Contents

01 Introduction
  Profile 10
  Schedule 11
  Site Analysis 12
  Case Studies 18
  Marketing Strategies 22

02 Design Strategies
  Instruction 24
  Walled Town 26
  The Arboretum 52
  Water Town 82
  Eco-Village 118
  Green Community 142

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Preface
Andrew Scott

Preface
Andrew Scott

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Profile

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Schedule

The workshop officially began on Monday, 14th, June. With a welcoming dinner, the fundamental information about site, contexts, concepts were presented by SNUG. The first conceptual sketches and drawings to site “identity” were due for a pin-up on Wednesday 16th.

The site concept was further developed identifying possible building typologies along with several desk critiques. The site concept was presented identifying the area to be studied in further detail together with building typologies. In order to communicate with design teams and SNUG, the interim presentation was held on Wednesday 23rd. Based on the discussions, the design teams developed the general concepts, building typologies, and tried to solve practical problems.

As the workshop approached the last days, all teams finalized their schemes with drawings and models. The final presentation was on Tuesday 29th from 10am, and the exhibition lasted one more week.
01 Introduction
Overview Nanjing

Nanjing, the capital city of Jiangsu province, is seated over banks of the Yangtze River. Located in the eastern coastal region of China, Nanjing plays the joint role of main artery of transportation in China from west to east, north to south.

As in the hot-summer-and-cold-winter zone, precipitation plenteous and dominant wind direction southeast in summer and northwest in winter, residential design in Nanjing would take drainage and winter-sunlight into account. “Suning Universal Venice Watertown” project is in Pukou District, east shore of Yangtze River, Bagua Zhou, and can be seen visually from Nanjing mountain. To the north is Luhe District, to the west is Pu Chu Road, to the south is the tunnel. Suning Group projects in the region covers an area of about 4500 acres, total construction area of about 500 million square meters has been completed and 200 million square meters of projects under construction.

The projects it will become a residential, leisure, vacation, entertainment, commerce and trade as one of the Metro. Public facilities that have been planned include clubs, schools, kindergartens, supermarkets, banks, public squares, hospitals, commercial street, brand name stores, restaurants, stadiums, etc. Architectural form, including multi-layer, high-rise, high-end class villas.

Venice Watertown is divided into 24 blocks, including plot #17, which has good landscape resources. This proposal is for plot #17.

Plot #17 is situated at a distance of only 1.5 kilometers from Nanjing Yangtze River Bridge, 12 kilometers from the city-center Xin Jie Kou, 12 kilometers from scenic area Zhongshan and Laoshan, and 9 kilometers from the sub city-center of Pukou. West to the Yangtze River and Bagua Alluvion and south to the Lushe District, the project is organized with advantaged transportation, along the west side of Pu Zhu Road and north of Nanjing Yangtze River Bridge and the planned No.3 metro line.

Overview of Nanjing

Nanjing, with a total land area of 6,598 square kilometers, is located 300 kilometers west of Shanghai, 1,200 kilometers south of Beijing.

Overview of the Project

Venice Watertown is divided into 24 blocks which has good landscape resources. The plot #17 is assigned as a site for this project.

Location of the Project

The site is located in Pukou District which is situated at a distance of 1.5 kilometers from Yangtze River Bridge, 12 kilometers from the city center.

Overview Workshop I Site Analysis I Overview Nanjing
**Overview Site**

The site, plot #17 has been described as generic, flat and relatively featureless. Site area is approximately 89,354 m² but only 79,000 m² usable land. The river, present in many of these plots, is the only possible amenity. It is allowed to change the direction and the position of the river with a reasonable explanation. The boundary lines indicates the possible area for planning. The first task is to give the site a conceptual identity. Mostly developments are given a stylistic flavor, such as Spanish, or a place reference such as Venice. The challenge is to seek an identity that has a stronger basis.
**Site Condition**

The total area of land is 84354m$^2$ which consists of 258-270m east-west edge and 336-350m north-south edge. The site is surrounded by four roads which are Puzhu North Road (city main road), Puzhou Road (city sub-main road) and Minbing Road.

1. Site area: 89354 m$^2$ but only 79000m$^2$ usable land
2. Property: residential land (70 years of property rights)
3. Floor Area Ratio: 1.25-1.5.
4. Building coverage: less than 25%
5. Building Height:
   - Low-rise 2-3 walkup
   - Multi-storey 4-6 walkup
   - High-rise 19-31/34 (100m)
   - Sub high-rise (1)12-18
   - Sub high-rise (2) 7-11
6. Green coverage: more than 35%
7. Vehicle Parking: area < 15% of total ground area (underground)

**Land Use**

- Type II Residence
- Kindergarten
- Residence mixed land
- Community Center
- Commerce
- Commerce and Residence
- Public Green Space
- Protective Green Space
- Water Area

**Range of Site**

East-west length: 258-270m
North-south length: 336-350m

**City Roads**

The site is surrounded by four roads which vary by its width and traffic.

**River Condition**

The direction of existing river was changed as the development of plot #13. The reason of changing the direction mainly was to avoid the sharp turn of the water flowing. River also can be utilized to separate commerce and residence. Except for the river, many water features exist mainly along the west side of the site. The river on the East side act as a flooding control which is flowing through the whole adjacent area. Water bodies on the West side exist as a type of ponds. The site, which is possessed relatively plain characteristics, can be identified by considering the existing water features.

**Water Features**

Except for the river, many water features exist mainly along the west side of the site.
Gan Xi, who became Jinshi (top examinees of Highest Annual National Examination) was born in 1797. Gan Xi’s residence house began its construction during the Reign of Emperor Jiaqing in Qing Dynasty (1796-1821). Commonly known as “ninety-nine and a half rooms.” With a high historical, scientific and tourism value, Gan Xi Residence is the largest and best preserved private house in Nanjing area. The plot area is 12000m² and total building area is 8000m². In order to effectively utilize and reproduce the style of Ming and Qing Dynasties southern residential houses, the Department restored part of the complex, built Nanjing Folk Museum, open to public in November 1992.

**Chinese Traditional House**

Gan Xi Residence

This traditional house was first built in Qing Dynasty, and the existing area covers more than 8000m². The museum of collecting folk articles, studying local traits and custom.

**The Residence of Ganxi**

The whole house consists of mainly two parts: Residence and Courtyard

**Residence**

The courtyards provide various advantages such as natural ventilation, daylight and drainage.

**Residence**

There is one main entrance and two extra entrances from the northside.

**Courtyard**

In the concept of “FENG SHUI”, the compound is seen as “gas mouth”. Planting trees also helps to provide clean air condition.

**Natural Ventilation and Daylighting**

Indoor and outdoor space is flowed and flexible - closed, partially or fully opened - to meet various needs.

**Transition Space**

Great importance of privacy and introversion was attached to the traditional residence. Through the tall gable wall, courtyard space become introversion. In addition, the tall gable wall has the function of obstructing fire.

**Privacy**

The relationship between man and nature is emphasized in Chinese philosophy. Heaven, earth and men are related in one circulation and metabolism. Courtyards are the center of daily life, thus are seen as the space where nature and men accrete.

**Harmony of Nature and Man**

The relationship between man and nature is emphasized in Chinese philosophy. Heaven, earth and men are related in one circulation and metabolism. Courtyards are the center of daily life, thus are seen as the space where nature and men accrete.

**In the concept of “FENG SHUI”, the compound is seen as “gas mouth”. Planting trees also helps to provide clean air condition.**
The Chinese Classical Garden is a place for solitary or social contemplation of nature. The gardens have been always small in plot area due to the high density of population in the district of ancient China. As a result of the mild climate and abundant resource of landscape, how to copy and create nature within the tiny garden is always the key.

Chinese gardens were created in the same way as a combination of landscape and paintings together with poems - this was the so-called "poetic garden." The design of Chinese gardens was to provide a spiritual utopia for one to connect with nature, to come back to one’s inner heart, to come back to ancient idealism. Process of building a Chinese classical garden is often guided by literati, especially, artist of painter. Thus we may often find a lot of similarities between a classical garden and a traditional painting. From then on, kind of interest between reality and imagination have come into consideration as importance.

They used plants as symbols. Bamboo was used in every traditional Chinese garden. This is because bamboo represents a strong but resilient character. Often pine is used to represent longevity, persistence, tenacity and dignity. The lotus is used to symbolize purity. The flowering plum is one of the most important aspects of a Chinese garden, as it represents renewal and strength of will.

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**Chinese Gardens**

- **On the Outskirt**
  Gardens are located on the outskirts of the city.

- **Along the Street**
  Gardens are located inside the city along the street. The left map shows one example which is located adjacent the street.

- **In the Block**
  Gardens are located inside the city, especially inside the block. This example demonstrates the entrance of garden is offset from the the street.
Chinese reforms and opening to the world not only caused dramatic changes to the country’s economy and society, they also brought unprecedented upheaval to Chinese families and marriages. An important characteristic of Chinese society’s changing family structure was its diminishing size. Nuclear families now account for the majority of modern families and smaller families are becoming prevalent. In 2002, the average family size in China was 3.39 persons, down 1.42 from the same figure in 1973 and approaching the 3.0 figure prevailing in developed countries such as the US and Canada.

<table>
<thead>
<tr>
<th>Family Type in China</th>
<th>Stem Family</th>
<th>Core Family</th>
<th>Joint Family</th>
<th>Single-Parent</th>
<th>Old Only</th>
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</tbody>
</table>

### House Area for Stem Family

- Less 60m²: 11.2%
- 61-90m²: 29.1%
- 91-120m²: 29.1%
- 121-140m²: 15.5%
- More 141m²: 15.1%

### House Area for Core Family

- Less 60m²: 13%
- 61-90m²: 30.6%
- 91-120m²: 29.8%
- 121-140m²: 13.6%
- More 141m²: 12.8%

### The Percentage of Family Type

- Dink: 62%
- Core Family: 1.4%
- Single-Parent: 28.5%
- Stem Family: 3.5%
- Joint Family: 8.5%

The chart shows the average house area for core family in China.

Nanjing Workshop | Marketing Strategies | Family Type in China
02
Design Strategies
Planning Design

1. Creative planning and design to create a beautiful ecological environment and landscape. Low-carbon sustainable development and green residential demonstration area.

2. Design should focus on the resident’s lifestyle, appropriate space and atmosphere with an innovative approach to the overall architectural style.

3. Design should meet the Nanjing specifications for domestic and residential architecture and combined with successful international precedents of roads and site planning to allow of different areas on site such as open community space and private domain. Design should take advantage of water features, vegetations, gardens.

4. Community entrance area must be designed to the level of the project, must strengthen the overall design concept. Peripheral walls, doors and facades of the design should be coordinated.

5. Design should allow certain flexibility for adjustment in the future for both residential and overall design.

6. Design should reflect the eco-energy saving ideas, and new technology, new materials, new equipment, new technology application in the project description accordingly.

7. The level of underground garage should avoid high water table during construction and future. Sun analysis and calculation should be included in design.

8. Design should focus on natural ventilation and the natural wind direction.

9. The design must consider reasonable integration of people and vehicles.

10. Homogeneity should be avoided in planning and design of development. According to the current and future market needs analysis, through design innovation and enables the project ahead of the domestic like product. The design should lead the future trend of residential architecture according to the geographical features of Nanjing.

11. Design innovation at the scale of the unit and building type and unconventional resolution of the building expansion.

12. Service facilities could take on a unique character and be integrated with the landscape as a highlight of the community.

Concept and Identity

1. Community

Parcel 17 will have an identity and be considered a community. The population of ±4,500 will be comprised of several communities. What defines a community spatially, what are the shared amenities and what size of population makes sense?

2. Spatial Hierarchies

There will be public, semi public and private spaces. How will these be anticipated and what character will they have? Are there iconic public spaces that give organizational clarity to the parcel?

3. Building Types

Typically buildings in Nanjing are sited as independent objects in space with landscape seeming to be ill defined and residual. If we think of using building types in a complimentary fashion, can we create meaningful space that also protects the residents from the microclimate?

4. Pedestrian Access

The form of housing is critically dependent on which access strategy is chosen. Some international examples try to link building types by shared access systems such as elevator a “street in the sky.” Are there levels other than the ground floor that can create community linkage?

5. Vehicular Access

To what extent are pedestrians and vehicles separated? How far is it from a parking garage to a dwelling? How big are garages and how formative are these in creating building groupings?

Nanjing Workshop | Instruction | Planning Design

Nanjing Workshop | Instruction | Concept and Identity

Walled Town

this could create a private and secure place to live within which there would be smaller scaled enclosures. An urban character to the streets within the block would be logical.

Eco-Village

ing this concept sustainable design would be the governing principle for design decisions large and small. Some levels of energy self-sufficiency would be important. What are the elements of the project that give identity?

Water Town

taking advantage of the existing river the water is manipulated to articulate different parts of the site, some of this ornamental. Can water be used to modify the microclimate and give aural pleasure?

The Arboretum

in this community the cultivation of natural beauty in the form of year-round flowering plants and specimen trees would import a flavor. Green houses and green roof would allow for the cultivation of edible plants. Healthy living is a theme.

Green Community

the integration of buildings and landscapes would be important by maximizing vegetation and manipulating the landscape to create topography. Similar issues to Eco-Village.
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Unit
Total 849
High-Rise 440
Mid-Rise 273
Low-Rise 120
River View 16

Land Use Planning
FAR 1.42
Building Coverage 28.82%
Green Coverage 40.80%
Roof In Green System 44.22%
Vehicle Parking 640
Walled-Town

This team’s work is centered on the theme of a walled-city. “Living” as an activity in this current milieu where integration of disciplines are essential to success was problematized; what does work, live and play mean in this current environment where indulgence and consumption for its very own sake is very much part of the cultural lifestyle.

We are made to think about these questions. In as much as it is about providing plausible answers, for architecture, we are to work in ways that turn these processes into expression. Four key words, “community, variety, security and privacy” were therefore set forward to guild our design research.
**Bottom-Up Approach**

Our experimentation started with a scenario in which the social power pattern is completely reversed and we assume that the middle/lower class, who represents the majority population living in the city, has the power to voice their opinion on their desired housing types and living condition.

We begin by targeting four major family groups and their preferred housing types, ranging from 60 sqm to 180 sqm. Their lifestyle and preferred communal activities are the key focus of our preliminary studies. We categorize these activities according to “movement”, “public-ness” and “flexibility”. With that, we are able to think spatially and imagine how these social interactions could take place under various spatial construct and in turn shape the shared spaces that house them.

**Categorization of Communal Activities**

Our scheme intends to address this problem by creating a hypothetical scenario, a scenario that is almost absurd and unthinkable under China’s current condition.

**Sectional Studies of Communal Space**

Each housing type for different families and lifestyle has sectional relationship with courtyards.
Hierarchy of Publicness

Our scheme intends to address this problem by creating a hypothetical scenario, a scenario that is almost absurd and unthinkable under China's current condition. However, by comparing and contrasting the end results, it exposes some of the fundamental problems that are yet to be addressed; hopefully the scheme could, to some extent, trigger the developer and local students to re-think China's residential housing typology and its 60 years of urban development.

Spatial Construct of Traditional Chinese Architecture

Precedence on traditional Chinese Architecture inspired our group on the use of public spaces. The public spaces and their order of hierarchy in traditional typology such as Tulou, Siheyuan is subject to re-interpretation.

Mapping of Programs According to Publicness

We systematically studied the courtyard configuration as an architectural language with a focus on the spatial sequence and its resulted quality in each iteration. The site context offers us a comfortable condition of a front and a back. We applied the principles extracted from Siheyuan typology onto the programmatic organization and let it drive the planning process. As a result, we came out with courtyard of various scales, programmatic constructs. Each one of them has a unique group of residence, different programs and spatial construct.
**FAR Study**

- **A Super-tall Building**
  - hard to access to the ground

- **The Great Wall Surrounding a Whole**
  - no intimate space of a big courtyard

- **Create Small Courtyards**
  - make courtyards considering the height of a building.

- **Make the Diverse Size of Courtyards**
  - according to housing types, the size of courtyards has to be changed.

---

**Form Generation**

- **Figure-ground**
  - according to the research of courtyards, make the figure-ground

- **Extrusion of the Figure-ground**
  - considering FAR, extrude the figure-ground

- **Adjust the Building Height**
  - By the site condition and solar movement, the height of a building has to be changed

- **Generate Form**
Take advantages of both an initial scheme and an organic scheme.

Grid system to have divers sizes of courtyards.

Organic Form
Change the grid system and make more open space, which has a relationship with the main street and a river.

Final Scheme

Landscaping the Corridor in Low-rise Housing Area
A main corridor has functional reason not only for the circulation also the linear public-space to have a landscape.
A masterplan considers two things at the same time: public and private space. Streets, the most public spaces, flow into the semi-public courtyard and then to a more private front porch before proceeding to the most private space: bedroom. This clear hierarchy of public spaces allows a variety of communal activities of different degrees of public-ness to take place.
Sectional study

In terms of the sectional strategy, the courtyard spatial construct is reinterpreted and articulate to incorporate housing units of maximum 4 stories in each typology, including the high-rise, mid-rise and low-rise. The intention is to break down the scale and rigidity of the common high-rise residential typology by integrating units of 2 to 4 levels of courtyard social groups. By doing so, it not only creates a more intimate dwelling environment, but also solves one of the major issues concerning the practical aspect of the project which involves non-south facing façade along the predominant street.
Roof Garden

In terms of sustainable design features, the project has only taken up 20.8% of the land area. By using green roof, the site has return 44% more green space to the site. Photovoltaic cells are used as a unifying tool to combine the high-rise, mid-rise and low-rise apartment into a holistic housing complex. Sustainable infrastructure is experimented on the residential design, special features such as collecting rainwater to flush toilet could significantly reduce the cost of living in the complex.
Courtyard Study

Contrasting with the surrounding residential project, this design broke down the monotonous and repetitive nature of commercial residential project by introducing a bottom up approach looking into the variety of needs in different family groups. In addition, the scheme also serves as a platform to experiment on "courtyard typology" as a formal language. And the scheme shows that Chinese traditional architecture principle could play an important role in the design of commercial residential projects.

Vertical Public Space

Higher part of a building is hard to take advantages of a courtyard. Therefore, we propose the vertical public space.

Arrangement of housing units and types of the courtyard
Plans: Corner Strategy and Roof Garden

Difficult corner conditions are turned into vertical circulation core or casual activity zone; Courtyard housing are created on the roof top of the block to bring in more sunlight from the roof; the balcony and bedrooms are oriented to get optimum south facing façade and sunlight penetration. Internal circulation space is reduced by creating shaded circulation corridor along the façade next to the road. In short, the limitation of site and program help to turn conditions into architectural expression.

Typical Units

Unit plans of a high-rise residence

Corner Strategy and East-facing Housing

The part of a mid-rise residence

Roof Garden

The roof garden of a mid-rise residence
Geometry of the Wall

Originally the geometry of facade was formed by diagonal lines of the East-facing wall; but it has functional reason, which is shading the sunlight. Housing units in an East-facing wall are rotated to South-Eastern direction to get more natural sunlight, which creates triangle-shaped balconies. These balconies make the geometric characteristic of the facade in the project.

Coutyard of the High-rise Residence

In virtue of corner studies considering solar shading, ventilation, and circulation, spatial diversity of the courtyard is created.
Facade Facing the Main Street

The facade facing the main street has a different strategy from inside ones, which reduces the monotony of a big wall.
Eco-Village

Team Members
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Ng Chun Lun Otto, MIT
Chen Yu, SEU
Pan Jie, SEU

Unit
Total 1338
High-Rise 1211
Mid-Rise
Low-Rise 127
River View 1338

Land Use Planning
FAR 1.48
Building Coverage 25%
Green Coverage 38%
Roof In Green System 36%
Vehicle Parking 899
Eco-Village

I smell the soil. I hear the water.

My first impression of the site was that it originally has a huge potential of life, from the running water, rich soil, and the rainy climate. Rather than creating a flat ground which urbanistically engages water with human, I imagined a more “alive” topography which weaves together with architecture in multiple layers. The architecture houses different levels of community which occurs between architectural landscape and natural landscape. We share the natural resources, we manage them, we enhance them.

I call it the Eco-Village.

Aerial View of One Building Type

The building bridges over the natural water, allowing the architectural landscape to engage with.
Concept
Nanjing has a big potential of natural resources from its rainy climate and the Yangtzi River. We propose a new life style which utilizes such local opportunities to enhance them, share them, and manage them.

The concept sketch describes the idea of water flowing through different levels of living from private to public. The water is managed in different scales from housing scale to Yangtzi River scale. Such system triggers new community between shared resources.

Building Community Along an Integrated Water Management System
Community is established through a water management system integrated with natural and architectural landscape. It collects rain water on the roof, irrigates farms and gardens, generates heat distributed to each unit, and flows into streams. The stream holds bio-topes along the edge purifying the river.
Sunlight Analysis

Sunlight Analysis of Buildings with Different Height, Shape and Directions
We found that shifting the building 45 degrees against the solar direction reduces the hours of shadow on the ground. The orientation of a V-shaped mass creates two distinguished courtyards.

Seasonal Courtyard (W-Winter, S-Summer)
The numbers show the area of the shadow it casts in comparison to its original footprint.

3 storeys (9m)

| 530 (112%) | 236 (49%) | 765 (112%) | 724 (90%) |

6 storeys (18m)

| 538 (112%) | 501 (104%) |

9 storeys (27m)

| 233 (49%) | 196 (41%) | 1544 (161%) | 1129 (118%) |

Extending the edges stretches out the shadow in two directions.

Comparing the two Vs, one shifted 45 degrees, one normal to the sun.

Elongating one end in this direction does not cast larger shadows.

Four different layout of an S-shape all create different courtyards in relation to the sun.

all in 6 storeys (18m)

shorten half of the leg

lower the leg to 3 storeys (9m)
Massing Strategies

The linear form of the buildings adjust to the complex topography and adds two distinctive characters to the landscape. The 12m width of the building provides south facing windows for every unit and cross ventilates the rooms. The height difference creates a range of housing types, from single person unit on the high rises to high income families on low rise villas.

Primary Form

We found that the interlocking of the simplest S-shape buildings in four different orientations opens infinite possibilities.

Formal Iterations

Series of roofing strategies were tested. Sloping, terracing, carving, puncturing.

Massing Iterations

Starting with a linear structure which informs the flow of water through the building and the integration with the ground level, we went through a series of massing studies keeping the FAR and footprint requirements.
Massing Studies
Making use of the native water features of the site which already has bio-diverse potentials, we connected the original existing ponds with the canal by making two loops. The linear buildings bridges over the loops weaving together the two different water scape. The topography created by the natural water scape and the architectural topography emerge with one another producing divergent landscapes across the site. Orchards, farms, biotopes, grass fields, plazas are distributed across the landscape according to its character. The space created under the raised ground will be used for car parking.

The north and south edge of the site has two car entries and one pedestrian entrance on both sides. The car entrances lead to a parking area for the residents which is covered under the undulating landscape. The ground plane is basically vehicle free, except for fire trucks which enter from the pedestrian walk way looping through the site. The west and the east a mainly for public. The west edge is a shopping street continued from the parcel under. The meandering edge of this commercial zone breaks the uniformity of the street scape. The east edge is a very spacious street overlooking the canal.
Native Waters of the Site
Series of natural ponds were left on the west side of the site.

Natural Streams to Flow Through
Some of the ponds are kept and connected to the river canal with natural water streams.

Architectural Water Flow
The architectural water features intersect with the natural streams on the ground level. Rigid form of the buildings and the organic stream flow together create diverse spaces in between.

Generated Topography
The weaving of natural and architectural waterscape generates landscapes undulating across the site.

Roofscape
Roofscape is used for collecting energy and farming, creating groups of private communities within the building.

Waterscape
Waterscape runs in and out of building edges, shared by the whole building. The residents work together to keep their own water source clean.

Farmscape
Farmscapes are shared between buildings which face the same garden.

Pathscape
Pathscape connects all the buildings. It is a walking path for residents. It runs through different sceneries of the site.

Toposcape
Toposcape creates diverse relationships between the building and the natural features.
The undulation of the ground surface creates space for parking underneath. There are two entrances in north and south, connected under the water level.

The west edge is a shopping street continued from the parcel under. The meandering edge of this commercial zone breaks the uniformity of the street scape. The east edge is a very spacious street overlooking the canal.

The small channels wrap around the building distributing water into farms and finally flowing into the streams.

The section shows the relationship between the building, the parking, and the ground level.
Building

The tallest part of the building are 12-story apartment with elevators and service core meanwhile the lowest end are 3-storey villas each having a private entrance on the ground. Despite diversity in typology, the community is united because of the presence of the courtyards, the roof and a continuous form. The S-shape primary form defines two seasonal courtyards. Winter courtyards with ample sunlight will be used for farming and gardens. Summer courtyards that are often in shadow are designed for outdoor recreational activities such as family picnic and playground.

Courtyards

Winter courtyards with ample sunlight will be used for farming and gardens. Summer courtyards which are often in shadow are designed for outdoor recreational activities such as picnic and playground.

Space-between

Multiple courtyards are connected through natural and architectural waterscape.
Common Space
Each building is an S-shaped building oriented in either one of the four directions. The public path connects adjacent courtyards forming larger natural environment. Rainwater collected on the roof filters through each units and to small channels weaving in and out of the courtyards and along the building. The channels bring water for communal farming and recreational activities on the ground.

Natural Groundscape
Water collected on the roof are drained into small channels weaving in and out of the courtyards and along the building. The channels bring water for communal farming and recreational activities on the ground.

Unit Configuration
Bedrooms are aligned on the southern edge to maximize daylighting. All living rooms are north-facing however its double height space increases the amount of northern light diffusing into the room. Some of the corner hinges without having sufficient sunlight are strategically used for vertical transport and mechanical and electrical services. Other corner areas with less sunlight at lower levels will not accommodate any units and rather become ground level shortcuts between the courtyards.

Odd Level
Elevators stop at every odd level. Each corridor is generally shared by four to eight residential units.

Even Level
There is no corridor on each even level. The extra space has become part of the living area.
Through market research and analysis, we manage to produce a list of potential resident composition. We anticipate that there will be a range of family size demanding for a range of unit types. Working with the estimated unit arrangement and its percentage of demand, a few types of unit design are proposed to fit the need of most residents. Special unit types are also developed to meet specific market demand. One example is the Dual-Family unit designed for the recent phenomenon that family of two generations tend to live adjacently in two individual apartments.

<table>
<thead>
<tr>
<th>Unit Type</th>
<th>Single Sqm</th>
<th>Total Sqm/m²</th>
<th>rate/ %</th>
</tr>
</thead>
<tbody>
<tr>
<td>1 single (simple)</td>
<td></td>
<td>50</td>
<td>10</td>
</tr>
<tr>
<td>1 new couple (simple)</td>
<td></td>
<td>80</td>
<td>15</td>
</tr>
<tr>
<td>1 single (luxury)</td>
<td></td>
<td>100</td>
<td>15</td>
</tr>
<tr>
<td>2 parents + 1 child (simple)</td>
<td></td>
<td>100</td>
<td>15</td>
</tr>
<tr>
<td>2 grands + guest child</td>
<td></td>
<td>100</td>
<td>15</td>
</tr>
<tr>
<td>1 new couple (luxury)</td>
<td></td>
<td>130</td>
<td>20</td>
</tr>
<tr>
<td>2 parents + 1 child (luxury)</td>
<td></td>
<td>140</td>
<td>10</td>
</tr>
<tr>
<td>2 grands + 2 parents + 1 child</td>
<td></td>
<td>180</td>
<td>5</td>
</tr>
</tbody>
</table>
Basic Unit Types

Each unit is accessible through a center corridor on every other level. Type A is a middle piece on the corridor and Type B is an end piece. Both unit types are a duplex with rooms above bridging over connecting the two sides of the building. Such a configuration is favorable for receiving southern light in the bedrooms. The double-height living room is created for spacious living experience while maximizing the amount of northern light diffusing into the room. Nearly every room is equipped with a balcony as an exterior breathing space. The balconies also provide shading function and reflect daylight to deeper part of the room.

The double-height living room is designed for more spacious living experience while maximizing the intake of northern diffuse light. The twisted L-shapes stack and interlock with one another sharing the southern light.

Special unit types are developed to meet specific market demand. One of them is the Dual-Family unit type. In Nanjing, Chinese family of two generations tend to live in two adjacent apartments. The type B duplex units are further developed for a dual family who can share a courtyard that opens up to the green roof. In addition, the courtyard will direct a pleasant amount of sunlight into the interior.

Type A Duplex
The double-height living room is designed for more spacious living experience while maximizing the intake of northern diffuse light.

Type B Duplex
This is designed for a dual family who will share a courtyard that connects to the green roof.

Dual Family Unit

Type B Roof Duplex for Dual Family

Type B Duplex
The twisted L-shapes stack and interlock with one another sharing the southern light.
viewing along the roofscape
Water Town

Team Members
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Yoonhee Cho, MIT
Hu Minghao, SEU
Liang Jie, SEU

Unit
Total 1050
High-Rise 398
Mid-Rise 517
Low-Rise 96
River View 1050

Land Use Planning
FAR 1.39
Building Coverage 16%
Green Coverage 29%
Roof in Green System 21%
Vehicle Parking 722
Key Idea

Water requires a continuous path for it to flow, converge and diverge to become the “Live-water”. The main characteristic of the relatively plain site (plot 17) is the possession of a river which is essential to the whole development for flooding control. Instead of seeing the river as a problem to be solved, we think designing with water can be an opportunity to explore and enhance the identity of the site. Water flow can be a new circulation system other than pedestrian and vehicle flows. The design concept is to incorporate this new system as the organizing tool for the whole site to introduce spatial hierarchies. The pedestrian and vehicle circulation are necessary to serve the daily operation of the development. They have different design constraints which need to be comprised with each other such as accessing points and dimension requirement. Introducing the water will further complicate the situation but will also act as a buffering component between various systems. We want to create the “Water-Town” which water system organizes the site by intercepting, penetrating and hiding from other systems. Residents can experience water both intentionally and accidentally through living and travelling in the town.

Overview Perspective

Experiencing Water

Water can be experienced differently and specifically depending on the degree of contact.

existing Water Condition

The river bisect the site is divided from the Yangze River which is the longest river in Asia.
Layering

Different systems have to be coordinated within the site. In the design, each system is treated as a particular layer since continuous flow is necessary for all the circulation systems. It can also help organizing the systems sectionally so that the traffic, pedestrian and water flow can be located in separated levels.

Buildings
Buildings layer is the topmost layer which penetrate through all the layers to provide entrances points.

Deck
Deck layer is mainly for pedestrian and acts as the dividing layer between pedestrian and traffic which is located under the deck.

Water
Water layer is the lowest layer which is divided from the existing river and connects some of the water from the existing ponds.

Garden
Garden layer goes with the water layer to give the characteristics for particular communities. It is the connecting layer between the pedestrian (deck) and water layers.
Divide the site into groups of community. Each has similar composition including water feature, low-rise and high-rise. The grouping is more subtle and dispersed.

Similar organizational logic however the low-rise, medium-rise and high-rise are merged into one big block which emphasizes more on the identity of each community. The organic form follows the form of water.

Regulating the organic form through maximizing the south facing side of the building and minimizing overcasting between buildings. In order to maximize the opportunities to experience the water, the amount of low-rise is maximized in this scheme. The emphasis of community is maintained however particular overlapping and penetration between communities are provided.

Breaking Down
Flowing Water
Distributed Gardens

Water as the center of each community which divide the site into five communities.
Water which divided from the river varies in sizes to provide different experiences.
Gardens vary in sizes to create the identities of specific communities.

Gardens vary in sizes to create the identities of specific communities.

Five communities have specific garden and identities are dissolved in particular points.
Under the Deck

The Deck is a dividing layer between traffic and pedestrian. Under the deck level houses the vehicle circulation, gardens and cores as the building entrances. The vehicle circulation includes the specific parking spaces and roads serving each community. The garden includes the water layer and greenery which is specific to each community and defines the identity of each community. Cores are dispersed throughout the site and located between the vehicle circulation and garden are serving as the main mean of vertical circulation for all the residential blocks.
The deck is mainly for pedestrian only which provides all the entrance points to the site and connects all the building blocks. It is a continuous surface to provide consecutive and sequential experience to water according to each garden and community. The deck helps to unite the site as a whole as well. All the community facilities are also located on this levels to facilitate the participation of the residents.
Over the Deck

Over the deck includes only the residential blocks. They are designed to minimize overcasting between buildings and maximize the coverage of the low-rise buildings to enhance the intimacy of water in the whole development. The shadow analysis shown below is a tool to study the overcasting in the critical days throughout the year.
Maximizing Sunlight

Maximizing sunlight can be done by maximizing the south-facing areas of the building. Massing and building designs both contribute to maximize the south-facing area. Below are the studies of strategies to maximize the south-facing area in building design level.

Before Shifting
South-facing area is confined only to the size of the block which is 48 sqm (12m x 4m).

After Shifting
It breaks down the whole building into blocks which greatly enlarge the perimeter and the south facing area to 96 sqm.

Maximizing Studies
Above are the studies of how the shifting strategy can be incorporated in the massing design.

Stacking Floors
Above are the studies of how the shifting strategy can be manipulated three-dimensionally to maximize sunlight as all the residential buildings in this development are multi-stories.
Unit Iterations

From the master-planning design, the unit design needs to fulfill very different conditions to achieve the requirement of sunlight and viewing to the water. The units are broken down into rooms having specific and sole functions listed below. Each type of room has specific sunlight and viewing requirements such as the sunlight and viewing to the water should be maximized for the living room while viewing is not critical for the bathroom. Through exploring the methods of adding different rooms to form a unit with the consideration of shifting strategy mentioned before, different types of unit design can be achieved with the same basic room units to cater specific condition.
Massing Strategies

Each building block includes both low-rise and high-rise parts which are connected through a smooth transition. This transition provides the opportunities of creating some roof terraces for some of the units and enhancing the shifting strategy three-dimensionally. In order to maximize the south-facing area, the high-rise part is located mainly along the south axis.

Massing Studies

Above are the studies of the degree of shifting along the north-south axis and east-west axis corresponding to the building height to maximize sunlight.

Height Decrease

To prevent overcasting effect, the building part along the East-west axis is lowered as the low-rise part while the part along the north-south axis is maintained.

Sectional Study

The section above describes the separation of traffic and pedestrian levels through the introduction of the deck layer and the core as the vertical connection and at the same time the buffer area between garden and traffic part.
Block Design

In order to study the block and unit design, a particular block located on the north-west corner is chosen to be designed in more detail. It is a generic block which has both low-rise and high-rise parts along different axes and describes most of the condition variations throughout the site. Units of different sizes for different family combinations are fitted into the block.
Community Design Studies

Below are the studies to understand the compositions and characteristics of future residents for this development. The studies can be divided into two parts. The first part is mainly for the unit design which studies through the combination of different family members to understand the spatial requirement of the corresponding unit. The second part is mainly for the community design. Through studying the characteristics of each family type, grouping can be done to form some potential communities which have similar anticipations towards the community. Corresponding community design including the community sizes, garden and water design can be done to fulfill those anticipations. It can facilitate the sense of community at the same time enhance the identity of each community.

<table>
<thead>
<tr>
<th>Family Type</th>
<th>1 parent</th>
<th>1 child</th>
<th>2 parents</th>
<th>3 mates</th>
<th>S-BED</th>
<th>L-BED</th>
<th>L-BED</th>
<th>4M2</th>
<th>15M2</th>
<th>9M2</th>
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<td>10%</td>
<td>11,850M²</td>
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<td>180 units</td>
<td>180 units</td>
<td>180 units</td>
<td>180 units</td>
<td></td>
</tr>
</tbody>
</table>

Nanjing Workshop: Value Trend Community Design Studies
Community Design

Five communities are designed in this development with varies sizes and locations. Each community has its own garden with water as the sharing valuable and character. The five gardens include the playful garden, the sculpture garden, the botanic garden, the mediating garden and the productive garden. Each family has its direct access to its own community garden. However all the communities are linked by the deck as a whole society.

A Playful Garden
The community is mainly formed by families with young children which would like to experience water through playing.

B Sculpture Garden
The community is mainly formed by families with grown-ups and elders which would like to see water as an ongoing exhibition.

C Botanic Garden
The community is mainly formed by residents who live with nature. Water is experienced along with the changing of nature.

D Mediating Garden
The community is formed by residents who are always stressed and looking for the place to relax and escape.

E Productive Garden
The community is formed by residents who would like to experience a healthier living style. Water functions as a key for growing and living actively.
Playful Garden

The community is the biggest among five and formed by bigger families with children. The garden is subdivided into smaller parts to increase the degree of intimacy. The ponds are shallow and water flows slowly which allow people to play directly with the water. In this garden, you can fully experience the water in your own way.

Section

The green is enclosed by the building blocks which a much more shallow water body can be located at the center as the playful garden.
Sculpture Garden

The community is formed by smaller families which are mainly grownups and elders. The garden created is more regular in terms of geometry with a more discrete experiencing path. Water is one of the main exhibits in this garden which can be appreciated through the sculpted path. The residents can also enjoy the exhibition through their own apartments since the community is mainly formed by the low-rise buildings.

Section

The community is mainly formed by the low-rise building which facilitates the intimacy between residents and water (exhibition). In order to reduce the noise, the traffic and deck are more separated to the garden and buffered by the buildings in this design.
Mediating Garden

The community is the smallest among five which is formed by those stressed residents. The garden is formed by some pure elements such as wood and geometry such as perfect square similar to the Zen garden. It is a place for people to escape from the busy world and relax. Therefore it is located at the heart of the whole development which isolated from the surrounding.

Section

The size of the water body is relatively big compare to the size of garden since water is one of the main mediating elements for the garden. The garden is isolated by the building blocks maintain its calmness.
The community is formed by residents who enjoy healthy lifestyle. The garden is formed by many farm lands which provide places for the residents to actively grow their own food. The size of the water body is the smallest among all the garden design. However the role of the water is the most critical to sustain the garden itself. From this garden, you can experience water in a totally different perspective.

Section

Water is not clearly revealed in this garden as it plays a different role compared to other gardens. The relatively flat garden allows residents to farm and at the same enjoy the connection between the garden and the river on the East side.
The Arboretum

Team Members
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Unit
Total 1338
High-Rise 1211
Mid-Rise -
Low-Rise 127
River View 1338

Land Use Planning
FAR 1.47
Building Coverage 21%
Green Coverage 40.80%
Roof In Green System -
Vehicle Parking 2050
The Arboretum

The project premises itself on challenging the current planning typologies that exists in Nanjing, China, by making prevalent landscape and its relationship to architectural form as tantamount entities. The programmatic distribution of architectural form across the site marks the presence of a greenbelt that separates two building typologies set on the east and west sides of the grid block. The greenbelt serves both communities on either of its sides, extending from north to south as a suggestive connection to a larger system.

Sections

The two typologies of high density housing on the west end of the site work together to define opposing sets of parkland and plaza capable of housing distinctive media attuned to the nature of each space. Both the gradual build-up of units away from the park and sloping to the north permit landscape and architecture to unite by blurring the moments in which each stops and ends.
**Green Strategies**

Distances between the high and low-rise developments allow for density within the first few stories, at the park level, to be enveloped by the natural green spans’ that envelope architectural form with multiple species of plants. The open spans on the east side of the site, past the park, allow for open views of the landscape below, offsetting the degree of density that packs its way onto the west side of the site. The flat nature of the site becomes activated through the burying and buildup of architectural elements, like the parking garage to the west of the site that allows for a gradual downward gradation towards the river in that runs through the centre of the site.

**Proposition**

The diagram on the left notes a proposed shift in the current planning strategies in the region that acknowledges landscape beyond its allocation to the residual of architectural form.

**Planning Strategies XL**

The diagram on the left is representative of the current planning conditions in which landscape becomes the residual of architectural configuration, blurring the potential scales of operation and their relationships to one another. The proposition (centre), represents a fusing of architecture into different scalar operations that allows for landscape to perform within different scopes tantamount to the pervasive presence of architectural form, allowing both to exist in accord. The densifying of high and medium density housing to the east and west, respectively, creates a greenway that allows landscape to operate on a scale that rides it of its designation as mere residual space between buildings. The allocation of XL landscape in the plan permits stronger relationships to be established between the built and natural form that are inclusive of larger formal strategies that operate on the level of the master plan. The distribution of such planning strategies across neighboring sites (right) demonstrates alternative methods of living in which landscapes become a part of larger systems that connect to one another, creating greater parklands capable of opening themselves up to a greater diversity of sensibilities dependant on the existence of larger landscapes. And with the utilization of such planning initiatives, varied neighboring schemes would in time begin to shape the larger landscaped infrastructure that connects each constituent plot of the grid.

**Sectional Strategies**

The diagrams above represent a catalogue of landscapes defined by scale that serve to create a diversity of spaces, each attuned to the different programmatic elements, whether public or private, of the site. Edges between each constituent part are sometimes blurred, contributing to the larger scheme by way of both visual and physical connections.

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**Site Condition**

The fantastically absolute nature of the existing site is only heightened as it sets itself up against a backdrop of artificial urbanism. The desperate contrast between landscape and architecture in this condition is horrifically breathtaking. What ceases to exist in here any form of urban metempsychosis. Urban towers grow, almost overnight, out of unpopulated farm fields, that show next to no signs of their future faces. The setback of the artificial skyline, against the large open field allows both architecture and landscape to play on the XL scale, each defining its neighbour’s presence.
Urban Belt

The designation of two proposed zones on the east and west ends of the site permit new edge conditions within the centre of the site designed to cater to the sensibilities of the transition between landscape and nature.
The park space is marked by the lowest point in the system, which collects all of the drainage water off the east and west ends of the site, causing the river below to fluctuate throughout different times of the year. The first of two typologies of high density, boulder-like buildings slopes its way down towards the park with large, open private terracing that helps to blur the distinction between the natural and artificial. The landscape below is densified through a diversity of programming that services residences on both sides. Fused with an extensive catalogue of botanical species, the open spans of green becomes sustainable to house indigenous wildlife, blurring the artificial with that which is seemingly natural. Overtime, it is expected that such a complex system will evolve naturally as it grows, constantly shaping the dynamics between artificial and real.
Shadow Study

A lighting study done on the shortest day of the year, shows the effectively of the formal strategy, curated to allow for a higher density stacking of units without sacrificing the quality of natural light each one is exposed to. The set-backed stacking permits larger outdoor spaces that define the private landscape, set back against the public park, vice-versa.

[Diagrams showing light studies at different times of the day]
Low Density Living

The smaller scale of the low-density housing, as seen from the higher density blocks to the west, almost appears within the landscape, as if one. The strategic planning of the lower density housing permits a significant amount of private roof gardens, set against the larger park. The garages below are half sunken below grade to minimize their height, while permitting natural light into these often undervalued areas. The housing towards the park becomes less densified, allowing for larger-scale, higher income dwellings to enjoy the exclusive proximity of the natural setting.
Increased stacking further from the park permits views from above, from within private terraces on the roofs capes. The spacing between housing at grade creates a more personal public streetscape, unique to this zone of the master plan, accustomed to attune to this particular style of single-family living.
Urban Module

The west side of the plot houses two high-density urban typologies that work together to shape the public space below, while shifting their form to allow for the high-density blocks to get maximum exposure to south light.
Urban Module

The first type of building terraces itself back towards to north allowing for greater southern exposure. Its green terraces are pushed towards the south side of the building, which exposes itself to the urban plazas below, creating a more artificial landscape. This typology is coupled with a second building that terraces itself down towards the park, while simultaneously angling itself back towards the north to shade the plaza below. This strategy allowed for an increased amount of sun exposure on the south facade that would otherwise be disrupted by shading at inopportune times of the day from the building to its south.
Green Community

Team Members
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Marie-Theres Richter, UTV
Sheng Xie, SEU
Guo Wei, SEU
Yin Xi, SEU

Unit
Total 926
High-Rise 410
Mid-Rise 516
River View 926

Land Use Planning
FAR 1.35
Building Coverage 26%
Green Coverage 35%
Roof in Green System 45%
Vehicle Parking
**Green Community**

The green community should not only have lots of trees and green space, but also many different active space and different relationships between people and nature (river). Meanwhile what kind of privacy for space is also important. So we have changed the existing community space and mixed the different density of buildings in order to create more different level of space. For example the tower has more open space and the village has more small scale space.

**Initial Idea**

We put the low density building at the east and west side of the site, at the same time, we put the tower along the river in the middle of the site.

**Sectional Idea**

Then both of the buildings can get a good view of the river and the people can share the space with the others.

**Masterplan**

The masterplan shows that the site is divided into three parts. The middle part has the tower and open space along the river, and the colour in the middle shows the space between the buildings is created in different levels.
Optimized Sun Distance

The design started from analysis of the existing community. In order to create more different levels of space and view of the river, we divided the site into three parts. In the west and east sides of the site, we chose the multistorey and generated the optimized sun distance grid to create more private space which looks like urban village. Then we put the tower in the middle part where the distance between the buildings is large and people can get a good view of the river.

Three types of building with different height are organised according to the sun distance.

Four types of building with different height are organised according to the sun distance.

Generating New Grid System

In order to create open space, semipublic space and private space with the organization of buildings before, we changed the volume and the shape of the buildings.
**Concept**

We organised the different elements of the whole site such as building heights, privacy, circulation, landscape, garden, and green space. And made them match with each other.

---

**Landscape Level**

We define the different public spaces as health space, socialising space, sports playground, flower garden, leisure space, and exercise square.
- need more privacy and recreation space than the young couples
- they have a more quiet way of living
- they may be overstrained with too much leisure time facilities and "modern" stuff
- prefer the traditional living
- short distances to different facilities
- apartments at the lower level (with no elevator)
- have a daily routine
- need help in some parts of their live
- > want to be needed too
- > they don’t want to be separated
- > don’t want to relocate often

- more privacy than the singles or postgraduates
- need connection and friends
- need also connection to the city
- look for more entertainment
- prefer the western kind of living in some parts of their life
- > but still stick to the traditional
- > may look for advice from the older ones
- > especially in family stuff
- > they work hard to found a family in the future
- > SOHO (also because of the distance to the city)
- > live there for a period of time until their child is at the school-age
- > maybe they come back when their child leaves

Family Types
We selected two types of family: the old and the core family, and analyzed what kind of life they would need when they lived here. Then we get some kinds of units.

Open Spaces
Two kinds of view: from the semipublic space and from the open space.

Massing Study
Stair illahrepel mint auditi volupta tquatio totatib auxciellesequs eum eusd m illahrepel mint auditi volupta tquatio totatib auxciellesequs eum eusd eum eusd m illahrepel mint auditi volupta tquatio totatib auxciellesequs eum eusd
Section
The section shows the different type of buildings and the gardens of different levels.

Garden Design
We analyzed the people who would live here, what kind of behaviour they would have and their time and activity to design the space outside and inside the buildings.

Sharing Public Garden
We want to make that different people can share the public space and at the same time they all own their private space. People can communicate with others easily and can have a rest or something quietly.

Public Space
People share many different sizes of public spaces along the river. This perspective specifically describes how people share the biggest garden of the community. It consists of green areas and passages.
Garden System
We designed the units in order to make each family own a garden. And there are several combination of the units.

Private Garden System
We change the position of each flat in order to make every plat own a garden. And there are five types of flat.

Details
At the level of technology we choose some green technology such as water treatment for both site scale and building scale to save the energy and make the life there more comfortable.

Detail of Wall
Unit Design

We analyzed the people who would live here, what kind of behavior they would have and their time and activity to design the space outside and inside the buildings.

Block Section

The space between the two multi-storey buildings.

Unit Plan

the unit plan of the multi-storey and the tower.
Sunlight Analysis

Red represents less than 1 hour in the sunshine; yellow represents sunshine in between 1-2 hours; blue sunshine representative of 3-4 hours in between; blue on behalf of sunshine in between 4-5 hours; purple of sunshine in between 5-6 hours; white or black on behalf of sunshine in between 6-7 hours; Gray on behalf of sunshine hours in 7 hours to 8 hours between.

Nanjing Workshop | Green Community | Sunlight Analysis
Green Strategies

Energy System
The energy system include the use of solar water heating, solar cell solar wall roof garden and GSHP (ground source heating pump).

Water Treatment over the Site
There are three level of green in this site, which can change the micro-climate of the site. The water of the rain and the river are used to lower the temperature. The wind can go through the garden easily and bring the fresh air. The green garden and the roof garden can protect the building from sunlight.

Water Treatment System
The goal of all water treatment system is to remove existing contaminants in the water, reduce the concentration of such contaminants so the water becomes fit for its desired end-use. One such use is returning water that has been used back into the natural environment without adverse ecological impact. The processes involved in treating water for drinking purpose may be solids separation using physical processes such as settling and filtration, and chemical processes such as disinfection and coagulation. Biological processes are also employed in the treatment of wastewater. The system includes rain water collection and intermediate water treatment.