



10 Public Infrastructure

The Taipei City Government has been aggressively building convenient and comfortable roads and bridges, safe and complete flood control facilities, high-quality and eco-friendly waterfront spaces, a low-carbon green garden city, LOHAS and fun mountainside environments, adequate utilities, and comprehensive and thoughtful housing and land planning. In addition to demonstrating exceptional construction expertise, the City Government has upheld the “craftsman's spirit” in every detail in project planning and implementation to achieve high-quality infrastructure.

10 Public Infrastructure

Public construction is indispensable to everyday life, and it is a major indicator of social progress and living quality. To pursue further progress in quality and standards upon the existing solid foundation, the Taipei City Government endeavors to turn Taipei into a space for happy and LOHAS life with various thoughtful details or themed operations based on the “people-focused” core concept. In doing so, the city government aims to keep elevating Taipei to shine on the world stage.

Part 1 Comfortable Road Service Quality

1. The Beian Road Lane 501 Boulevard Construction Project

Coordinating with the “Boai Construction Project” of the Ministry of National Defense, the Taipei City Government launched the “Zhongshan North Road and Beian Road Lane 501 Boulevard Construction Project” to expand Lane 501 of Beian Road into a 40m-wide Boulevard. The project covers the entry of Lane 501 of Beian Road in the south to Alley 78 of Lane 501 of Beian Road in the north. After project completion, the Boulevard became a dual-lane road about 526m long and 40m wide, with a traffic island in the middle. There are also sidewalks, bikeways and green belts.

2. Renewal of Project-Covered Roads

In Taipei City, the total road surface area is about 22.52 million m². After deducting the area of traffic islands, sidewalks, ditches, and MRT projects, the actual asphalt concrete area is about 15 million m². This six-year project, from 2009-2014, aimed to upgrade the surface of main roads in Taipei City. During the project period, 280 roads under project control were upgraded, with a total area of 6.72 million m². In terms of ordinary two-lane roads (16m wide), a total of about 420 km was resurfaced, equivalent to the distance from Keelung to Pingtung on National Highway No. 3. In addition, the number of manholes on the upgraded road surface has been reduced to 47,994 manholes. After project



Renai Road Circus Road Renewal Project





Xinyi Road sidewalk

completion, the service quality of urban roads in Taipei has been improved significantly to provide a safe and comfortable driving network. For its aggressive action and dedication to road maintenance, the Taipei City Government was ranked the top of the urban category in the 2014 Performance Evaluation of Urban Road Maintenance and Management implemented by the Construction and Planning Agency of the Ministry of the Interior.

3. Improving Sidewalk Conditions

In Taipei City, the total area occupied by sidewalks is about 2.50 million m². During 1999-2014, a total of 2,263,496 m² of sidewalks were improved, accounting for 90.54% of the total area of sidewalks in the city. With a target of 50,000 m² each year, it is estimated that all sidewalks in Taipei City will be improved by 2019 to provide citizens with a safe, pleasant, flat, and open walking space and improve quality of life and activity quality. The effectiveness of the Taipei City Government's aggressive efforts to improve sidewalk quality have won public acclaim and the second prize in the metropolis category of the 2014 Evaluation of Barrier – free Environments for Pedestrians in Urban Areas, awarded by the Construction and Planning Agency, Ministry of the Interior.

4. Periodic Inspection of Bridges and Culverts

At present, there are a total of 431 bridges and culverts in Taipei City, including 199



Detailed bridge examination

ordinary bridges, 35 cross-river bridges, 30 overpasses, 87 footbridges, 12 tunnels, 12 underpasses, and 56 subways. All are examined and serviced periodically.

(1) Painting Steel Bridges

Steel bridges are painted to prevent and mitigate corrosion damage to steel due to weathering, so as to ensure steel bridge safety and maintain a beautiful bridge appearance.

(2) Bridge Inspection, Maintenance, and Reinforcement

In 2014 a total of 193 bridges were inspected, including steel structure seismic resistance and cross-river bridge flood prevention examinations. A budget for maintenance and reinforcement was planned based on the inspection results to ensure bridge safety.

5. Construction Common Ducts

The Taipei City Government has contained utility pipelines of different units in the common duct system with reference to the Common Duct Law, so as to reduce road excavation frequency and the traffic jams and traffic accident risk which results from roadwork. According to the currently announced Route Map of Taipei Common Duct, the following common ducts have been completed and begun operation: Civic Boulevard Common Duct, common ducts for new communities (e.g. the Keelung River Straightening Project), Zhoumei Expressway Common Duct, Nangang Business Park Common Duct, Dadu Road Common Duct, a

common duct for the Nangang Extension Line of the Taipei Railway Underground Project, Neihsu Phase 5 Common Duct, and Guandu Common Duct. The Route Map of Metro Taipei Xinyi Line Common Duct has been completed and awaiting approval. Other common ducts under construction include the Route Map of Metro Taipei Songshan Line Common Duct, the Beitou-Shilin Technology Park Common Duct, and the Fuguo Road Common Duct. Common ducts under planning and design include the Route Map of Metro Taipei Wanda Line Common Duct and the Route Map of Metro Taipei Xinyi Eastern Extension Line Common Duct.

Part 2 Clean and Safe Rivers

1. Flood Control and Drainage Construction

(1) Establishing a CFC Mechanism in Taipei

Upon the concept of “retaining upstream water resources, minimizing midstream flood risks, and preventing downstream flooding”, the Taipei City Government established the Comprehensive Flood Control Committee (CFCC) in 2006 to build a safe, comfortable, pleasant, and healthy eco-city with both structural and non-structural measures combining multiple strategies, such as flood diversion, infiltration, retention, and disaster resilience. In 2014, two committee meetings and a great number of publicity activities were held to draw up quantitative CFC targets, strengthen the development of flood prevention measures and flood control construction, and establish a comprehensive response mechanism. In addition, through the urban construction and building control master plan, permeable pavements and infiltration facilities were added to open spaces such as parallel parking spaces, sidewalks, parking lots, parks, schools, and sports grounds, so as to promote comprehensive flood control and water conservation countermeasures.

(2) Flood Control Engineering

Referring to the “Taipei Flood Control Plan” approved by the Executive Yuan, building embankments supported by river training and river management are the flood control policy of Taipei City. Projects completed in 2014 included the Embankment Construction and River Training Project on the right bank of Jingmei River (from Wanfang Interchange to Wanfang Road), Taipei City Embankment Beautification Project (contracts 2, 3, 4 of phase I, and contract 1 of phase II), Keelung River Low-water Revetment Renovation Project Phase I (Bailing Bridge to Zhongshan Bridge), Neigou River Landscape Improvement Project (contract 2), Taipei City CCTV River Flood Surveillance Equipment Project Phase I, Pumping Station Environment Improvement Project Phase I, Pumping Station Environment Improvement Project Phase II (contract 1), the renewal project of Zishan, Fude and Jinzhou pumping stations, Revetment and Embankment Facility Improvement Project (Donghu, Lohas, and Xinsheng emergency flood protection roads cross-embankment ways), and Embankment Environment Improvement Project: Nanhu Bridge to Chenggong Bridge.



Keelung River Low-water Revetment Renovation Project

(3) Rainwater Sewage Construction

A total of 522 km of a planned length at 540 km of the main and branch lines of the rainwater sewage system has been completed, a completion rate of 96.7%. In 2014, eight projects including the “Yanggang 3 Flood Regulation Settling Basin Construction Project” were implemented to enhance draining



performance and improve the sanitation of the urban environment. To maintain monitoring of water levels in the rainwater sewage system, the “Rainwater Sewage Flood Surveillance System Maintenance” was implemented in 2014 to monitor, analyze and maintain data for effective flood information surveillance.

(4) Flood Control Experience Park Construction

In order to make citizens understand the flood control facilities in Taipei City and their management and maintenance achievements, the Taipei City Government has launched educational courses on water resources to transform water conservancy facilities into educational facilities. By opening the control center of the pumping station, Taiwan's first pumping station automatic control system, and the new equipment and facilities in the Xinsheng Expansion Station to the public, along with short



Xinsheng Pumping Station guided tour

films, statistical displays, interactive equipment and games, group performances, and tour guide explanations, the city government enables the public to learn more about flood control in Taipei City, so as to educate and publicize disaster prevention.

2. Riverside and Waterfront Structures

(1) Riverside Bikeway Construction

The Taipei City Government has completed six riverside bikeways: the Tamsui River Riverside Bikeway, the Xindian River Riverside Bikeway, the Jingmei River Riverside Bikeway, the Shuangxi River Riverside Bikeway, the Keelung River Right Bank Riverside Bikeway, and the Keelung River Left Bank Riverside Bikeway. In fact, each riverside bikeway is connected with one another to form a complete bikeway network extending a total of 112 km. To make the bikeway network more complete, the Taipei City Government has introduced the 59 km-long round-Taipei route to link riverside bikeways with urban bikeways.

(2) Riverside Park Construction

The Hydraulic Engineering Office of the Public Works Department of the Taipei City Government has built six theme riverside parks in Taipei City. The Shezidao Riverside Park and Shezidao Wetlands featuring wetland environment building and ecological tour were



The Sea of Flowers at Dajia Riverside Park

completed in April 2013. The camping-oriented Huazhong Riverside Park was completed in September 2014. The wedding photography-focused Guting Riverside Park was completed in September 2014. Other culture- and history-oriented theme riverside parks such as the Dataocheng and Guandu Riverside Parks will be completed in 2015. In addition, to continuously improve the landscape of riverside parks, the Taipei City Government has planned the Sea of Flower Project, which is to occupy a total area of about 28,000 m² for the Dajia, Rainbow, Guting, Heshuang No. 21, Mazhangding and Dagouxi Riverside Parks, so as to present a brand-new visual joy to Taipei citizens with different kinds of landscapes and 3D totems.

3. Sewerage Construction

(1) Continuous Sewerage Construction

By the end of 2014, the completion rate of the primary and secondary main and branch sewerage networks was 100%, 97.55%, and 88.51% respectively. 807,754 households had been connected to the network, the project rate of users' pipe connections was 100%, and rate of doorplate households had reached 73.83%, up by 1.56% from 72.27% in 2013.

(2) Steady Operation of Gravel Contact Oxidation (GCO) Facilities

The Taipei City Government has pioneered the "gravel contact oxidation (GCO) method" and built four GCO facilities on highland beaches along the main course of the Tamsui River and the bank of the Keelung River: Nanhu, Chengmei, Guiyang, and Zhongxiao, with a combined treatment capacity of over 50,000 m³ per day. The Zhongxiao GCO Facility is the biggest by capacity and the first sewage treatment facility in Taiwan to integrate the on-site gravel contact ecological engineering method with an interception facility to effectively improve river water quality.

(3) Steady Operation of Sewage Interception Stations

There are a total of 35 sewage interception stations in the Tamsui River system, including



Presentation of an award in recognition of the achievements of Zhongxiao Gravel Contact Oxidation Facility in Taipei City

12 in Taipei City, 22 in New Taipei City, and one in Keelung City. Except for the Nanzigou Interception Station in New Taipei City which is operated by the New Taipei City Government, the other 34 are operated centrally by the Taipei City Government to effectively intercept dry-weather flow and transport sewage to sewage treatment plants for treatment before discharge.

(4) Continuous Implementation of Back Alley Beautification

The Taipei City Government incorporated the back alley beautification project into sewage connection construction. For households in



Building leisure space for citizens through back lane beautification



areas undergoing user pipe connection and repairs, back alleys wider than 2 meters were refurbished. By the end of 2014, a total of 1,242 back alleys had been refurbished, with 188 alleys more than the 1,054 alleys in 2013. This significantly improved the undesirable pre-existing back alley environment and created a sense of community character.

(5) Optimization, Maintenance, and Steady Operation of Sewerage Systems

The Taipei City Government continuously outsources the maintenance, operation, and management of sewerage systems in Taipei area to ensure the steady operation of the Neihu Sewage Treatment Plant, Dihua Sewage Treatment Plant, and Bali Sewage Treatment Plant commissioned by New Taipei City at the total planned treatment capacity of 1.97 million m³ per day. In 2013, the total treatment capacity of these three sewage treatment plants was 1.81 million m³ per day.

(6) Sludge Reduction of Dihua Sewage Treatment Plant

Due to difficulty of finding treatment sites, the rise of environmental awareness among citizens, and increases in treatment costs in recent years and in coordination with the “Zero Landfill and Total Recycle from 2010” policy of the Taipei City Government, the Sewerage Systems Office of the Public Works Department of the Taipei City Government installed sludge reduction equipment in the Dihua Sewage Treatment Plant to reduce the average water content of sludge from 80% to 30% by indirect heating. Besides effectively reducing the environmental impact and disposal cost which arise from sludge transportation, the City Government is working for sludge recycling and reuse.

(7) Environmental Education from the Dihua Sewage Treatment Plant

The Dihua Sewage Treatment Plant passed environmental education certification on March 25, 2014, to become Taiwan's first urban domestic sewage treatment plant for environmental education. By integrating with sewerage construction, the current natural



Main unit of sludge drying equipment



Environmental education venue at Dihua Street Sewage Treatment Plant

environment of the Tamsui River and the cultural and historical characteristics of Dalongdong Culture Park and through environmental education, the education arrangement of the sewage treatment plant enables citizens to understand the process and technology of sewage treatment, so as to achieve sustainable use of water resources.

Part 3

A Colorful and Blooming Garden City

1. Quality Green Space and a Garden City for Citizens

Referring to the current urban planning of Taipei City, the total green area is about 1,984 hectares, including a total of 1,068 parks, greens, squares, and children's playgrounds (including 39 riverside parks and other facilities). That is to say, each Taipei citizen can enjoy up to 5.1 m² of cultivated parks and green space.

2. Park Construction (Expansion) and Renewal

Major projects in 2014 included the Dahu Park Environmental Reengineering Project in Neihu, Park 233 Construction Project in Beitou, Greenfield 242 Construction Project in Beitou, Qianshan Park, and the Shihpai Park, Fuxing Park, and Liugonzun Park Renewal Projects.

3. Road Greening and Beautification

(1) Green Embellishment for Streets and Roadways throughout the City

Taipei City has a total of 90,129 street trees. In 2014 a budget of NT\$85.5 million was planned for road greening and park beautification enhancement. The total area of greening and beautification was 147,860 m², a total of 710 street trees, 177,994 shrubs, 5,129 m² of lawn, and 10,593 pots of ground cover were added (filled).



Embellishment of the traffic island in Renai Road with azaleas



Big is beautiful: the Giant Water Lily Aquatic Plant Show

(2) Adoption Programs

The Taipei City Government also encourages private groups or individuals to engage in the maintenance of greens, squares, traffic islands, street trees, and parks over one hectare in area. By the end of 2014, an area of 329,793 m² had been adopted.

4. Flower Shows and Festivals

(1) The Taipei Camellia Show

The “2014 Taipei Camellia Show: Perfect Camellia” was held during January 10 to 19, 2014. Over ten thousand camellia and Christmas camellia plants grown in the exhibition site and Japanese camellia grown in the camellia greenhouse bloomed gorgeously, competing to display their beauty. The show attracted a total of 41,000 person-times.

(2) The Yangmingshan Flower Festival

The “2014 Yangmingshan Flower Festival: Flowery Spring” was held during January 29 to March 9, 2014. The festival launched four themes: spirit, the ecology, environmental protection, and art. Together with the landscape art of artist A-sun Wu and the Beautiful Youth Solo Exhibition of artist Paloma Chang, the event attracted about 1.7 million person-times.

(3) The Shuangxi Park Aquatic Plants Show

The “Shuangxi Park Aquatic Plants Show” was held during September 11 to October 12, 2014 to display the luxuriant grace and dainty appearance of the giant water lily (*Victoria amazonica*). The show attracted 31,400 person-times.

(4) The CKS Shilin Residence Chrysanthemum Show

The “2014 CKS Shilin Residence Chrysanthemum Show: Say Love in Time” was held during November 15 to 30, 2014. Nine zones were craftily arranged in the residence, to interpret the value of love with different species of chrysanthemums and symbolic objects. The show attracted about 473,672 person-times.





A colorful and varied chrysanthemum show

(5) The Taipei Flower Show

The “Taipei Flower Show: Art in Trees with Poinsettia” was held in the 2014 Taipei Expo Park Taipei Flora Festival from December 13, 2014 to January 11, 2015 at the Taipei Expo Park Complex, and neighborhood parks of Taipei’s 12 districts to fill these parks with the festive elements of Christmas and turn them into a Christmas theme-park. The event attracted about 360,000 person-times.

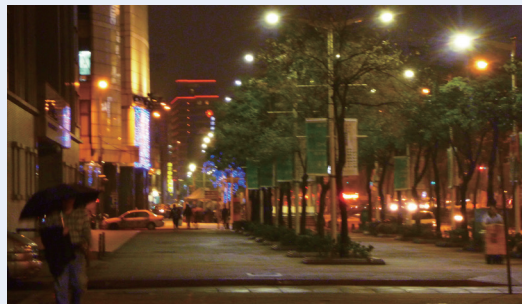
5. Replacement and Installation of Energy-Saving Streetlight

(1) The Streetlight Addition Program

In 2014, about 1,432 new streetlights were installed.

(2) Integrating Streetlight Switching Boxes into Streetlight Pole

The Taipei City Government continuously implements integrating streetlight switching boxes into streetlight poles. Currently there are 10,151 streetlight switching boxes on the roads. In 2014, 159 poles were completed for integrating streetlight switching box. Cumulatively a total of 4,935 streetlight switching boxes have been integrated within streetlight poles.



LED lights on the sidewalk of Zhonghua Road

(3) Carbon Reduction and Energy-Saving LED Streetlights

There are a total of 154,305 street and park lights in Taipei City. After replacing 72,882 street and park lights with LED lights by the end of 2014, a total of 47.88 million kWh of electricity, NT\$99.26 million of electricity bill, and 30,070 mt of CO₂-e were saved each year.

6. Creating an Urban Utopia for LOHAS

(1) Hiking Trail Network System and Industrial Road Construction

Currently there are 130 hiking trails with a combined length of approximately 100



Teapot image beautification on Zinan industrial road

km in Taipei City. After effectively combining culture with the landscape, the Geotechnical Engineering Office of the Public Works Department of the Taipei City Government completed six circular trails, five characteristics trails, and eight trail image entrances in 2014 to build a complete and characterful hiking trail network system. In addition, besides maintaining basic transportation function and safety, the Geotechnical Engineering Office operates 65 industrial roads with a total length of about 131km in the city with district characteristics to provide citizens with another way to enjoy forest leisure in Taipei.

(2) Building Theme Scenic Areas and Camping Sites

Under a five-year plan, the Taipei City Government has integrated the deep and serene forest environment of the Zhinan Scenic Area with the religious culture of Zhinan Temple to build a comprehensive recreational scenic spot. The scenic area is divided into five theme zones connected by forest trails. In fact, it is one of the few religion-themed scenic areas in Taiwan.

(3) Vitalizing Urban Environments for Agritourism

To increase the recreational and leisure space available to citizens and improve the

environment for slopeland agriculture, the Taipei City Government began interviewing communities practicing slopeland agriculture in Neihu, Shilin, Beitou and Nangang districts, and succeeded in building a recreational and leisure environment combining the characteristics of individual communities with a rural atmosphere. Besides completing the Datun Borough Recreational Square in Beitou District and the Soapberry Platform in Hushan Borough, the city government continuously surveys and observes the Bashihu Suspension Bridge in Neihu District to ensure the safety of recreational facilities.

7. Soil and Water Conservation and Disaster Prevention

(1) Management of Potential Debris Flow Streams and Stream Watersheds

To prevent disasters caused by streams with potential debris flow, the Geotechnical Engineering Office of the Public Works Department of the Taipei City Government began river training at the Jiubei Stream through multiple methods of structuring, including shaped revetments, wooden structures, riprap protection, and masonry stilling basins. By combining these features with the local mining culture and folklores, the Geotechnical Engineering Office has built a new mountainside and waterfront highlight in Taipei City. After





Chouzitou River Nature Park

examining all wide streams and mountain canals in the city, the Office integrated the rich ecology of the Chouzitou Stream with local history, art, and culture to turn it into a nature park integrating ecology, conservation, education, and leisure.

(2) Safety Improvement and Conservation and Use Management of Slopeland Buildings

To ensure the safety of citizens living in slope areas, the Taipei City Government implements routine maintenance of drainage sludge, dangerous trees and relevant facilities near slopeland buildings. The Taipei City Government also implements emergency maintenance and management of hazards around slopeland buildings in the city during typhoons and torrential rain to prevent disasters. In addition, to ensure the function of completed soil and water conservation facilities, the Taipei City Government continuously maintains soil and water conservation facilities. In 2014, the Taipei City Government examined 551 soil



Slope improvement with free posts and beams

and water conservation facilities and provided technical consultation service for citizens. In addition, the city government has formed a soil and water conservation service team to provide citizens with free consultations with professional engineers.

Part 4 Comprehensive and Sustainable Public Facilities

1. Water Supply Facilities

(1) Building the Datong-Guandu Distribution Pipeline to Raise Water Supply Capacity in Shilin and Beitou

In addition to increasing the water supply to Shilin and Beitou districts by 400,000 tons daily, the Datong-Guandu distribution pipe can form a mutually-redundant dual supply system with the original distribution main. The completion of Phases I (from Datong Booster Station to Yumen Street) and II (from Yumen Street to below Shuanxi Bridge) in 2005 and 2012 respectively have equipped Shilin District with dual-system redundancy. Phase III (from the mouth of Shuanxi River to Dadu distributing reservoir), initiated in August 2012 and expected to be completed in 2016, can achieve dual supply redundancy and also meet the water demand of newly-developed areas including the Beitou – Shilin Technology Park and Danhai New Town. In addition, to cope with the disaster prevention plan of the Taipei City Government, two emergency lifeline intakes have been reserved at the Shezi Riverside Baseball Field and the high beach area under the Zhengde Bridge to provide emergency water supply during disasters.

(2) Building the Anhua – Xindian Distribution Pipe to Support Banxin Phase II Water Supply

The Anhua – Xindian distribution pipe encompasses the Anhua – Xindian Distribution Pipe and Anhua – Xindian Distribution Pipe Extension Project. The former was completed



Lifting and installation of TMB for the Anhua – Xindian Extension Line

in October 2012 and the latter in October 2014. After the completion of the entire Anhua – Xindian Distribution Pipe, the Anhua Booster Station on the Xindian Distribution Pipe will replace the Zhonghe Booster Station on the same pipe to supply drinking water for citizens in New Taipei City's Xindian District and serve the Zhonghe Booster Station as a backup booster, so as to complete the dual-system supply for Zhonghe and Xindian districts to support the Banxin Phase II Project.

2. Hot Spring Resources Management

(1) Implementing the Hot Spring Taking Fee and Use as Specific Fund

The Taipei City Government has established the Hot Spring Resources Management Fund to promote hot spring resources management. The Taipei City Government funds collection rate over the past five years was 100%, ranking at the top of Taiwan. In 2014, the Taipei City Government used the fund to subsidize four units, including the Taipei Hot Springs Association, implemented the conservation and management of hot spring resources, and funded the R&D of the sustainable development and use of hot spring resources. In 2014 a total of NT\$10,370,723 of the hot spring taking fee collected for 2013, a 99% collection rate.

(2) Guidance for Enterprises Obtaining and Supplying Hot Spring Water

To provide guidance for enterprises obtaining and supply hot spring water with

reference to the Taipei City Hot Spring Area Management Plan, the "Taipei City Hot Spring Development and Operation Permit Application Review Commission" was established to review applications for development and operation permits made by enterprises who intended to obtaining and supply hot spring water. By the end of 2014, a total of 17 applications for hot spring development and five applications for operation permits had been approved.

(3) Taiwan's First Hot Spring Crystal Product Line

The hot spring foot spa pool at Quanyuan Park in Beitou District attracts over 750 visitors each day and with a customer satisfaction rate of over 97%, it has become one of Beitou's most important public leisure facilities. To respond to the expectations of citizens and promote the diversification of hot spring uses, the Department of Economic Development of the Taipei City Government established new hot spring foot spa pools in Liouhuang Valley and Fuxing Park. Both hot spring foot spa pools were opened in 2014 and attracted about 2,000 people each day.



Fuxing Park Hot Spring Foot Spa Pool

(4) Taiwan's First Hot Spring Crystal Product Line

To aggressively foster hot spring industry development in Taipei, the Department of Economic Development, Taipei City Government pioneered the diversification of hot spring resources use to transform hot spring crystals into hot spring flowers with special processes. A total of 35 products for cleansing body



and mind, skin repair and care, cultural and creative living, and real experiences have been developed by more than 24 local hot spring enterprises under government guidance. Together with the Taipei City Farmers' Association, these enterprises of "Crystallization of Hot Spring" have launched a wide variety of products at the Taipei Souvenir Shop in the Taipei Flora Park to share their achievements with the public.

The Department of Economic Development, Taipei City Government also formed the "Taipei City Hot Spring Flower Industry Consultation Group" together with professionals from the industry, government, and academia. In 2013, the group provided guidance services for organizations, communities, underprivileged groups, and manufacturers in the city's hot spring area on manufacturing soaps, bathing gels, and shampoos with hot spring flowers with innovative extraction technology. The group also showed them how to replace chemicals with the strong acid and antibacterial and anti-oxidation characteristics of blue spring sulfur and develop "blue sulfur foot mask and exfoliation gel", thus writing a new chapter in the diversification of hot spring resource uses in Taiwan.

(5) Quality Improvement for Hot Spring Water Supply

To meet the tourism demands of the hot spring area in Xinbeitou, the Taipei City Government is committed to improving the quality and stability of the hot spring's water supply. The Taipei Water Department thus maintains the hot spring supply facilities and repairs and replaces the pipeline of hot spring water supply continuously to reduce hot spring water leakage and clear scaling pipelines to improve pipeline distribution efficiency and improve the intake facilities of hot spring water, so as to ensure a supply of hot spring water of adequate quality and quantity and in turn the sustainable development of the hot spring industry.

3. Natural Gas Utilities

In natural gas of Taipei City is supplied by four companies: The Great Taipei Gas Corporation, The Yang Ming Shan Gas Co., Ltd., The Shin-



Audit of gas leak emergency repair

Hu Gas Co. Ltd., and The Shin Shin Natural Gas Co., Ltd. By the end of 2014, these four gas companies had supplied 330,449,049 m³ of natural gas to a total of 667,051 households, accounting for 64.3% of total gas users.

All gas companies have implemented the central surveillance and management system to keep track on the status of gasholders, governor stations, and high-pressure gas pipes to ensure the safety and service quality of gas supply. Autonomous inspection, service and maintenance of gas storage, transmission and distribution equipment are implemented as planned and pipeline inspections and replacements are implemented periodically. In 2014 IPQC inspection was carried out on a total of 6,386 km of pipeline and a total of 45 km of pipeline was replaced with a ratio of 1.9%. In addition, each gas company provides free pipeline and equipment safety checks for users biennially. In 2014, free pipeline and equipment safety check was carried out in 312,873 households, and education on gas use safety was included at the same time to prevent carbon monoxide poisoning.

To prevent catastrophes caused by gas explosions and maintain public safety, the Taipei City Government established the Taipei City Natural Gas Transmission and Storage Equipment Public Safety Project Team on August 1, 2014 to audit the transmission and storage equipment used by these four gas companies. From August 5 to December 11, 2014, a total of 20 audits were conducted, and no violation of any law and regulation was detected. Most importantly, the audit continues.

4. Power Service and Gas Station Operation Safety

The Taiwan Power Company has established three business departments in Taipei City to provide service for over 1.17 million households. Through the emergency service hotline “1911”, citizens are connected to the local emergency repair unit to report power outages for repair.

To strengthen the safety management of gas stations in Taipei City, the Taipei City Government continuously audits the operational safety management of gas stations. Apart from requesting gas station owners to implement periodic safety self-inspection, the city government audited 107 gas stations, 23 LPG gas filling stations, and 26 private gas filling and storage facilities in 2014. Most business owners were found to be in compliance with the law; those who were not, were requested to make improvement by a deadline.

and Qingnian Public Housing Estate (originally Qingnian Section in Wanhua District). After completion, these housing estates will provide up to 1,575 units of housing. All buildings will be awarded the green building silver mark and intelligent building mark.

(1) Xinglong Public Housing Estate Phase I

The project, expected to be completed in June 2015, occupies an area of 3,594 m², has three stories underground and 18 stories above ground to provide a total of 272 units of housing, with proportions of 67% public housing and 33% affordable housing. To ensure the safety of public housing, the project has obtained seismic resistance design certification and is green building certification is pending.



Xinglong Public Housing Phase I construction drawing

(2) Xinglong Public Housing Estate Phase II

The project, expected to be completed in 2016, occupies an area of 5,924 m² and will provide a total of 526 units of housing, with proportions of 67% public housing and 33% affordable housing for low-income families and residential placement. With regard to spatial planning, the project includes a wide variety

Part 5 Thoughtful Residential Placement and Land Use Planning

1. Public Housing Construction

In public housing promotion, by the end of 2014 the Taipei City Government had rented, planned budgets for, and made plans for over 9,000 units of public housing. This figure has passed the medium-term target of 4,808 units that should be completed, under construction, or under planning and design set for the same period. At present, the Taipei City Government has provided a total of 274 units of public housing in Dalongdong, MRT Xingtian Temple Station, MRT Wanlong Station, and the Dunhuang, Jing-wen, and Yongping Public Housing Estates. Public housing currently under construction includes Xinglong Public Housing Estate Phase I (Site D of the original Ankang Community), Xinglong Public Housing Estate Phase II (originally Ankang Market), Jiankang Public Housing Estate Phases I and II (originally the Baoqing Section of Songshan District),





Xinglong Public Housing Phase II simulation drawing

of public service spaces, including a “social welfare service work station”, “BOT nursery center”, “BOT daycare home for seniors”, “community operation facilities for the people with disabilities”, and “welfare organization for people with disabilities” to ensure effective care for underprivileged groups and the promotion of social justice and well-being.

(3) Jiankang Public Housing Estate Phases I and II

The project, expected to be completed in 2017 and occupying an area of 9,684 m², extends three stories underground and 14 to 16 stories above ground to provide about 507 units of housing.

(4) Qingnian Public Housing Estate

This project was outsourced as a procurement and construction project (engineering in advance) and was awarded on September 5, 2012. It occupies an area of 4,075 m² with two stories underground and 14 to 18 stories above ground to provide about 270 units of housing.

2. Enhancing Land/Property Use Efficiency

(1) Expropriation and Appropriation of Land

The Taipei City Government has aggressively acquired land for infrastructure construction. In 2014, the Taipei City Government completed two private land expropriation cases covering 5 plots of land with an area of 0.002464 hectares expropriated from 74 households, for which a total compensation of NT\$16,603,760 was paid. The city government also completed 77 government land appropriation projects covering 203 plots of lands with a total area of 22.9 hectares to accelerate infrastructure construction.

(2) Zone Expropriation

The expected benefits of zone expropriation include optimizing land use, creating land benefits, improving the cityscape, and sharing development benefits with landlords. In 2014, zone expropriation was implemented in Qiyen Community, Beitou – Shilin Technology Park,

and Shezidao. Qiyen Community neighbors the Qiyen Station and Qilian Station of the MRT's Tamsui Line. Currently the land is open for public facility use. Located alongside Chengde Road Section 6, Beitou – Shilin Technology Park connects Neihu Technology Park to Nangang Software Park to form the “Northern Taiwan High-tech Industry Corridor” and has become a well-designed high-tech industry park integrating production, life and ecology. Shezidao is located at the intersection of the Keelung River and the Tamsui River downstream. As the core node of the Northern Taiwan High-tech Industry Corridor, it is a multifunctional living area integrating flood control, ecological conservation, and entertainment.

By the end of 2014, the Taipei City Government had expropriated 14 zones with a total area of about 781.2 hectares and land for public facility uses including roads, parks and schools with an area of about 565.8 hectares. About 215.4 hectares of land will be released for construction.

(3) Urban Land Consolidation

Urban land consolidation is an important measure used by local governments to build public facilities. The Taipei City Government has been implementing urban land consolidation for over four decades. Apart from providing land for public facilities required by urban construction, this has allowed for the development of various major construction projects in Taipei City, such as Taipei 101, Nangang Business Park, Neihu Technology Park, the National Taiwan Science Education Center, Minsheng Community in Songshan District, Shilin Central Community, and Songshan Railway Station. These projects are substantial accomplishments of urban land consolidation. By the end of 2014, urban land consolidation had been completed in 39 blocks, with an area totaling 920.1 hectares, including about 544.4 hectares for building purposes and 375.7 hectares for public facilities such as roads, parks, and schools. Urban land consolidation for a number of BOT projects has also been promoted, including Wenshan District Phase I, Nangang District Phase III, and Neihu District Phase IX. The Taipei City Government also proactively encourages land owners to organize

their own consolidation associations and engage in urban land consolidation as part of incentivizing civil society to take part in urban construction, which not only helps bring in abundant private capital and manpower but also contributes to the establishment of regional identities as a result of spontaneous public involvement to promote local construction, development, and prosperity. In 2014, assistance continued for spontaneous urban land consolidation at the Nangang section of Nangang District, Yucheng in Nangang District, Huaisheng in Daan District, Residential Area 6-6 in Shilin District, Shitan Borough in Neihu District, and Residential Area 12 in Beitou.

Conclusion

While urban development in Taiwan has matured, infrastructure must also be promoted to a higher level. In addition to perfect hardware construction, it is necessary to pursue “aesthetics”, “environmental protection”, and “culture” at the time. In recent years the Taipei City Government has devoted itself to implementing infrastructure projects that can be seen and felt by the public. These included the Road Smoothing Project, Sidewalk Pavement Improvement Project, riverside park building, sewerage connection, back alley beautification, LED streetlight replacement, city greening and beautification, hiking trail network construction, and slopeland agritourism development. Looking back at how and what achievements have accumulated, the Taipei City Government's efforts to set the pace of urban improvement across Taiwan by setting high standards and applying innovative concepts for infrastructure planning and completing them with refined implementation quality are truly exceptional.

