

# TAICHUNG WATERFRONT



# CITY OVERVIEW

Taichung is the first city in Taiwan to implement urban planning. With the announcement of the City Renovation Proposal in 1900 and the unique 45 degrees tilted gridiron road system, Taichung City became the most dazzling modern city.

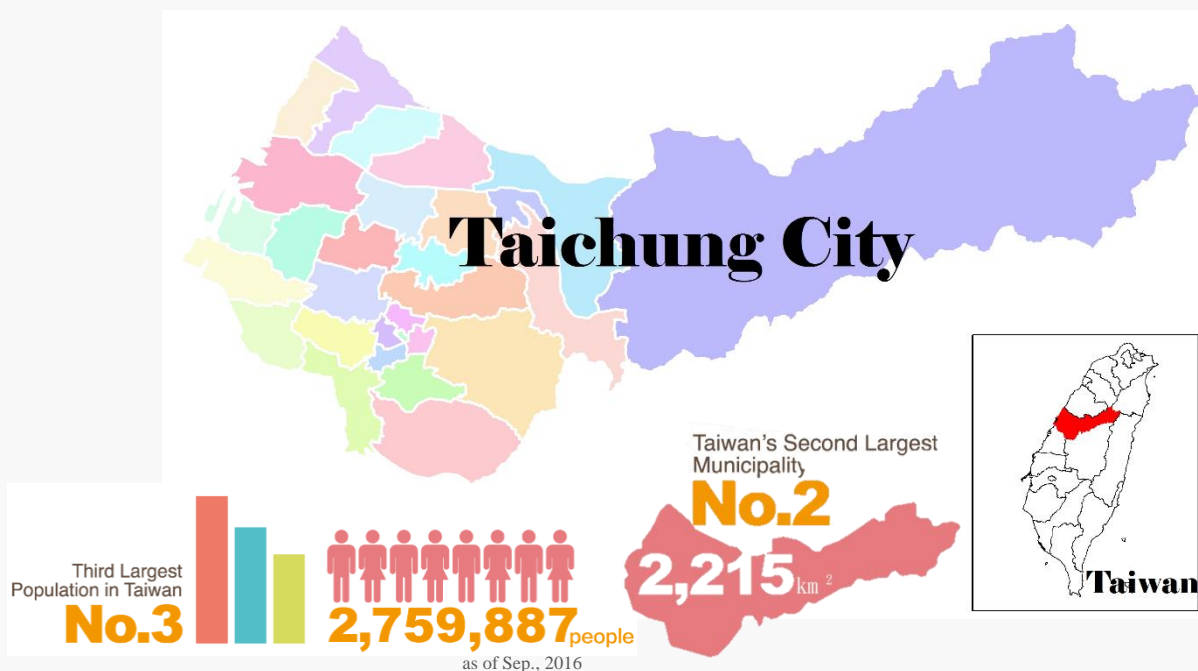
Since then, the establishment of the gridiron road system, the construction of the Taichū-eki — now known as Taichung Train Station — the reorganization of Luchuan and Liuchuan Canals, and business developments along the streets, transformed the old downtown into a political, economic and transportation hub of central Taiwan.

The renovation and transplantation of weeping willows to Luchuan and Liuchuan Canals — by the Japanese government — gave Taichung the past reputation of “Little Kyoto.”

Later, due to the rapid increase in population of Taichung, urban areas gradually expanded. On December 25<sup>th</sup>, 2010, Taichung City and County merged and became a special municipality.

With a total of 28 bureaus, 29 administrative districts, a total population of more than 2.75 million people, and a land area of 2,215 square kilometers, Taichung became the core city of central Taiwan.

However, with the Taichung City Government and the Taichung City Council stationed in the new city hall of Xitun District, urban areas developed westward and the old downtown gradually declined. Hence, the topic of central district revitalization is an important milestone in current city development



## Topography and Rivers

The Central Mountain Range lies to the East of Taichung City. To the west is the Taiwan Strait, to the north is Miaoli County, to the south is Changhua and Nantou Counties.

Taichung City has terrains gradually ascending from the west to the east and can be divided into sea shore, plains, plateaus, basins, hills, mountains, and etcetera.

The highest point in Taichung City and Miaoli County is Snow Mountain (Xueshan) with an elevation of 3,886 m (12,749 ft) above sea level. The lowest point is located along the coast of the Taiwan Strait and has the same height as sea level.

The shoreline of Taichung City - which stretches a total of 41km - begins from Farnghlii River and runs south to Dadu Estuary.

Taichung City river range from the north to the south can be divided into three watersheds, Da'an River, Dajia River, and Wu River (Dadu River). Fazi River and Tali River are tributaries of Wu River Basin in Taichung jurisdiction and administered by the central government along with 8 other drainage systems.

Taichung City currently administers one Wedelia River - sourced by Houli Plateau and sandwiched between Da'an and Dajia River - along with 131 drainage systems.



**Distribution Map of Rivers in Taichung**

# Taichung City Spatial Development Framework

In order to effectively and reasonably guide local development after Taichung City became a special municipality, Taichung City Government is actively promoting Greater Taichung 123 Plan.

This includes the consolidation of fundamental infrastructure, the diminishing of gap between urban and rural administrative districts, and to become the international gateway of central Taiwan.

The plan will create one Greater Taichung Shan-Shoou Line (Taichung Rail Loop Line) (a railway loop of both mountain and coastal lines), two international ports (Taichung Airport and Taichung Harbor), and three major subcenters (Wuri High Speed Rail, Fengyuan Mountain City, and Dual Port Coastal Line). Through better transit implementations, increased regional development, and counter marginalization problems, Taichung can become the living capital of Taiwan.

At the same time, in the heart of Taichung, presents a mosaic of old and new with the Shui-Nan Smart City and Cultural City Center to consolidate Taichung's motivation on fundamental development.

The construction of Shui-Nan Smart City is based on three key focuses, which are wisdom, low-carbon, and innovation, and displays a futuristic and creative cosmopolitan style.

The establishment of the Cultural City Center can promote the revitalization of Central District and guide in the restoration of the city's past, glorious reputation by re-examining the usage and distribution of old urban landscape to help with future growth and restructure.



## Greater Taichung 123 Spatial Development Framework



## Revitalization of Central District

The Central District of Taichung City is located between Liuchuan and Luchuan Canal. Early on, when the city was undeveloped, the area is full of marshes, in which there is a small foothill. The Qing Dynasty set beacons on the dūn—high mounds of the foothill. Hence, the foothill was named Tatun (now Fortress Hill in Taichung Park) and neighboring streets are named "Tatun Street". This was the origin of Taichung City.



During the Japanese colonial period, the streets of Taichung are shaped similar to a checkerboard. In 1900, with the announcement of the City Renovation Proposal, there were two Greenfield sites marked specifically for future park development.

One became a railway station, which is the present site of Taichung Train Station, and the other became the current Taichung Park. In addition, during the Japanese Reign, the reorganization of Luchuan and Liuchuan Canals, the establishment of the gridiron road system, the construction of the Taichū-eki - now known as Taichung Train Station - steadily transformed Taichung into a modern city.

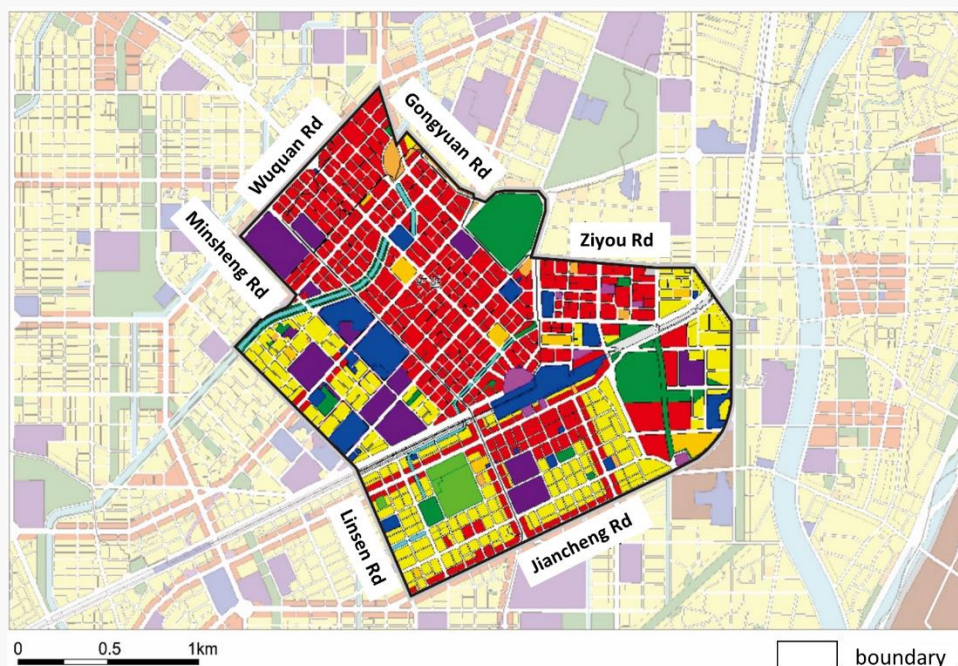


The Central District is the birthplace of Taichung's urban and cultural advancement. Due to long-term urban regeneration, the area has been neglected, resulting in dreadful environmental quality and functional decline in the region. In addition, the water quality of Luchuan Canal, which passes through Central District, continues to progressively deteriorate due to discharged wastewater from the rapid growth of population and en route commercial industries. In the case where wastewater cannot be treated onsite, the sewage is dumped into the Luchuan Canal. As a temporary means to conceal the stench from time to time, several sections of Luchuan Canal were covered.

Taichung City Government is actively promoting the revitalization of Central District to motivate the reconstruction and growth of the old downtown. The hope is to bring back the glorious, prosperous past. Urban restoration is officially launched with Taichung City Center Revitalization Plan.

The five major restructuring approaches are the establishment of surface transit system, the economic recovery, the growth of tourism, land-water integration, and the reconstruction of cultural landscape. The implementation of the tactics is vital to retaining the traditional features of old downtown while refining the living conditions and quality of environment, supporting industrial activities, and civilizing urban function.

The green corridor links the two sides of Luchuan Canal with a railway overpass designed in a systematic combination of green and blue belts. With combined ideas, suggestions, and voice from the people, the surrounding culture and tourism spots are connected. This will create a fusion between the present and the past with green, urban waterfront scenery.



**Revitalization Blueprint of Central District**

## 「GREEN TAICHUNG」 DUAL-CORE DESIGN

The management of the rivers determines the success or failure of a city. Taichung's past reputation as Little Kyoto owes to the beauty of the waterways, especially, Luchuan and Liuchuan Canals.

Hence, Taichung City Government emphasizes on the preservation of cultural context and living memory with the addition of rapid overpass transit systematization during the city revitalization process. The implementation of Xinsheng Luchuan Canal Waterfront Corridor Project and Taichung Overpass Development Plan (Green Taichung Dual-Core Design) can bring prosperity into the Central District by drawing attention to the city waters.



**Rapid Overpass Transit Systematization and Luchuan Canal**



## Xinsheng Luchuan Canal Waterfront Corridor Project

The two main rivers in Taichung City are Luchuan Canal - formerly known as Xinsheng Creek —and Liuchuan Canal. Luchuan Canal is the origin of the old downtown. In the Japanese colonial period, the governor – general of Taiwan saw the beautiful river scenery speckled with green similar to emeralds.

Hence, the waterway was named Green Canal (Luchuan Canal). Since Taichung was famed as “Little Kyoto,” the Luchuan Canal is often compared to the Kamo River of Kyoto Prefecture.

Unfortunately, with continuous urban sprawl, Luchuan Canal became a city sewer due to the impact caused by large amounts of urban sewage discharged into the waterway.

Taichung City Government is vigorously promoting the revitalization of Central District by restoring the former elegance of Luchuan Canal, which is the key to reform the region. Taichung Train Station is next to Luchuan Canal which makes the waterway an important waterfront corridor.

Hence, the Xinsheng Luchuan Canal Waterfront Corridor Project was suggested. The aim is to recuperate the stunning green water scenery. The goal of reviving the old downtown by restoring the natural ecology in the waterway is to create a water-friendly environment parallel to Kamo River of Kyoto Prefecture and Cheonggyecheon of Seoul.



**Photograph of Current Luchuan Canal**



There are four main phases in the implementation of Xinsheng Luchuan Canal Waterfront Corridor Project.

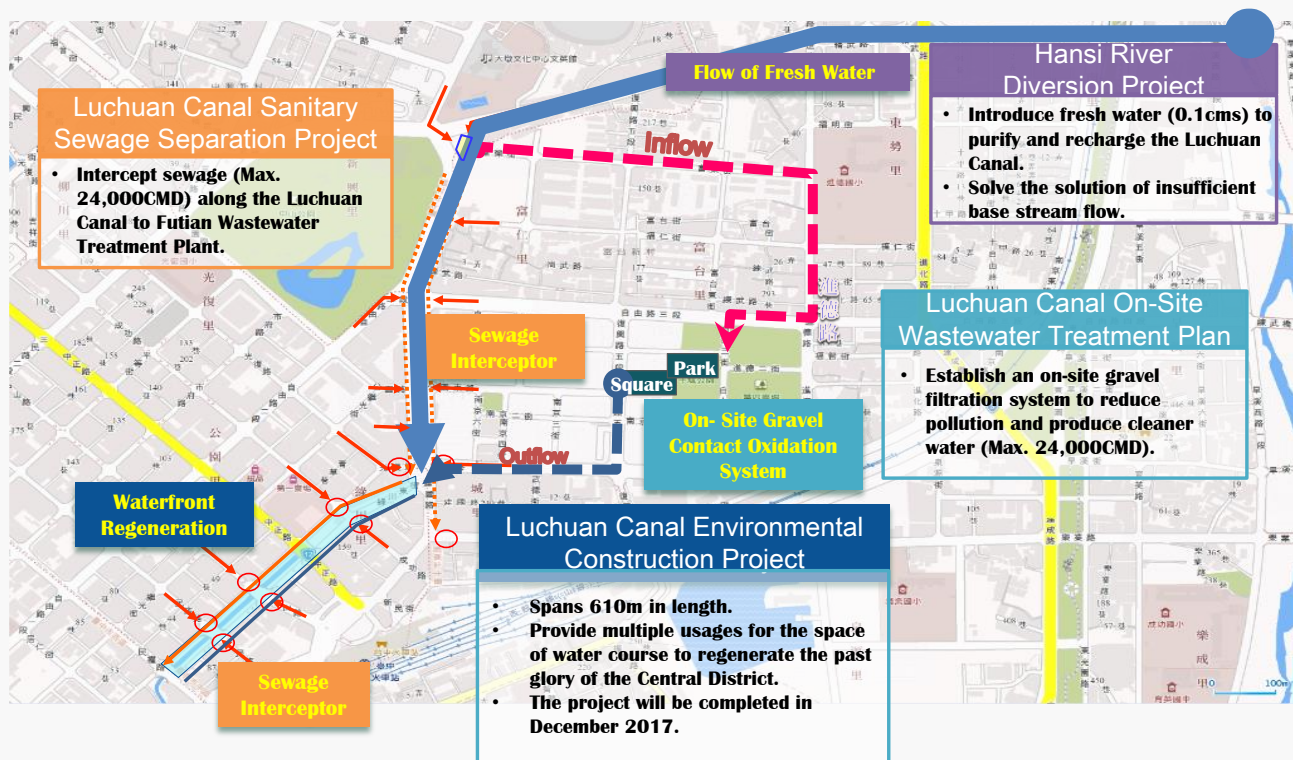
The first phase is the Luchuan Canal Sanitary Sewage Separation Project, which establishes interception facilities and utilizes wastewater run-off method to carry residential and industrial wastewater into the Futian Wastewater Treatment Plant for purification. Hence, there will be a decrease of pollution in the canal.

The second phase is to push for the Hansi River Diversion Project, which will introduce fresh water to purify and recharge the Luchuan Canal.

At the same time, the third phase, the Luchuan Canal On-Site Wastewater Treatment Plan will establish an on-site gravel filtration system to reduce pollution and produce cleaner water.

Lastly, the fourth phase - the Luchuan Canal Environmental Construction Project - spans 610 m in length from Shuangshi to Minquan Road and utilizes Duplex-Decker Culvert Box Method to both preserve the overhead scenery of watercourse as well as protect the city from flood disaster.

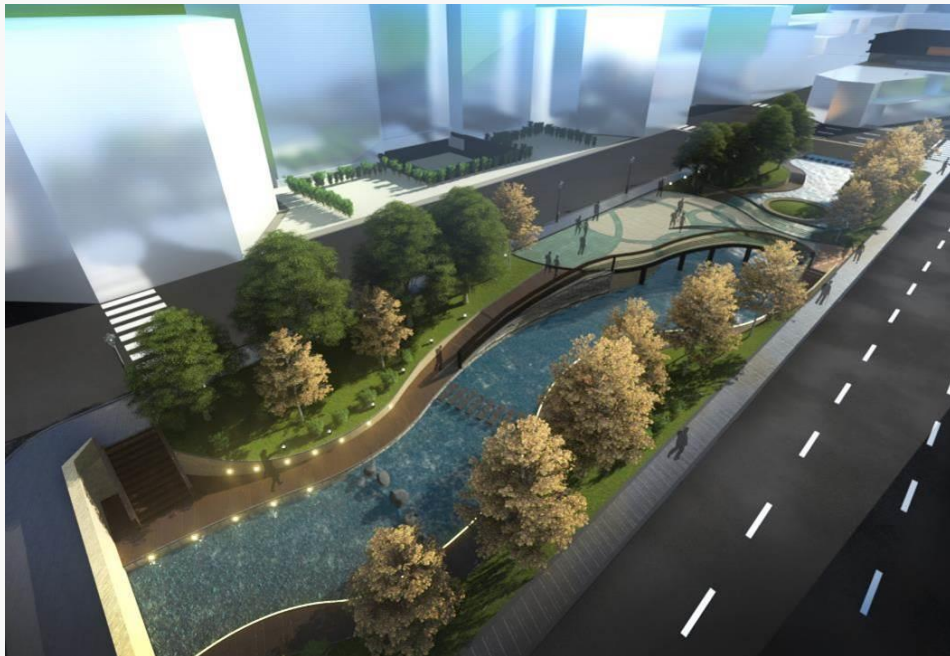
The establishment of water-friendly environment is by converting the back of existing edifices into storefronts to allow businesses to align the waterfront. The construction will be completed on December 2017 and the waterway will initiate the overall development of the old downtown in the future.



**Water Quality Improvement Plan**



**The Design Vision of New Luchuan River Waterfront Corridor Project (I)**



**The Design Vision of New Luchuan River Waterfront Corridor Project (II)**





**The Design Vision of New Luchuan River Waterfront Corridor Project (III)**



**The Design Vision of New Luchuan River Waterfront Corridor Project (IV)**



Through effective hydraulic engineering projects, Taichung City Government aims to launch a water-friendly culture. Luchuan Canal will be renamed the First Taichung Canal in order to become a new city hotspot.

In order to listen to public opinion, to clarify the public doubts, and to establish a cross-sector collaboration platform on the topic of Luchuan Canal Vision Empowerment Program, a series of Luchuan Canal Vision Empowerment Lectures, Luchuan Canal Vision Workshop, and Luchuan Canal Empowerment Documentary Activities to integrate the participation of residents.

The public sphere or cross-sector collaboration platform invites all relevant bureaus of Taichung City Government, planning and design companies, experts, scholars, local leaders, and residents of Luchuan Canal surrounding areas to discuss future enhancements on the water quality, cultural history, ecology, cultural diversity, ethnic groups, and etcetera around Luchuan Canal in order to better understand the sound of the land.



## Luchuan Canal Vision Empowerment Program

Through the Luchuan Canal Vision Empowerment Program, the thoughts and ideas of opinion leaders, commercial districts, NGOs, Luchuan Canal enthusiasts, and residents about the improvement changes can be understood.

A total of 154 personal interviews, 11 empowerment lectures, 5 workshops, and 1 documentary activity were conducted. With a cumulative sum of 772 participants, the communication platform was fully utilized with views exchanged from both government and public standings.

The public sphere is a prime example of civilians participating in the restoration of aquatic resources. Hence, Luchuan Canal is further acquainted with the public.



**Documentation of Luchuan Canal Empowerment Program**



## Taichung Overpass Development Plan

After long term passage by the North-South Railway through the downtown area of Taichung City, there exists in a division of urban space.

The 21.7 km elevation of the railway from Fengyuan to Daqing is in progress due to the current Rapid Overpass Transit Systematization of Taichung metropolitan area. The project will substantially eliminate the space restrictions imposed by the intertwining of railroad tracks and promote the development and re-structure of urban space on both sides of the railway. This development is the greatest change in Taichung landscape over the past century.

The early development of Taichung began in the 1900s with the commencement of the City Renovation Proposal.

In 1905, Taichung Train Station, formerly known as Taichū-eki, was constructed and now denotes the origin of Taichung city. The neighboring areas are of unique historical significance, such as the clearance box for the railway overpass, the old adjacent warehouse, dormitories, other historical buildings, and nearby lands. The overall design will use, re-use, and re-purpose the areas near Taichung railway, which are important aspects in the suture and regeneration of urban space.



**The Design Vision of Rapid Overpass Transit Systematization**



The proposed Taichung Overpass Development Plan by the Taichung City Government utilizes the old 1.6km railway from Taichung Sugar Plant Ecology Lake Park to Budokan Martial Arts Hall Culture Park to improve bike rides and pedestrian space as the center of advancement.

By connecting Taichung Sugar Plant Ecology Lake Park, developed Gan-Cherng Business District, Railway Cultural Park, revitalized Central District, Taichung Cultural and Creative Industries Park, Budokan Martial Arts Hall Culture Park and other attractions along with Ziyou Road, Zhongzheng Road, Jianguo Morning Market, and Rear Commercial District, the government hopes to string all the various “points” with a “line”.

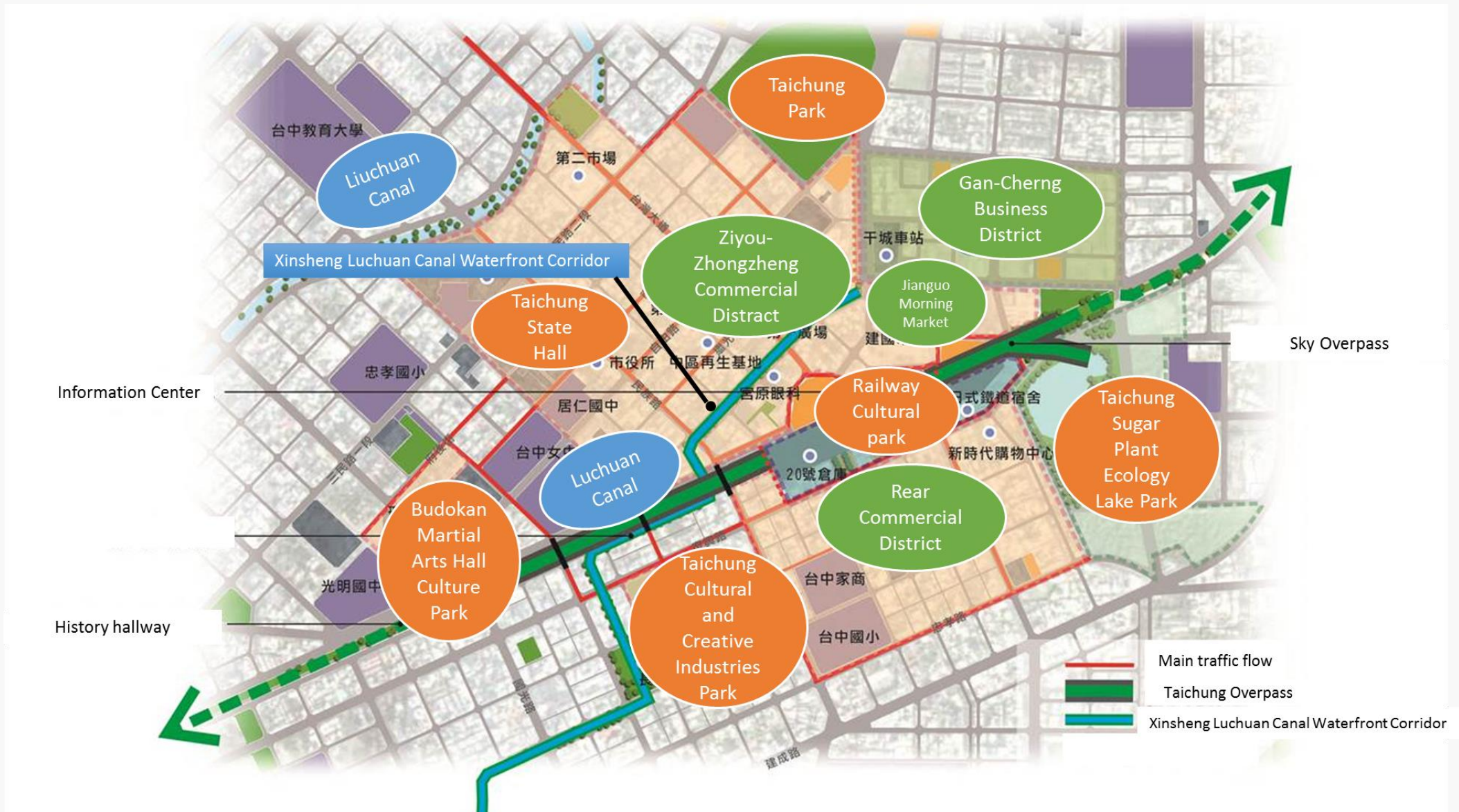
Various transit options including walking, cycling are provided between the attractions to allow convenient sightseeing of railway tourism.

With the combined improvement of the Luchuan Canal and the strengthening of public facilities, important historical buildings and the surrounding land will be re-used and re-purposed to create a complete historic district.

The surrounding land will also incur new prospects, such as addition of public transportation, low-carbon vehicles, history of humanism, and cultural and creative industries and will bring success to the revitalization of Central District.



**The Design Vision of Taichung Overpass Development Plan**



**Layout of Taichung Overpass Development Plan**



# THE LANDSCAPE DESIGN OF LIUCHUAN CANAL WATERFRONT

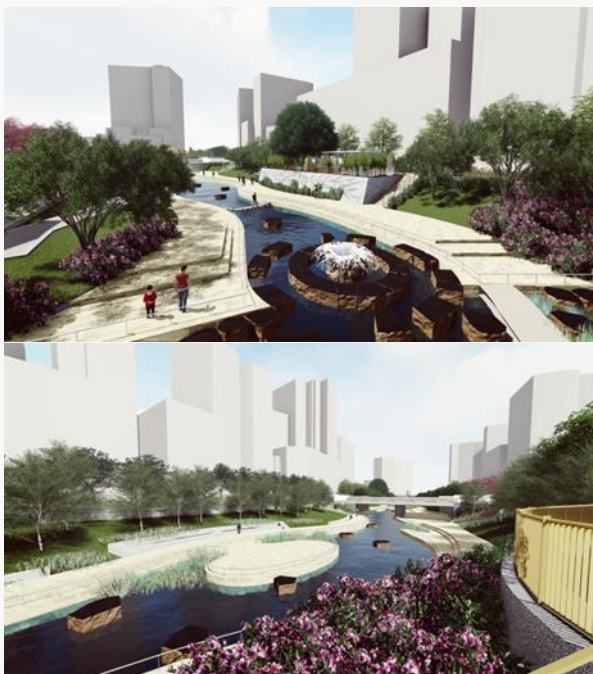
During the Japanese colonial period, the Japanese Government transplanted weeping willows to both sides of Liuchuan Canal. The sensation was beyond words, with branches fluttering in the wind and rippling sounds from the water, giving an overall atmosphere of relaxation and happiness.

After the restoration of Taiwan, the willow trees of Liuchuan Canal were removed and the stunning landscape was destroyed as temporary housings were assembled for the abundant migrants.

In 1960s, Taichung City Government began to gradually dismantle unsanctioned constructions along the banks of Liuchuan Canal and the work was fully completed in 1987.

Since then, the government has continued to green both sides of Liuchuan Canal, hoping to one day restore the splendor of Liuchuan Canal.

However, as times change and population density continues to rise, the increase of urban sewage discharge and pollution of water source are becoming an issue.



**The Design Vision of Liuchuan Canal Waterfront**



Waterways are similar to human blood vessels. Once the water is impure, the city will become ill. Hence, Taichung City Government aims to generate more vitality in downtown area by implementing Liuchuan Canal Pollution Restoration and Environmental Improvement Project to improve the health of the waterway along with the surrounding environment, and bring back the city.

The first phase of the project comprises of 30 sewage interceptors, from Chongde Liu Bridge to both sides of Zhongzheng Liu Bridge, and applies seven different construction methods in accordance to local conditions.

The wastewater treatment is divided into two sectors. One will lead 10,000 tons of sewage daily to Zhonghua Water Purification Station and the other sewer line will send the remaining 20,000 tons to Futian Wastewater Treatment Plant.

The Zhonghua Water Purification Station is beneath the Zhonghua Parking Lot and utilizes an on-site gravel filtration system to purify 10,000 tons of sewage daily.

The recharged and filtrated water is then released downstream, beneath the Zhongzheng Liu Bridge, as source water.

The observation corridor, established within Zhonghua Water Purification Station, is now used as an ecology classroom to educate the public on the water purification process.

After the project is completed in December 2015, the original function of the Zhonghua Parking Lot was restored.



**Location of Zhonghua Water Purification Station**

The second phase of the project, which comprises of 42 sewage interceptors from Zhongzheng Liu Bridge to Nantun Liu Bridge, also sends the effluent to Futian Wastewater Treatment Plant through sewer lines.

The assembly reduces 27,000 tons of sewage discharged into Liuchuan Canal daily, which improves the water quality of the waterway along with decreased stench.

In regards to the waterfront scenery, there are initiatives in place to convert the grey levees and revetments into ecological slopes, open platforms and riverside green walkways from Zhongzheng Liu Bridge to Minquan Liu Bridge. Approximately 300 meters of riparian landscape will be renovated into accessible public space using the concept of low impact development (LID).

After the completion in December 2016, Taichung residents will have the first LID accessible water space in Taiwan. Besides its safety, comfortableness, and beauty, the illumination lighting design makes the waterfront appear different completely daytime and nighttime.

The waterfront will provide a good place for public recreation and become a city hotspot in the future.



**Waterfront Landscape of Liuchuan Canal**

# CONCLUSIONS

While city is a container for culture, culture is the soul of the city. Since the collective memory of the old downtown is an important cultural identity of Taichung residents, Taichung City Government proposed the Green Taichung Dual-Canal Design - which includes Xinsheng Luchuan Canal Waterfront Corridor Project and Taichung Overpass Development Plan - and piloted the Liuchuan Canal Pollution Restoration and Environmental Improvement Project.

After the completion of the TRA Elevation, the old railway will be refurbished into the 1.6 km long Taichung Overpass, a green space for walks and bike rides. Luchuan Canal and Liuchuan Canal will be opened to the public.

Luchuan and Liuchuan Canals blue waterways and Taichung's Green Overpass will connect the surrounding Empire Sugar Plant, Budokan Martial Arts Hall Culture Park, Lin Chih-Chu Studio, Taichung State Hall, Cultural and Creative Industries Park, Railway Cultural Park, Zhongshang Lu Bridge (Xinsheng Bridge) and other historical and cultural attractions in Old Downtown — similar to stringing cultural pearls on a silver wire.

The glorious pavement of art and literature along with the magnificent display of old urban elegance evolves the Central District into a new Cultural City Center.

Through the development of the rivers in old downtown, Taichung City Government aims to revitalize the city. With the addition of railways, trails, bike paths, and other transportations, historical memories are strung together. The blend of humanities and environment is achieved with people-oriented development.

The five major revitalization approaches are the beautification of cultural scenery, growth of tourism, economic recovery, land-water integration, and the deployment of transportation network strategies, which can lead to a new sense of living with the transformation of industry and attainment of a sustainable environment.

