VITALITY REGENERATION BY NEW-LUAN RIVER

LANDSCAPE DESIGN OF THE BEIHE PARK IN LUANNAN COUNTY, TANGSHAN, HEBEI, CHINA

Project Statement

Situated between the old and new urban areas of Luannan County, Tangshan City, Hebei Province, China, Beihe Park is not only a fabulous scenic spot that boasts the widest water surface in the basin of the New-Luan River, the only river around Luannan County, but also serve as a crucial focal point of the development axis of the old and new urban areas, which together form the overall concept of the parks landscape design. In terms of specific design, the blue-green ecological belt contributes to the ecosystem service efficiency of the park and provides sustainable ecological health and welfare for residents. The waterfront greenway system, designed with comprehensive connection structure and a partial circulation scheme enables easy access to the waterfront zone on foot and enjoy a diverse and uninterrupted waterfront walking experience. What's more, the civic square functions as a platform for large-scale urban events while displaying history and culture and reinforcing the public's cultural memory. The open space on both sides of the river is the scenery of the opposite bank and acts as a visual interaction and spatial connection between the old and new urban areas. In 2011, Beihe Park was bestowed the famous honor of "Eight Sights of Tangshan" by the public. Up to now, Beihe Park stands as a protected area of regional biodiversity resources and a highly dynamic urban open space center. It shows the amalgamation of new urban development and blue-green ecological structure.

Project Narrative

1. Background: The Intersection of Regional Blue-Green Ecological Network Framework and Urban Development Axis

Luannan, a county town in Tangshan City, Hebei Province, China, enjoys a superior geographical location, climate environment, and scenic resources. It is 35km away from Luanzhou Ancient City, which has a history of over 3,000 years in the Bohai Rim region, and 45km from Bohai Bay, the largest bay in northern China. The New-Luan River, the largest river, runs through Luannan County. However, for a long time, farmland has been the main land cover on both sides of the river. The absence of green space, such as wetlands and near-natural forest zones that can play an ecological buffering and filtering role has negatively impacted the water quality and biodiversity of the river. At the same time, the lack of waterfront walking and cycling facilities also limited local residents' access to the waterfront environment.

Fortunately, in 2008, the development of Beihe new urban area in Luannan County solved these issues. The old and new urban areas face each other across the river. Beihe Park, with a total area of 0.883km², is built on the 2.6km long, 0.418km² water surface of the new Luanhe River. The establishment of Beihe Park not only revitalizes both sides of the New-Luan River but also rises to a scenic belt connecting the new and old urban areas and integrating the entire urban spatial structure. Its significance lies not only in an increasingly comprehensive park but also in the ever-improving blue-green ecological network, the enrichment of urban open space, and the extension of the urban axis. Today, we will review the design scheme of Beihe Park and present our design ideas based on the results of the on-ground construction.

2. Vision and Strategy: Blue-Green Ecological Belt, Waterfront Greenway & Unique Open Space System between New and Old Urban District

Our vision for Beihe Park is to add a wider roles from a waterfront ecological landscape to the focal point of the ecological landscape and urban open space center for the entire region. To achieve this, we have developed three strategies based on a thorough evaluation and comparison of the current site conditions and design requirements. First, construct an ecological zone with a blue-green composite structure. Integrate rivers, wetlands, waterfront forests, and lawns into a blue-green ecological landscape with a higher level of ecosystem services; second, optimize the waterfront greenway service facilities system. Establish a coherent walking path network, strengthen the connection between the east-west path of the park, and connect it with the city's walking and cycling traffic network to create a unified part from both inside and outside; Finally, construct an open space with local cultural characteristics. We aim to preserve the memories of Luanzhou Ancient City and historical celebrities while enhancing the park's functionality and diversity of public activities and bringing more possibilities to the whole city.

3. Landscape System Design of Beihe Park

(1) Blue-Green Ecological Belt: Improving Ecosystem Service Efficiency

With improving ecosystem service function as the major guidance, the following blue-green ecological belt planning strategies are proposed: (i) Enhance biodiversity on land and water. The original ecological resources of the site, such as ecological islands and wetlands, have been preserved to the maximum extent. Most of the areas are off-limits to visitors. The number and variety of plant species and planting levels along the river banks have been increased to provide more diverse and complex habitats for birds, fish, amphibians, and other animals; (ii) enhance the water purification function of wetlands. Two water purification zones of 5.6km long and 0.05km² on both sides of the river will reduce the threat of urban surface pollution and are mainly composed of wetlands and sunken green areas through a combination of plants and soil to achieve high efficient water purification. At the same time, the combination can also play the role of "storage and stagnation" for rainwater, which can minimize the impact of urban flooding on the safety of both sides of the river; (iii) clean the air and reduce the noise pollution. The arbor coverage rate of the park is up to 80.05%. This increase will not only provide a quiet environment for residents but also store a large amount of carbon for the city, minimizing the impact of carbon emissions brought by urban production and living activities.

(2) Waterfront Greenway System: Overall Connection and Partial Circulation

The following are the proposed design strategies for the waterfront greenway system: (i)a 4.95km walkway connects 18 waterfront landscape nodes on both sides of the river. Along the way, 6 wooden structure platforms with excellent views are constructed to offer a continuous and rich viewing experience; (ii)16 greenway service stations are evenly distributed along the waterfront greenway route, providing a variety of services such as nature education, catering and charging; (iii) in the wide land area on both sides of the river are narrow greenway networks inside the functional areas, such as the natural sports area (37,200m²), the historical and cultural exhibition area (52,360m²), the near-natural forest area (37,520m²) and the wetland landscape area (26,650m²). These areas intersect with the main route of the waterfront greenway, forming a greenway network structure of overall connection and partial circulation; (iv)entrances and exits are strategically set in the direction of the crowd gathering places such as city intersections and commercial centers, making it easy for residents to walk into the waterfront zone.

(3) Urban Open Space: The Focal Point of the City and Civic Center

Beihe Park, situated at the intersection of the principal axis of urban development and the regional blue-green ecological network, represents an open spatial system accessible to the entire region. The park's design features numerous small event spaces adjacent to city streets for the temporary use of pedestrians. The city axis features the largest municipal event square, an extension of the city government on its northern side for hosting large-scale events and holiday activities. In addition, this square, in the line of sight, also interacts with the old urban area and serves as a focal point and center of civic activity between the old and new urban areas. Several activity squares on both sides of Beihe Park face each other across the river and create a mutually enhancing landscape. In the detailed design of the square, 16 stone landscape columns towering 12 meters, stand on both sides of the municipal square, adorned with cultural patterns showing information about Luanzhou Ancient City. The same design is evident in the eight stone relief walls. In addition, celebrities in local drama history such as Yang Sanjie and Cheng Zhaocai are also immortalized in the open space in the form of sculptures so that the public can remember local history and culture.

4. Conclusion

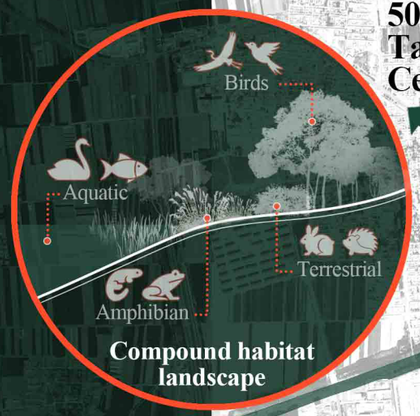
Beihe Park acts as a pivotal connection between the old and new urban areas of Luannan County. It has improved in a more sustainable form the regional ecosystem services and the urban residents' welfare. Despite its function of urban large-scale civic events, it achieves a harmonious transition from an urban public activity center to a more natural waterfront environment. At the same time, the impact of Beihe Park extends beyond its immediate surroundings, as more and more residents and visitors flock to the area and a growing number of aquatic, terrestrial, and bird species find a home here. Moreover, it has become a site for creating urban and public memories. In conclusion, Beihe Park is a comprehensive park with a composite design concept that integrates the blue-green ecological belt, waterfront greenway, and urban open space. It serves as a practical reference for the development of new urban areas and river landscape construction in the world.

VITALITY REGENERATION BY NEW-LUAN RIVER

Landscape Design of Beihe Park in Luannan County, Tangshan

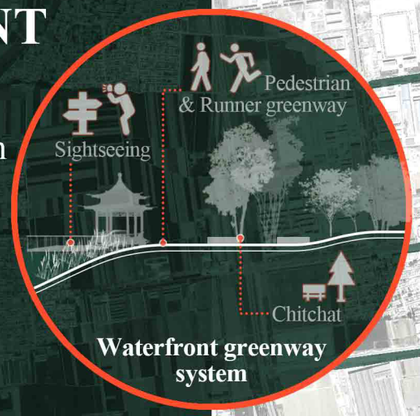
ECOSYSTEM SERVICE

- Biodiversity enhancement
- Water purification



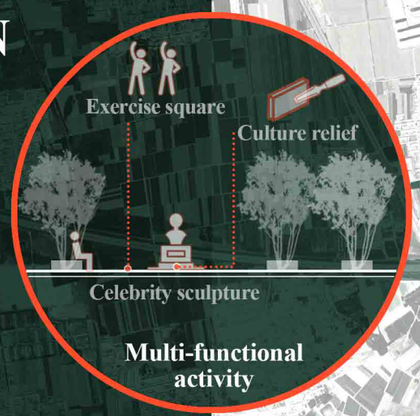
WATERFRONT GREENWAY

- Waterfront pedestrian system
- Water-theme scenic spots



URBAN OPEN SPACE

- Cultural exhibition
- Event landscape
- Public fitness square



The core of regional blue-green ecological network

The focal point of the urban development axis

New urban district

Old urban district

New-Luan River

China

Hebei Province

35km to Luanzhou ancient city

Tangshan City

Luannan County

Urban Axis

50km to Tangshan Central City

New-Luan River

Artificial pond

New Urban District

County Governance

North-river Park

0.883km²

Forest garden

45km to Bohai Bay

Old Urban District

Community Park

Jing Park

Forest-garden

Boxingyuan Park

Jingan Park

Wisdom-Sports Park

Forest-garden

Luannan Rainway Station

Luocheng Park

Urban Axis

Artificial pond

N

0 1.0 2.0km

North-River Park
Green open space
Service scope
Urban river
Traffic corridor

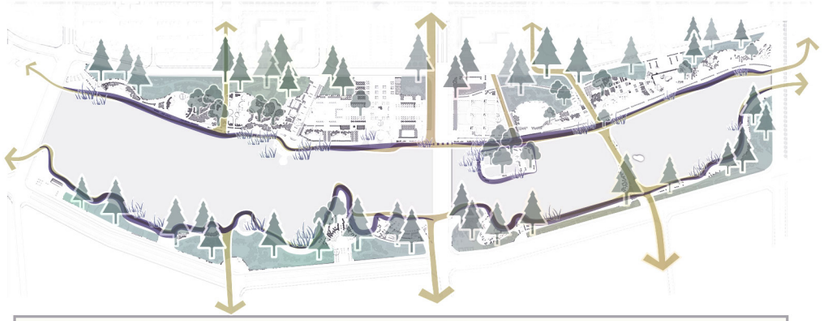
Beihe Park is located at the intersection of the New-Luan River and the axis of urban development. It serves as a vital ecological landscape belt that integrates the health of the regional ecosystem and the multifunctional living of urban residents.

0.88 km² Multi-Functional Park **0.43 km² Approx-Natural Forest**

4.87 km Waterfront Pedestian Greenway **18 Landscape Scenic Spots**

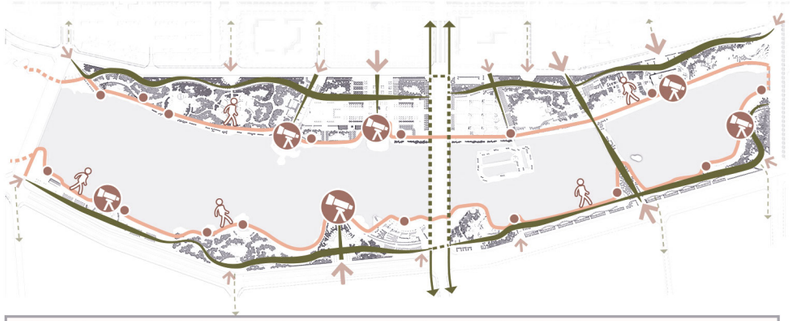
MASTER PLAN

CREATING A MORE ECOLOGICAL AND VIBRANT URBAN PARK WITH NEW-LUAN RIVER



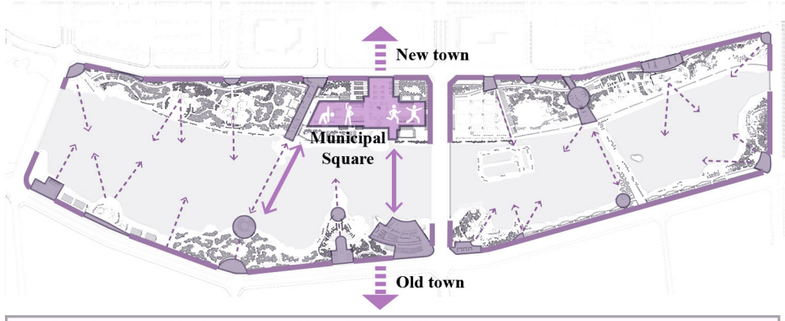
ECOSYSTEM SERVICE

- **0.43** km² Approx-Natural Forest
- **0.05** km² Wetland for Water Purification
- **5.01** km Ecological Revetment Belt
- Regional Ecological Network



WATERFRONT GREENWAY

- **6** Main Viewpoint
- **16** Greenway Service Station
- **4.87** km Water-Theme Walkway
- **4.50** Main Park Road



URBAN OPEN SPACE

- **52 360** m² Municipal square
- **70 870** m² Street open space
- Urban Axis (from old town and new town)
- Main view landscape

Covering a land area of 0.465km² and a water area of 0.418km², Beihe Park will make sustainable contributions in three key aspects.

ECOSYSTEM SERVICE

ECOLOGICAL
FLOATING ISLAND

SLOPE BOUNDARY

WETLAND

With the preservation of existing native ecological islands and wetlands, Beihe Park has become an important protected area for regional biodiversity resources, playing an important role in water purification and climate regulation.

ECOSYSTEM SERVICE

1

Arbor forest
Native mixed coniferous and broad-leaved forest

2

Bushes along the shoreline
Perennial herbaceous plants

3

Water purification zone
Emergent plants & floating plants

4

Water zone
Submerged plants

WATERLINE

The native arbor forest can provide a food source for birds, and the scrub layer and herbs can create a sheltered space for small mammals. Several species of aquatic plants at different depths work with animals to create underwater habitats.

ECOSYSTEM SERVICE

Waterfront pedestrian system is elevated so that municipal pipes and naturally collected rainwater can enter the park waters directly through the bottom level. The emergent plants alongside the wooden stacks play a purifying role.

WATERFRONT GREENWAY

WATERFRONT SQUARE

WATERFRONT PEDESTRIAN ROUTES

WATERFRONT PEDESTRIAN ROUTES

Visitors can enjoy waterfront scenery through a 2.6-km walk on each side of the river, where wooden platforms, squares, and traditional Chinese landscape pavilions are set at key nodes along the walkway route to offer breathtaking views.

WATERFRONT GREENWAY

1

A landscape pavilion in tranditional Chinese style becomes the visual focus of the river

BEIHE PAVILION

3

Opposite scenery was formed by the two sides landscape of the New-Luan River

2

A series of platforms constructed from local plant materials provide walkers with a close-up view of wetland

Waterfront squares on both sides of the river form stunning views of each other. These squares not only offer great viewing conditions but also serve as beautiful scenic elements to those on the opposite side.

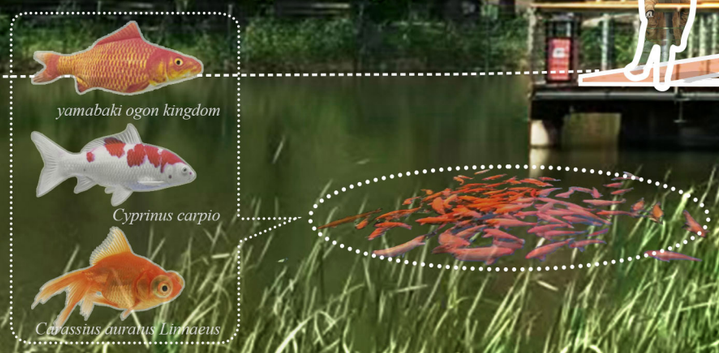
WATERFRONT GREENWAY

1

The wooden walkway creates a path link between the island in the water and the land

3

Fish can freely shuttle under the wooden trestle, or get food from the hands of tourists



2

Aquatic plants such as reeds are planted under and on both sides of the wooden plank road

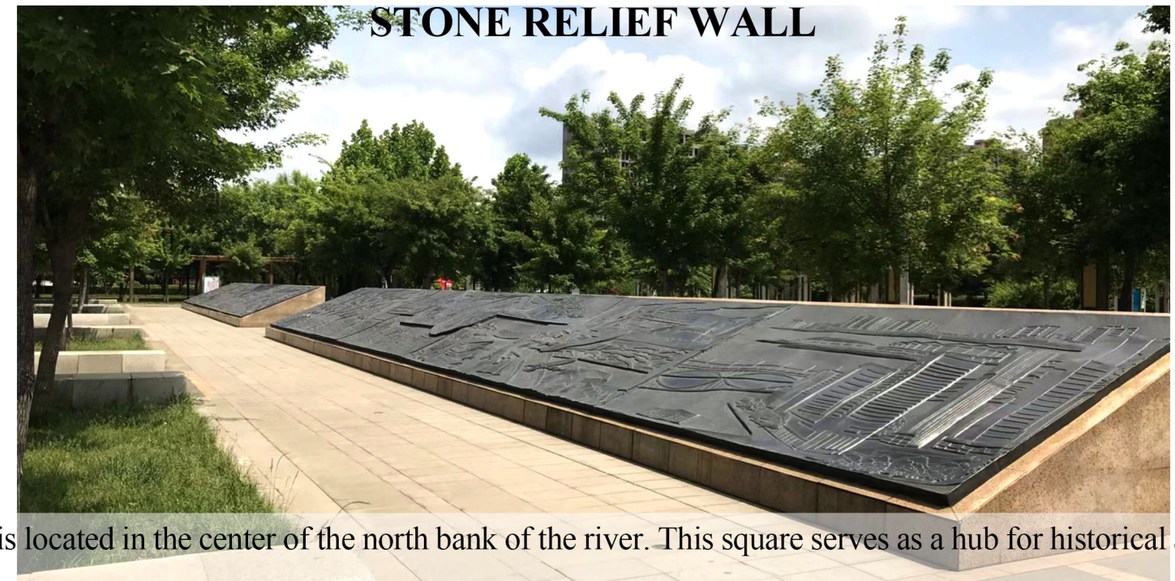
The walkways are built on the water in a low-disturbance engineering way with locally sourced wood materials, allowing visitors to walk among the aquatic plants and giving fish and amphibians the freedom to move around in the water.

URBAN OPEN SPACE

MUNICIPAL SQUARE

CELEBRITIES

STONE RELIEF WALL



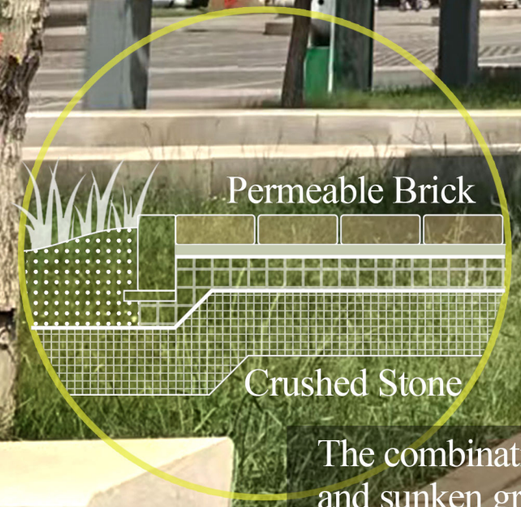
CULTURAL STONE

The largest municipal square is located in the center of the north bank of the river. This square serves as a hub for historical and cultural exhibitions and is a versatile open space that can host large-scale urban events.

URBAN OPEN SPACE

2 Rain gardens are distributed along the boundary of the square and can be used to increase the proportion of permeable ground

RAIN GARDEN

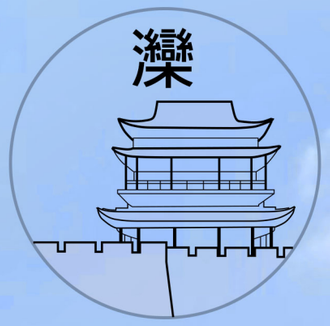


The combination of hard-surfaced squares and sunken green spaces is an effective way to alleviate urban flooding problem

1 WATER PERMEABLE BRICK

In an effort to improve groundwater permeability and increase the park's resilience to urban flooding, open spaces in Beihe Park incorporate water-permeable bricks, inlaid grass bricks, and other permeable materials.

URBAN OPEN SPACE



Luanzhou Ancient Town

Luan River Culture

Ping Opera

2

Representative patterns of Luanan Ancient Town, Luanhe River and Ping Opera are carved on the surface of landscape columns

1

The square is an extension of the city government on the north side, which can be used to hold large-scale events and holiday activities in the city

16 stone landscape columns towering 12 meters, stand on both sides of the municipal square, adorned with cultural patterns showing information about Luanzhou Ancient City. The same design is evident in the eight stone relief walls.