



# IFLA ASIA- PAC LA AWARDS

2023

## Award Categories:

Built Projects- Parks and Open space

## Project Title:

Binhaiwan Culture Sports Park, the central Vitality Park  
in Urban New Area, promoting a healthy lifestyle  
Dongguan, China



# **IFLA ASIA-PAC LA AWARDS 2023**

## **Built Projects- Analysis and Master Planning- Parks and Open Space**

### **Project Title:**

**Binhaiwan culture sports park, the central Vitality Park in Urban New Area, promoting a healthy lifestyle  
Dongguan, China**

## **PROJECT STATEMENT**

In 2020, the design of the cultural and sports park project in the Binhai Bay New Area was completed. The project lasted for three years and was finished in 2023. It is a component of the industrial sharing central axis, in new urban area. The area is 12 hectares, surrounded by proposed urban comprehensive development area. The park will become a first area in new urban areas, build a healthy foundation for urban construction.

In the post-pandemic era, health have caused broad attention. Without a healthy environment, the life safety of various organisms will be threatened. Therefore, we propose to build a central park that leads a healthy lifestyle, encouraging people to go to the park. We pay attention to environmental and human health, hope to improve subjective well-being (SWB) and form a unique urban culture, which will also have a positive impact on the economic development of the community. In addition, during the design process of the park, the designer conducted experiments on soil, plants, and foundations, as well as public participation activities. We use evidence-based design create a healthy external environment for individuals or groups .

The design first focuses on environmental health and human health, and healthy environment provides a space to promoting mental and physical health for humanity.



# PROJECT NARRATIVE

**The design first focuses on environmental health and human health, and healthy environment provides a space to promoting mental and physical health for humanity.**

## **Environmental health**

The site is located in the urban reclamation area. In order to carry out construction on soft foundation land, the effects of various soft foundation treatments were analyzed through testing the local soil, and the optimal process of mixing pile soft foundation treatment was selected.

According to the drill hole, the site stratum has a long settlement time, large and uneven settlement, high water content, large void ratio, high compressibility, low permeability, high sensitivity, high thixotropy, high fluidity, shallow burial and other characteristics under the load. Therefore, natural foundations cannot meet the bearing capacity, settlement, and stability requirements of the proposed structure, and appropriate soft foundation treatment must be carried out.

We adopt a more economical, environmentally friendly, and effective preloading method for large green and hardened square areas.

For each building structure, we will independently analyze the load and flexibly use composite foundation to reinforce the soft foundation.

In addition, the saline alkali problem of the site soil requires us to propose scientific methods to create a sustainable ecological environment. After conducting scientific testing of the site soil, the testing data revealed that the main soil problems include: there are many plain fill stones and debris, which are generally alkaline. Some areas have high soil salinity and poor soil clay infiltration performance.

To this end, we propose a combination of physical and biological methods to improve the soil environment:

### **Physical methods include:**

1. Loose topsoil and irrigate the soil to wash away soil salinity;
2. By creating landscape like terrain, the surface is raised to avoid the impact of salt brought by groundwater;
3. By laying concealed pipes underground, the capillary effect of groundwater in the soil can be effectively isolated or greatly reduced, the formation of secondary salt alkali can be cut off, and irrigation water can be effectively diverted to achieve the effect of salt discharge.

### **Biological methods include:**

1. Salt tolerant plants change the soil structure through the expansion of roots, so that the water holding capacity and aeration of the soil are improved;
2. Salt alkali tolerant plants reduce the evaporation of surface water by covering the ground, thereby limiting the accumulation of salt in groundwater on the surface of the soil;
3. Salt tolerant plants can improve the microclimate of saline alkali land by building plant community to improve the surrounding microenvironment.



# PROJECT NARRATIVE

## Human health

In the planning and design process of this project, we adopted a public participation work model, where citizens raised their demands for the environmental quality, activity facilities, and service facilities in the park. We analyze the psychological and physical health of the public from two aspects, and provide reasonable guidance for the construction of community parks in the post epidemic era.

Based on the dual needs of residents for both mental and physical health, we provide them with a full age activity system to enhance their physical health. At the same time, we create more charming social spaces to meet their mental health needs, and achieve the goal of improving residents' quality of life and enhancing community cohesion by creating a beautiful park environment.

To further enhance the sense of gain and happiness, a community full age sports square has been created to meet the leisure and fitness needs of people of different age groups, ensuring the social sustainability of the project. People of different age groups can take walks, ride bicycles, or engage in other recreational activities here to enjoy a healthier life.

In the post pandemic era, the youthful trend of outdoor socializing has become a new way of life, and parks are becoming a new urban social space. The diverse and charming public space provides a good foundation for enriching the spiritual life of residents and strengthening communication between people.

## **After the built of the project, it has brought huge benefits to the area and improved people's subjective well-being.**

Firstly, it is the formation of an open, enterprising, and pioneering local cultural heritage centered around parks. From Guancao compiling technique to sea, it shows the pioneering and sea oriented characteristics of the people of Dongguan from ancient to the present. The completion of the project has attracted widespread attention from residents in surrounding cities. Through cooperation with social groups, the management has undertaken various types of activities, including community sports events, science education salons, etc, which have played a positive role in the economic recovery and cultural education in the post epidemic era.

Secondly, the subjective well-being of people in the region has been improved. Subjective well-being refers to an individual's overall evaluation of their quality of life based on their own standards. The project has developed a happiness scale to measure the happiness of local residents. The survey results show that when engaging in recreational activities in the park, leisure enthusiasts not only meet their recreational needs, but also improve the benefits of various aspects of life, reflecting the positive evaluation of the park environment, facilities, nature, humanities, management, and other aspects by the public. They also experience the enjoyment of leisure activities and the positive emotional benefits of pleasure during the leisure process.



# Background

THE SITE IS LOCATED ON THE URBAN DEVELOPMENT AXIS OF THE BINHAI BAY NEW AREA AND IS A KEY LOCATION FOR FUTURE URBAN DEVELOPMENT. AS URBAN PARKS IN THE POST PANDEMIC ERA, MORE ATTENTION SHOULD BE PAID TO ENVIRONMENTAL HEALTH AND HUMAN HEALTH.

The project is located in the Binhai Bay New Area of Dongguan City, which is located in the "Golden C-spot" of the Guangdong Hong Kong Macao Greater Bay Area, at the top of Lingdingyang Bay. The project is located on the central axis of industrial sharing in the urban new area, with comprehensive development land as the main area around it. The project aims to use the construction of the Central Park as the leading area for the construction of the new area, and build a healthy foundation for urban development.



## Challenge:



### Salinization

The project needs to combat soil salinization. The site is located in the urban reclamation area, where multiple transgressions have led to the emergence of saline water underground. In addition, the ground elevation of this area is 0.52m lower than the the Pearl River base level, which can resist the sea level during astronomical spring tide and the site soil salinization. Building urban parks on saline alkali soil is a major challenge in this project



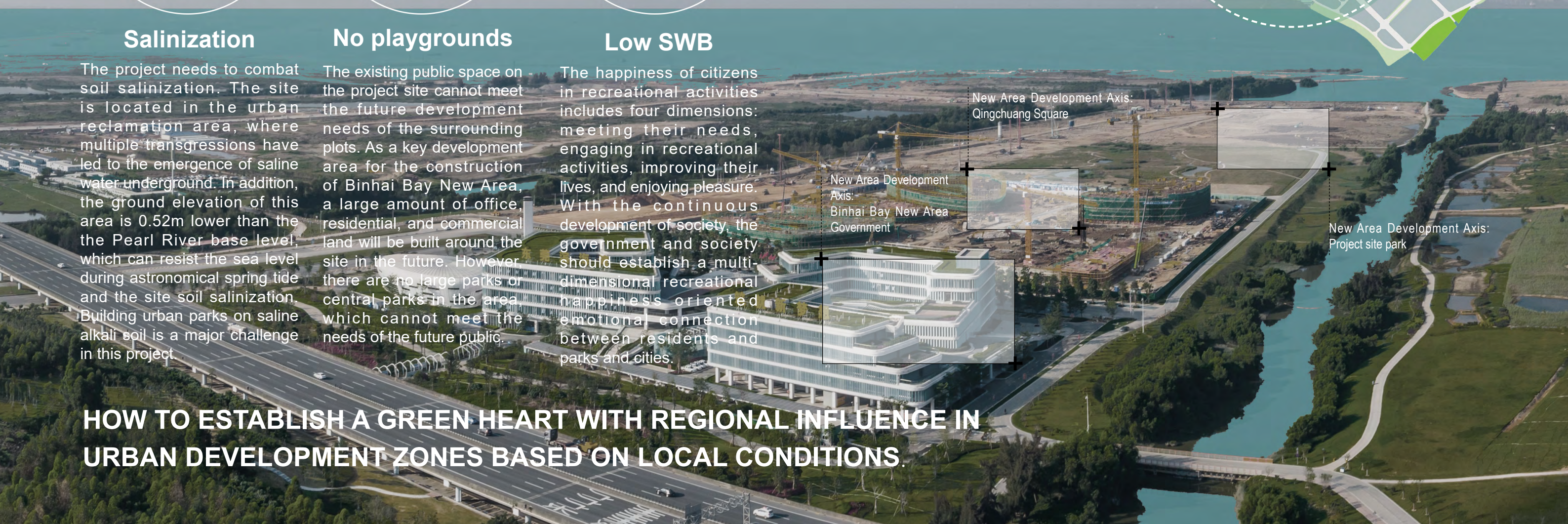
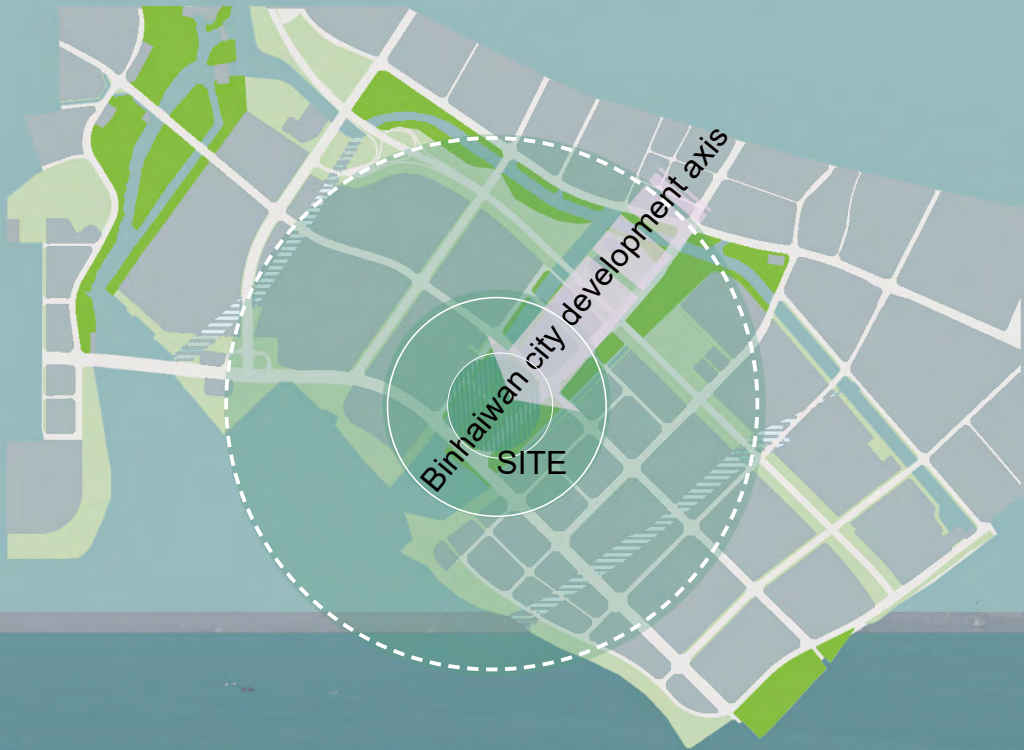
### No playgrounds

The existing public space on the project site cannot meet the future development needs of the surrounding plots. As a key development area for the construction of Binhai Bay New Area, a large amount of office, residential, and commercial land will be built around the site in the future. However there are no large parks or central parks in the area which cannot meet the needs of the future public.



### Low SWB

The happiness of citizens in recreational activities includes four dimensions: meeting their needs, engaging in recreational activities, improving their lives, and enjoying pleasure. With the continuous development of society, the government and society should establish a multi-dimensional recreational happiness oriented emotional connection between residents and parks and cities.



HOW TO ESTABLISH A GREEN HEART WITH REGIONAL INFLUENCE IN URBAN DEVELOPMENT ZONES BASED ON LOCAL CONDITIONS.



# Vision

## BINHAIWAN CULTURE SPORTS PARK, THE CENTRAL VITALITY PARK IN URBAN NEW AREA, PROMOTING A HEALTHY LIFESTYLE! GO PARK! BE HEALTH! BASED ON GREEN SPACE!

THE SITE WILL BUILD A PARK THAT FOCUSES ON HUMAN HEALTH AND ENVIRONMENTAL HEALTH, AND ENHANCES RESIDENTS SUBJECTIVE SATISFACTION



Human health

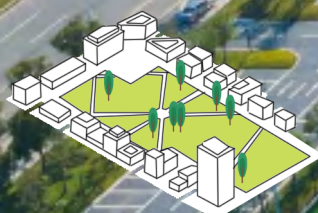
Environmental health

Parks create conditions for individuals to cope with life challenges, improve quality of life, and increase the connection between well-being and nature.

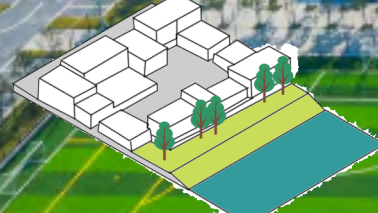
THE PROJECT FULLY ACTIVATES THE SITE AND MAXIMIZES THE VALUE OF THE LAND PARCEL



The contribution rate of neighborhood park to surrounding land prices **5%**



The contribution rate of desyinstion park to surrounding land prices **16%**



The contribution rate of riverfront to surrounding land prices **15%**

The Value of Urban Landscape Resources "Guidelines for Measuring Outdoor Leisure Projects and Parks"

The development of emerging industrial zones requires matching high-quality dynamic landscape spaces to attract investment, attract talent, and enhance land value.



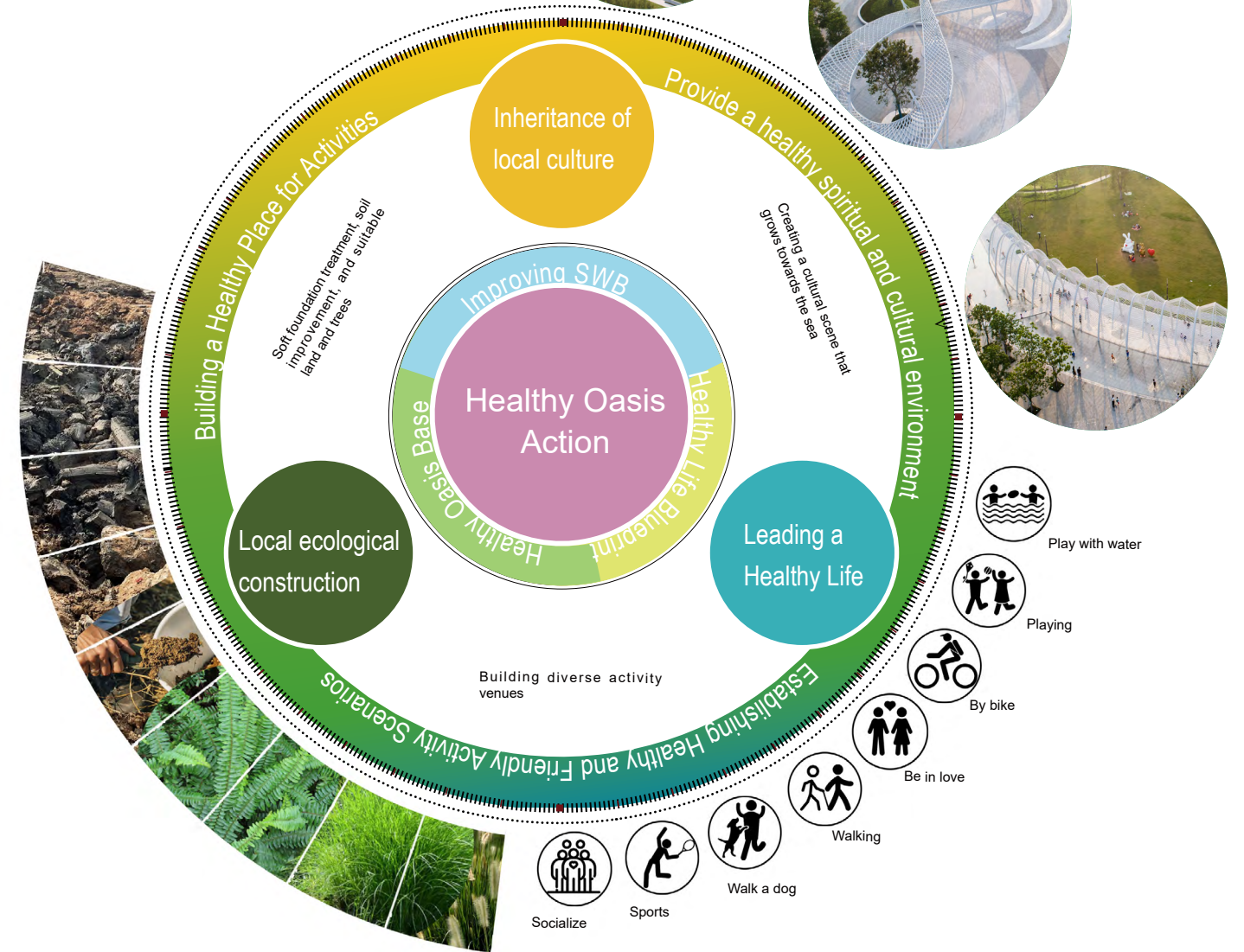


Master Plan



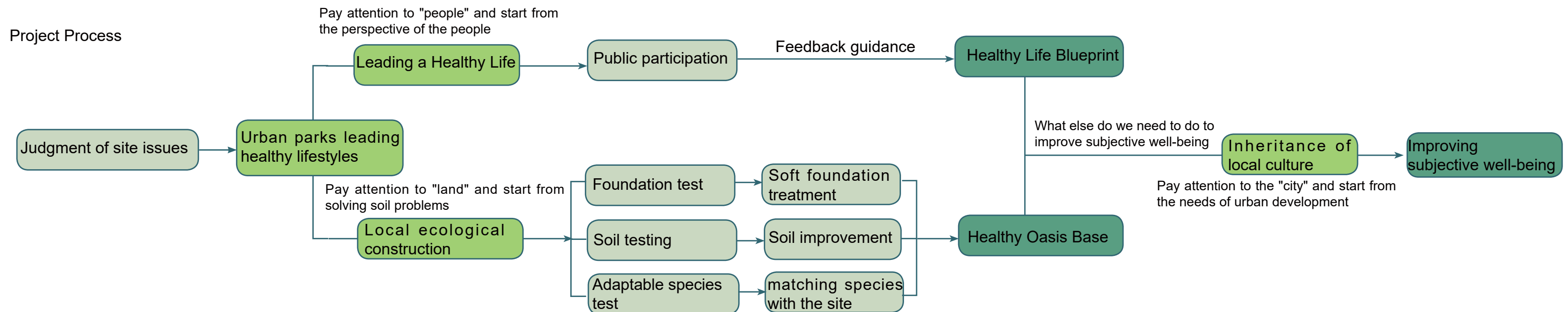


## HEALTHY OASIS ACTION

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graph LR; A[Judgment of site issues] --> B[Urban parks leading healthy lifestyles]; B -- "Pay attention to 'people' and start from the perspective of the people" --> C[Leading a Healthy Life]; B -- "Pay attention to 'land' and start from solving soil problems" --> D[Local ecological construction]; C --> E[Public participation]; E -- "Feedback guidance" --> F[Healthy Life Blueprint]; D --> G[Foundation test]; D --> H[Soil testing]; D --> I[Adaptable species test]; G --> J[Soft foundation treatment]; H --> K[Soil improvement]; I --> L[matching species with the site]; J --> M[Healthy Oasis Base]; K --> M; L --> M; F -- "What else do we need to do to improve subjective well-being" --> N[Inheritance of local culture]; N -- "Pay attention to the 'city' and start from the needs of urban development" --> O[Improving subjective well-being]; M --> P[Healthy Oasis Base];
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The flowchart illustrates the project process for urban parks leading healthy lifestyles. It begins with the 'Judgment of site issues', which leads to 'Urban parks leading healthy lifestyles'. From here, the process branches into two main paths: one focusing on 'people' and the other on 'land'. The 'people' path involves 'Leading a Healthy Life', 'Public participation', and 'Feedback guidance' to create a 'Healthy Life Blueprint'. The 'land' path involves 'Local ecological construction', which includes 'Foundation test', 'Soil testing', and 'Adaptable species test', leading to 'Soft foundation treatment', 'Soil improvement', and 'matching species with the site'. These three sub-paths converge into the 'Healthy Oasis Base'. Additionally, the 'Healthy Life Blueprint' leads to 'Inheritance of local culture', which then leads to 'Improving subjective well-being'.

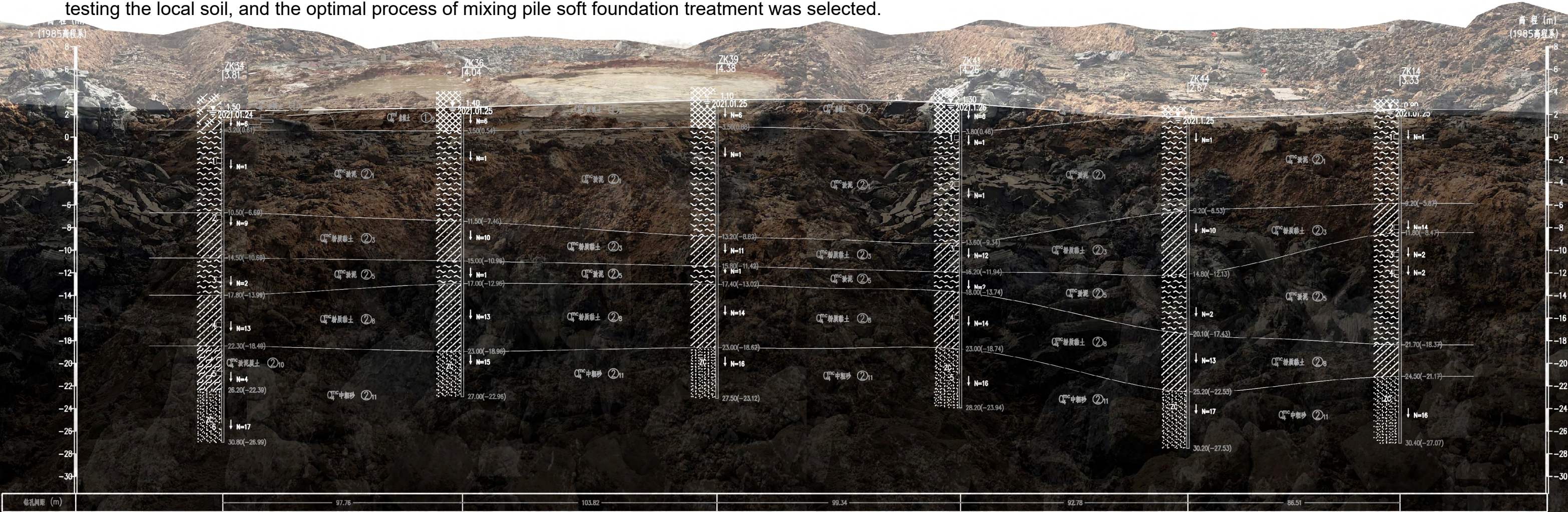




# Step1 Local Ecological Construction

## Foundation testing and soft foundation treatment

The site is located in the urban reclamation area. In order to carry out construction on soft foundation land, the effects of various soft foundation treatments were analyzed through testing the local soil, and the optimal process of mixing pile soft foundation treatment was selected.



According to the borehole, the stratum of the site is mainly plain filled soil, silty clay and medium coarse sand. Under the action of load, the settlement time is long, the settlement amount is large and uneven. The site silt is characterized by high water content, large pore ratio, high compressibility, low permeability, high sensitivity, high thixotropy and rheology, and shallow burial. Therefore, the natural foundation can not meet the requirements of bearing capacity, settlement and stability of the proposed structure, so it must be treated appropriately with soft foundation.

Comparison of common soft base processing techniques

Soft foundation treatment	Work period	Effect	Range of application
Preloading	6 months	Good effect	A large area of deep silt
Vacuum Preloading	6 months	Good effect	Soft foundation with low consolidation and high permeability
Composite Foundation	5 months	Good effect	Normal consolidation of silty soil, plain filled soil, etc
Electroosmotic precipitation	3 months	Uncontrollable	Only suitable for soft foundation with small water content

Soft foundation treatment adapted to the site



We adopt a more economical, environmentally friendly, and effective preloading method for large green and hardened square areas.



For each building structure, we will independently analyze the load and flexibly use composite foundation to reinforce the soft foundation.

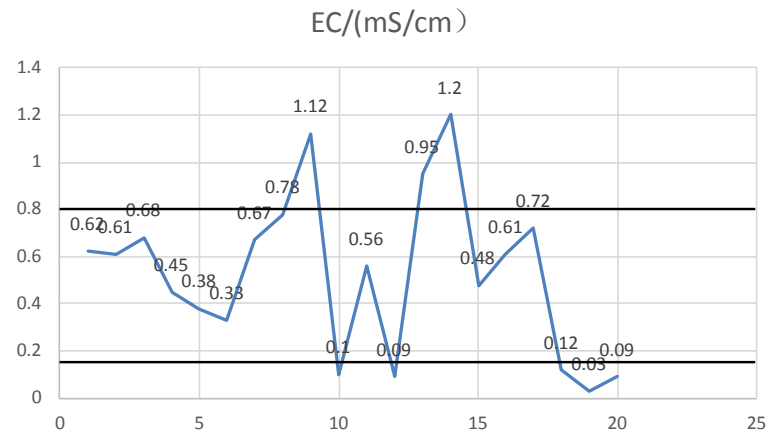


# Step1 Local Ecological Construction

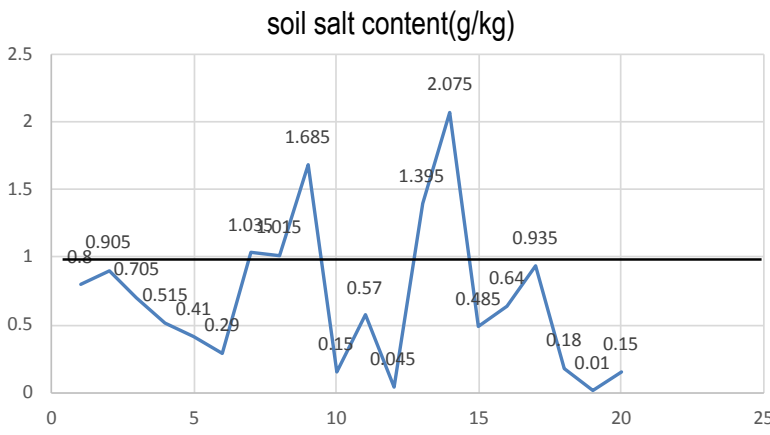
## Soil Testing and Soil Improvement



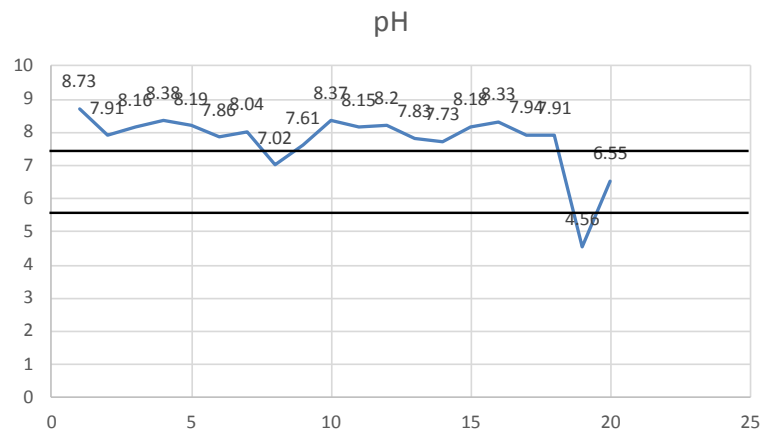
Soil at the site was collected and sampled to test EC value, pH value, salt content and permeability. The results will guide us to better modify the soil to make it more suitable for plant growth.



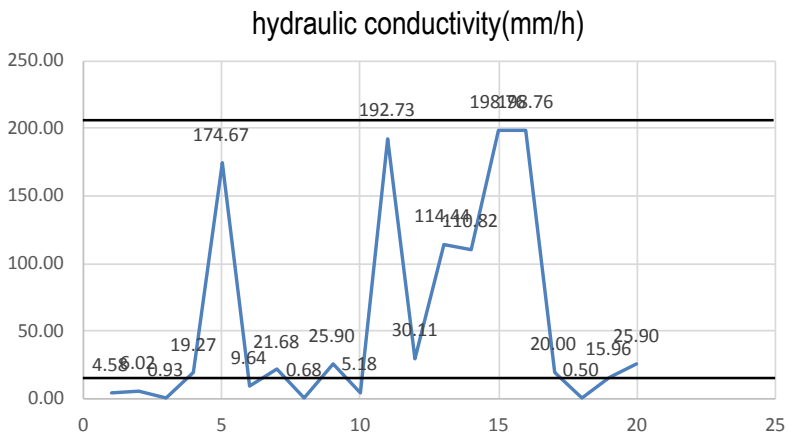
EC value reflects the concentration of soluble ions in the planting medium. High concentration of soluble salts will cause plant damage or root death.



Total salt content of soil refers to the total salt content of soil, including the salt present in soil mineral crystals.

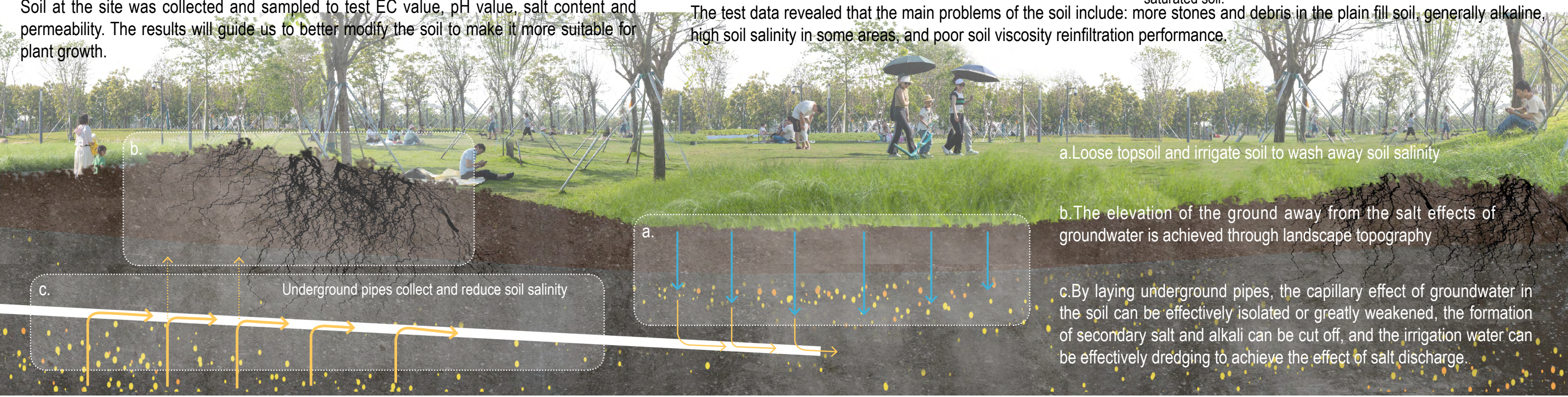


The pH value of soil reflects the strength of acid-base reaction of soil, and the pH value between 6.5 and 7.5 is neutral soil. Below 6.5 is acidic soil; Above 7.5 is alkaline soil.



The velocity of water passing through a unit section perpendicular to the direction of water flow under a unit water pressure gradient in saturated soil.

The test data revealed that the main problems of the soil include: more stones and debris in the plain fill soil, generally alkaline, high soil salinity in some areas, and poor soil viscosity reinfiltration performance.



a. Loose topsoil and irrigate soil to wash away soil salinity

b. The elevation of the ground away from the salt effects of groundwater is achieved through landscape topography

c. By laying underground pipes, the capillary effect of groundwater in the soil can be effectively isolated or greatly weakened, the formation of secondary salt and alkali can be cut off, and the irrigation water can be effectively dredging to achieve the effect of salt discharge.



# Step1 Local Ecological Construction

## Matching species with the site



*Terminalia neotaliala*



*Ficus virens* var. *sub lanceolata*  
(Mip.) Corner



*Bischofia javanica* Blume



*Phoenix sylvestris* Roxb.



*Nephrolepis cordifolia* (L.) C. Presl



*Triadica sebifera* (Linnaeus) Small



*Pennisetum alopecuroides* (L.) Spreng.)



*Miscanthus sinensis* 'Gracillimus'



*Wodyetia bifurcata* A.K.Irvine

1. Saline-tolerant plants change soil structure through root expansion, which improves soil water holding and aeration;
2. Saline-tolerant plants reduce the evaporation of surface water by covering the ground, thus limiting the accumulation of salt in groundwater in the soil surface;
3. Saline-alkali tolerant plants can improve the microclimate of saline-alkali land by building plant communities to improve the surrounding microenvironment.



Biological treatment is the most stable and environmentally friendly way to control saline-alkali land, and is beneficial to soil and water conservation and ecological balance. In this way, we can restore the original ecologically fragile site.

▲ before  
▶ after



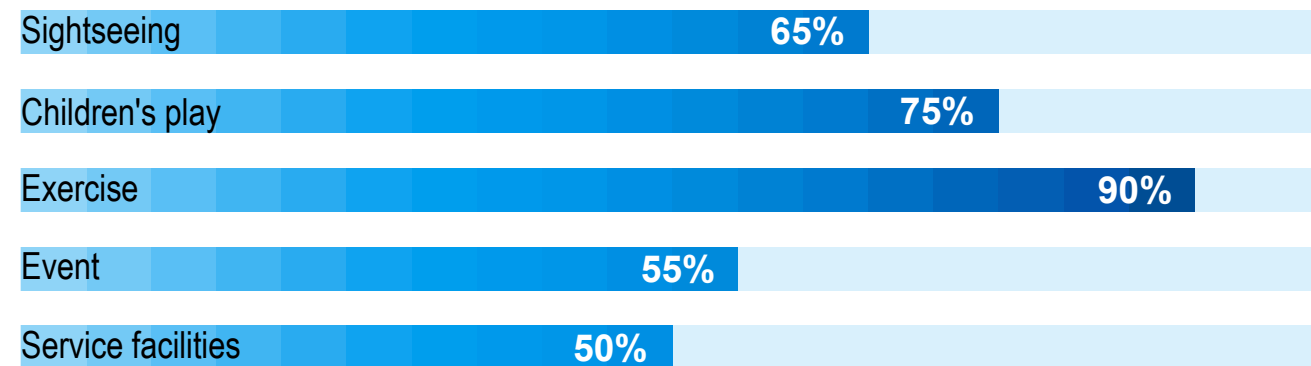


# Step 2 Leading a Healthy Life

## Focus on public health and involve the public in design

In the planning and design process of this project, we adopted a public participation work model, where citizens raised their demands for the environmental quality, activity facilities, and service facilities in the park. We analyze the psychological and physical health of the public from two aspects, and provide reasonable guidance for the construction of community parks in the post epidemic era.

### WHAT THEY WANT?



#### Sightseeing

Enjoy the flowers, see the sunrise, see the sunset, see the sea, see the city buildings, see the night scenery, enjoy the fallen leaves

#### Children's play

Water play, children's park, sand play, ecological education, kite flying, grass skiing, painting

#### Exercise

Jogging, tennis, badminton, football, table tennis, basketball, outdoor fitness, yoga, Frisbee, dance, Tai Chi, aerobics

#### Event

Music Festival, science saloon, volunteer activities, theme flower show, bird watching, nature education, urban photography exhibition, Spring Festival flower Market

#### Service facilities

Catering, outdoor market, playground, carnival, children's activity facilities, gym, badminton hall

PHYSICAL  
HEALTH

MENTAL  
HEALTH

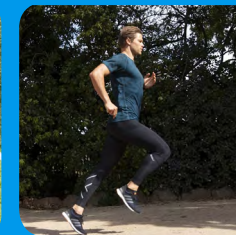


### WHAT CAN WE OFFER?

Based on the dual needs of residents for both mental and physical health, we provide them with a full age activity system to enhance their physical health. At the same time, we create more charming social spaces to meet their mental health needs, and achieve the goal of improving residents, quality of life and enhancing community cohesion by creating a beautiful park environment.

### FULL AGE ACTIVITY SYSTEM

To further enhance the sense of gain and happiness, a community full age sports square has been created to meet the leisure and fitness needs of people of different age groups, ensuring the social sustainability of the project. People of different age groups can take walks, ride bicycles, or engage in other recreational activities here to enjoy a healthier life.



### CHARMING SOCIAL PLACES

In the post pandemic era, the youthful trend of outdoor socializing has become a new way of life, and parks are becoming a new urban social space. The diverse and charming public space provides a good foundation for enriching the spiritual life of residents and strengthening communication between people.





## Step 2 Leading a Healthy Life

Focus on public health and involve the public in design



**Amphitheater**  
Shared stage

**Tennis court**

**Meadow**

**Children's park**  
Outdoor play equipment

**Sports club**  
Indoor fitness

**Service station**  
Shared library

**Sports field**  
All-age fitness

**Land art**  
Children's playground

**Football field**

**Running track**  
Total length 1.2kilometre

**Basketball court**



## Step 2 Leading a Healthy Life

All age activity system





## Step 2 Leading a Healthy Life

All age activity system





## Step 2 Leading a Healthy Life

Charming social places





## Step 2 Leading a Healthy Life

### Charming social places





# Construction Benefits

The spirit of city



The open urban space showcases the spirit of Dongguan which is open, enterprising, and daring to take the lead.



# Construction Benefits

## Local cultural inheritance



Guan Cao, is a native waterfront plant, Dongguan city named after it. Before the industrial age, local people would use it to weave into various daily necessities, but with the development of The Times, this traditional craft gradually disappeared. We learn weaving skills from local people and commemorate this story of harmony between man and nature with landmarks.



# Construction Benefits

Local cultural inheritance



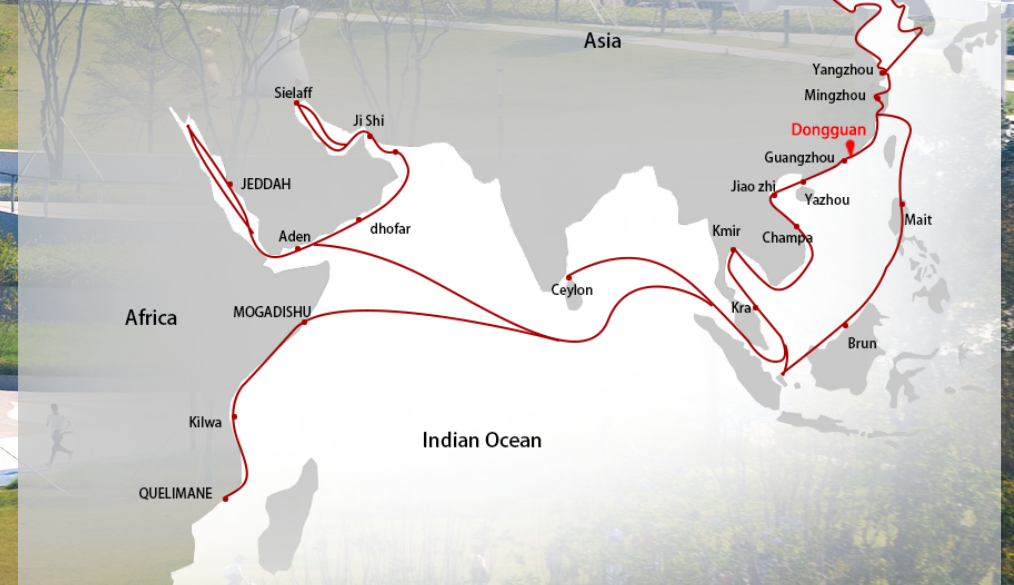


# Construction Benefits

## Local cultural inheritance



Ancient Maritime Silk Road



The flame of civilization has illuminated the road ahead for Dongguan. Here, the the Pearl River estuary is guarded. On the full map of the "Maritime Silk Road", Dongguan is shrunk to a point. This indispensable point is the starting point of Dongguan people's outward exploration and open and inclusive personality, the endpoint of countless merchant ships, and the hometown of countless merchants. The open water play space in the park evokes our emotional resonance.



# Construction Benefits

## Local cultural inheritance



A deck stands bravely at the tide, facing the landscape of the sea.

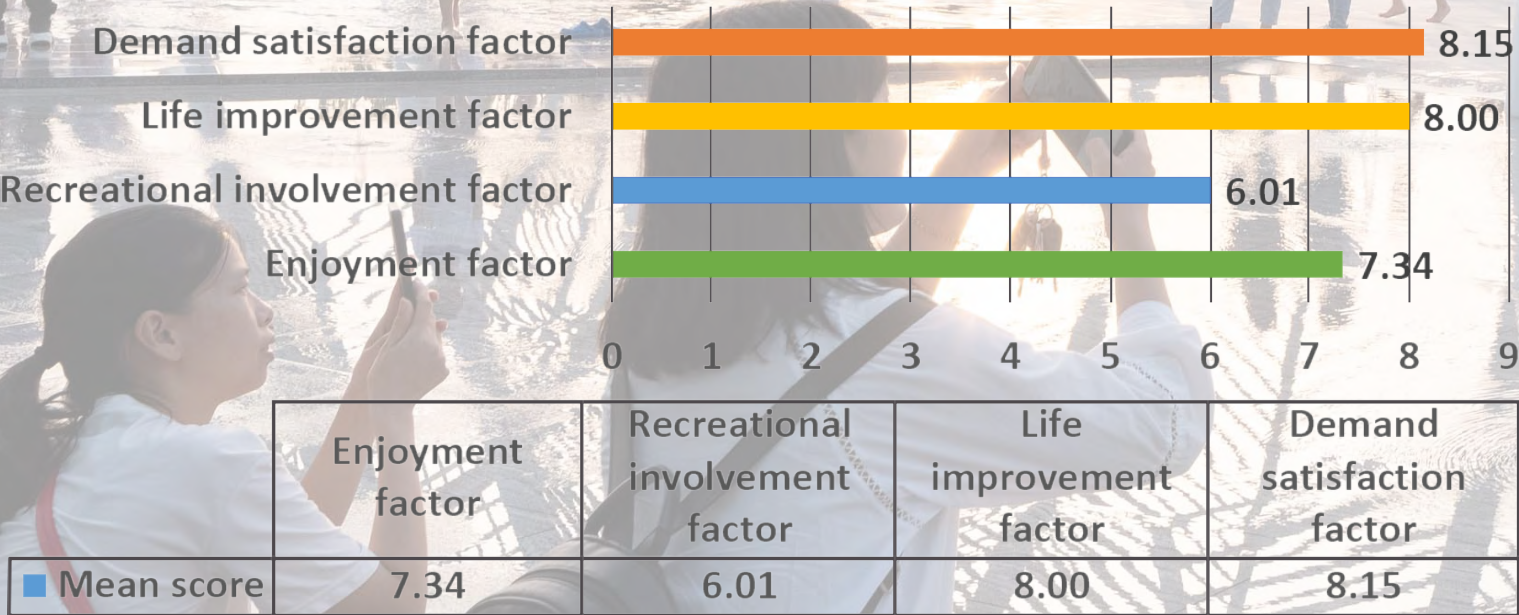


# Construction Benefits

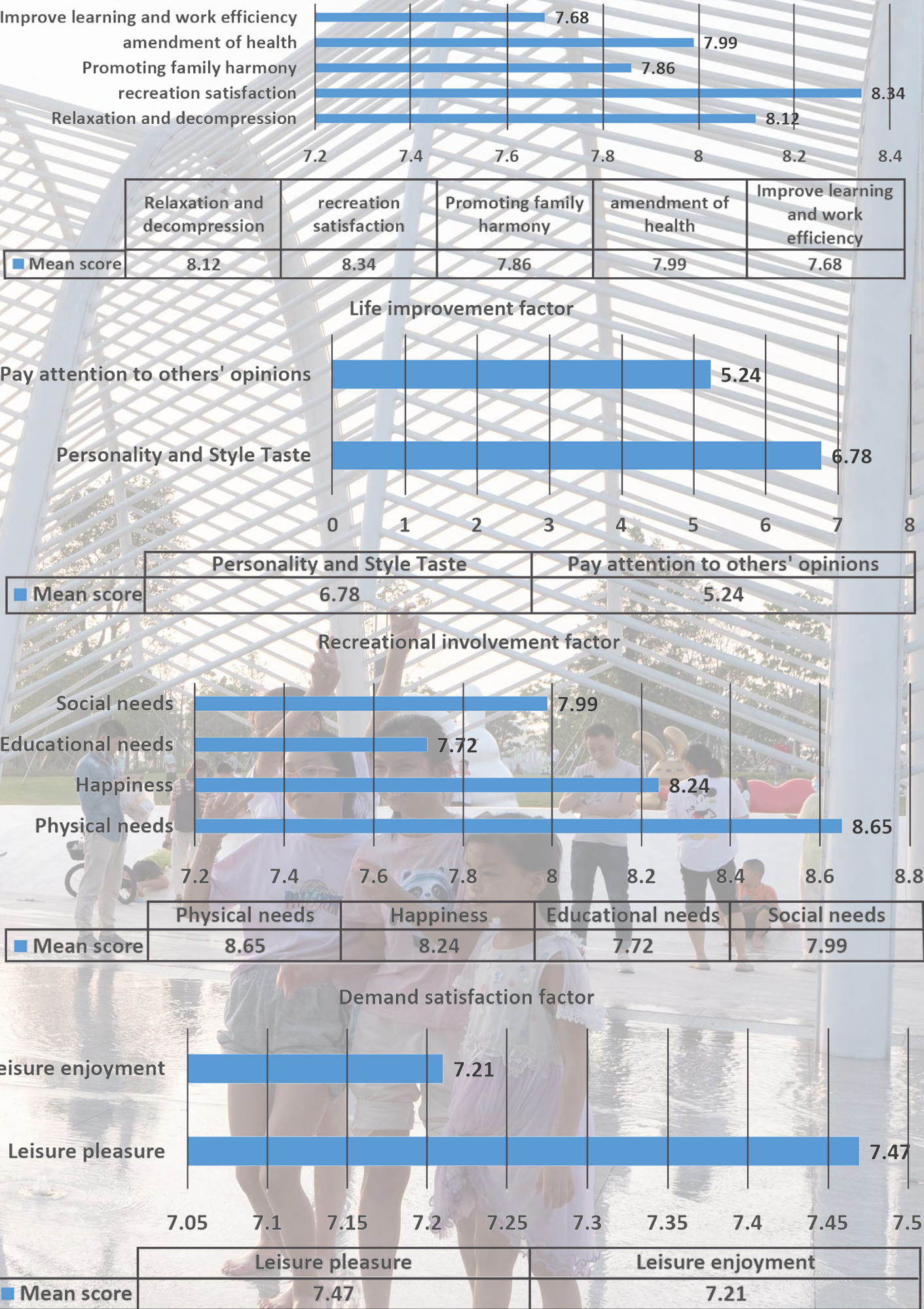
## Public happiness and satisfaction

The recreation well-being scale in this paper uses the 11 point Likert scale to score, and requires respondents to evaluate their attitudes in the range of 0 to 10. 0 means "completely disagree", and 10 means "completely agree". A questionnaire was distributed at the main exit of the park and required to be filled out on-site to obtain the exact feelings of visitors who completed their leisure activities in real time. A total of 600 questionnaires were distributed, with a recovery rate of 100% and a valid questionnaire of 532, with an effective rate of 88.7%. This article uses factor analysis to analyze the composition of recreational happiness, reducing multiple variables and calculating the correlation between indicators and main components.

According to the evaluation of various dimensions of recreational happiness, the overall evaluation average of park recreational happiness is 7.37, and the evaluation average of the four common factors is greater than 5, of which three are greater than 7. This indicates that recreational users have a good rating of the park and people feel a higher sense of happiness in leisure activities. The highest score for the requirement satisfaction dimension among the four dimensions of common factors is 8.15; Next is the dimension of life improvement, with an evaluation score close to the demand satisfaction factor, which is 8.00; Subsequently, the dimension of enjoyment was 7.34; Finally, dimension 6.01 is involved in recreational activities. It can be seen that when engaging in recreational activities in the park, leisure enthusiasts not only meet their recreational needs, but also improve the benefits of various aspects of life, reflecting the positive evaluation of the park environment, facilities, nature, humanities, management, and other aspects by the public. They also experience the enjoyment of leisure activities and the positive emotional benefits of pleasure during the recreational process.



Evaluation of various dimensions of happiness



Enjoyment factor



# Construction Benefits

## Public happiness and satisfaction



The project has attracted people from within the area. Although the surrounding land area of the project is under construction, the park is still overcrowded. It is believed that in the future, the surrounding urban area will be more influential after completion.

After the completion of the park, it carried many cultural activities and triggered the night economy. The government organized a cultural week to enrich the cultural life of citizens and promote the healthy development of society.

The completion of this project is a preliminary demonstration of the style of Binhai Bay New Area and an important measure to build a green shared space. It will become a small window for people to observe Binhai Bay New Area, give people confidence, and play a positive role in the later construction and development of Binhai Bay.