

Communicate with Nature

Brazil, Rio de Janeiro, Nova Iguazu

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Content

Chapter One. Analyzes to understand the characteristics of the site

1.1 Introduction

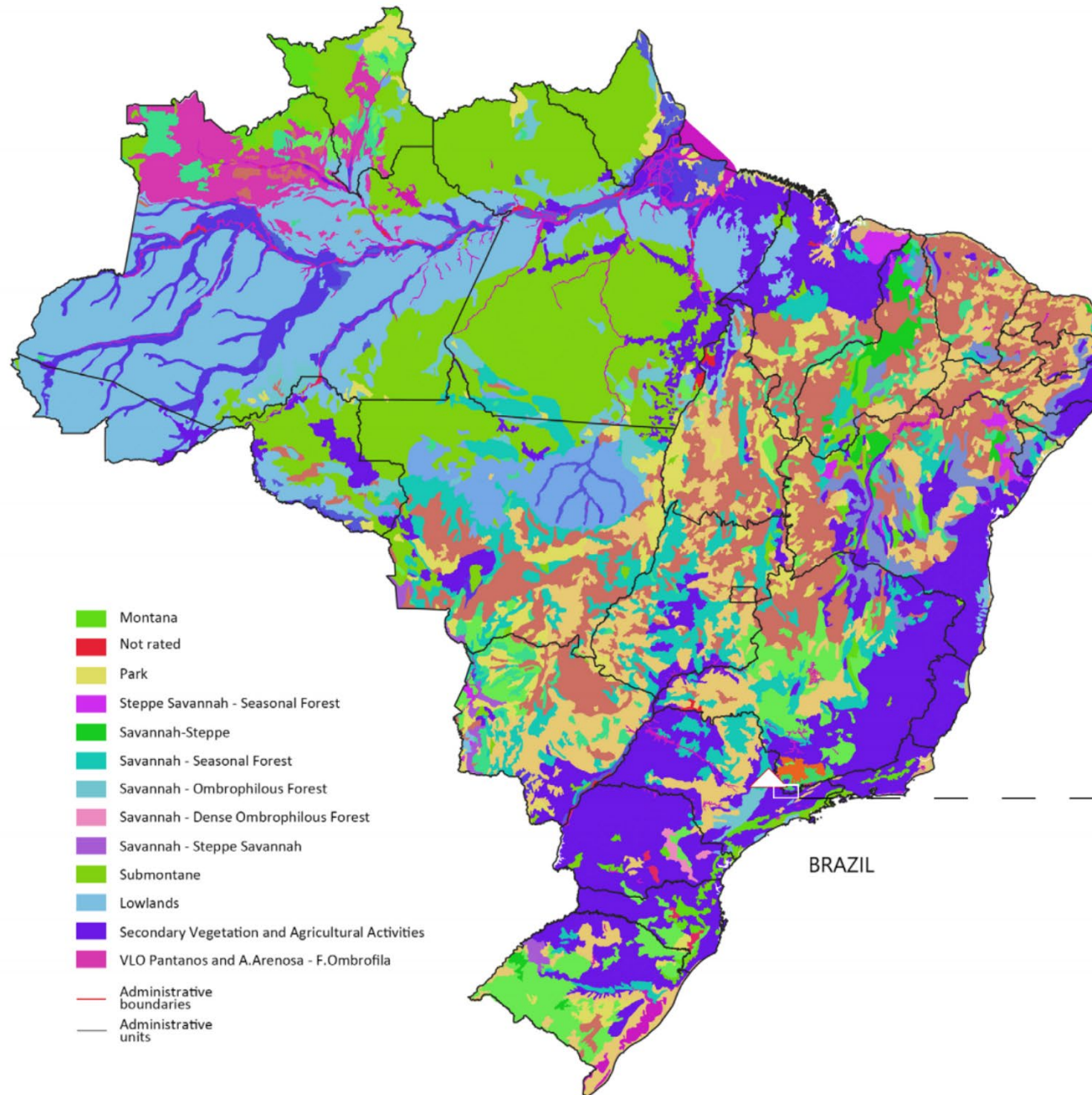
1.2 SWOT Analyzes

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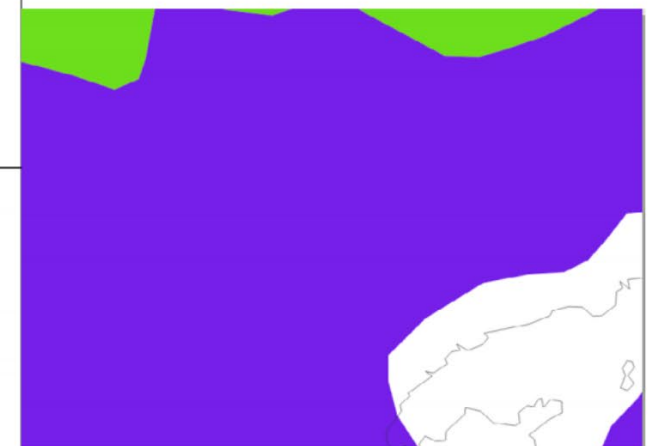
map

Vegetation index

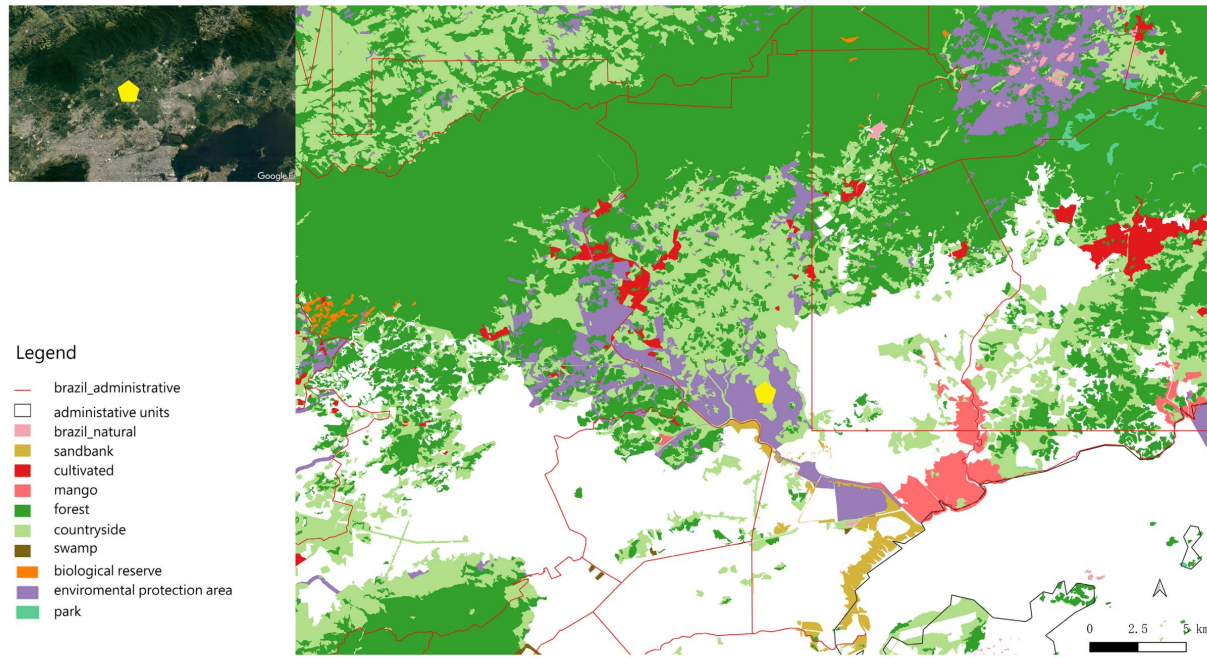
1.1 Introduction



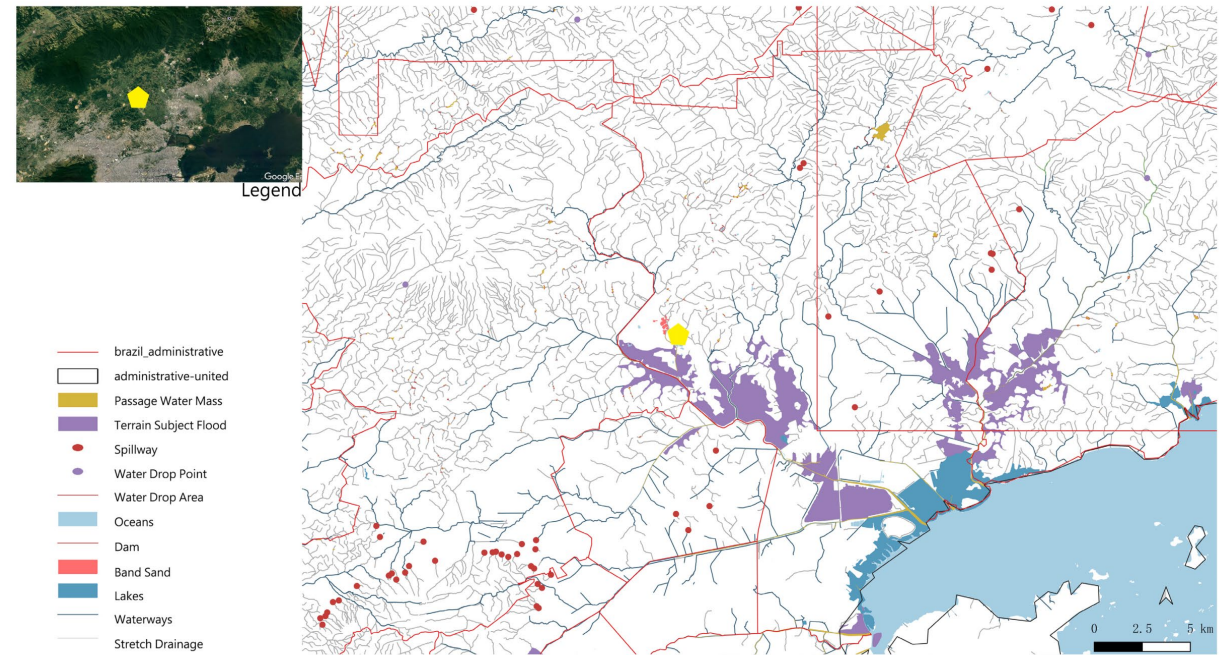
Brazil is rich in vegetation and widely distributed. The main vegetation types on the site are Secondary Vegetation and Agricultural Activities.



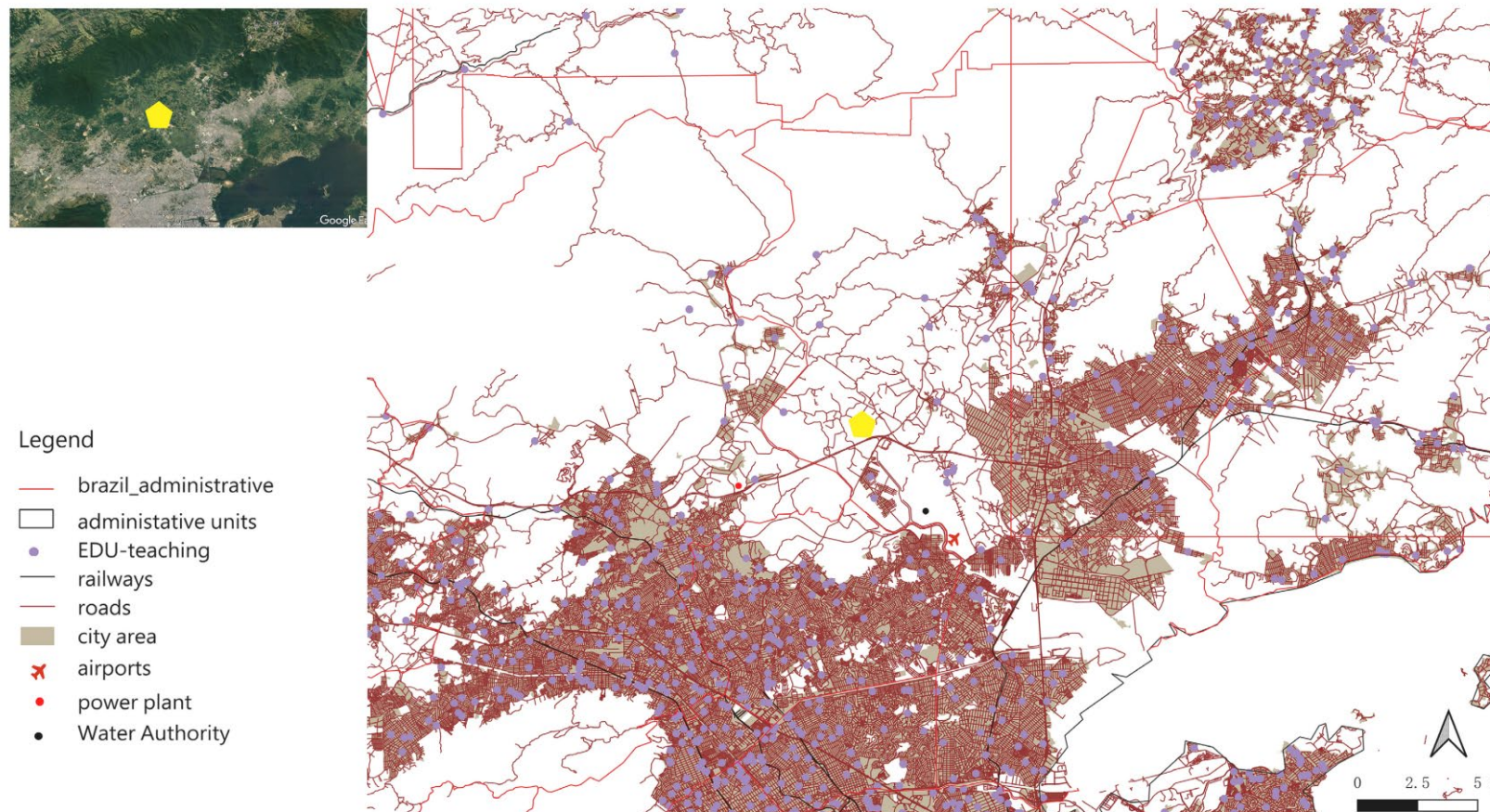
Strengths



Strengths



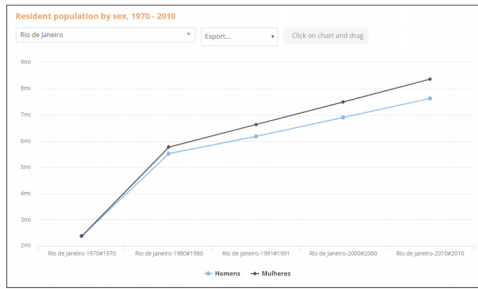
Strengths



1. Great accessibility. Aeroclub De Nova Iguaçu, which is located 30 mins 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.

1.2 SWOT Analyzes

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 Iguaçu. (50mins from Nova Iguaçu - Nova Iguaçu, 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.

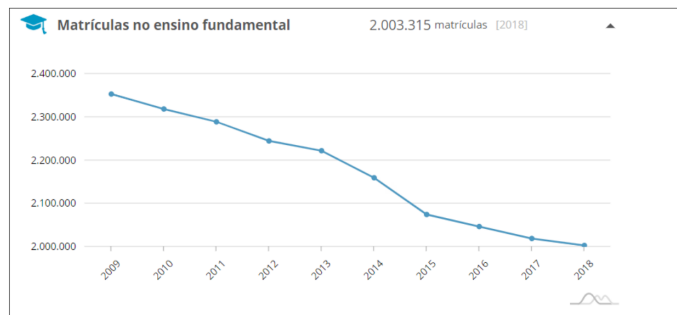
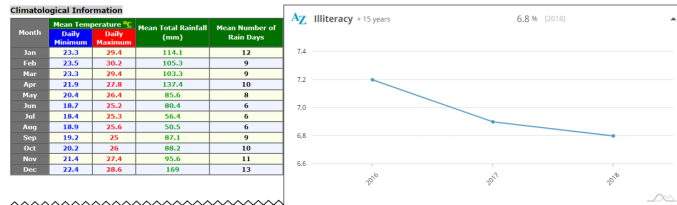
Forest Fragmentation and Degradation.

- 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.

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.



Opportunity

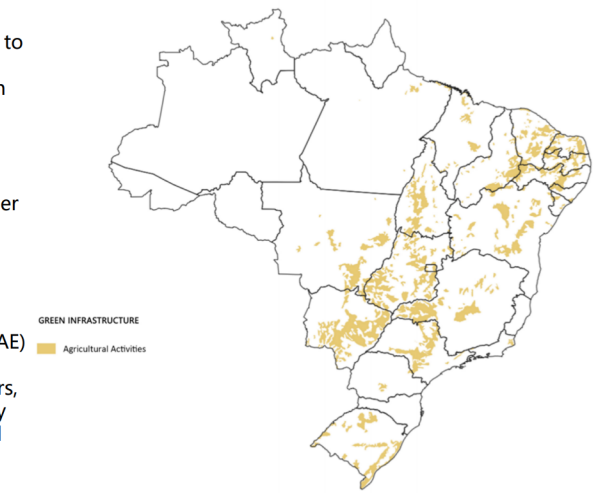
- Municipalities: Rio de Janeiro Municipality has had an increase in professional and specialized workers, which if accessible, can help sustain our project by integrating the local community.
- Water Decontamination Technology has improved immensely making Hydraulic Micro drainage and biofilters easy 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

Divisão de Censo Demográfico 2010

Tabela 1.4 - População nos Censos Demográficos, segundo as Grandes Regiões e as Unidades da Federação - 1970-2010

Região/Unidade da Federação	População em Censo Demográfico									
	01.01.1970	01.01.1980	01.01.1991	01.01.2000	01.01.2010	01.01.2010	01.01.2010	01.01.2010	01.01.2010	01.01.2010
Brasil	100.000.000	140.000.000	170.000.000	190.000.000	200.000.000	205.000.000	208.000.000	210.000.000	212.000.000	214.000.000
Grande Região Sudeste	40.000.000	55.000.000	65.000.000	75.000.000	80.000.000	82.000.000	84.000.000	86.000.000	88.000.000	90.000.000
Grande Região Sul	15.000.000	18.000.000	20.000.000	22.000.000	23.000.000	24.000.000	25.000.000	26.000.000	27.000.000	28.000.000
Grande Região Nordeste	30.000.000	35.000.000	40.000.000	45.000.000	48.000.000	50.000.000	52.000.000	54.000.000	56.000.000	58.000.000
Grande Região Centro-Oeste	10.000.000	12.000.000	14.000.000	16.000.000	17.000.000	18.000.000	19.000.000	20.000.000	21.000.000	22.000.000
Grande Região Norte	5.000.000	6.000.000	7.000.000	8.000.000	9.000.000	10.000.000	11.000.000	12.000.000	13.000.000	14.000.000

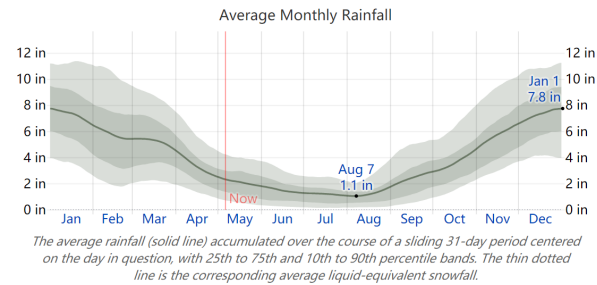


Rainfall

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.

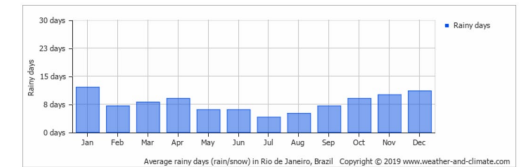
Rain falls throughout the year in Nova Iguaçu. The most rain falls during the 31 days centered around January 1, with an average total accumulation of 7.8 inches.

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



Monthly rainy days

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



Temperature

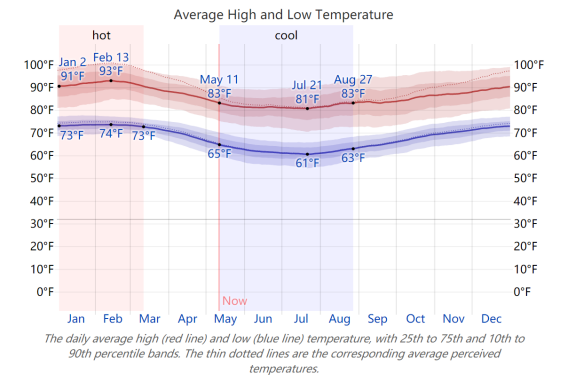
The hot season lasts for 2.3 months, from January 2 to March 11, with an average daily high temperature above 91°F. The hottest day of the year is February 13, with an average high of 93°F and low of 74°F.

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.

Video

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

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



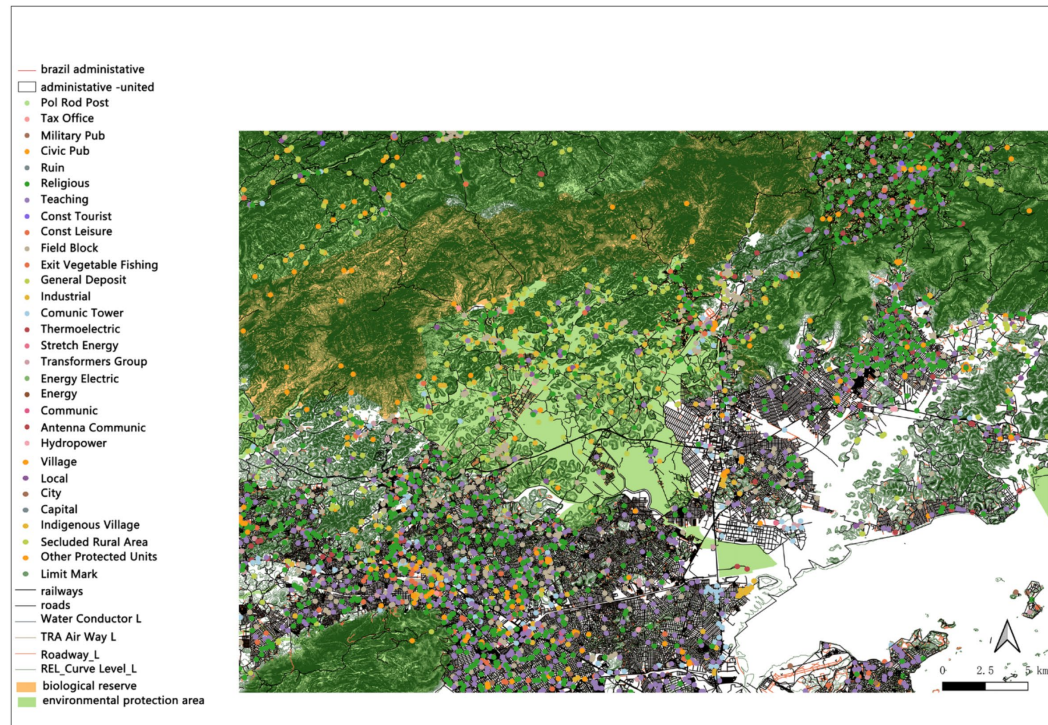


map

Buildings and roads Topography Natural areas for protection

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.

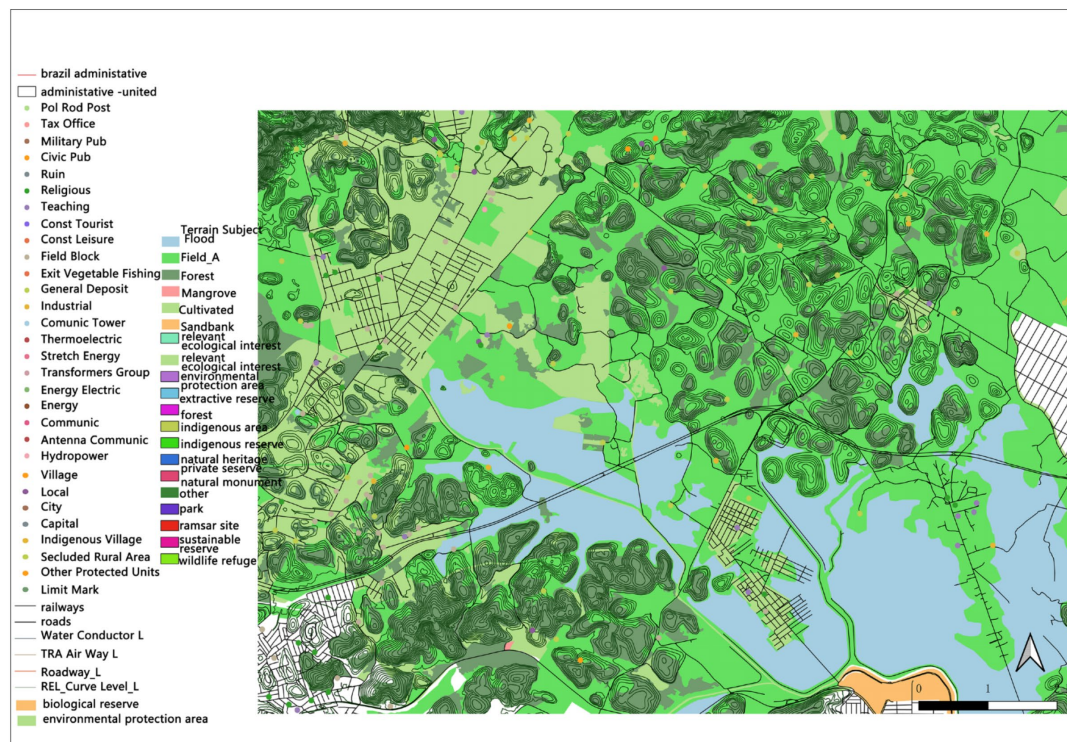


1.3 Design Proposal

map

Buffer zone Buildings and roads Vegetation

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.**



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.

Chapter Two. Sketches show ideas

2.1 Entrance Part Design

2.2 Masterplan

2.3 Sections

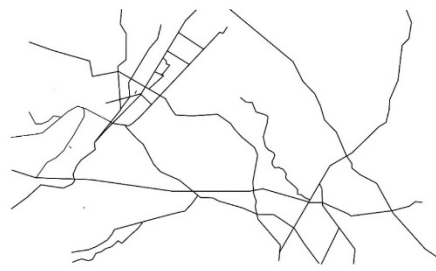
2.4 Views

2.5 Activities

2.6 Zoom In Areas

Development

1985



2004



2020



Section A-A'



1 Nature



2 Nature + Urban



3 Urban



Section B-B'

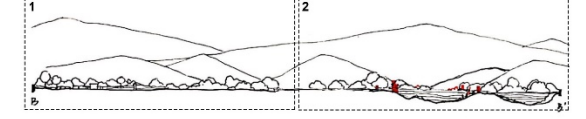
1 Urban



2 Nature



Urban

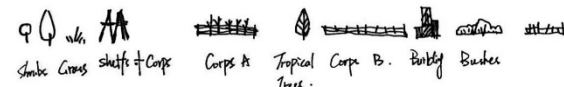


Nature

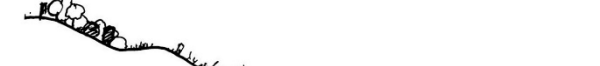
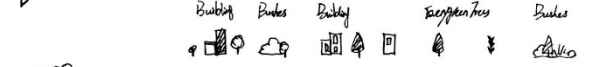
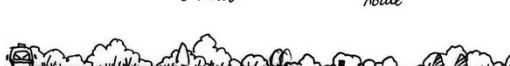
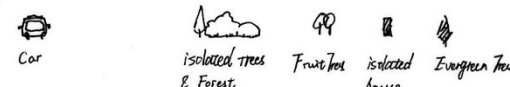
Section C



Section D



C



Existing Entrances



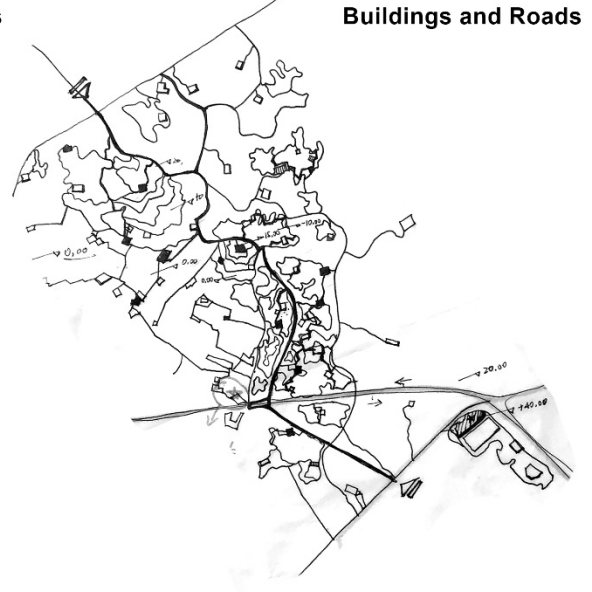
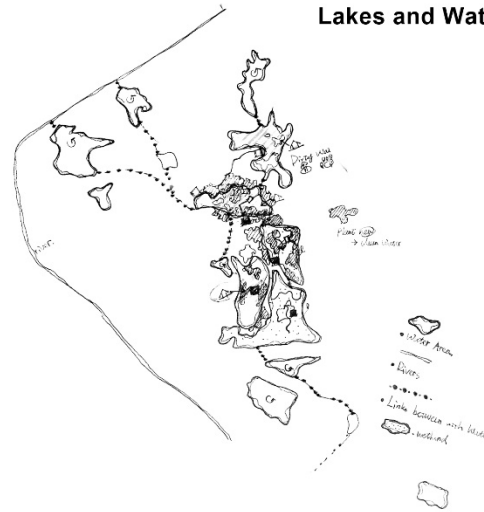
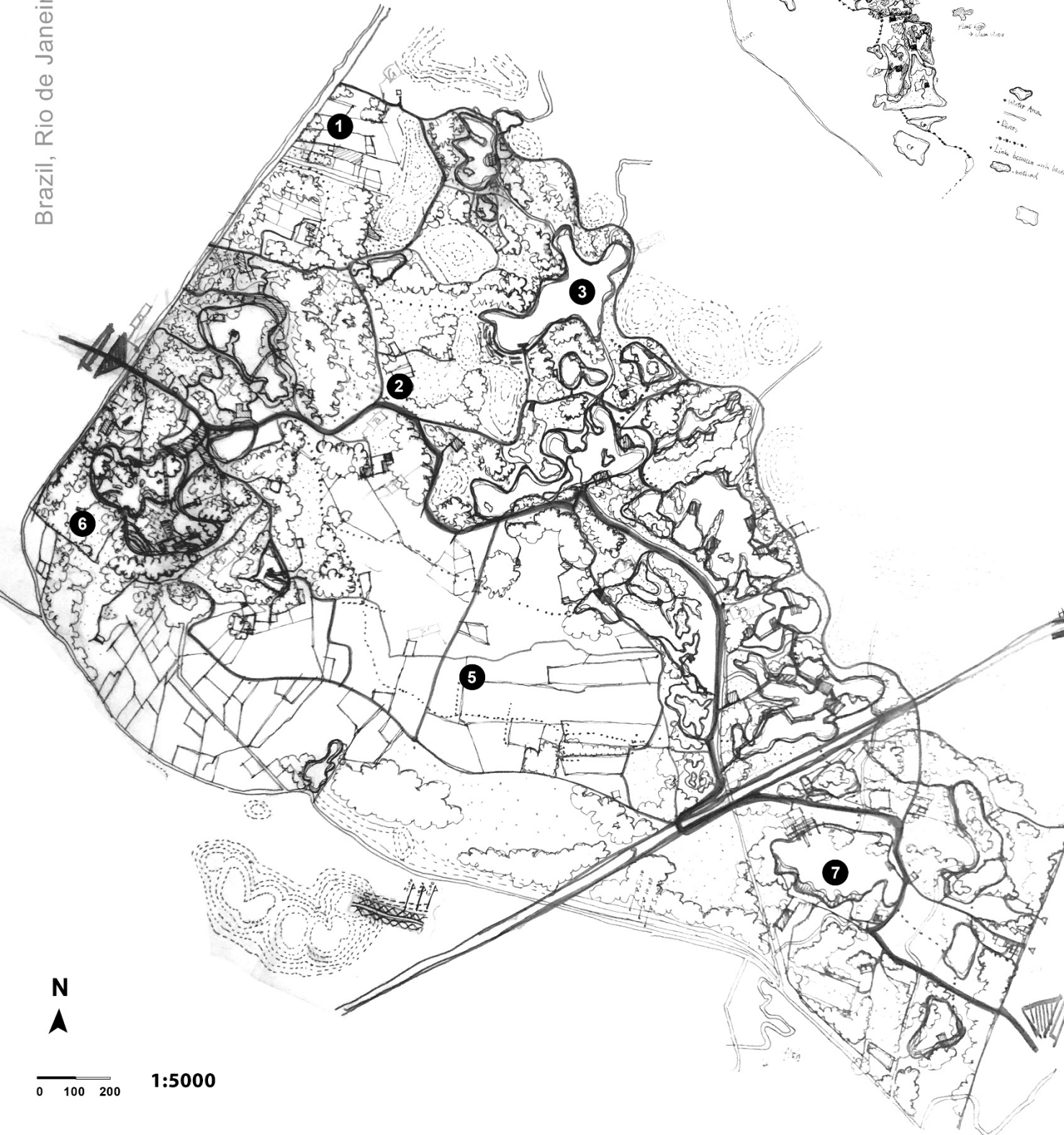
Entrances Design



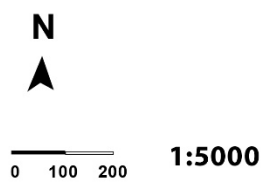
Lakes and Water Channels

Trees and Hills

Buildings and Roads



Activities



Masterplan of Design Solution

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

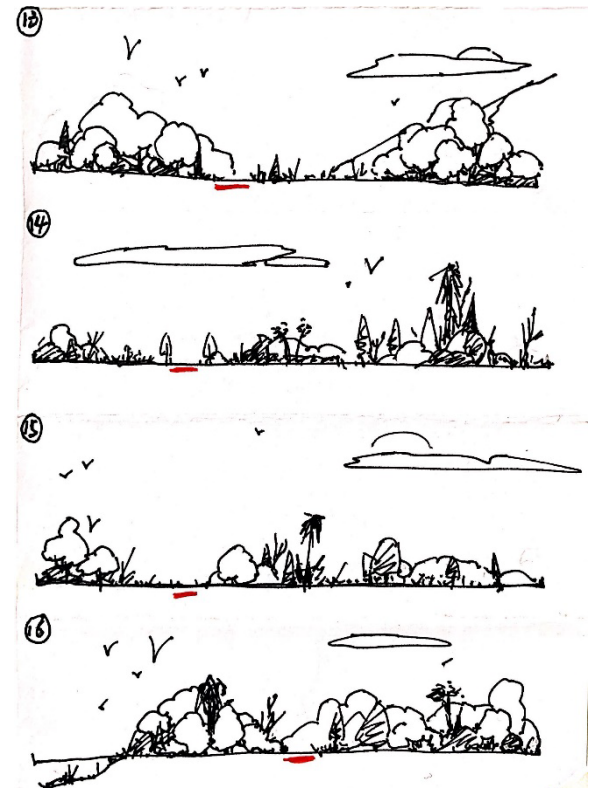
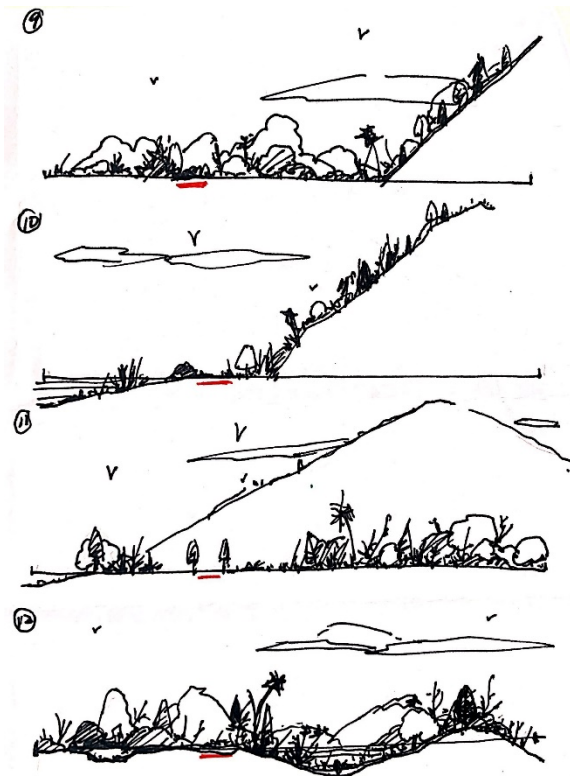
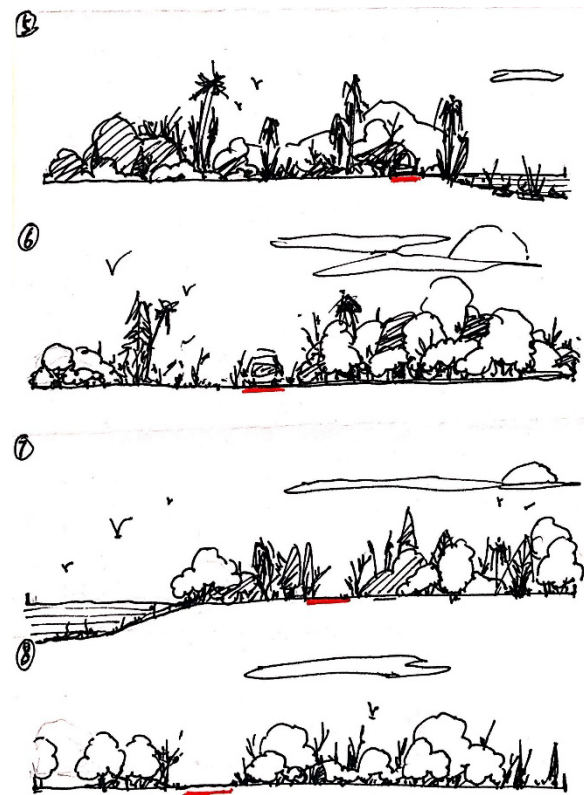
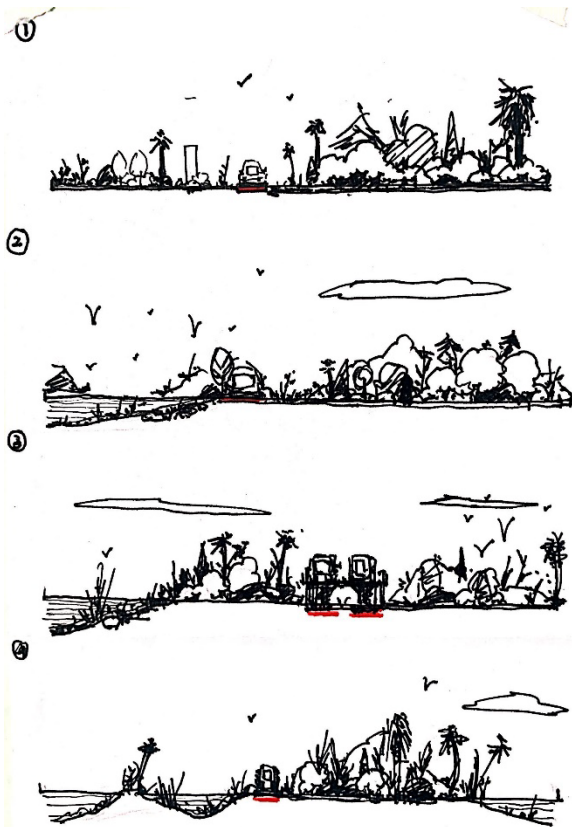
LEGEND

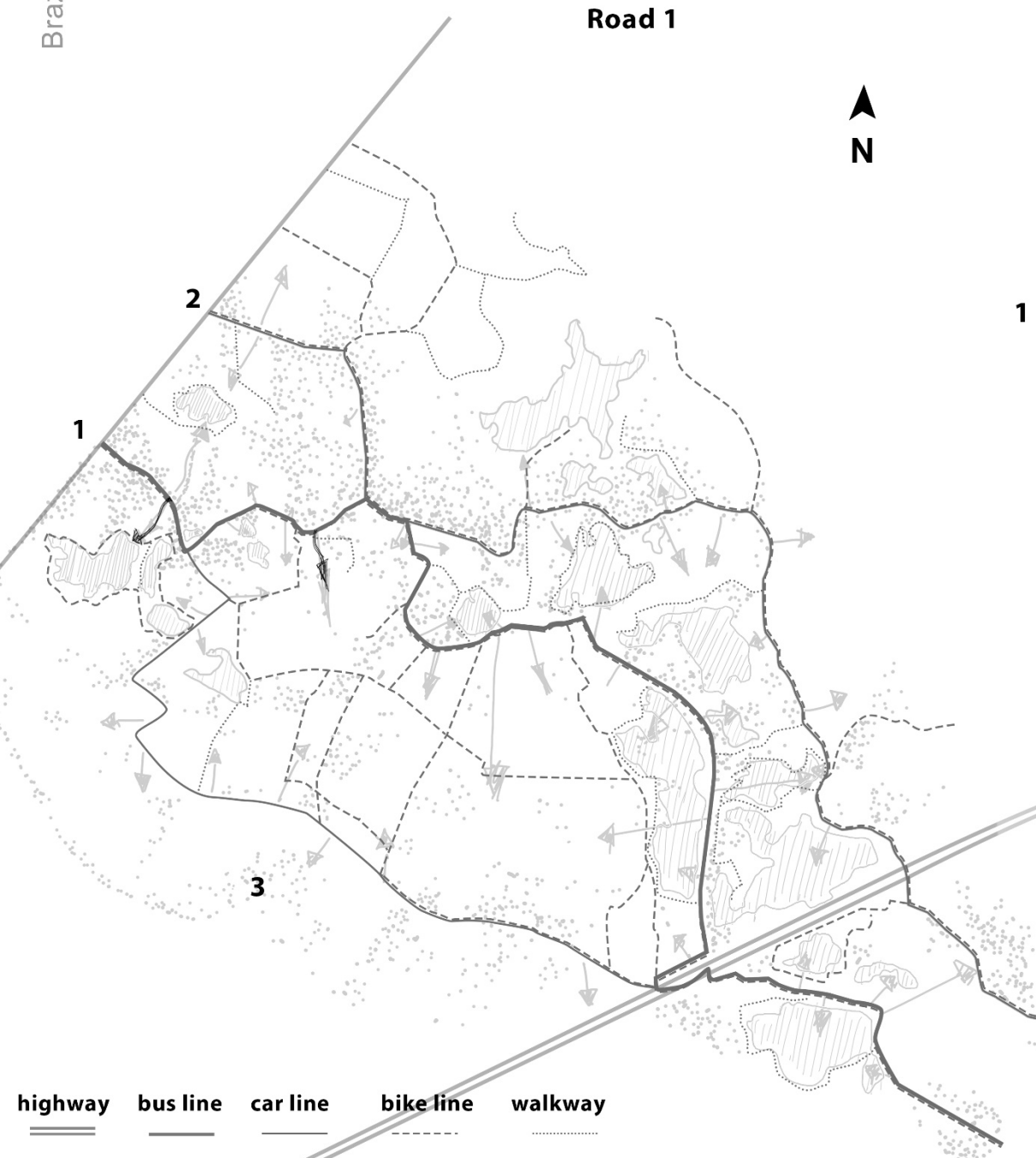
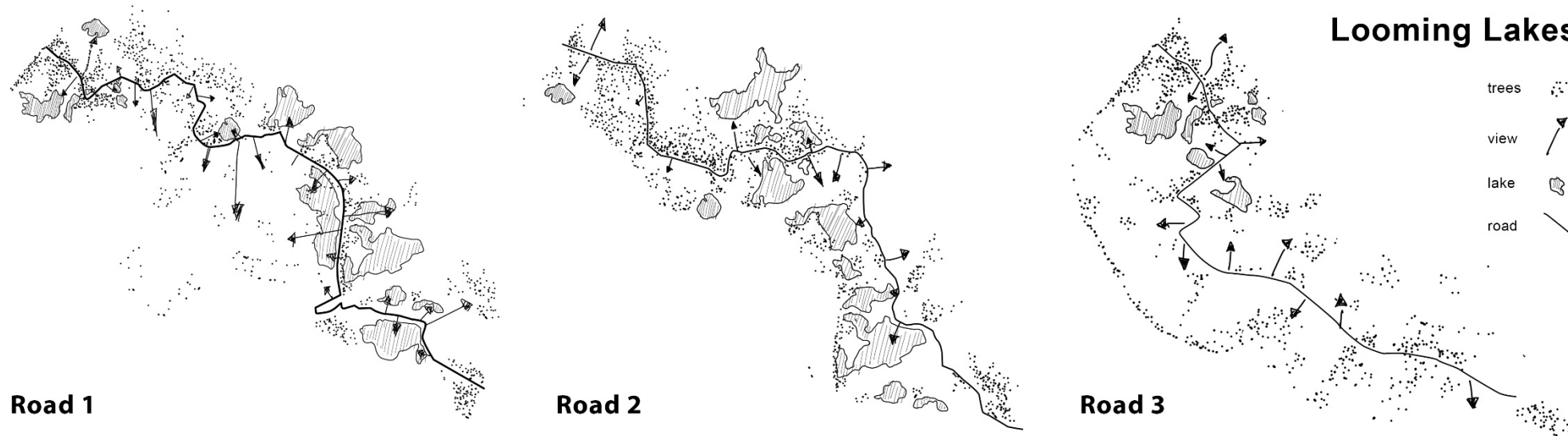


Locations

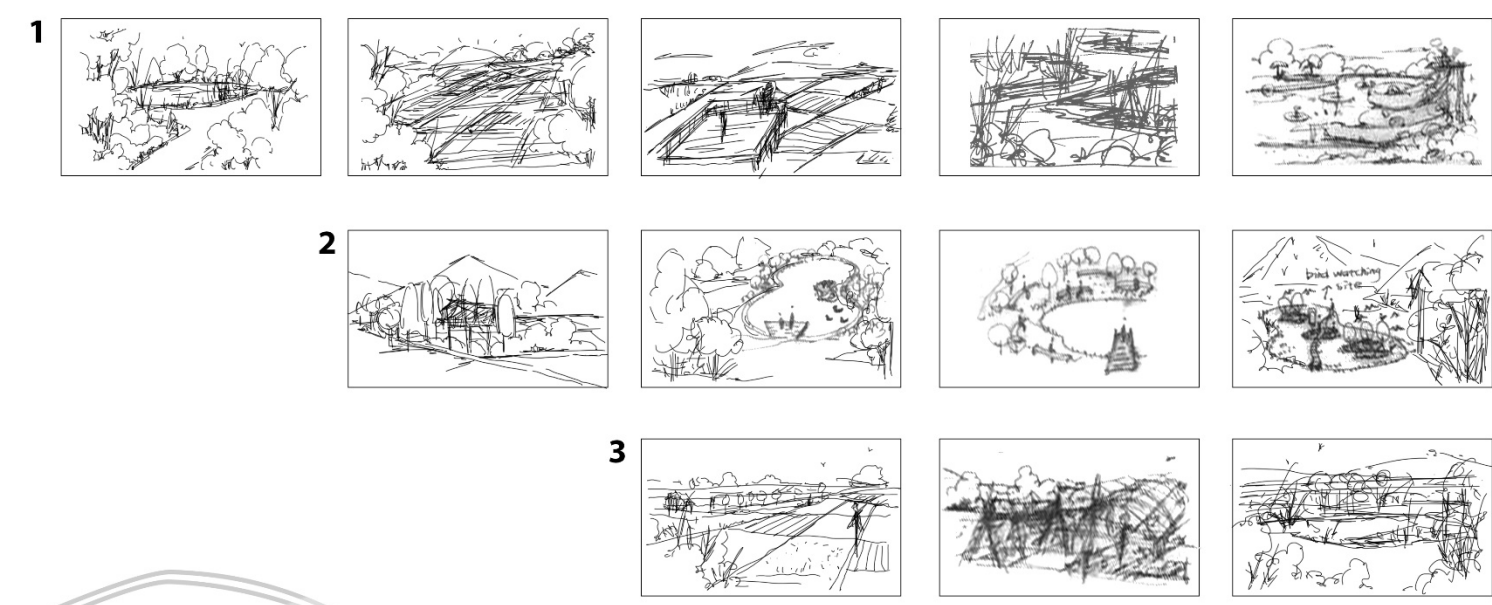


Sections





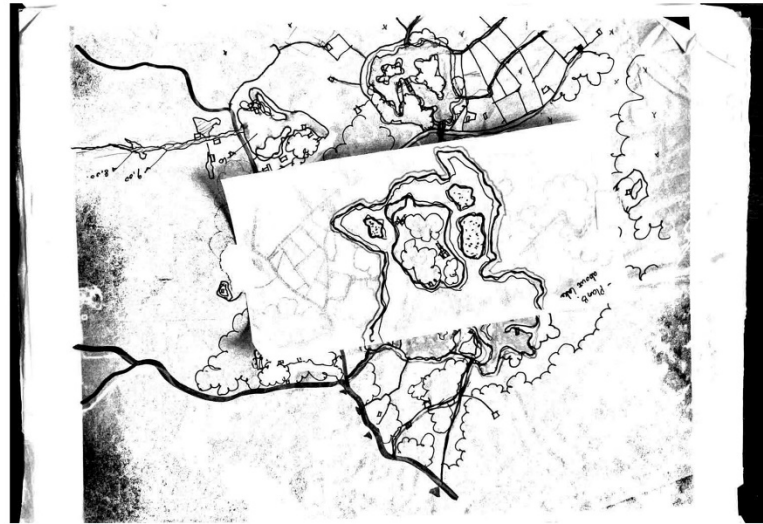
Perspective Views



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

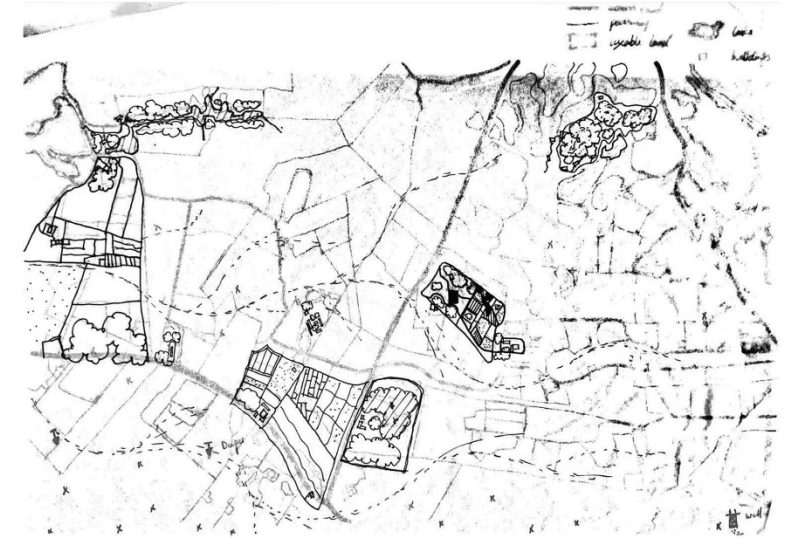
Educational Park



Land Art



Land Art



Educational Park



Public Green Spaces



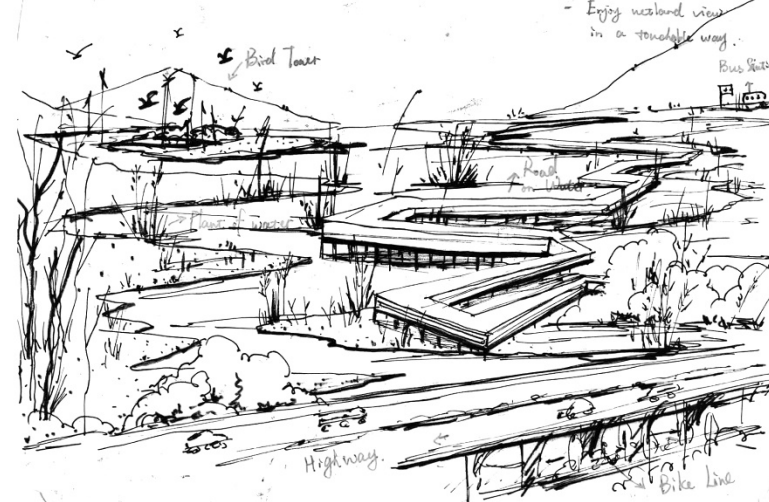
Land Art



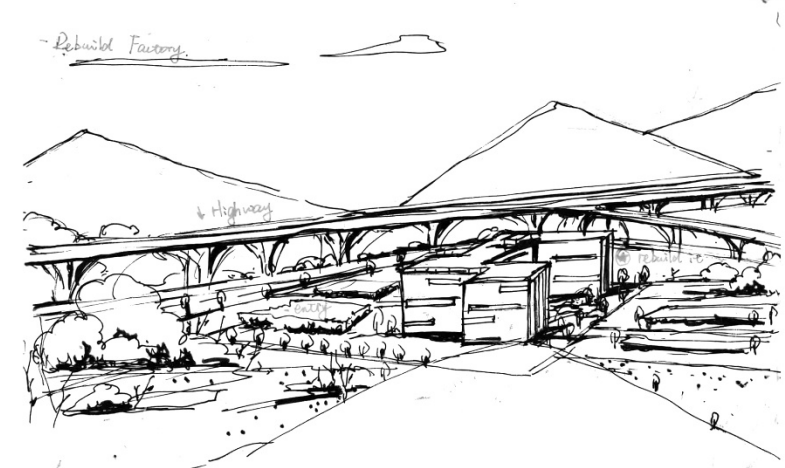
Water Park



Wetland Areas



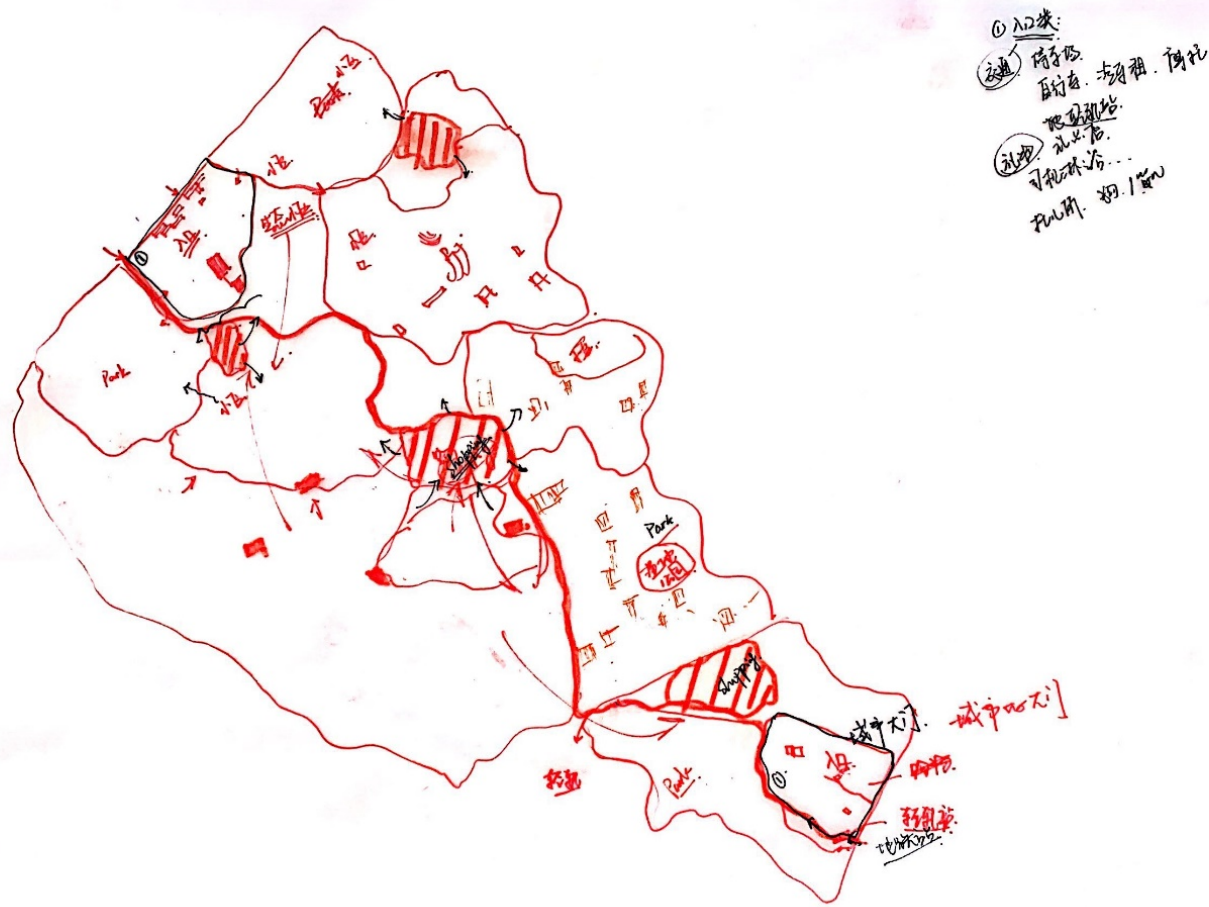
Landmark



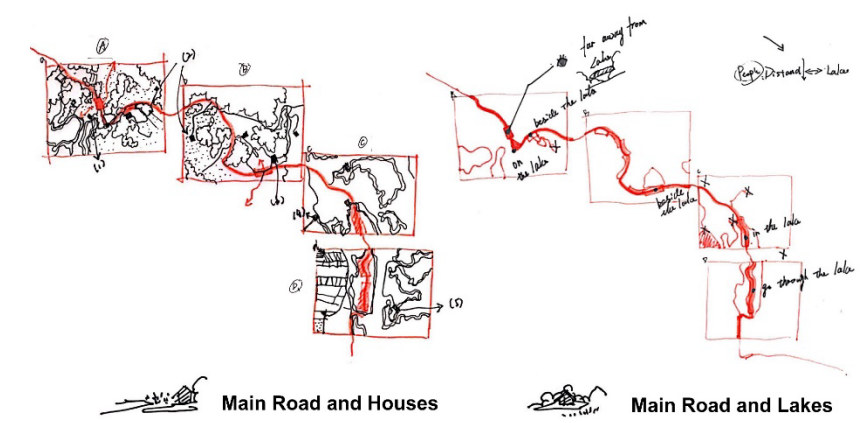
Perspective Views

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.



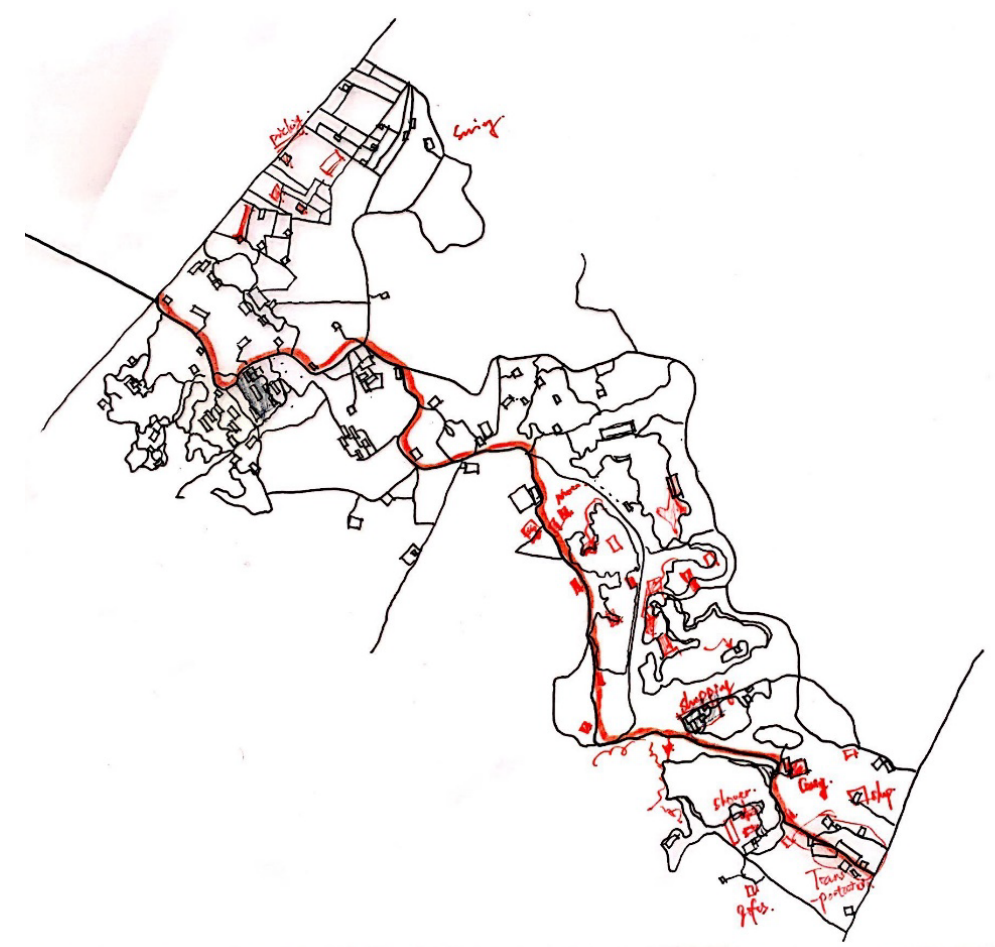
① 入口:
自行车、步行、电瓶车
电瓶车、步行、电瓶车
电瓶车、步行、电瓶车
电瓶车、步行、电瓶车

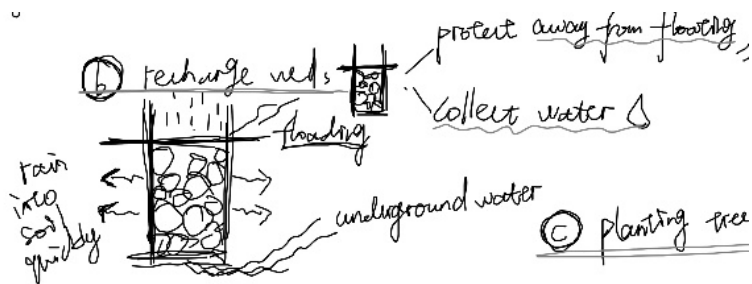


Music gathering centers, florists, markets, public kitchens... Explore what people want and like in life?

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.



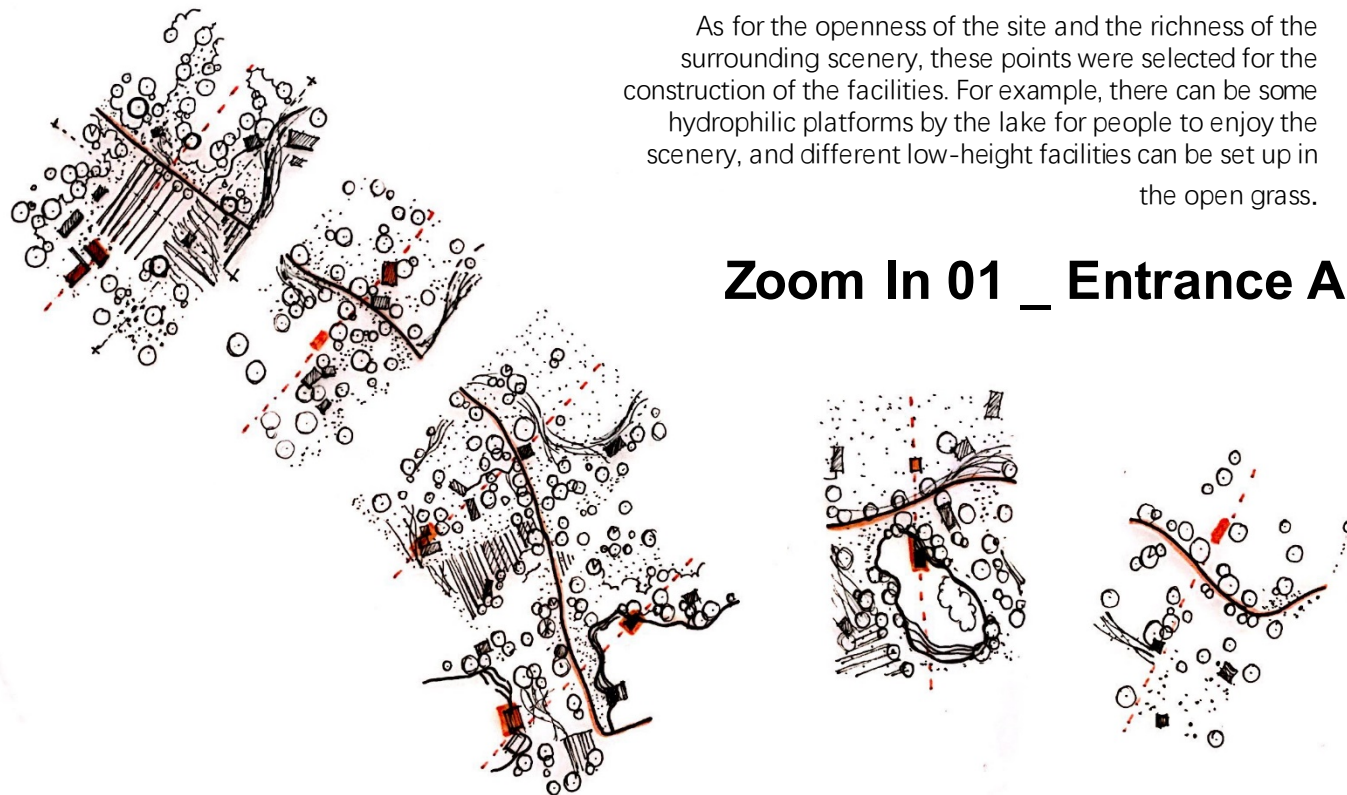
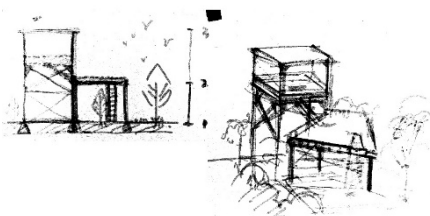


Recharge Well

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

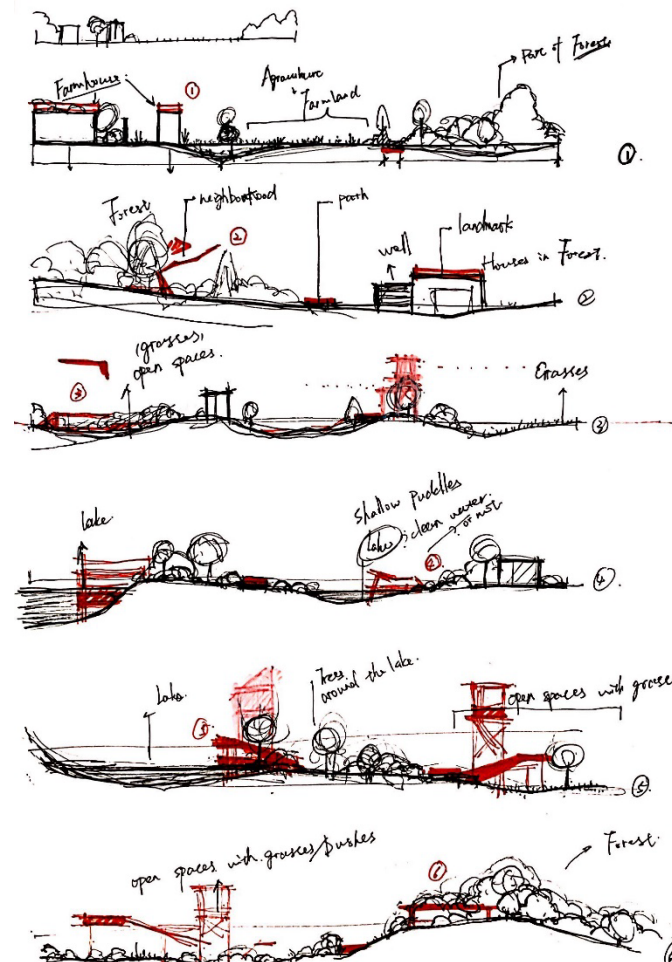
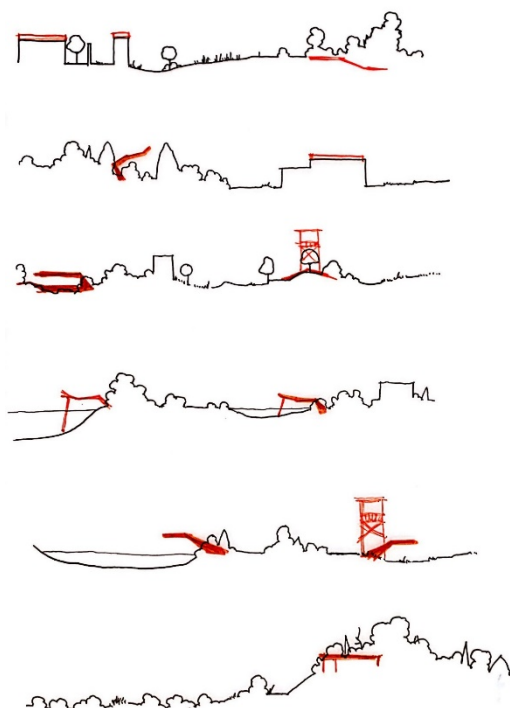


As for the openness of the site and the richness of the surrounding scenery, these points were selected for the construction of the facilities. For example, there can be some hydrophilic platforms by the lake for people to enjoy the scenery, and different low-height facilities can be set up in the open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

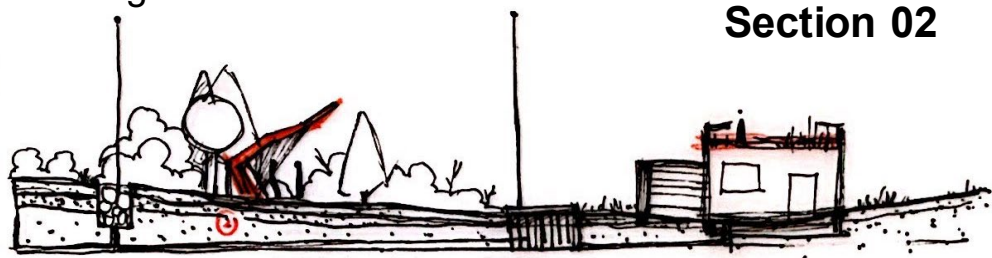
Zoom In 01 _ Entrance A

Entrance A Sections

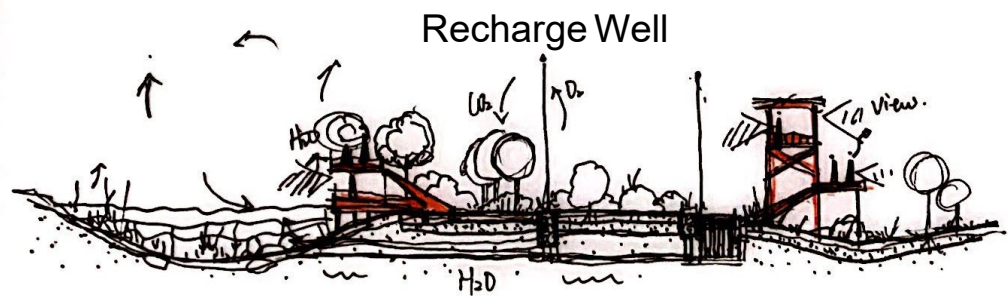
This picture shows the various forms of structures from the ground. People can enjoy the natural scenery from different angles and different environments by using these structures along the road



Recharge Well Water-permeable Paving Section 02



Section 05 Water-permeable Paving Recharge Well





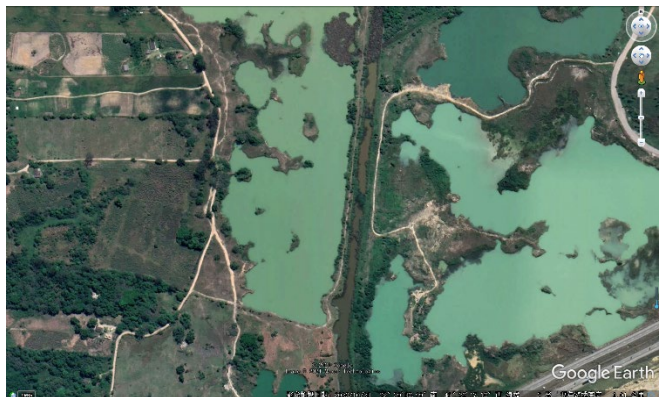
B Survival Challenge Games and Planting Experience

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 Three. Final Mapping how to create new one

3.1 Green and Blue

3.2 Waterway

3.3 Masterplan

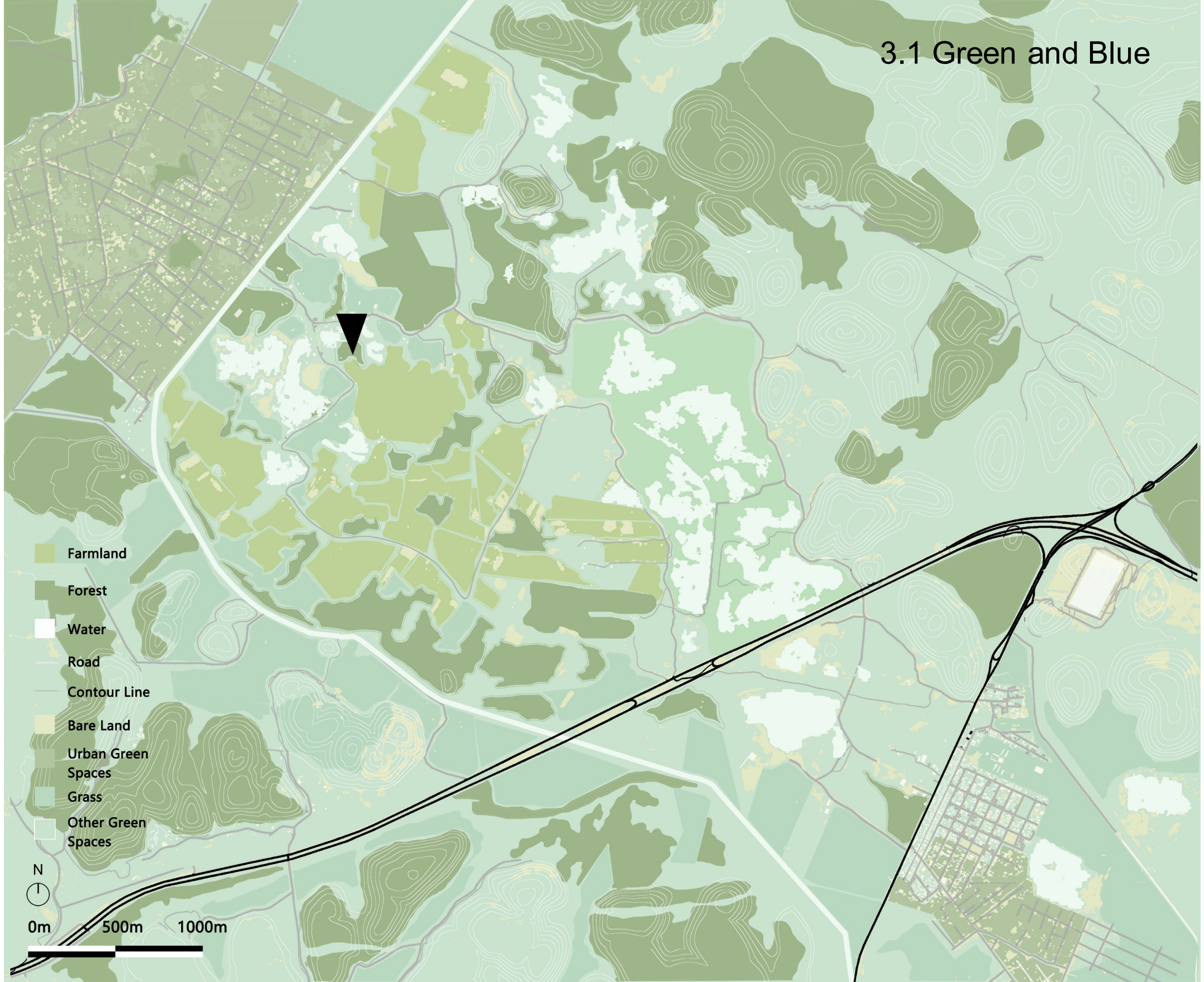
3.4 Whole View

3.5 Zoom In

3.6 Details

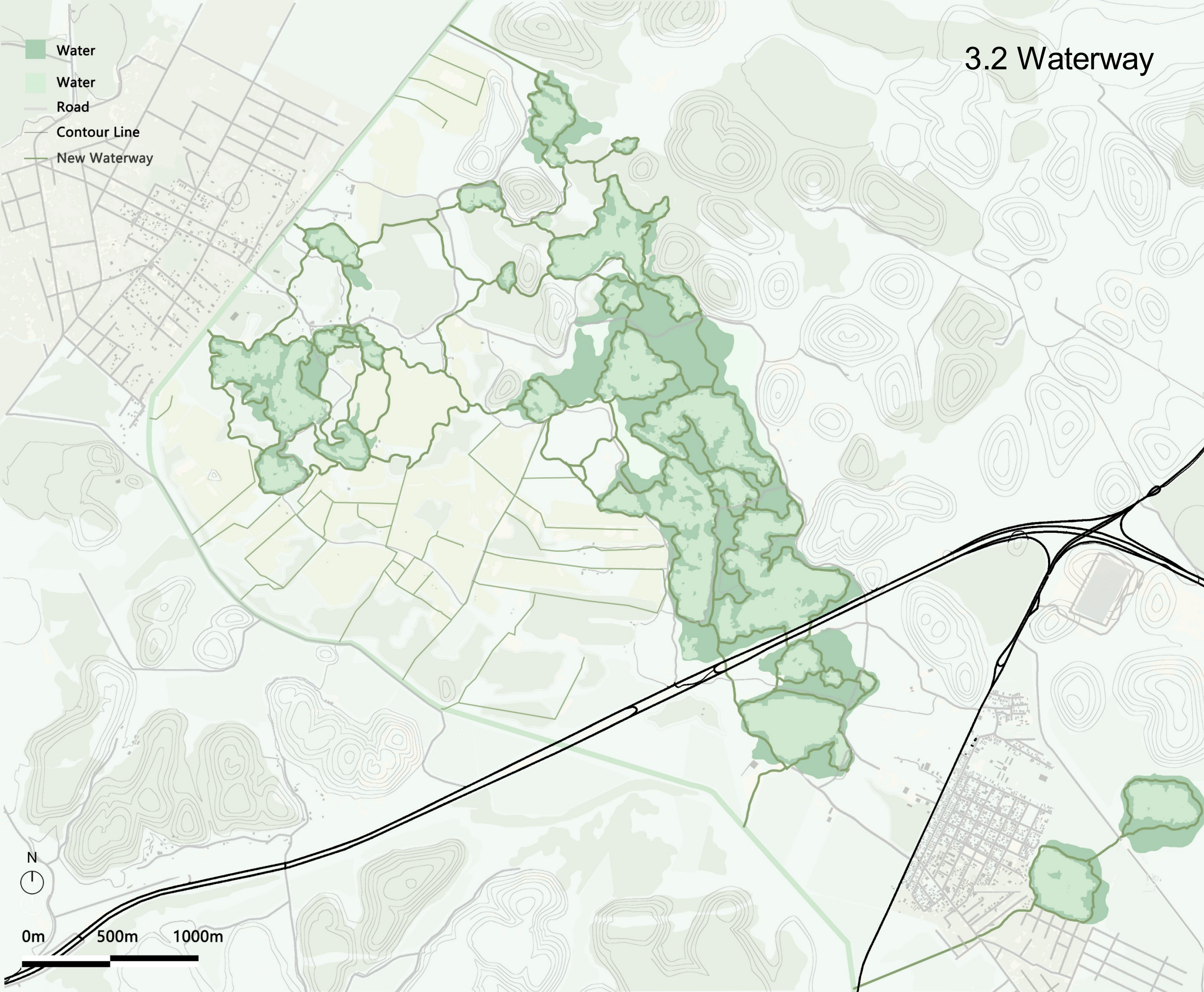
3.7 Middle School Design

3.1 Green and Blue

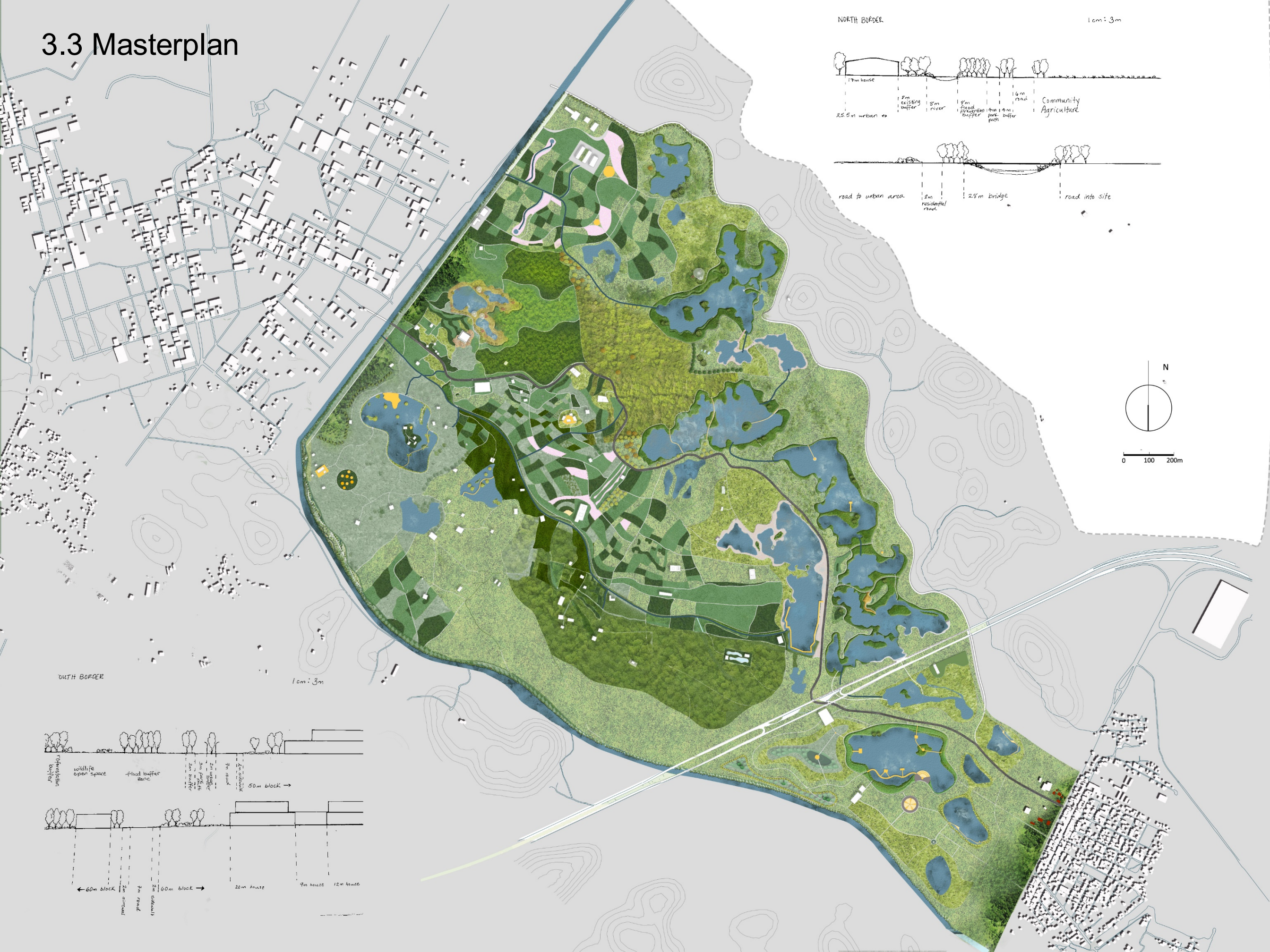


3.2 Waterway

- Water
- Water
- Road
- Contour Line
- New Waterway

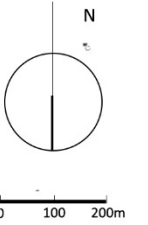
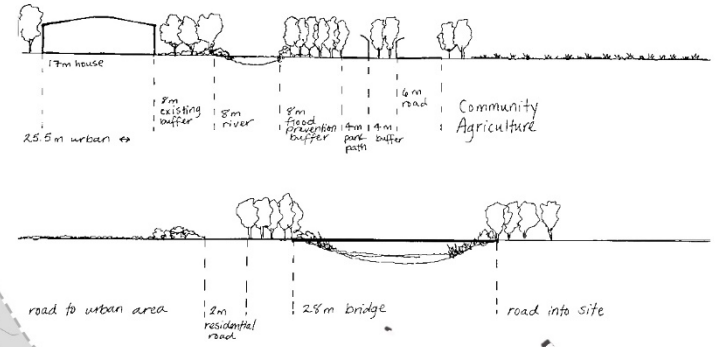


3.3 Masterplan



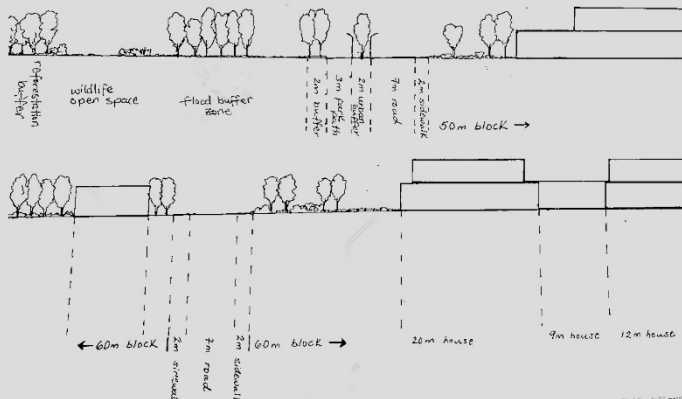
NORTH BORDER

1cm:3m

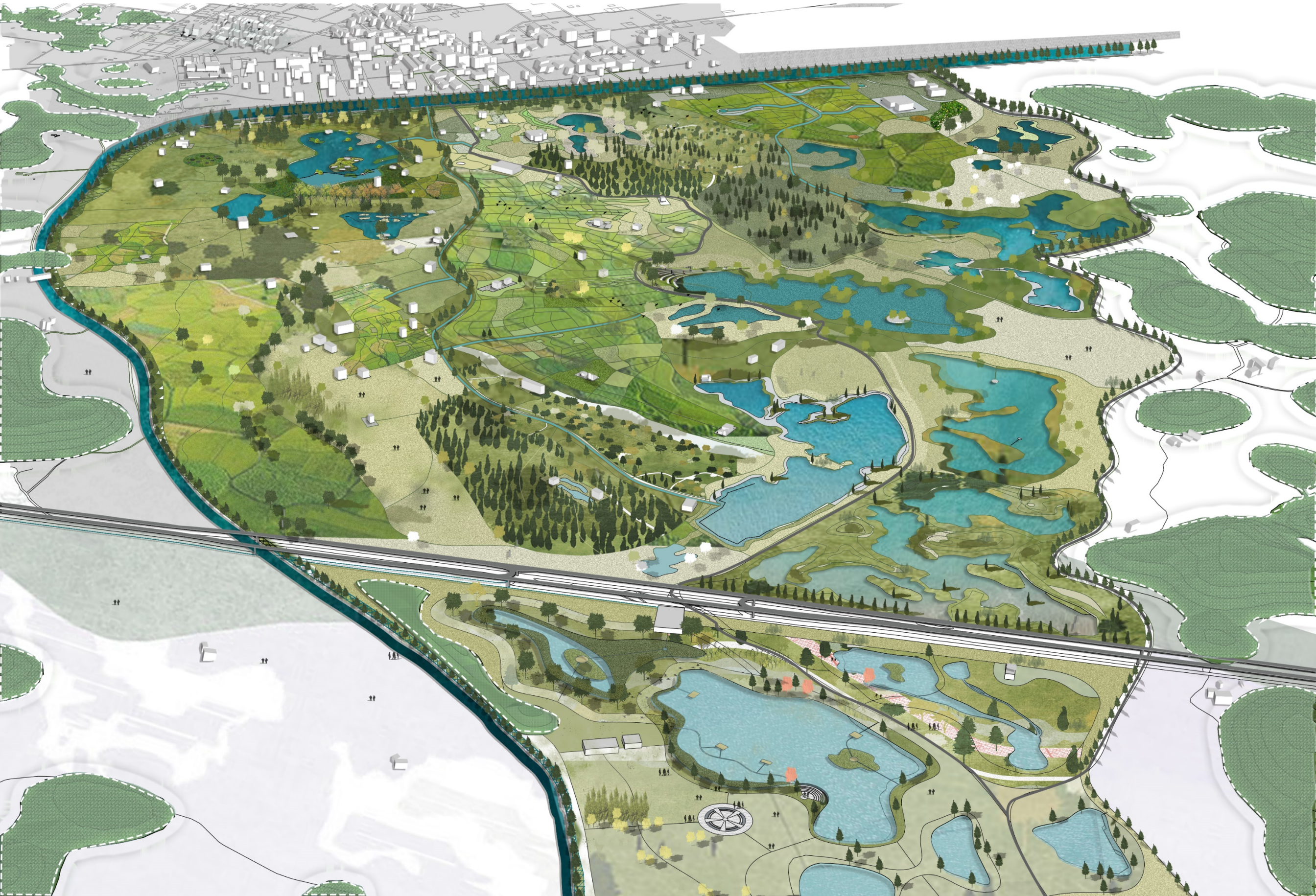


SOUTH BORDER

1cm:3m

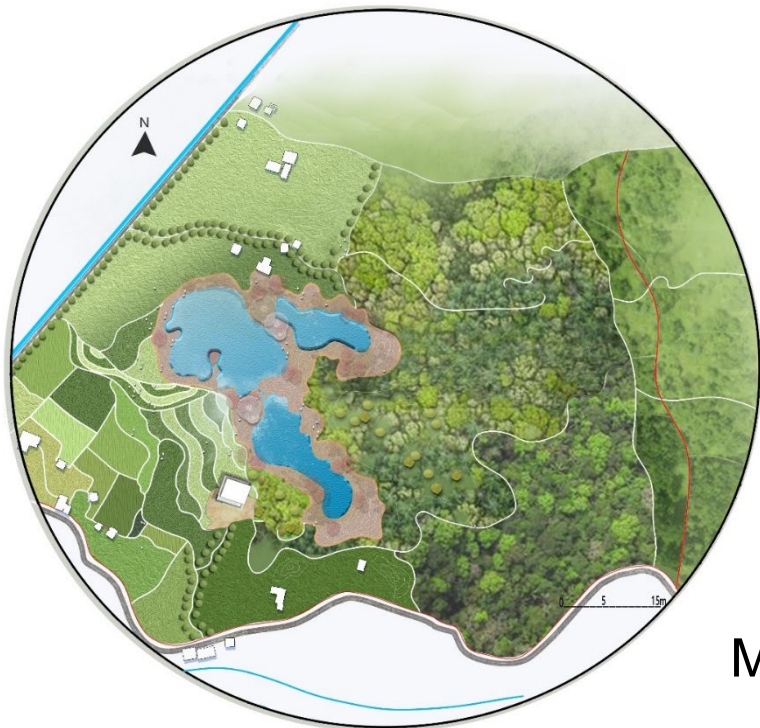


3.4 Whole View



3.5 Zoom In

river



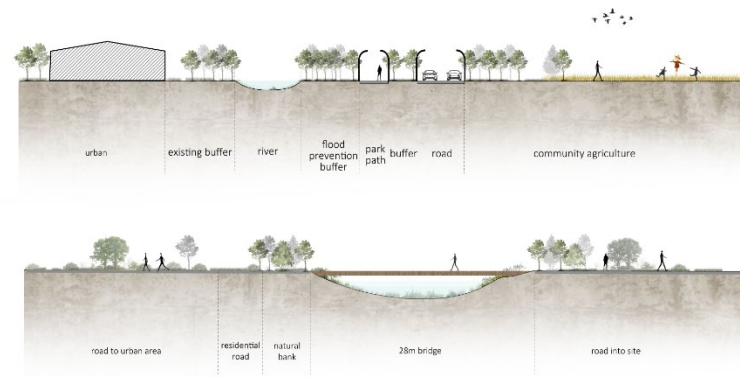
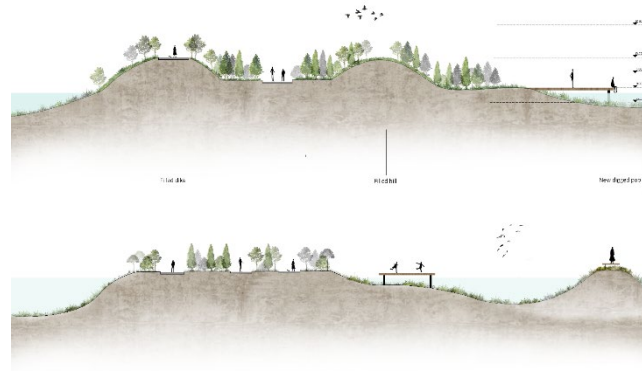
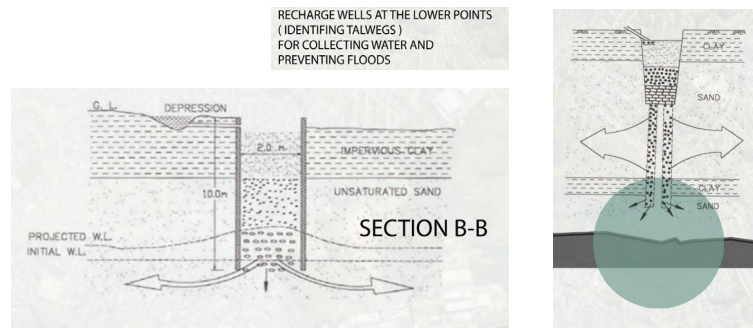
Museum Park

Elastic
Park

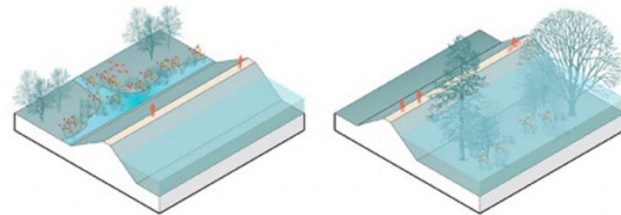


ELASTIC PARK

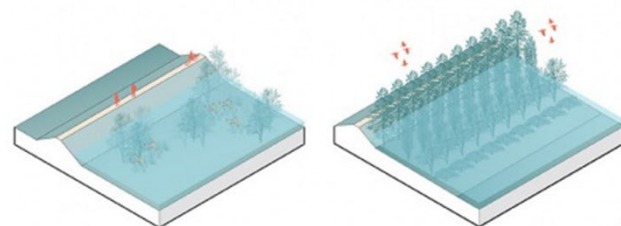
3.6 Details



GUARDIAN STRATEGY

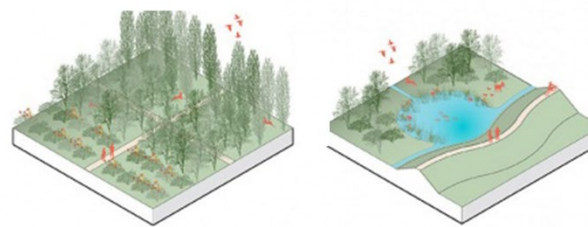


CREAT DIKE ZONE

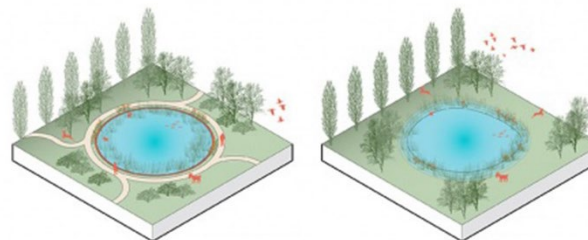


DECREASE FLOW SPEED

ECOLOGICAL STRATEGY

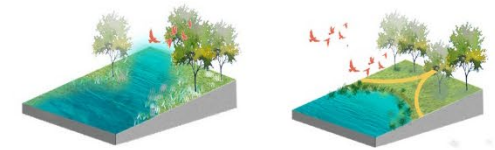


PURIFICATION OF LARGE PLANTS

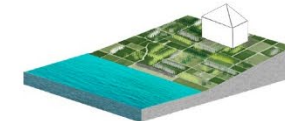


ECOLOGICAL AND ENTERTAINMENT PARK

Ecological wetland



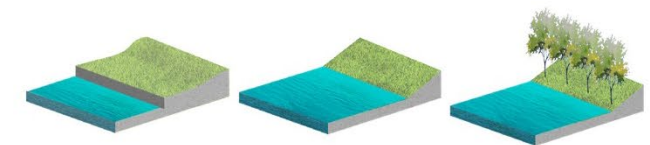
Agricultural landscape



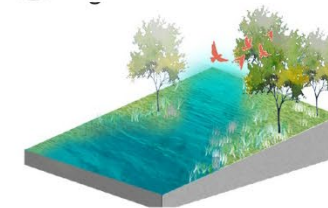
Traffic landscape



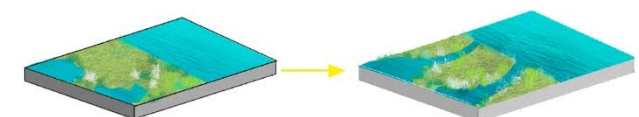
Flood control area



Water storage area

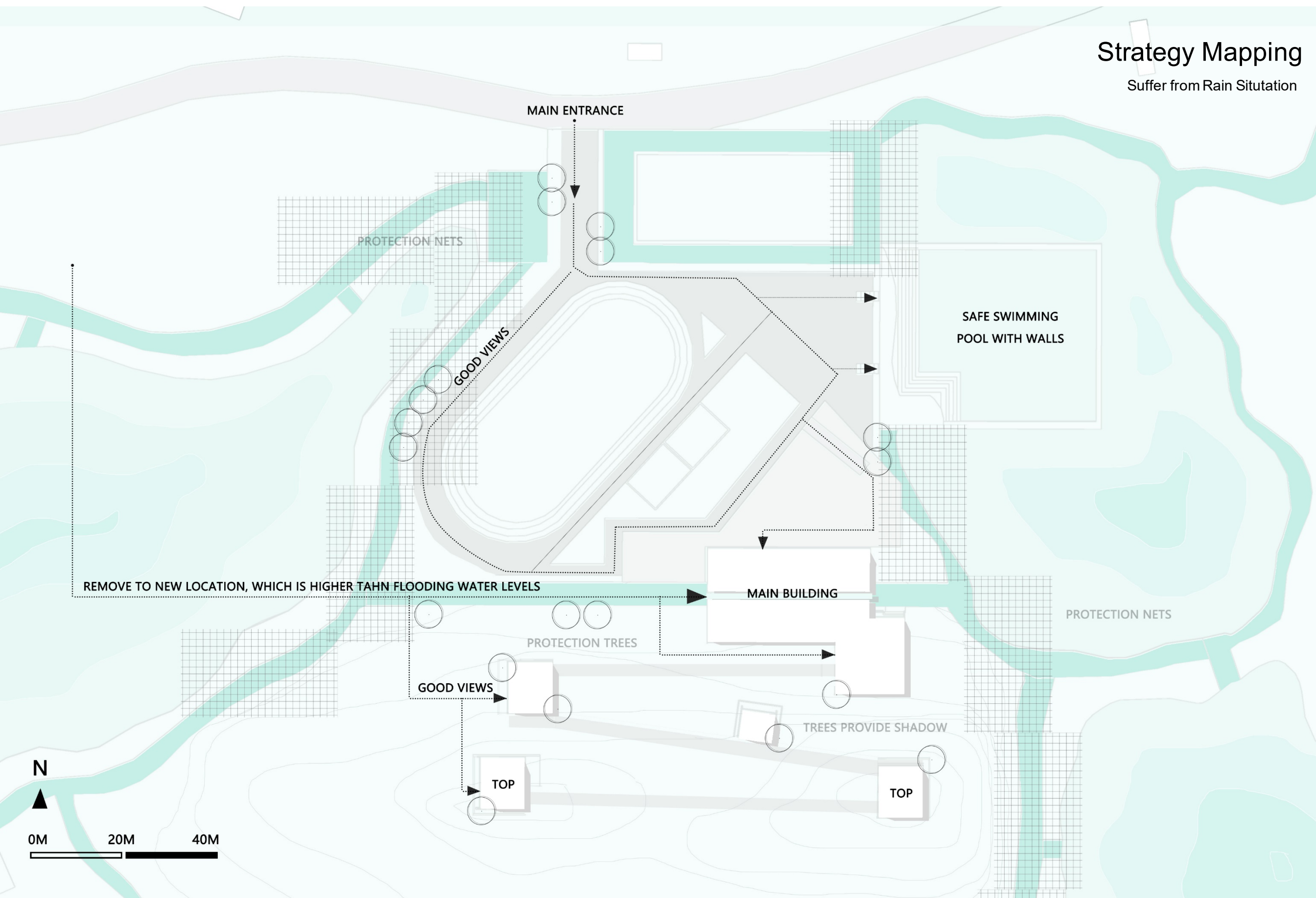


Drainage zone

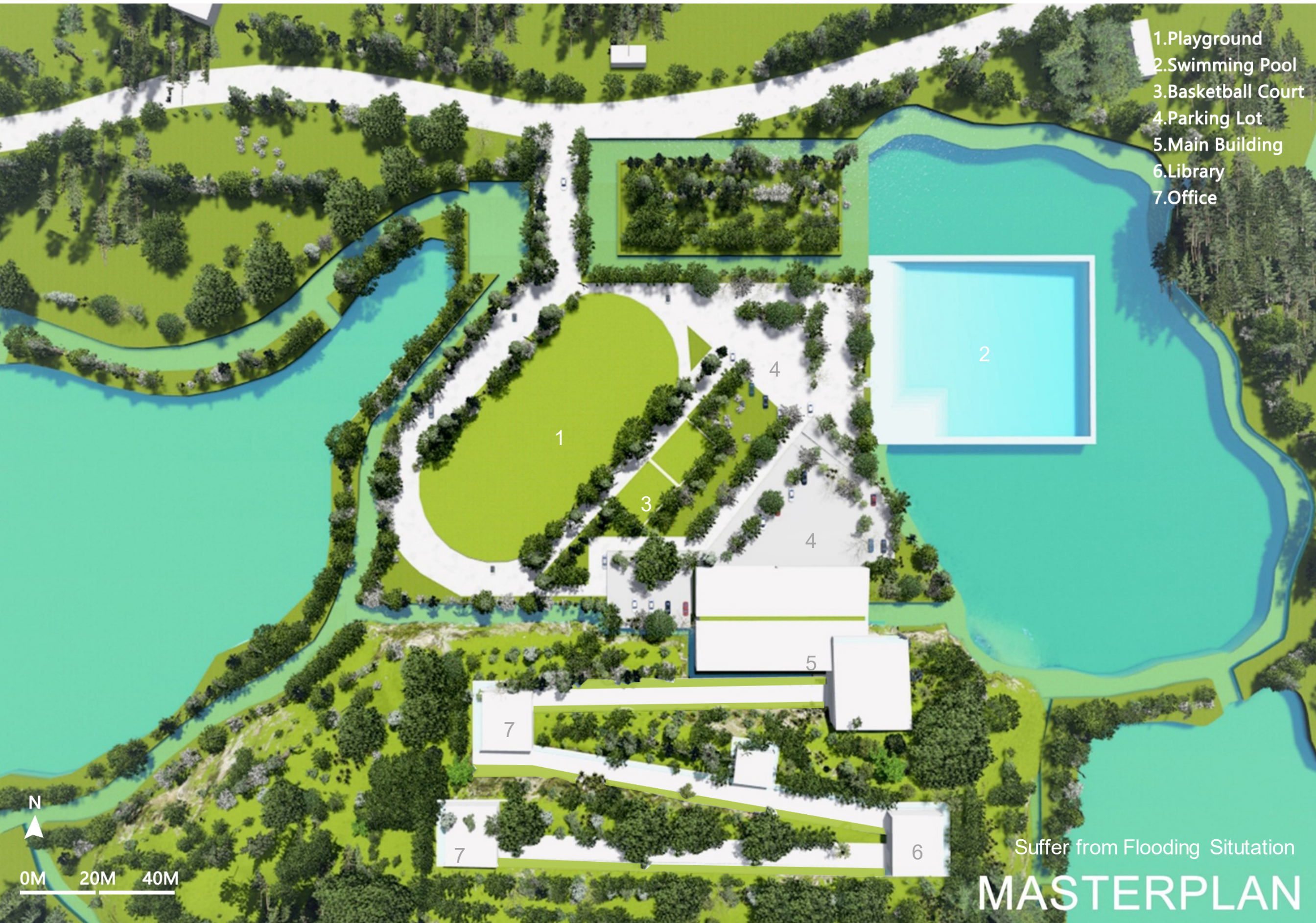


Strategy Mapping

Suffer from Rain Situation



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



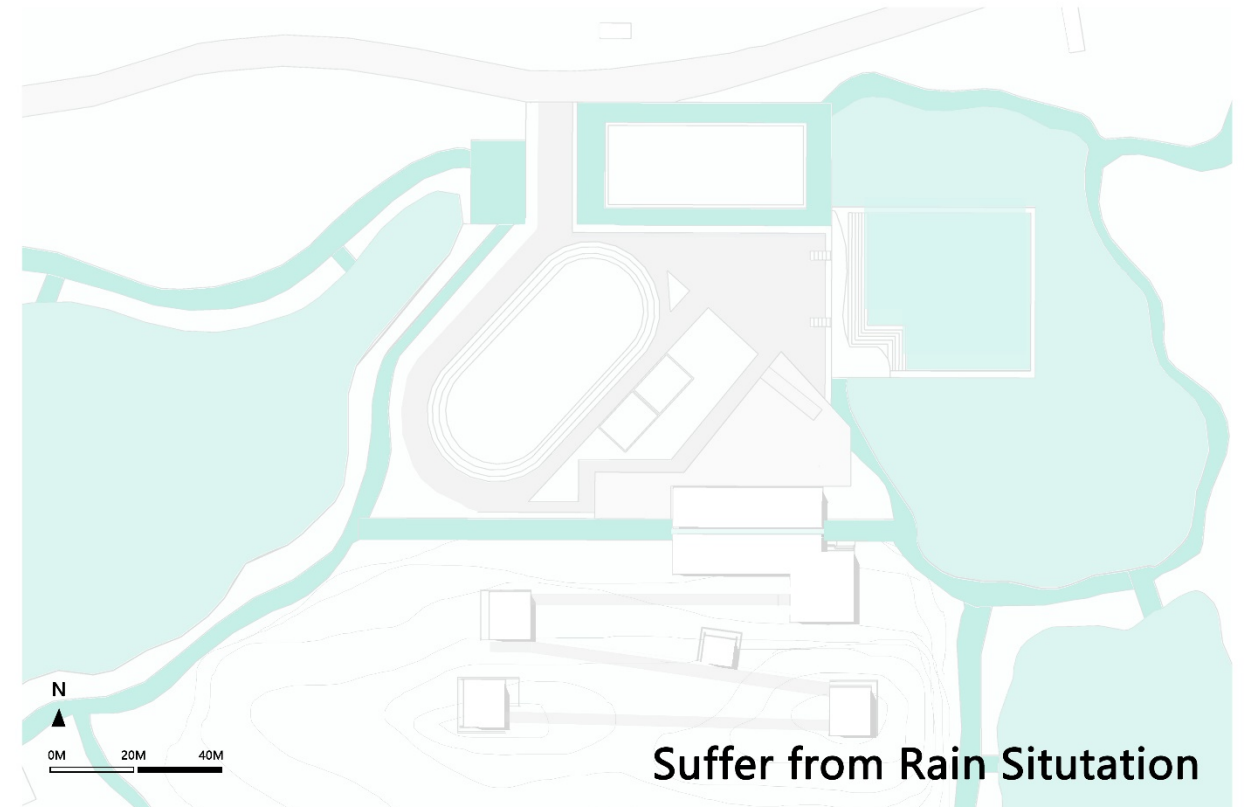
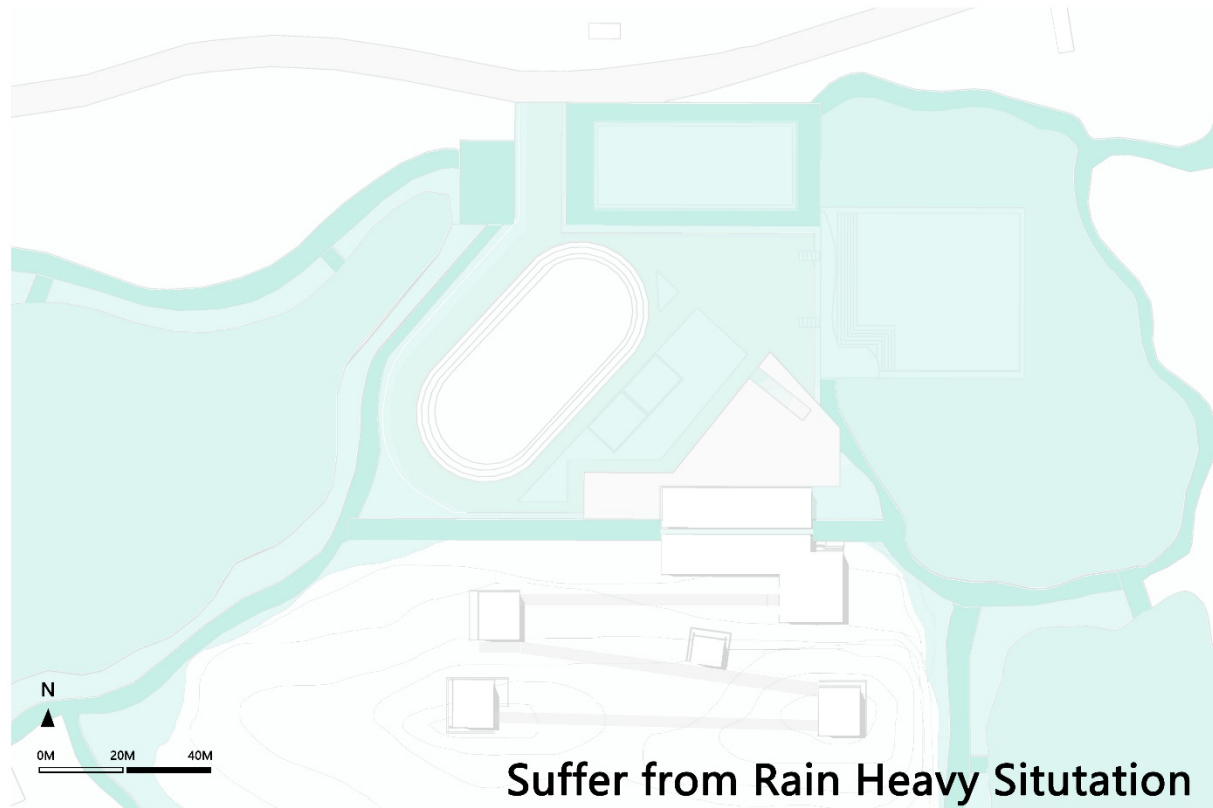
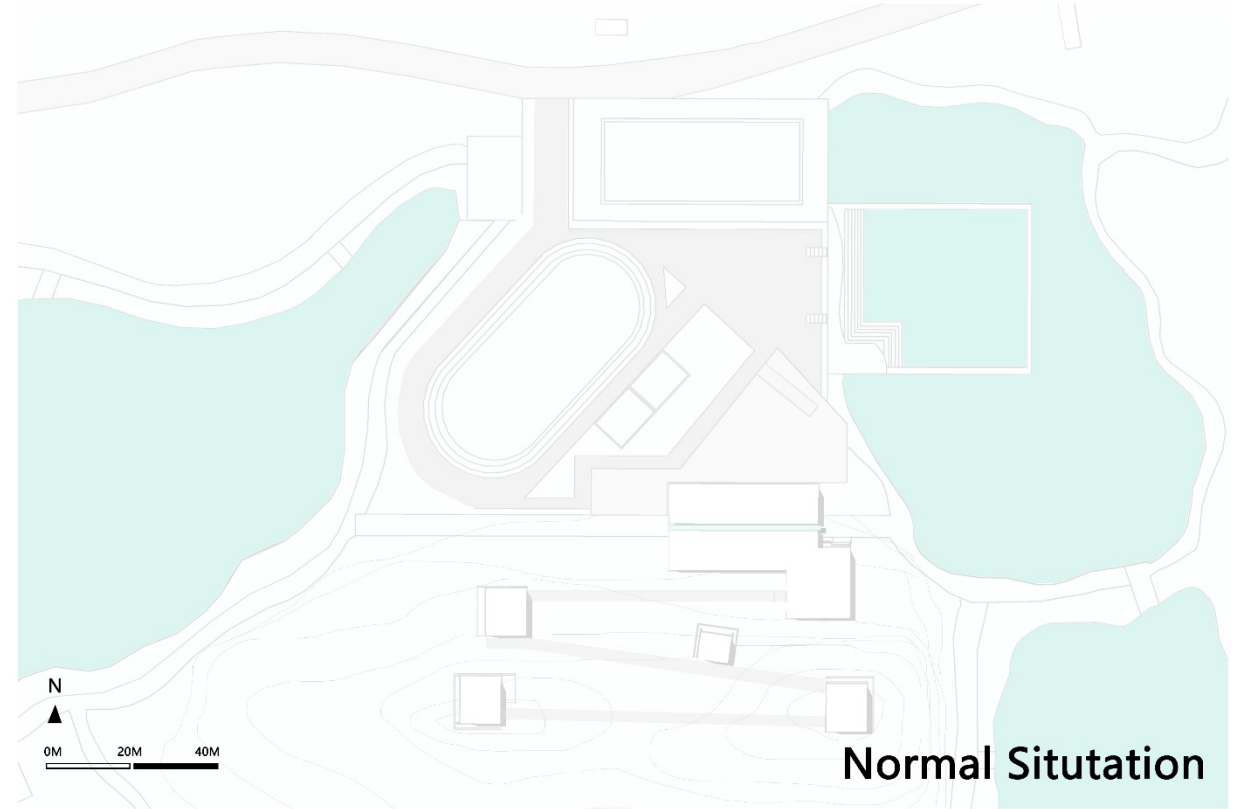
N
0M 20M 40M

Suffer from Flooding Situation

MASTERPLAN

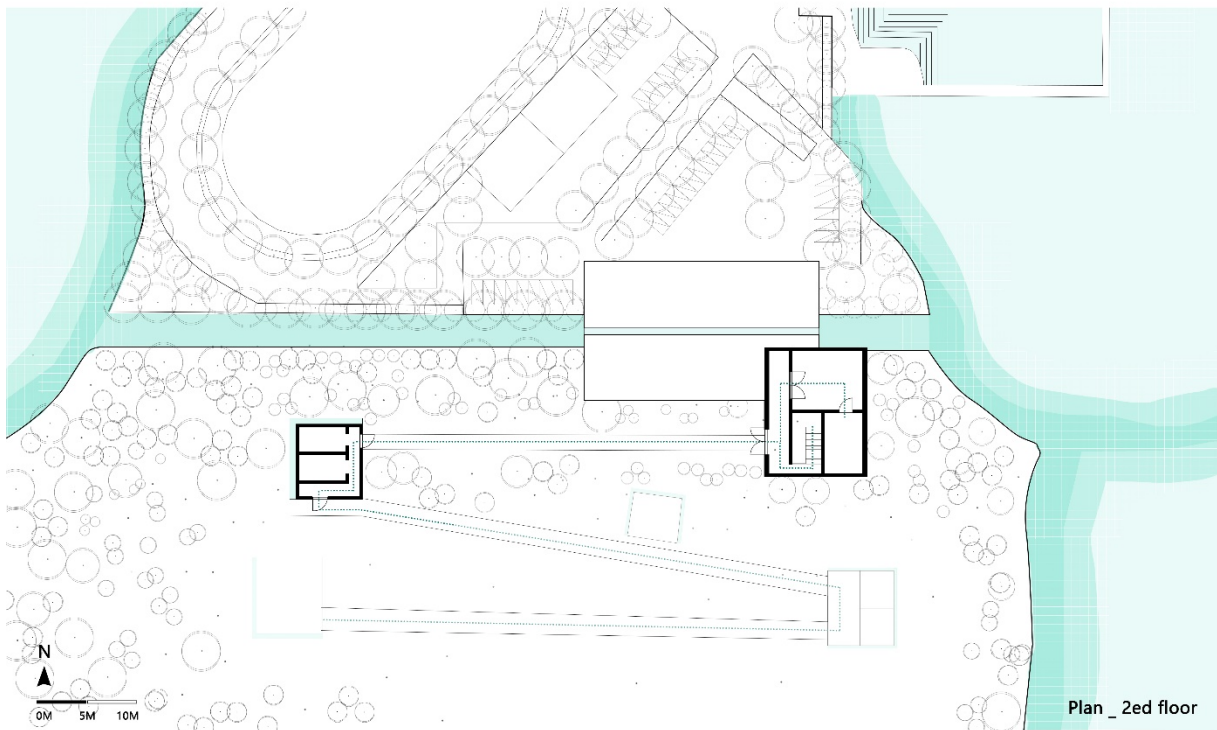
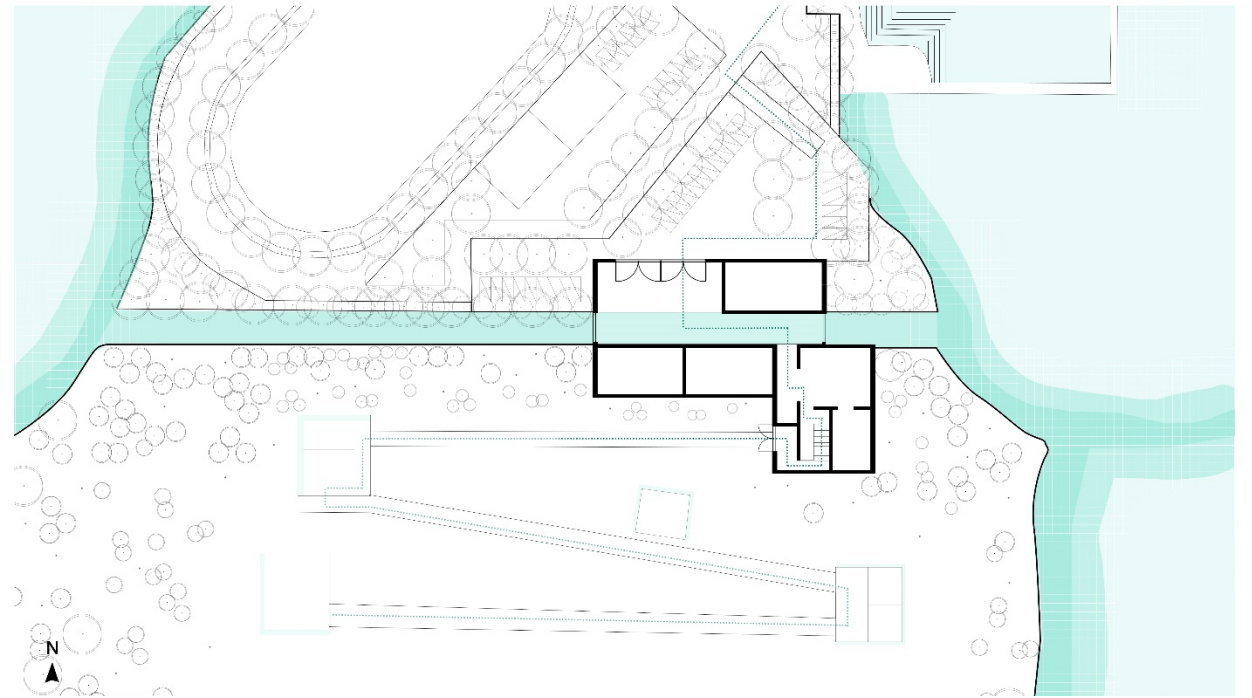
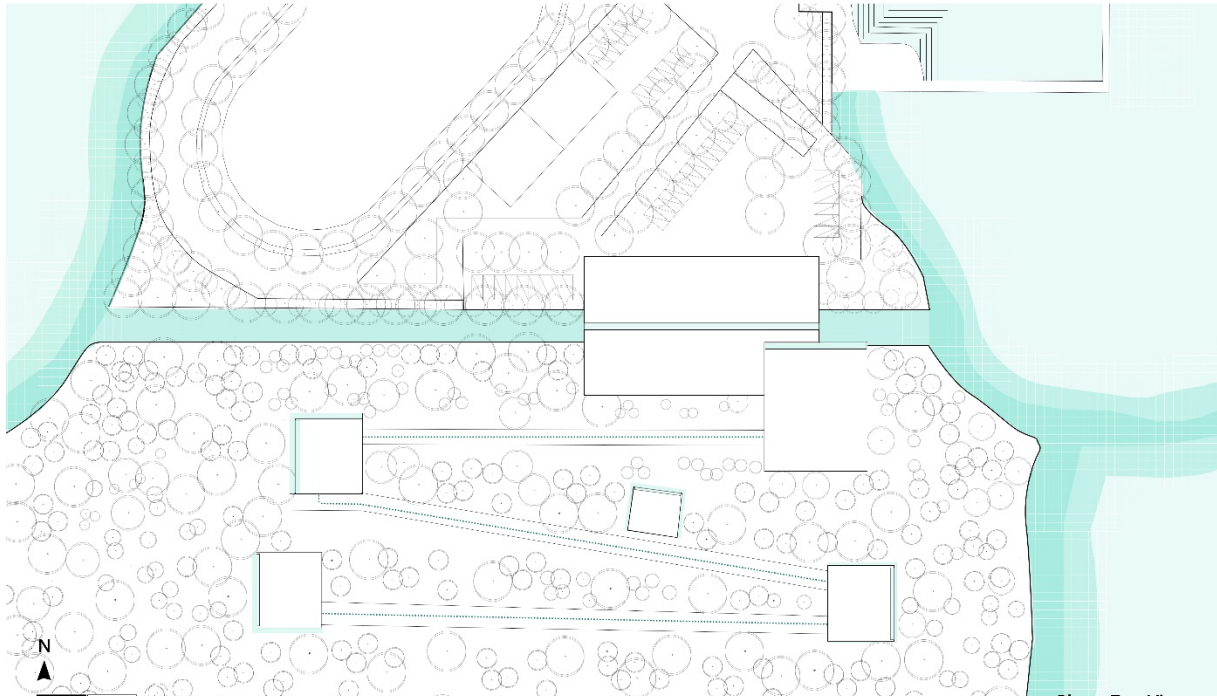
Water Level Mappings

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

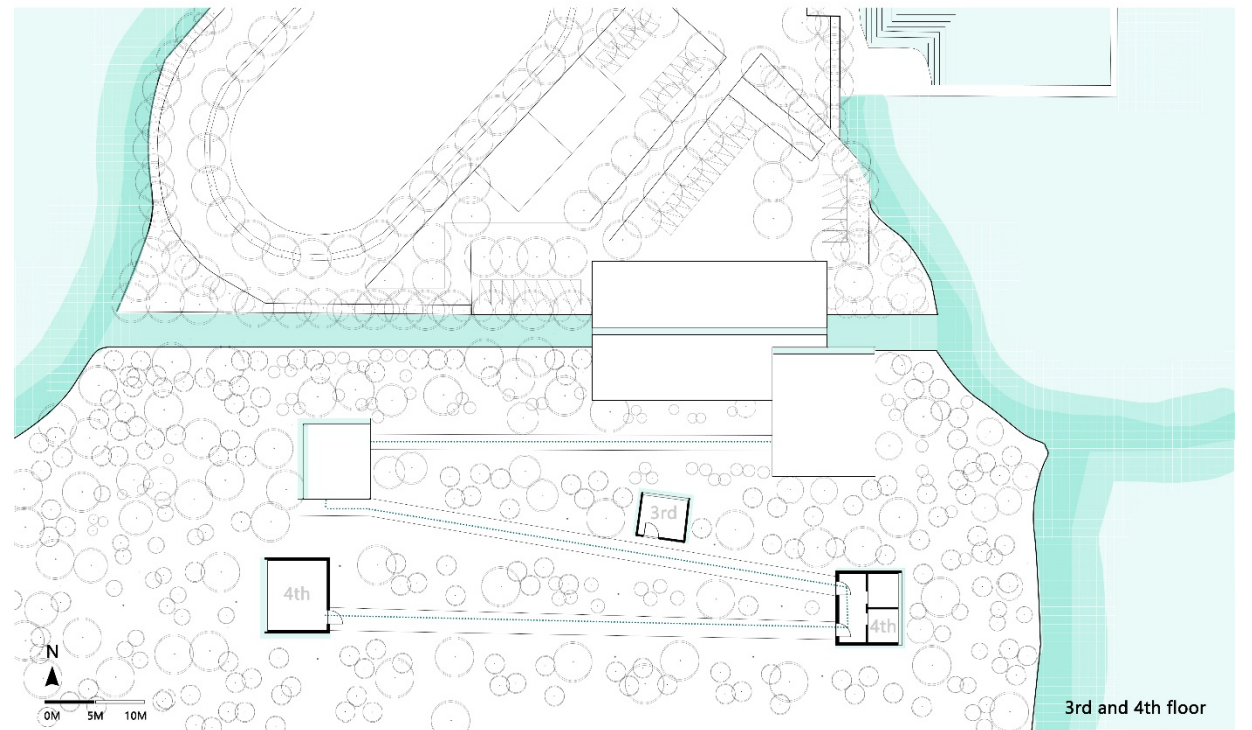


Floors Plans

Suffer from Rain Situation



Plan _ 2ed floor

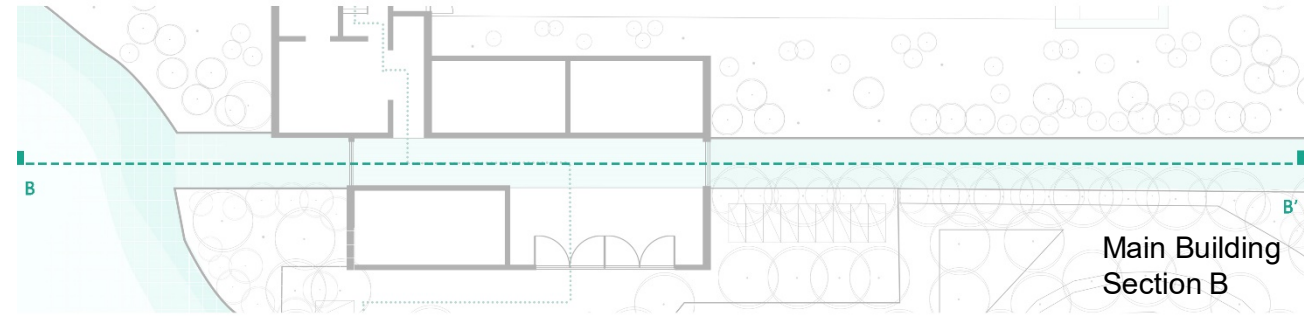
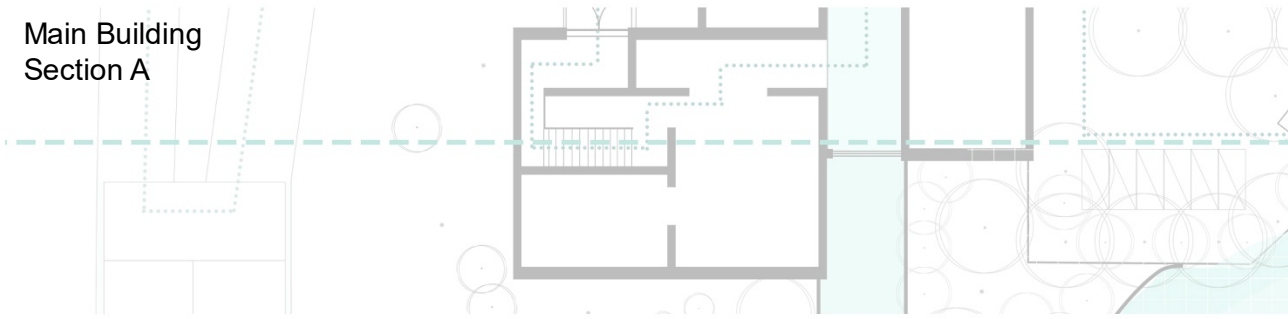


3rd and 4th floor

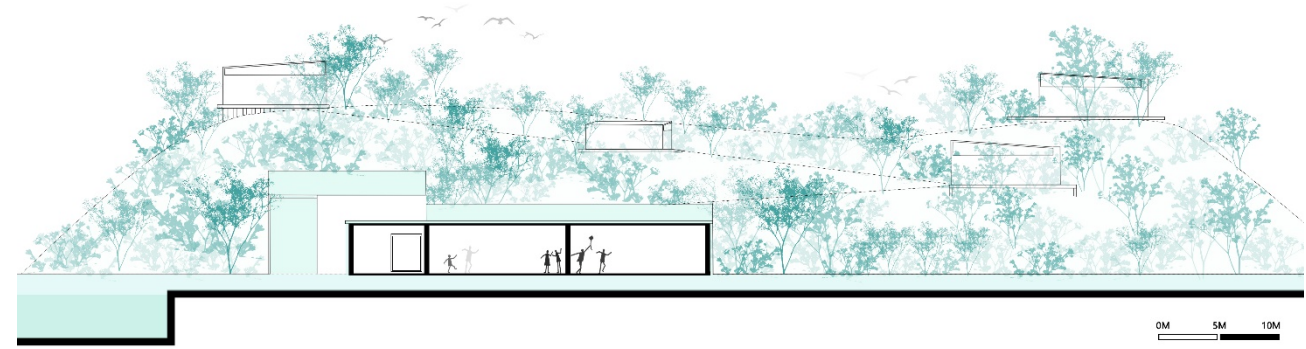
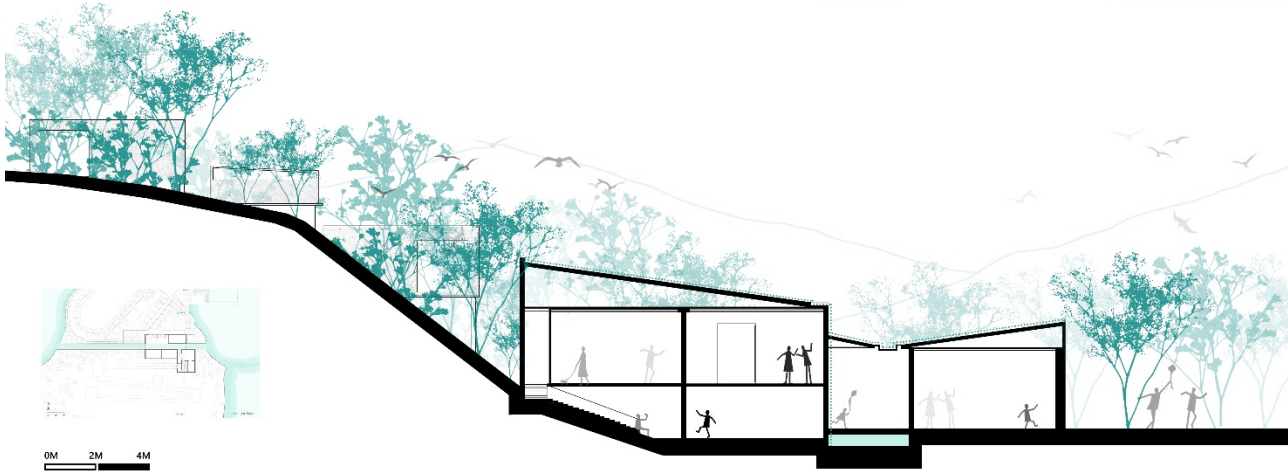
Floors Sections

Suffer from Rain Situation

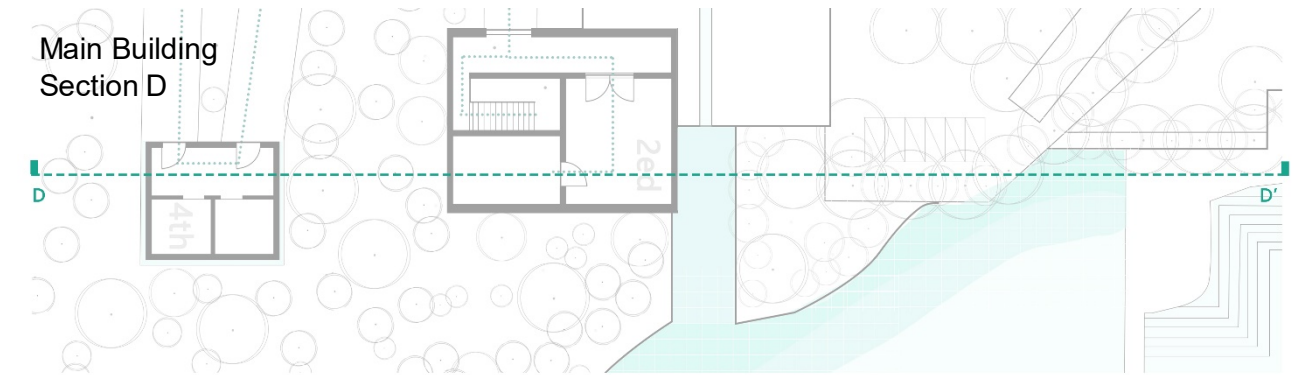
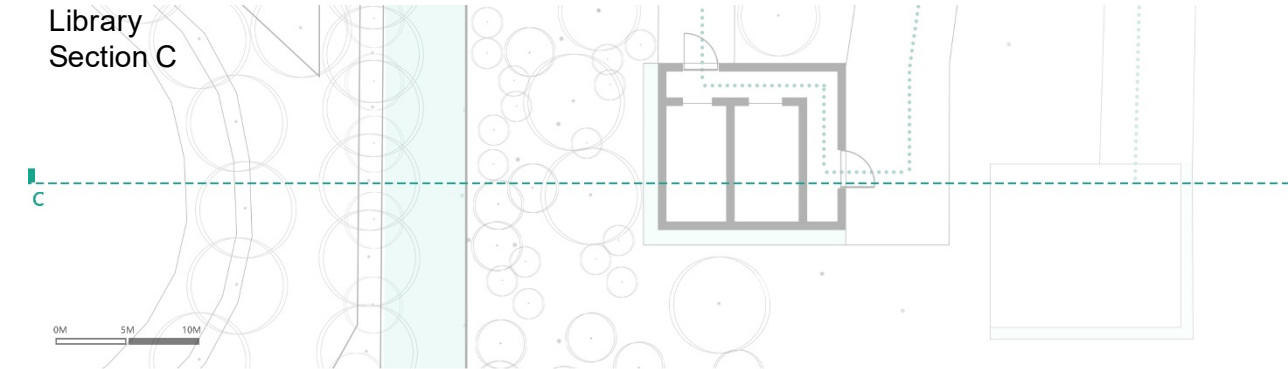
Main Building
Section A



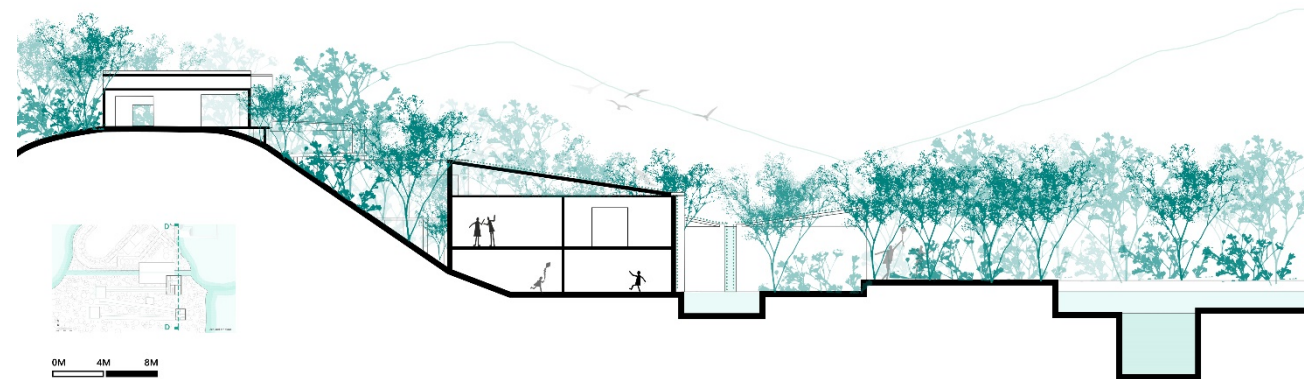
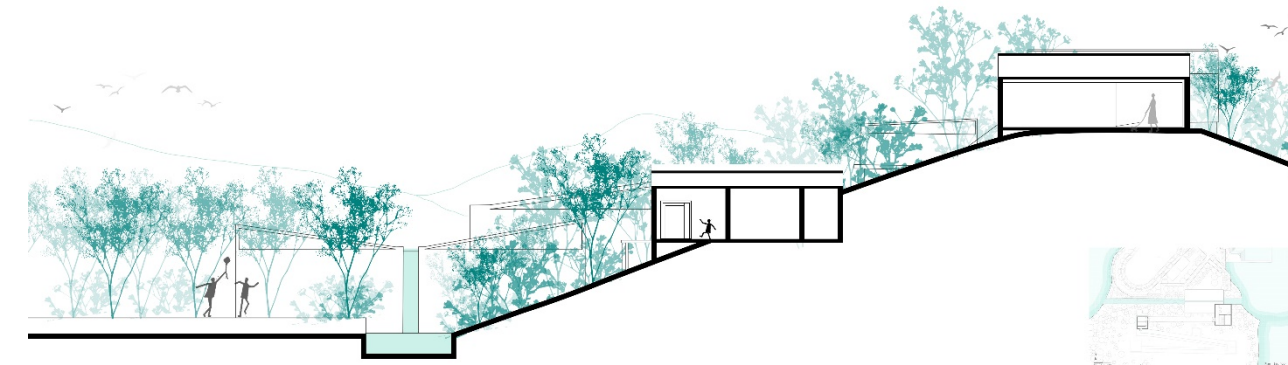
Main Building
Section B

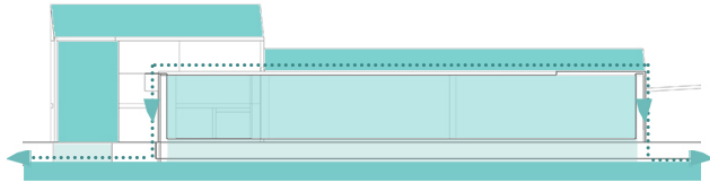


Library
Section C



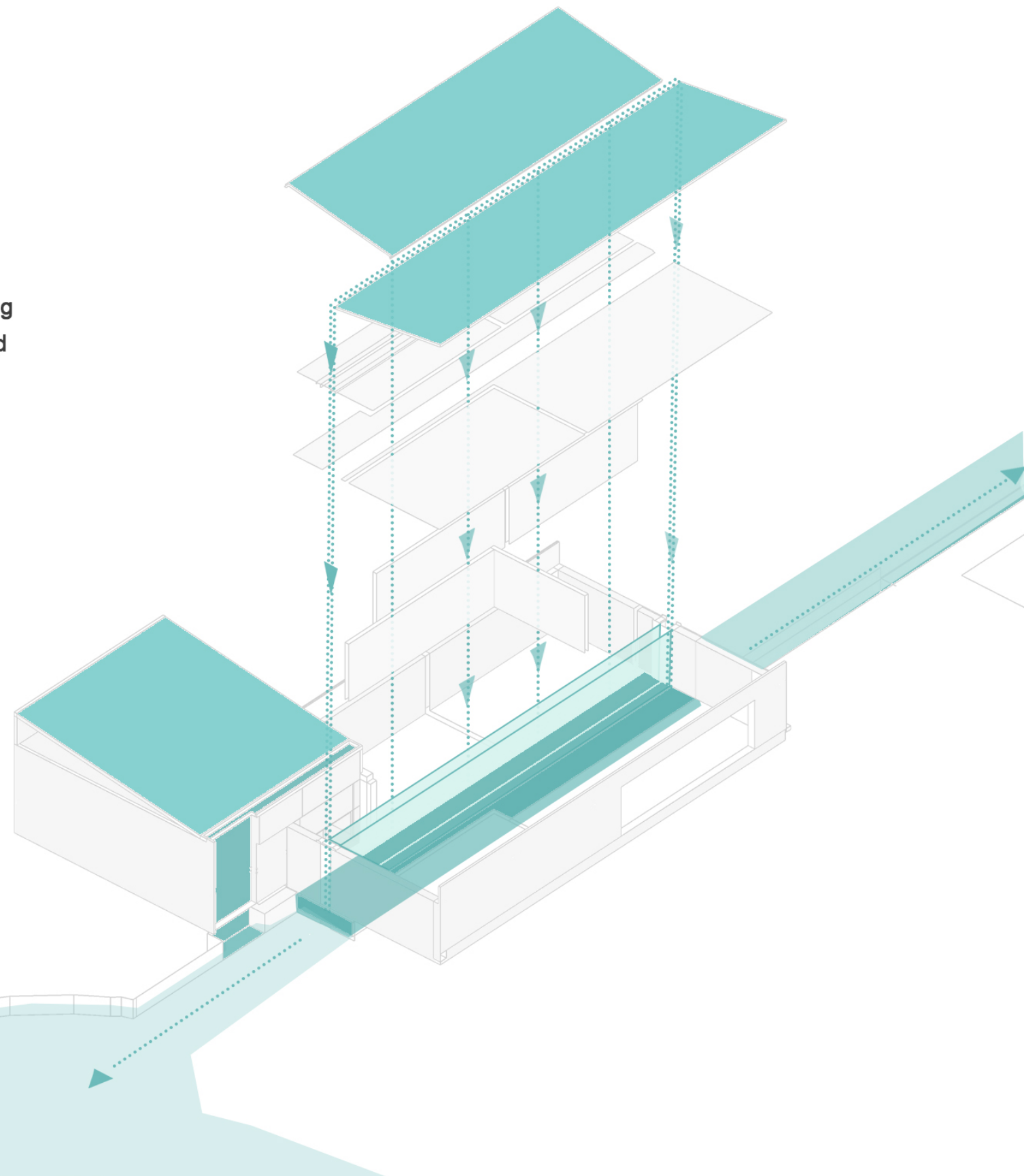
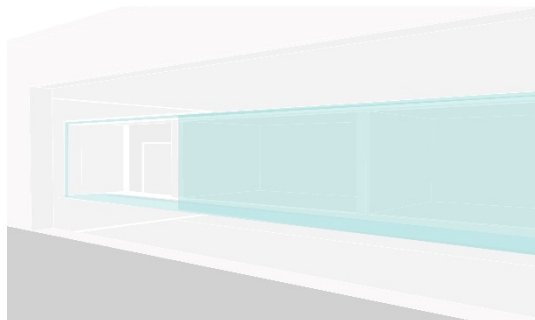
Main Building
Section D





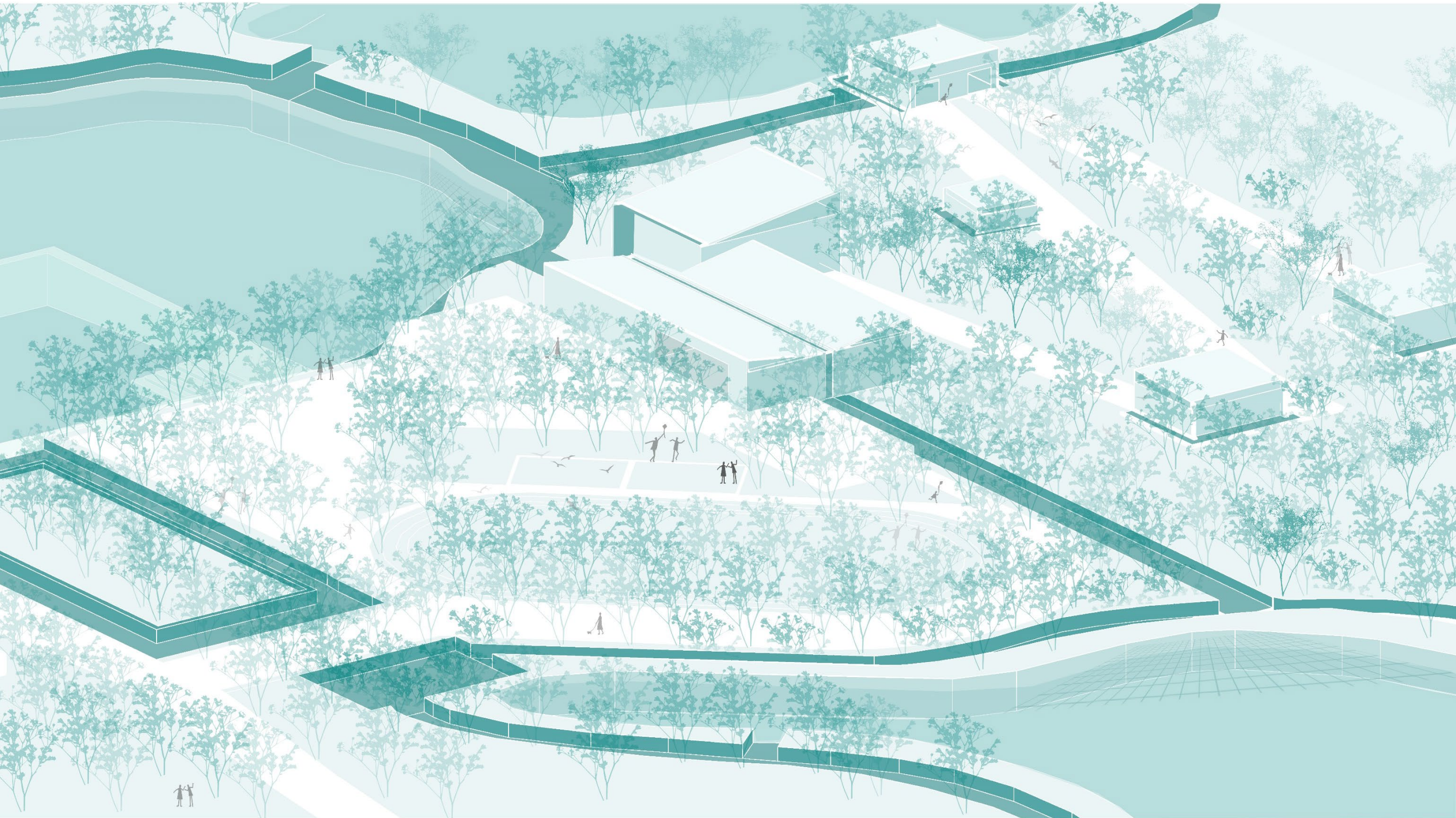
BLUE WALL INSIDE THE BUILDING

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.

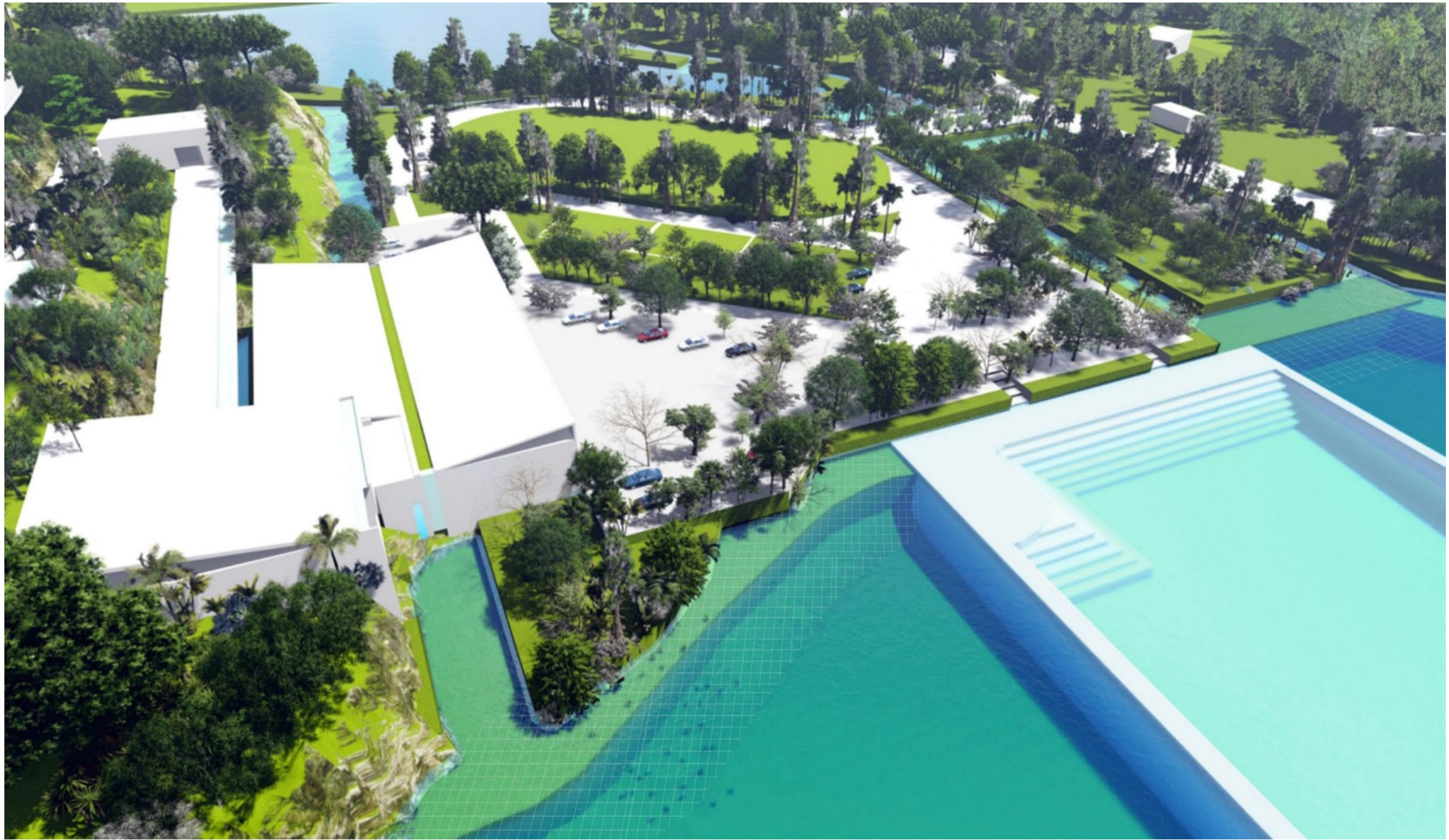


Aerial View

Suffer from Rain Situation



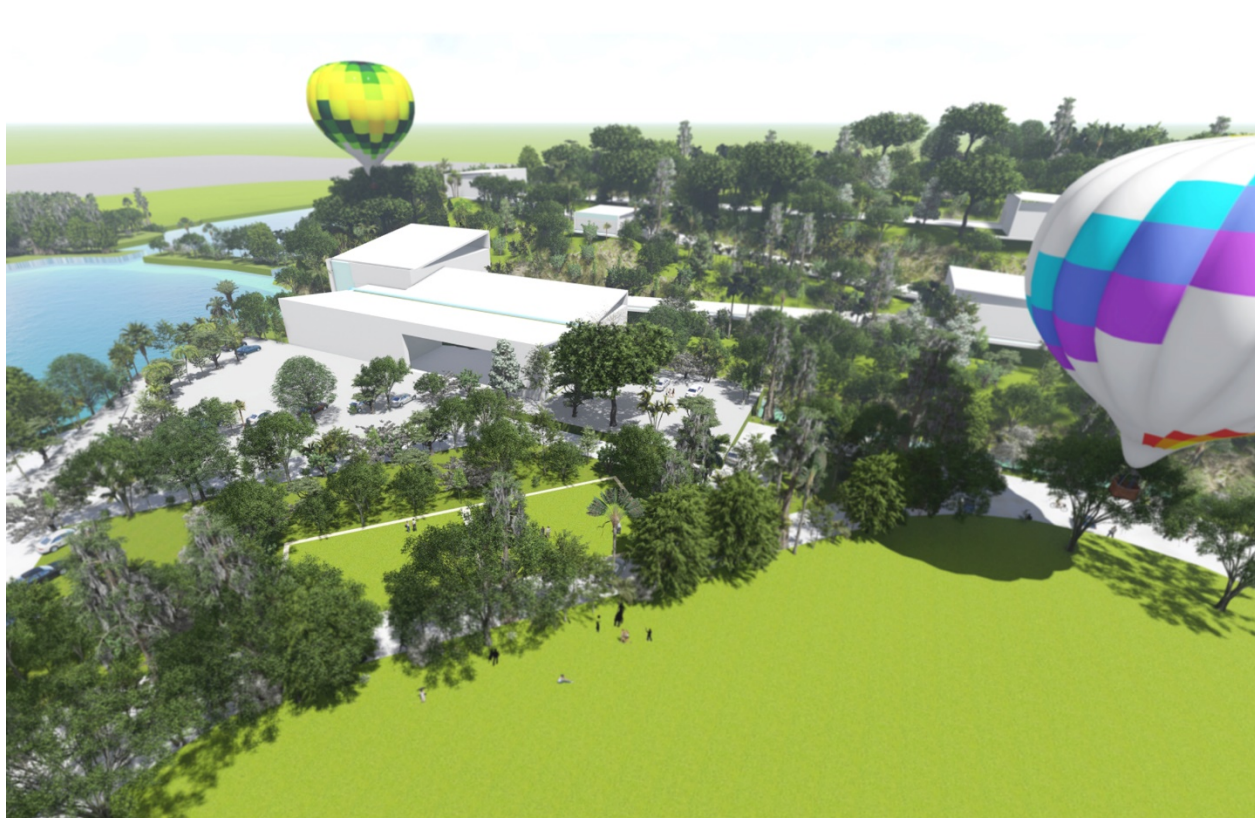
School with Swimming
Pool and Playground
Views



Perspective Views



Perspective Views





2ed Building Views



3rd Building Views



3rd Building Views



TOP Building Views

THANKS