

It is a crucial moment for architects to find out how to adapt this population in this high-density city.

The availability of land in Dhaka is highly competitive and thus the battle is ruthless. Consequently, the land value is sky rocketing and each vacant square feet becomes a subject prior to discussion: "Is it possible, in these circumstances to recover Dhaka from the certain death?"

Dhaka is basically being built/killed in two ways: by developers and builders whose only concern is maximum economic profit and who could care less about spearheading an environmental and social degradation; and by designated policy-makers whose myopic and miserly visions do not go beyond making regulations and land divisions, and hold no answer to the **complexity of the urban landscape**. (Ashraf et al 2009)

Thus the project is to find a way to answer these complexity of Urban Landscape. A **Sustainable Landscape Design** in this high density city. To find a way to integrate the landscape with the existing urban tissue.

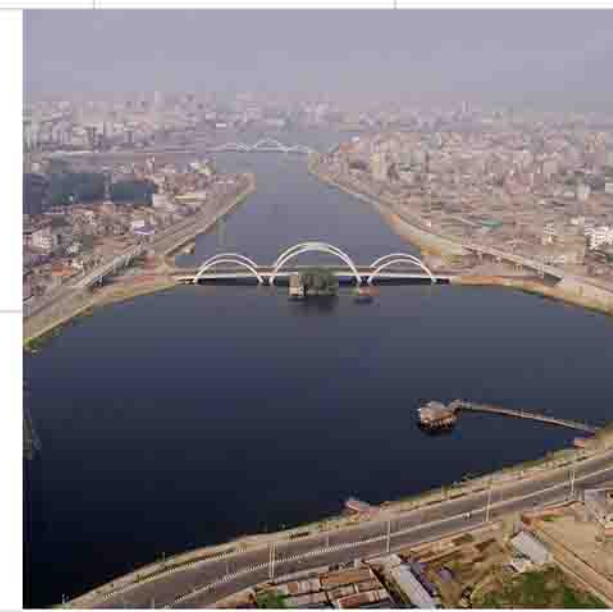
Project



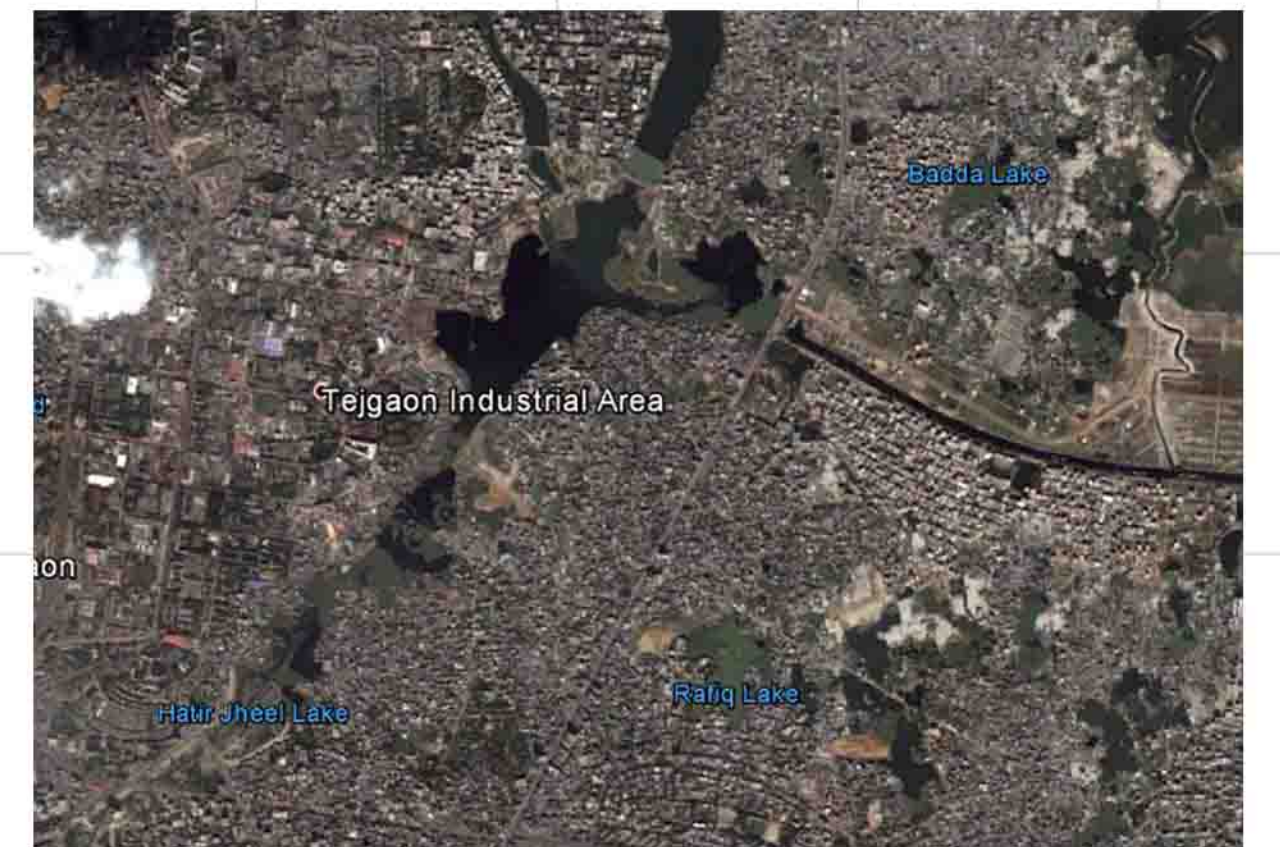
2006



To propose the site area was one of the difficult task for this project. However, through last few years of observation, I realized the great possibility for the execution of this vision near Hatirjheel Lake. Hatirjheel (also known as Hatirjheel-Begunbari Lake) is a significant lake situated at the heart of the city beside Tejgaon Industrial area. Both the lake and the industrial area create a wide opportunity to start the recovery of Dhaka from its certain death.



Area Proposed .. Why?



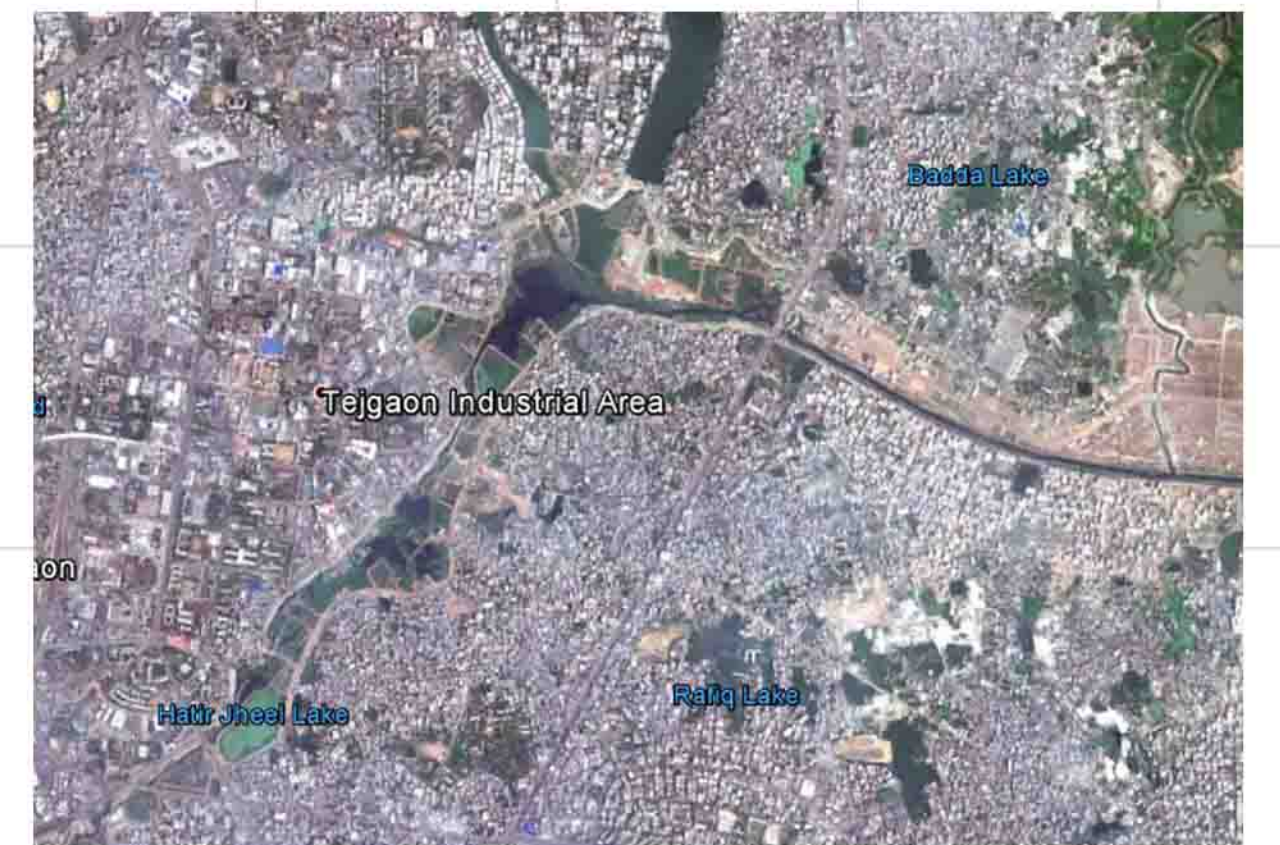
2008

During the last decade, there have been some inappropriate constructions around the lake by some influential people, against the regulations. For a deeper enquiry, a research and analysis have been developed regarding DMDP (Dhaka Metropolitan Development plan) and DAP (Detail area plan). The outcome showed the lake was converted into a wetland by multiple owners; who began to develop their properties on the converted wetland according to themselves, within and around the lake.

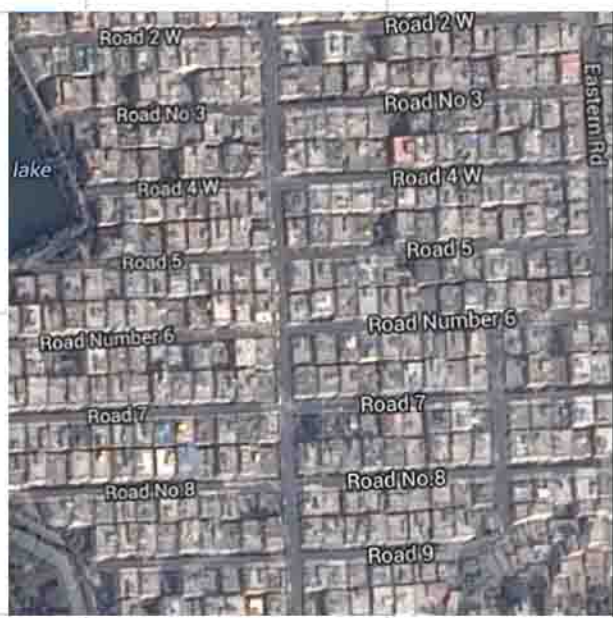
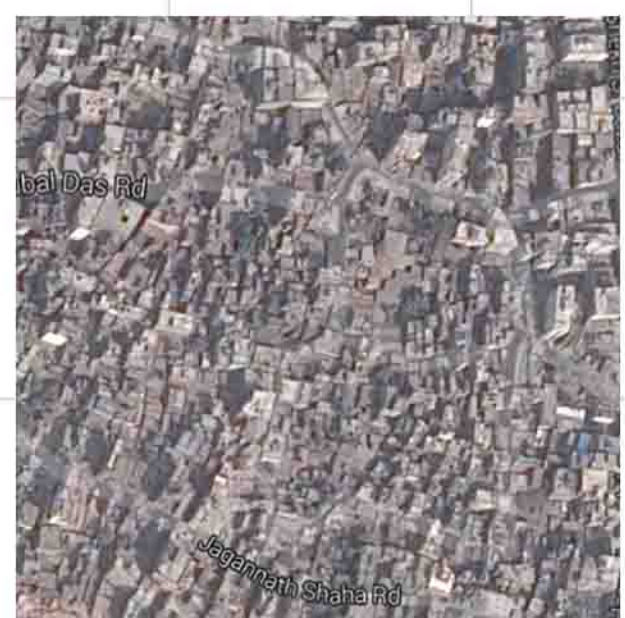
Yet now one can find the plot divisions within and around the lake in DAP. However, this incident was then protested by some architects and the wetland in hatirjheel was acquired by the Government for redeveloping the lake. This lake now serves as the heart and a major breathing space for the whole city

In addition, this created a wide opportunity for Dhaka city to rethink the future. The lake was then further developed with a new a permanent boundary. (People started to build new building) More interestingly, This fixed boundary of the lake created an unknown opportunity for the future development of Dhaka, as the land around the lake was not predefined or zoned into any specific type of area. Moreover, according to DAP these lands have the different owners who are legal to build.

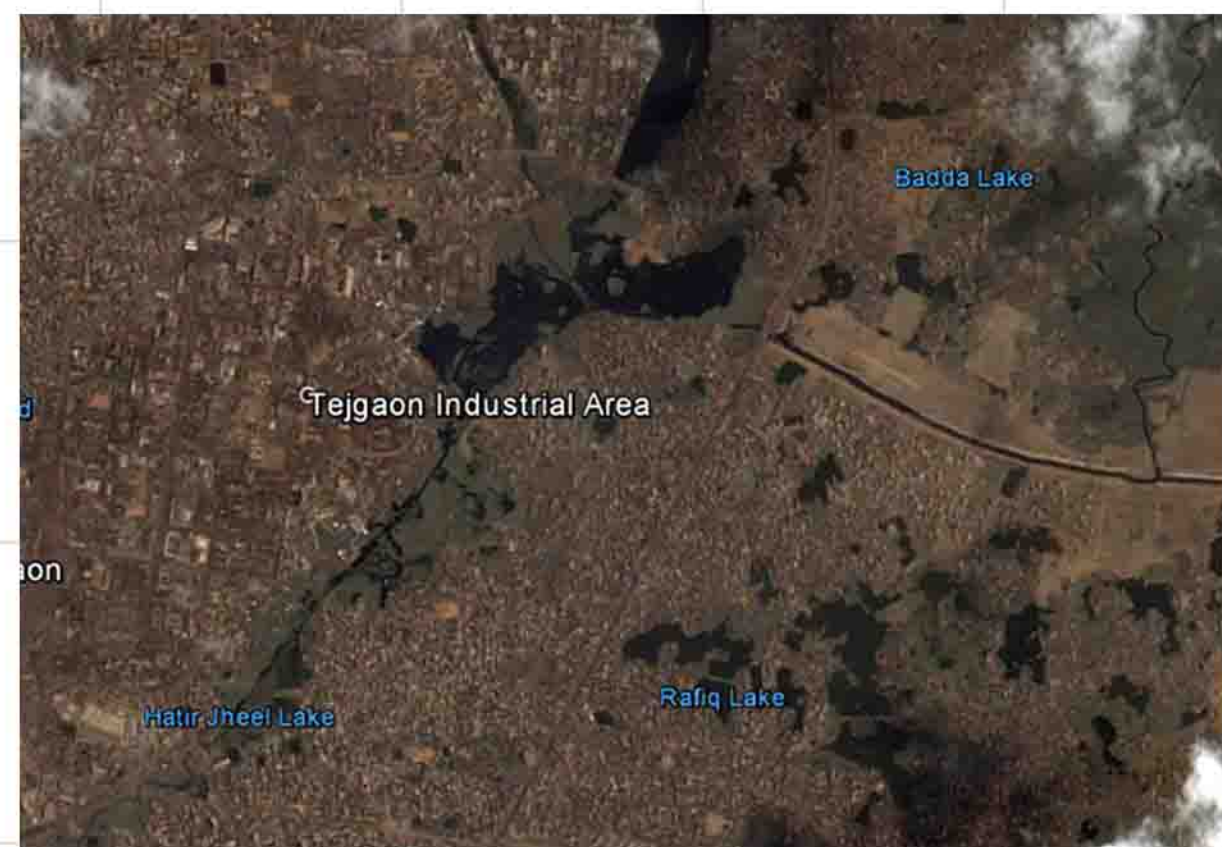
A satellite view of this area has been illustrated below from the year 2001 till now to explain the scenario.



2010



Glimse of Dhaka - a dead concrete city



2001

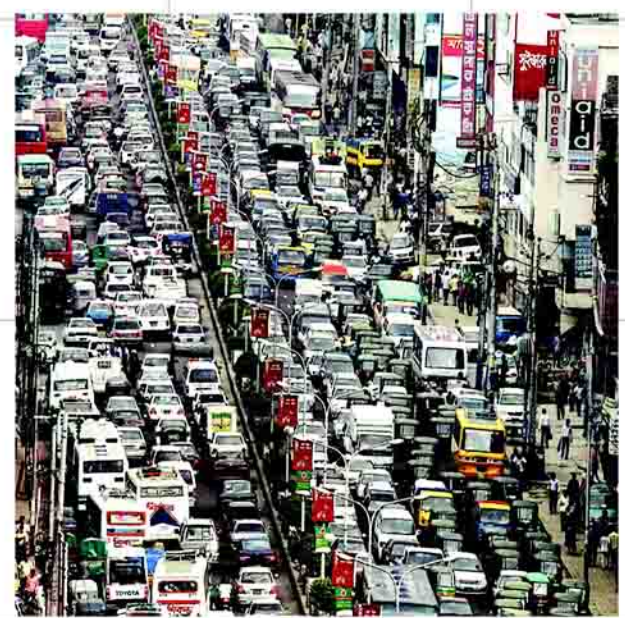


2012

Dhaka, the Mega city is the capital of Bangladesh. According to Forbes's magazine, Dhaka is the most densely populated, making its way to number one in the world. In 2013, its population reached to **14.399 million** with the density of **115200 per square mile (45000/km2)**. (<http://www.forbes.com/pictures/edg45fdll/no-1-dhaka-bangladesh/>)



The most important development that has taken place in the city's recent history is the overwhelming growth of its population, chiefly through migration. In 1872, at the time of the first census, Dhaka had a population of 69,212; in 1881, 79,076; in 1911, 1,25,000; and in 1941, 2,39,000. After the Partition of 1947 the increase in population showed a steady rise with the arrival of migrants from India and in 1951 the population jumped to 3,36,000. According to the census of 1961, the city had a population of 556,000, a growth of some 44.63% during a decade. This growth rose dramatically after 1971. By 1974, the population increased to 1,680,000; in 1981 it reached 3,440,000; and in 1991, 6,150,000. In 2008, population was 12.8 million (BBS 2008) whereas now in these five years it rose to around more one and half-million.



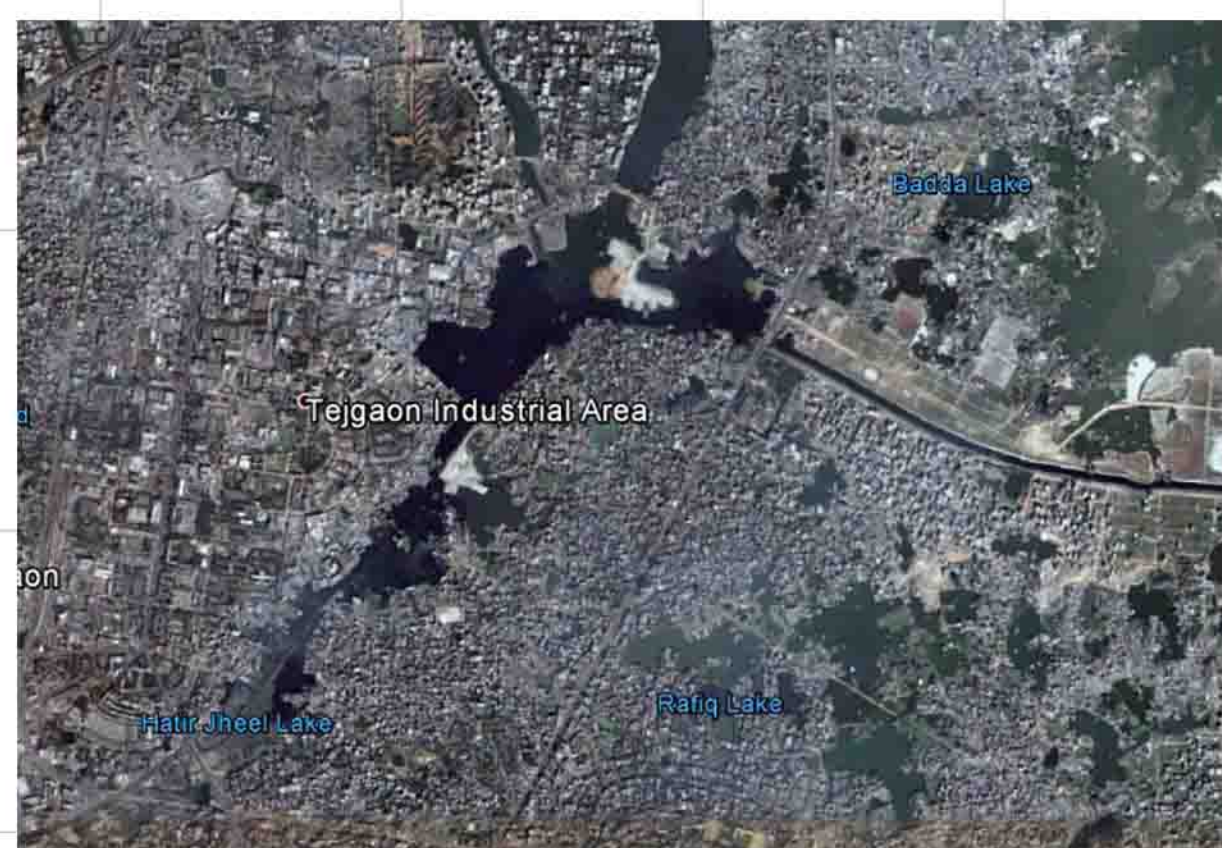
Everyday Dhaka



2003



2013

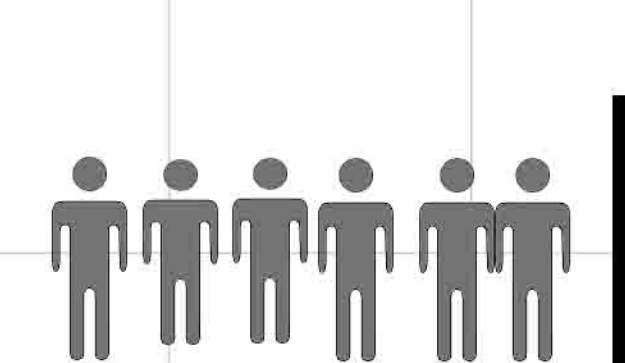


2004

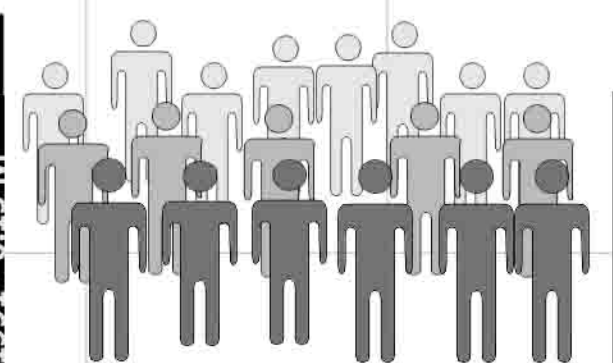


2014

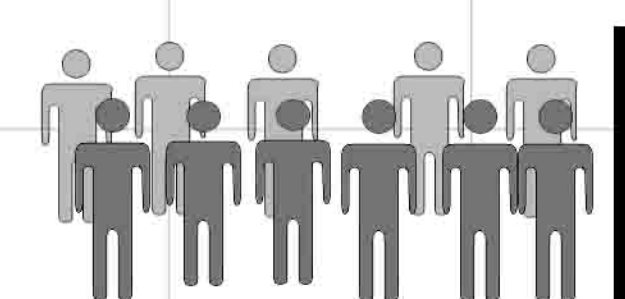
Recovering the lake



1991 - 6.15 M



2013 - 14.39 M



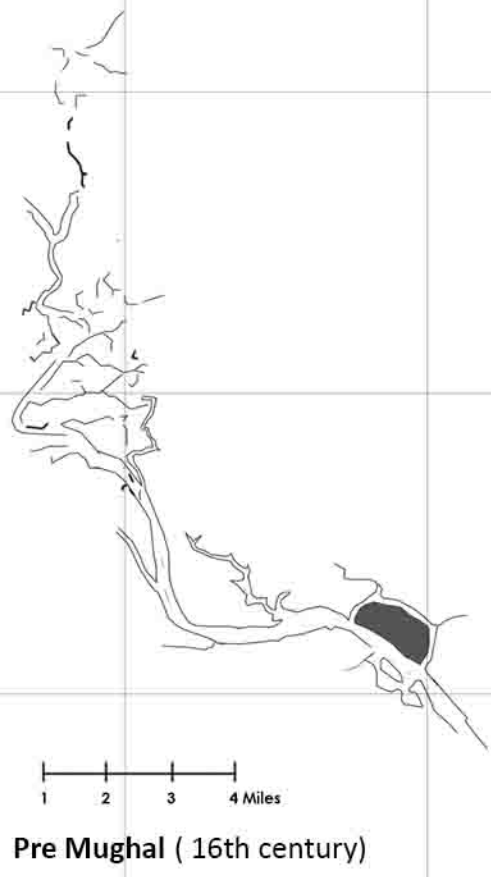
2008 - 12.8 M



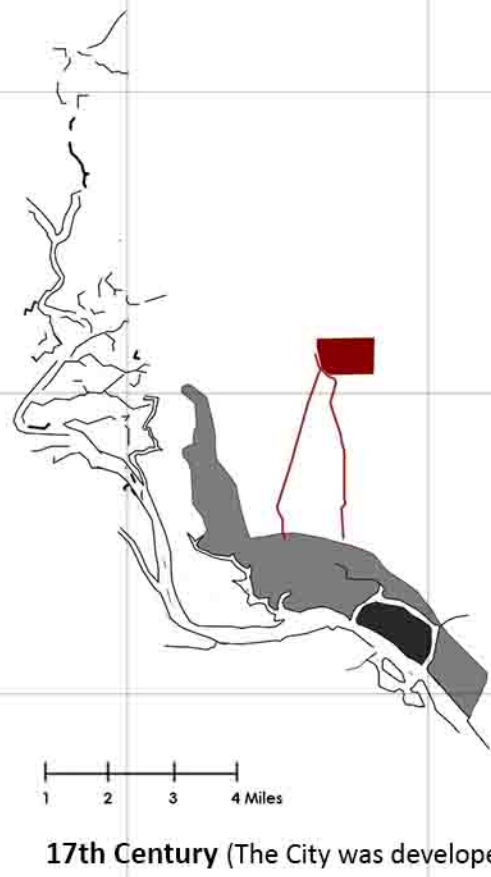
Next ...?

It is the ideal time for a visionary approach for the whole area. Whole area includes the land beside the lake as well as the Tejgaon Industrial Area itself.

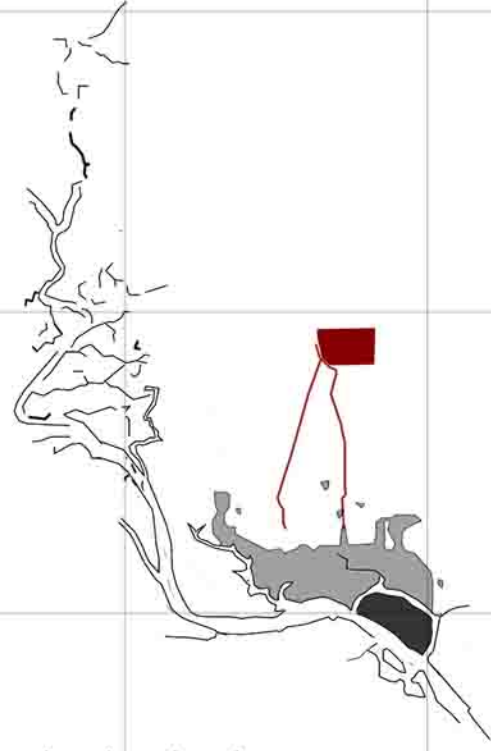
I began to research the importance of the area. Find out an answer, "why an industrial area grew in the heart of the city?" As a result, I produced these maps considering the Tejgaon Industrial area in relation to the growth of the Dhaka City.



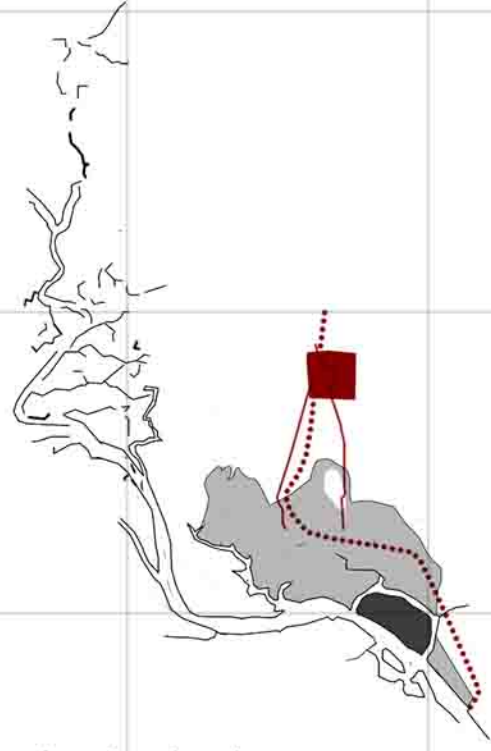
Pre Mughal (16th century)



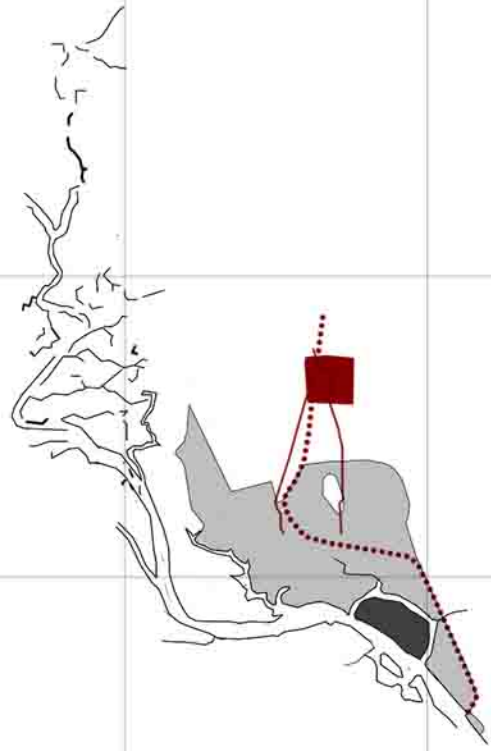
17th Century (The City was developed from East to West. Dhaka attracted by European Traders) They established their factories in Tejgaon Area



18th Century (Shrinking of Dhaka after British East India Company took over the country)



1859 (introducing a rail line from Tongi trough Tejgaon)



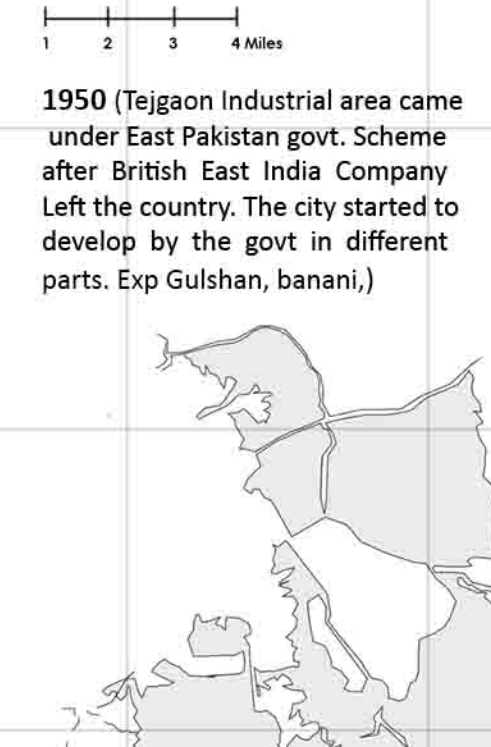
1905 (Dhaka Started to develop towards North)



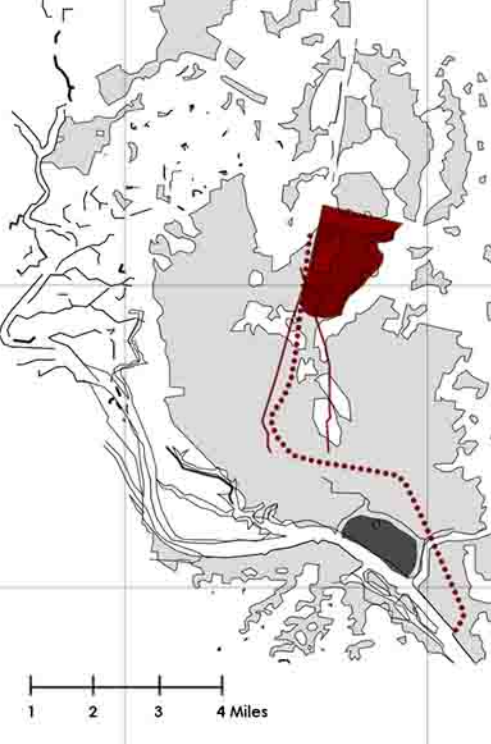
1950 (Tejgaon Industrial area came under East Pakistan gov. Scheme after British East India Company Left the country. The city started to develop by the gov in different parts. Exp Gulshan, banani.)



1980 (Dhaka Started to develop towards Further in the North)

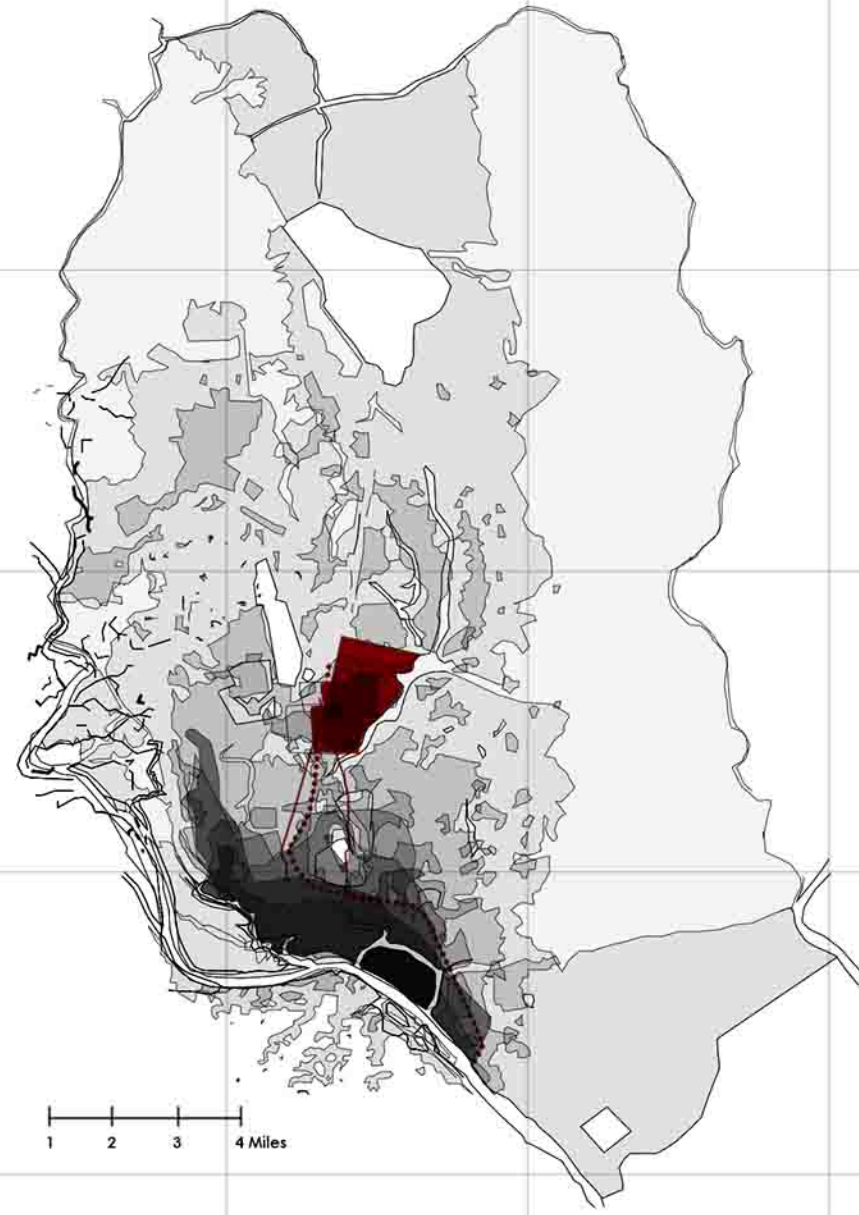


2014 (Tejgaon became in the middle of the city)

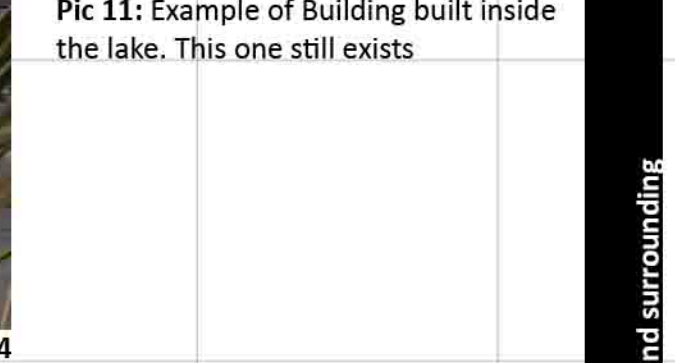
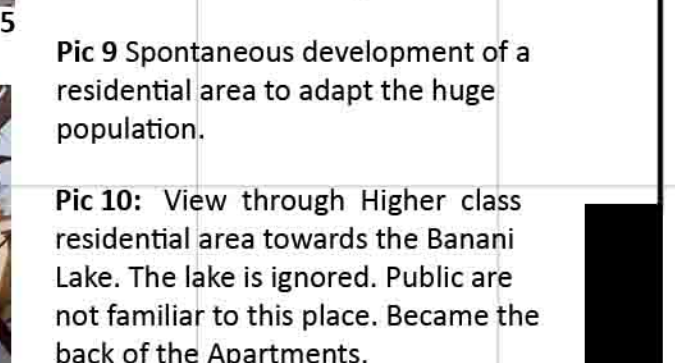
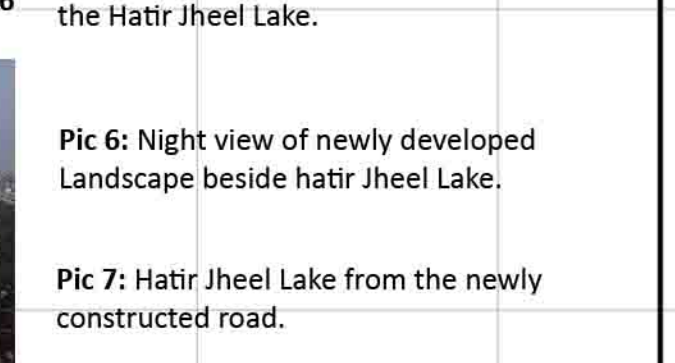
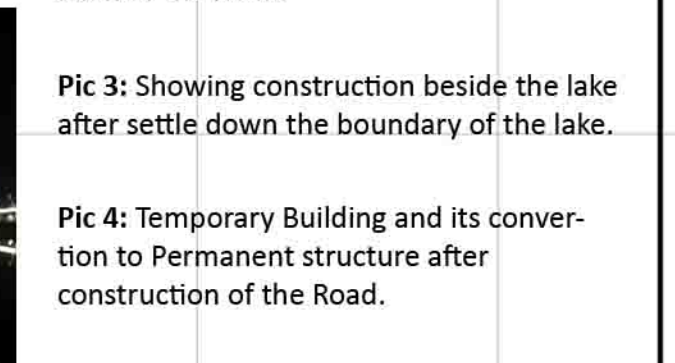


2050 Future projection of the City

All together



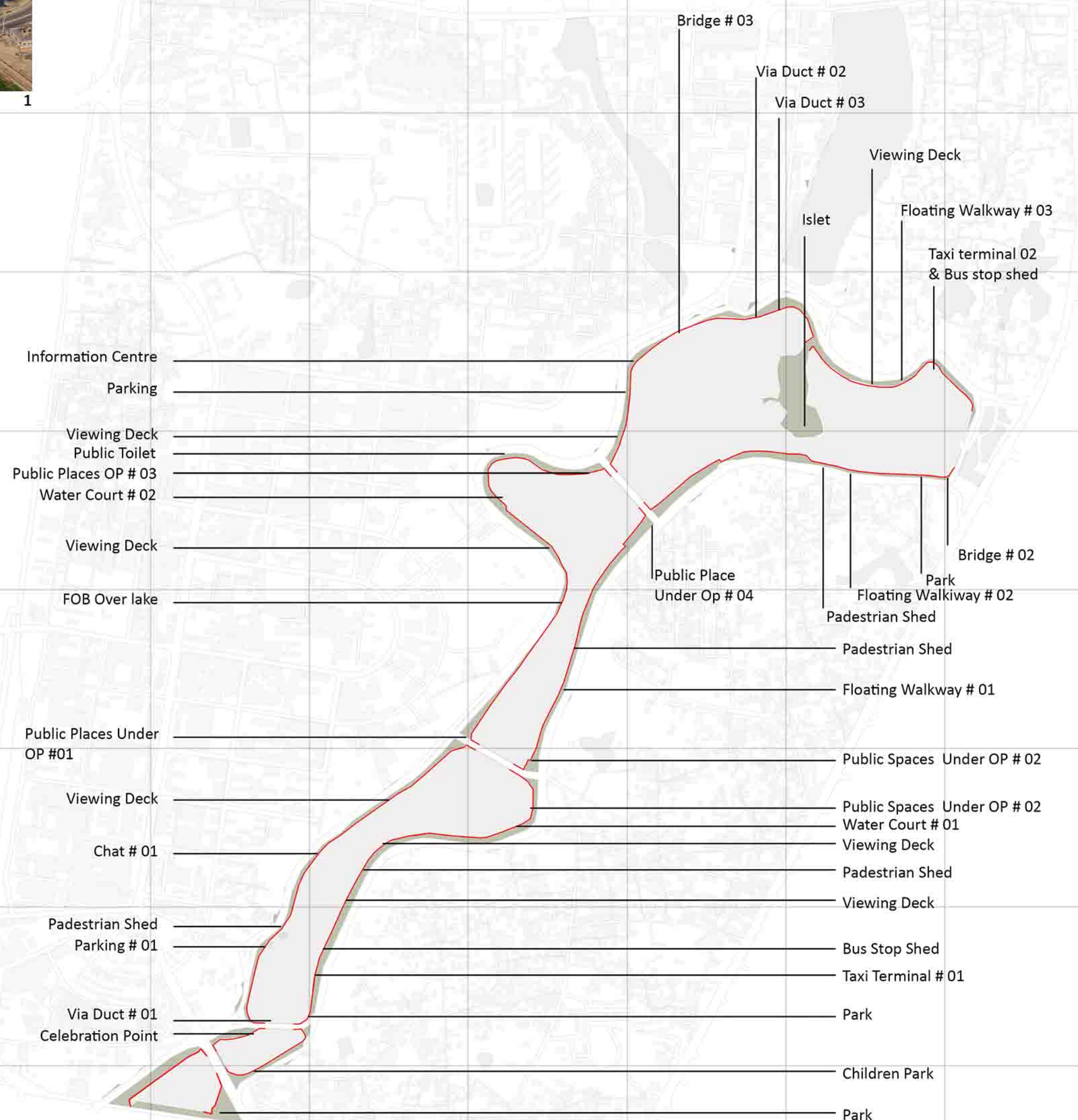
Above analysis, it is clear, tejgaon in the Mughal period started far away from the city. After British ruler took over the country, they started to develop the city towards North direction. It also influenced the East Pakistan government (1950) to develop the city more towards North by selecting different part of the land to develop mostly middle-income housing. It is noticeable that in selecting these sites the method of picking the highlands along the transportation system was followed.



Note: **Temporary Building:** Temporary building" means any building or structure constructed of short-lived materials or permitted to be used by the competent authority or Commissioner of Building Control for a period not exceeding 36 months or such other period as may be prescribed.

All the Phases together

Introduction to the lake and surrounding



Development of Tejgaon Industrial Area and Hatirjheel Lake

Functions designed in this landscape lake front

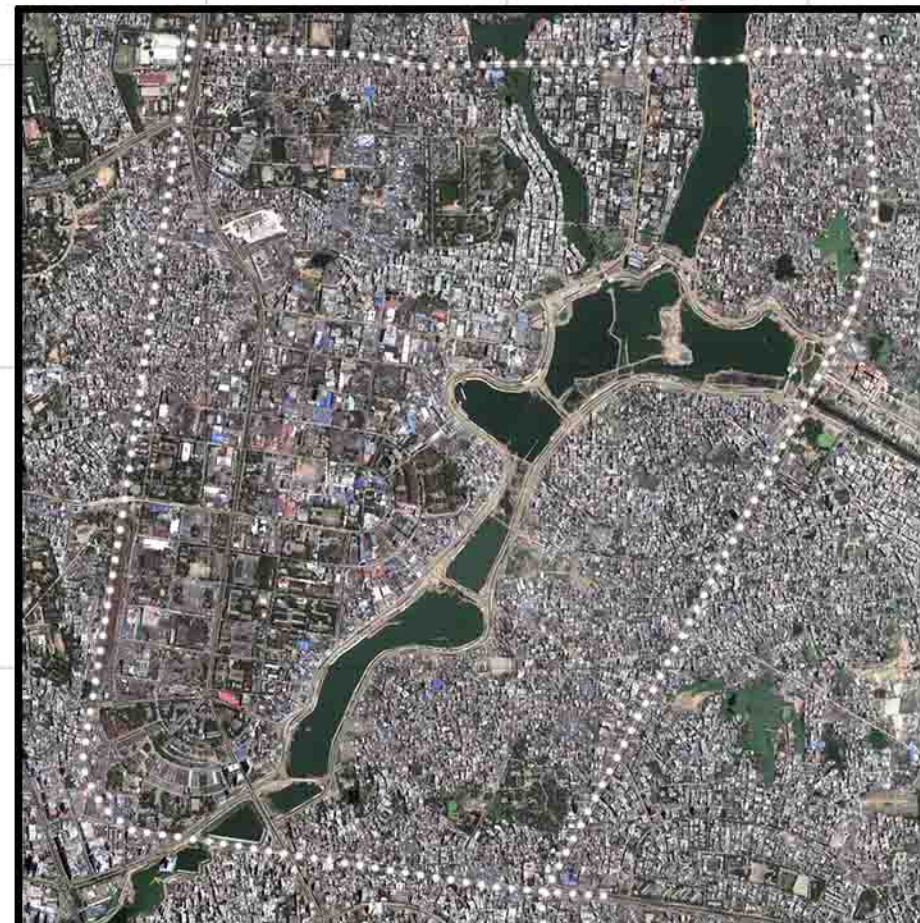
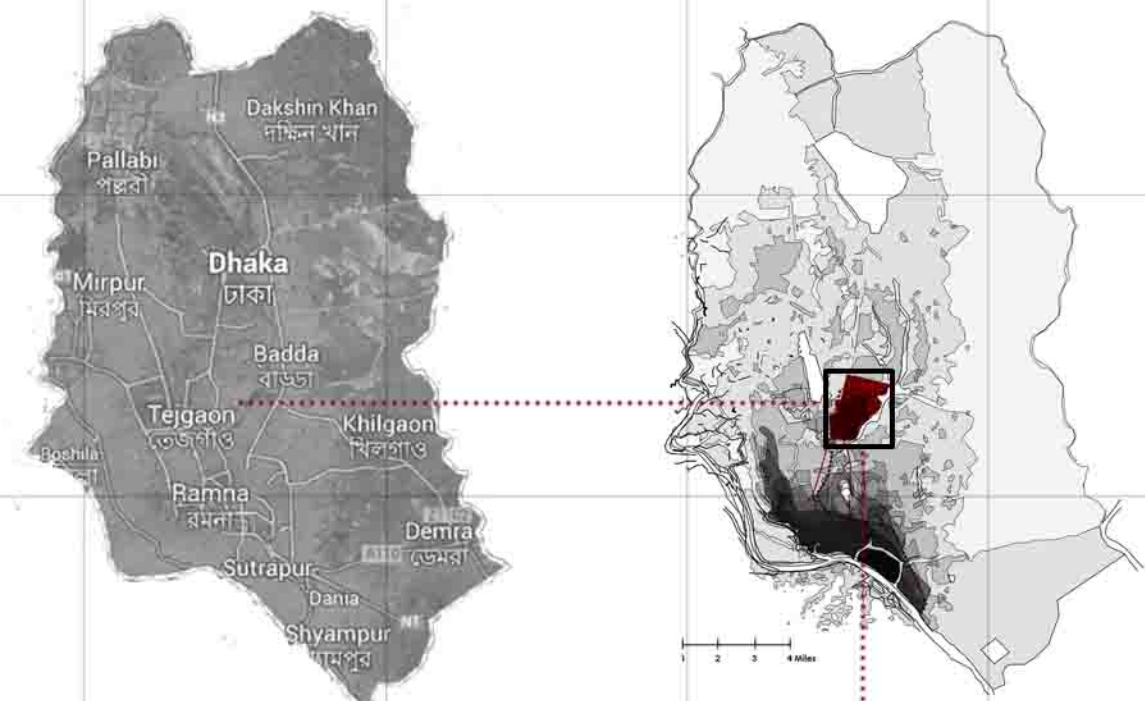


Project name: **Sustainable Landscapes**
 Dhaka, an Urban and Architectural Strategy for High-density City

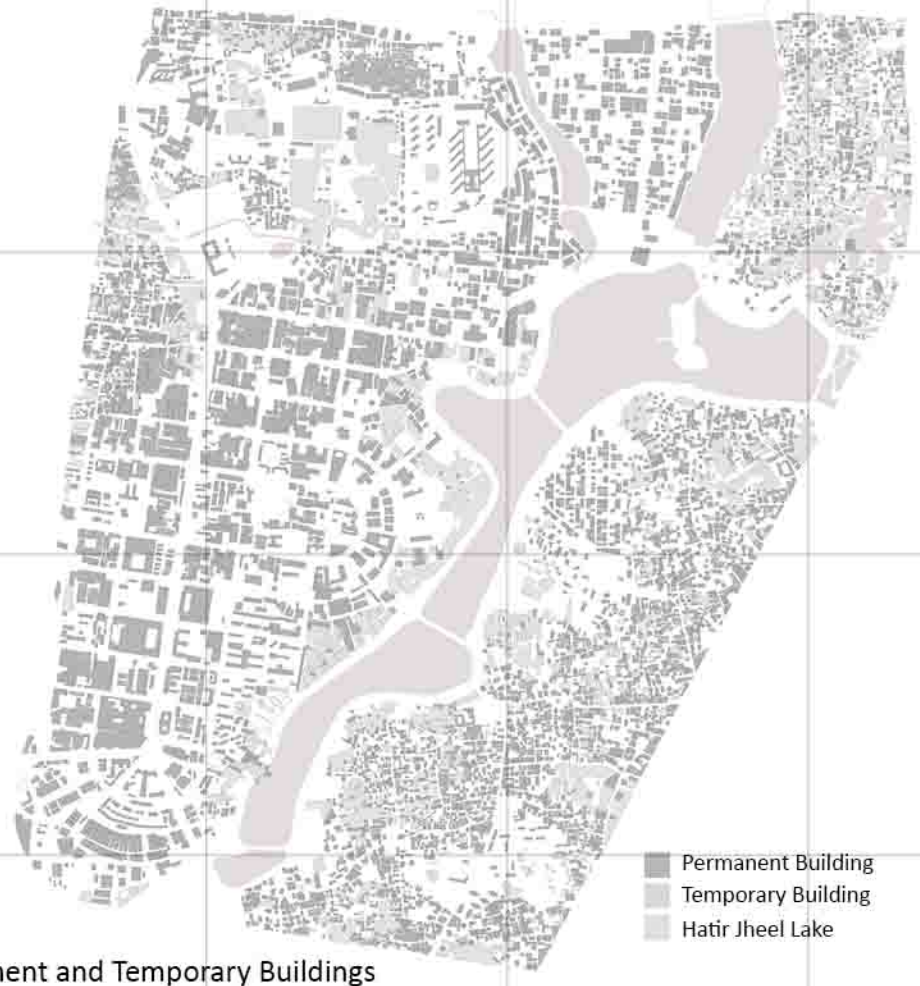
Supervisor: **Michele Roda**
 Co-Supervisor: **Filippo Orsini**

Submitted By:
Imran Ebne Amin

To understand in detail and to identify the gap where the future development can be possible, I started with a morphological analysis. All these analyses led me to come up with a proposal.



A. Morphology around the Site



Permanent and Temporary Buildings



Only Permanent Buildings



Only Temporary Building (darker one Temporary structure in the industrial area using as industrial purposes)



What is happening here?

fixing a boundary depending on the road around for Analysis

Morphology around the Site



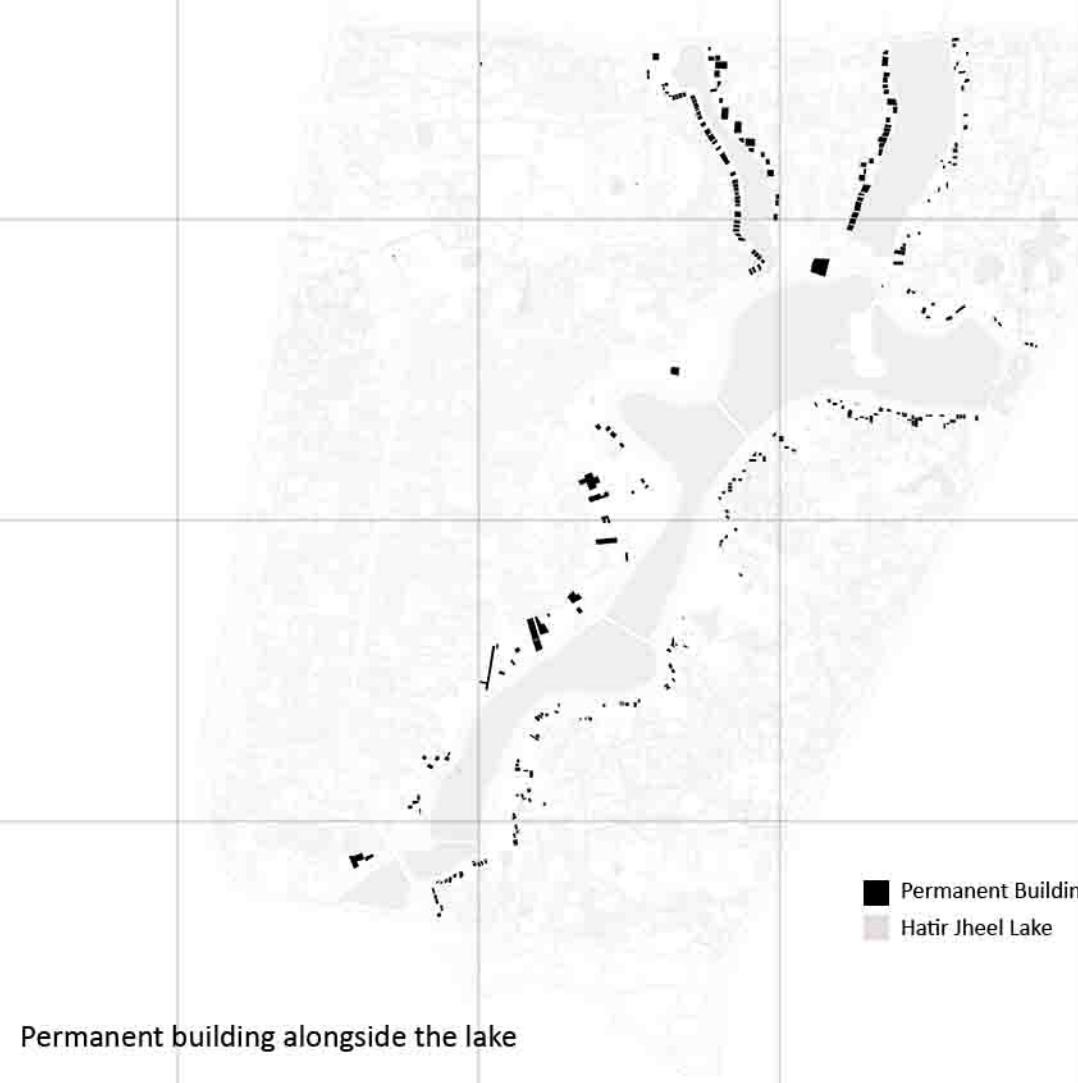
Two years ago



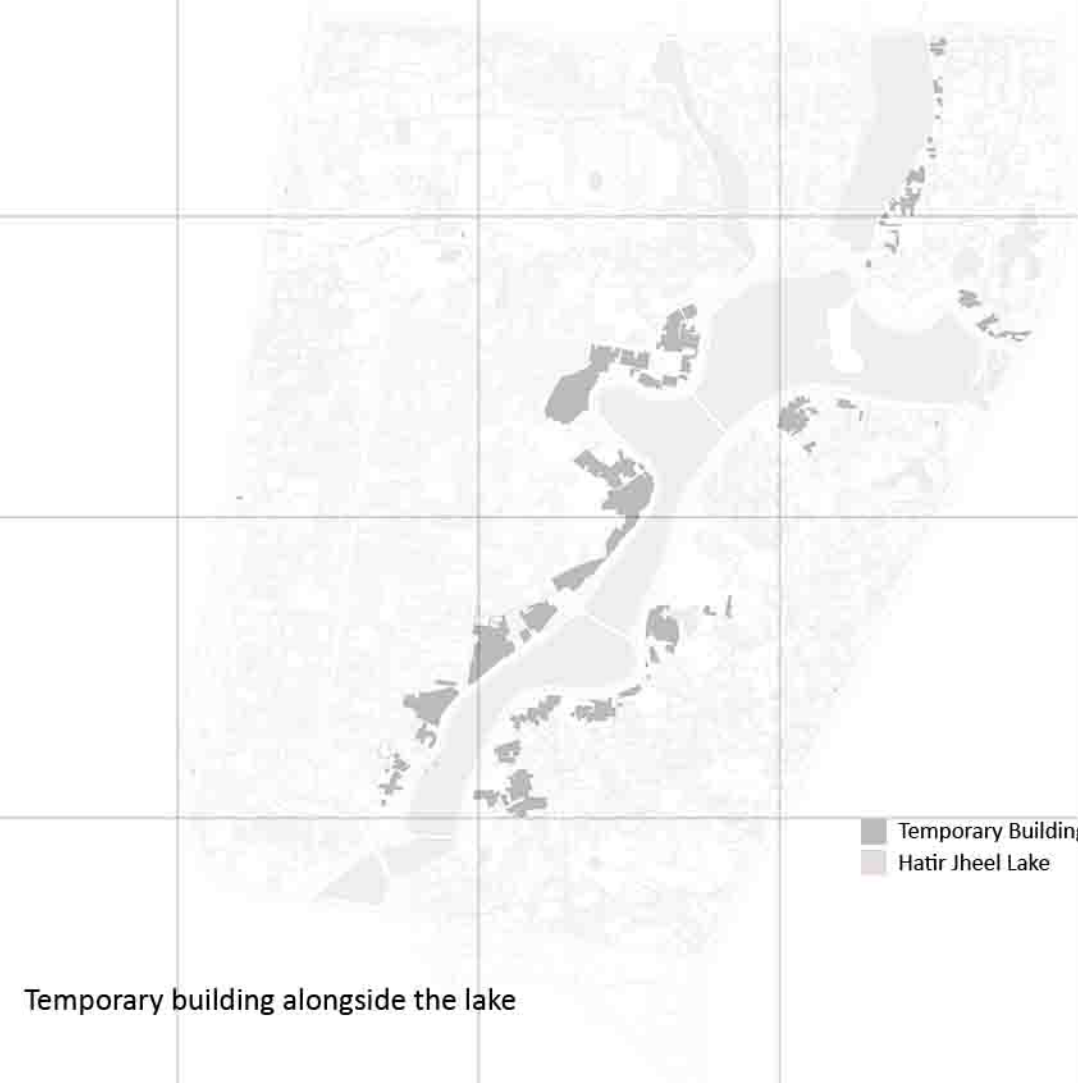
Building Constructed in last two years ago

- Identifying through This analysis:**
- A gap beside the lake and the industrial area.
 - Uncertain future of the Area
 - Spontaneous development started (this change is more visible in next analysis).

B. Morphology alongside Lake



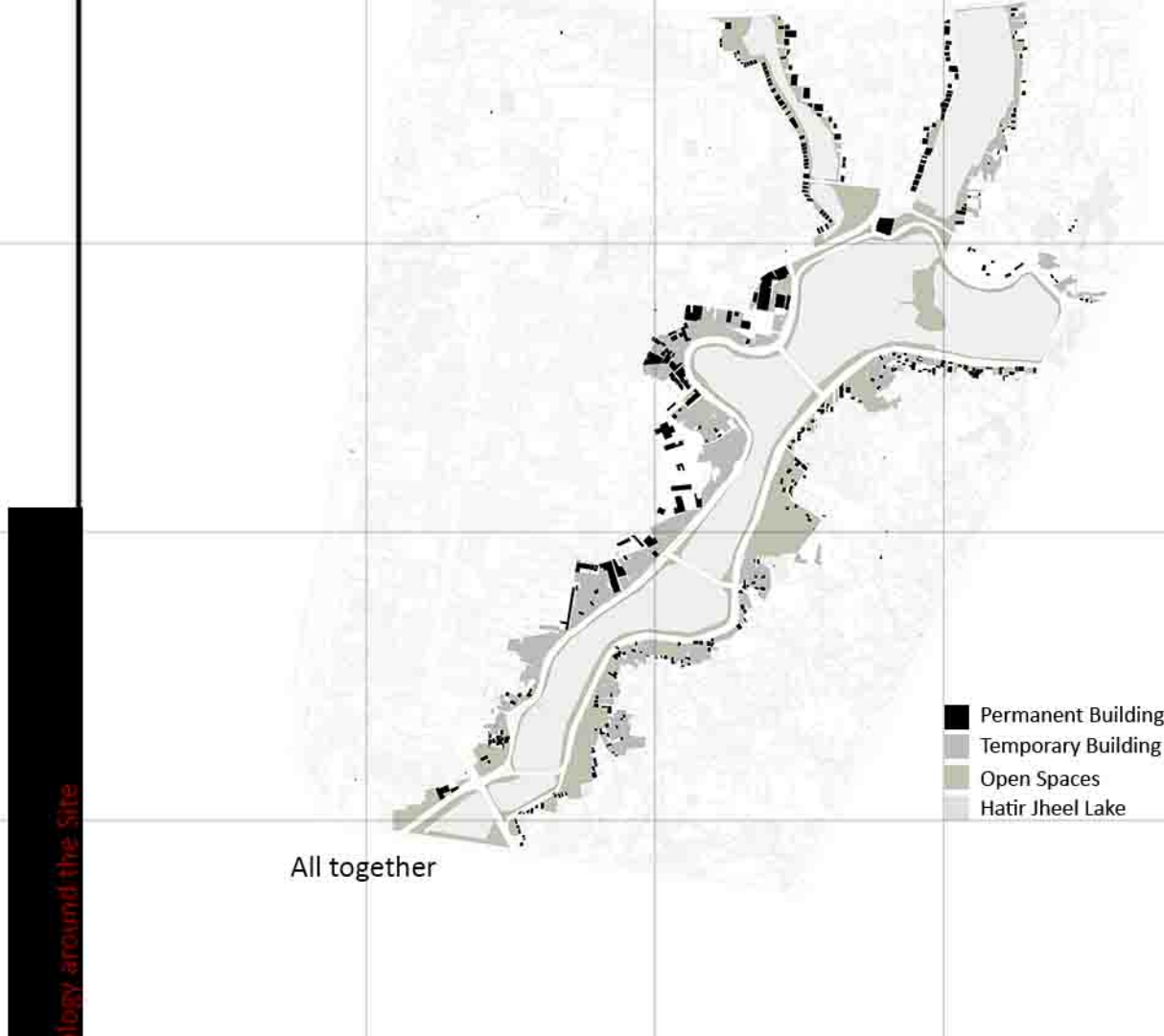
Permanent building alongside the lake



Temporary building alongside the lake

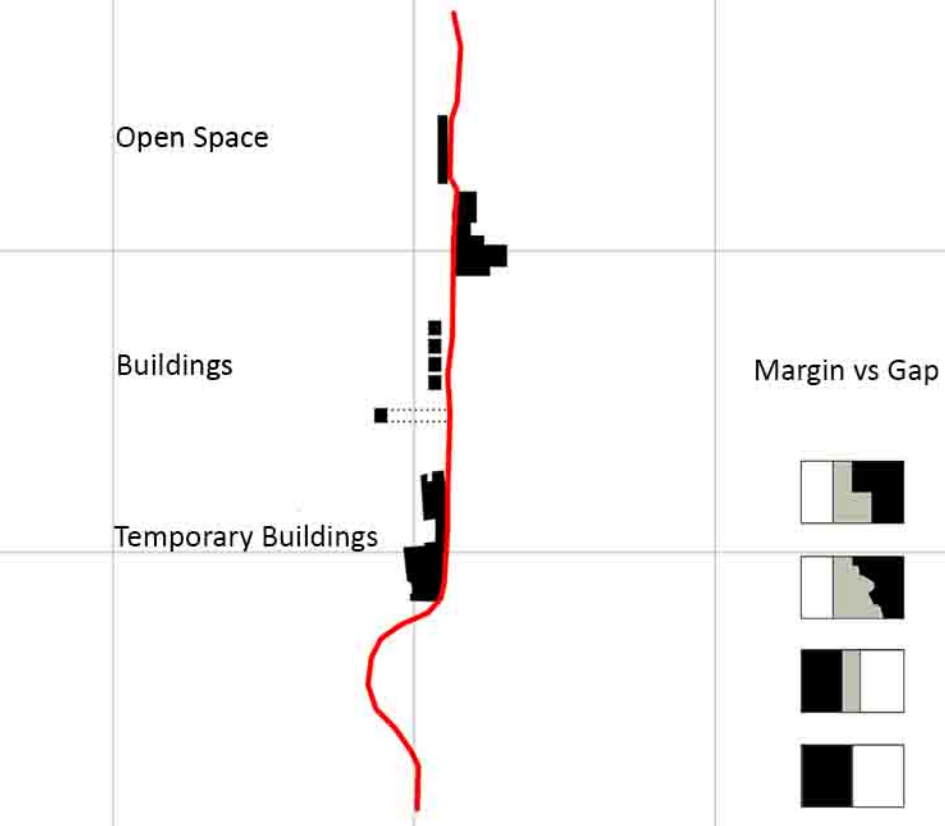


Open Space alongside the lake



All together

Identification



However, More interesting finding came out after analyzing lake side development during last few years.

Identification from Morphology around the Site

Morphology alongside Lake

Morphology alongside Lake (continue)

Identification



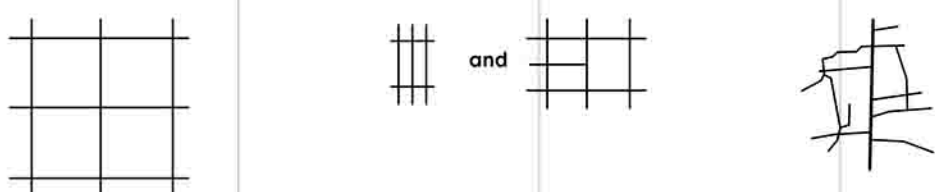
C. Analyzing Urban System:

The analysis is done to understand the urban system exist around the site.



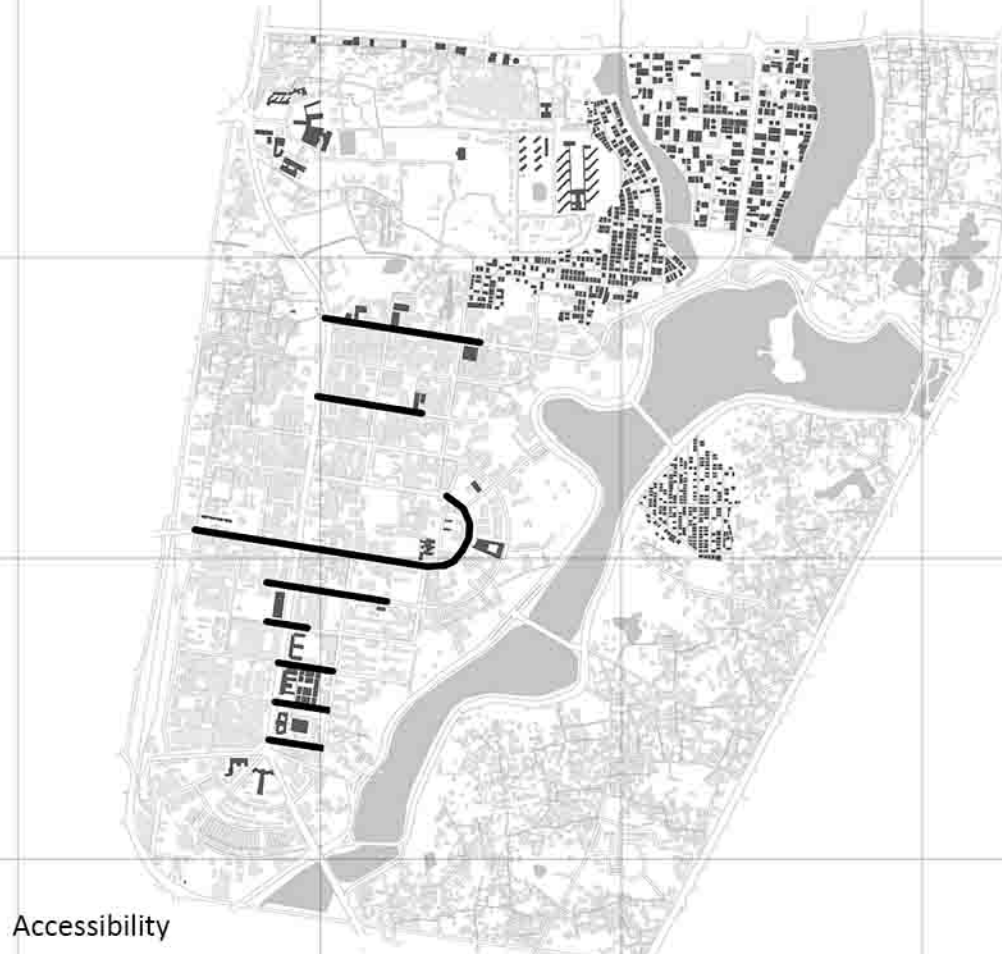
Identification of the system

- 01. Large Orthogonal System
- 02. Small Orthogonal System
- 03. Spontinuous System

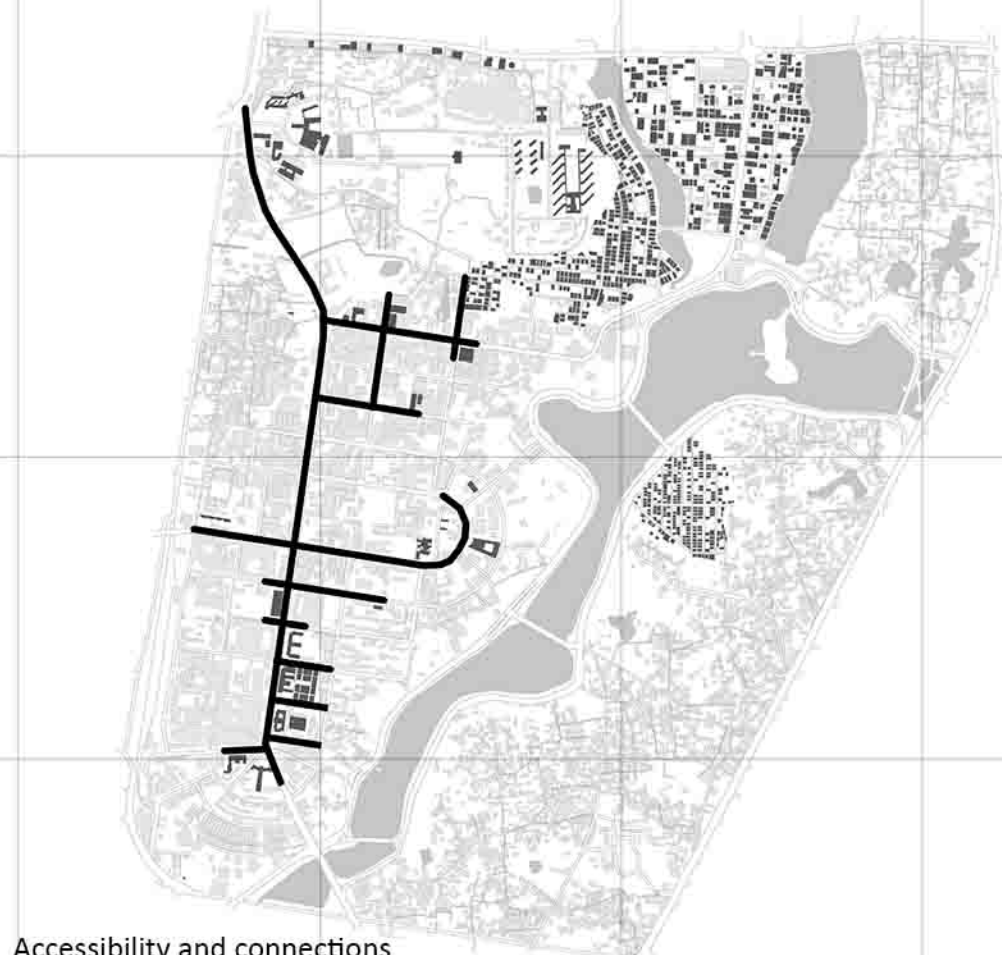


- Identifying Industrial area has a large Orthogonal of Urban system.
- This identification made me to develop the strategy for developing future sustainable with a healthy environment Dhaka.

D. Analyzing the connection between the lake and the Industrial Area.



Accessibility



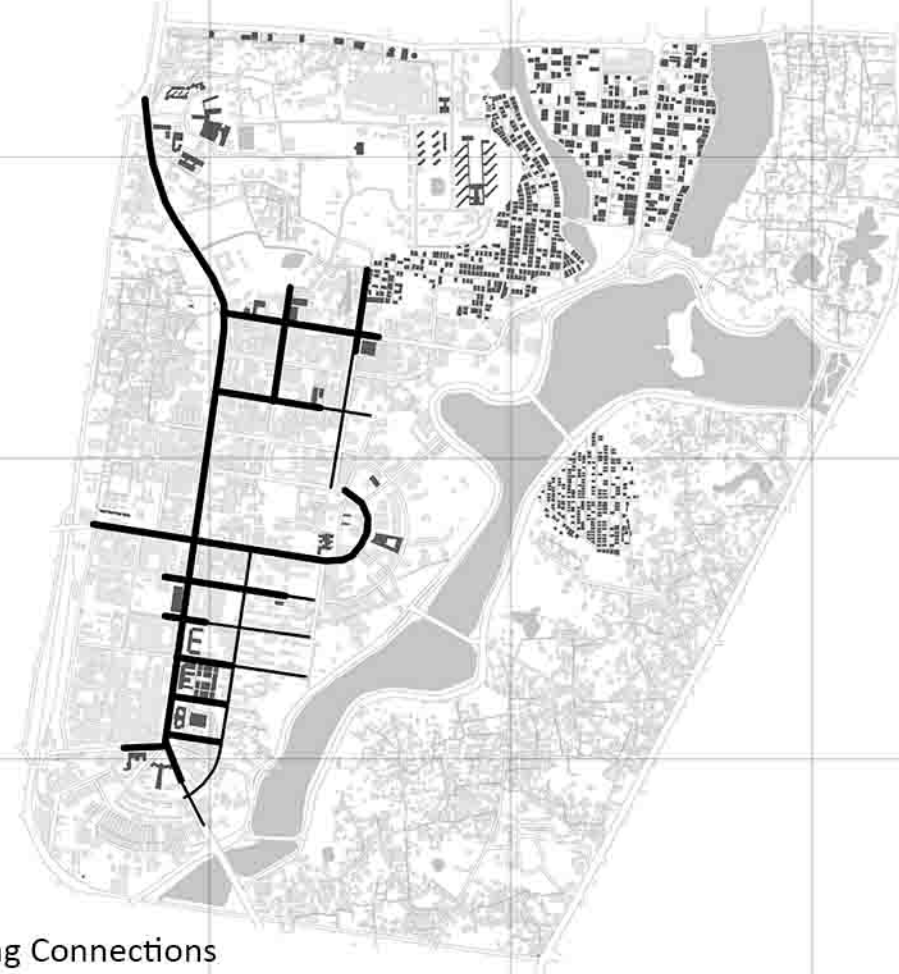
Accessibility and connections

C. Analyzing Urban System

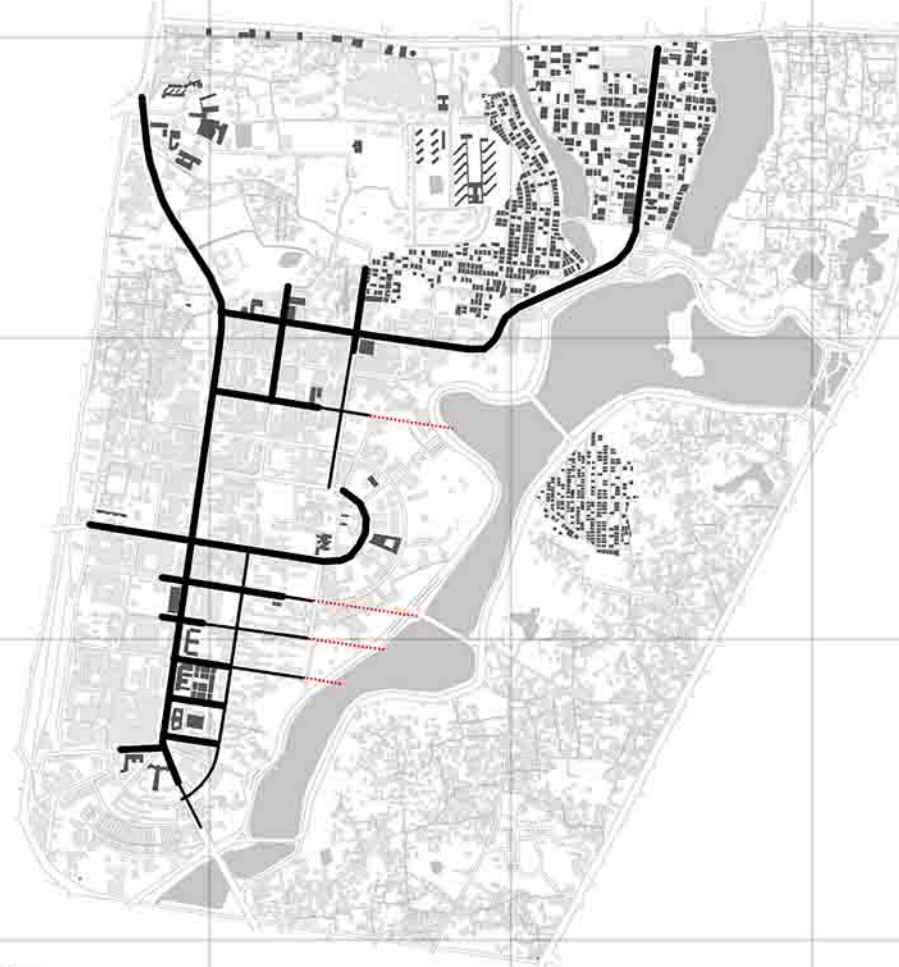
Identification

Connection between the lake and the Industrial Area

Identifying the urban system led me to analyze the connection between the industrial area and the hatir Jheel Lake. The result is, there are missing connections. To merge the "gap" the connection must be continue



Missing Connections



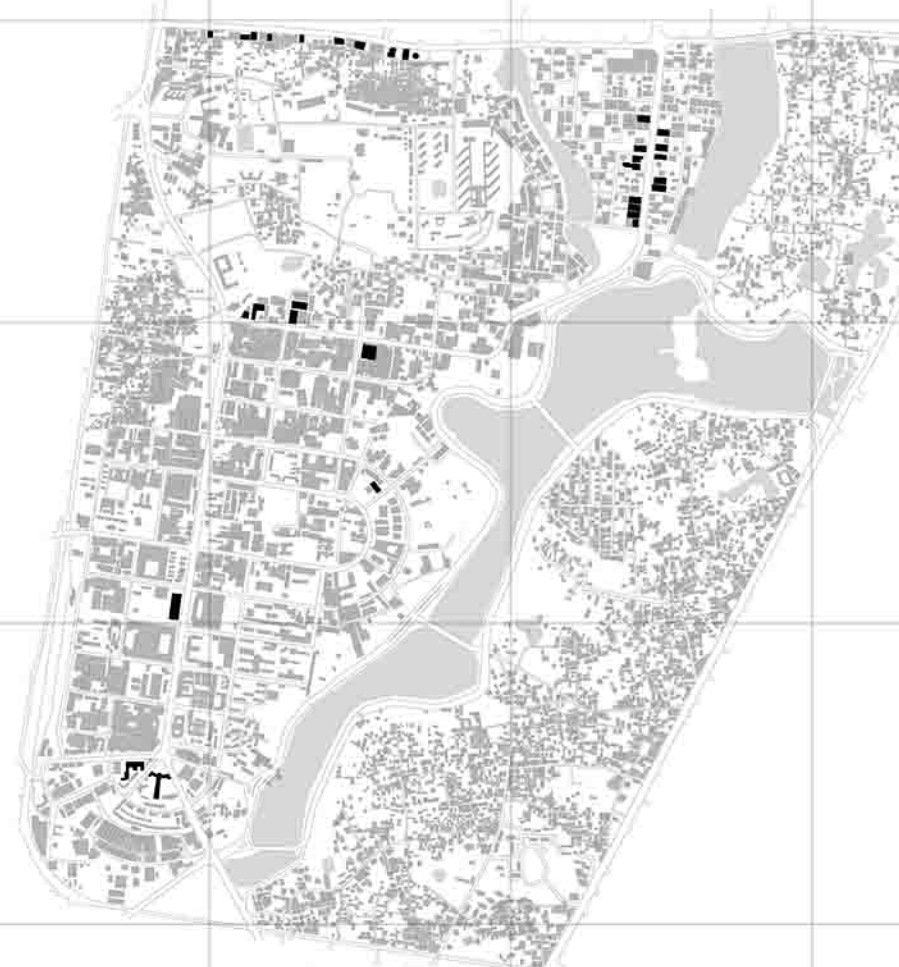
Continuity

E. Typology of the Building:

This analysis finally led me to finish with an analysis of the typology of the building. What is the building typology around?



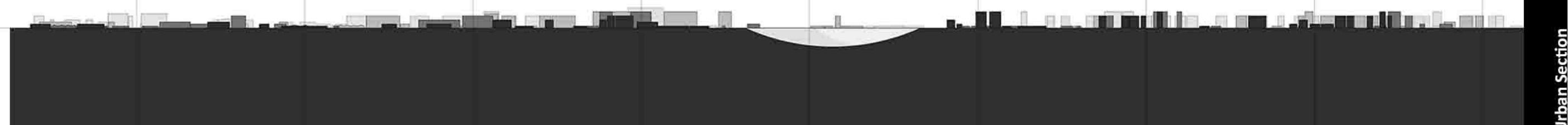
Institutional Buildings



Mixed Used Buildings

F. Urban Section:

Understanding the skyline



Identification

Typology

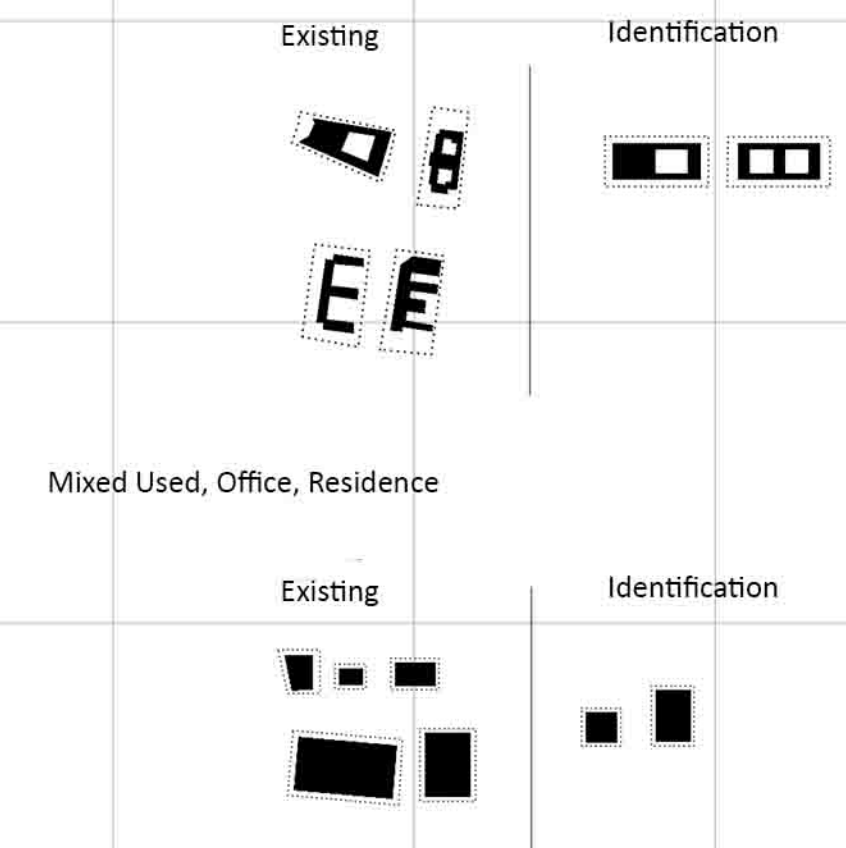
Urban Section



Residential Buildings

Identification

Institution:



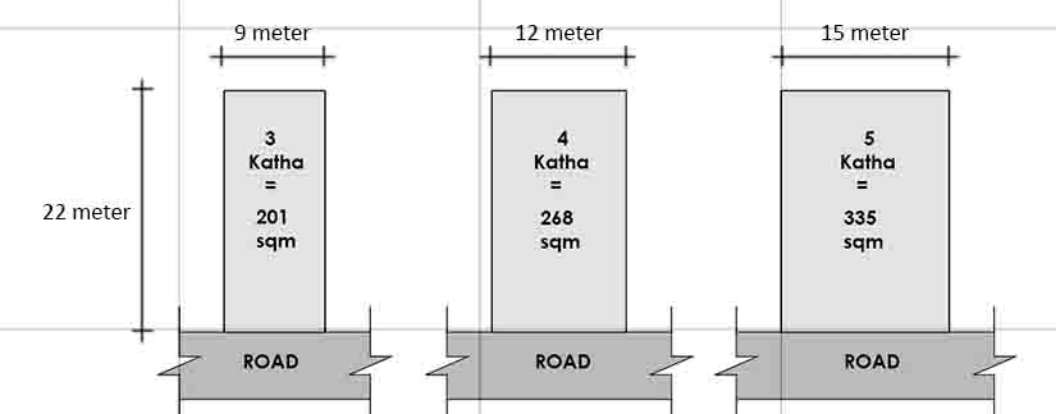
The identification shows the building construction took almost all the land around except a few setbacks.

From 2008 government introduced new rules for the building construction. This identification started myself to think to analyze the rules and regulation for the building construction, both old and new one. Old one to understand the mistakes. However, the new one to understand how it works

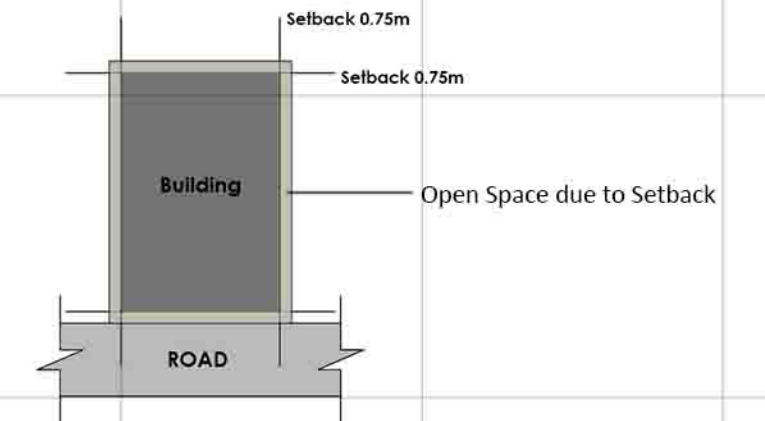
Building Construction rules and regulation:

Again I would like to mention the quotation from Ashrat et al (2009), Dhaka is basically being built/killed in two ways: by developers and builders whose only concern is maximum economic profit and who could care less about spearheading an environmental and social degradation; and by designated policy-makers whose myopic and miserly visions do not go beyond making regulations and land divisions, and hold no answer to the complexity of the urban landscape.

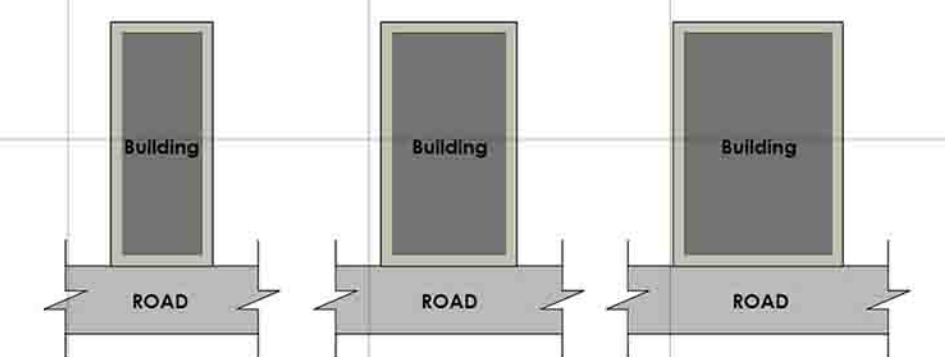
Usually in Dhaka popular land division by both developers and the government are as below:



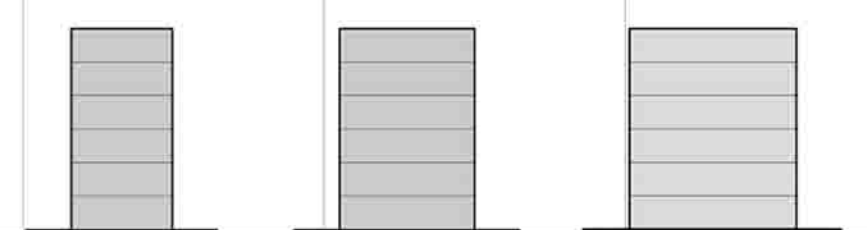
Let's see what was happening before



After constructing the building in all those land divisions the situation created as below:



The height was fixed and maximum 6 storied



Typology

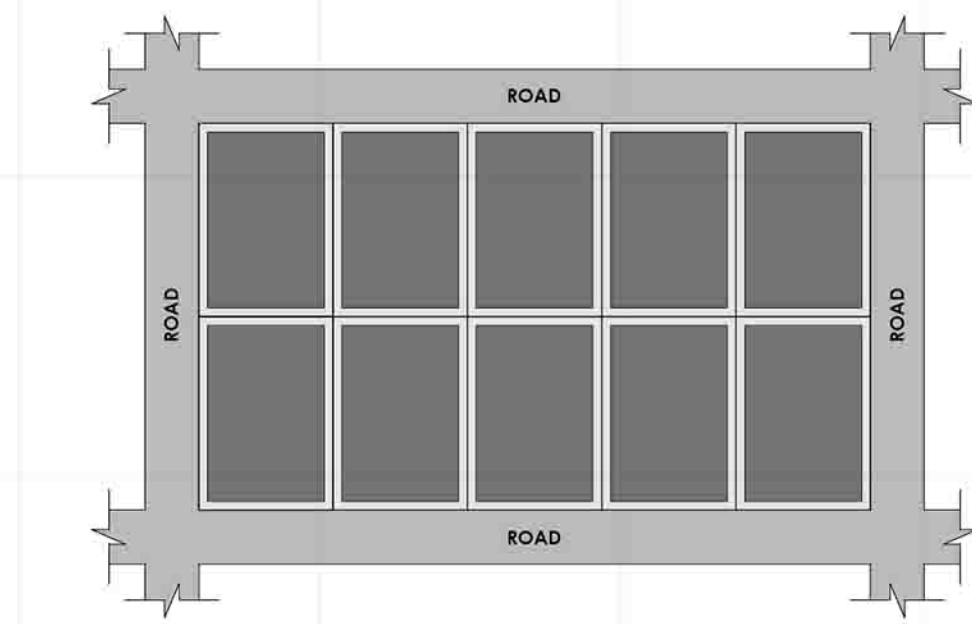
Identification

rules and regulation

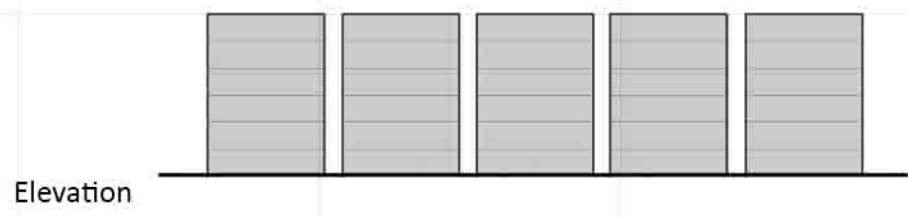
Urban Section



As a result when the building was built in a site



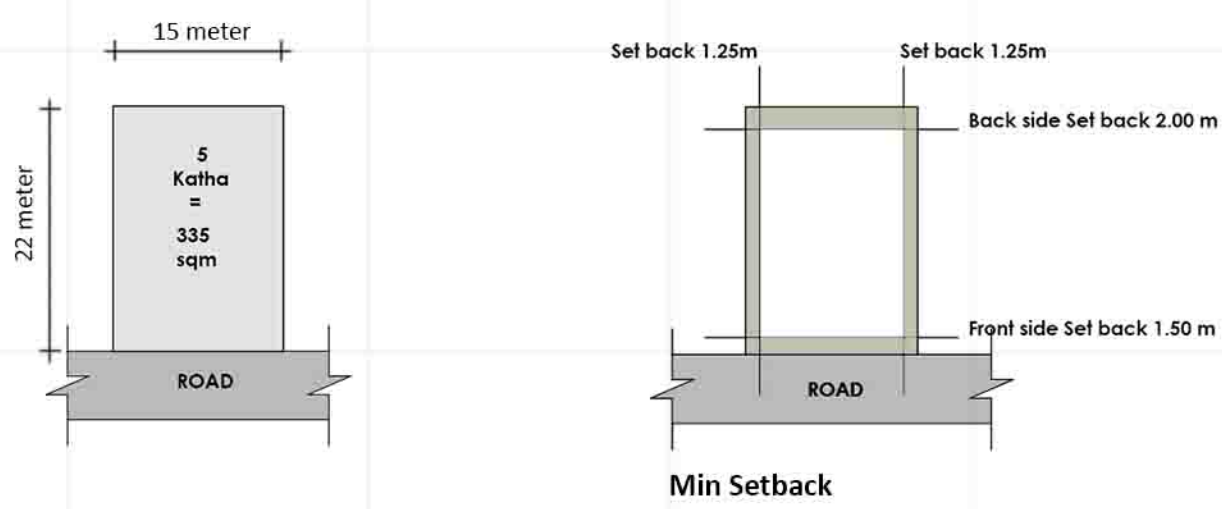
Plan



Elevation

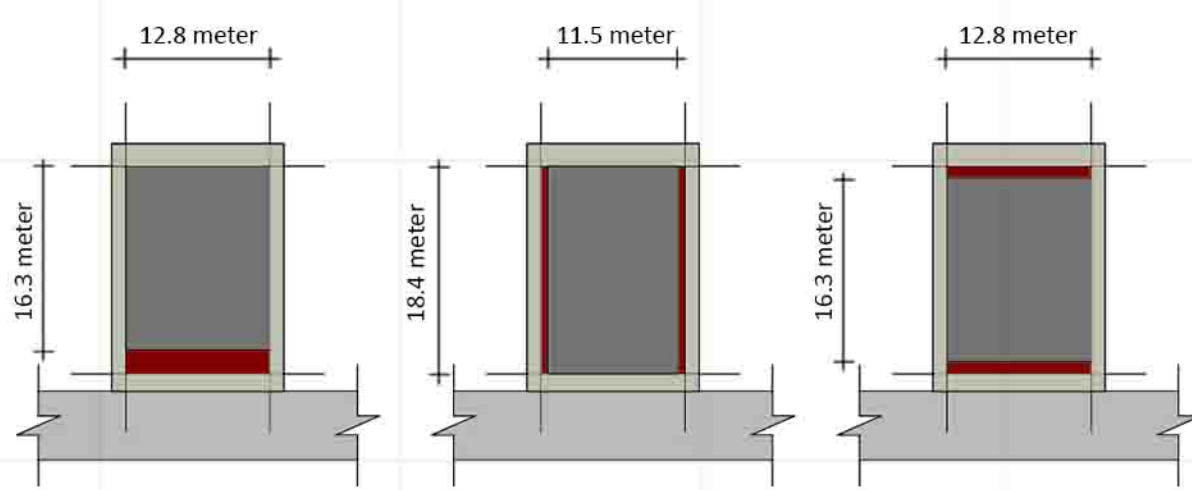
Now let's jump to the new rules and regulation introduced in 2008. It introduced Floor Area Ratio (FAR). Which mean the building can be constructed with a relation to the site area. The new rules for building construction trends to appear as an opportunity for the healthy and livable environment for Dhaka city in the future.

I choose 335 square metre land area to illustrate the rules and its implementation. This is the most favored land area in Dhaka. Later, I interpreted picking one part from the proposed site to prove how it serve.



Min Setback

FAR applied for this plot according to the chart is 3.5
 Maximum Ground Coverage is 62.5% for this land area
 Total floor area is then FAR x floor area= 335 x 3.5 = 1172.5 sqm
 So maximum ground coverage is 209.37 sqm
 Building height is 6 Storey + Parking
 Taking the ground coverage the maximum 62.5%



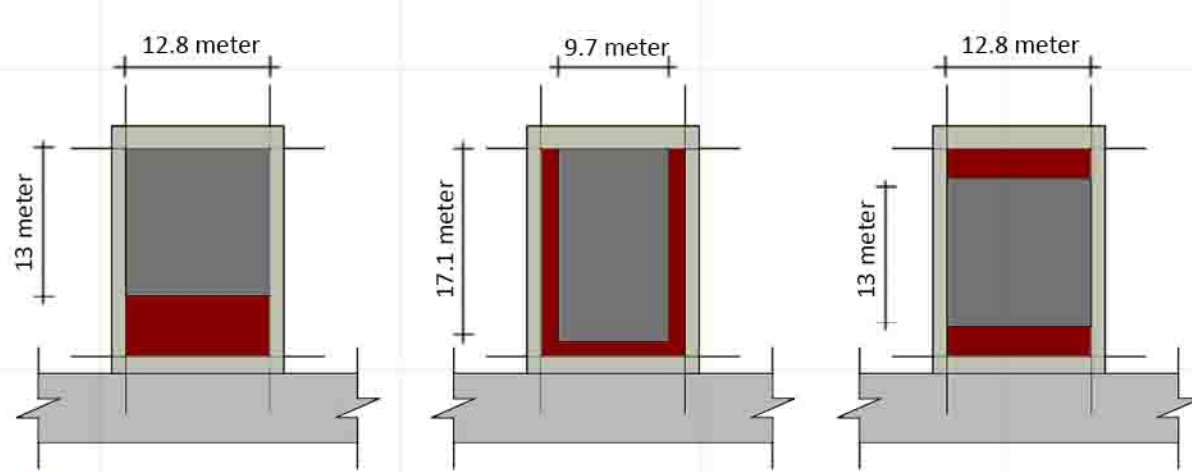
Gained open Space



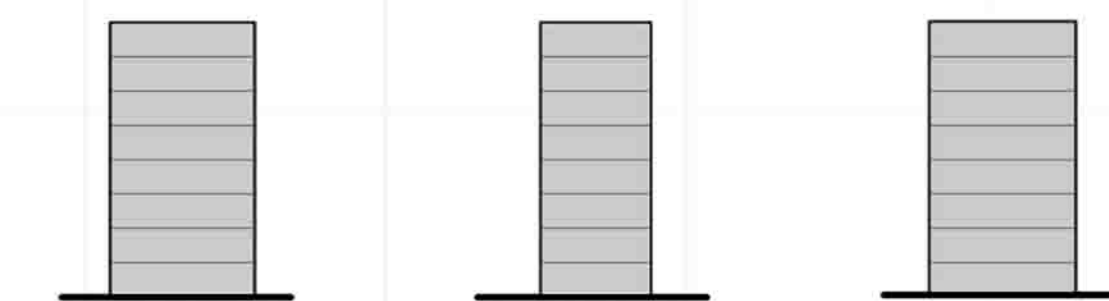
7 storied building including parking area

The building now can be placed in many ways. Above I showed possible three ways. The red color indicates the gained green/open spaces one's getting from the application of the FAR.

Another example I am showing by taking the ground coverage 50%.
 Maximum Ground Coverage 50%
 So maximum ground coverage will be 167.5 sqm
 Building height 7 storey + Parking



Gained open Space



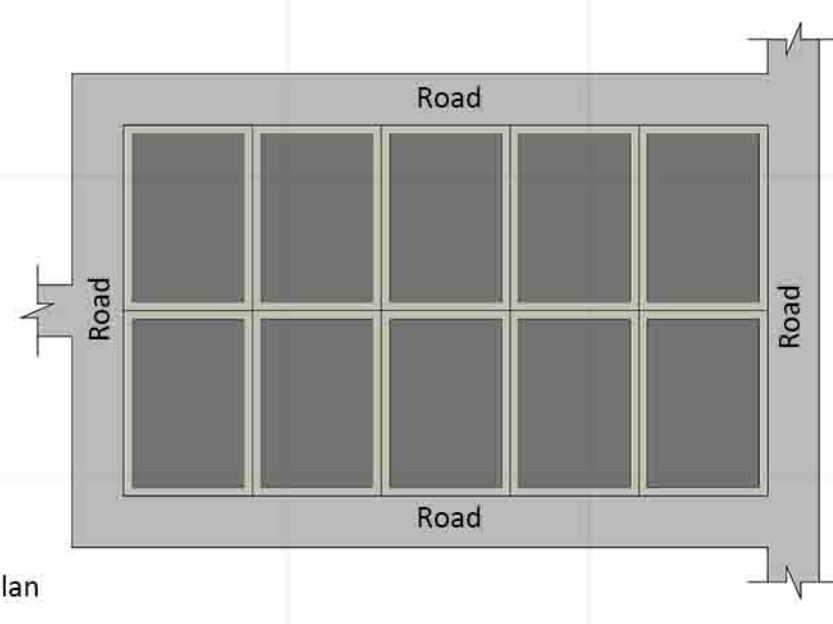
8 storied building including parking area

In the site, there is an example of some conventional way of creating buildings. In DAP (Detail Area Plan) we can find these plots were owned by only three owners. However, studying current situation from the google map it seems, the owner divided it into 10 regular conventional plots to sell it in the market.

I am choosing this area to compare with the new building construction rule.

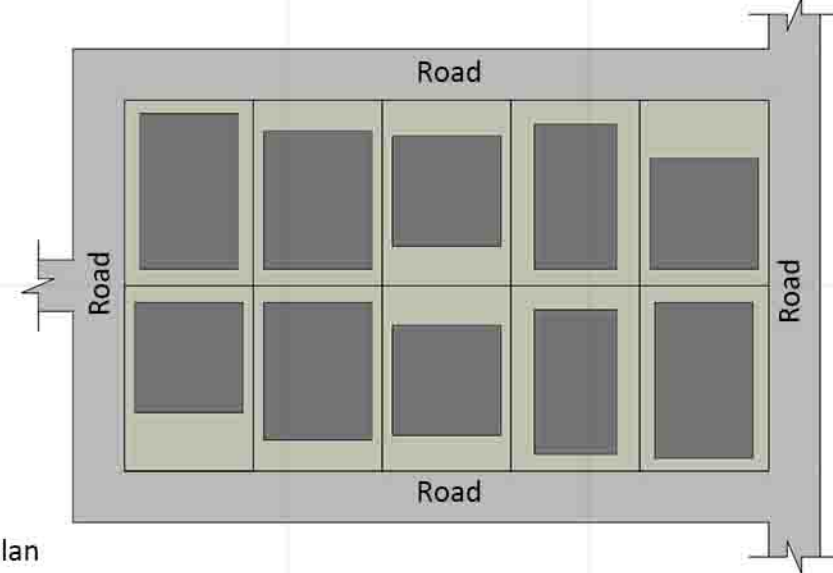


The way it way constructing

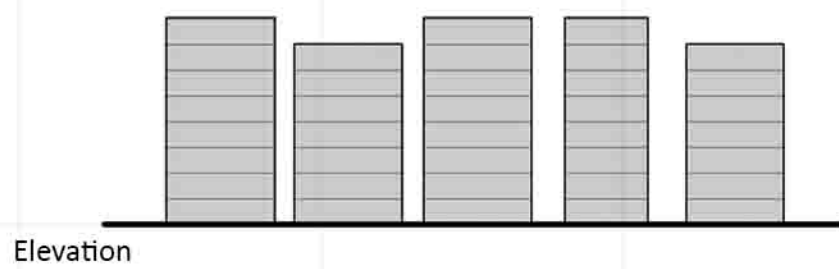


Plan

Let replace it with the new way of creating the buildings. From the dimension measured from the google earth each of the plots is about 335 sqm plot the same we assumed.



Plan



Elevation

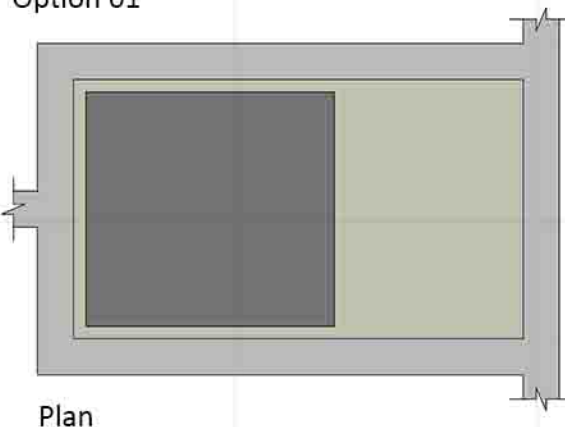
The green/open space increased from the conventional way

However, the spaces are not practically developed as it could be or should be developed as a green living environment.

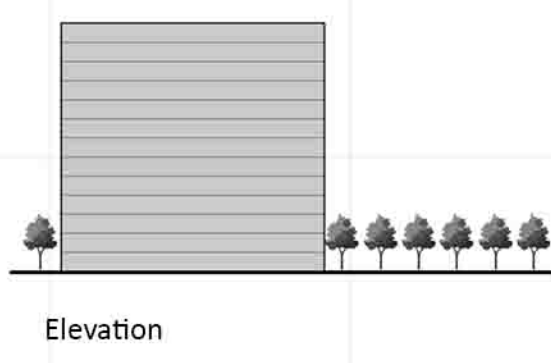
To understand this hypothesis in detail let assume the owner of these plots haven't divided the plots as we find in the google map, conversely they added the plot together and made a bigger plot. So, as it happened rather to create it in 10 small plots, they made it in only one big plot. In such a way according to the new rule, the FAR at present can apply 5.5 or 6 (according to the road adjacent with the site) for the whole area. And the maximum ground coverage is now 50%, which mean the increase of the open space.

In detail,
 Plot Size 3350 sqm
 FAR applied for this plot according to regulation is 6
 Maximum Ground Coverage is 50%
 Total floor area is FAR x floor area= 3350 x 6 = 20100 sqm
 (In the previous way of developing if we add the amount of total floor area all together we can find it is (1172.5 sqm x 10) 11725 less than this one.) Almost double. It means in this way we gain both buildable area as well as green area. So maximum ground coverage is 1675 sqm Building height min is 12 Storey + Parking The height is variable in relation to the Ground coverage. And the option for building are more. Below has given few examples of this:

Option 01

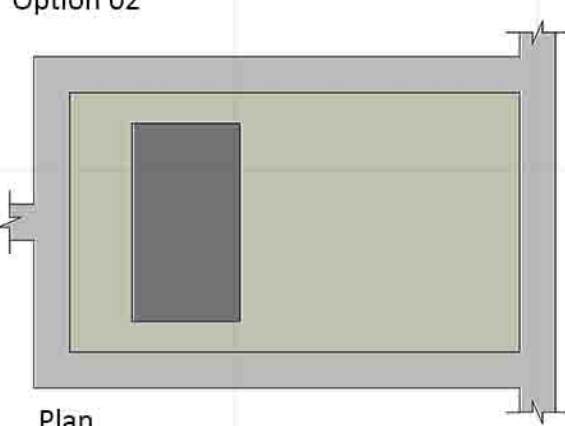


Plan

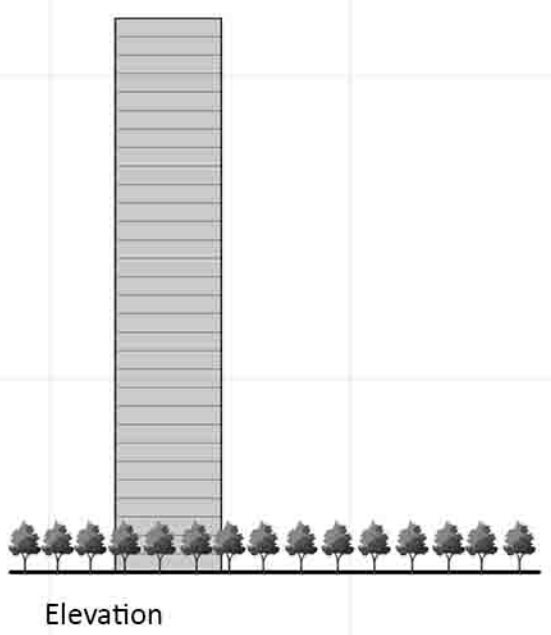


Elevation

Option 02

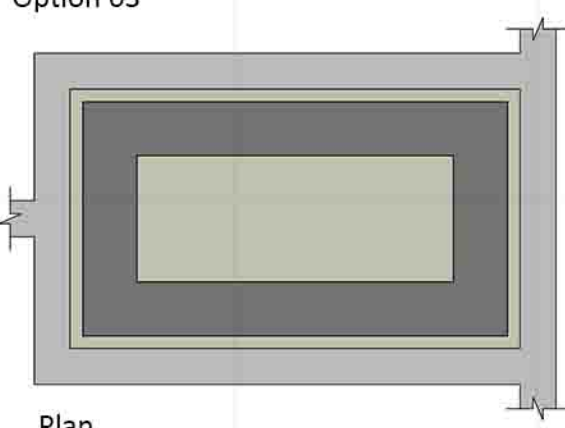


Plan

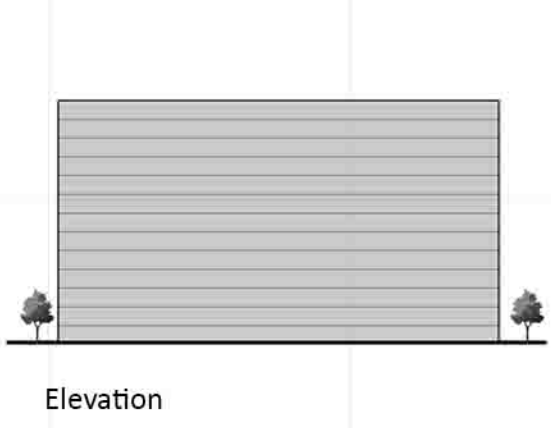


Elevation

Option 03

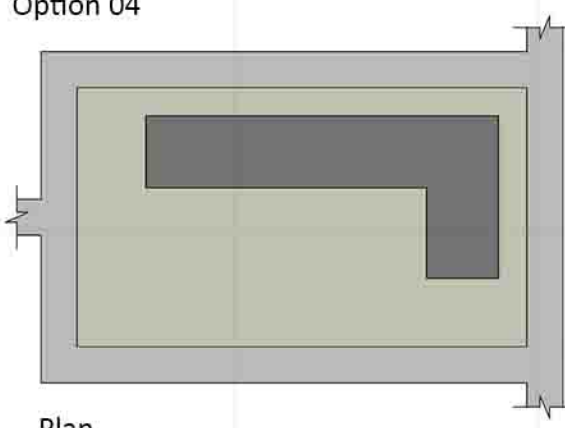


Plan

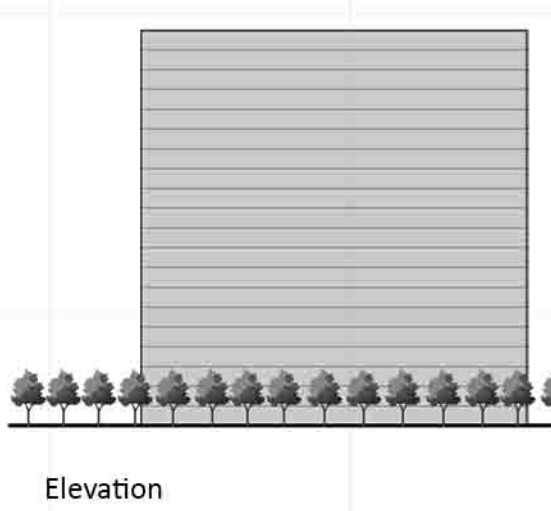


Elevation

Option 04

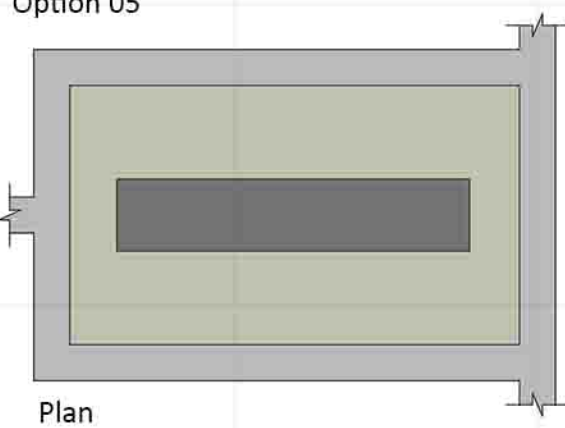


Plan

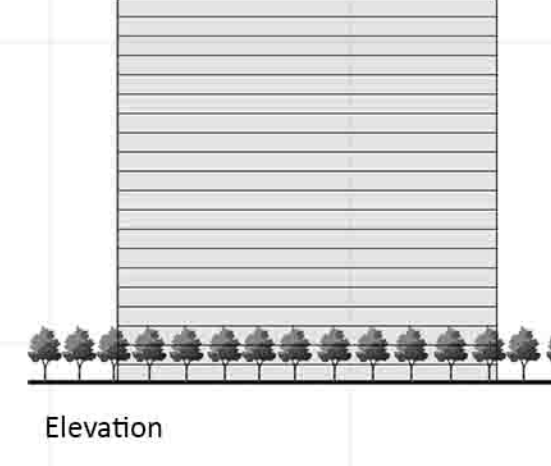


Elevation

Option 05



Plan



Elevation

Vision:

At the moment, when I started to think about the strategic master plan, I started to visualize some visions for the future Dhaka. This vision includes the Tejgaon Industrial area what I am proposing in the future it can be developed as heart of the city. The maps that show the development of Dhaka city strengthen this visionary idea. All the analysis represents the potentiality of this proposal. The visions can be as follows:

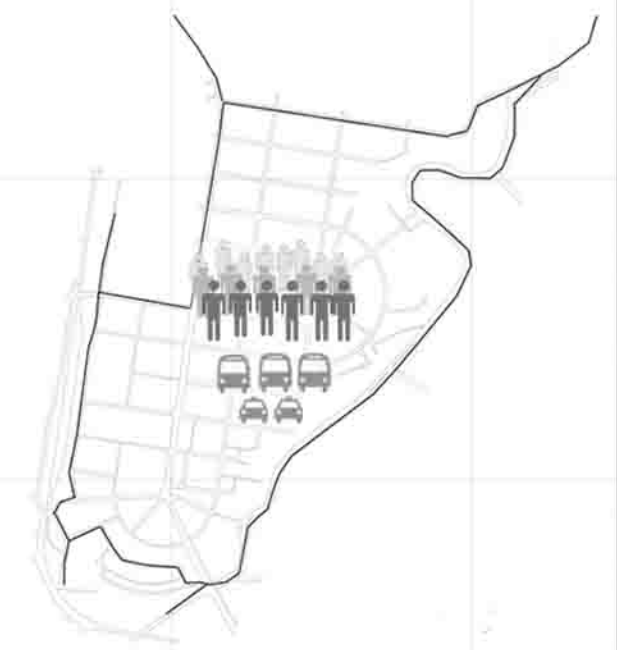
From a nonfunctional area in the heart of the city

To a multifunctional and variety in the heart of the city



From a car priority city

To People Priority City



From a traffic barrier

To Rather a connected city



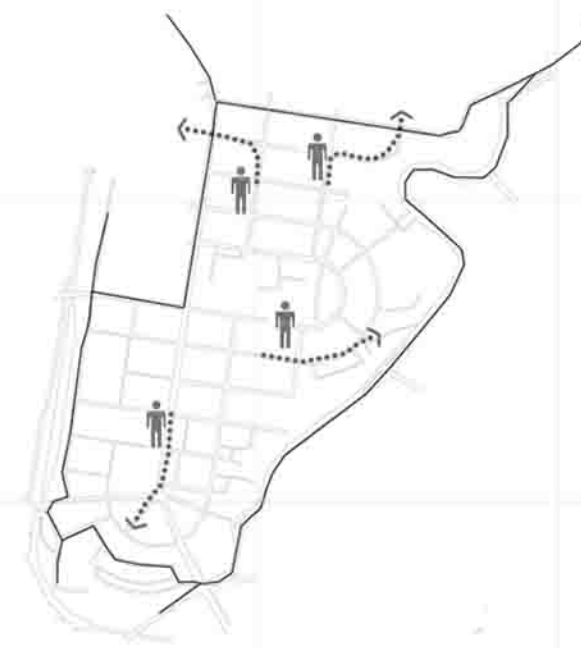
From rather neglecting connection to the lake front with the surroundings

To A greater connection with the surroundings city



From a poor links to surrounding amenities city

To a strong link to surrounding amenities and to Strengthen the waterfront as people's place



From a very low priority bicycle friendly streets

To a bicycle friendly streets



Applying Rules and Regulation in Different ways

Vision

Rules and Regulation

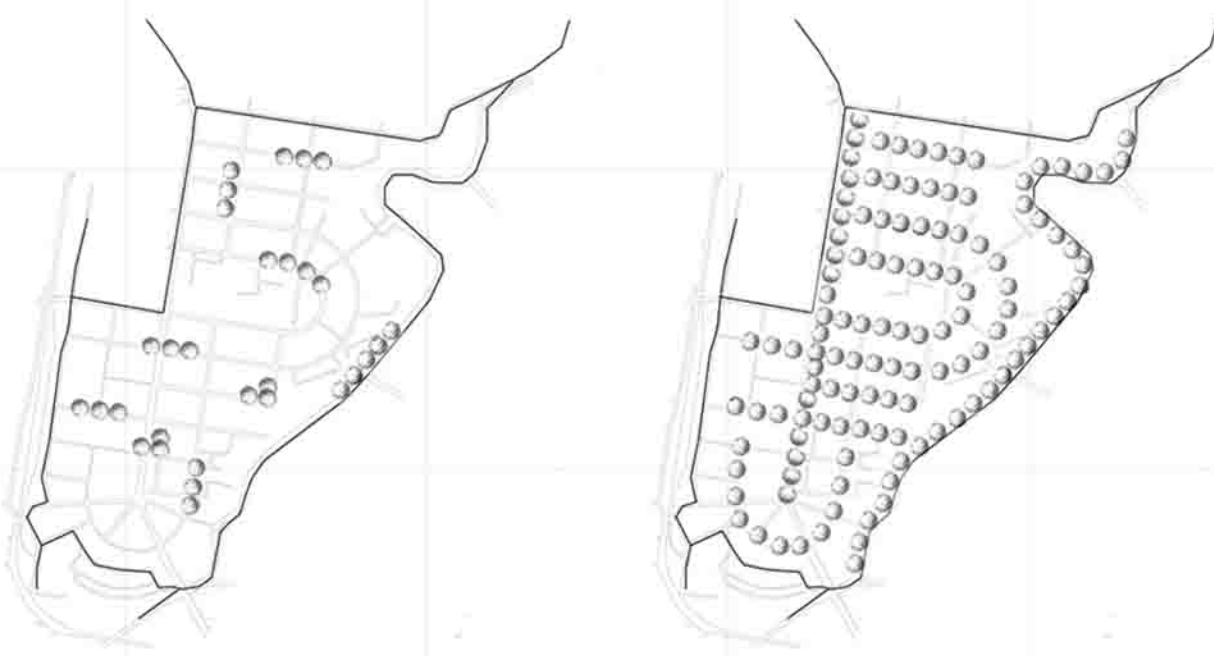


Project name: **Sustainable Landscapes**
 Dhaka, an Urban and Architectural Strategy for High-density City

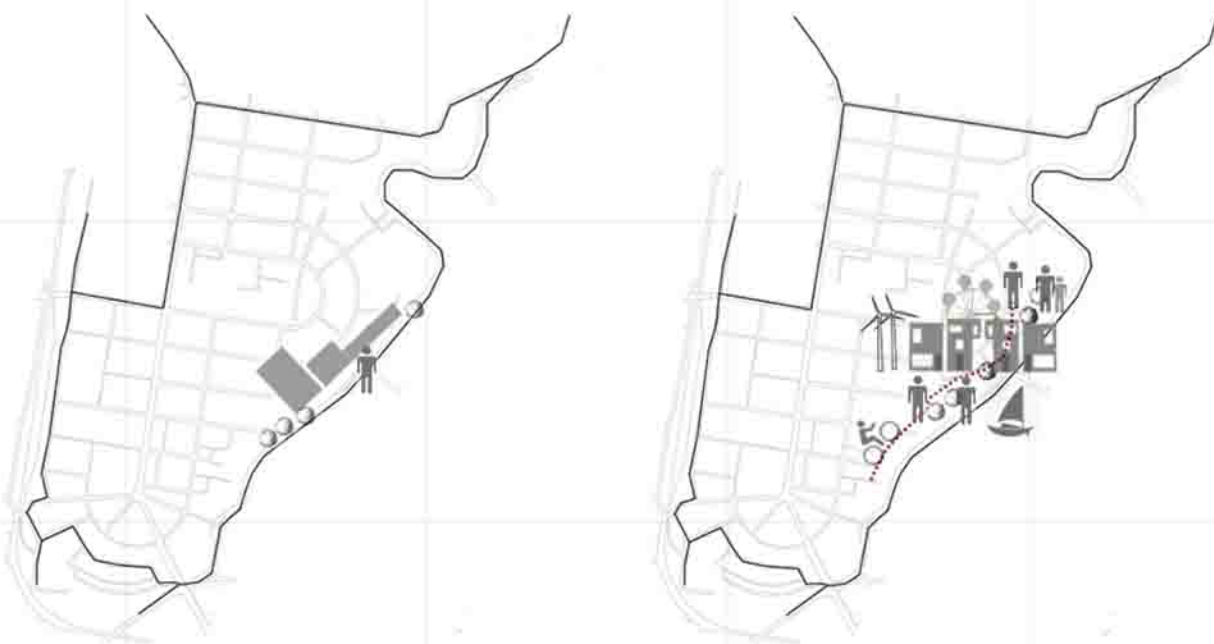
Supervisor: **Michele Roda**
 Co-Supervisor: **Filippo Orsini**

Submitted By:
Imran Ebne Amin

From a city with scattered trees To an organized and green city



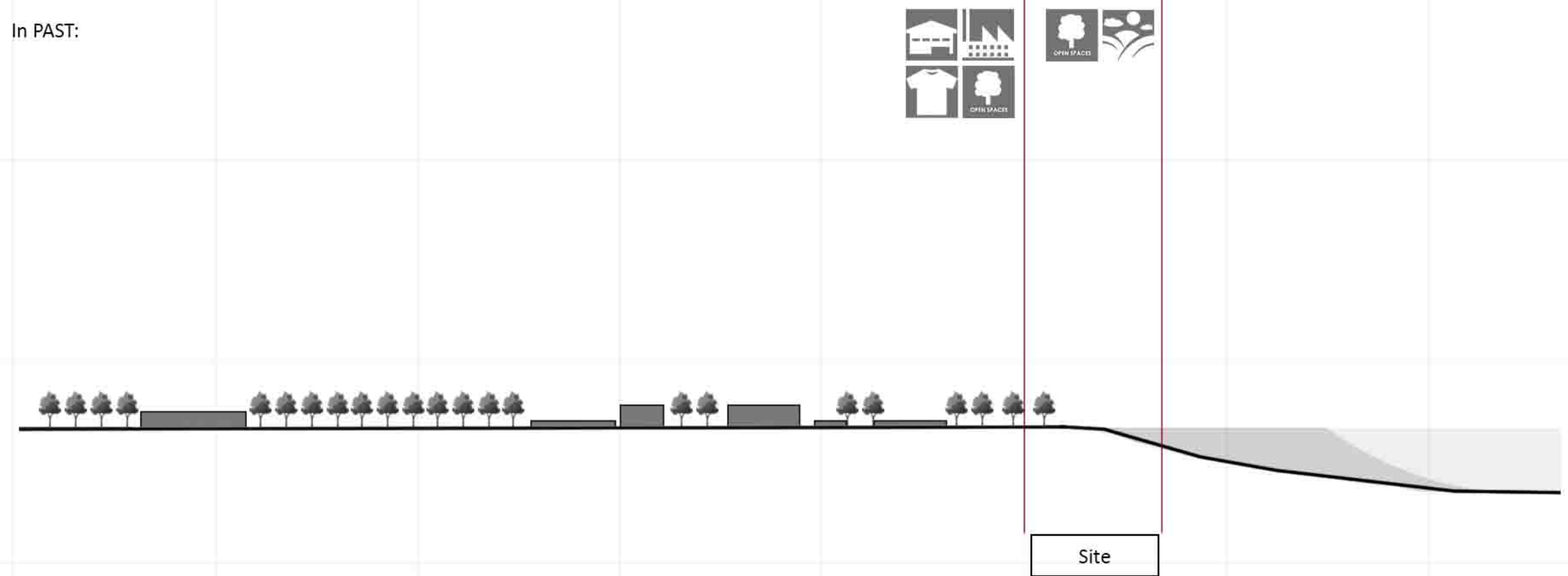
From Lack of visual pleasure in the street environment To a street with beautiful and surprising environment with high quality streetscape



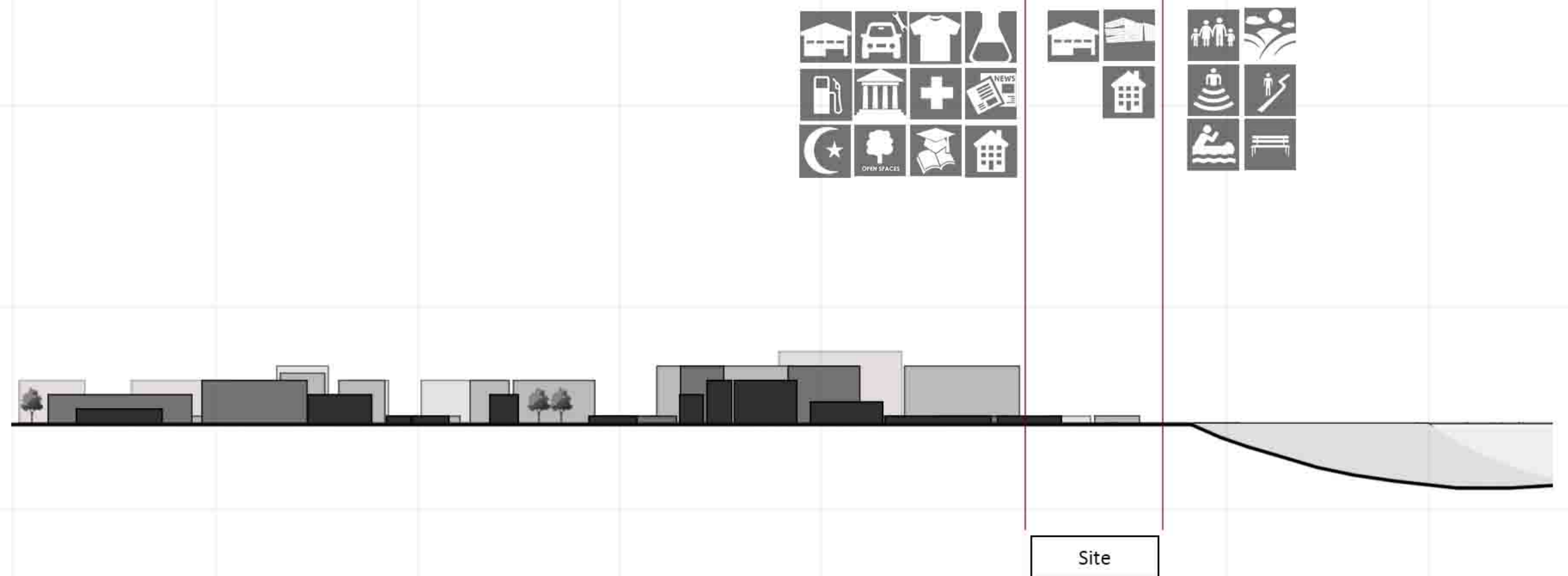
Vision

In section

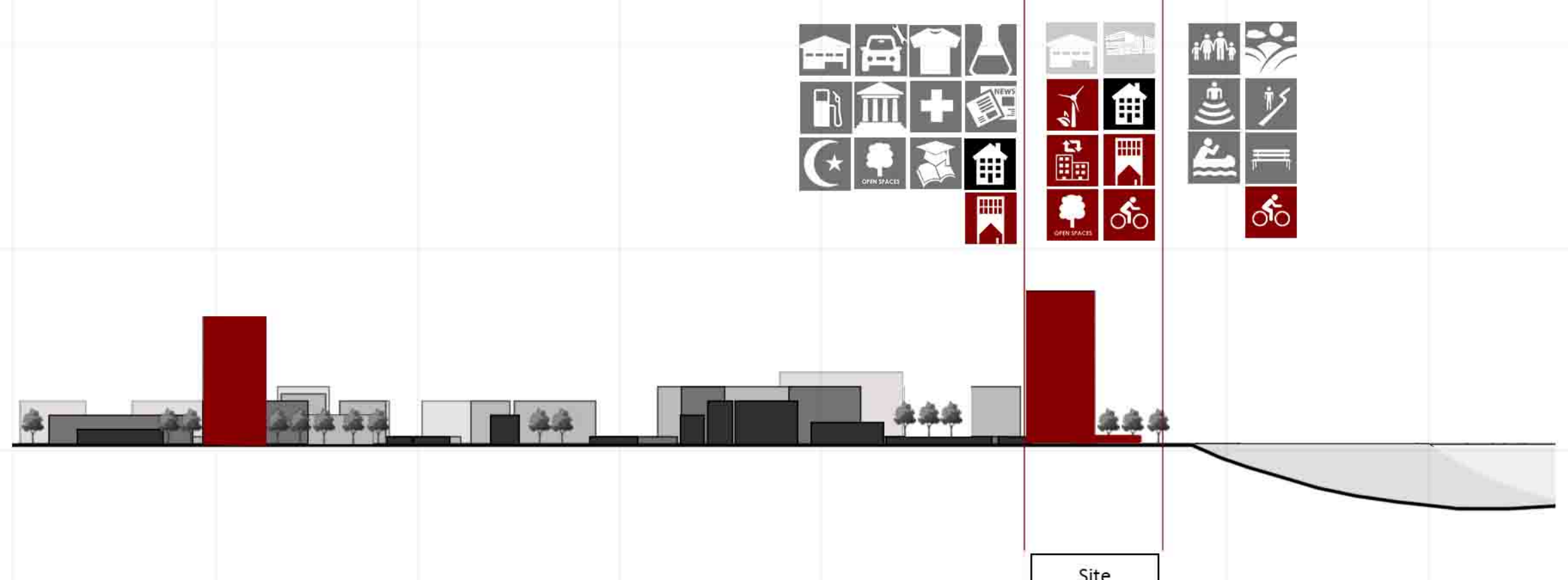
In PAST:



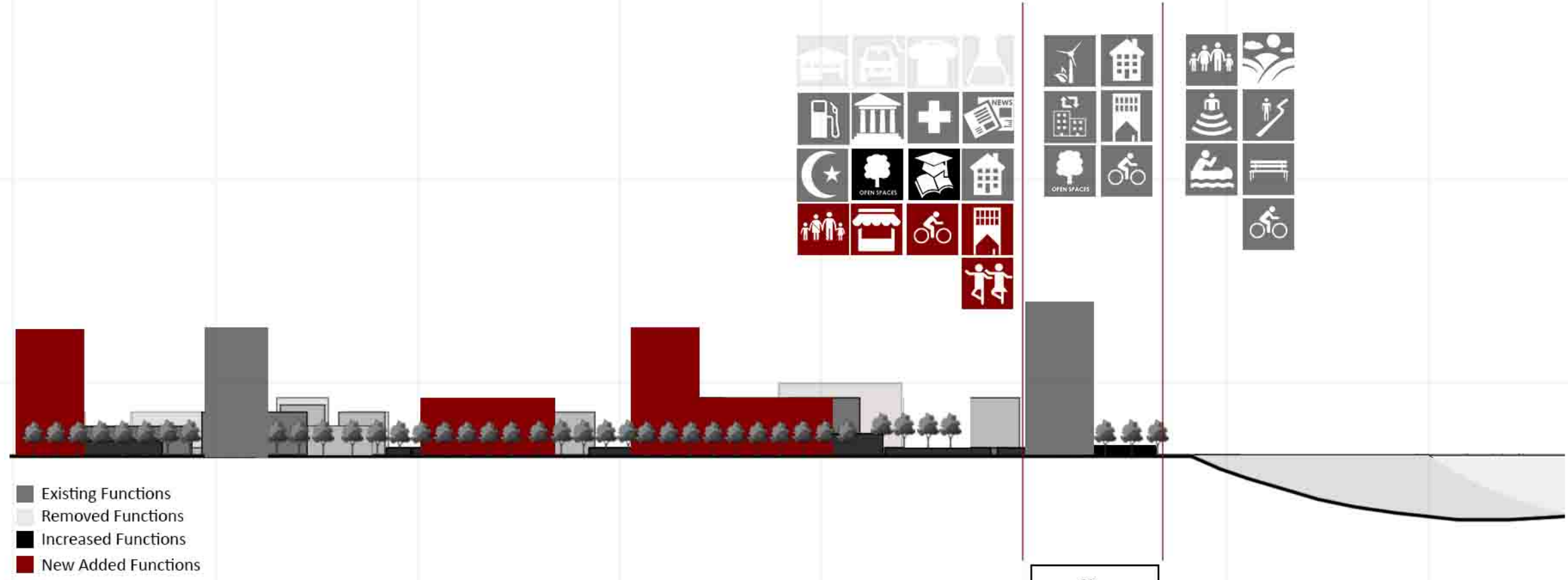
Current Situation



Strategy for 2020



Strategy for 2050



Strategy in SECTION

Developing Strategy:

From the visions above I started to think to develop the strategy by merging the gap between the proposed site and the industrial area. It led me to analyze the function having in the industrial area.



Result:



Which made my analysis to go further to analyze to identify what happen to this area at night.



According to Detail Area Plan, the proposed site is mostly dedicated for mixed used development, Commercial Office and Business.

However, all these analyses led me to propose residential functions within this mixed used building. So the area won't be a dead or dangerous place after certain time. Moreover, general people can take the best advantages of the newly developed landscape design along the lake.

A city where is very few options for getting natural light and air in each dwelling, proposing residential functions can be a good step to adapt this. The location of the proposed site is excellent for catching the wind as well as for the natural light.

It is rare to find a place such as this in Dhaka, where there is a huge void of open space. This opportunity made me to propose the new buildings with a technology of sustainable architecture. Get the best advantages of the wind and Sun to adapt in the building system.

Furthermore, I am proposing to build low-income housing in some part of the industrial area to Marge the gap. This low-income housing will be mostly reserved for the workers of the industrial area who basically lives now in the temporary structure where I am going to propose my building.

These analysis led me to develop my strategic plan in two period of time.

1. In 2020 (which I am going to design)
2. In 2050 Future city center for Dhaka.

In 2050, the industrial functions can be replaced and a new city center with multifunctional activities can be introduced.

Strategy:

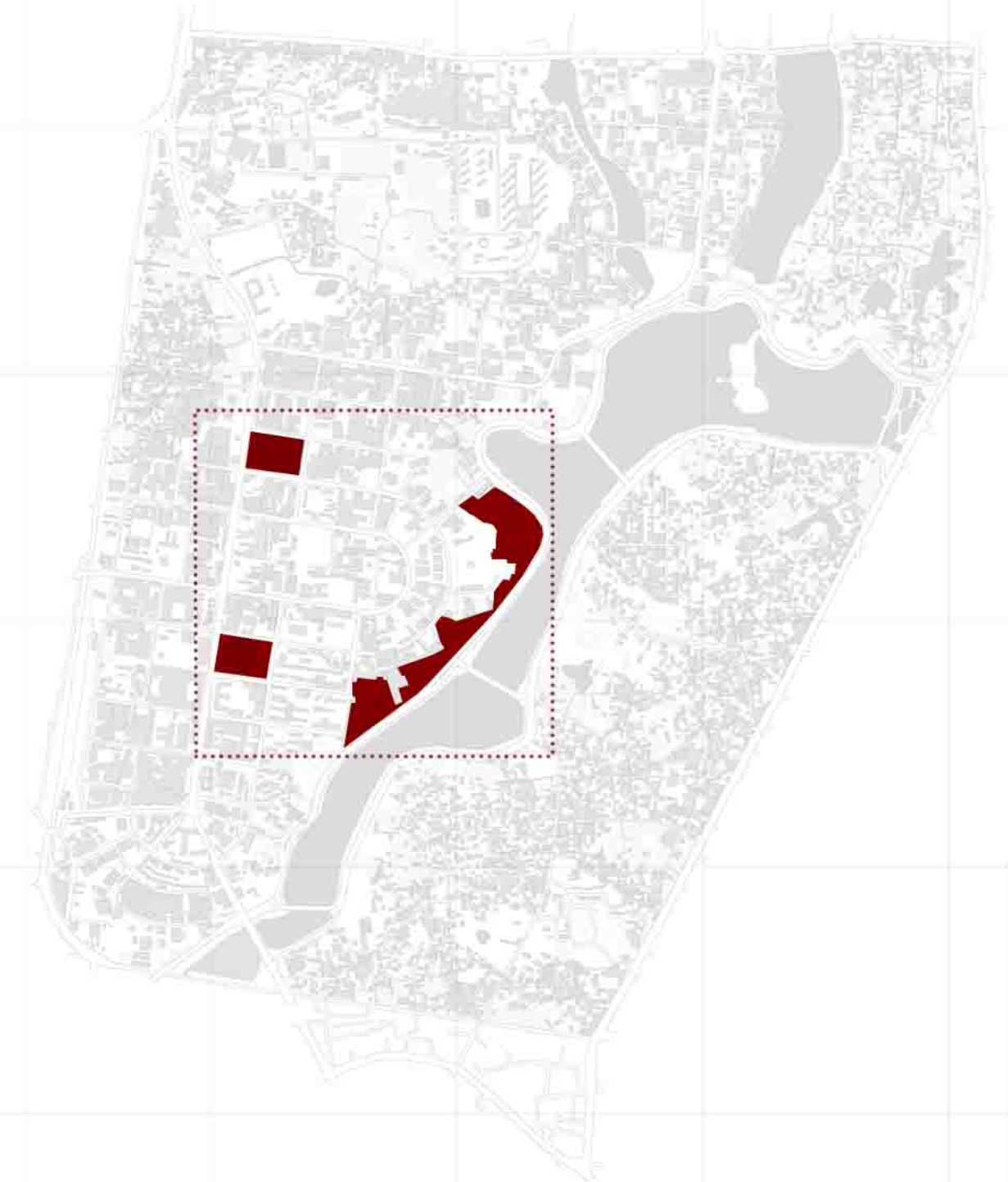
Strategy is Marge the Gap

Strategy Development

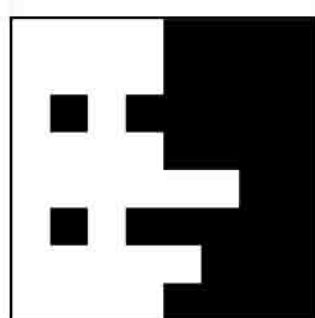
Detail Area Plan of the Site



Identifying Site Area (reading from DAP and Strategy)



Identifying Site Area



In Plan

Strategy in Plan



Project name: **Sustainable Landscapes**
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Supervisor: **Michele Roda**
Co-Supervisor: **Filippo Orsini**

Submitted By:
Imran Ebne Amin

Implementing VISION:

1. Car Priority to People Priority and a traffic dominating city to a better city of walking.
2. Bicycle friendly
3. An Introverted city to a waterfront city
4. Lack of street hierarchy to better city with walking and cycling
5. Scattered few trees with organized more trees.
6. Isolated open space with boundary to an inviting street scape with open spaces.
7. Neglected connection to the lake to the greater connection.

Ultimate VISION:

Safe

+ Lively

Healthy

+ Attractive

Sustainability

Basic Steps to Design Masterplan (Over all)

- STEP 01 Introducing Limited Car Access
- STEP 02 Eating Void
- STEP 03 Identifying the Area
- STEP 04 Introducing Safe Walking
- STEP 05 Introducing Bike Path
- STEP 06 Adjusting Measurement from the City Reading
- STEP 07 Maintaining Trees and Green

Implementing the Steps in Detail

A. Eating Void

B.

C. Safe Pedestrian

D.

E. Measurement from City Reading

F.

G.

H.

I.

J.

Steps to Design Landscape:

Step 01: Identifying and adjusted measurement with scale

Basic Measurement

15 meter

Step 02: Setting Rules

1 m → 200 cm →

Step 03: Playing with Modules

Sitting Cycle Stand Green

Step 04: Using Materials and colors

Slate Stone (Dark Grey) Teracota (Grey) Concrete (Light Grey)

1. Fixing 5m x 5m grid with 1m x 1m

Dark Grey / Light Grey / Grey / Green / White

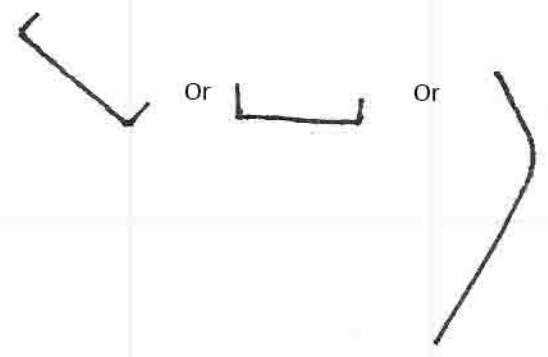
Playing with 1m x 1m make between some

Playing to connect Grids

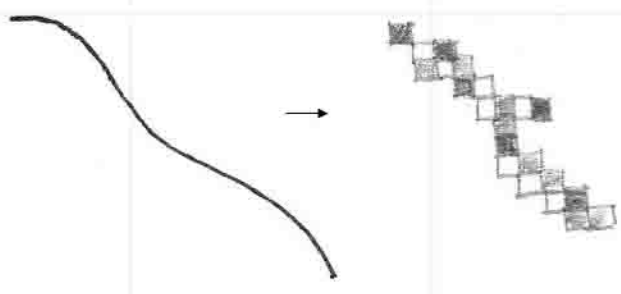


Design Guide Line/Tools:

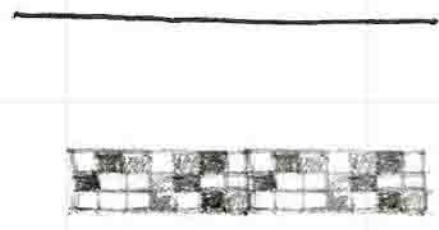
A. Margin



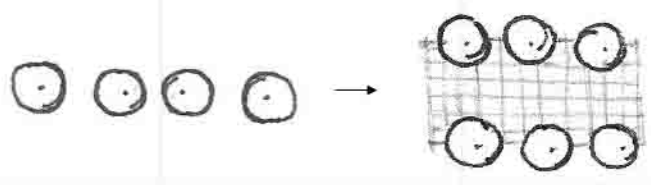
B. Pedestrian



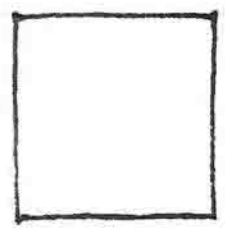
C. Bike Path



D. Tree

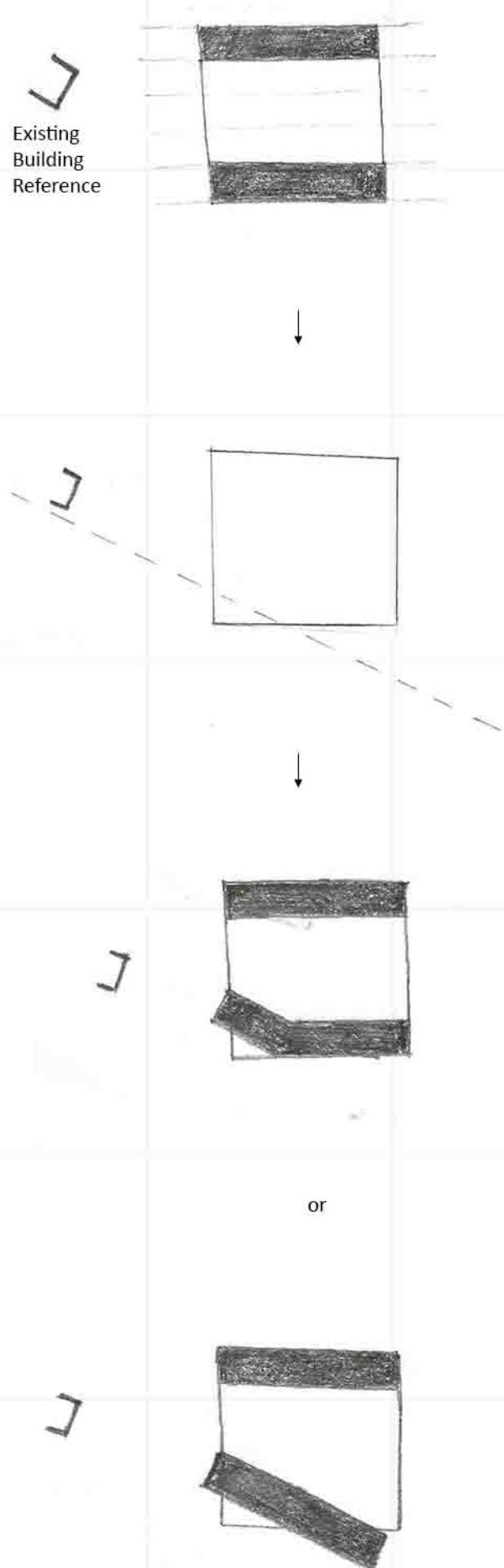


E. Space for Building



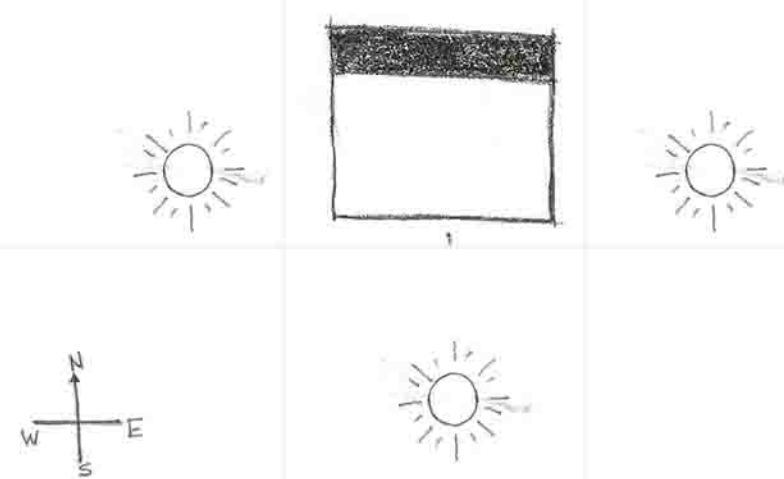
Steps to Design Building Complex:

1. Respect the reference of existing surrounding buildings.



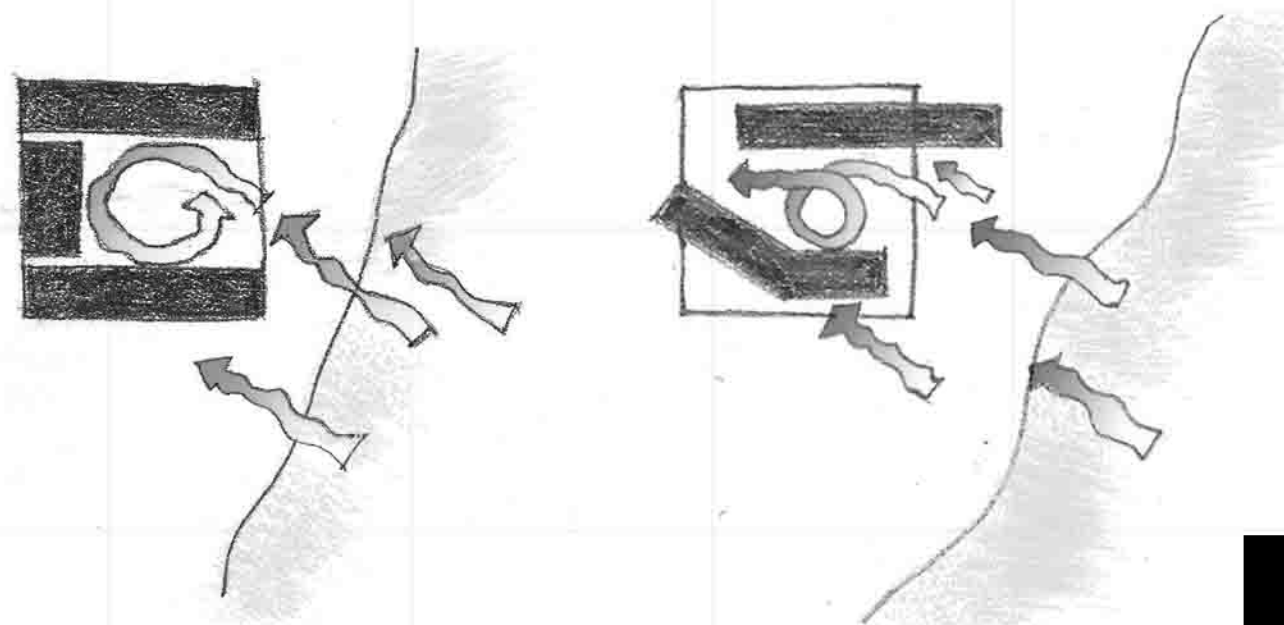
2. Respecting the orientation for climate

- Best orientations
- a. South
- then
- b. South-east
- then
- c. South-west

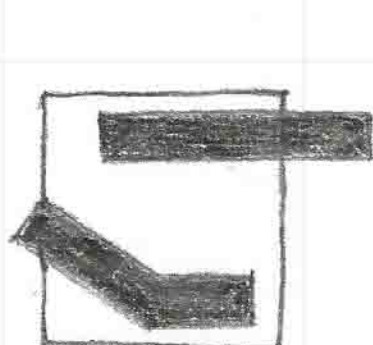


3. Inviting wind to the complex to create micro climate allowing possibilities of natural ventilation.

The concept in general

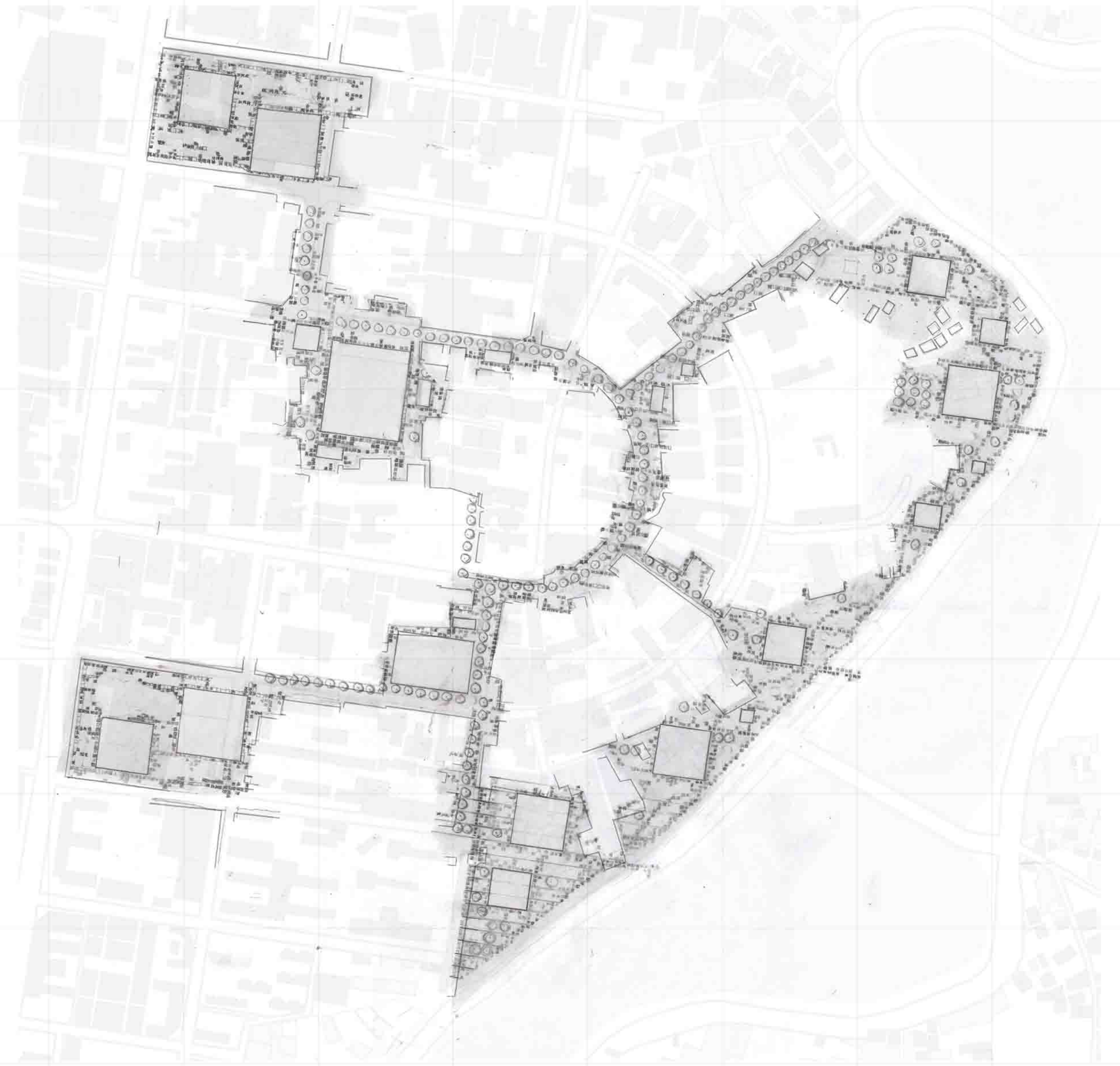


4. Opening the wider part of the building complex to face advantages of nature i.e. Lake, wind.



Implementing

Guide Lines



Master Plan with Building Spaces



Steps for Building Complex

Buildings Outline Development





Masterplan Scale 1:7500

Masterplan Scale 1:3000

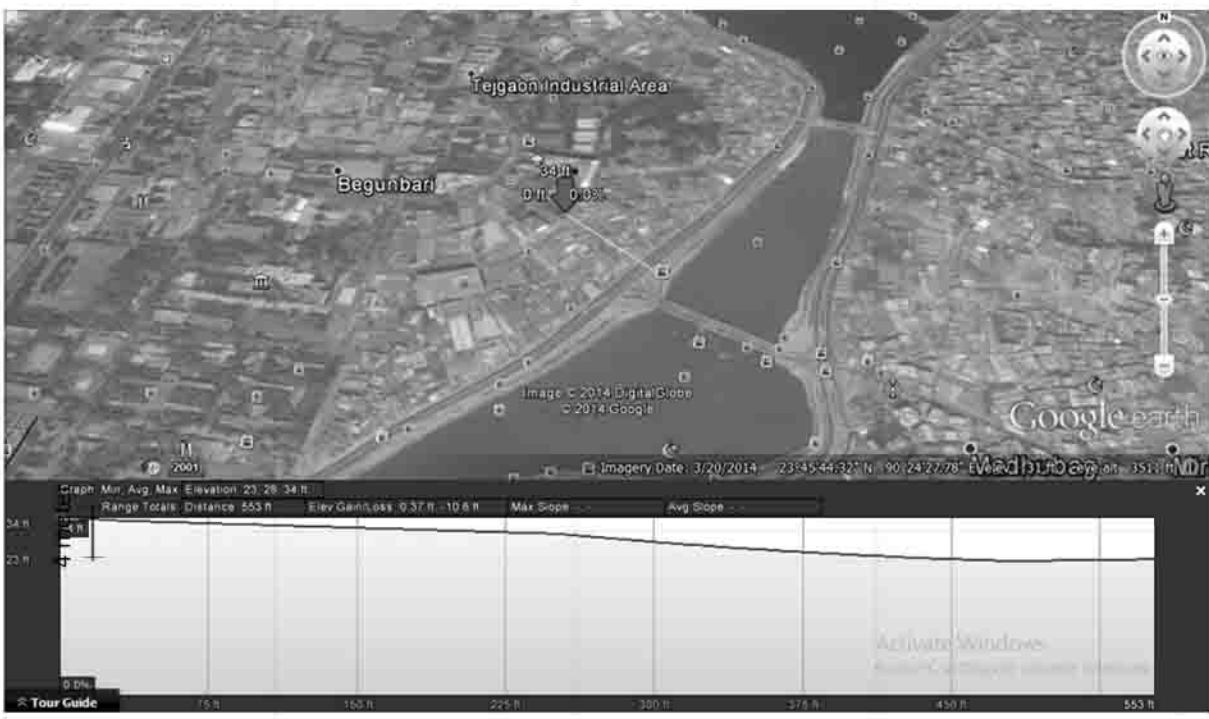


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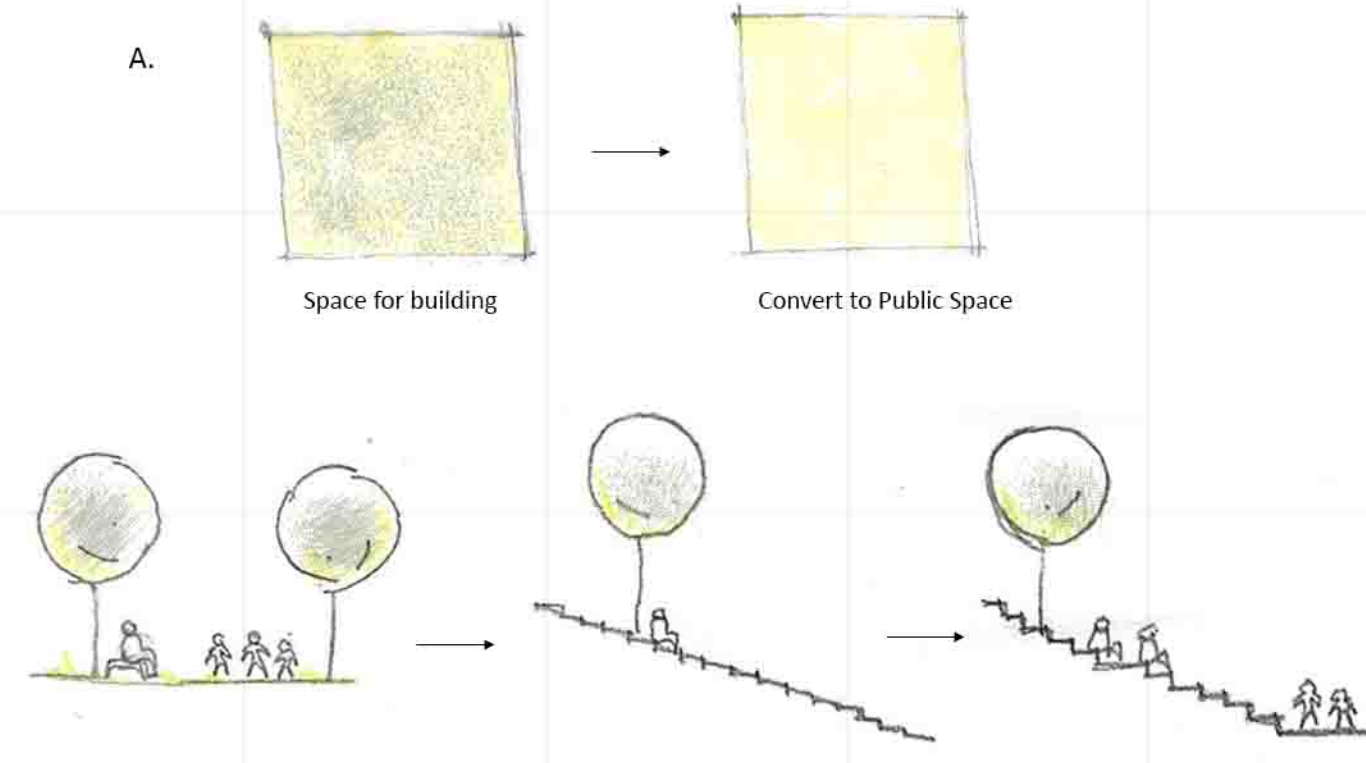
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Submitted By:
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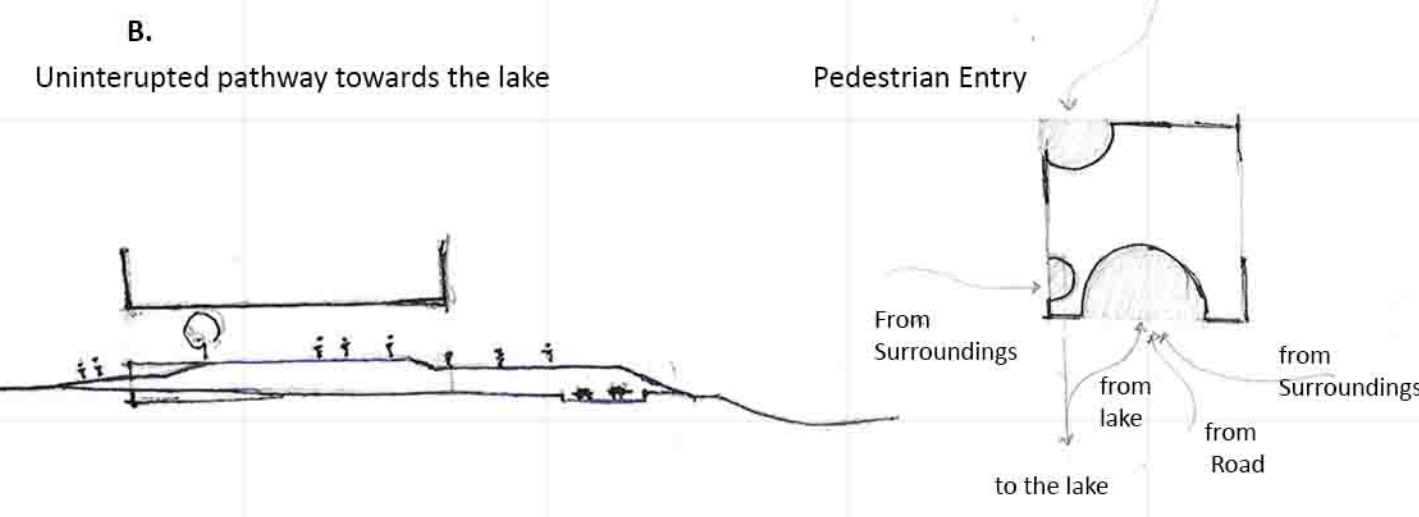
Analysing Land Profile



Idea for public spaces utilizing the land profile:



Interaction/gathering/ Cultural Activities i.e. reduction of the lack of public activities

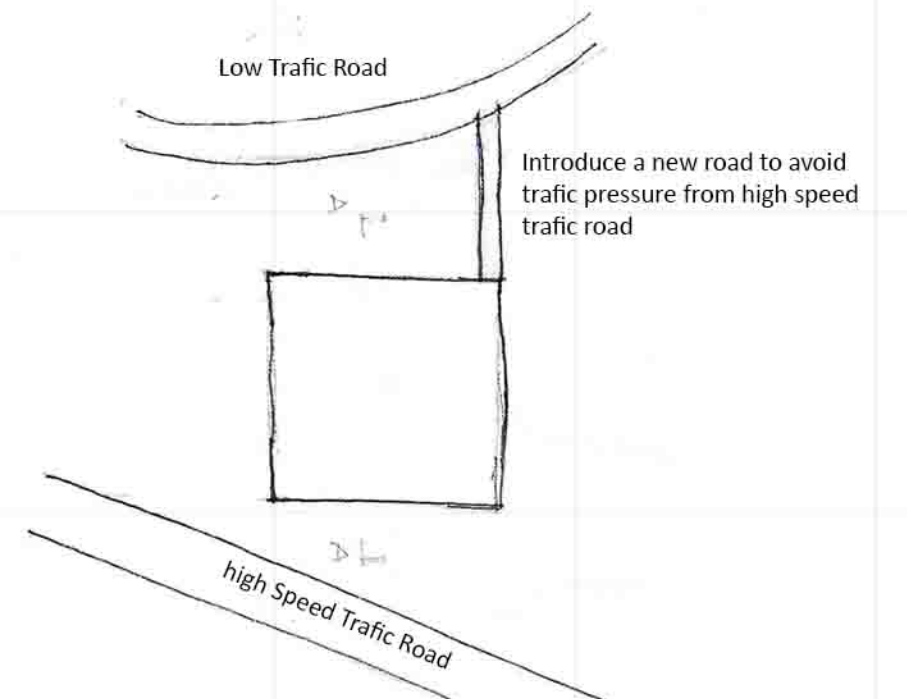


Uninterrupted pathway towards the lake

Pedestrian Entry

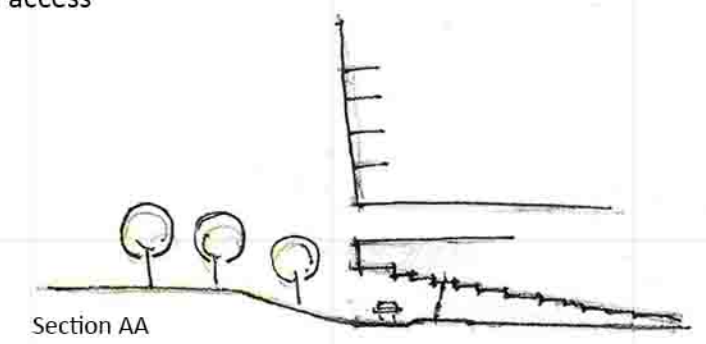
From City
From Surroundings
from lake
from Road
to the lake

Vehicular Access

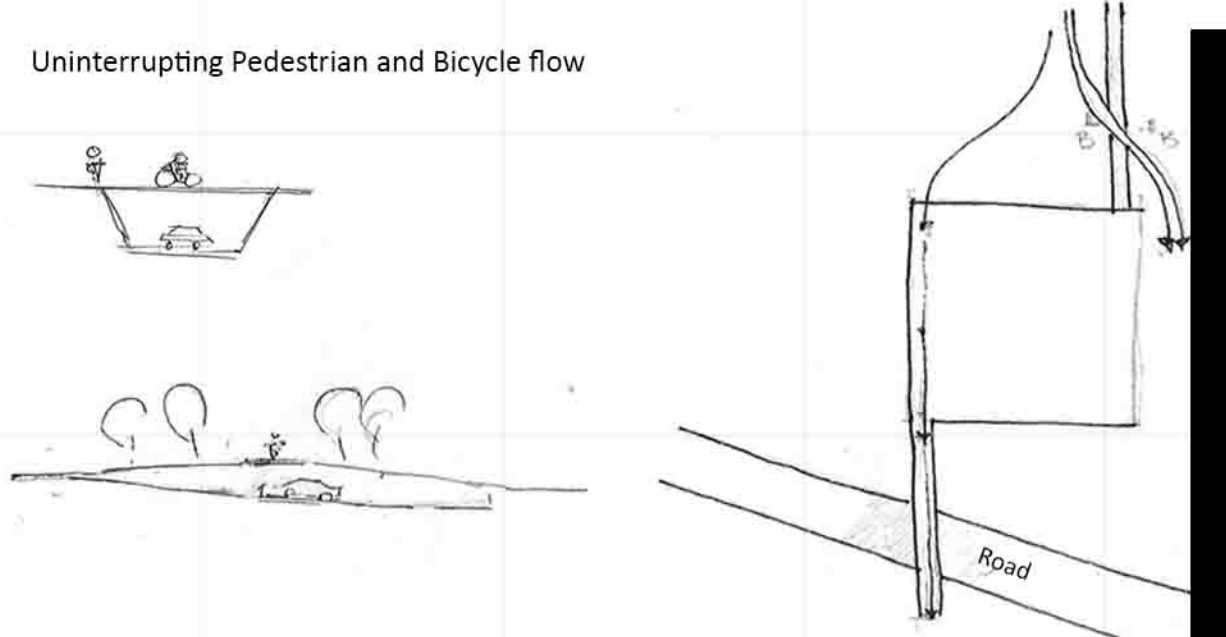


Introduce a new road to avoid traffic pressure from high speed traffic road

Using Land Profile to create the Vehicular Access to the building and hide from pedestrian access



Uninterrupting Pedestrian and Bicycle flow



Steps for the complex Design

Steps for the complex Design



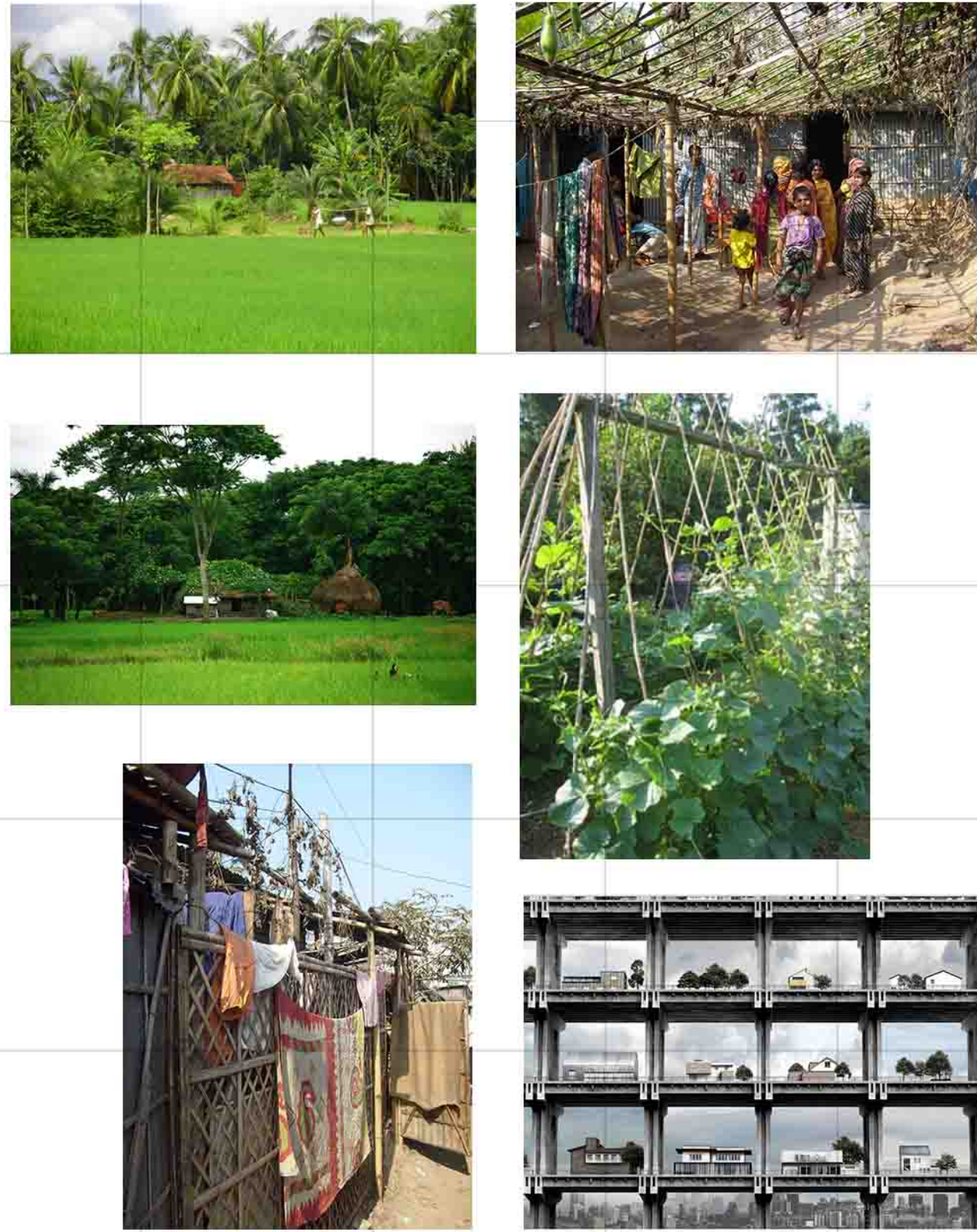
Complex master Plan

Foot over bridge over high traffic allows green and other functions (including sittings, hawkers shops, galleries) to eliminate the effect of height.

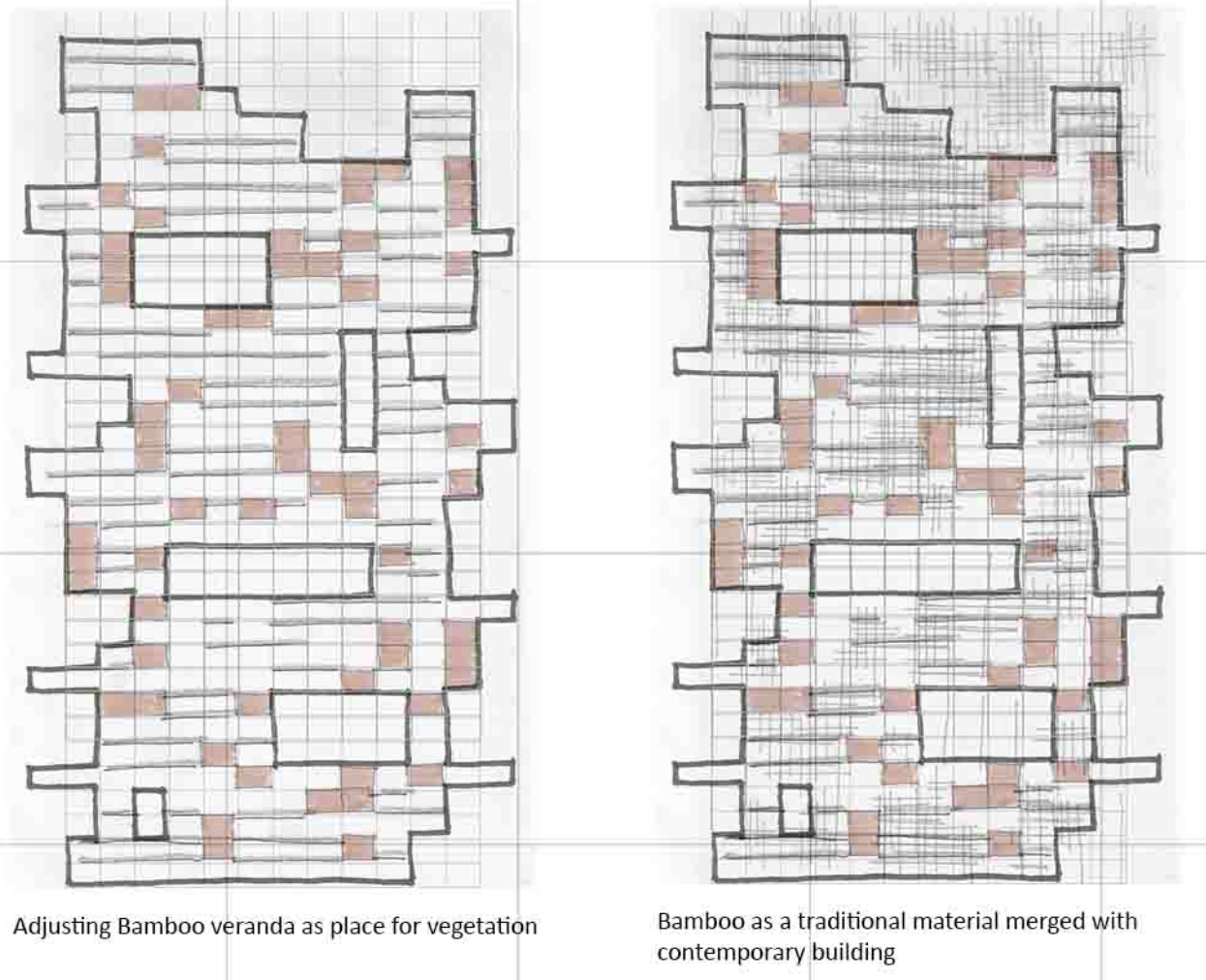


Idea for foot over bridge

The Idea of the building_ Introducing vertical Garden



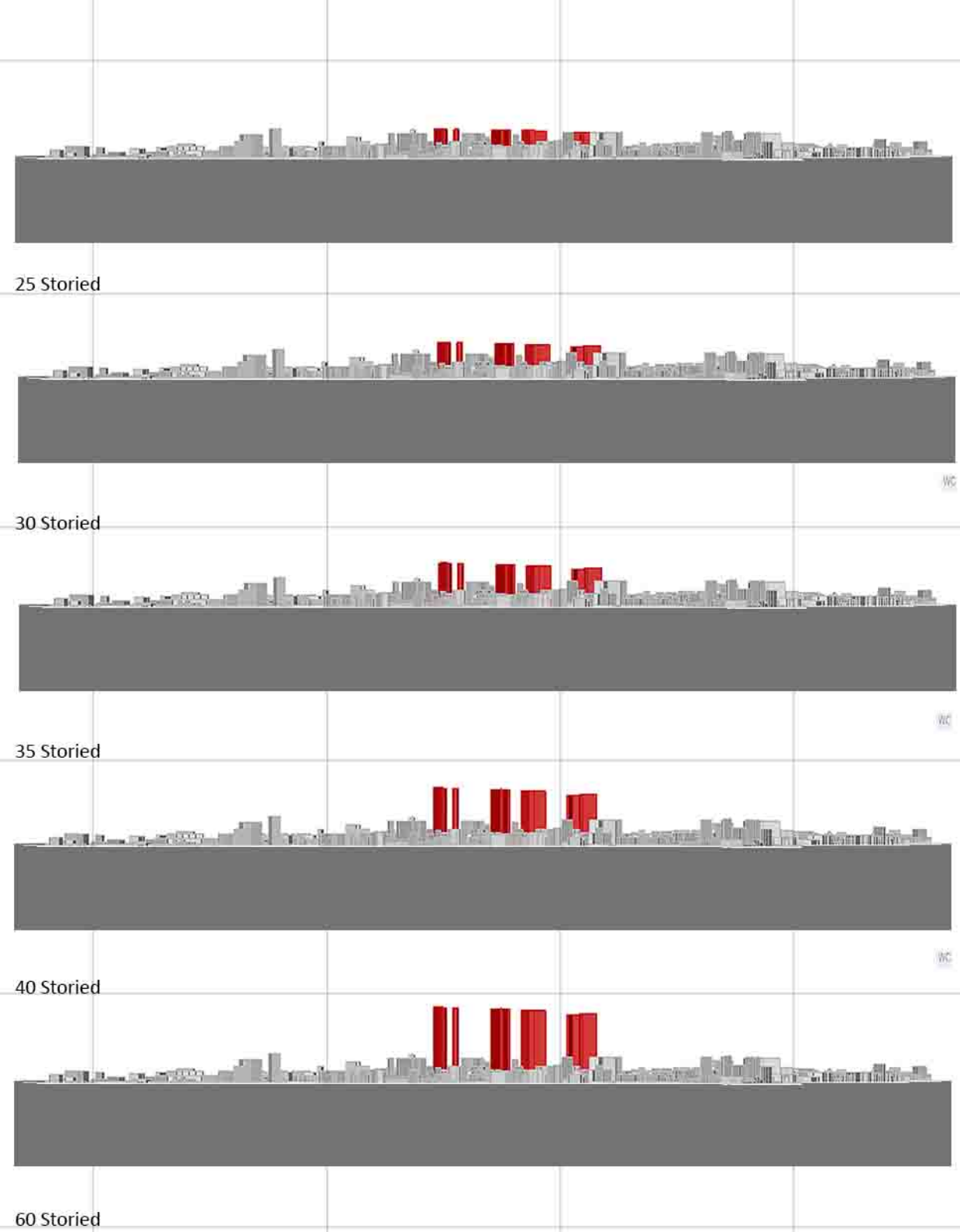
Ideas for vertical garden



Adjusting Bamboo veranda as place for vegetation

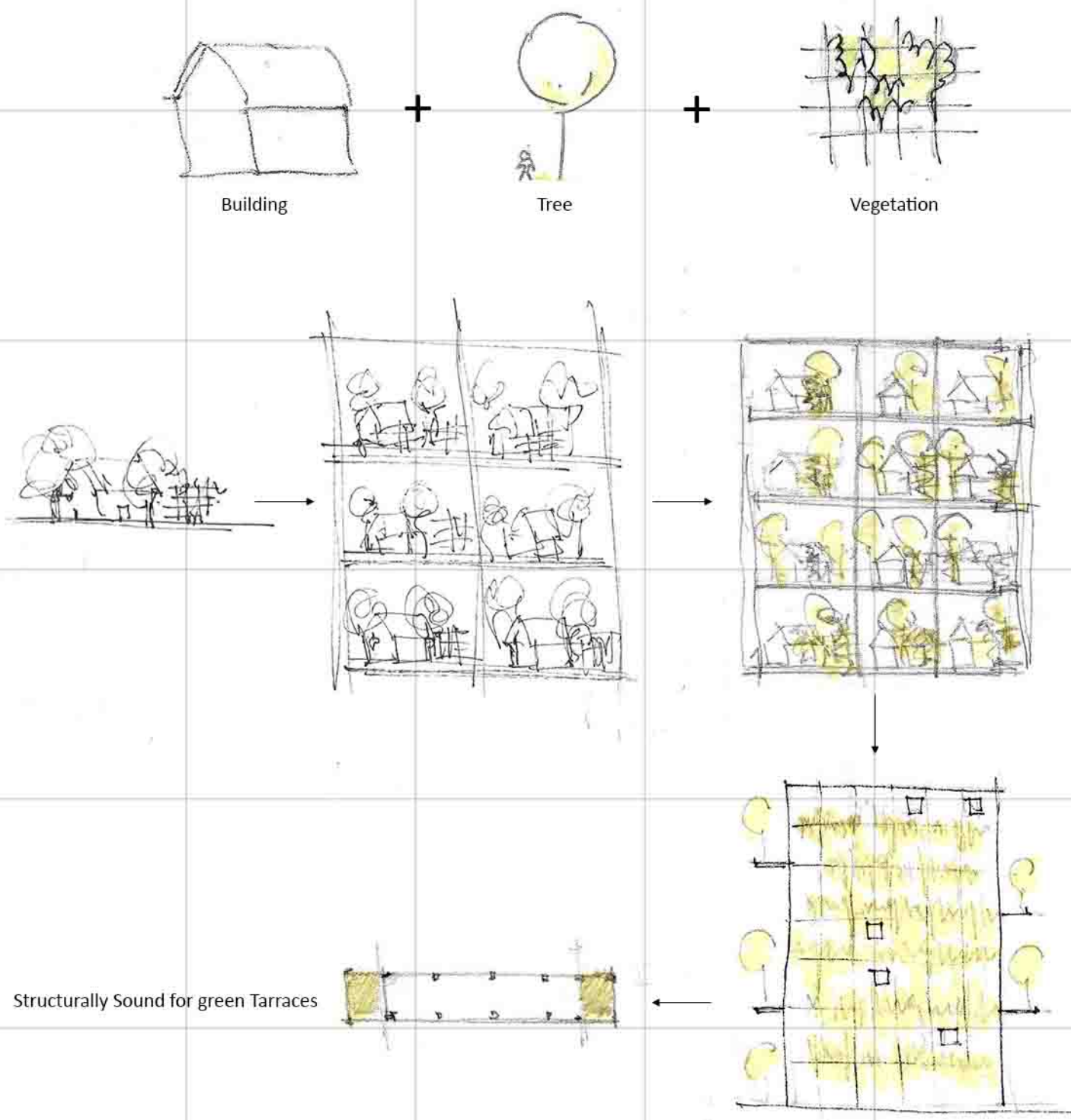
Bamboo as a traditional material merged with contemporary building

Analysing building height with existing buildings to fix a satisfactory height for the Proposed buildings



Height Analysis

Three Basic Items



Structurally Sound for green Terraces

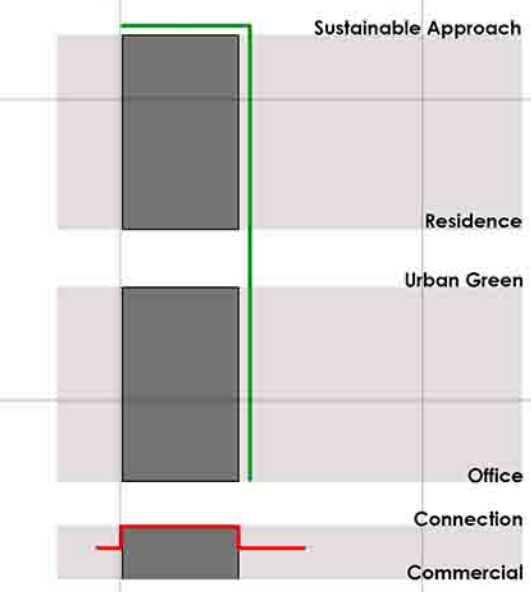


Conceptual Building Facade

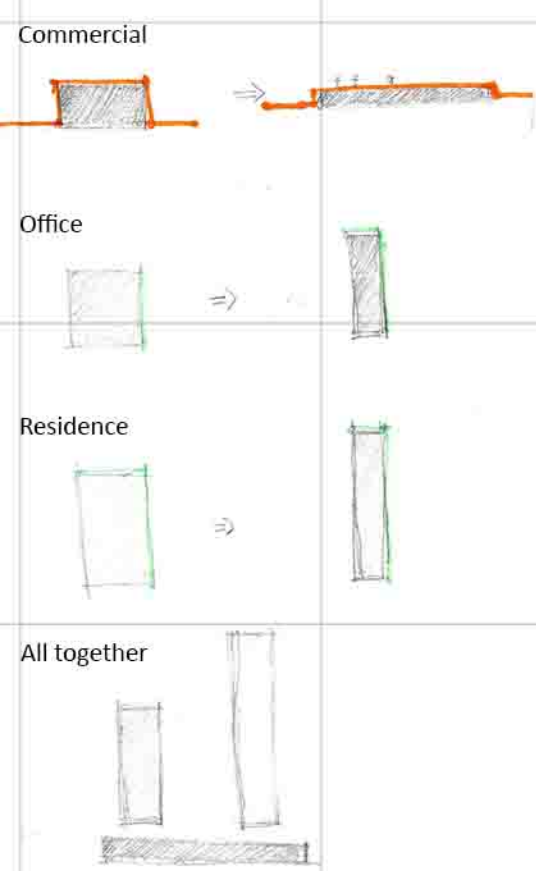
Innovative In Materials:

01. Merge the gap between tradition and current materials
02. Vertical garden to construct with traditional materials ie. Bamboo
03. They define their own aesthetics and identity
04. Moreover, sustainable architecture seeks to minimize the negative environmental impact of buildings by enhancing efficiency and moderation in use of materials.
05. The vertical garden will improve the condition of the living in higher levels.
06. Integrating traditional materials with sustainable technologies. Ie. Solar panel, wind turbine.

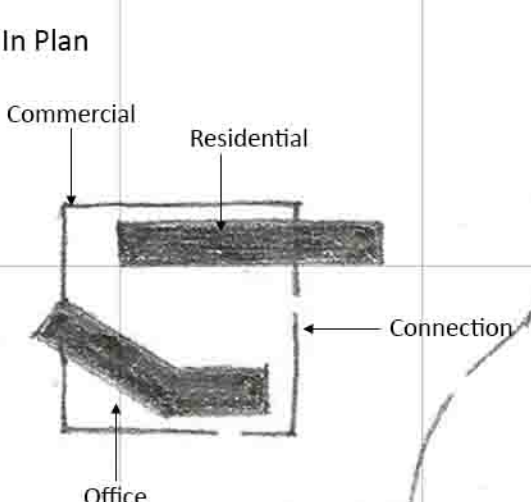
Basic approach to the Building.



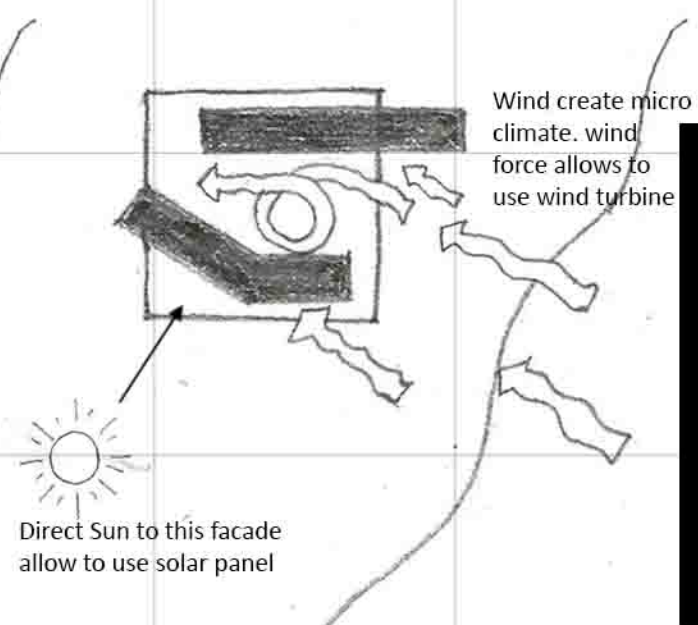
Simplifying/ reduce complexity of accessibility/ provide identification of individual functions



A. Create Separate entry after grand entry
B. Provide individual entry



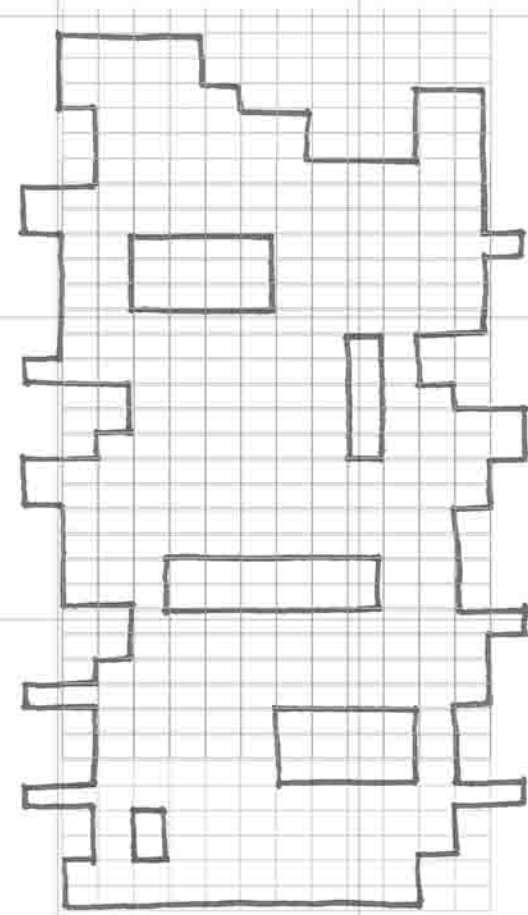
Sustainable Approach In Plan



Approach to the Building



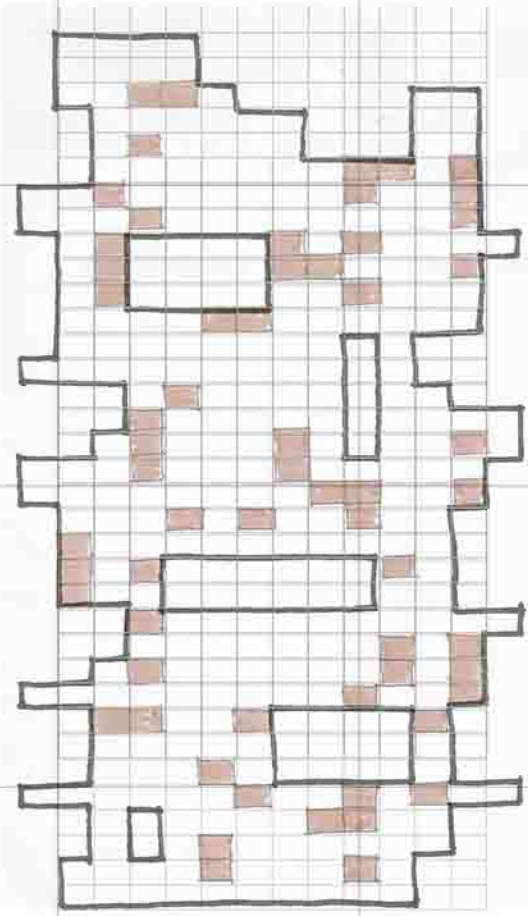
General Grid



Identifying Spaces for Trees vertical courtyard



Result



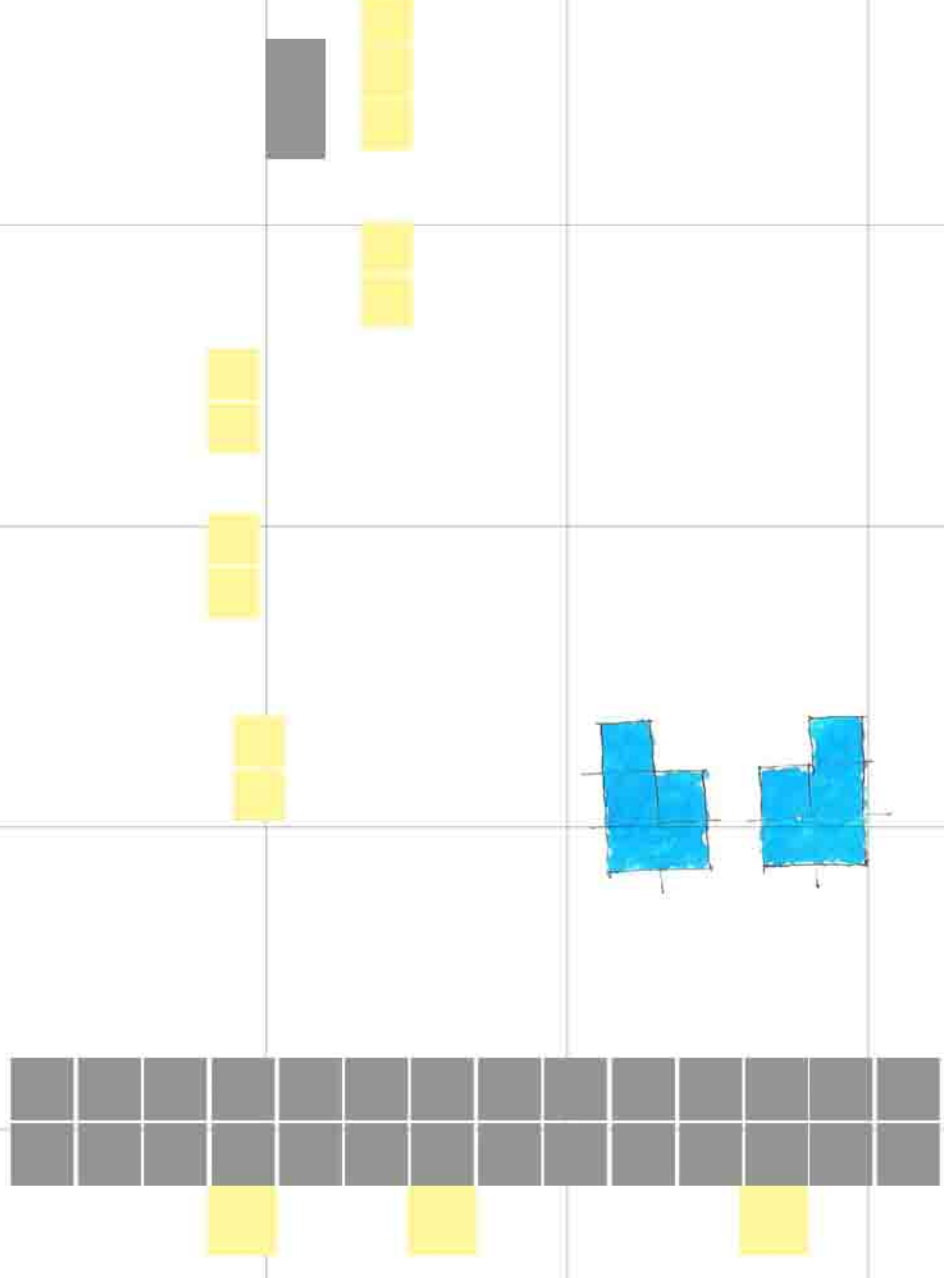
Introducing Bamboo Cantilever to allow view to the lake (inside outside relation Ship)

Building Development

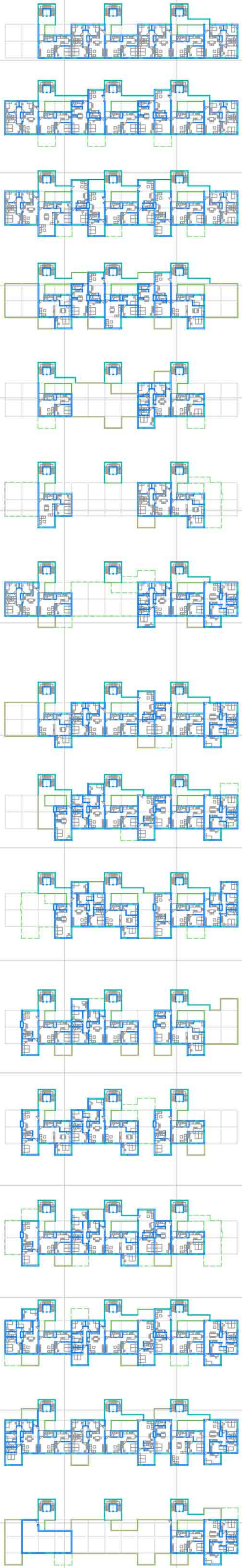


Materials

Residential units and plans Organization:



Organization of Residential Plans



Residential Plan Layout

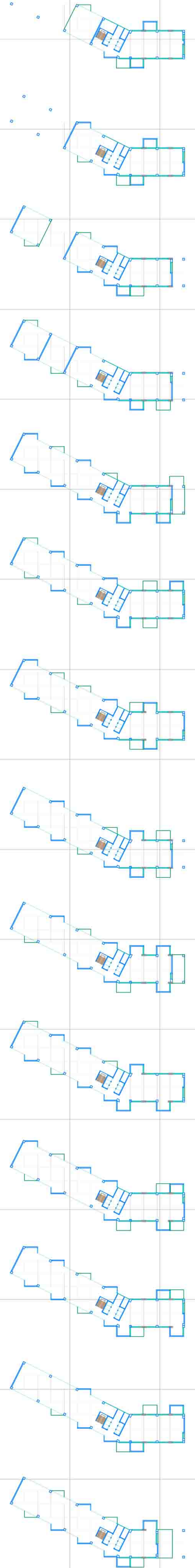


Residential Plan Layout

Office Organization

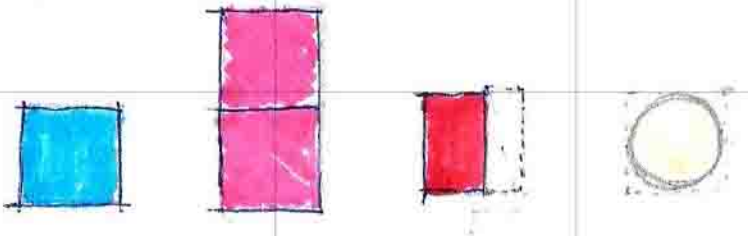


Office Plan Organization

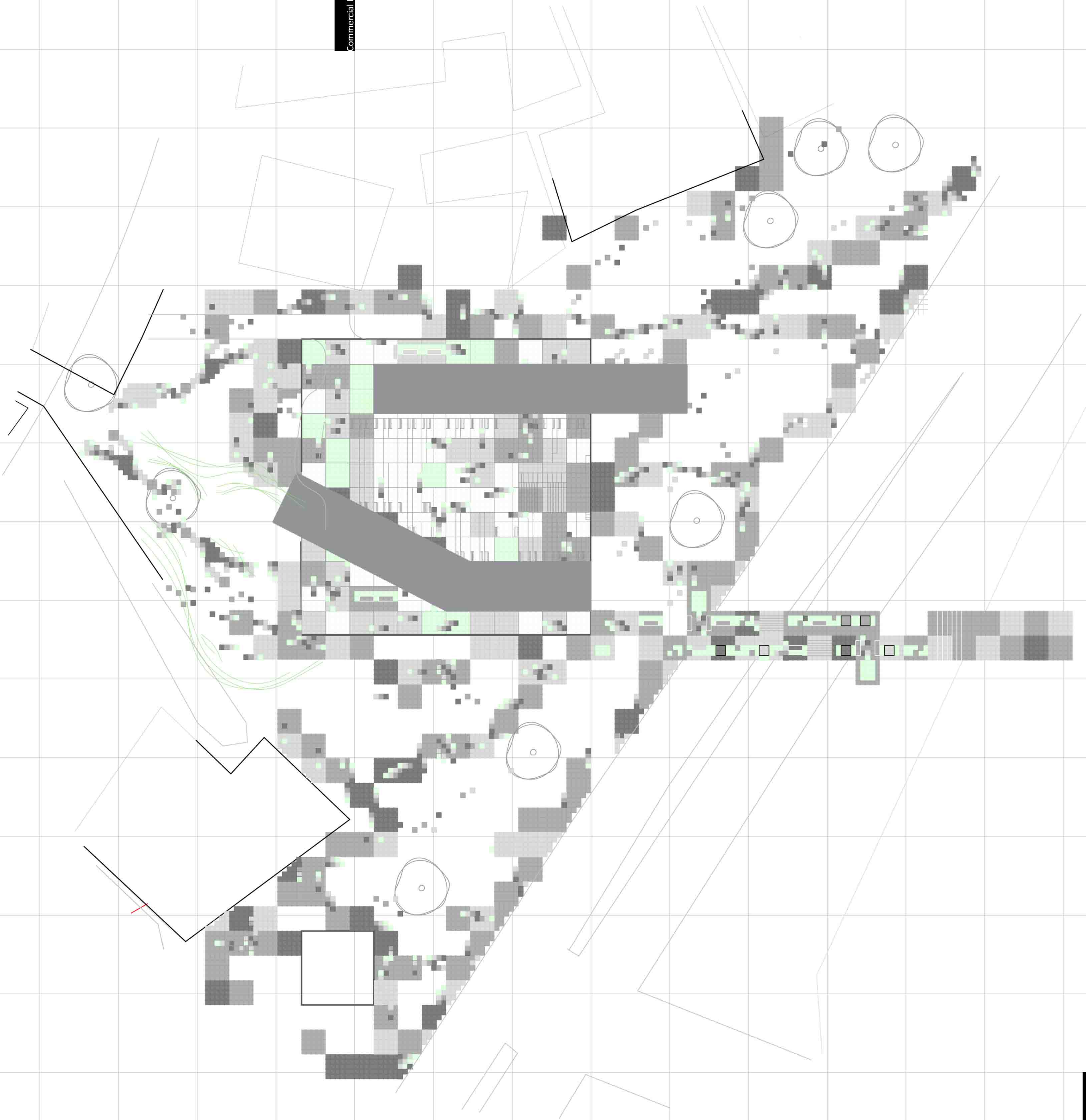


Office Plans Layout





Commercial Plan Organization



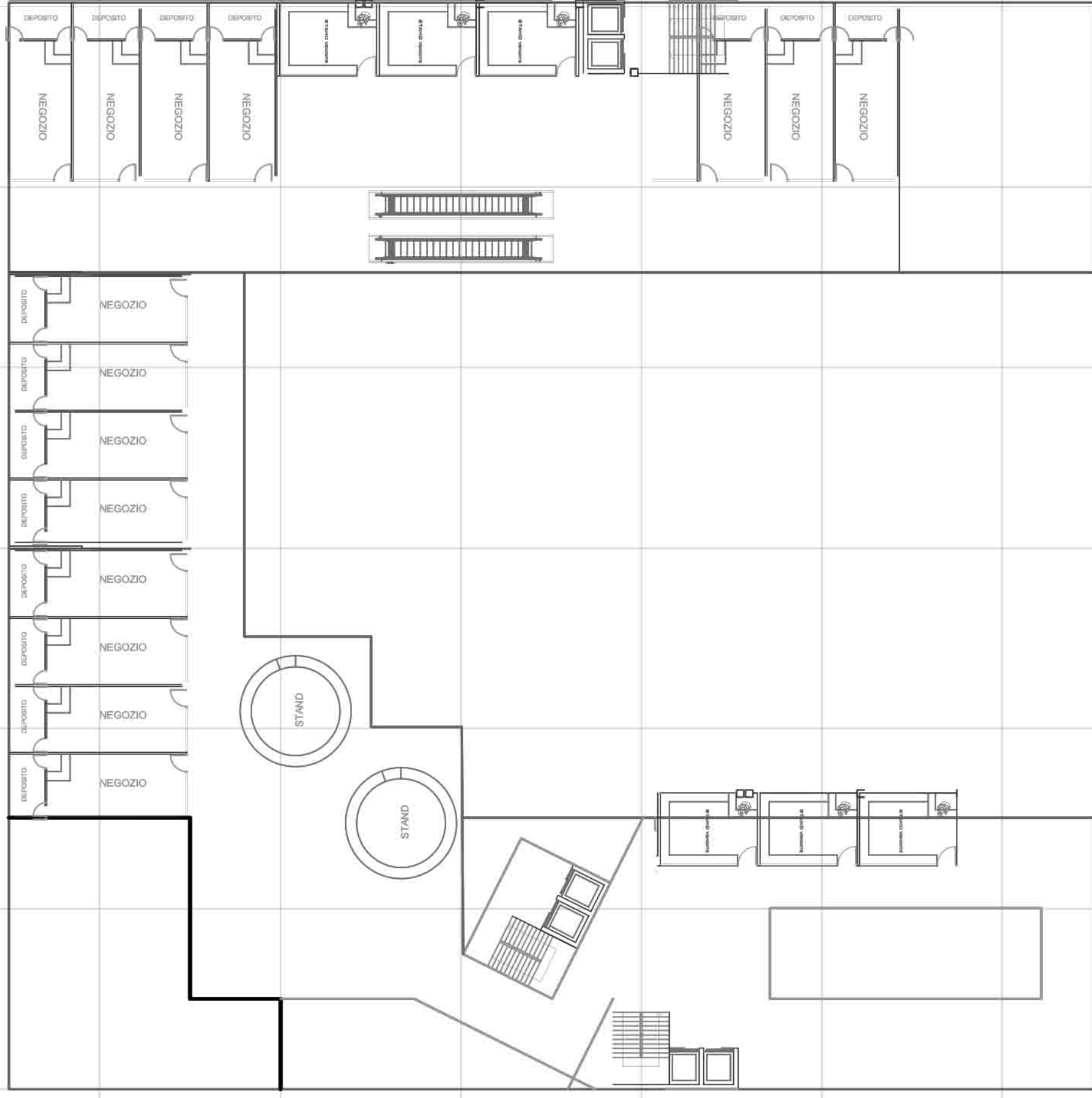
Ground Floor Plan



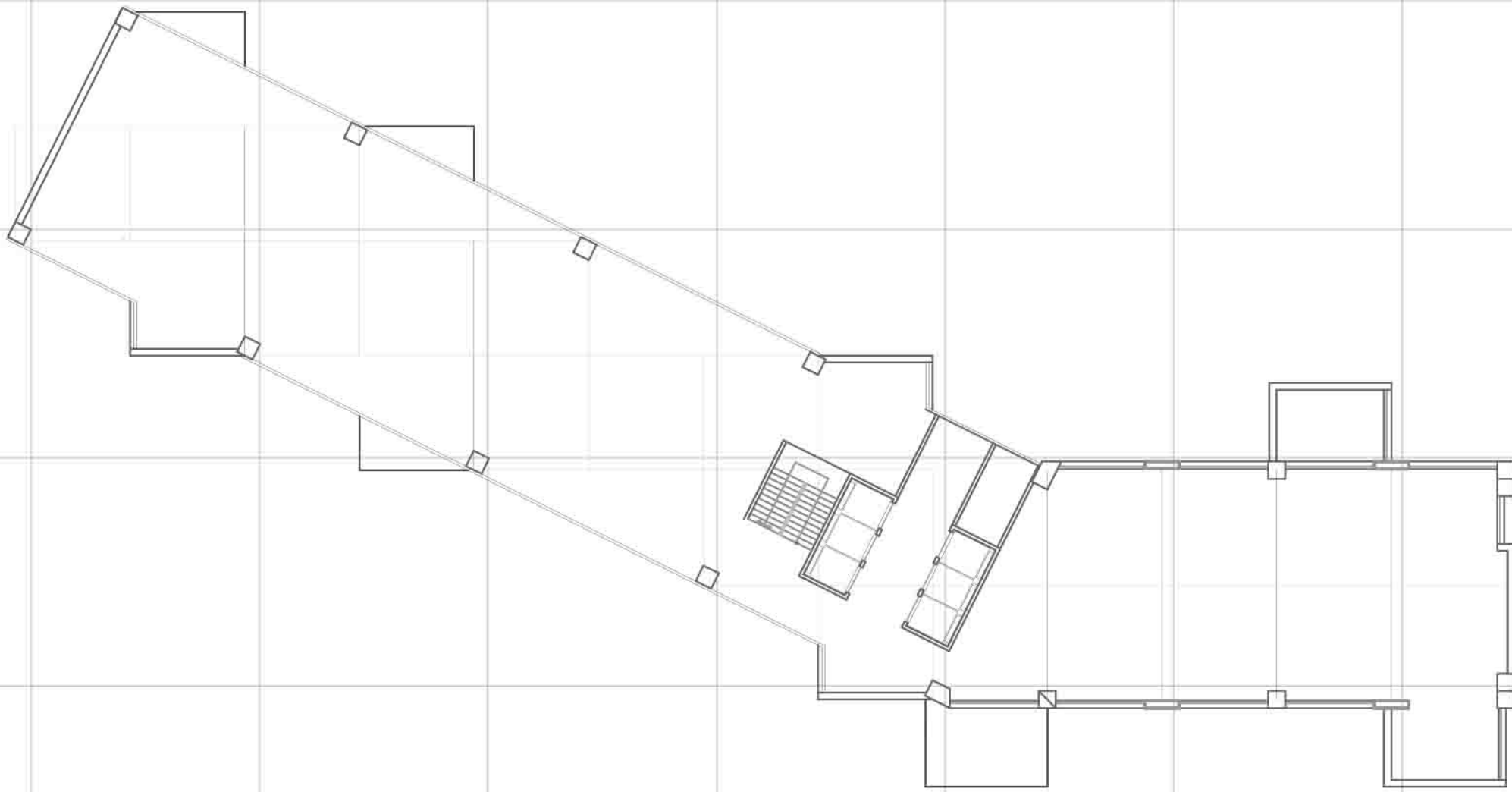
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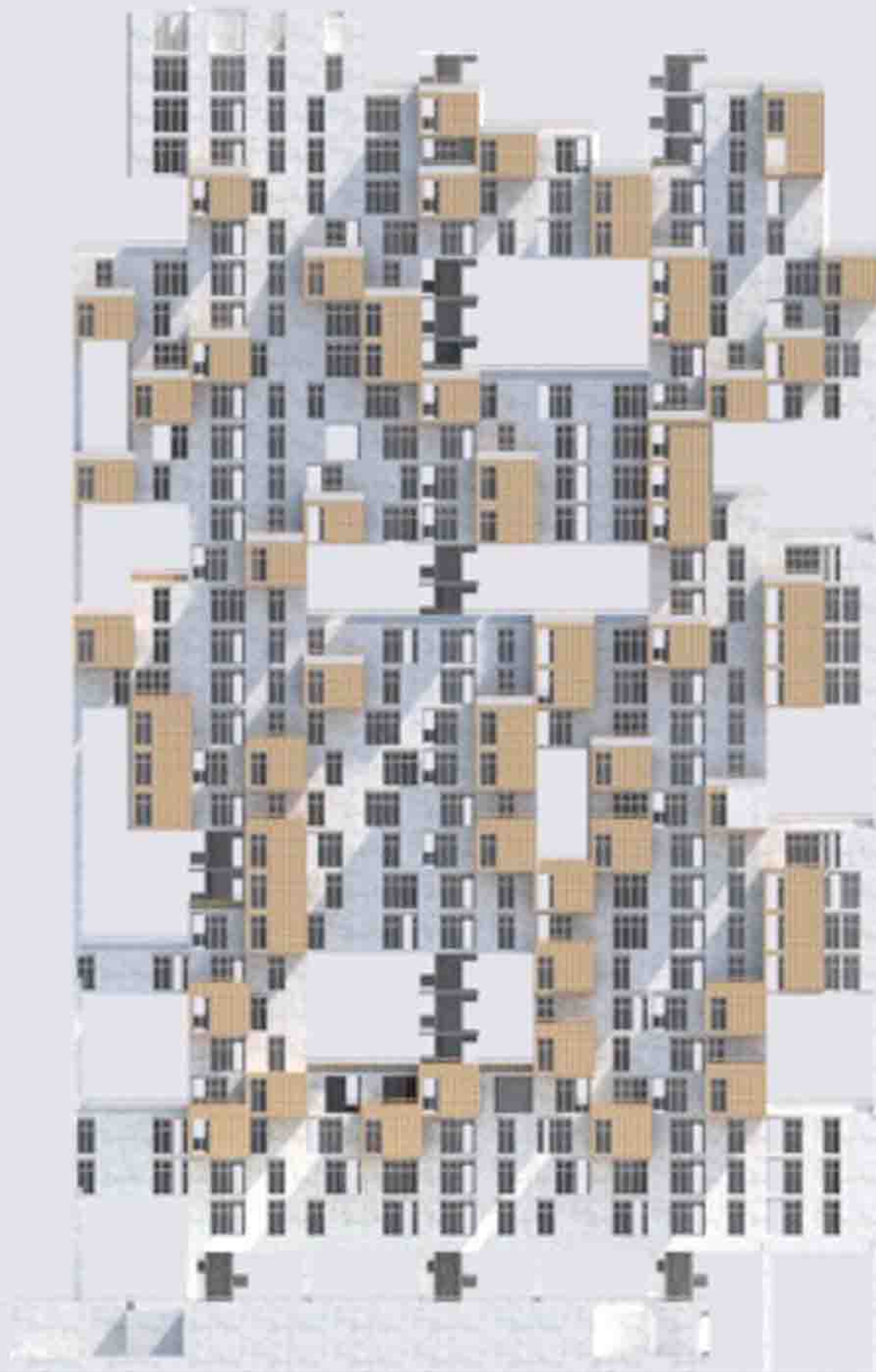


Floor Plan



Floor Plan

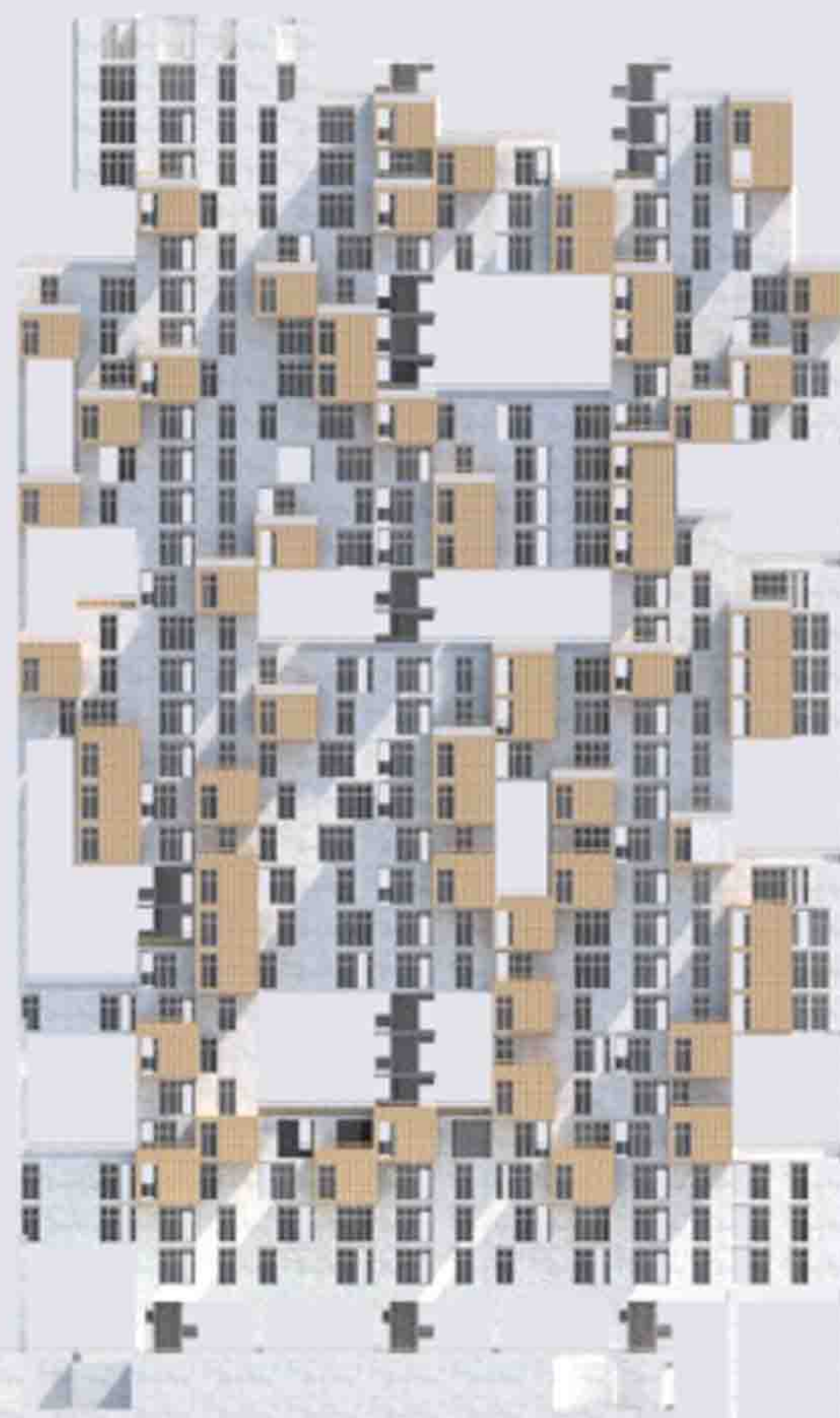




40.04 | file: View 01 starting with plaza material 28-11-14-1.max | frame: 0000 | p

Section AA

Section AA

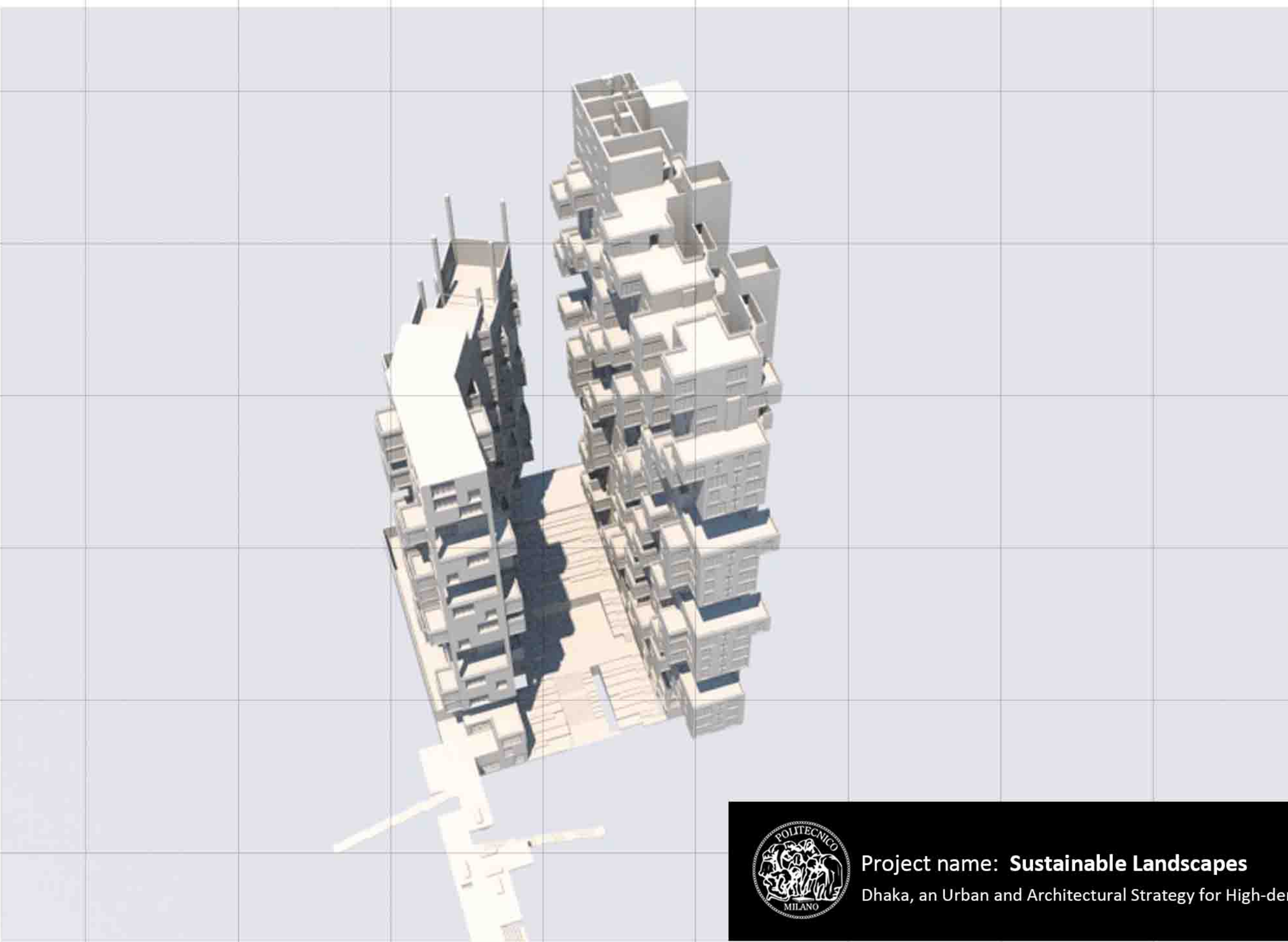
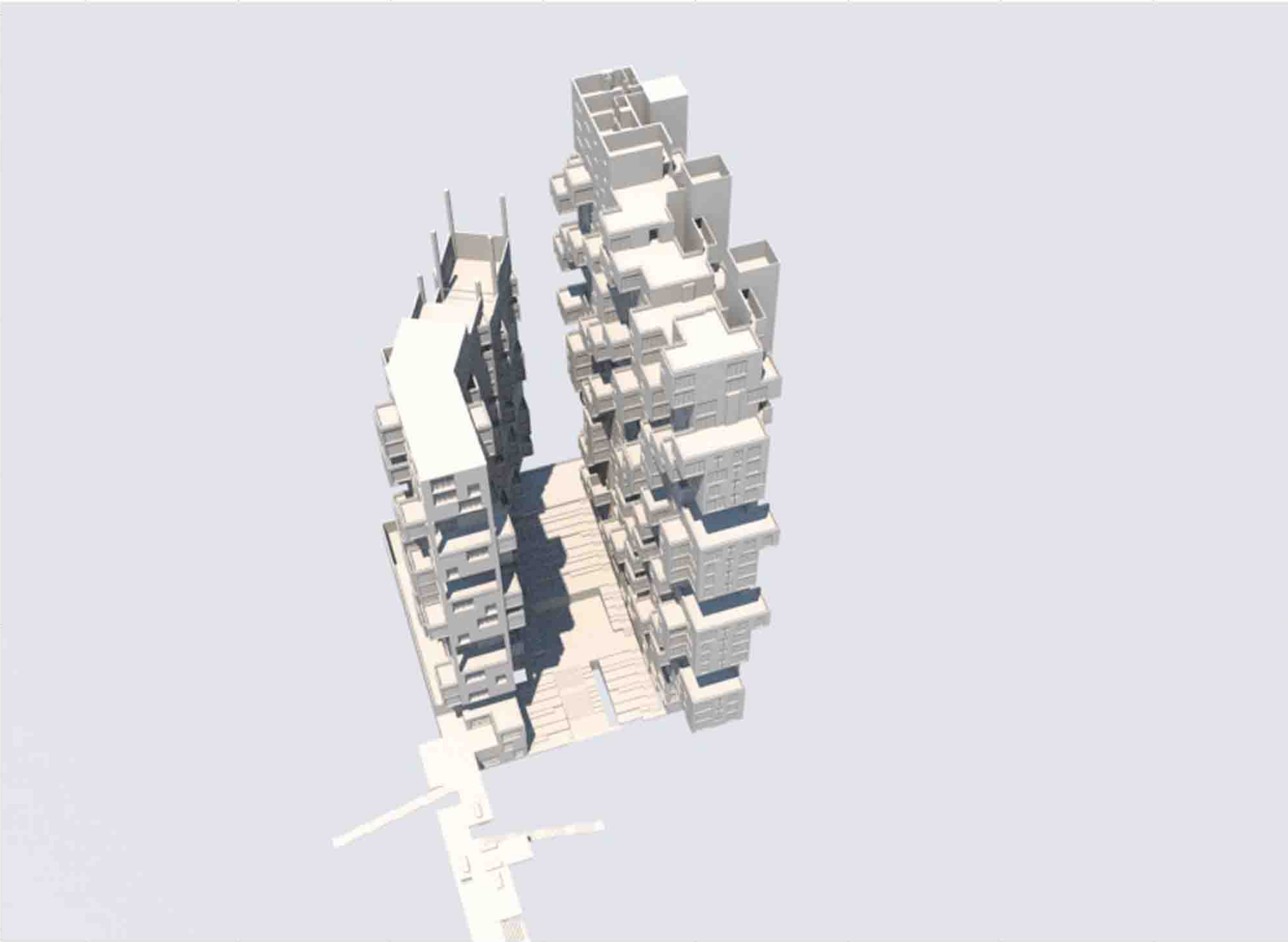
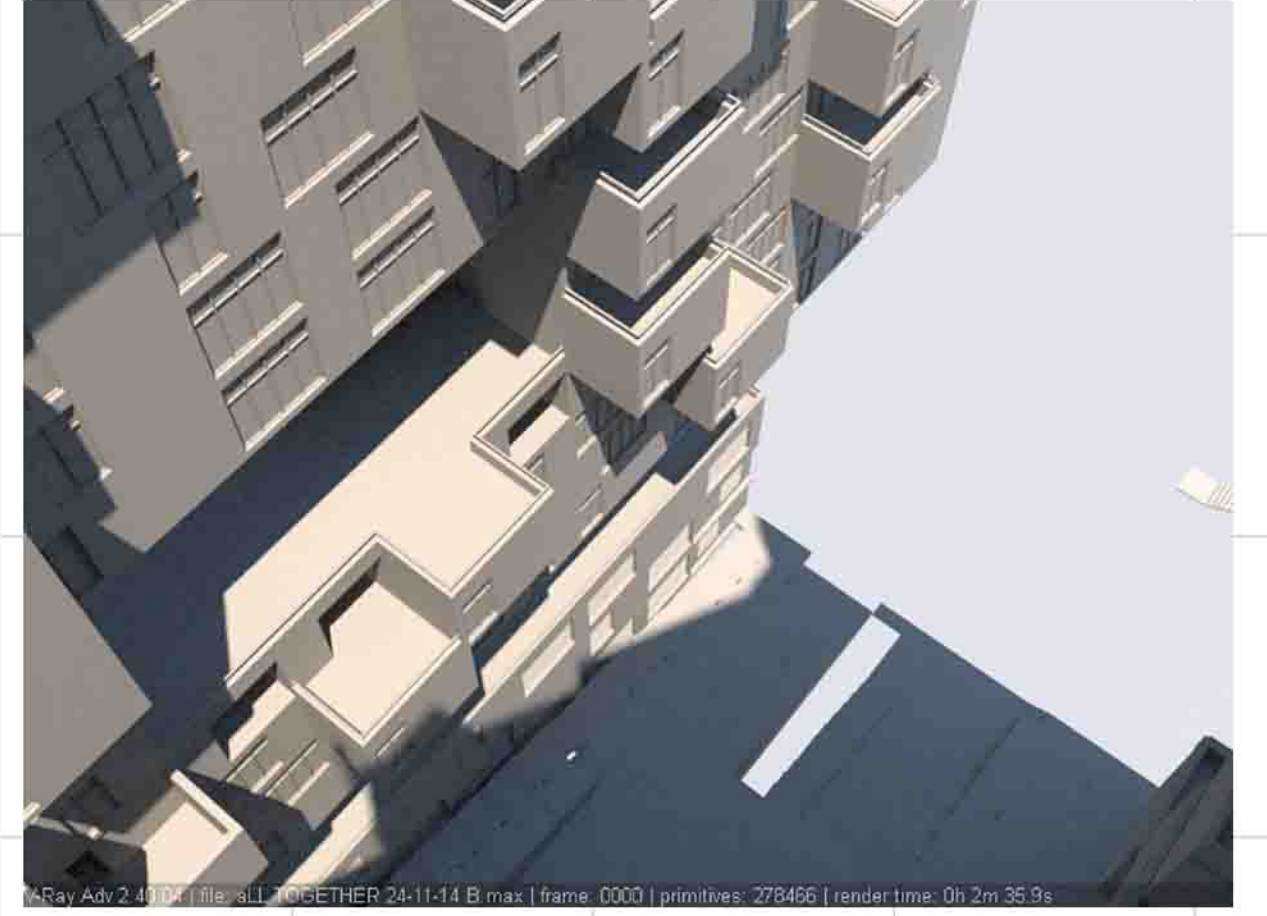


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Section BB

Section BB





Perspective

Perspective

