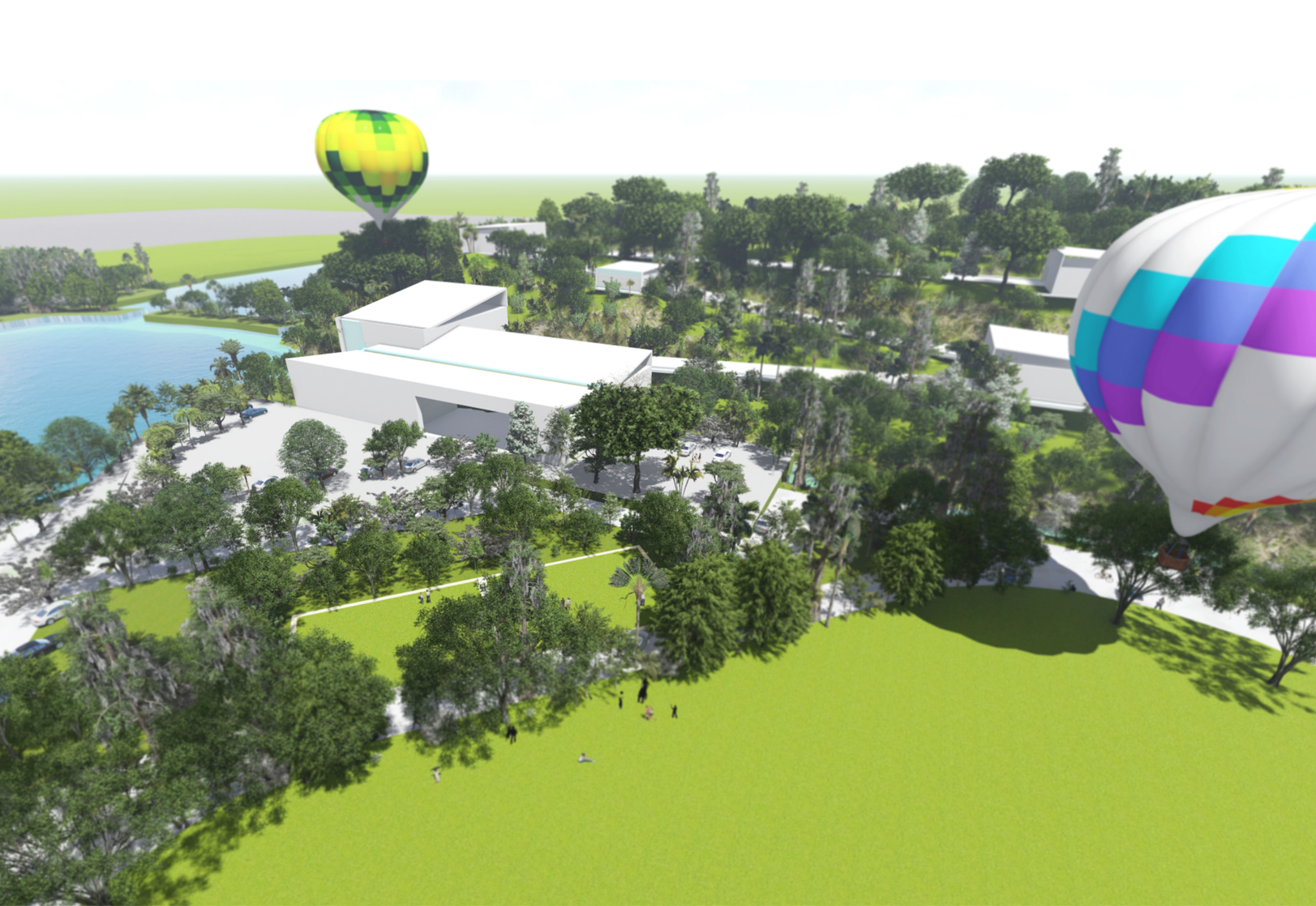
On rainy days, rainwater is collected by the sloping roof, flows along the glass wall in the house and finally flows into the sink below, and gathers into the lake water.



School with Swimming  
Pool and Playground  
Views



**Perspective Views**



**Perspective Views**



**Main Buildings**





Waterway



Playground



Swimming Pool



2ed Building Views



3rd Building Views



**3rd Building Views**



**TOP Building Views**

## Bibliography

1. Looking at the Vineyard
2. Donald Appleyard Kevin Lynch and John R Myer.(1965) The View from the Road \_ The MIT Press
3. Paola Viganò (2009) Territories of a New Modernity
4. Kevin Lynch (1952- 53) The Travel Journals
5. Kevin Lynch (1965)The Openness of Open Space
6. Aldo Cibic e Cibic & Partners (2009) Microrealities [https://issuu.com/cibicworkshop/docs/book\\_mr](https://issuu.com/cibicworkshop/docs/book_mr)
7. Donald Waston, Michele Adams (2011)Design for Flood Disasters
8. Low\_Impact\_Development\_Manual-2010
9. Ebro, Zaragoza .River\_Space\_Design\_C

## Sitography & Climate

- |   |   |
|---|---|
| 1. DATAS GEOFABRIK IBGE Instituto Brasileiro de Geografia e Estística | <a href="ftp://geoftp.ibge.gov.br/cartas_e_mapas/bases_cartograficas_continuas/bc25/rj/versao2018">ftp://geoftp.ibge.gov.br/cartas_e_mapas/bases_cartograficas_continuas/bc25/rj/versao2018</a>   |
| 2. MAP CRUZIN   | <a href="http://download.geofabrik.de/">http://download.geofabrik.de/</a>   |
| 3. MINISTERIO INFRAESTRUTURA do Brazil                                | <a href="http://www.infraestrutura.gov.br/component/content/article?id=5124">http://www.infraestrutura.gov.br/component/content/article?id=5124</a>   |
| 4. AVERAGE WEATHER in NOVA IGUAZU                                     | <a href="https://weatherspark.com/y/30570/Average-Weather-in-Nova-Igua%C3%A7u-Brazil-Year-Round">https://weatherspark.com/y/30570/Average-Weather-in-Nova-Igua%C3%A7u-Brazil-Year-Round</a>   |
| 5. CLIMATE in NOVA IGUAZU   | <a href="https://weather-and-climate.com/average-monthly-Rainfall-Temperature-Sunshine,nova-iguacu-rio-de-janeiro-state-br,Brazil">https://weather-and-climate.com/average-monthly-Rainfall-Temperature-Sunshine,nova-iguacu-rio-de-janeiro-state-br,Brazil</a> |