

# A Liveable Water Town for All - Wulongpu project, Kunming

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Original site information





# EXISTING PROBLEMS

## City transforming

Modern city



Tourist city



Ghost town



## WHAT

At present, Chinese cities are developing rapidly, and most people yearn for a fast pace urban life. Some small towns are gradually abandoned, and those towns with good natural environment have become tourist cities to support the economy.

Under this environment, young people tended to seek for study or job opportunities in big cities. Only old people who were reluctant to move remained in old cities.

Both the expansion of big cities and tourism cities bring great burden to the surrounding environment. It is difficult to maintain the balance between cities and nature. In the process of urban development, the natural environment were destroyed, and pollution can be seen everywhere.

## WHY

It is necessary to find a sustainable way of development for these small places.

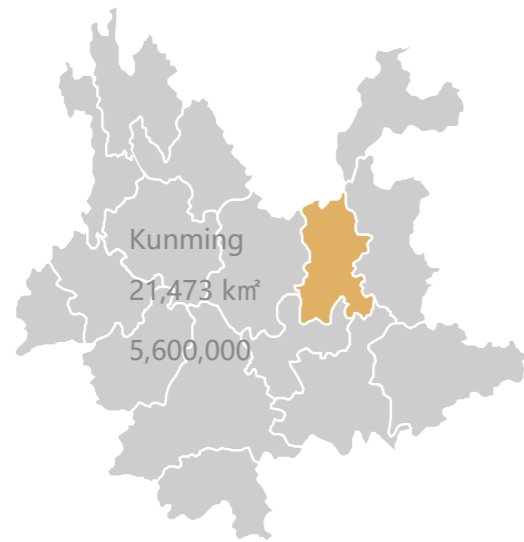
This kind of cities has the possibility to have their own characteristics, which can attract different age groups to gather and live there.

In order to achieve sustainable development, how to balance urban development and natural environmental protection is also one of the important issues. The solution should be based on the local conditions and background as well.



# RESEARCH PART

## LOCATION





## SURROUNDINGS

This small town seems like that it is separated by a highway. Actually, there is not much traffic on the big road, and there are bike & pedestrian paths on both sides. If there are traffic lights, it is easy to cross.

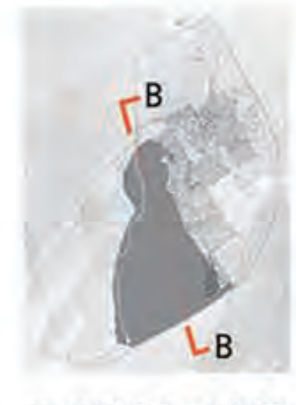
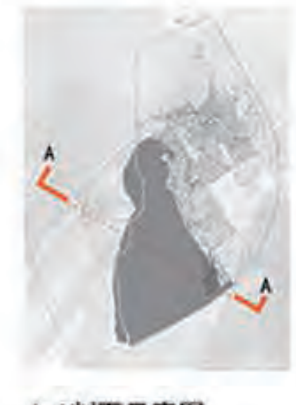
There is a small mountain (about 20m) on the south-west of the town, Part of the town was built on the slope.

There are many green areas around.

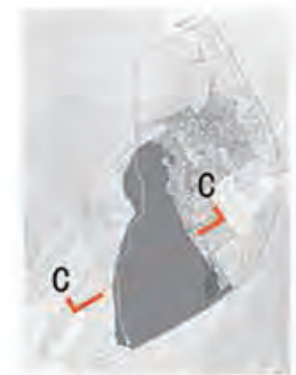
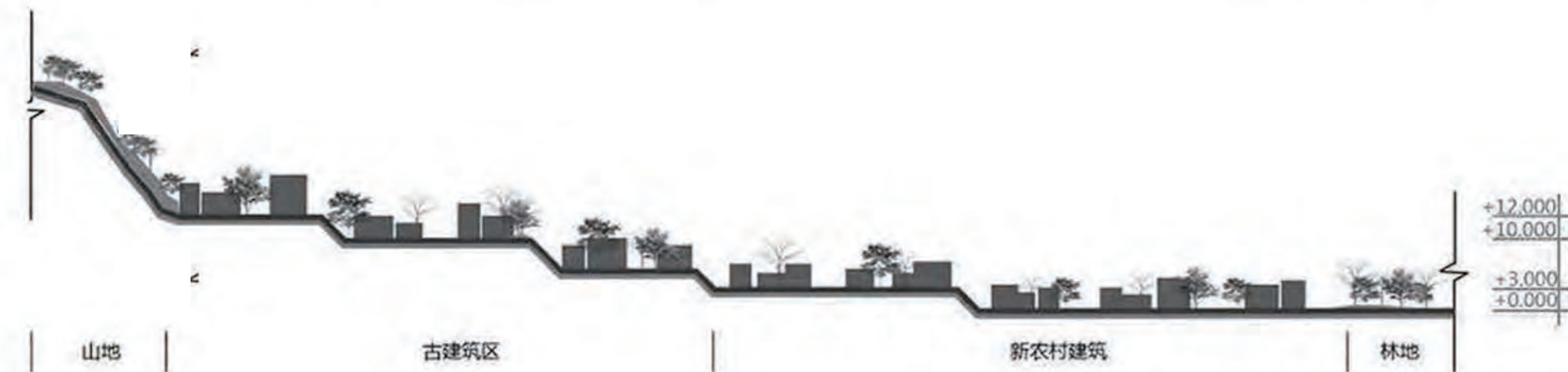




# MOUNTAIN SECTIONS



图

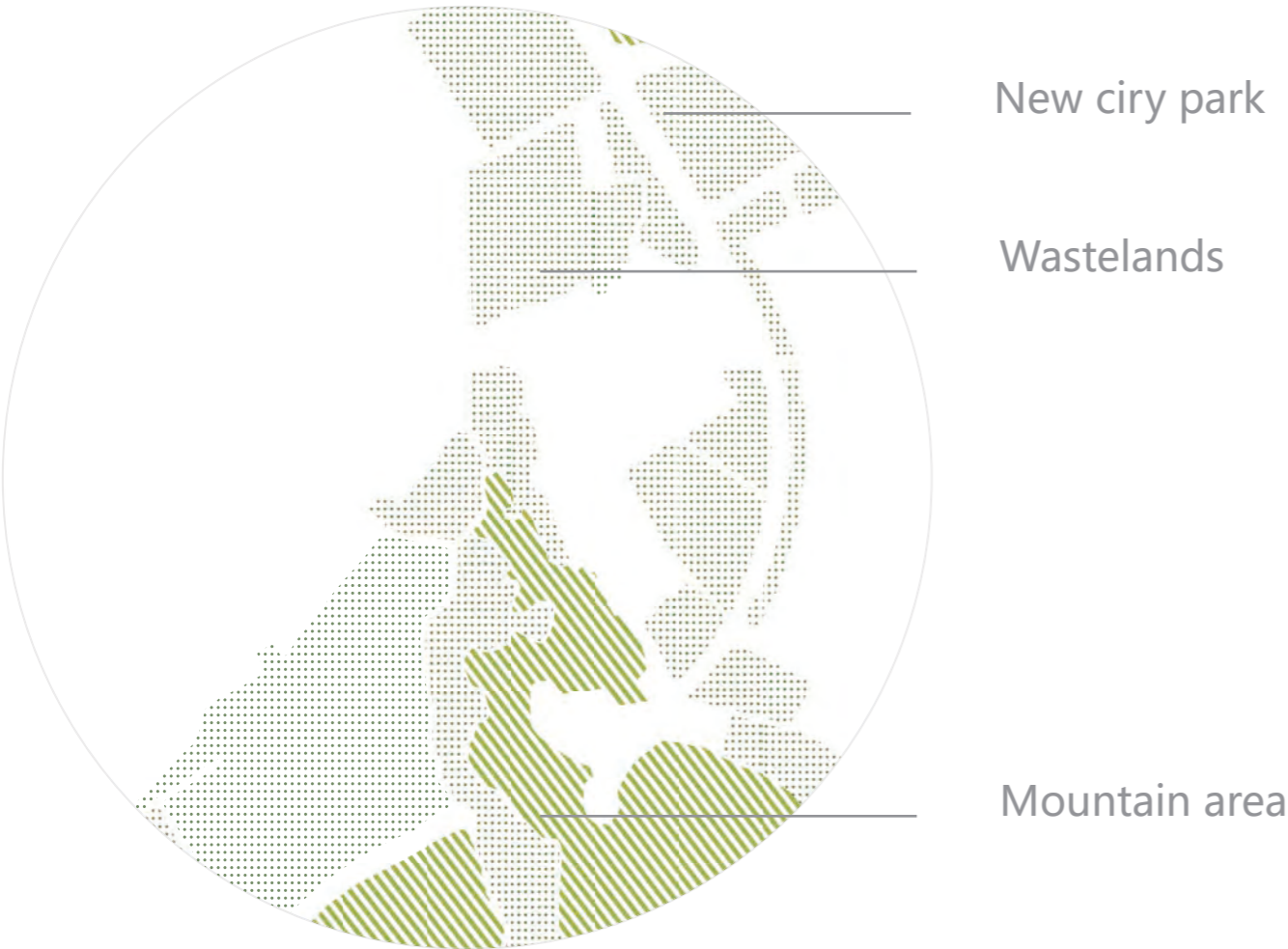


C-C剖面示意图



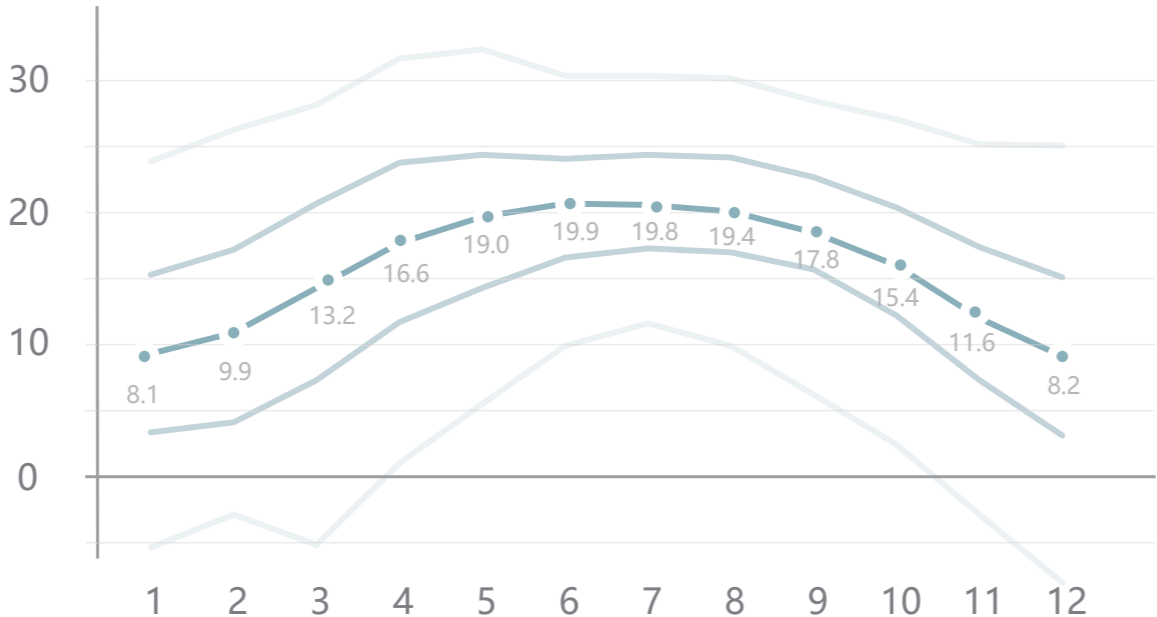
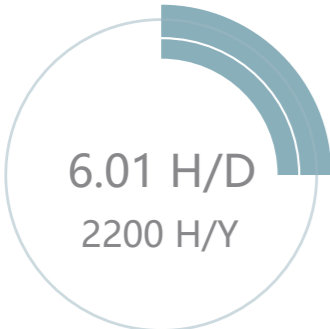
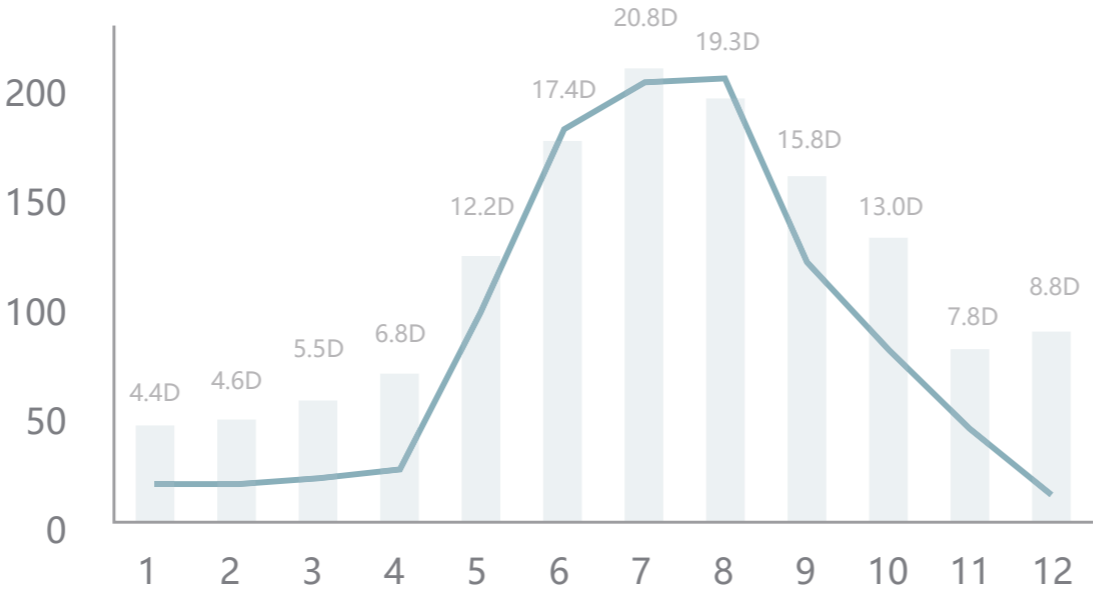
# GREEN SPACES AROUND

These areas were farmlands in the past and are wastelands now.





# CLIMATE



# CULTURE

## FARMING AND LEARNING

The climate in Kunming is suitable for planting all kinds of food crops. At the same time, Kunming is also the largest flower export city in China. The local residents in Wulongpu are mostly old people, who keep the habit of farming and prefer to plant something in their own courtyards.

People here pay great attention to education as well.





# BLUE RESOURCES

Dianchi covering an area of 330 square kilometers. It is the largest fresh-water lake in yunnan province and known as the pearl of the plateau.

The average depth is 5 meters and the deepest is 8 meters.

Dozens of electric power drainage and irrigation stations are built along the lake to relieve the flood disaster and ensure irrigation for farmland, urban industrial and living water.



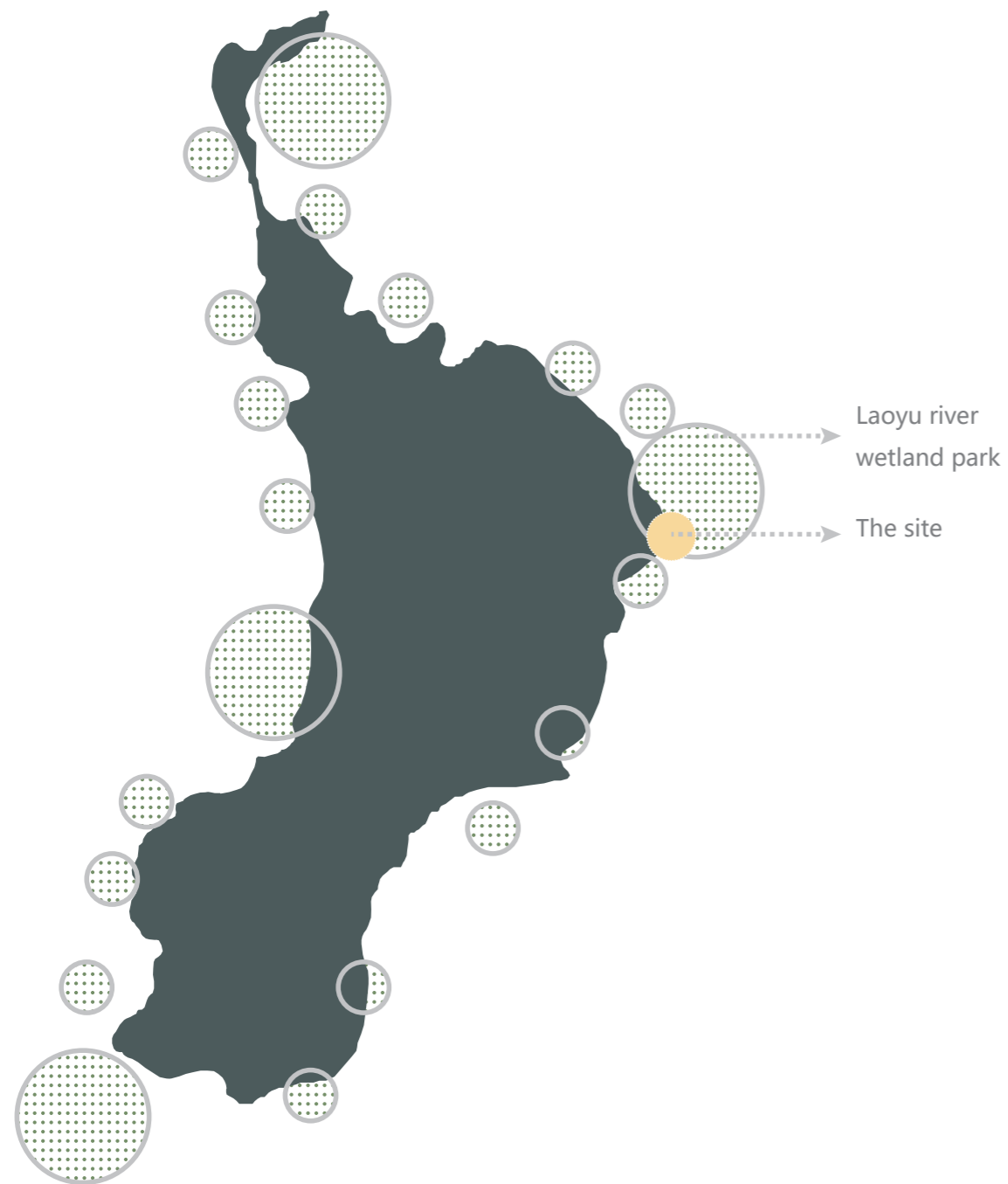
Dianchi lake

Small lake in the city park





## WETLAND PROJECTS AROUND DIANCHI LAKE



Many wetlands in Kunming turned into fish ponds and farmland. The natural purification capacity of Dianchi lake water decreases and the water quality becomes worse gradually. With the improvement of people's understanding of the importance of ecological environment, the ecological restoration project of Dianchi lake is constantly promoted. Laoyu river wetland park is one of those wetland parks.



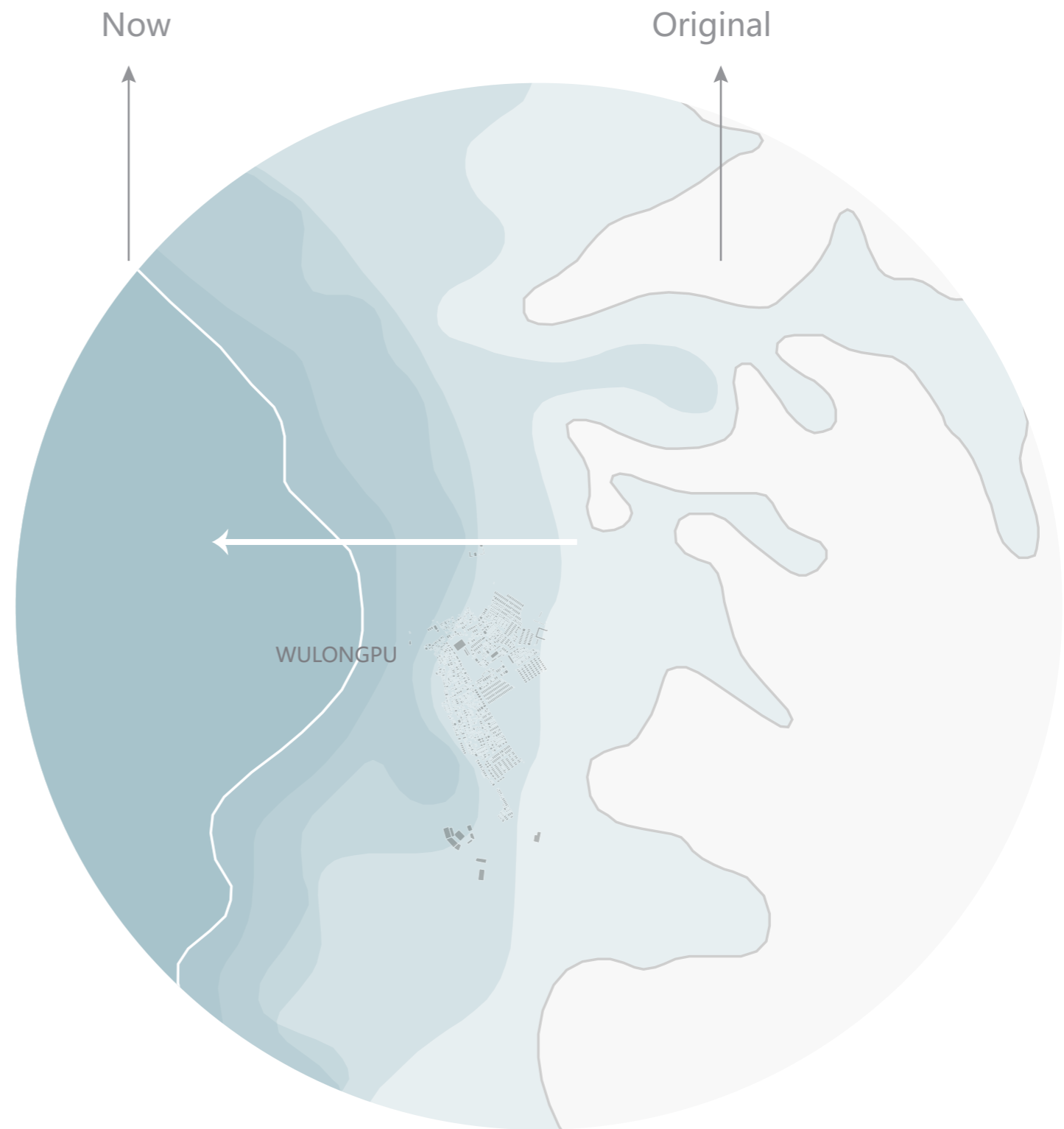


## WATER LEVEL CHANGES

Villages around dianchi lake were regularly flooded long time ago.

But after hydropower stations and were built, the lake's water level shrank inward and become stable.

These original flooded areas are now forming the base of my proposal wetlands.





## SITE CONDITIONS

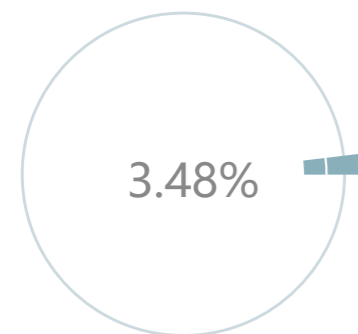
the quality of the old houses is not so good. Spaces between different houses is very small and the roads are very narrow in some places.

Residents use the limited public space to do some small-scale farming.

Because of the good weather here, flowers and grasses are flourishing in some tiny spaces.

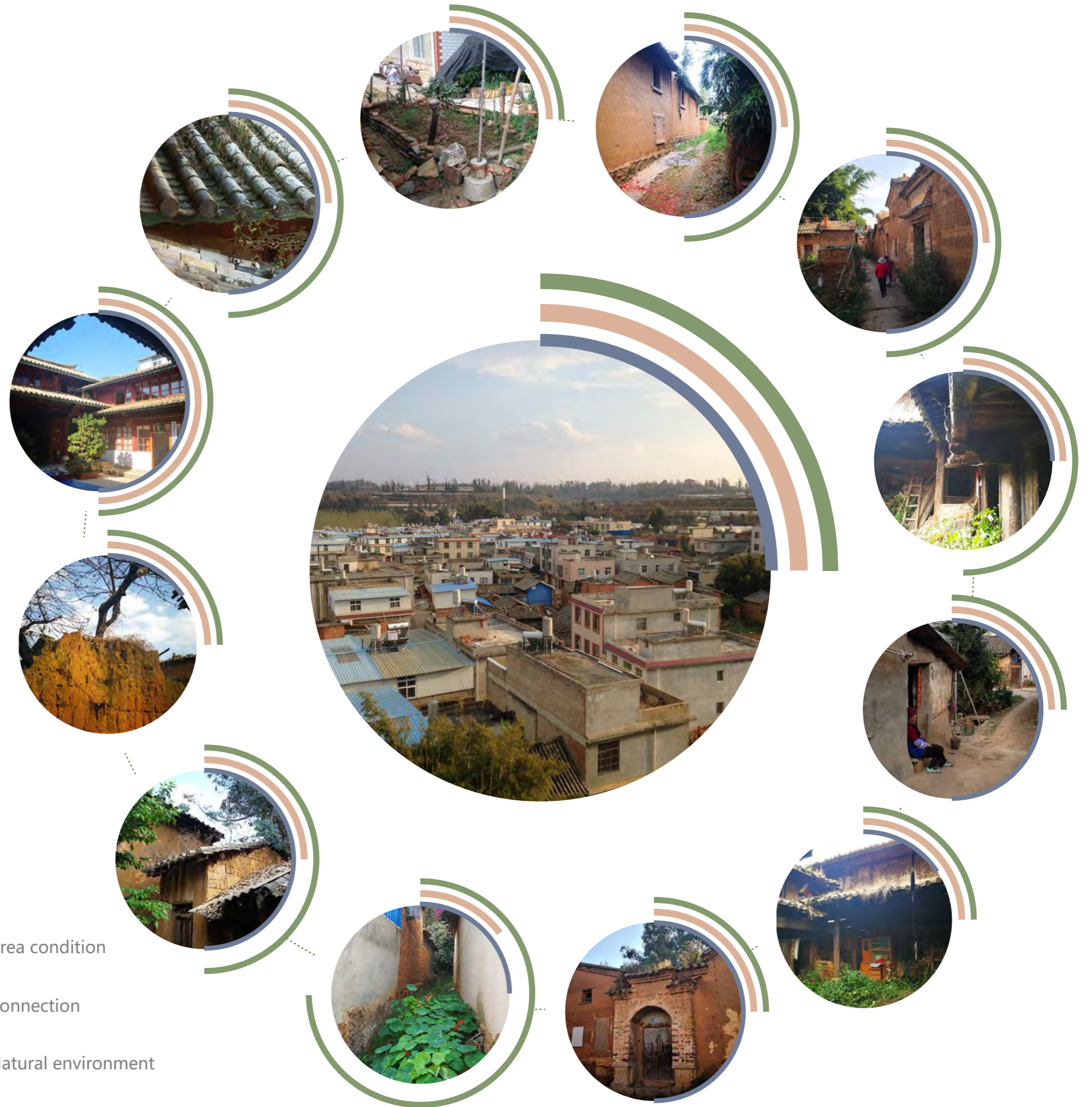
Many house are empty.

## POPULATION



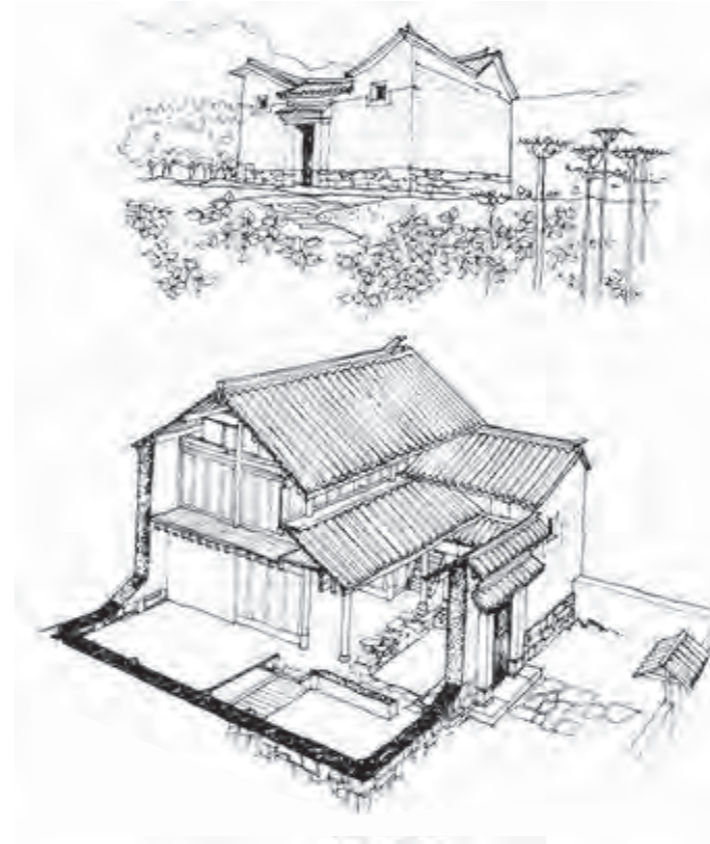
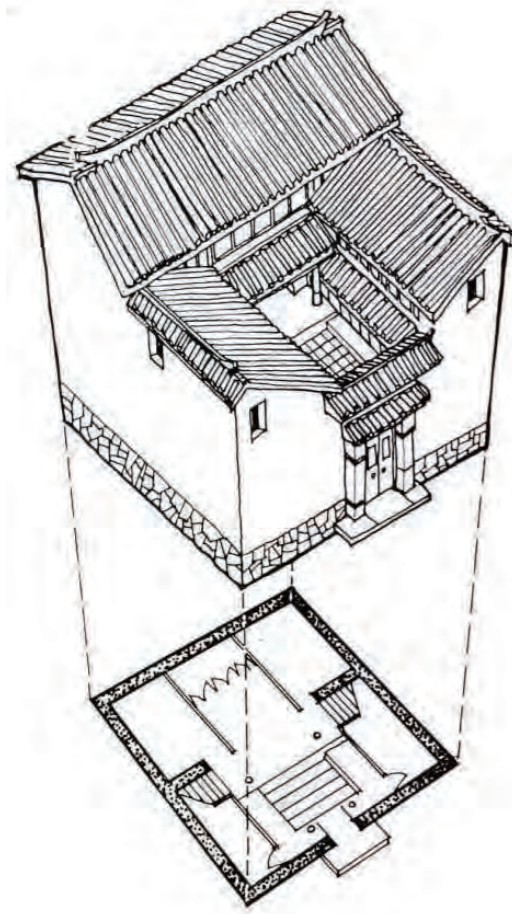
3912 local people

- Area condition
- Connection
- Natural environment





## TRADITIONAL TYPOLOGY



Kunming is located in plateau area. Four seasons here feel like spring, because it is not cold or windy in the whole year. In order to save land, improve the inner climate and form shadows at the same time, local people use small patio and thick high wall to build a special courtyard. These high walls can help defend fire and sand. but this kind of houses always has ventilation and lighting problems, because these walls have no windows.



This kind of housing unit is small, so the building location can be changed according to different mountain shapes or different water locations.



## BUILD STRUCTURE

Wulongpu has a long history, and a lot of buildings built hundreds of years ago still remain in some areas.

In the process of development, the town expanded outward. But the newly built houses are not well matched with the surrounding environment and the house quality is not good. Only some old people live in these houses. Most of them are empty.

-  BUILDINGS UNDER PROTECTION
-  EARTH BUILDINGS
-  TRADITIONAL BUILDINGS
-  RED BRICK BUILDINGS
-  TEMPORARY BUILDINGS
-  NEWLY BUILT STRUCTURES
-  BUILDINGS OUTSIDE THE SITE





## CONNECTION

Road system here is poor. Some roads which link to the outside areas are newly built, and are easy to pass. But most original paths need to be improved.



**MAIN ROAD**

Can be passed by both cars and pedestrians



**SECONDARY ROAD**

Can be passed by both cars and pedestrians



**SMALL PATH**

Can be passed only by pedestrians



## SWOT

S	W	T	O
Good air quality	Less job opportunities	How to balance the new buildings with the old ones	A university town nearby (easy to connect them)
Good natural resources (big lake and beautiful mountain)	Young people are leaving	How to protect the nature	Near to Kunming city
This town has a long history	Building quality is not good	Kunming is a tourism city	Have metro lines nearby
	Connections are not good (roads are too narrow somewhere, even bikes cannot reach )		Have many wastelands which can be used as farming lands



# LEARNING

## Attract young people to live there

- Work with nearby universities and build a new campus inside the town
- the majors offered here can also support the development of the town



Linked by shuttle bus



Linked by bike paths

## CHANGES



Located in a natural area



A quiet space for learning



Has fields for special subjects



## VISION



Attract young people



Active the old city



# FARMING

Improve the living quality of the local people.

- provide new housing typology (There are many problems in the old town)
- continue farming in this area

/// Create canals to irrigate crops



Linked by bike paths

## CHANGES

- Suitable weather for farming
- Skillful people
- Soil and water are good



## VISION

- Keep local people
- Support the economy



Increase farming lands



New typology



Add spaces which people can exchange their food



# WETLAND

Use wetland to balance city development with nature protection

- Create new wetlands to help reduce water pollution in this area
- connect the drainage system with the wetland
- make some canals which provide water for farming

/// Link water in the city park with Dianchi lake



Linked by walking paths

## CHANGES



A place have access to the lake



Had natural wetland in the past



Has old canals in the old town



## VISION



Clean the water



Create a drainage system



Enrich ecosystem



Original site information



## STEP ONE

### OLD BUILDINGS AND ROADS

Most of the buildings in the site are in poor condition because the internal structures are aging and some of them are in danger of collapse.

These houses are empty now.

So the first step is to tear down some old buildings (still keep some important parts which the government also want to protect)

Then it is necessary to build a better road system according to the new texture.





## STEP TWO

### WATER

In order to prevent Dianchi lake from further water pollution problems, it is necessary to build a wetland system that can purify the water before they enter Dianchi lake.

Use two pieces of land which are both on the water front to create wetland parks, and bring the water into the town as well.

These areas are designed according to the contour lines. The wetlands are located in the lowest areas.



## STEP THREE

### NEW TYPOLOGY, CANALS AND FARM LAND

Create new living areas for the people who lives there. And at the same time, build up the surroundings as well.

The east part will be farm lands.

Small canals will also be built in these areas to create a drainage system.





## "FLOWING" VILLAGE

A lovely village which located a little bit far from the city, but still have convenient and good connection to the city center. There are no high-rises, and the form of life returns to the previous slow pace life which is full of human kindness. Canals appear everywhere and form a drainage system which can help purify the water before it goes into Dianchi lake. It is a self-sufficient life mode. Everyone can enjoy the peaceful environment and focus on what they love to do.



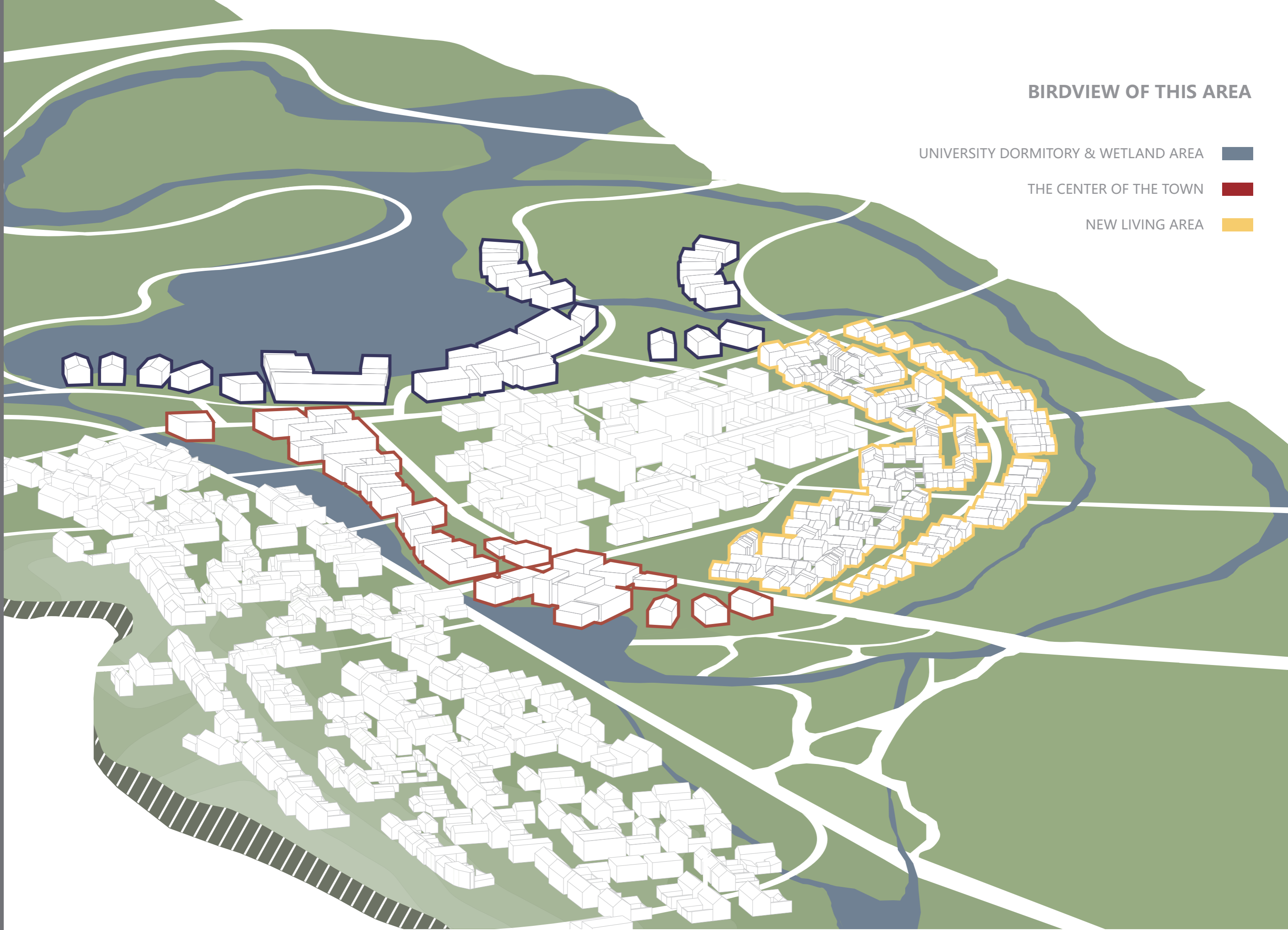


# BIRDVIEW OF THIS AREA

UNIVERSITY DORMITORY & WETLAND AREA 

THE CENTER OF THE TOWN 

NEW LIVING AREA 





# WATER SYSTEM

## LOCATION

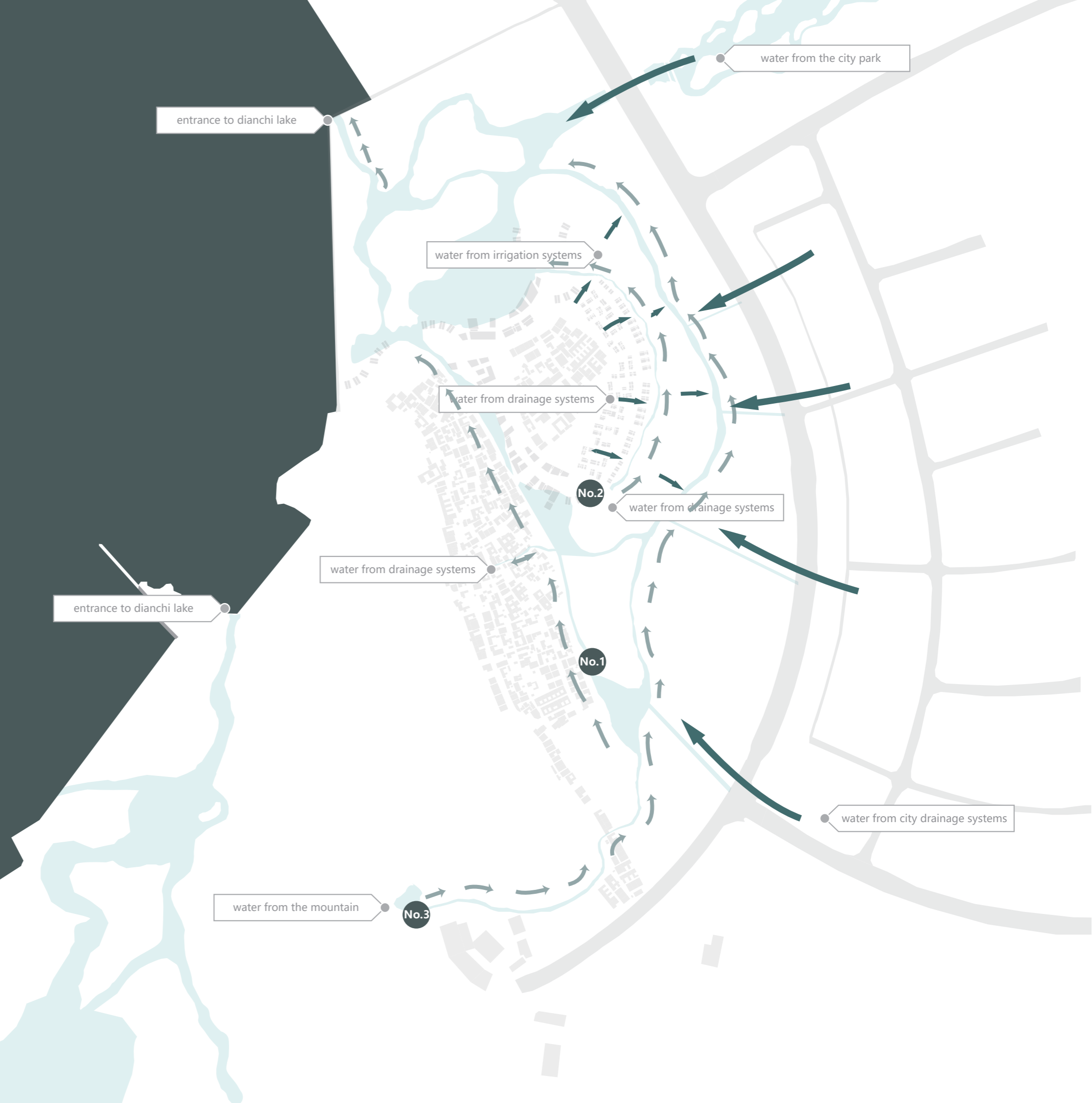
There are three main canals that collecting water from different areas.

No.1 collects the water from the old town area (in the mountain area) drainage system and also from the campus area.

No.2 collects the water from the old town (in the central area) and from the new living area.

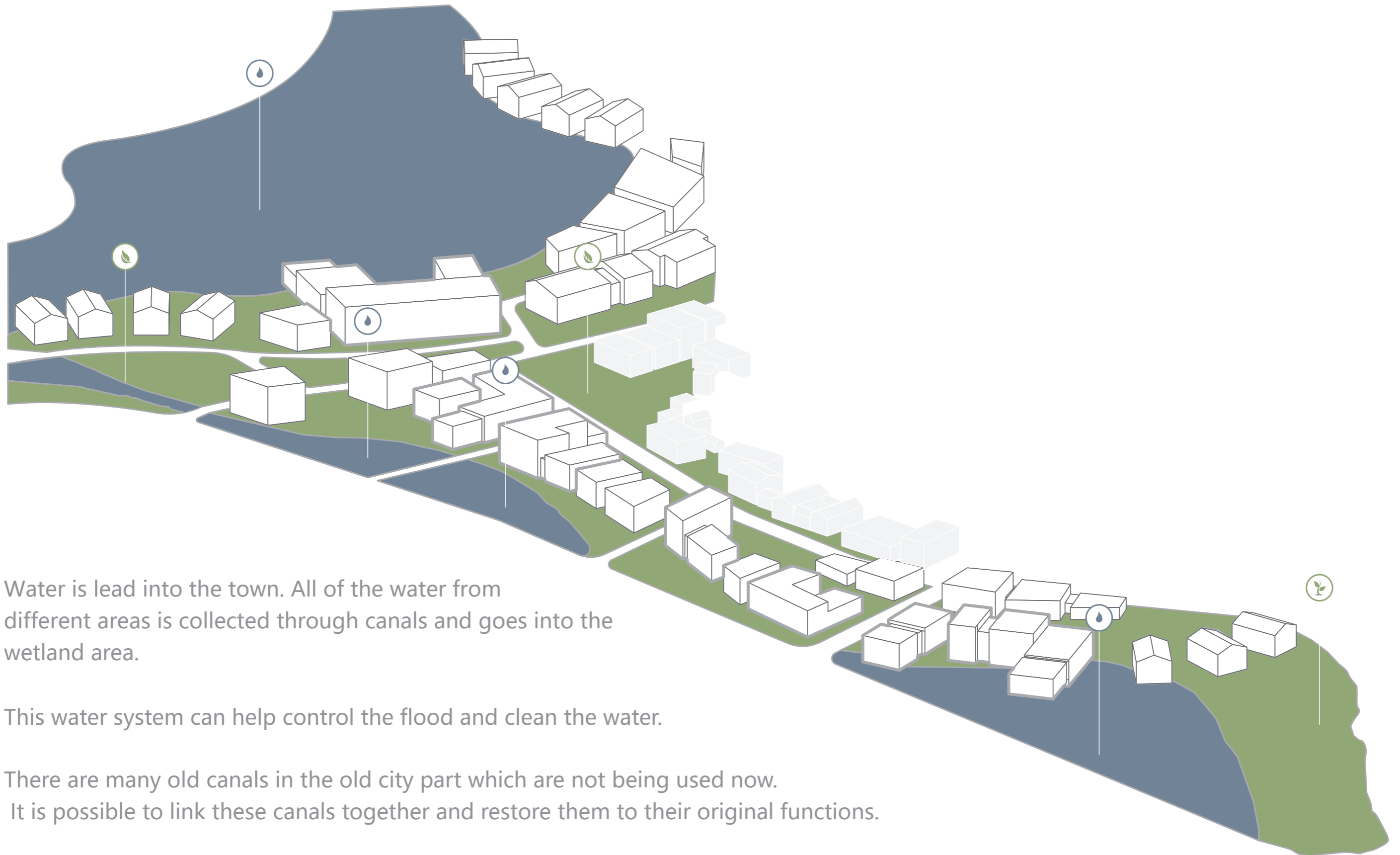
No.3 collects the water from the outside city area and mountain area. Also it collects the water left over from irrigation.

All the water flows towards the wetland and then is cleaned by wetland system. Finally, it will flow into the Dianchi lake



# THE CENTER OF THE TOWN

## SURROUNDING



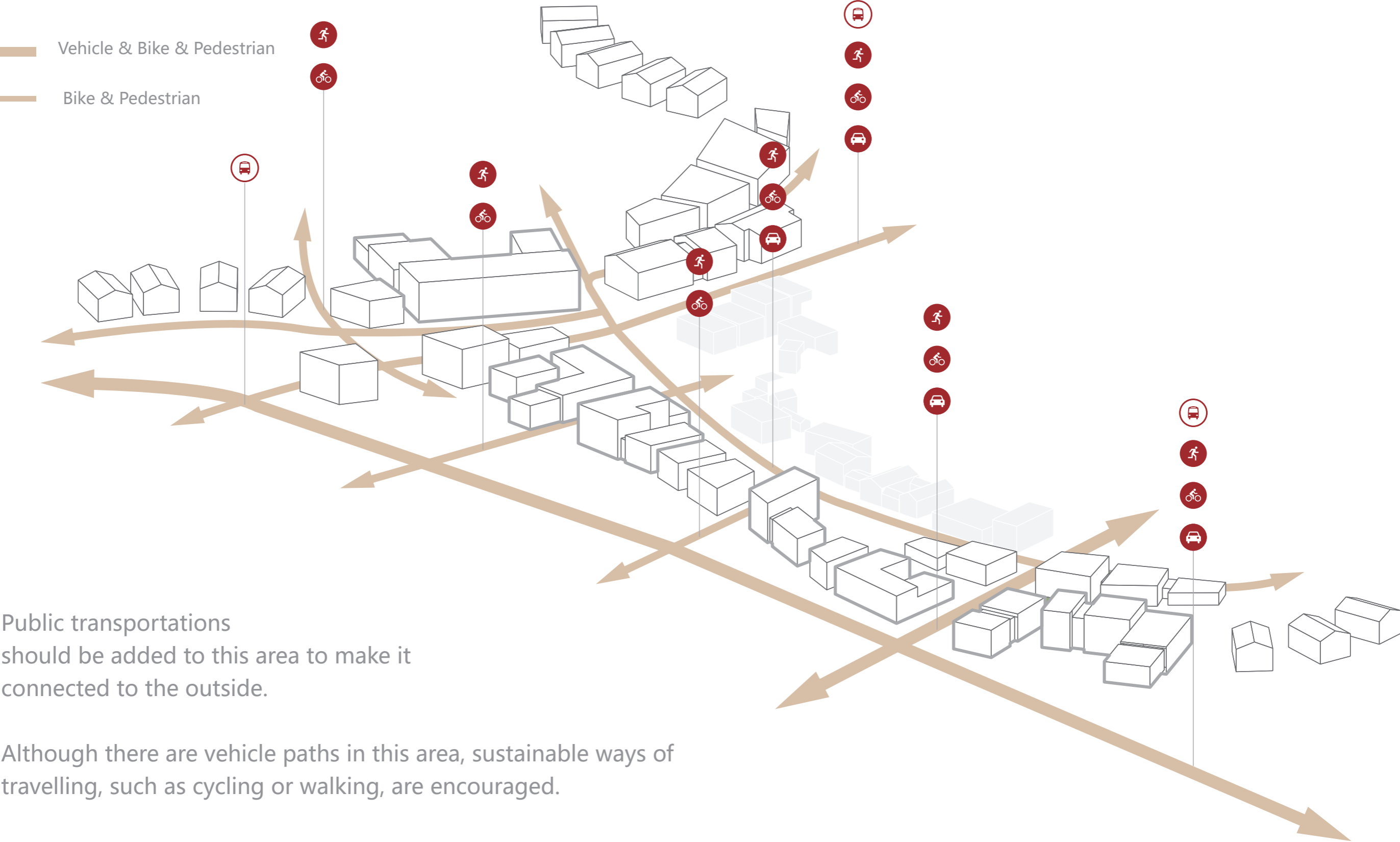
Water is lead into the town. All of the water from different areas is collected through canals and goes into the wetland area.

This water system can help control the flood and clean the water.

There are many old canals in the old city part which are not being used now. It is possible to link these canals together and restore them to their original functions.



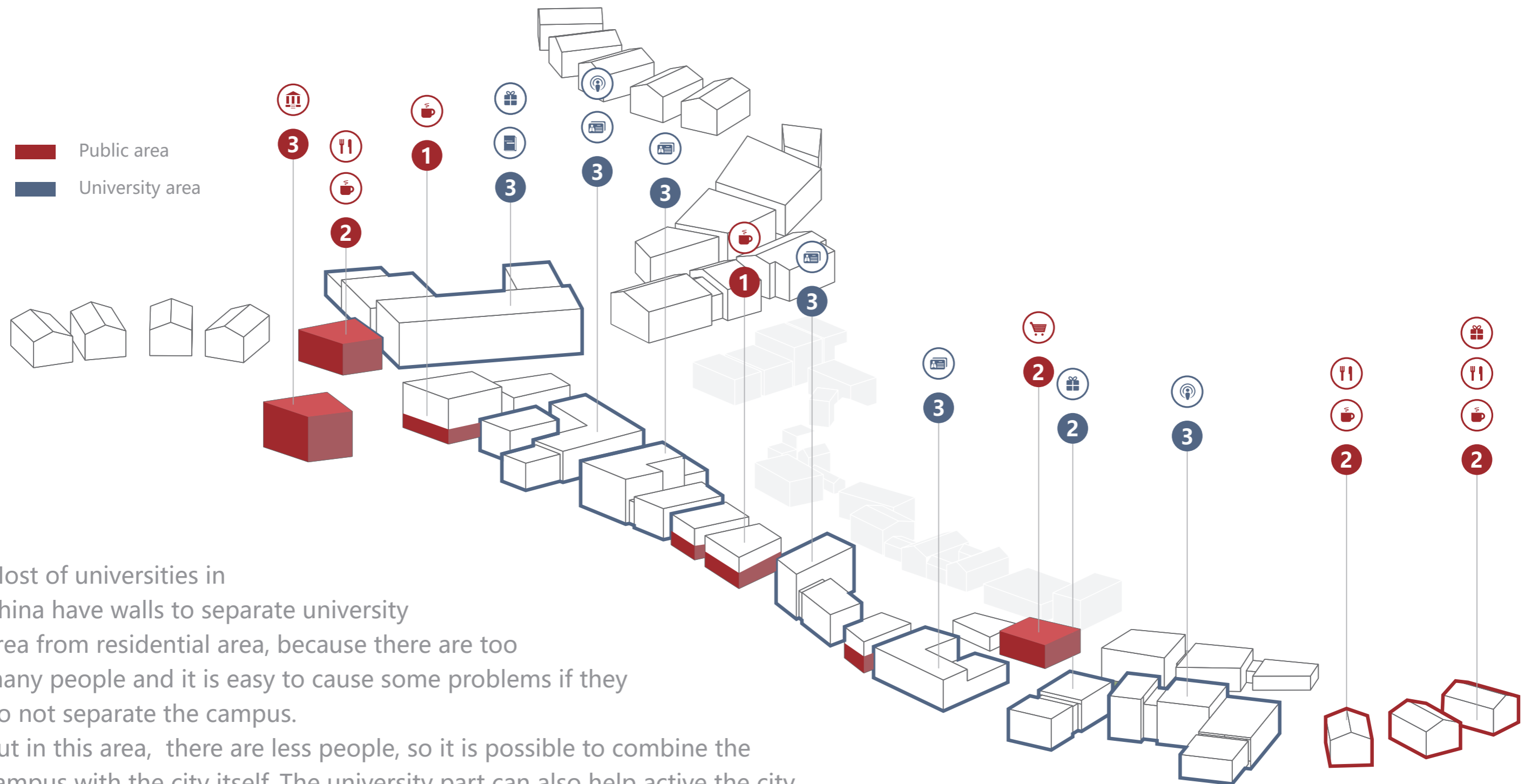
# CONNECTION & BUS STATION



Public transportations should be added to this area to make it connected to the outside.

Although there are vehicle paths in this area, sustainable ways of travelling, such as cycling or walking, are encouraged.

## A NEW FORM OF CITY AND UNIVERSITY

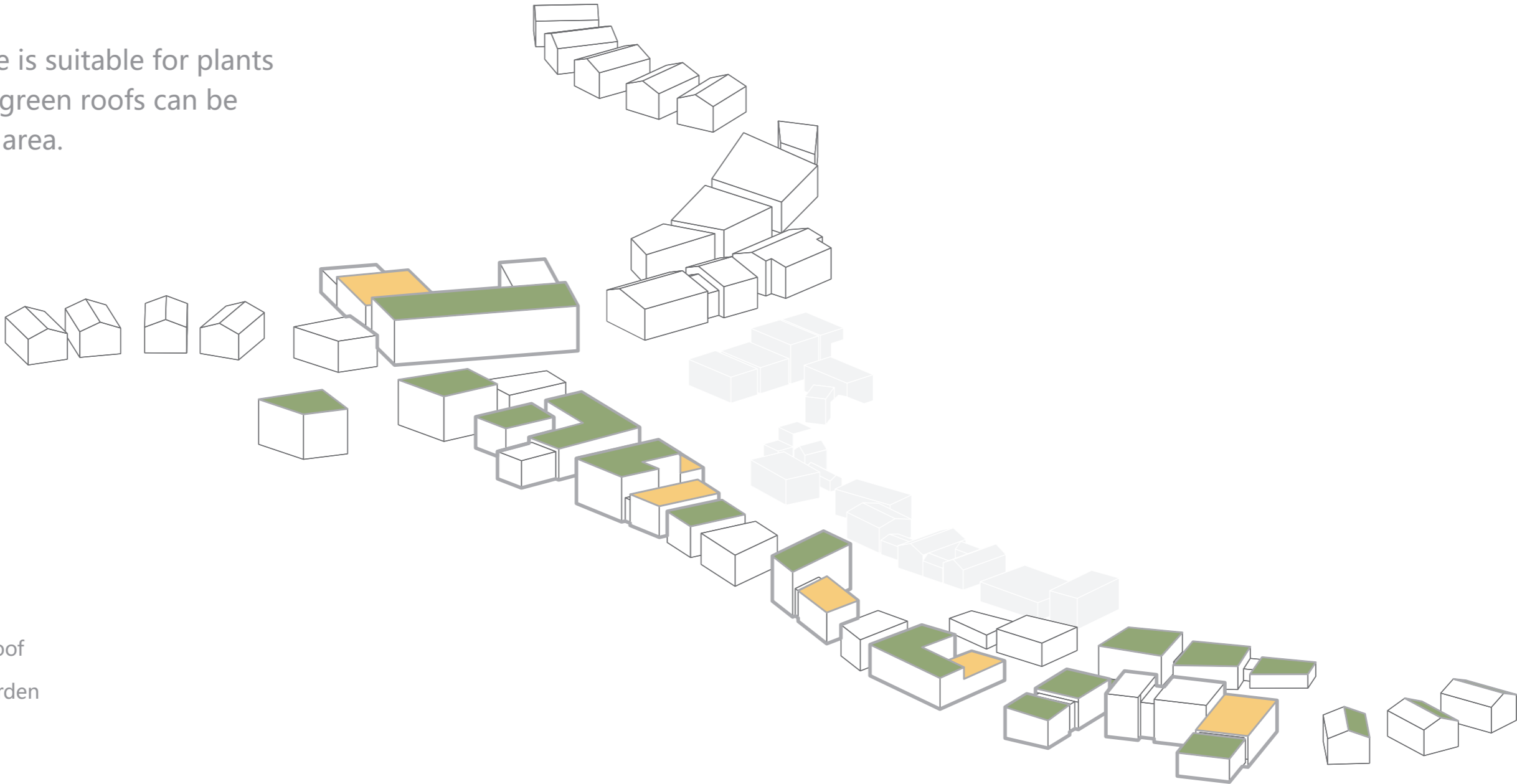




Most of universities in China have walls to separate university area from residential area, because there are too many people and it is easy to cause some problems if they do not separate the campus. But in this area, there are less people, so it is possible to combine the campus with the city itself. The university part can also help active the city and always bring new things or knowledge to the city.

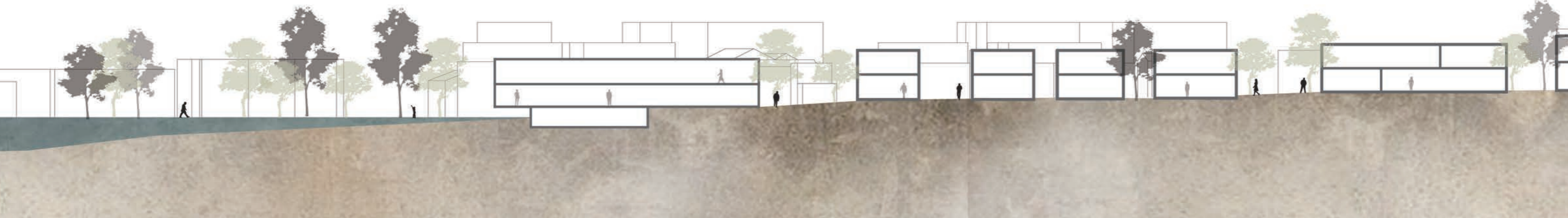


# GREEN ROOF & ROOF GARDEN

Climate here is suitable for plants to grow, so green roofs can be used in this area.



-  Green roof
-  Roof garden



# NEW LIVING AREA

## SURROUNDING

In this new area, it is important to ensure that people have enough outdoor spaces to do some activities. In the old part, there is few spaces for people to walk or stay. So the space in-between the old town and the new area will be a green belt where people can walk through or meet with their friends. The outer area will become farmlands in the future. Different families can take care of different parts of these areas and plant something. Canals also past through this area collecting rainwater the water left over from irrigation.





# CONNECTION & BUS STATION

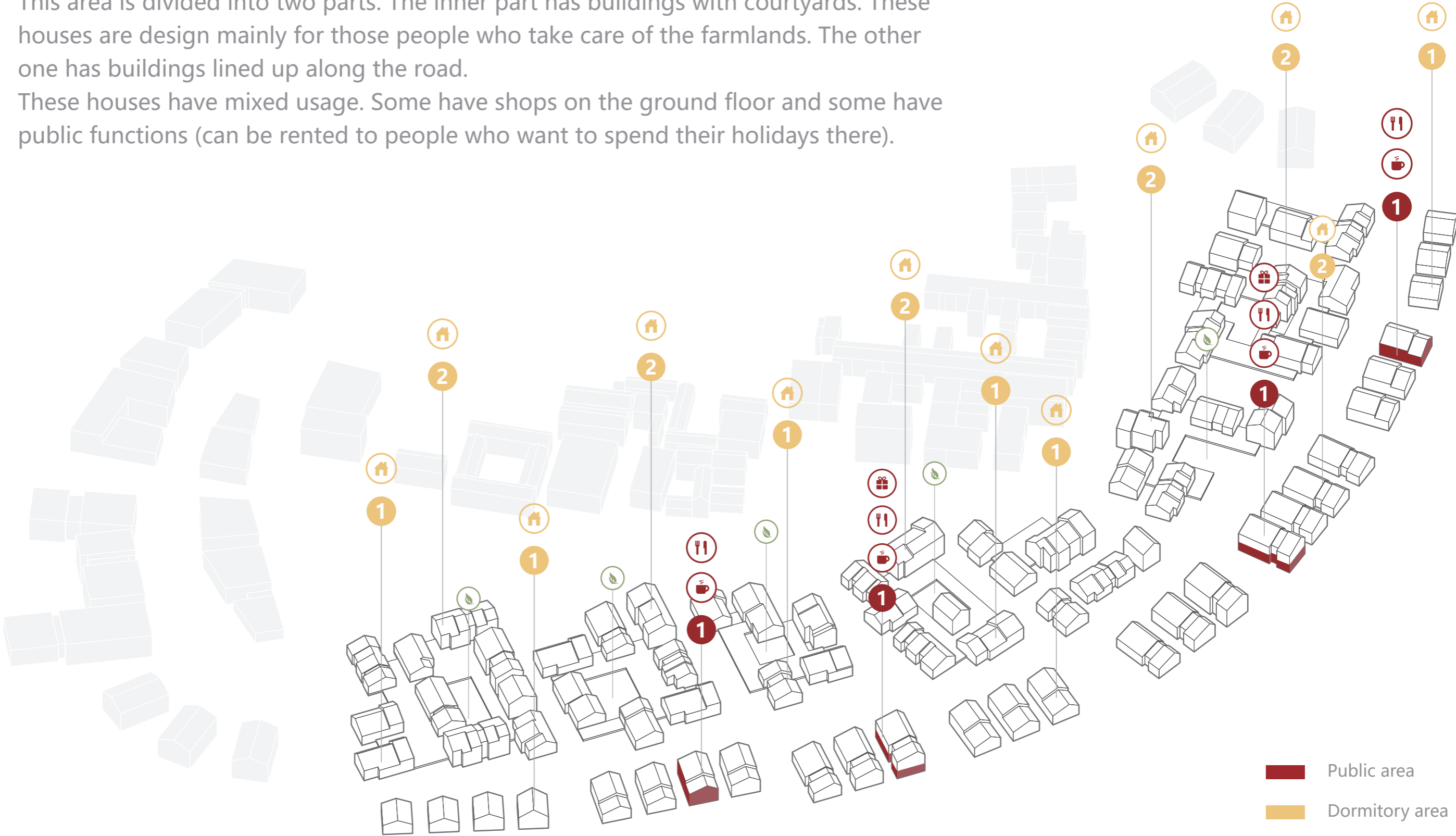
This area will be well connected with outside, and cycling and walking are encouraged here in order to reduce pollution. Public bus line is added here as well.



# FUNCTION & HEIGHT

This area is divided into two parts. The inner part has buildings with courtyards. These houses are design mainly for those people who take care of the farmlands. The other one has buildings lined up along the road.

These houses have mixed usage. Some have shops on the ground floor and some have public functions (can be rented to people who want to spend their holidays there).

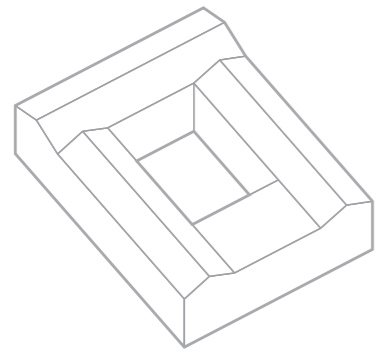








## TYOLOGY

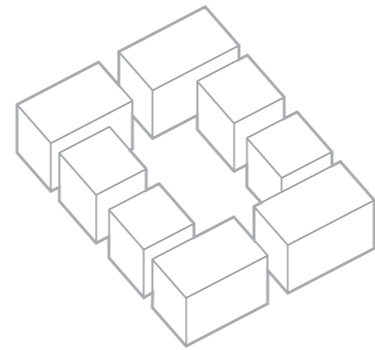


Traditional typology:

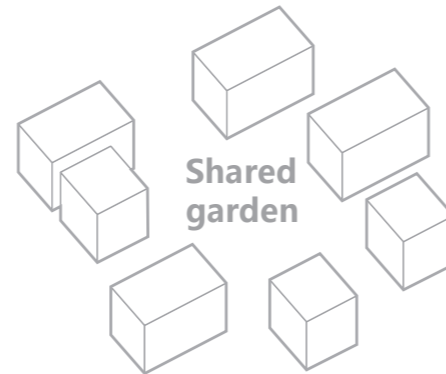
These buildings have tall walls, and most of them are two floors or one floor high. In the middle there are small courtyards.

People cannot get enough fresh air and sunshine.

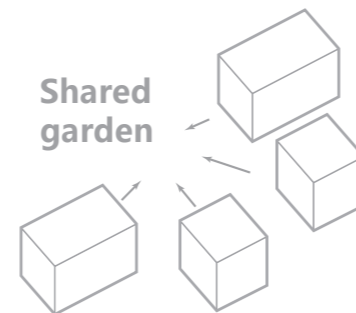
1



Separate buildings into small parts  
People who live in these buildings can get more fresh air and more sunshine

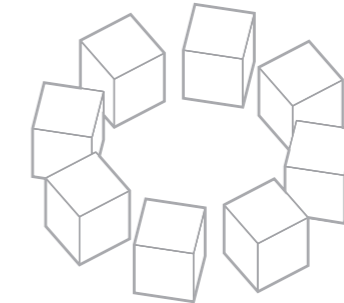


Keep the same height with the traditional buildings and make it more open. They still have shared courtyard.

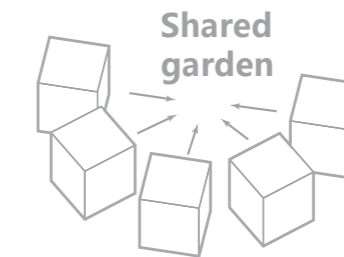


These small units can be not closed, and have one side or two sides facing to the public.

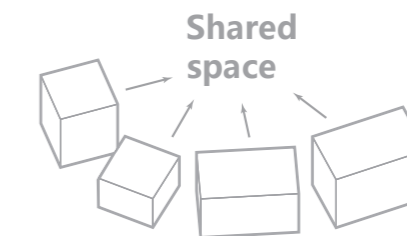
2



In those areas near water or mountains, circle links can be more flexible. The buildings can be easy to follow the water, roads or mountains.



Also keep the same height with the traditional buildings and make it more open. They still have shared areas for activities.



Can also line up along roads, mountains or water.

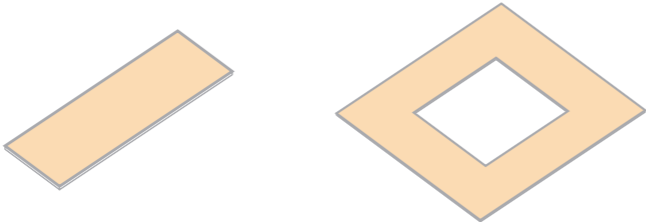
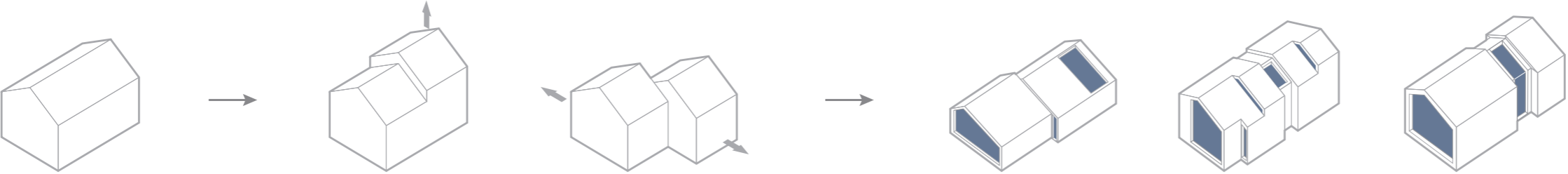


# BUILDING DETAILS

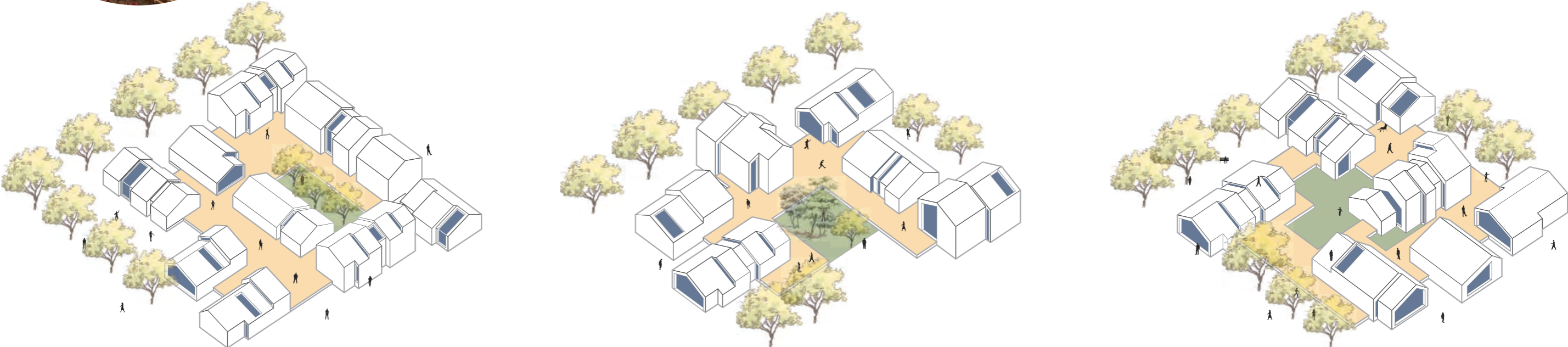
In ancient time, traditional houses were built tightly and this made their roofs seemed overlap with each other, which we called "Chong Yan" in Chinese. This becomes the main concept when adding windows in these new housing areas (add thin windows on roofs and walls).



Painting of "Chong yan"

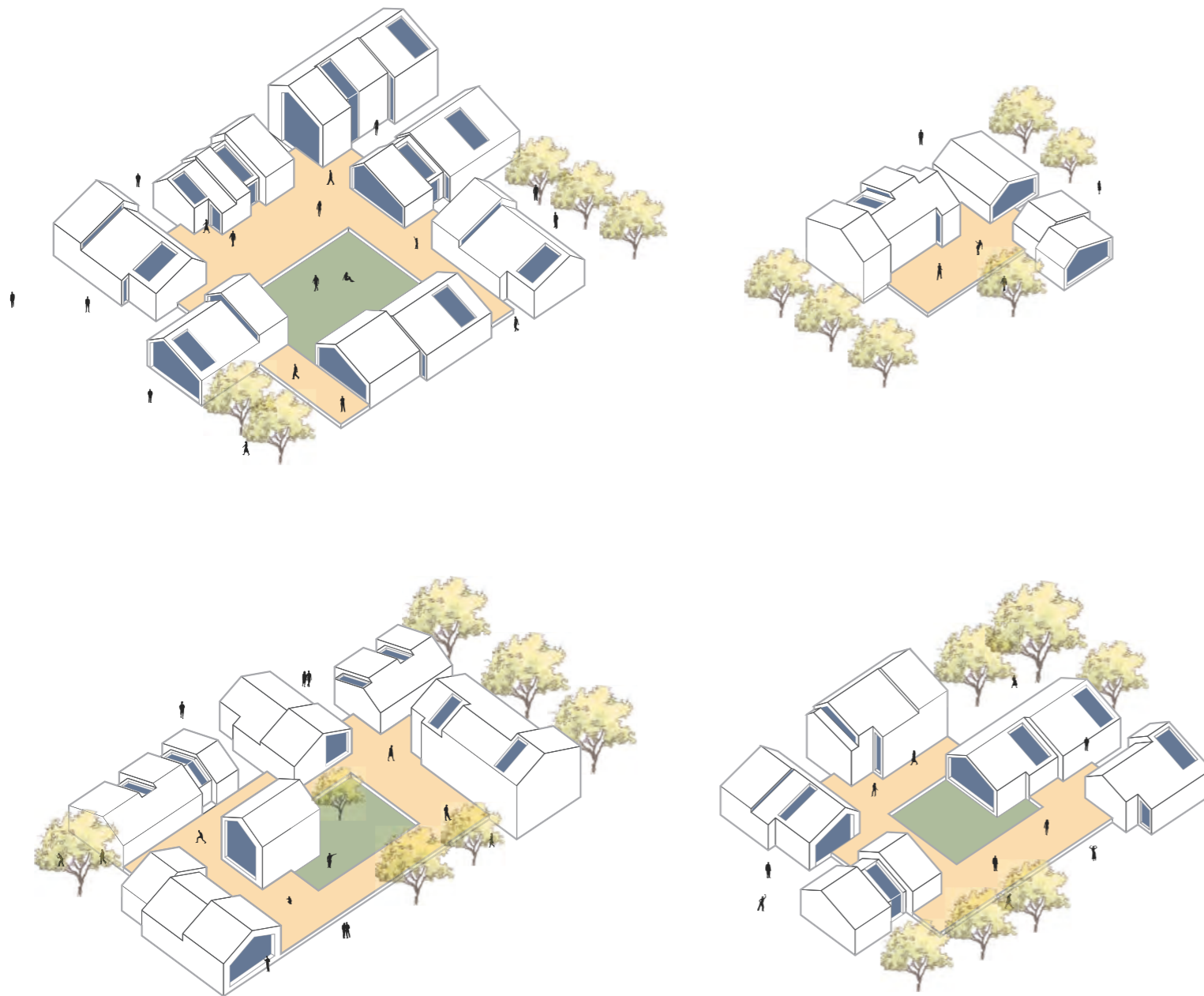


In many regions of China, people always put some kinds of food in the sun and make them dry before processing. So it is important to have some outdoor places. These new buildings are linked by wooden decks to meet this need. People can move easily during raining seasons.



## BUILDING TYPE 1

These new units have a courtyard in the middle, and trees around also help to form some semi-private spaces. These spaces can be used as small squares or small farmlands to plant something.

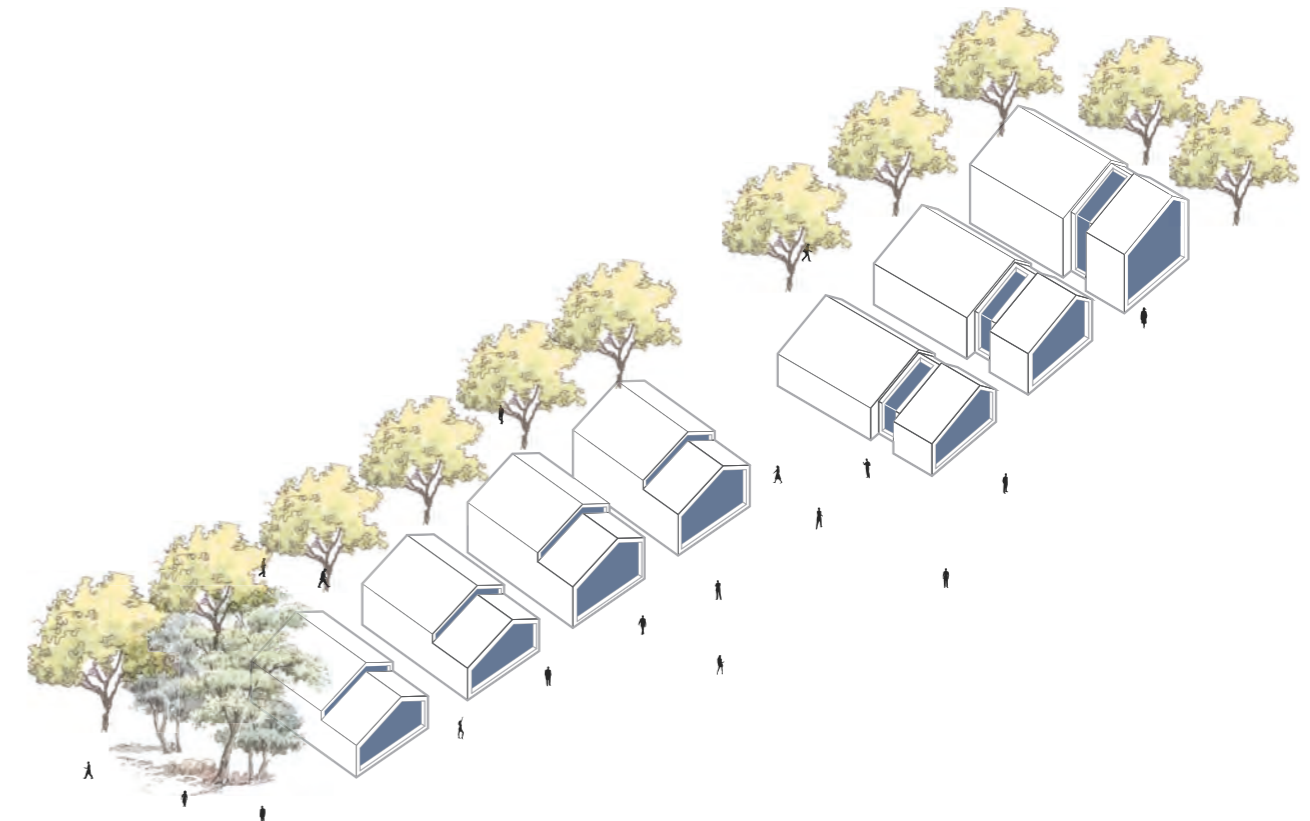


## BUILDING TYPE 2

Houses along the river

These buildings facing to the farmlands and have good views on one side. On the other side trees are planted in order to form a private and quiet feeling.

Because this area is the closest part to the farmlands, It will be nice to change these normal trees to some fruit trees if they can grow there.

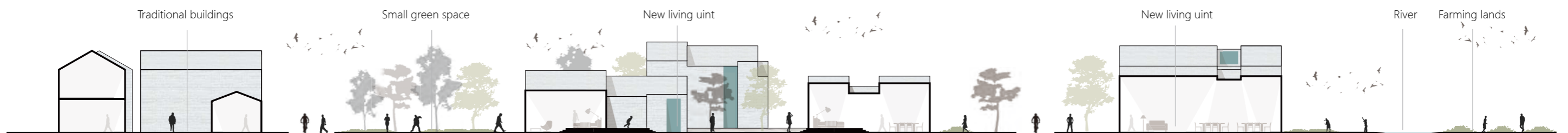
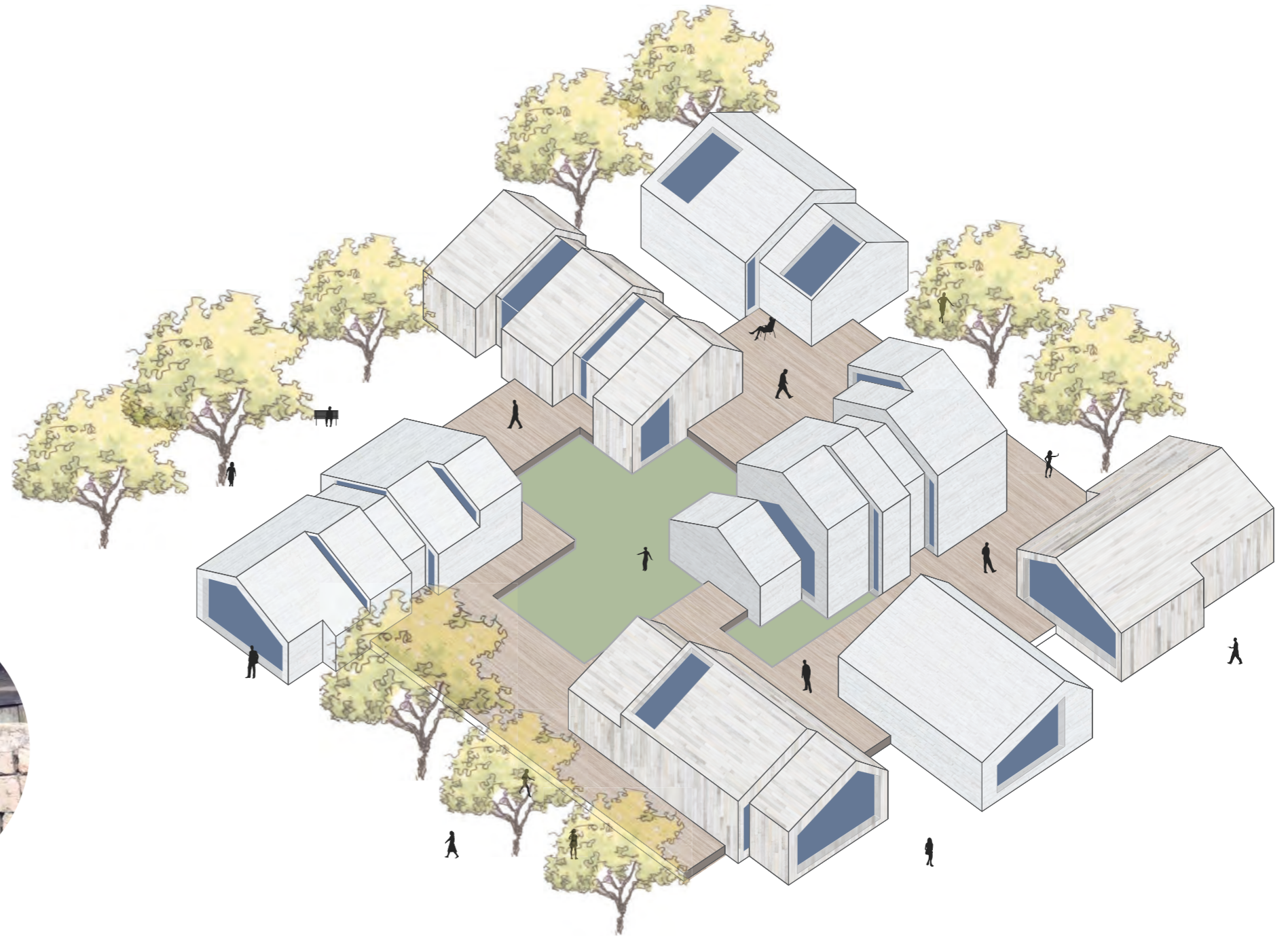




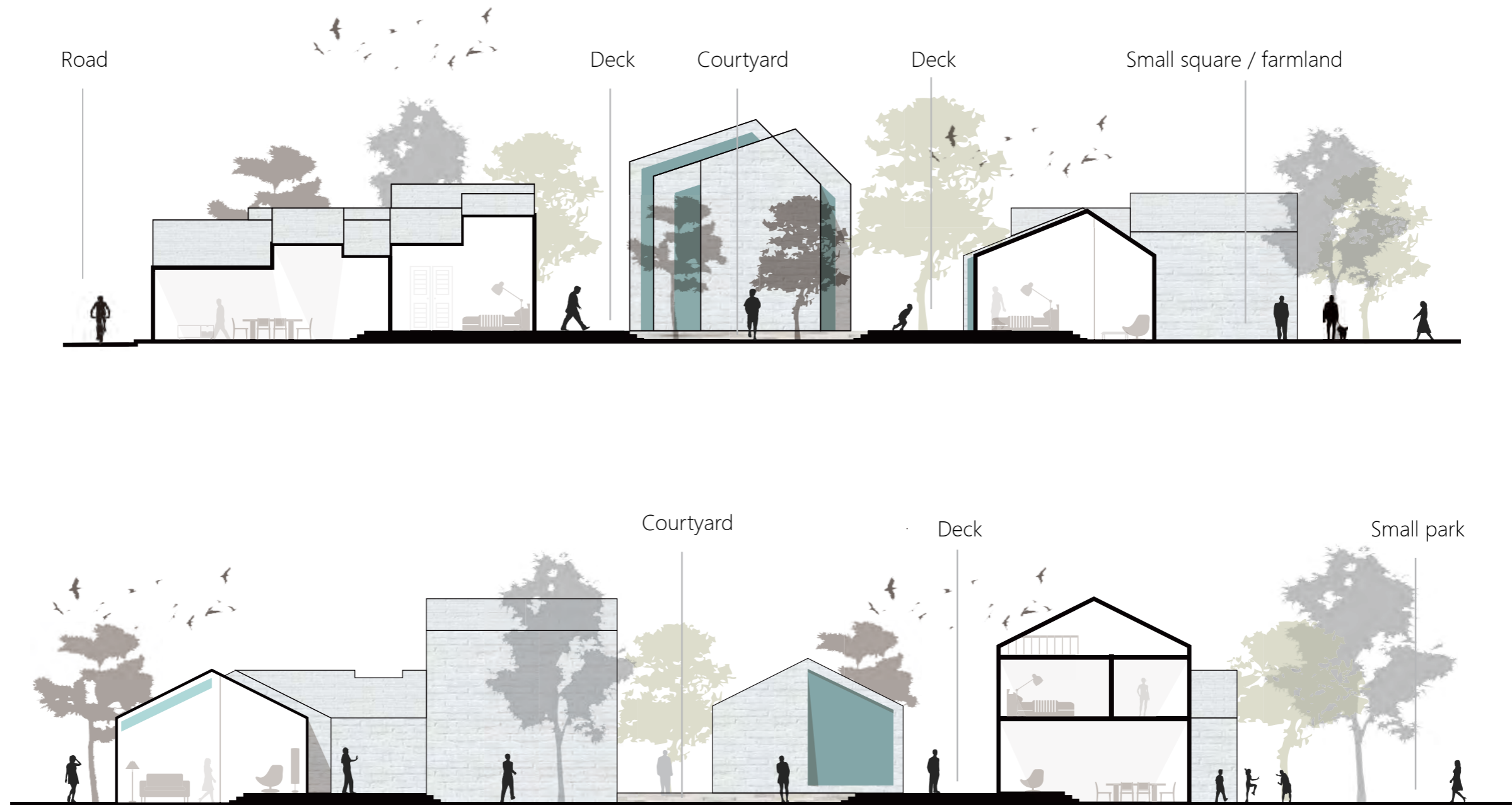
## MATERIAL

Wood is also used in Chinese architectures. It could be nice to use wooden materials in the new housing area.

There is a brick factory in the old town, so brick is a local material which can be used for new buildings.



SECTIONS 1:200

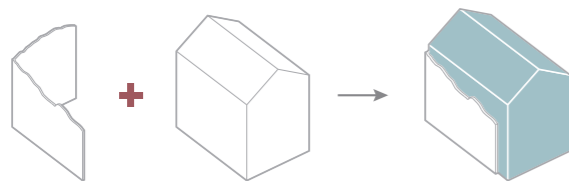




## ABOUT OLD BUILDINGS



In the old town, some buildings are too old and the walls are broken. In order to protect these traditional buildings and at the same time make it possible for people to live in again, new structures will be added inside the walls (mainly use glasses to provide enough sunlight and fresh air).



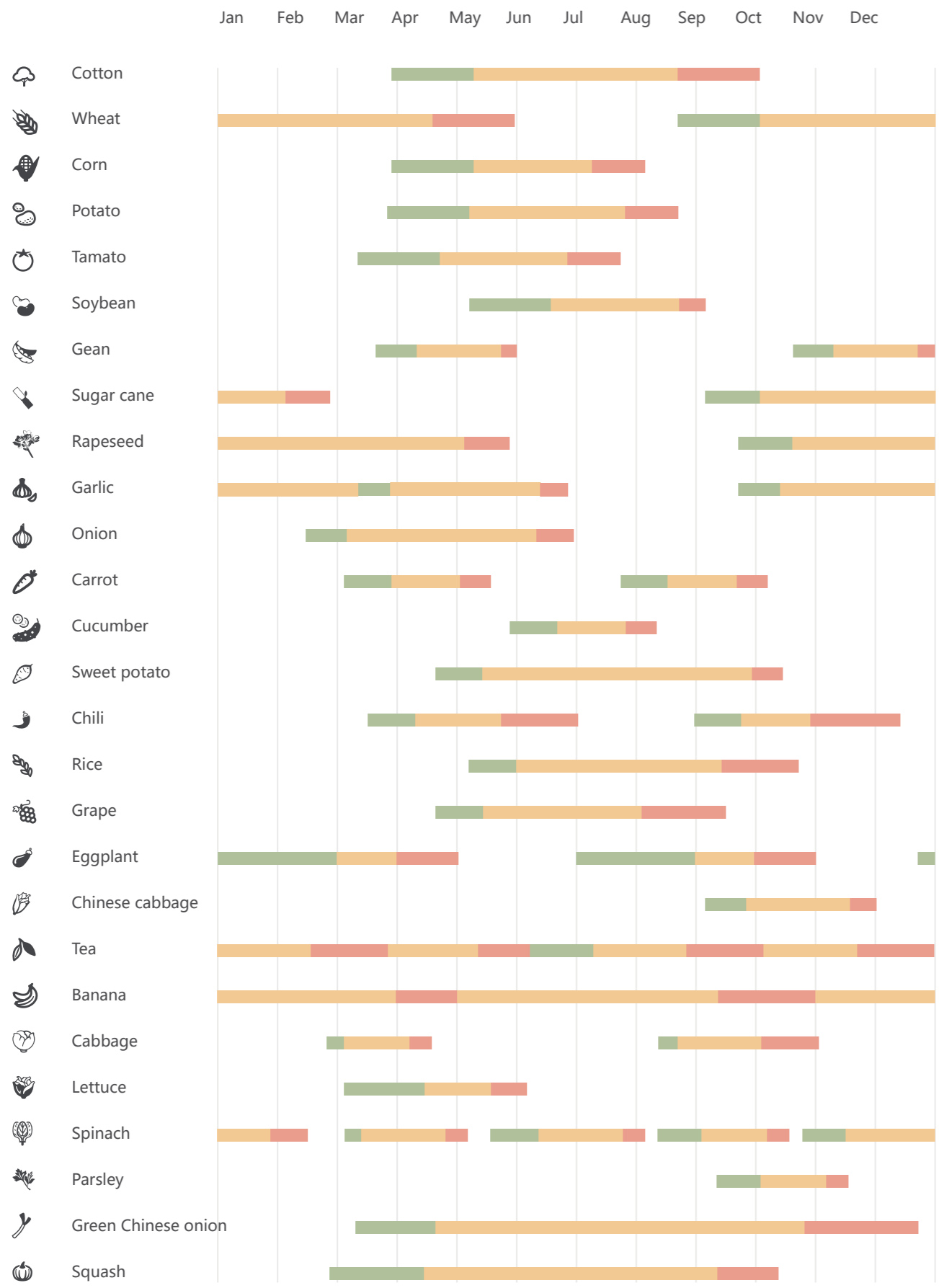


## FARMING LANDS

Different families can take charge of different lands. The size of each piece of land and the space between the ridges are different. Different crops can be cultivated according to individual preferences. People from the city can also rent small plots of land to plant. Local people help to take care of them at ordinary times, and people from the city can spend their holidays on the farm. Activities can also be held during the harvest seasons.







## PLANTING GUIDE

Many crops cannot be planted every year. Different kinds of crops need to be planted to protect the soil.



Planting different crops together can prevent disease and pests, balance temperature and nutrition.









# UNIVERSITY DORMITORY AREA & WETLAND AREA

## SURROUNDING

On the north of the site is the new wetland. The main functions of the wetland are helping purify the water flowing into Dianchi lake and improving water quality in Dianchi lake. A better natural environment also leads to a better ecosystem.

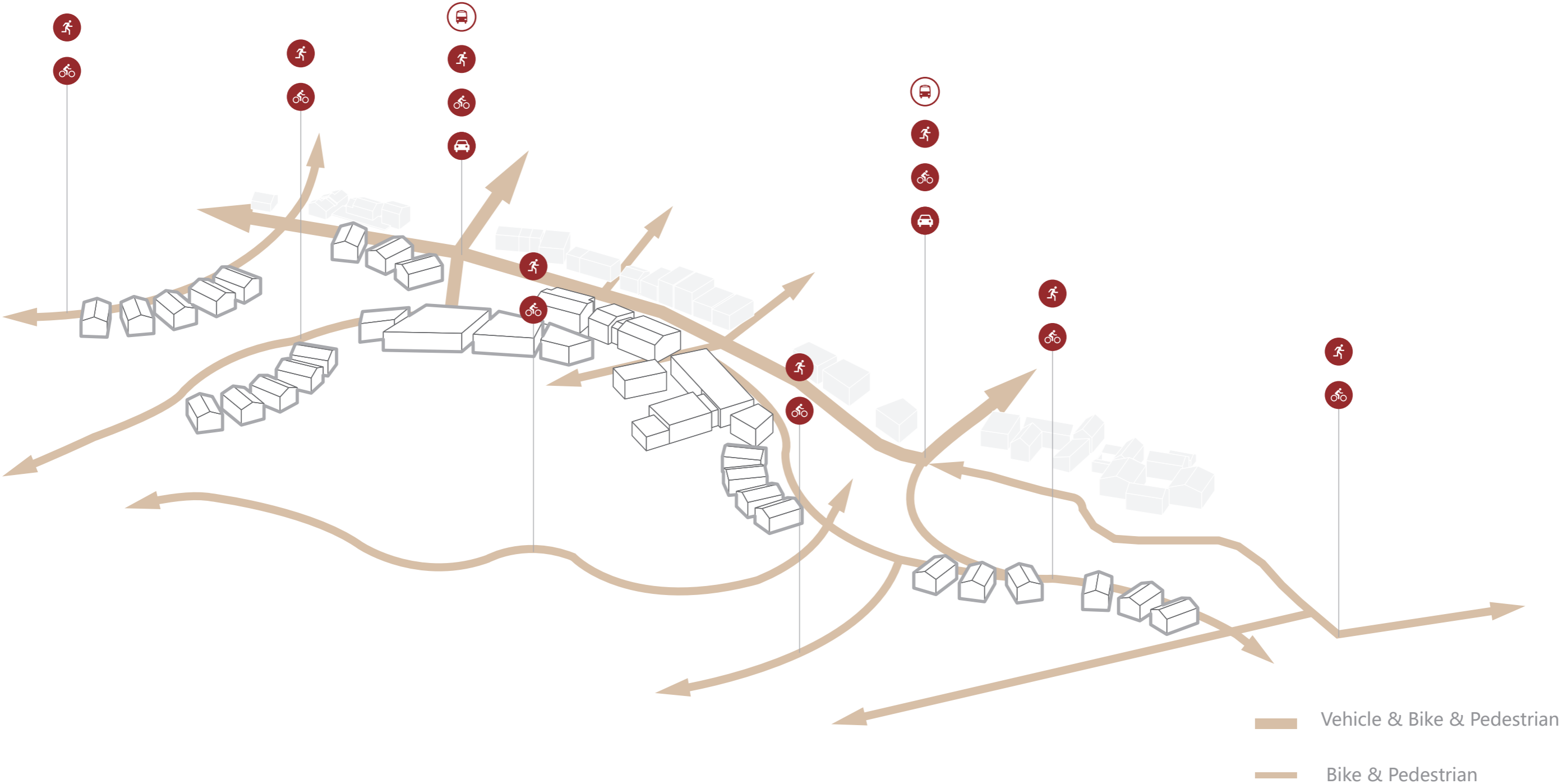
The university dormitories are built near the small lake beside the wetland. There are some places in this area where people can have access to the water.





# CONNECTION & BUS STATION

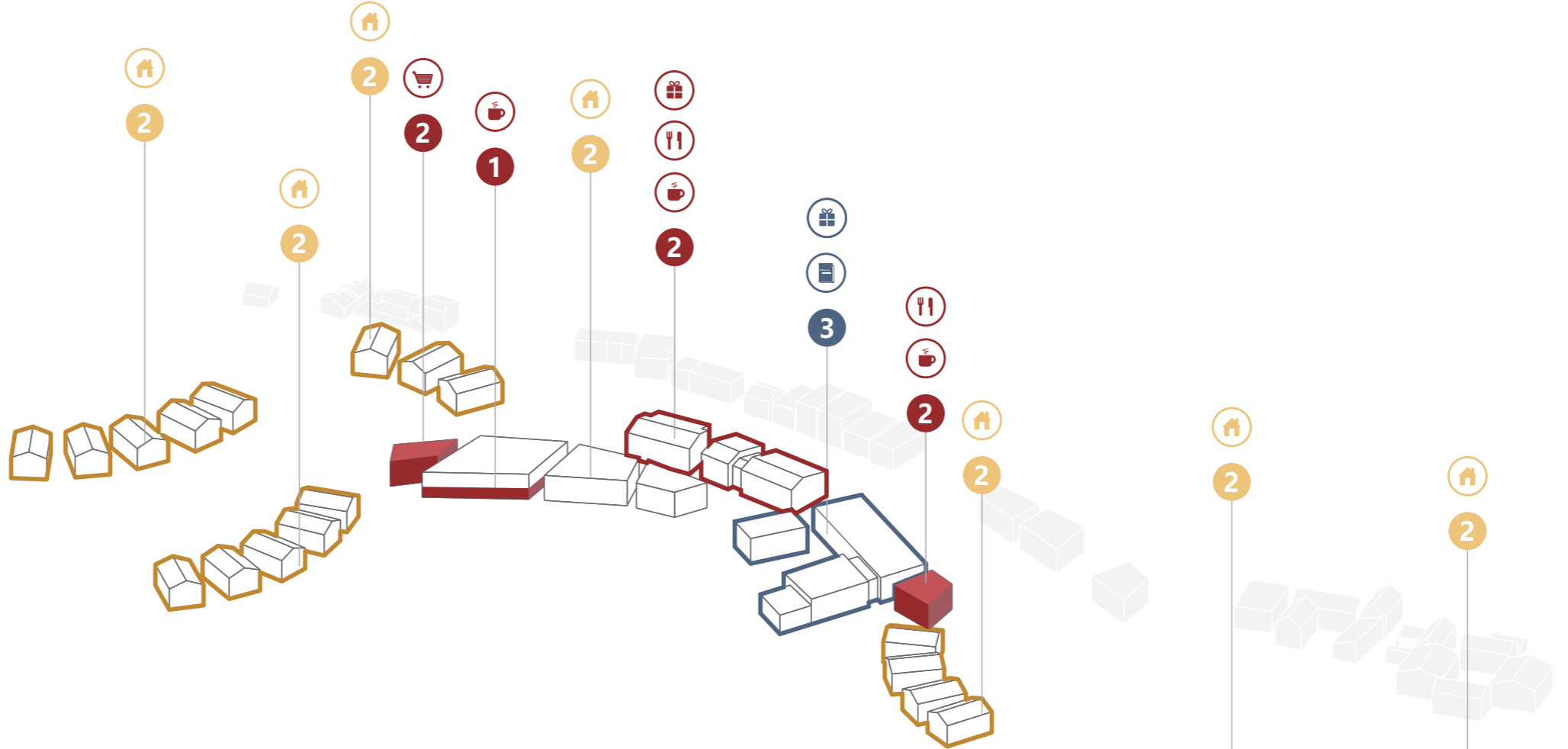
This part is also well connected and have two bus stations. Because the campus here is part of the university town outside the site, shuttle buses are needed to link these two places together.



### FUNCTION & HEIGHT

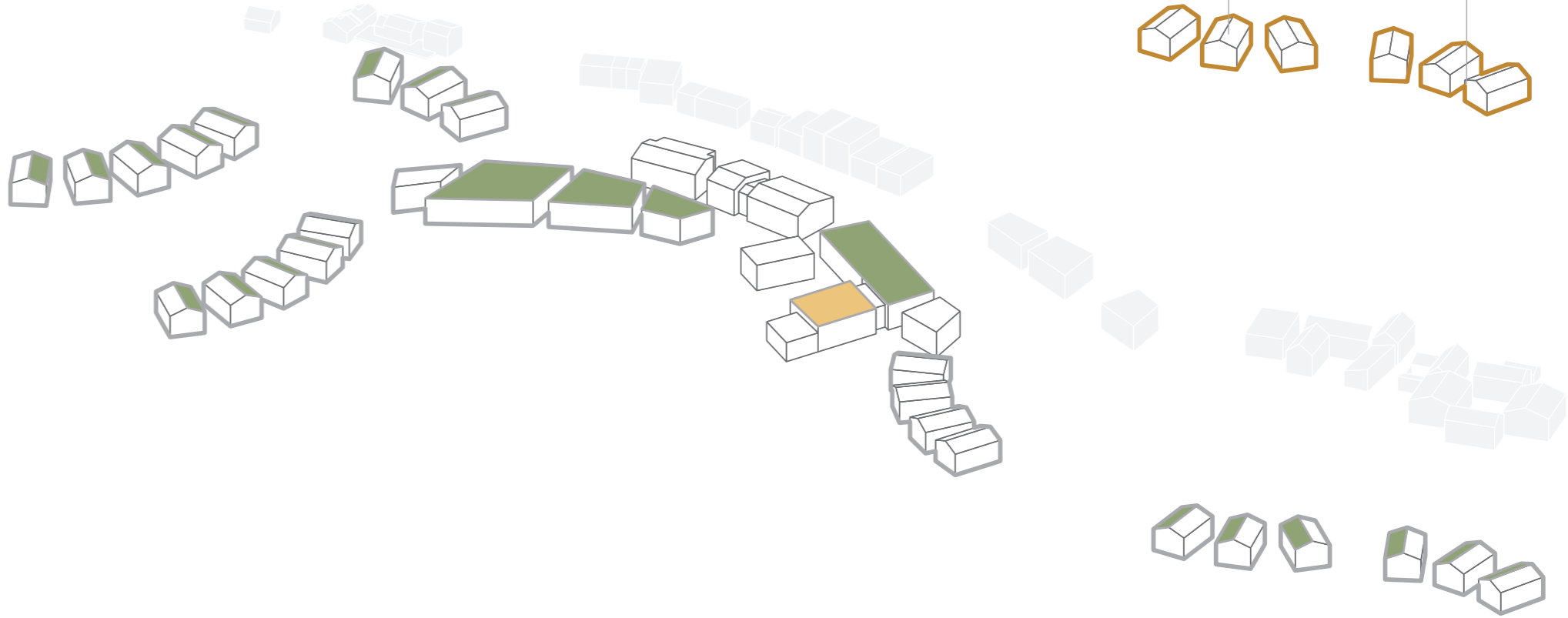
Nice library, restaurant, cafes and other shops can be found here to meet students' daily needs.

- Public area
- University area
- Dormitory area



Climate here is suitable for plants to grow, so green roofs can be used in this area.

- Green roof
- Roof garden









## THE REASONS WHY DIANCHI LAKE IS POLLUTED SO HEAVILY



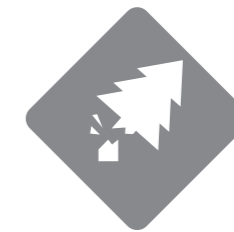
Houses in the old city part lack some water facilities. So domestic water always goes into the river directly.



A lot of land is used for farming (such as vegetables and flowers). Fertilizer used for farming remains in the land and water which cause water pollution in Dianchi lake.



Kunming city is expanding rapidly and the population is growing. As a result, there is more pollution in this area.



Natural wetlands were destroyed. Coastal areas lost their ability to clean the land and water by themselves. At the same time lands along the lake are eroded quickly.



## BENEFITS OF SETTING UP A WETLAND PARK



Wetland plants absorb excess nutrients. So wetland can help improve water quality in farming area.



Wetland will enrich biodiversity because they provide habitats for plants and animals.



Wetland provide a place for water to settle before it flows into a lake. Some pollutants can be removed before they enter Dianchi lake.



Curved tributaries slow down the flow of water and slow down the erosion of land as well. It is important to protect the land, while adding water in the site.



Wetland system helps protect natural environment in this area, especially water quality.

## THE SOURCE OF WATER



Rainwater

The main pollution come from dust and particles in the air.



Water from the mountain

Water from the mountain pass mainly through farming lands, and most of the pollution comes from fertilizers in the soil.



Treated water from the city

Pollution comes mainly from human activities. But this kind of water has been artificially purified already.

## WATER PURIFICATION SYSTEM

Particulate pollutant  
Fertilizer  
A few chemicals



Photosynthesis increases oxygen content in water

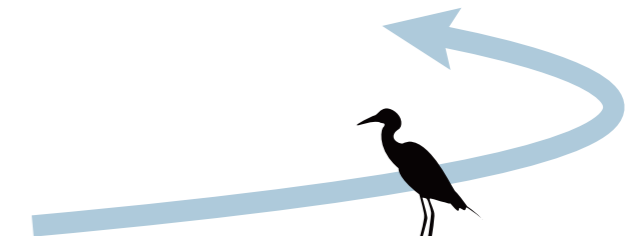


Some pollutants are degraded by microbes

Water becomes clean before flowing into Dianchi lake



Insects and birds eat organic particles

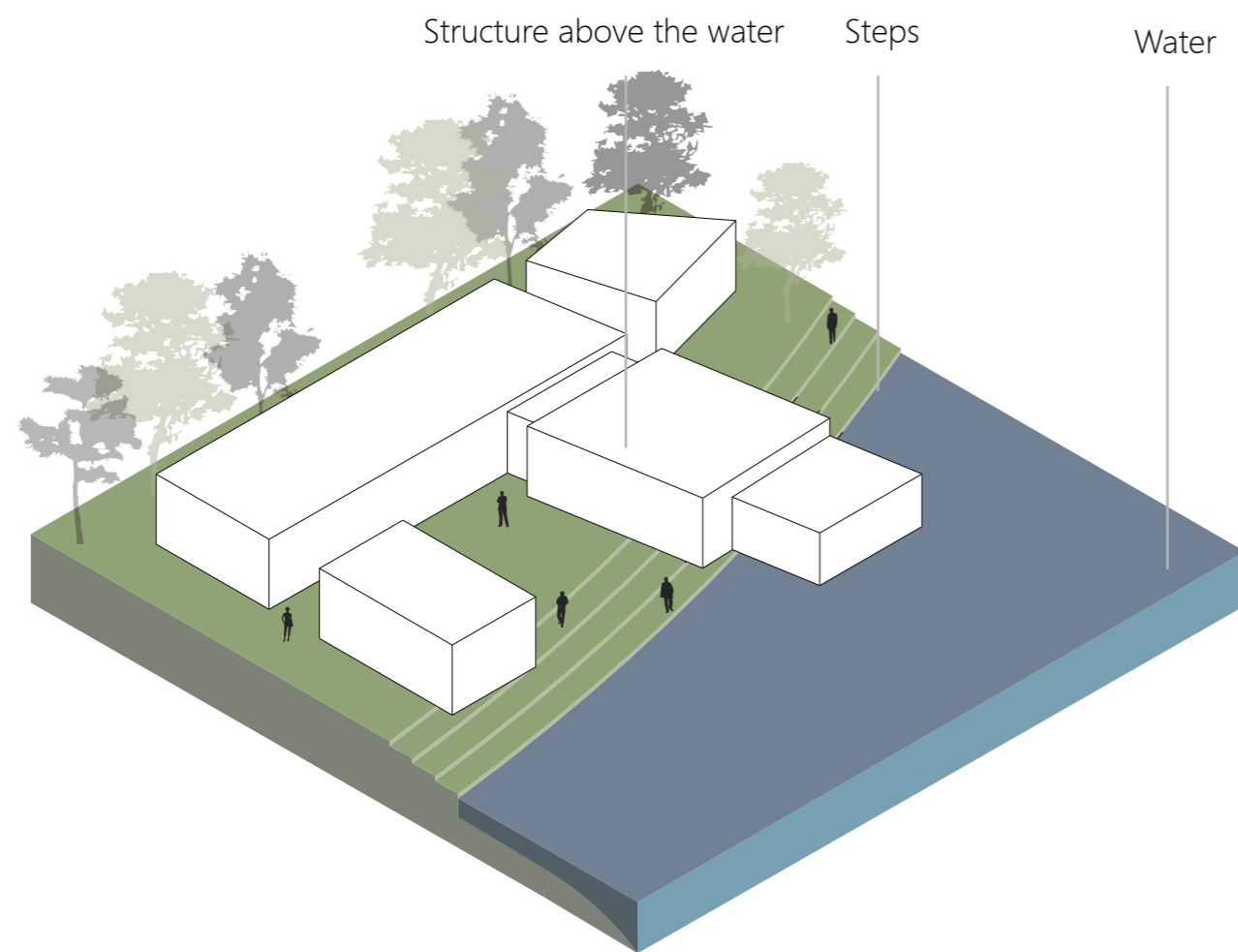


Wetland plants absorb organic pollutants



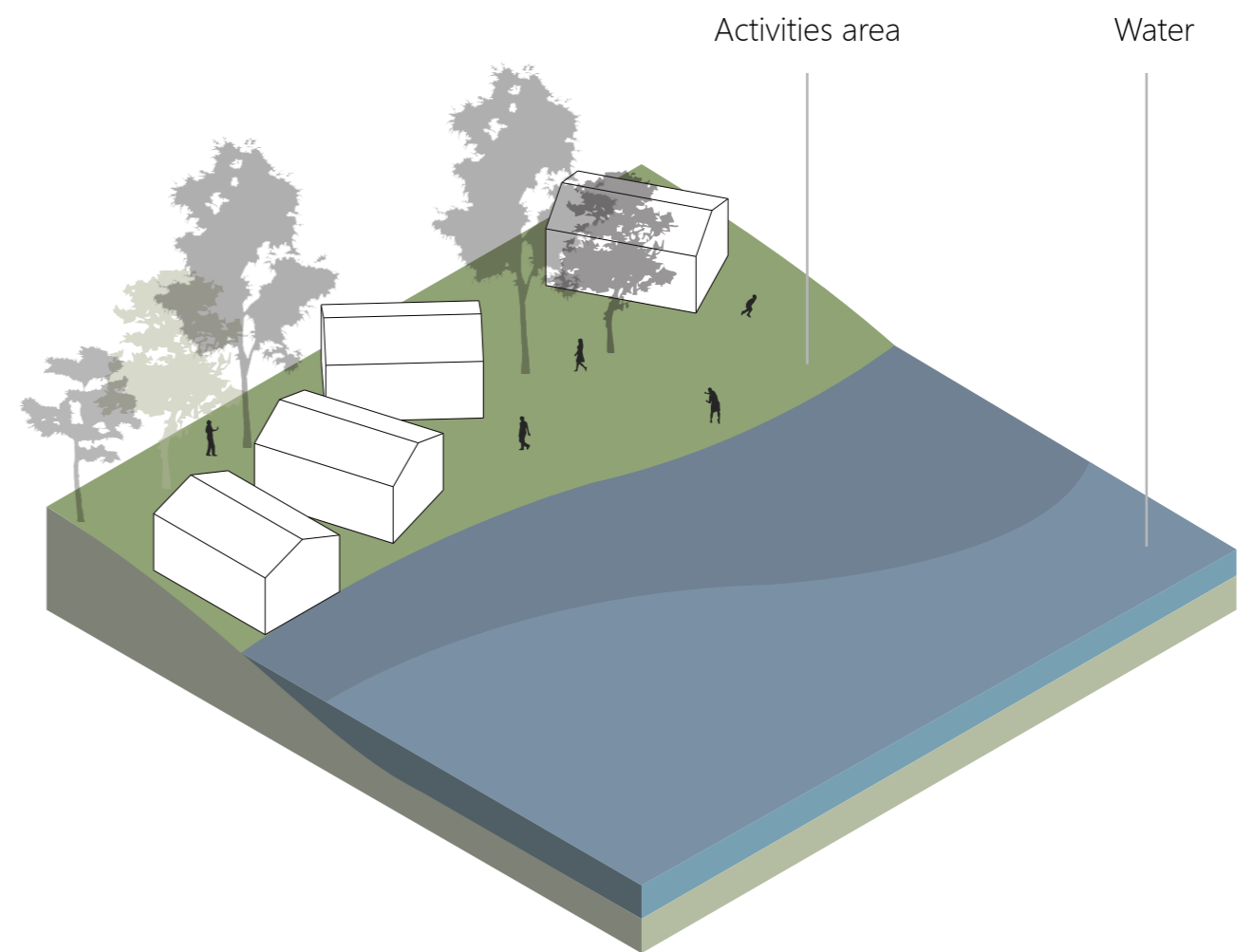
## 1 ARTIFICIAL PLATFORM

The building extends to the water surface. There are steps lead to the water and people can play with water.



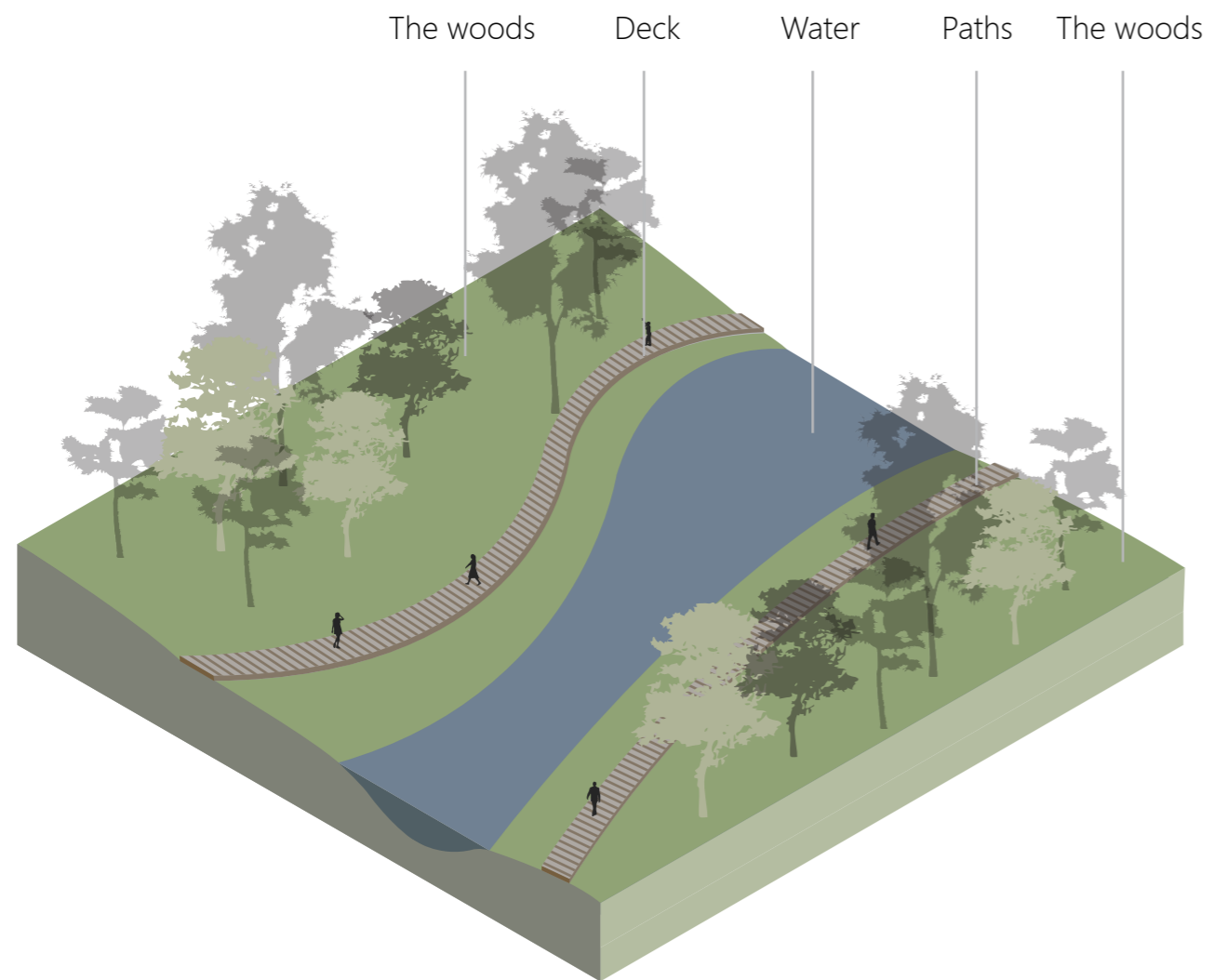
## 2 LIVING AREA

Houses are built near the water and people can live close to the water.



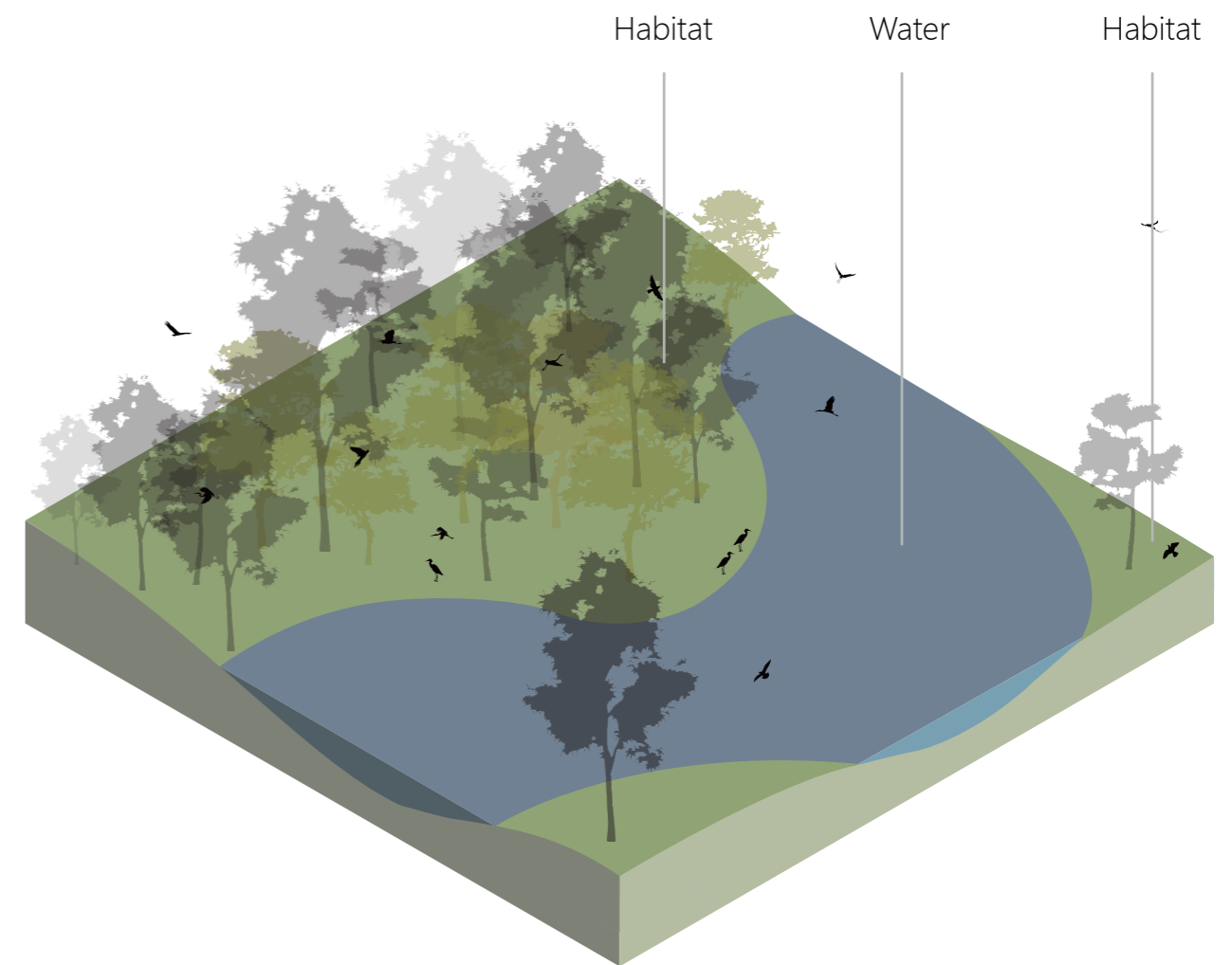
### 3 PATHS IN THE PARK

There are many small paths inside wetland area. People can have activities there.



### 4 HABITAT

People can not access these areas. These spaces are built only for animals, insects and plants.





# AREA LOCATION





# ATTRACTIONS

- Vehicle road
- Bike path
- Pedestrian path



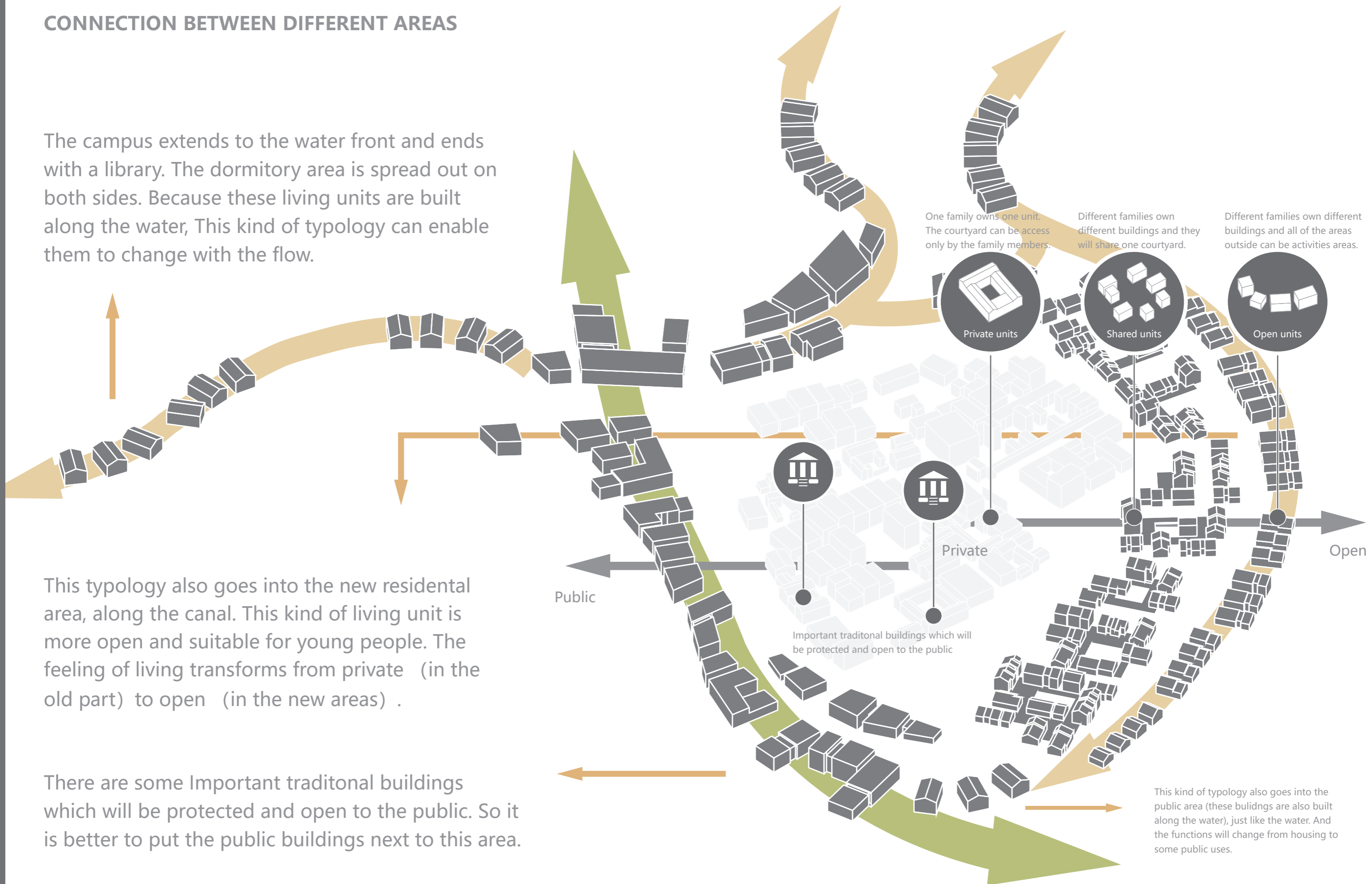


## CONNECTION BETWEEN DIFFERENT AREAS

The campus extends to the water front and ends with a library. The dormitory area is spread out on both sides. Because these living units are built along the water, This kind of typology can enable them to change with the flow.

This typology also goes into the new residential area, along the canal. This kind of living unit is more open and suitable for young people. The feeling of living transforms from private (in the old part) to open (in the new areas) .

There are some Important traditonal buildings which will be protected and open to the public. So it is better to put the public buildings next to this area.



## TRAVELING ROUTE

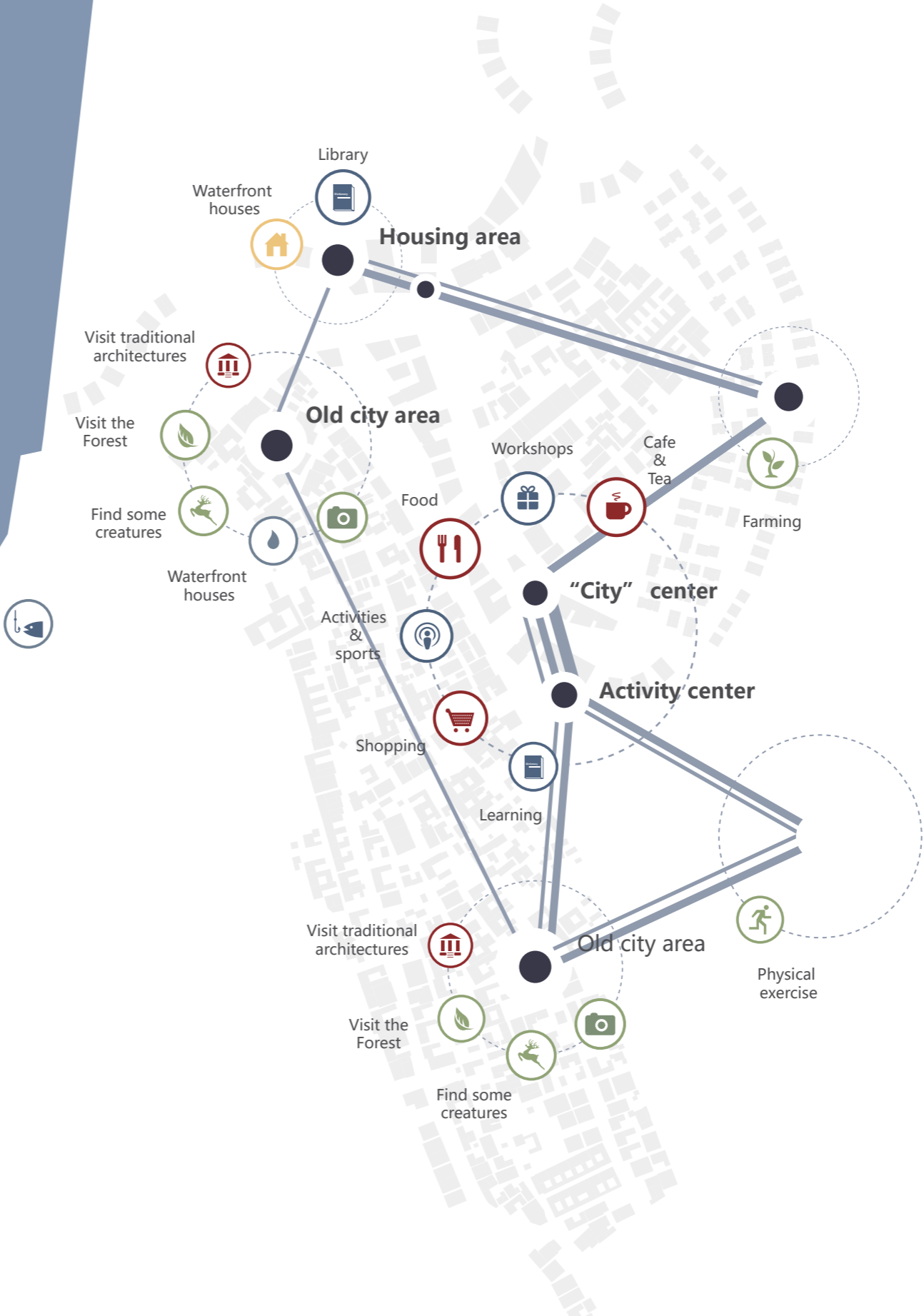
One route links all of the natural resources together. People can visit these spaces in their free time and enjoy a slow pace of life.





# RESIDENTS ROUTE

One route links different parts together and add some functions to meet residents' daily needs. Different from busy city life, people can enjoy a self-sufficiency life here.



## STUDENTS ROUTE

Students who study here live in dormitories just near the water. Students study in some kinds of subjects (such as history, architecture) can do some researches in the old city, and these knowledge can also support the development of this small town.





## VISION



It will be suitable for people from different age group to live.



Residents can live self-sufficient, slow-paced lives.



The small town will grow in a sustainable way.

## SUMMARY

Such Kind of small town which is abandoned by young people appears nearly everywhere in China. How to help these towns continue to develop is an important issue.

It is good to keep some traditional features while developing, but at the same time, things should not be always the same as what they were in the past, because sometimes they can not meet people's needs now. New elements should be added.

It is also important to take care of the natural environment. It usually takes hundreds of years to restore something which has been already destroyed.

Always be sustainable!