

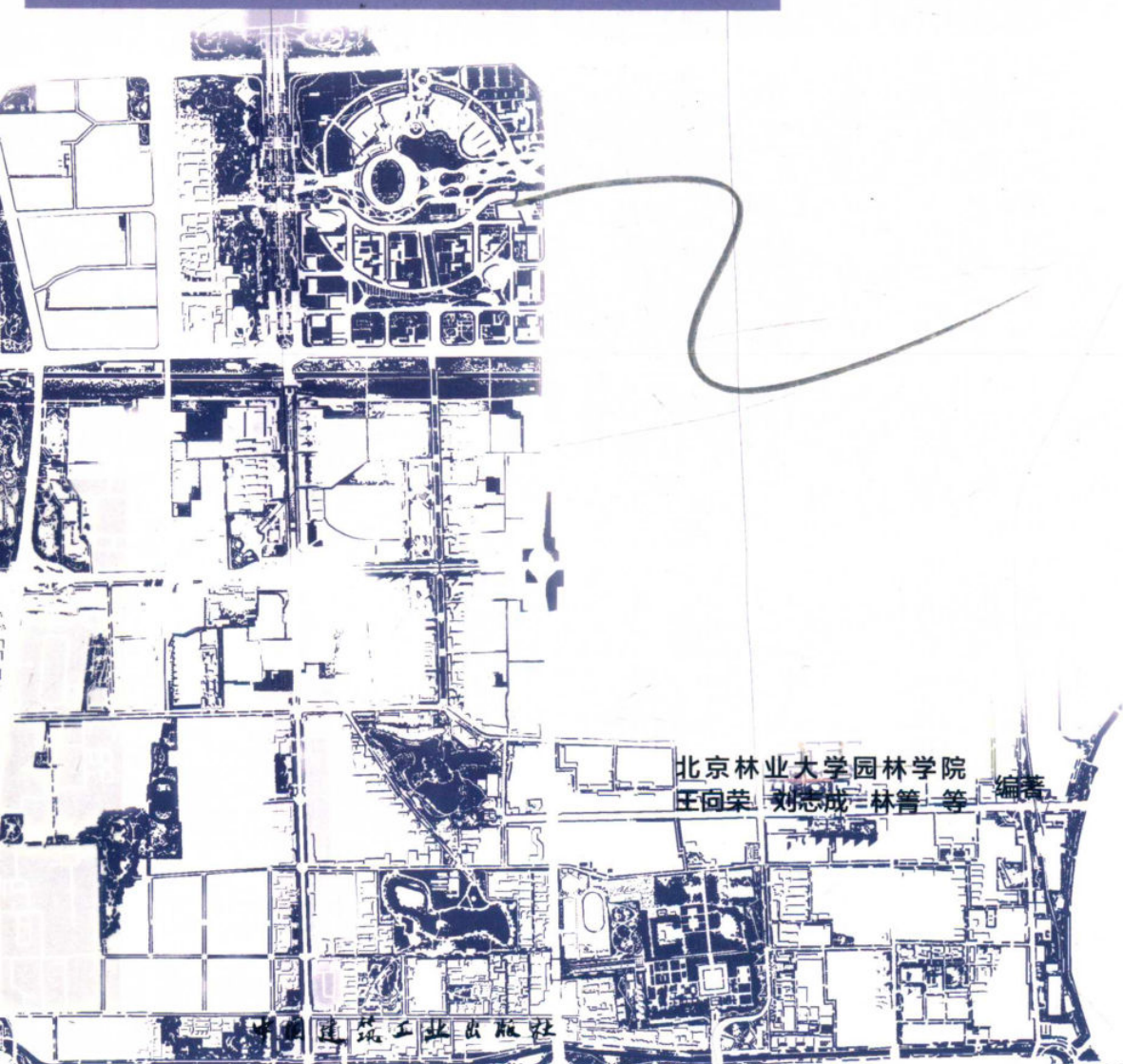
“绿都北京”研究系列丛书

Green Beijing Research Series

# 北京北中轴区域绿色网络

## 规划与设计研究

Planning and Design of Green Network Renewal in  
the Areas of North Axis, Beijing



北京林业大学园林学院  
王向荣 刘志成 林菁 等 编著

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## 前言

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美国著名风景园林师西蒙兹（John Simonds 1913-2005）出版过一本文集 Lessons（中文版书名为《启迪》），书中有一篇文章记录了西蒙兹 1939 年到北平考察的经历。

在北京，西蒙兹拜访了一位祖上曾经参与规划了元大都的李姓建筑师，李先生非常赞赏他能到北京考察风景规划，并向西蒙兹简单地介绍了元大都的规划思想。“在这片有良好水源的平原上，将建设一个伟大的城市——人们在这里可以与上天、自然以及同伴们和谐共处”。“蓄水池以自然湖泊的面貌贯穿整个都城，挖出的土用来堆成湖边的小山，湖边和山上种植了从全国各地收集来的树木和花灌木”。“关于公园事宜和开放空间，可汗命令不能有孤立的公园。更准确地说，整个大都城将被规划成一个巨大而美丽的花园式公园，期间散布宫殿、庙宇、公共建筑、民居和市场，全都有机地结合在一起”。“从文献中我了解到北平被一些来此旅游的人称为世界上最美丽的城市，我不知道这是否正确。如果真是这样，那么这种美丽不是偶然形成的，而是从最大的布局构思到最小的细节——都是通过这样的方法规划而成的。”

北京的确如西蒙兹在文章中提到的李姓建筑师所说，是一座伟大的城市，也是一个巨大而美丽的花园式都城。

北京有着优越的地理条件，城市的西、北和东北被群山环绕，东南是平原。市域内有 5 条河流，其中的永定河在历史上不断改道，在这片土地上形成广阔的冲积扇平原，留下了几十条故道，这些故道随后演变为许多大大小小的湖泊，有些故道转为地下水流，在某些地方溢出地面，形成泉水。

北京又有着 3000 年的建城史。李先生提到的元大都已将人工的建造与自然环境完美地叠加融合在一起，到了清朝时期，北京城人工与自然的融合更加紧密完善。城市西北郊建造了三山五园园林群，西山和玉泉山的汇水和众多泉流汇纳在一起，形成这些园林中的湖泊，水又通过高粱河引入城市，串联起城中的一系列湖泊。许多宫苑、坛庙、王府临水而建，水岸也是城市重要的开放空间。城中水系再通过运河向东接通大运河。由此，北京城市内外的自然景观成为一个连贯完整的体系，这一自然系统承担着调节雨洪、城市供水、漕运、灌溉、提供公共空间、观光游览、塑造城市风貌等复合的功能。城市居住的基本单元——四合院平铺在棋盘格结构的城市中，但每一个四合院的院子里都有别样的风景，每个院子都种有大树，如果从空中鸟瞰，北京城完全掩映在绿色的海洋之中。

然而，随着人口的增加和城市建设的发展，北京的环境在迅速地变化着，古老的护城河已部分消失，一起消失的还有城市中的不少湖泊和池塘。特别是快速城市化以来，北京的变化更为剧烈。老城中低矮的四合院被高楼大厦取代，步行尺度的胡同变成了宽阔的道路。老城之外，城市建设不断向周边蔓延，侵占着田野、树林和湿地，城市内外完整的自然系统被阻断，积极的公共空间不断消失，而交通设施的无限扩张，又使得城市被快速路不断地切割，城市渐渐失去了人性化的尺度、也渐渐失去了固有的个性与特色。

面对自然系统的断裂和公共空间的破碎与缺失等城市问题，作为风景园林、城市规划和建筑学的教育和研究者，我们看到了通过维护好北京现有的自然环境和公园绿地，利用北京的河道、废弃的铁路和城市中的开放土地，改造城市快速交通环路，建设一条条绿色的廊道，并形成城市中一个完整的绿色生态网络，从而再塑北京完整的自然系统和公共空间体系的巨大机会。

这一绿色的生态网络可以重新构筑贯穿城市内外的连续自然系统，使得城市的人工建造与自然环境有机地融合在一起；这个网络可以将由于建造各种基础设施而被隔离分割的城市重新连接并缝合起来，形成城市的公共空间体系；这个网络可以承载更加丰富多彩的都市生活，成为慢行系统、游览、休憩和运动的载体，也成为人们认知城市、体验城市的场所；这个网络还可以带来周边地区更多的商业机会，促进周围社区的活力；这个网络更是城市中重要的绿色基础设施，承担着雨洪管理、气候调节、生态廊道、生物栖息场构建、生物多样性保护的关键作用。

这套丛书收录的是我们对北京绿廊和生态网络构建的研究和设想。当然，畅想总是容易的，而实施却面临着巨大的困难和不确定性，但是我们看到，世界上任何伟大的城市之所以能够建成，就是从畅想开始的，如同元大都的建设一样。

在《启迪》中那篇谈到北京的文章最后，西蒙兹总结到：“要想规划一个伟大的城市，首先要学习规划园林，两者的原理是一样的”。

我们的研究实质上就是以规划园林的方式来改良城市，希望我们的这些研究成果也能对北京未来的建设和发展有所启迪。

2018年1月

# Forewords

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The famous US landscape architect John Simonds once published a corpus named 'Lessons', and one of the articles in this book records the experience of Simonds's investigation to Beijing in 1939.

Simonds visited an architect surnamed Li whose ancestors once took part in planning of the Great Capital of Yuan in Beijing, and the architect admired that Simonds came to Beijing to study landscape planning. He also briefly introduced the planning thoughts of the Great Capital of Yuan to Simonds's group. According to architect Li, here on this well-watered plain, was to be built a great city in which man would find himself in harmony with God, with nature, and his fellow man. Throughout the capital were to be located reservoirs in the form of lakes and lagoons, the soil formed their excavations to be shaped into enfolding hills, planted with trees and flowering shrubs collected from the farthest reaches of his dominion. As for the matter of parks and open spaces, architect Li said the Khan decreed that no separate parks were to be set aside. Rather, the whole of Ta-Tu would be planned as one great inter-related garden-park, with palaces, temples, public buildings, homes and market places beautifully interspersed. He also added that he was led to believe that Peking (now present day Beijing) was regarded by some who have travelled here to be the most beautiful city of the world, which he could not know to be true. If so, it would be no happenstance, for from the broadest concept to the least detail --- it was planned that way.

Just like what architect Li mentioned, Beijing is indeed a great city, also a grand gorgeous garden capital.

With superior geographical condition, Beijing city is surrounded by mountains in the west, north and northeast direction, and the southeast of the city is plain. There are 5 rivers in the city. Among them, the Yongding River has constant change of course in history, thus formed the vast alluvial fan plain here and has left dozens of old river courses. These old water courses then evolved into lakes with different scales, some even transformed into underground water streams and overflowed to the ground to form springs.

At the same time, Beijing has a history of 3000 years of city construction. As architect Li said, the Great Capital of Yuan has integrated the artificial construction and the natural environment perfectly. And when it came to Qing Dynasty, the integration of labor and nature is even more perfect in Beijing city. People built the 'Three Hills and Five Gardens' in the northwest of the city, so that the catchments of the West Mountain and Yuquan Mountain could join numerous springs together, and formed the lakes in these royal gardens. Then, water was introduced into the city through the Sorghum River, and thus a series of lakes inside the city are connected. Plenty of palatial gardens, temples and mansions of monarch were built in the waterfront, which makes the water bank an important open space for the whole city. The river system in the city heads for the east and connects to the Grand Canal, which makes the nature environment inside and outside the city into a coherent and complete system, which takes the charge of compound functions including the regulation of rain flood, city water supply, water transport, irrigation, providing public space, sightseeing function and shaping the cityscape. As the basic unit of urban living, Siheyuans are paved in the city with chessboard structure. Uniformed as they are in appearance, we can still see unique landscape and stories in each different courtyard. There are big trees thriving in each courtyard, as if they were telling the history of each family. If we have a bird's eye view from the air, Beijing will be completely covered in the green ocean.

However, with the population increase and the urban construction development, the environment of Beijing has been changing rapidly. The ancient moat has partly disappeared, together with many lakes and ponds in the city. Beijing has changed even more fast and violent since the rapid urbanization. Low Siheyuans have been replaced by skyscrapers, and Hutongs of walking scale also became broad roads for vehicles. Apart from the Old City, the urban construction in Beijing has been spreading to the surrounding area, invading the fields, forests and wetlands. As a result, the holistic natural system both inside and outside the city is blocked, active public space is disappearing, and the unlimited expansion of transportation facilities make the city constantly cut by express ways. We cannot deny that the city has gradually lost its humanized scale, and it has also gradually lost its inherent personality and characteristics.

In face of the city fracture problems of natural systems and the broken public space, as landscape architects, urban planners, architecture educators and researchers, we see huge opportunities to maintain the existing natural environment and garden greenways, use the river courses, disused railways and open lands in Beijing to reform the city fast traffic roads and construct several green corridors in order to form a complete green ecological network in the city, and remold integrated natural system and public space system in Beijing.

This green ecological network can reconstruct the continuous natural system running throughout the city, so that the artificial construction of the city can be organically integrated with the natural environment. The network can connect and stitch the city divided by all kinds of infrastructure, and form a public space system in Beijing. What's more, the network can carry more colorful urban life styles and become the supporter of slow travel system, sightseeing, recreation and sports, and it will turn into a place for people to cognize and experience the city. It can also bring more business opportunities in the surrounding areas to promote the vitality of the communities in the neighborhood. Above all, the network is a significant ecological infrastructure in the city, which plays key roles in rain and flood management, climate regulation, ecological corridors, biological habitat construction and biodiversity conservation, etc.

This collection includes our researches and thinking of greenways and the construction of ecological corridor network in Beijing. It is without doubts that imagination is always easy, while implementation is always faced with great difficulties and uncertainties. But we can see that any great city in the world was finally built up based on the imaginations in the beginning, just like the construction of the Great Capital of Yuan.

In the article about Beijing from 'Lessons', Simonds concluded that: If you want to plan a great city, you need to learn to plan gardens first, for the principles of both are the same.

Essentially, our research is to explore a way to improve a city in the way of planning gardens, and we do hope that our research results may enlighten the future construction and development in Beijing.

Wang Xiangrong  
January, 2018

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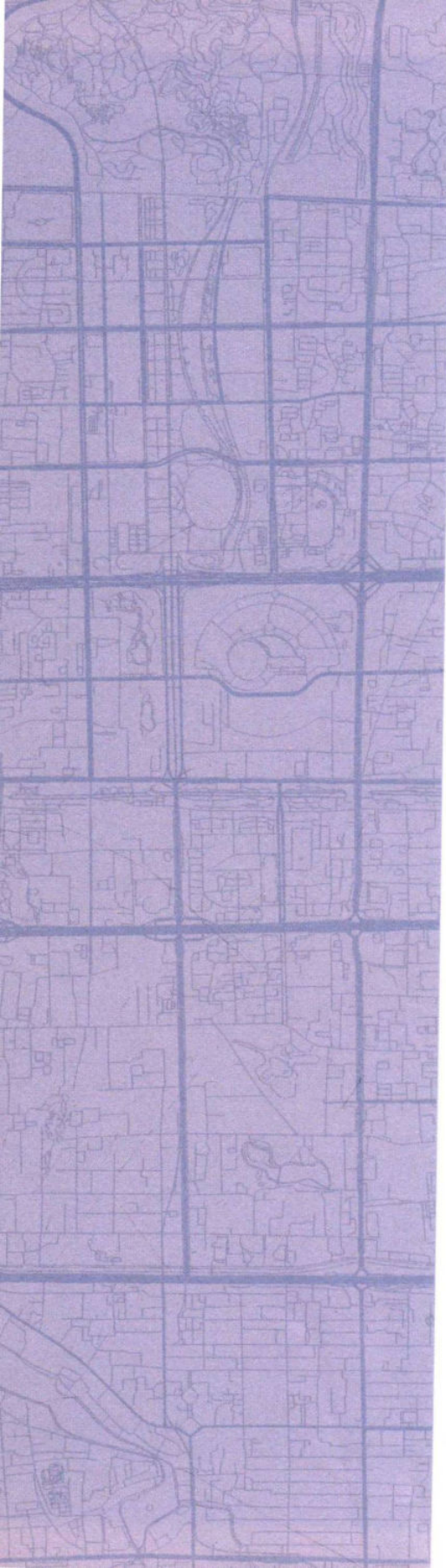
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# 01 规划设计

PLANNING & DESIGN

进入新世纪，中国的城市发展也开始进入新的阶段。在过去的三十余年，由于中国城市化率严重不足，一直以来更加注重城市化的数量增长，快速城市化使中国的城市化率迅速提升。这种城市化模式为中国的经济发展带来了巨大的推动力量，但是随着城市史无前例地快速扩张，也产生了中国城市病的严重问题。目前，中国的城市化发展已经进入新的分水岭，城市化进程开始更多地转向质量提升。这点在诸如北京、上海、广州等中国特大城市中表现得尤其明显。量质共生应当是未来中国城市化发展的主旋律。

高品质城市的一个重要特征就是提升城市的公共服务质量。不同的学科都在探索中国新型城市化的质量提升模式。从风景园林的视角来看，建设高品质的城市绿色公共空间系统是获得高质量城市服务的重要内容，对城市品质提升效益非常显著。过去，大家往往更加关注扩张型城市（城市新区）的公共空间建设。如今，已建成区的绿色公共空间系统建设将被提上日程。此类公共空间建设具有很强的特殊性和挑战性，此时城市已经完成基本建设，空间制约非常明显。风景园林需要利用城市更新的机遇，挖掘未充分利用的城市空间潜力，从而开展设计。此类空间的利用需要结合场地现状的精细化分析手段和创造性的设计介入模式。同时，由于用地比较复杂，需要与城市规划、建筑、交通、水利等多学科开展更加密切的合作。

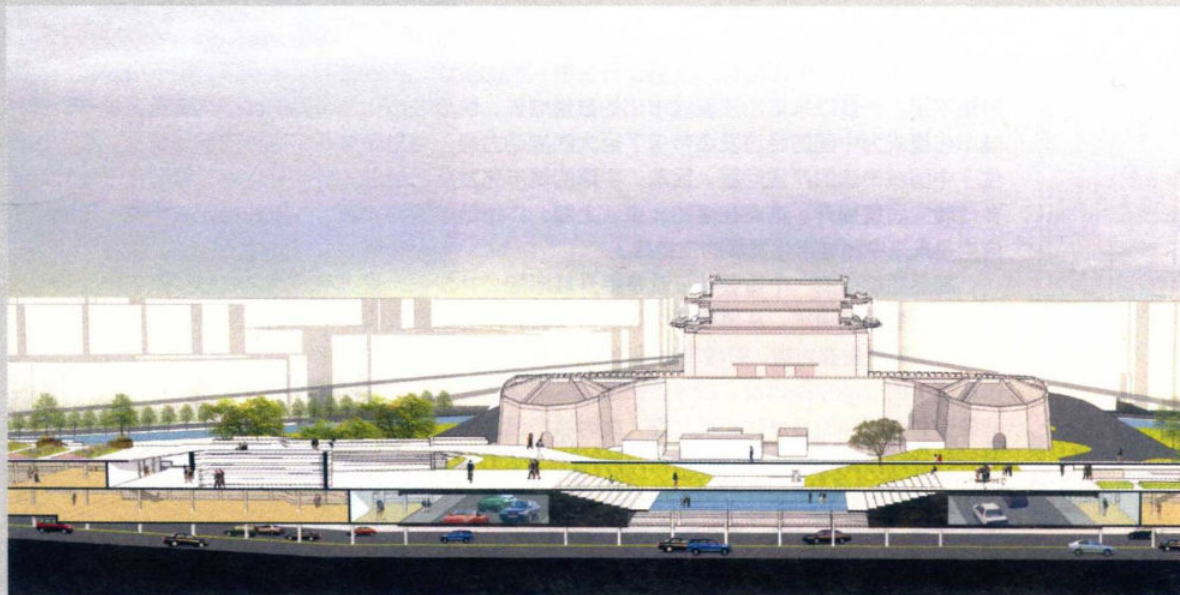
本课程题目聚焦于北京的北中轴线及周边城市区域。该区域是北京城市发展中具有特殊历史意义和重要价值的区块。北二环路及护城河是明清京城古城遗址的一部分；青年湖、柳荫公园等是北京早期公园建设的代表性成果；中华民族园、奥体中心（公园）、奥林匹克中心区等是改革开放后大型活动引领建设的标志性成就。本次规划设计工作在北京市“城市功能疏解”、“绿道建设”、“2008奥运遗产再利用”和“2022冬奥会筹办”的大背景下，试图通过精细化的区域调研、发掘绿色更新潜力空间，提出合理、可实施的空间更新策略，构建一个从北京老城区向北延伸至奥林匹克中轴线的北京中央城区绿色公共空间网络。

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Since the 21st century, the development of Chinese cities entered a new phase as the response to the long-term low urbanization rate in the past. Consequently, the key themes of such a process focus only on the speed of the physical growth, which may generate great push power of local economy but also potential "urban disease" in many aspects. This means the coming "turning point" of China's urbanization, and the quality improvement of urban spaces will be the main task in future. In some larger metropolises like Beijing, Shanghai, and Guangzhou, the historic changes are emerging right now.

There have been tremendous findings in pursuing appropriate ways to create higher-quality urban spaces. From the perspective of landscape architecture, the establishment of green open space system should be significant measurements to improve the quality of urban spaces. This includes not only the construction of greenways in new urban areas, but also effective betterments of the existing urban areas. Certainly, the planning and design of the renewal process must be more unique and challengeable, and require deeper investigation on the existing and potential green areas and needs of local community, usually with more detailed analytical tools and innovative design. Also, this should be a complex process under close cooperation by urban planners, architects, civil engineers and hydraulician and so on.

This project focuses on the area around the north central-axis of Beijing city. This is a very special area which just reflects the urban development trajectory of Beijing. The North 2nd ring road and the moat are parts of the historic town; the Qingnianhu Park and Liuyin Park are two typical cases of early city parks in the Socialist planned-economy era; while Chinese Ethnic Culture Park, the Olympic Green and sports parks are the symbols of recent urban construction since the era of the reform and opening-up policy. Currently, under the idea of "better reuse the Olympic heritages" and the new master plan of Beijing Municipal City, the renewal process aims to regenerate a green open space system within the area in very cautious ways. The work expects to create green connections across the historic town, Socialist modernist city and the Olympic central area along the north central-axis of the capital city.



The site is located on the north of Beijing Second Ring Road and the west of the central axis of the city, which is the junction area of Xicheng, Haidian, and Chaoyang District. The connection of the block to the wedge-shaped green structure in the urban area of Beijing has positive significance for the continuation of the ecological corridor, and also plays an important role in enhancing the experience of the city.

Under the background of urban 'double repair'—the urban repair and ecological restoration, the renewal of green network in the old city is a key step in the reconstruction of the old city, which is of great significance to the improvement of the old city space quality and the living environment. The renewal of the green network in the old urban areas is mostly based on the preservation of the existing green space, which usually means the minimum intervention along with the best achievements. Given the situation that many Chinese cities is carrying out the totally reconstruction of the old city, it is worth to rethinking how to update the old city network scientifically on the basis of maintaining the old urban features.

The construction of the site began from the 1960s, and now is dominated by residential areas. Most of the buildings were traditional courtyards. Among those courtyards, transportation facilities cover a large proportion of land which has potential renewal value. The site is attached to the North Second Ring Road and there are two community parks, and a water system is running through the site as well. However, the green space is distributed fragmentedly and structurally weak, and the amount of greenery on the west side is obviously insufficient. At the same time, because this area was constructed about fifty years ago, although the internal road network system and public transportation of the site are relatively complete, the road is narrow, the parking facilities are insufficient, and the roads are usually occupied for other purposes, which results in poor road slowness and comfort. In addition, historical spot and cultural heritages such as Taiping Lake, Zhuanhe River, Deshengmen Gate Tower, etc., will become important nodes for transformation and design.

In general, the location advantage of the site is obvious, and it is strongly associated with the adjacent area, but the internal land use is chaotic, the traffic is complex, and the green quantity is insufficient, so it needs to be optimized and integrated. The plan aims to increase the total amount of green space, establish a complete green network to connect important nodes, and then establish a comfortable slow traffic system. It will also create distinctive open spaces for different site conditions.

Therefore, the following design strategies are proposed: Firstly, art galleries will be constructed along the central axis; secondly, historical and cultural recreation areas will be built along Zhuanhe River and North Moat; then, the Axis Art Gallery, the second ring road greenway, and the Yuan Ruins Park will be linked to form a U-shaped greenway to create a comfortable slow traffic system. In this way, the internal micro-circulation of the site will be open, and the potential space will be fully explored to stimulate the site's vitality. In the end, a "one axis, one belt, three centers" planning structure will be formed.

Specifically, we divide this site into 'three centers' as axis art district, the riverside cultural district and the neighborhood leisure district along the North central axis and Zhuan River, which are called 'the Axis' and 'the Belt'. A perfect green network is formed through the pertinent transformation and design. The linear system forms the skeleton of the green network to meet the demand of walking and cycling respectively. And the transportation station will be combined to form a perfect system of public service facilities, including the tourist service station, recreation facilities, parking facilities as well as health facilities and so on, which form a U-shaped green way. Finally, the Slow-traffic System of the old city area will be built. Dot and block system mainly include public spaces such as commercial center, art center, cultural center and green land of parks. We put forward corresponding transformation modes for different nodes, so as to create multifunctional living areas and to meet the residents' demand of daily activities, and to stimulate the vitality of this area.

Finally, the ecological corridor will be continued by completing the structure of Beijing green network through the green network skeleton, and the internal microcirculation will be formed by extending the green network to inner city, then public space will be created to meet the demands of residents' leisure activities by creating historic city landmarks to improve the living quality of residents, and finally the sustainable development of the city will be realized.