高明规划工作室

GAOMING PLANNING STUDIO

MIT | DEPARTMENT OF URBAN STUDIES AND PLANNING

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Massachusetts
Institute of
Technology

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PREFACE
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Gaoming—one of the five districts of Foshan City—is located in the northwest of the Pearl River Delta (PRD), the fastest growing and most productive region of China. The district has historically been an agricultural area with green rolling hills and paddy fields. It is located on the West branch of the Pearl River with water access to all of the major cities in the Delta and inland to Guangxi. Gaoming District has a population of about 250,000 with a planned doubling of its size in the next few decades to fulfill its role in the ongoing urbanization of Foshan City (total population of about 5.5 million). Foshan City and Gaoming District are rapidly developing into a single urban area that will assume an important role as the PRD continues to integrate economically and socially.

Gaoming is presently engaged in planning for its future as a balanced city with industry and agriculture while maintaining a strong emphasis on sustainability and environmental quality. The district recently completed its master plan, a planning effort in which several design institutes and a Hong Kong planning firm generated ideas for the entire district and for a new central area along the river.

佛山市五个区之一的高明坐落于中国发展最迅速、最具生产能力的珠江三角洲的西北部。自古以来就是有着绵延起伏的山丘和稻田的农业产区。它拥有珠江的支流－西江，水路可以通向珠江三角洲的各个主要城市，直至广西。高明现有人口25万，计划在未来几十年人口数量将翻倍以适应佛山市（总人口达550万）总体城市化的需要。在珠江三角洲继续实现经济和社会协调发展的同时佛山市和高明区将会迅速发展成为具有重要作用的都市区。

高明现在致力于将未来规划成一个工业和农业平衡发展的城市，同时又重视可持续发展和环境质量。高明最新的总体规划是由几家设计机构和一家香港规划公司共同完成的，它是整个地区和沿河新中心区的构想。

BACKGROUND
背景

In the spring of 2005, an urban planning studio at the Massachusetts Institute of Technology's School of Architecture and Planning examined the future of Gaoming. This studio, sponsored by the Esquel Group, is one of a series of domestic and international studios and workshops carried out by MIT's City Design and Development group. These studios investigate current urban planning and city design issues in a dynamic setting. In recent years, these studios have put forward ideas for areas and sites in Boston, Washington, DC, Chile, Singapore, England and Spain among others.

To complement these efforts, the studio focused on planning and design options for the proposed new central area along the West River. Of particular interest to our client and to the studio group was the exploration of new ways of integrating water/hydrological factors into a modern city - including watershed and natural ecosystem protection, recreational activities, housing, transportation, and tourism.

The studio's pedagogic objectives were to introduce students from different backgrounds (architecture, environmental planning, international development, and policy) to the issues that can be addressed through design and planning, as well as to the techniques and values that must be engaged in that task. Beyond these educational purposes, there is also a wider important public objective. Typically, there has been a concerted effort to stimulate public understanding and debate about a current design or policy issue in that locale. Thus, the studio worked with our client—officials of the District of Gaoming and Foshan Municipality—who would hopefully benefit from the proposals that the studio generated.

2005年春，美国麻省理工学院建筑与规划学院的一个城市规划工作组探讨了高明的未来发展。由溢达集团赞助的高明工作室是麻省理工学院城市设计与发展组创办的一系列国内外工作室之一。这些工作室在一个充满活力的背景下，研究目前城市规划和设计的课题。近年来，这些工作室为波士顿、华盛顿、智利、新加坡、英国和西班牙等的一些地区和项目提出过设想。

同以上这些努力相同，高明工作室的重点是为计划在西江沿岸开发的新中心区提供规划和设计上的选择。项目委托人和工作组对与寻找将水/水文因素与现代城市发展综合起来的新途径尤为感兴趣，包括分水岭和自然生态系统保护、休闲娱乐活动、住房、交通和旅游观光。

高明工作室的教学目标是引导从不同背景（建筑、环境规划、国际发展和政策）来的学生通过设计和规划来解决问题，同时在工作中受益并培养技能。除了这些教学目的，还有更重要的公共目的。一直以来政府希望提高和促进公众对高明现有设计和政策问题的理解和讨论。于是高明工作室与高明区和佛山市的官员一同工作，希望可以从工作室的建议中受益。

STUDIO OBJECTIVES
高明工作室目标

Using a holistic approach, the studio sought to address such issues as recreation, transportation, ecology, economic development, and community development in a number of ways, including:

- Compiling an inventory of the features that affect the site and the given problem;
- Analyzing these factors to assess opportunities and constraints that the site and surrounding area afford;
- Evaluating the potential for a sustainable approach to developing Gaoming's new central district as a model water city;
- Establishing a process for creating design ideas and guidelines for planning a city with water and hydrology as the unifying elements;
- Generating design and planning concepts;
- Producing sets of design and planning prototypes and typologies and reporting on the options for Gaoming District;
- Getting feedback and debriefing through public presentations and reports.

通过采用整体规划，工作室以各种方式探讨了娱乐、交通、生态、经济发展和社区发展等问题，例如：

- 收集整理各种关于所探讨课题和高明的资料；
- 分析这些因素并剖析高明及其周边地区的机会和局限性；
- 评估高明新区发展为现代水城的潜力；
- 为规划以水和水文为基础的城市提出设计建立步骤、主张和指导方针；
- 提出设计和规划理念；
- 提出多种设计和规划模型，并汇报给高明区；
- 通过公开陈述和汇报获取反馈意见。

PROCESS
步骤

1. Composition of the studio
Students with a multitude of backgrounds were selected to participate in the studio based on a competitive application process; the group chosen includes planners, urban designers, and architects with many different interests.

2. Site visit

3. Charrette in Gaoming and presentation

4. Inventory and analysis
The initial inventory and analysis was intended to provide an understanding of the composite patterns and processes of the natural and man-made systems; to assess the opportunities and constraints (challenges); and to generate planning and design concepts which will aid in transforming the site into an urban place.

5. Prototypes
Students also explored similar cases in which cities successfully and innovatively addressed the issues at hand.

6. Personal abstraction and projection
As a self-reflective exercise, students paused midway through the process to present a variety of visions for Gaoming and to explain their ideas in relation to one or several of the site's major issues such as waterfront development, the distribution and location of land uses, streets and blocks, integration of natural systems, and the preservation of existing villages.

1. 工作室组成
通过竞争激烈的申请审核过程来挑选具有不同背景的学生加入高明工作室，包括有不同兴趣的规划师、城市设计师和建筑师。

2. 实地考察

3. 高明研讨会和演讲

4. 资料收集及分析
最初的资料收集和分析是为了便于理解综合模式，以及自然、人工系统；是为了评估机遇和局限（挑战）；是为了形成能够助高明转变为城市的规划和设计理念。

5. 例证
学生们还研究了一些类似的案例，如：一些城市成功且有创意地解决了棘手的问题。

6. 个人观念概括和计划
作为一个自我思考的锻炼，学生们在这个过程中展现了对高明未来的各种设想，通过相关的一个或多个问题来阐述他们的想法，例如：水滨发展、土地利用分配和定位、街道、整合自然系统、及保存现有村庄。

7. 整体规划及设计调查建议
中期评审的高明总体规划为客户提出了几种规划情景和选择。这一步反映了制订决策的三个特定层次：

1）规划背景和首选设想：地区和城市的整体背景及首选方案的依据

2）提出区域的总体规划

3）详细的社区规划，提供一个特定土地利用区域的细节

8. 在高明的中期报告和第二次实地考察

9. 设计和规划类型的形成
工作的最后阶段是产生以下主题的设计、规划类型：水（水文）、交通和土地利用、密度和构成、市政中心、村庄。

10. 与高明市长和官员讨论

11. 修改以及汇报成果

12. 方案展示

13. 在高明做方案演讲

7. Overall plan and suggested design investigations
The master site plans prepared for the midterm review explored alternative planning scenarios and presented potential options to the client. This reflected three specific levels of decision-making:

(1) Planning context and preferred scenario: the overall context at a regional and city scale and the basis for a preferred plan,

(2) A proposed master plan for the site, and

(3) An illustrative neighborhood plan that provides details for a specific land use area.

8. Midterm review in Gaoming and additional site visits

9. Development of Design and Planning Typologies

The final stage of work created specific typologies for design and planning along the following themes: water (hydrology) transportation and land use, density and form, civic centers, and villages.

10. Review with the Mayor of Gaoming and city officials

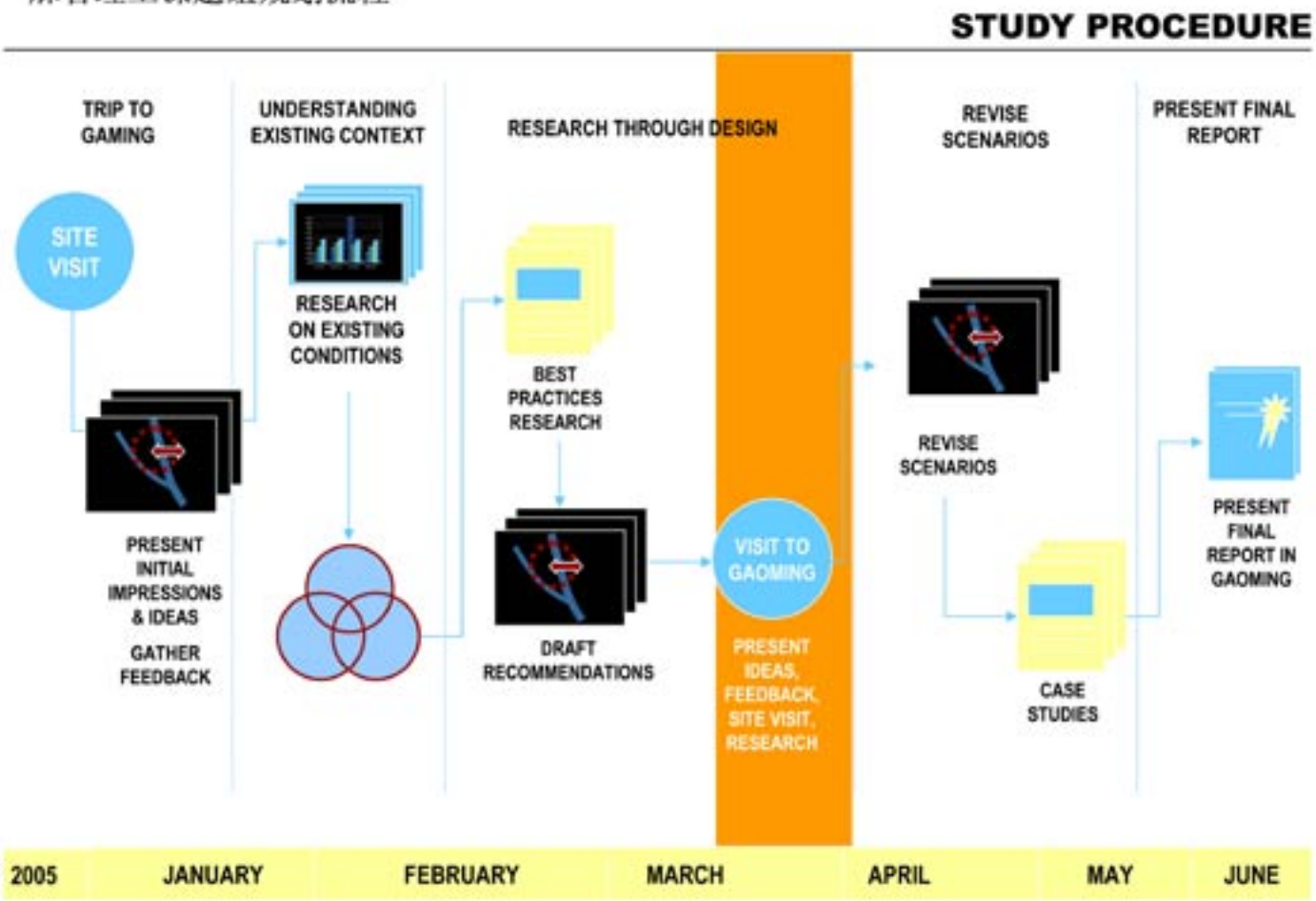
11. Revisions and report production

12. Exhibition of project

13. Presentation of project in Gaoming

在高明规划

麻省理工课题组规划流程



THE REPORT
报告

The remaining sections of this report detail the context of this project and the team's proposals. It describes the issues to be addressed in the planning and design of Gaoming and presents the investigations and proposals for the area that were prepared by the students. It is organized into four sections:

Section I: First Impressions

Section II: Context

Section III: Planning Frameworks
Re-Building the Urban Canal
Balancing Urban Growth
The Maturing City
The Network City Gaoming
A Healthy Gaoming

Section IV: Design and Planning Typologies
This section outlines specific interventions within the study site. It illustrates prototypical typologies for design implementations such as water, transportation and land use, and civic centers.

本报告的其他章节将详细阐述这个项目的背景和各小组的建议，并描述在高明规划和设计中处理的问题。学生们准备的调查报告和建议分为以下四个部分：

第一部分：第一印象

第二部分：地方分析

第三部分：规划框架
重建城市内河
绿色高明
走向成熟的城市
网络之城－高明
健康高明

第四部分：设计和规划类型
这部分概述了研究地区的特定建议，阐明了水、交通和土地利用、城市中心的设计实施原型。

EXECUTIVE SUMMARY
综合摘要

Gaoming, a rapidly growing district in the corner of the Pearl River Delta, is on the cusp of establishing itself as a large city in the Foshan region, with the population expected to double in the next decade. However, this growth must be environmentally, economically, and socially sustainable to ensure that the district continues to prosper in the years to come.

This report documents the challenges and opportunities that lie ahead for Gaoming District, with specific attention to strategies and actions that can help to lay the groundwork for a vibrant new city in the decades to come.

Specifically, the report stresses the following points:

Water and Hydrology

- Water resources must be sheltered from pollution and integrated into new development to protect Gaoming's flood plain for future residents.

Waterfront Development

- Waterfront development should enhance access to the water for Gaoming's residents and leverage the rivers and canals as resources and catalysts for new development and community-building efforts.

Civic Center

- A new civic center for Gaoming should link the existing city to the new development and provide a focal point for civic life in the region in the years to come.

位于珠江三角洲一角的，迅速发展的高明正在全力建设成为佛山地区的一个大城市，其人口将在未来十年翻倍。然而，为了保证这一地区未来的繁荣，这种发展必须是环保的，有经济效益的，可持续发展的。

本报告指出了高明所面临的挑战与机遇，对策略和行动的重视将有助于为未来的活力新城打下基础。

报告尤其强调以下几点：

水和水文

- 水源应远离污染，融入到新开发中去，为高明的后代保护洪泛区。

水滨开发

- 水滨开发应增加居民接触水的机会，发挥河流、内河作为新开发和社区建设的资源和催化剂的作用。

市政中心

- 新的高明城市中心应连接新老高明，为将来的城市生活提供焦点。

村庄、住宅及城市结构

- 新的住宅发展应为中、高密度，并集中在交通要道周围来开发，兼顾居住和商用，创建生机勃勃和适宜居住的城市。现有的村庄应融入新的城市脉络，以保护相关文化，保证居民从老城向新城的平稳过渡。

交通、街道和土地利用

- 综合交通和土地利用规划能够保证高明的新开发将为日益增长的人口提供住房、就业和休闲场所，同时又可以通过建立交通中转点、精心设计的街道模式和社区交流来增强流动性。

公园和开放空间

- 虽然规划仍在进行中，但是高明必须现在就预留出开放空间土地；公园、水路、以及其它自然资源应在开发前就保护起来。

Villages, Housing, and Urban Form

- New housing development should concentrate high- and medium-density development along transit while integrating residential and commercial uses to create a vibrant, livable city. Existing villages should be integrated into the new urban fabric to preserve cultural relevancy and allow residents to transition peacefully from the old to the new.

Transportation, Streets, and Land Use

- Integrated transportation and land use planning can ensure that new development in Gaoming provides housing, employment, and leisure space for the growing population while enhancing mobility for all by establishing transit connections, well-designed street patterns, and community connections.

Parks and Open Space

- Gaoming must designate land for open space now, while the planning process is still underway; parks, waterways, and other natural resources should be protected before development begins.

在高明规划

FIRST IMPRESSIONS
第一印象

We arrived in Gaoming after several days of travel through Hong Kong, Shenzhen, and Foshan. As we moved further into the Pearl River Delta our perspective narrowed and became more local. Our first introduction to the PRD was in Hong Kong during a meeting at the University of Hong Kong where we learned about macro level impacts on the region. It was here that we first began thinking of the role the PRD plays in greater China; the "industrial seat" of the country was booming in many ways and growing rapidly. We also learned about the impact of such growth--the environmental effects of these industries on air and water quality was a subject that would be addressed in the coming meetings with the planners in Foshan and Gaoming. We traveled by train from Hong Kong to mainland China and arrived in the vibrant city of Shenzhen. Our stay was brief, but informative. We met with city planners and learned about the success of the city's rapid development--and even rode on the new high speed underground metro line. Our travels took us to Guangzhou and Foshan next and it was during these visits that we began to understand our task more clearly. The planners presented us with large scale models of the regional hub of Foshan, described how Gaoming fit into the regional plans, and also presented us with the products of a design competition. In all, the meetings leading up to our work in Gaoming were seminal in shaping our first impressions of the region. Through these conversations, we were able to focus on four areas of exploration: regional context, waterfront, street network, and housing. Our first task would be to get a feel for the existing conditions. In the following chapter, we detail our first impressions of the regional context, waterfront, street network, and housing.

我们在对香港、深圳和佛山做了几天考察之后抵达了高明。随着足迹逐渐深入珠江三角洲，我们的观察越来越具体，越来越本地化。在香港大学的会谈中，我们第一次接触到了珠江三角洲，了解到宏观经济对这一地区的影响。就是在那时，我们开始思考珠江三角洲在大中华地区所扮演的角色。中国的工业排名不断上升，经济迅速发展。我们也看到这种飞速发展所造成的影响：例如工业对大气和水环境的影响将会是我们和佛山、高明的规划师们所讨论的一个话题。从香港乘火车，我们抵达了中国大陆的活力之城—深圳。我们的停留短暂但颇有收获。我们会见了深圳的规划师，了解了深圳飞速发展的成功经验，并乘坐了深圳的新型高速地铁。在接下来的广州和佛山之行中，我们对我们的任务理解得越来越清晰。规划师们向我们展示了佛山区域规划模型，讲述了高明的发展如何可以更好的融合到区域规划中，并给我们看了设计比赛中的作品。总之，高明工作的介绍会议帮助我们形成了对这一地区的第一印象。通过这些交谈，我们将重点放在四个开发方面：区域环境、水滨地区、街道网络和住房。第一个任务是要了解高明的现状。在后面的章节中，我们将详细阐述我们对区域环境、水滨地区、街道网络和住房的第一印象。

REGIONAL CONTEXT
区域背景

Gaoming – because of its privileged location and abundant nature – has the opportunity to be a new manufacturing base in the Pearl River Delta (PRD). With thoughtful development, it can also be the driving force of the West River region.

The geographic proximity to the large industrial pole of Foshan City makes Gaoming a very attractive location for new industries. According to existing plans, Gaoming will soon be served by diverse arterial roads offering connectivity to the surrounding cities. Gaoming should also plan to use these roads and other new ways to provide public transportation at the same metropolitan scale.

Public transportation should also be employed to organize the new development of the city. The coordination between corridors of dedicated lines for buses, for example, should coincide with the denser areas of new development. This strategy, called Integrated Land Use Transportation Planning, allows for coherent concentration of population and commercial activity where the public transportation is more efficient. Moving away from the served corridors, the density becomes lower.

得益于它独特的地理位置和丰富的自然资源，高明有可能成为珠江三角洲的一个新兴的生产基地。如果有周密的发展规划，高明还有可能成为西江地区发展的龙头。

地理位置上靠近佛山市的大工业支柱区域，使得高明对于新兴工业具有很大的吸引力。根据现有的规划，高明将很快贯通不同的运输动脉，连接周边地区。高明还应规划利用这些道路和其它运输动脉来承担这一地区的公共交通。

公共交通还应被用来组织城市新的开发。比如公交专用通道之间的调整应该与新开发区的密集程度相一致。这个众所周知的策略叫做“整合土地利用和交通规划”。它考虑居住和商业活动的集中，使得公共交通更加有效。离交通要道越远，人口密度越低。

Probably the most striking feature of the city is its landscape, with abundant water throughout the territory both from the rivers (West River, Xiuli River and other streams) and from the innumerable fishponds. Gaoming should make use of the plentiful water resource, which can be very attractive for the urban organization of new developments. The river edges should be explored in the form of continuous green space and also by programming the waterfront with diverse activities. The concern about the water quality is then posed, given the notorious air pollution in the PRD region. The hope is that strategic policies will be coordinated through different governmental instances, in order to recover and maintain the water quality from areas further up the West River.

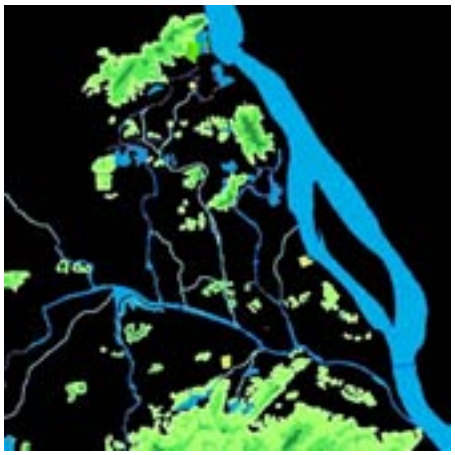


figure 1: Water Resources in Gaoming
图 1 ： 高明的水资源

If the river water depends mostly on an efficient regional coordination, the city of Gaoming should employ advanced ecological techniques for the management of storm water and waste water. Two advanced techniques are dedicated wetlands and constructed swales, for example.

The theme of technology producing an ecological city can be attractive to new industries in the PRD that are essentially concerned with the environment. Gaoming can become a pole of green industries, a city engaged in the preservation of the natural resources and also in the quality of life of its population.

figure 2: Foshan Metropolitan Area
图 2 ： 佛山大都市圈范围

In that sense, all the above mentioned development strategies should be complemented by a strong educational system. If fast-paced industrialization is the most likely scenario for Gaoming in the next following years, the city should have a long term strategy of education in order to avoid the depression that many industrial cities in developed countries now face.

Gaoming has the opportunity to become a model of sustainable city for the PRD region. The city already benefits from an abundance of natural resources. What Gaoming needs is the exploration of development strategies that will protect its beautiful landscape. It needs intelligent development approaches that incorporate environmental and human resources, such as integrated land use transportation planning, metropolitan connectivity, coordinated water policy, ecological water treatment, and educational systems. The combination of unique nature, strategic location in the PRD and smart planning development will be the key to a successful Gaoming.

figure 3: Fishponds in Gaoming
图 3 ： 高明的鱼塘

figure 4: Integrated Land Use Transportation Typical Section

figure 5: Aerial View of Curitiba, Brazil

figure 6: BRT station in Curitiba, Brazil

figure 7: Constructed Wetland in Melbourne, Australia

figure 8: Infiltration Swale in Melbourne, Australia

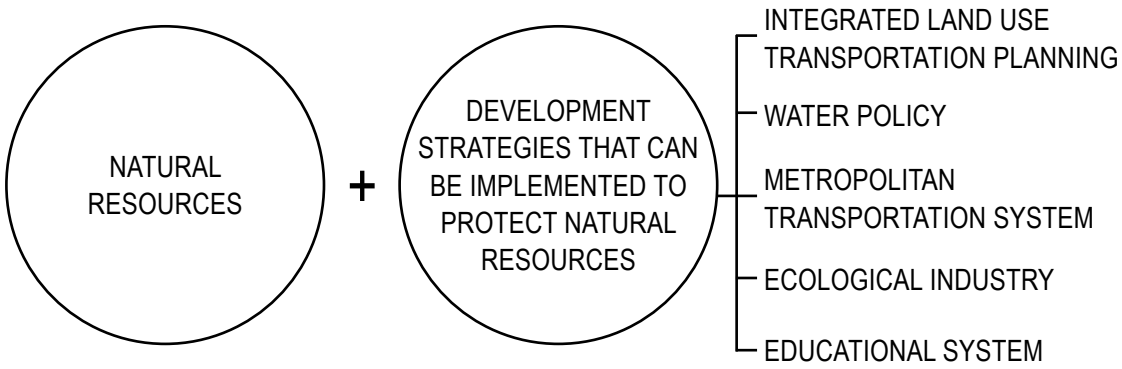
高明最明显的特征大概就要算是它的地貌了，辖区内河流（西江、秀丽河以及其它河流）和不计其数的鱼塘构成了丰富的水资源。高明应充分利用大量的水资源，这些水资源对于新开发的城市具有很大的吸引力。河岸应开发成绵延的绿色空间，修建各种水滨活动设施。然而珠江三角洲严重的空气污染让人们对水质提出了质疑。希望各地区政府能够协调战略方针，以恢复和维持包括西江上游的水质。

如果河流水质在很大程度上取决于有效的区域协作的话，高明当地应采用先进的生态技术来处理雨水和废水。例如，现在在新城，这些水通过湿地和人工湿地循环使用。

科技主题打造的新兴生态城市将吸引珠江三角洲关注环境的新兴工业。高明可以成为绿色产业基地，不仅注意保护自然资源，还致力于提高人民的生活质量。

从这个意义上来说，以上提到的所有发展策略还应有一套完善的教育体系来补充。如果高明未来的发展是迅速工业化，那她就应该有一个教育发展的长远规划，以避免现在许多发达国家的工业城市所面临的萧条。

高明有可能成为珠江三角洲可持续发展城市的模型。因为高明已经有了丰富的自然资源，她所需要的就是探寻能保护其优美风景的发展策略。她需要兼顾环境和人文资源的明智的发展策略，例如：整合土地利用、交通规划、大都市圈连通、协调的水资源政策、生态水处理方法、教育体系等。高明成功的关键就在于综合独特的自然条件、珠江三角洲的有利地势和明智的发展规划。



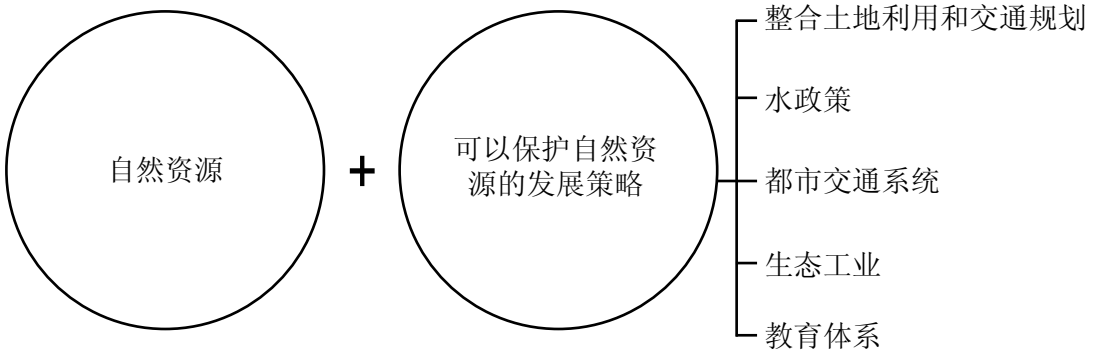


figure 9: Diagram of Strategy for Gaoming
图 9 ：高明的规划策略

STREETS AND TRANSPORTATION
街道与交通

The studio's initial reaction was that Gaoming already contained many of the design solutions for future streets and transportation. Gaoming's urban context and natural assets today thus served as points of departure for the streets and transportation research, analysis and recommendations. Augmented by lessons learned from around the world, Gaoming is now in a fortunate position to maintain present day mobility and accessibility even as its population begins to soar.

But the time to act is now. Transportation infrastructure makes a lasting impact on urban development. It is therefore critical to think about how streets and transportation can preserve current mobility, prevent congestion and enhance future mobility. Planning for adaptability now, before the Gaoming central area is developed, makes the most economic and environmental sense for Gaoming, its people and landscape.

This section summarizes the transportation and street elements Gaoming may wish to preserve and enhance. It also discusses elements Gaoming would like to prevent and preempt, many of which we have heard from the officials in Foshan and Gaoming themselves. Four areas of recommendations and avenues of exploration are thus suggested to acheive these goals: street network, street typology, adaptability and water networks.

我们工作室最初的印象是高明已经有许多关于未来街道和交通设计的方案。高明现有的城市环境和自然资源可以作为对街道和交通研究、分析和建议的起点。吸收世界各地的经验，高明现在可以争取在人口激增的同时保持现有的交通流动性和可达性。

现在是应该行动的时候了。交通基础设施对城市的发展有着深远的影响。因此，考虑街道和交通如何才能保持现有的流动性，防止交通堵塞，以及增强今后的流动性就显得尤为重要。在高明发展新的中心区之前，现在就应该规划其适应能力，这将对高明市、高明市民和高明风景产生重要的经济和环保意义。

这部分概述了高明可以保护和加强的交通和街道要素，还讨论了我们从佛山和高明的官员那里听说的一些高明应当防止和预先考虑的因素。建议的四个方面和考察的途径预示着将实现以下目标：街道网络、街道结构、适应能力以及水网络。

水和街道网络

高明的水特点对我们在高明的区域交通研究有许多设计和实际上的影响。高明丰富的水资源在带来工程上的挑战的同时，也带来许许多多的机遇。西江、秀丽河及其延伸的内河网络可以作为高明中心区域交通系统和街道的特色和亮点。

作为典型的水城，高明可以通过对开放空间、水网络和街道进行创新式的整合，而成为真正的典范。一条条街道可以通过运河、开发空间、滨江/河道与水相交。水景将会使房产增值的同时增加环境效益，例如减少雨水流失，降低城市温度等。

街道生活

高明有着充满活力和丰富多彩的街道生活。在夜市上，市中心的人行道上摆满了各式各样的零售商品，高明向我们展现出一个富裕而生机勃勃的城市。可问题是如何在高明城市向外发展的同时保持和加强这种活力。

WATER AND STREET NETWORKS

Gaoming's water features have tremendous design and practical implications for transportatoin in Gaoming and the site. While water poses engineering challenges, Gaoming's abundance of water resources also present tremendous opportunity. The West River, the Xiu Li river and its extensive canal network can serve as defining features and enhancements to the the transportation system and streets in the Gaoming Central Area.

As a Model Water City, Gaoming can truly be a model through the innovative integration of open space, water networks and street. Individual streets can intersect with water through canals, open spaces and riverwalks. The water features will enhance real estate values while providing the added environmental benefits of reducing stormwater run-off and cooling the district.

STREET LIFE

Gaoming also has a vibrant and diverse street life. With night markets, large sidewalks and a variety of business and retail throughout downtown, many elements of a rich and lively city are already contained within Gaoming. The question then is how to build such vitality and enhance it as Gaoming expands.

figure 1: the vibrant street life with a mix of pedestrians, bicycles, motorcycles, motorcycle taxis and automobiles in downtown Gaoming.

图 1：高明市中心充满活力的街道生活。行人、自行车、摩托车、摩托的士和汽车川流不息。

figure 2: the hierarchy of streets in Gaoming and other cities is important for transportation functions in downtown. This variability should be taken into account in planning the Gaoming Central Area.

图 2：高明和其他城市中街道的不同类型层次对于城中心交通的运作尤其重要。高明未来中心城区的设计应该考虑到街道的多元性。

STREET VARIATION AND ADAPTABILITY

街道改造和适应性调整

The variation in street types of downtown Gaoming is one way to maintain this vitality. Different street types serve different uses, provide different commercial and residential spaces, and help meet the diverse needs of any city. Like all cities, downtown Gaoming thrives on diversity and its streets differentiate over time. A challenge in designing the Gaoming Central Area is how to enable this diversity and allow for such change from the beginning. One way to accommodate urban diversity is through varying street sizes and types. The relationships of

改造高明市区的街道类型是保持其活力的一个方法。不同的街道类型有不同的用途，提供不同的商业和住宅空间，有助于满足城市多样化的需求。像所有城市一样，高明市区的繁荣依赖于它的多样性。高明的街道随着时间不断变迁。对高明中心区规划设计提出的一个挑战就是如何使这种多样化成为可能，并且从一开始就允许这种变化。适应

城市多样化的一个途径就是改造街道的宽度和类型。街道的宽窄、街景、人行道设施、停车场之间的关系以及观光模式是历来就有的自然事物，但它们对我们今天如何规划和开发也至关重要。例如，既然现在步行通道对高明市区如此重要，那么就有必要从短期和长远的角度，在高明中心区采取措施保护步行通道和流动性。宽阔的人行道、宽敞的停车场、集中开发对于今天的高明来说也许是必要的，但是在将来，垂直发展和步行商业区也许更为合适。这样，街道的层次和结构，在这个报告中就显得尤为重要。

因此对街道的适应性调整就和初期他们的多样性一样重要。而街道调整的阶段性和发展的阶段性也一样重要。新建街道不仅应考虑到现在，更应考虑到适应未来的需要和变化。

different street widths, street landscaping, sidewalk amenities, parking treatments and travel patterns with land uses are natural processes which occur over time - but they are also critical to how we plan and expand today. For example, since pedestrian access is so crucial to downtown Gaoming today, it is critical to maintain measures that preserve pedestrian access and mobility in the short and long term of the Gaoming Central Area. Large sidewalks, parking, and clustered development may be necessary today, while transit rights of way, vertical growth and pedestrian malls may be most appropriate in the future. The street hierarchy and typology are thus critical to this report.

Adaptability of these streets is therefore just as important as their diversity from the outset. The phasing of streets is therefore just as important as the phasing of development. New streets must be considered in their present day terms, but must also be planned to accommodate future needs and changes.

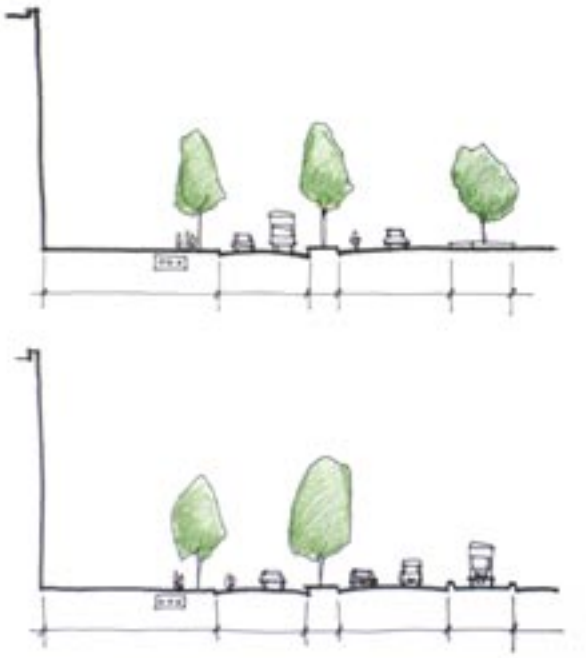


figure 3: street Adaptability: Streets should be designed to adapt to future needs. Above, a median designed for the short term can become a rapid transit right-of-way in the long term.
图 3 ：街道适应性：街道的设计应该可以适应未来的发展需要。如上图所示，街道中间短期的分隔地带未来可以开发作为公交快速道。

figure 4: the chance to plan the future is now. Development and streets in the Gaoming Central Area are still being planned. Above, the arterial extending north from downtown Gaoming through the Central Area.

图 4 ：现在就是规划未来的时候。高明中心城区的发展和道路现在仍在被规划。上图是一条连接高明现在市中心和未来中心城区的主干道。

STREET NETWORK

Putting it all together, we considered Gaoming's current street layout and possibilities for future networks of streets as Gaoming expands. The existing street network of Gaoming - a connected grid system - allows for multiple transportation options. Gaoming's existing street hierarchy provides the starting point for integrating land use and transportation planning in the future. Gaoming has a unique opportunity to lay out a new street network, hierarchy, and typology which, coordinated with land use plans and design elements, can enhance existing natural features, economic growth and the future generations of Gaoming.

街道网络

总而言之，我们要考虑到高明现在街道的规划，以及随着高明城市的扩大，未来街道网络的可能性。高明现有的街道网络呈现一个棋盘结构因而允许多种交通形式的存在。高明现有的街道层次为未来整合土地利用和交通规划提供了起点。高明有着独特的机遇来布局新的街道网络、层次和类型 。这些网络、层次、类型和土地利用规划、设计要素相结合，将突出现有的自然特色，加快经济发展，造福后代。

RIVERFRONT
水滨地区

RIVERFRONT AS AN OPPORTUNITY FOR GREEN DEVELOPMENT IN GAOMING

Gaoming's location along the West River, a branch of the Pearl River, provides a unique opportunity for green developments. Based on the available resources, Gaoming's current vision as a Capital City with Forest Hills (*Shanlin Shuidu*, 山林水都) is a good strategy for the city. Many of the current positive development practices should be preserved and continued, while green developments should pay special attention to Gaoming's most precious asset: the riverfront of the West River.

Green developments foster a sustainable future for Gaoming while allowing continued urban growth and improvement on GDP. In addition, green physical development along the riverfront provides unique opportunities to construct harmonious social relations by designing better civic spaces that encourage social encounters and interactions. The new green development will reconnect Gaoming with the West River, the cradle that has nurtured Gaoming from the very beginning.

OPPORTUNITIES AND CHALLENGES

There are presently many valuable opportunities which Gaoming's future green development could utilize:

河岸是高明绿色开发的机遇

坐落于珠江支流的西江畔，高明在绿色开发方面有着独特的机遇。依托现有资源，高明现在“山林水都”的设想是打造城市的一个好策略。当前许多积极的发展模式应该被保存和提倡，同时未来的绿色开发尤其应关注高明宝贵的财产：西江河岸。

绿色开发在继续城市发展和国民生产总值增长的同时，帮助高明建设一个可持续发展的未来。此外，通过设计良好的市民空间，鼓励社会活动和互动，沿河两岸的绿色自然开发为建造和谐的社会关系提供了独一无二的条件。新的绿色开发将重新连接高明和其城市发源地—西江。

机遇与挑战

高明的未来绿色开发有许多有价值

Scenic riverfront
Situated upstream on the West River, Gaoming's riverfront is surrounded by attractive natural scenes. The water quality is relatively good, offering valuable opportunities for human interactions with the water.

Water Transportation Links
The West River and the dense waterway network in the area are a valuable asset for transportation, tourism, production, dwelling, and a wide range of other functions.

Local history
Gaoming has a distinctive history with its environment, especially with water. Fish ponds and waterfront villages document memorable local water culture from the early history of the town.

Existing open space
There is currently an open space system in Gaoming that is composed of rolling hills, canal fronts, linear parks, plazas, and riverfront. This system provides a good foundation for future open space development.

Similar to other rapidly developing areas, Gaoming is also facing some challenges:

Steep edge
The 10-meter tall dike currently cuts off the city from meaningful interactions with the West River. The steep edge of the dike largely discourages casual uses.

的机遇可供利用：
风景秀丽的河岸：位于西江的上游，高明的河岸遍布宜人的美景。相对优良的水质为人们与水之间的互动提供了绝好的机会。

水路运输连线：西江与高明密布的水网构成可供交通、旅游、生产、生活以及其它各种用途的宝贵资源。

当地历史：高明有着与众不同的历史环境，尤其是她的水。鱼塘和渔村见证了当地自古以来特殊的水文化。

现有的开放空间：今天，高明有一个由绵延起伏的山丘、内河水道、沿河公园、广场与河岸组成的开放空间网络。这个网络为将来开放空间的发展奠定了良好的基础。

与其它迅速发展的地区相类似，高明也面临着一些挑战：

陡峭的堤岸：当前，沿江10米高的堤坝切断了城市与西江的互动。陡峭的堤岸在很大程度上阻碍了沿江

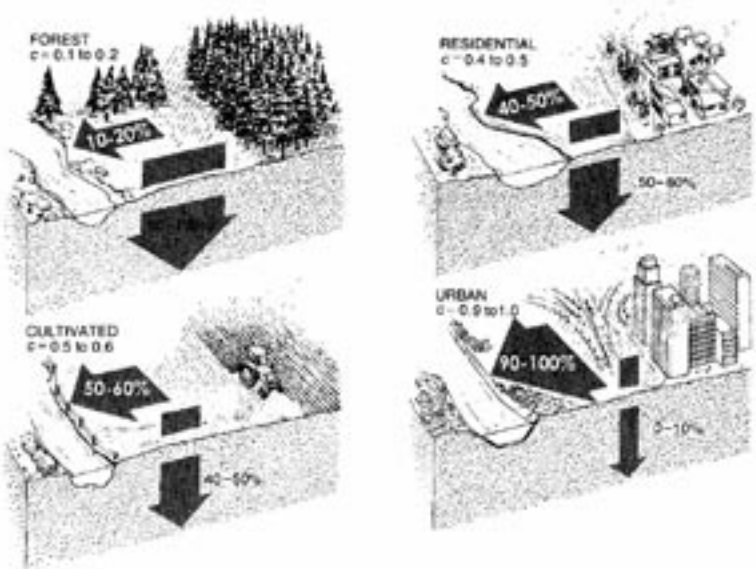
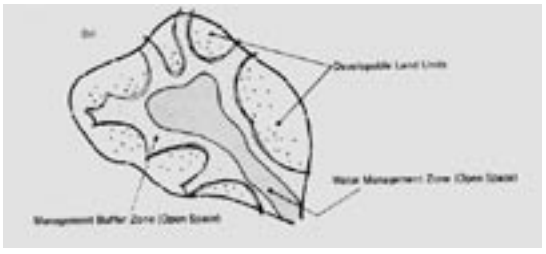


figure 1: different degrees of permeability based on ground surface treatments
图1：不同地表拥有不同的水渗透率。

figure 2: surface parking of a stadium covered with grass, allowing higher permeability for storm water.
图2：体育馆的停车场用草地覆盖，以提高水的渗透率。

figure 3: extensive local fish ponds and water network are a part of the rich local physical and cultural history.
图3：当地密集的鱼塘和水道是本地丰富的环境和文化历史的一部分。



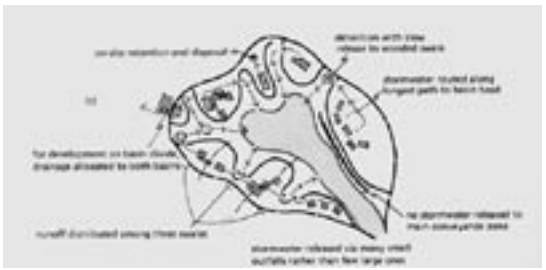


figure 4: Development pattern is informed by local hydrological conditions.
图4：当地的水文条件影响了发展模式。

Pollution: Rapid growth of local industries is a potential challenge for the local environment, especially the industries emitting untreated water directly into the local water system.

GREEN DEVELOPMENT:

Eco-tourism

Gaoming could consider taking advantage of its natural beauty through ecotourism—a strategy that fulfills multiple targets, improving local economy, raising natural preservation awareness, and protecting the environment. Ecotourism fits Gaoming's overall position of "Water Capital with Forest Hills" for green development. Gaoming's current exploration of ecotourism should be encouraged, such as its tourism development on Zhangmo Shan, Agruciltural Ecogarden, Linnan Jiuzhaigou.

Water Resources

As Gaoming's objective is to become a "Water Capital with Forest Hills," water resources should be one of its major goals for green development. This means it does not only focus on conventional practices like water use reduction or water pollution prevention, but also on more creative measures. For instance, the integration of open space system with the urban fabric increases the urban surface's permeability, thus reducing the amount of polluted storm water directly running into streams and rivers.

Furthermore, urban design should also reflect and respond to local hydrological conditions, allowing a systematic development of effective drainage patterns, minimizing storm drainage run-off, and replenishing ground water.

的休闲活动。
污染：快速发展的工业对当地的环境是一个潜在的威胁，特别是未经处理的工业废水被直接排放到当地水域。

绿色开发：

生态旅游：

高明可以考虑利用其自然资源开发生态旅游。这个策略可以实现多种目标：发展经济，提高人们保护自然的意识，以及保护环境。生态旅游与高明整体“山林水都”的绿色开发计划相适应。应鼓励高明现有的生态旅游开发，例如：皂幕山，农业生态园，岭南九寨沟。

水资源：

高明的目标是成为“山林水都”，那么水资源应是其绿色开发的主要目标。这意味着不仅仅要聚焦在传统的减少水耗费、防止水污染的实践上，还应有创新的举措。例如：把开放空间整合于城市结构，以增加城市地表的渗透性，以减少被污染的雨水直接流入小溪和河流。

此外，城市设计还应表现和反应当地的水文状况。例如，系统发展高效排水模式，最小化雨水流失，以及补充地表水。

figure 5: various designs to foster a diverse and intimate relation between the water edge and its users.
图5：不同的设计以营造水边和使用者间多样化的亲密关系。

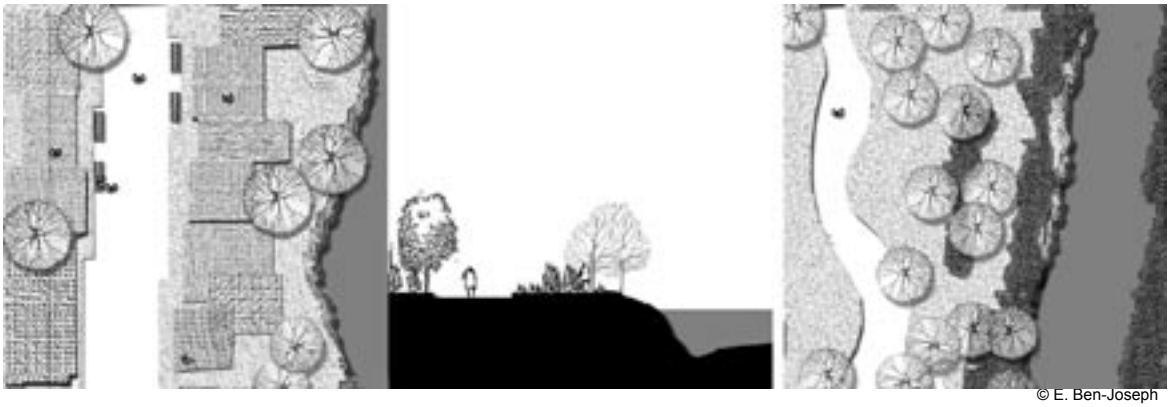
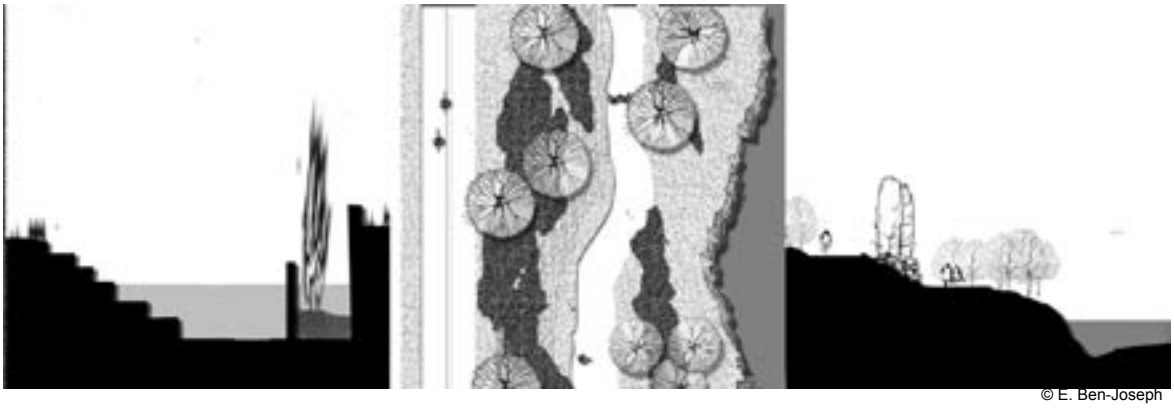


figure 6: the multi-functional "Emerald Necklace" in Boston has been continuously improved over the centuries.
图6:波士顿多功能的“祖母绿项链”在过去的几个世纪中不断被改善。

figure 7: annual charity rubber "Duck Race" attracts people in Singapore to the Boat Quay waterfront.
图7:一年一度的慈善塑胶“鸭子游泳”比赛吸引着新加坡人到Boat Quey水边观摩。

© Singapore Urban Redevelopment Authority, *Shaping Singapore: A Pictorial Journey*



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Public Open Space

Green development relies on the integration of a well-designed public open space system, which helps both the environment and the wellbeing of the people. The pressure from rapid development would lead to high demand in land. Although fully developing all available land might be economically compelling, a public open space system is an integral part of Gaoming's sustainable future for decades to come. For instance, the well-known Emerald Necklace open-space system in Boston is a result of continuous improvements through centuries. This system has been transformed from a simple open-space reserve to a multi-functional open space system for natural preservation, flood control, and leisure functions.

The rich local cultural history should also be incorporated into the development of the open space system, which could help extend and enrich the local water culture. For instance, the preservation and transformation of the current *ji-tang* (基塘) agricultural practices could lead to ecotourism. The development of riverfronts with open space for boat markets could reinvent the long-gone boat merchants scenes of the past.

Lastly, the treatment of the water edge, especially the dike, could become inviting for public gathering and daily socializing. A soft edge with various spatial options provides flexibility for different uses.

Creating an Integrated Edge

A successful development along the West River waterfront ultimately demands an integrated edge. The fulfillment of green developments necessitates these various complementary systems working together. For instance, the development of transportation along the riverfront should incorporate the interconnections between various transportation modes (bus, water taxi, pedestrian pathways, etc.) and the space along the water edge. The clustering of various functions and programming should work cohesively while each node along the edge retaining its uniqueness within these integrated programs.

公共开放空间：

绿色开发依赖于一个完整的、精心设计的公共开放空间网络，它将有益于环境和人民生活。城市飞速发展的压力将会导致对土地利用的高需求。虽然充分开发所有可利用的土地可能产生巨大的经济效益，但是公共开放空间网络是高明未来可持续发展中不可缺少的一部分。例如：波士顿著名的“翡翠项链”开放空间网络就是几个世纪以来不断努力发展的结果。它由单一的预留空地转变为具有自然保护、洪水控制、休闲娱乐等多功能的开放空间网络

高明丰富的历史文化也应当融合在开放空间网络中，这样有助于延伸和发展当地的水文化。例如：保存和改造现有的基塘农业点，将其建成生态旅游点；把河岸发展成船上市场的开放空间，重现消失已久的船上贸易景象。

最后，水岸治理，尤其是堤坝，将会吸引公众和日常社会活动。具有多种空间结构的亲水堤岸将为不同用途创造便利条件。

建造完整统一的水岸：

西江沿岸的成功开发非常需要一个完整统一的水岸。要想实现绿色开发，就必须整合各种各样的补充系统。例如：沿河交通运输的发展应考虑到各种交通方式（汽车、水上巴士、人行走道等）和沿河岸空间的内在联系。聚集在一起的不同功能和设计既要相互融合，又要在整体规划中保持其各自的特色。

HOUSING, DENSITY & LAND USE
住房，密度和土地利用

Upon site investigation in Gaoming, many intriguing aspects of the local culture emerge which should take priority in design of the extension of the city. Walking through the existing context, one experiences many diverse social activities including: singing and dancing in the park, jogging, Tai-Chi, fishing and farming along the coast and various other activities among the streets, including formal and informal markets. There also exists a mix of street performers, operating in any available open space, singing and dancing, bringing crowds of people all around them. The street life in Gaoming is alive and buzzing, and it may be said that this is a direct result of the tendency of Gaoming residents to look toward the streets and shops as an opportunity for social interaction.

Taking this observation into serious consideration, it is necessary to positively integrate this existing social culture into the new urban fabric and provide appropriate open space for these conditions. Therefore, our team explored the opportunity of scattering small green spaces throughout the city rather than allocating one only specific site for a large open space. Potentially, the new city of Gaoming could offer the same intensity of street life if open space is consistently provided within walking distance of any given point within the fabric. These smaller, evenly dispersed open spaces prove may be a better alternative, in that they provide inhabitants of the city with an intimate park setting within their neighborhood.

通过在高明的实地调查，我们发现当地有许多引人注目的文化场所，在设计城市外延的时候就要优先考虑到这些文化场所。当你在现在的高明漫步的时候，能够体验到各式各样的社会活动，如：在公园里唱歌和跳舞，慢跑，打太极拳，在河岸边垂钓和耕种，以及在街上正规和非正规的市场里的各种活动。还有各种街头表演者在空地上唱歌、跳舞，和里里外外的观众。高明的街头活动是活跃而嘈杂的，这可以说是市民们倾向于把街道和商店作为社会互动场所的直接结果。

当我们认真考虑这些现象的时候，有必要将这些现存社会文化的积极元素融入到新的城市网络当中去，为这些活动提供适当的空间。我们组就是在寻找机会在城市中建造许多分散的、小的绿色空间，而不是仅仅建造一个特定的广阔空地。这样，如果开放空间都建造在城市网络中任何一点的步行范围之内，高明新城就有可能维持和老城同样频繁的社会活动。这些小型均匀分布的空地为城市居民送去社区小公园，这有可能是更好的选择。

MAJOR / MINOR STREETS

Noticing that street life is an essential part of the city's culture, we proposed to provide an urban fabric that is sensitive to the human scale of pedestrian and cyclist. This may be achieved by creating a grid system of varying street widths and traffic densities. Therefore, major streets would be established as main retail and commercial streets, and the inner streets could decrease in scale, sometimes restricted only to pedestrian use. Understanding the rainy climate of the region, these major streets could have cantilevered overhangs, as we observed of many of Goaming's existing typologies, or alternatively could be arcaded; both would shield the pedestrian from weather. Another aspect of the street network that we took note of was the somewhat chaotic interaction between pedestrian, motorist, and cyclist. This struck us as a very dangerous condition that hinders the sense of security for the pedestrian. Therefore, we recommend that a more integrated system of traffic coordination be investigated for the new areas of the city.

HOUSING TYPOLOGIES

After observing the existing typologies within the city, we felt that there are three major housing classifications in Gaoming. These are: dormitories, mixed income, and luxury housing. A diverse range of use throughout the city is important in order to provide a dynamic environment, one comfortable to many different users; therefore, each of these could housing typologies could perhaps be mixed together. Their adjacency would allow for a cohesive city, one that does not create sections of lower income residents.

PRESERVATION

On our site visit, we realized that the existing rural villages make up a large minority of the existing landscape, and therefore we feel that it is important for the city of Gaoming to selectively preserve some of these villages in order to salvage an aspect of the city's history. These preserved villages could potentially become areas of adaptive re-use, where they could emulate the Shanghai model of Xintiandi by housing retail and dining spaces

figure 1: sketch of open space within the housing block
图 2 ：住宅和开发空间草图

figure 2: wide sidewalk in Gaoming taken over as motorcycle parking area
图 3 ：高明宽大的行人道被用作摩托车的停放点

figure 3: sample block typology with various scales of integrated open space.
图 4 ：城市街区类型例子，融合和不同的规模和开放空间的整合

figures 4 and 5: existing landscape as potential for urbanized open spaces
图 5 和图 6 ：现有的土地有潜力成为未来都市中的开放空间

主次干道：

注意到街道活动是城市文化的重要组成部分，我们建议创建一个适宜人们步行和骑自行车的城市网络。这个网络可以通过创建一个由宽窄不同、交通密度不同的街道而组成的棋盘网络来实现。这样，主干道将被建成主要的零售和商业街，而次干道则可以缩小规模，有时甚至可以变成步行街。为适应于这里的多雨气候，主干道可以建成像我们在高明看到的许多悬臂结构一样，或者是骑楼，为行人遮挡风雨。我们注意到高明街道网络的另一个特点是行人、摩托车、自行车的混杂行驶。这种危险的状况非常令我们担心，因为行人的安全容易被忽视。因此我们建议在新城区建立一套更完善的交通协调系统。

住宅结构：

在考察了高明现有的住宅类型之后，我们看到三种主要住房类型：宿舍型、混合收入型和高级住宅。为了展现一个充满活力的环境，城市住宅有必要呈现出多样化。一种住宅满足不同使用者的需要，这样就会把各种不同的住宅模式混合在一起。各种住宅相互交叉，可以形成一个有凝聚力的城市，而不会出现所谓的“贫民区”。

保护区：

在实地考察中，我们看到村庄占土地面积的很大一部分。因此我们认为高明市有必要有选择的保护一些村庄，以在其大开发之前先抢救其城市的部分特征。这些保护村可以变为可适应性再利用的区域，就像上海的新天地，利用这些建筑来进行零售和餐饮业活动。

EQUITY / CULTURE

Noticing that the city is a mix of diverse users, we felt that the way to continue this positive mix is by building new housing that provides units geared towards a wide range of incomes. Taking this mix as a sign of the social tendencies of the residents of Gaoming, we felt that it is necessary to re-invent and introduce the culture related to the villagers and farmers. One possible solution would be to provide urban green space within neighborhoods for individuals to grow their own personal crops for private consumption.

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平等 / 文化：

看到不同收入人士在高明和睦为邻，我们感到要保持这种积极多元化聚居，就得建造符合为不同收入水平人士使用需要的住宅。把这种多元化聚居作为高明居民住宅趋势的标志，我们认为有必要重新引入和改进农田生活文化。一种可能的解决办法就是在城市小区划出一片绿地，供居民们种植一些其生活所需的农作物。

figures 6 and 7: current Land Use plan and study of occupying superblocks

图 7 和图 8：现有土地利用规划和“巨型都市街区”研究

SITE ANALYSIS
当地状况分析

We performed an inventory and analysis exercise to gain an understanding of the composite patterns and processes of the natural and man-made systems, to assess the opportunities and constraints (challenges) of the site, and to generate planning and design concepts which would aid in transforming the site into an urban place.

Using the available data (satellite imagery, GIS, CADD, images, reports, observations, etc.) the class investigated, analyzed and evaluated the factors of seven analysis topics of the site and the proposed development, including: hydrology, land use, waterfront, villages, street networks, open space, and housing.

Each team generated a list of impacts and possibilities of each topic as it relates to the development; created inventory/analysis maps and diagrams using the base maps provided; developed constraints and opportunities for each particular topic; and generated a list of planning and design principles. Teams also chose case studies which represent successes and innovations or failures to provide model lessons in developing typologies for Gaoming. The following provides an overview of these inventories and analyses.

我们的调查和分析研究是为了寻求获得了解自然与人造系统的复合发展模式，去考量机会和限制(挑战)，并且创造规划和设计的观念来协助当地向城市空间的转变。

工作室使用现有的数据(卫星图像，地理信息系统[GIS]，计算机自动辅助设计 [CADD]，图象，报告，调查等)调查、分析和评估了当地的发展，拟定出七个分析项目课题，包括水文学、土地利用、河岸、村庄、街道网络、公共空间和住房。

各个组负责一个课题，列出可能对当地发展造成影响的因素；用所提供的基础地图作出分析图和图表；探讨了各个课题的局限和机遇；并且拟定出各种规划和设计原则。各组也选择了专题案例研究， 这些案例代表了成功、创新和失败的例子，为高明的发展方向提供了经验和参考。 下列提供了这些调查和分析的概要。

在高明规划

The city of Gaoming 高明市

LAND USE & TRANSPORTATION
土地利用和交通

Our group analyzed the structure of planning in China in order to understand the contexts and dynamics of development practice. During the analysis, we started to understand the overall planning sequence and explored the difference between central and local governments in the process of land use planning. The central government emphasizes more socio-economic and environmental control, whereas the local governments focus more on economic developments. The roadmap for local planning agencies is based on the five year plan by the central government, with which local planning bodies are required to comply.

We also examined the taxation structure of the local governments and concluded that the current taxation system for development (based upon negotiations among different levels of local governments) might invite corruption. However, since we are not fully aware of the planning context in China, our analysis should be only regarded as our own judgment.

The overall site contexts, such as the length of waterfront and the site area, were analyzed in order to have a sense of scale. We looked at how much density would be built given a gross residential designation by the city of Gaoming. We projected population growth based on the changes in density and looked at increases in the number of people per hectare. We also analyzed the current urban infrastructure by investigating the networks of the main existing arterial roads and civic nodes. By overlaying a one kilometer buffer around them, we realized there were some relationships between nodes and transportation routes. We concluded that transportation would be an important aspect of Gaoming's growth, since hospitals, civic centers, markets, and port areas were linked by two major road axes.

我们的小组分析了中国的规划组织制度以便了解当地环境状况和发展实践的机制。 在分析中, 我们开始了解整个规划的次序，发现中央政府和地方政府之间的土地利用计划的区别。中央政府更多强调社会经济和环境控制，而地方政府更多集中于经济发展。地方规划部门的路线图是基于中央政府的五年计划, 地方规划局均遵守此五年计划。

我们研究了地方政府的税收制度并且知道当前的税制在不同级别的地方政府通过协商来分派，可能存在腐败现象。 但是, 因为我们不完全了解中国的规划体制，我们的分析主要是基于有限的认识和自己的评断。

规划区域，譬如河岸的长度和规划的面积， 我们通过分析对规划的空间尺度有了更好的掌握。城市密度决定了高明市的总住宅指标。我们通过密度的转变和每公顷人口数量的增长预计人口增长。我们也通过调查现存主干道和城市节点及网络分析了城市现有基础设施。通过覆盖一公里缓冲区, 我们认识到节点和交通线路之间的一些关系。因为医院, 市中心, 市场和港口都以两个主要公路为轴心， 我们认为交通会是高明发展的一个重要方面。

在高明规划

中央:
社会经济的平衡
农业土地保护
环境控制

CENTRAL
Socioeconomic balance
Agricultural land protection
Environmental control

地方:
经济发展
城市化
工业化
竞争目标

LOCAL
Economic development
Urbanization
Industrialization
Competing Goals

限制:
发展速度过快
污染
缺乏协调
缺乏融合

CONSTRAINTS
Rampant growth
Pollution
Lack of coordination
Lack of Integration

figure 1: Planning Structure
图 1 ： 规划架构

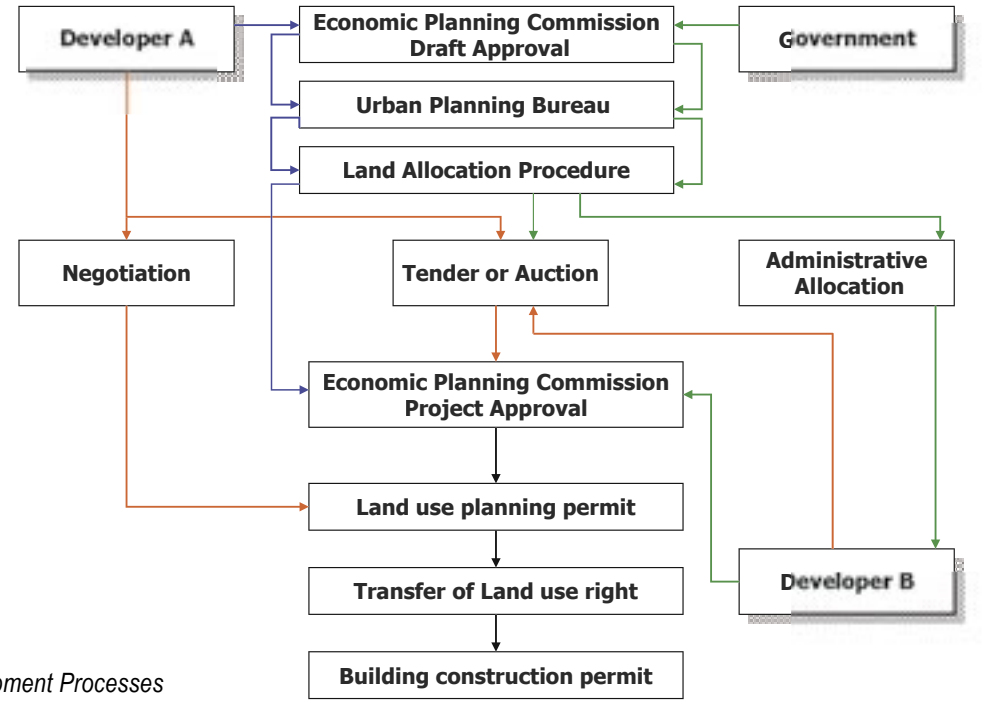
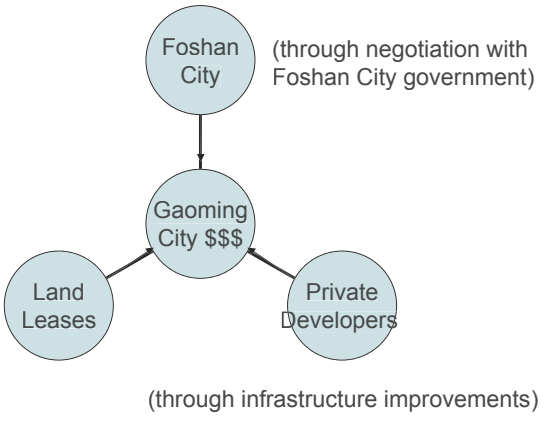


figure 2: Development Processes
图 2 ： 发展过程

Function	Economic and Social Development Planning	Land Administration and Land Use planning	Urban Planning
	Economic Development	**Land & Resource Control**	**Urban Development**
Central	National Planning Commission	Ministry of Land and Resources	Ministry of Construction
Provincial	Economic Planning Commission	Department of Land and Resources	Department of Construction
Prefecture County	Economic Planning Commission	Bureau of Land and Resources	Bureau of Construction Bureau of City Planning
Town Village	Economic Planning Commission	Office of Land and Resources	Construction and Planning Bureaus

figure 3: Planning Function Analysis
图 3 ： 规划机能分析



Income and business taxes are negligible, and all development taxes are paid to Foshan Central District.

We think this situation leads to inconsistent revenue generation and many opportunities for corruption.

收入税和商业税可以忽略不计, 并且所有发展税收都被缴纳到佛山市。

我们认为这种情况造成不一致的税收, 并且有可能造成腐败。

figure 4:Taxation Diagram
图 4 ： 税收示意图

SITE CONTEXT & DATA

Total Area: 1200 hectares (12 km^2)
Waterfront: 6,000 linear meters (6 km)
Other Canals: 11,500 linear meters (11.5 km)
Population: 250,000
Economy: Agriculture
Transportation: bicycle Bus system

Projected population: 500,000 people

规划区域和数据

总面积: 1200 公顷(12平方公里)
江畔: 河岸线6,000米(6 公里)
其他次要运河: 河岸线11,500米(11.5 公里)
人口: 250,000
经济: 农业
交通: 自行车和公共汽车系统

规划人口: 500,000人

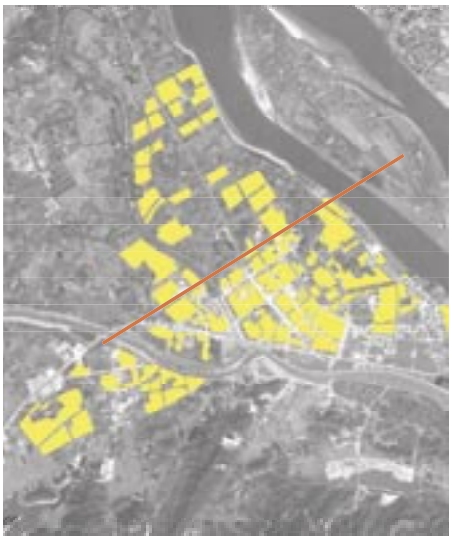


figure 5: Residential Areas

figure 6: Population Histogram
图 6 ： 人口柱状图

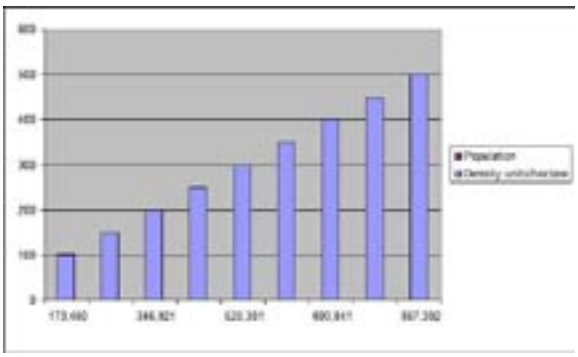


figure 7: Population Projection
图 7 ： 人口预测

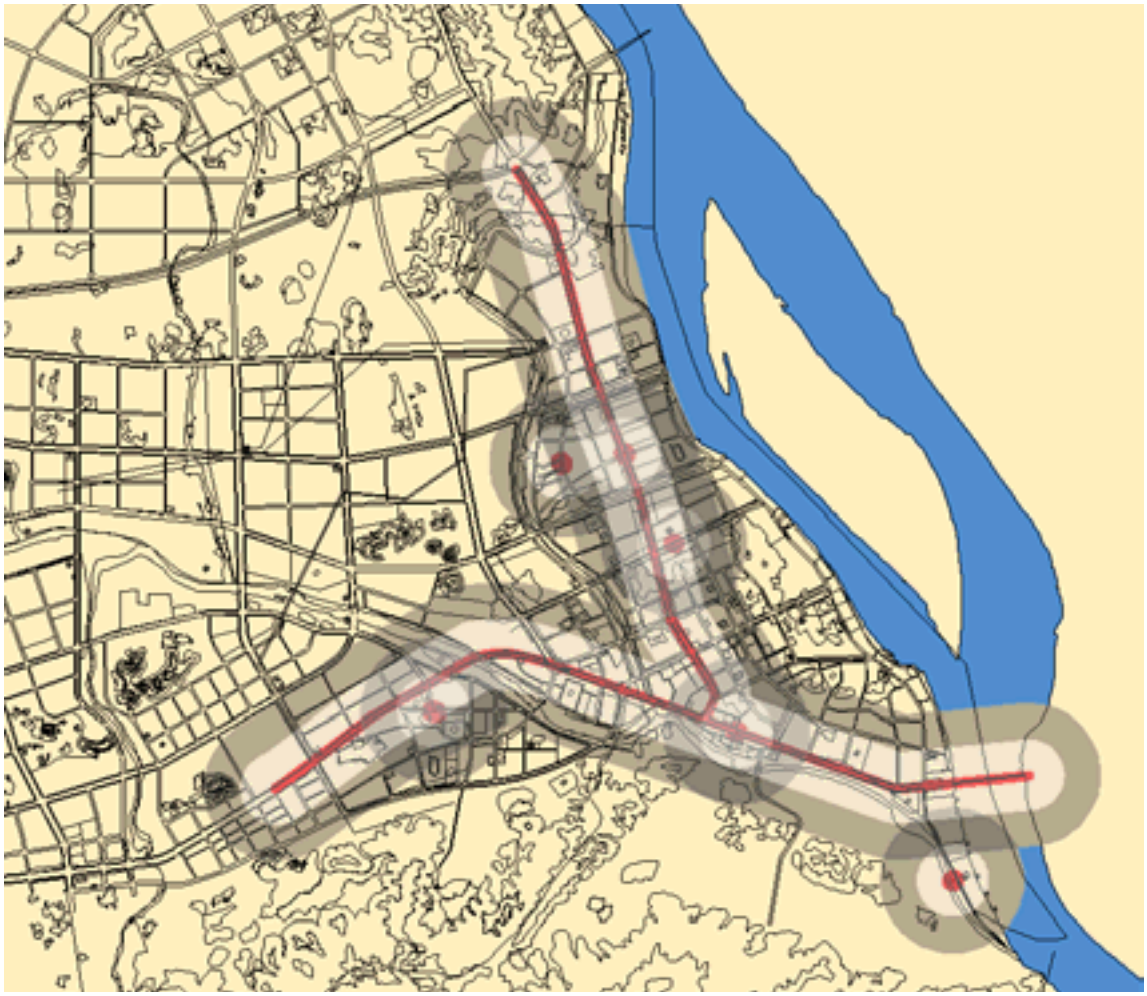
Assumptions: 4336608 sqm, 433.6608 hectare		4 people/unit
Units/hectare	# of units	4 people per unit
100	43,366	173,460
150	65,048	260,190
200	86,730	346,921
250	108,413	433,651
300	130,096	520,381
350	151,778	607,111
400	173,460	693,841
450	195,143	780,571
500	216,825	867,302

figure 8: Existing Land Use Plan
图 8 ： 现有土地利用

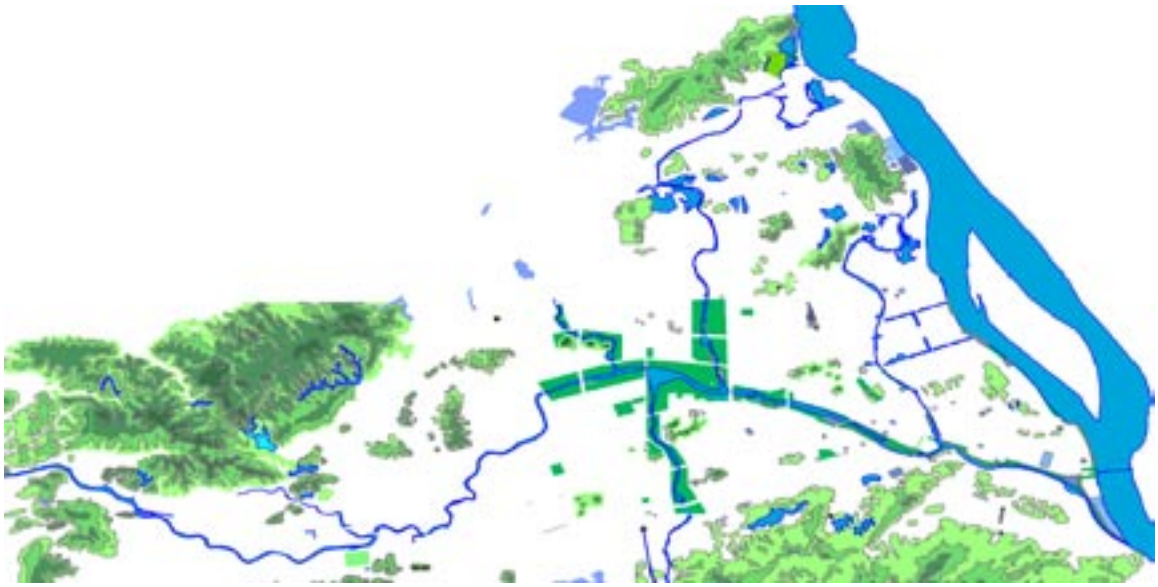
我们发现了多数就业地点、商场和其他非居住区紧挨在主干道路。缓冲区范围大概是在主干线2 公里半径区域和城市节点1 公里半径内。这有助于我们了解土地利用状况和街区的规模。我们发现一些街区有一公里长, 有别于西方的街区结构。 通过实地考察, 我们发现当前高明的就业和其他活动主要围绕在城市节点附近。

We found most places of employment, shopping, and other non-residential destinations are close to the arterial roads. The buffer shows a 2 km radius around the arterial roads and 1 km radius around the civic nodes. This gives us both a good indication of land uses, as well as a better sense of block sizes. We realized some blocks appear to be 1 km long, quite different from block configurations of the West. Through field trips we found that currently, employment and activities are revolving around the civic nodes.

figure 9: Transportation Analysis 图 9 ：交通分析



在高明规划



HYDROLOGY

水文状况

Water constitutes one of the most important resources for sustainable development in Gaoming. The richness, diversity, and history of water bodies provide enormous opportunities for Gaoming. However, the city's rapid urban development is endangering water quality and separating water from human activities. One of our major tasks is to seek a sustainable way to develop Gaoming, ensuring economic growth while protecting its water resource and promoting water economy.

水是高明可持续发展最重要的资源之一 。 水资源的丰富多样及其历史为高明提供了极大的机会。 但是, 城市的迅速发展正危及水质和水资源，将水从人类活动中分离出去。 我们的主要任务之一就是为高明寻求一个可持续发展的模式, 保证经济增长的同时也保护水源和促进水在发展中的作用。

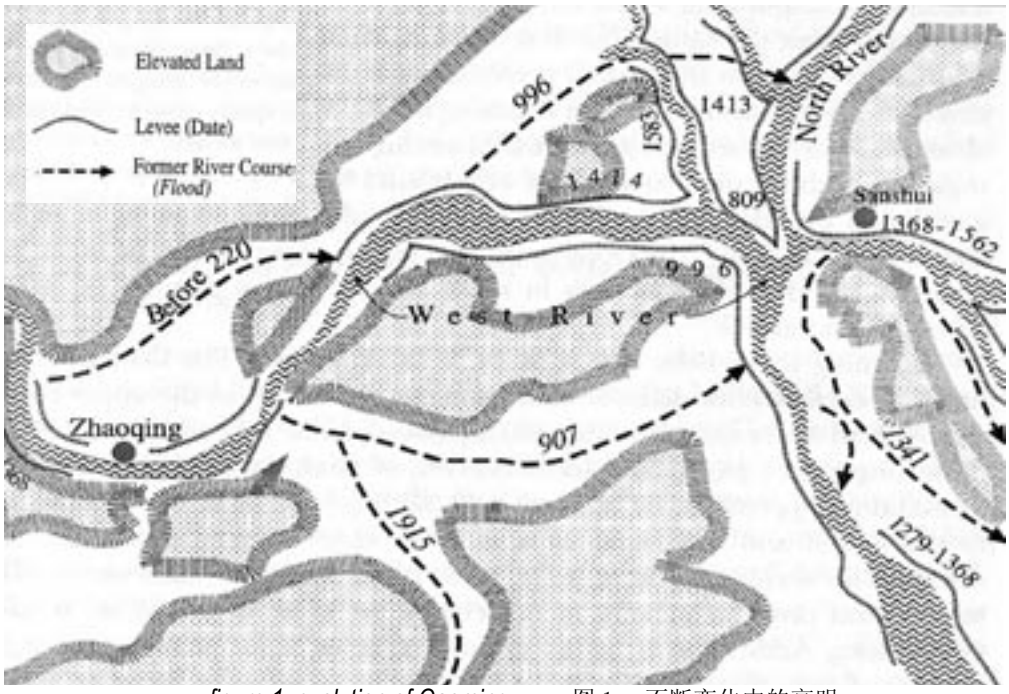


figure 1: evolution of Gaoming 图 1 ： 不断变化中的高明

Source: Marks, Robert, 1997. Tigers, rice, silk, and silt: Environment and Economy in Late Imperial South China. New York: Cambridge University Press.

历史背景

高明今天的江河、水道和鱼塘与过去是有所不同的。 实际上一千 年前, 这个地方整个是在水之下。 这里，如同珠江三角洲的大多数地方一样, 建立在数个世纪的泥沙堆积之上; 筑提和水稻的种植将出海口变成了今天的珠江三角洲。 在公元后的一千年里, 当农民不断地将珠江以北的山地森林改造成农场, 他们因此增加了河流承载的泥沙。 当一些泥沙堆积在在海岛附近, 季雨冲积的泥沙也开始聚积在整个低部地区。在宋朝，大量的移民来到这里，也将北方的水稻种植带到了这个入海口地带。 为了种植水稻而修建的堤堰也改变了这里的地理景观。

河堤体系和泥沙堆积形成了西江和我们今天看到的珠江三角洲。 所示的是９９６年的西江河堤，随后

HISTORICAL CONTEXTS

Gaoming's rivers, canals and fish ponds did not always appear as we see them today. In fact, 1000 years ago, this site was entirely under water. The site, like most of the Pearl River Delta, was created after centuries of silt accumulation; diking and rice culture transformed an estuary into todays PRD. In the first millennium b.c.e., as farmers increasingly converted forests into farms in the hills north of the Pearl River, they increased the river's silt load. While some silt accumulated around islands, monsoonal rains washed the silt into rivers which overflowed and distributed it throughout the lowlands. Increasing settlement of the river valleys in the Song Dynasty brought northern rice paddy culture to the estuary. Dikes intended to create rice paddies transformed the landscape.

This system of levies and silt runoff created the West River and PRD as we know them today. Figure 1 shows that the location of the west river levy was established in 996, to be rebuilt a number of times in the centuries since.

More recently, the paddies have evolved into more lucrative fish ponds. Each evolution of land in Gaoming has taken elements from its past. Just as today's fish ponds, roads and development are shaped by the rice paddies that came before them, the next wave of development will be shaped by the canals, ponds, villages and river that we see today. This has made economic and environmental sense for hundreds of years. Now, as we re-design these fish ponds and lands for urban use, we must consider the natural elements which make the most economic and environmental sense for the centuries to follow.

THE DIVERSITY OF WATER FORMS

Gaoming has a diverse water system, including rivers, canals, fish ponds, wetlands, and swamps. These water bodies are distributed throughout Gaoming, have different shapes and sizes, and assume multiple ecological and economic functions.

的几个世纪里，这些河堤被不断地重建。

在不久的过去， 许多稻田被改成了更加赚钱的鱼塘。高明的每一寸土地的转变都有着其历史因素。正如以前的农田影响了今天的鱼塘、道路和开发；我们今天所见到的江河，水道, 池塘,和村庄将会影响着未来的发展。 这些经济和环境因素影响了过去百年的发展。 而我们今天在规划这些鱼塘和鱼池和土地利用的时候, 我们也必须考虑到对未来的经济和环境的影响。

水形式的多样

高明有一个多样化的水系统, 包括江河、 运河、 鱼塘、 湿地和沼泽。 这些水体分布在整个高明市中, 有不同的形状和大小, 并且承担多种生态和经济作用。

figure 2: River 图 2 ： 江河

figure 3: Canal 图 3 ： 水道

figure 4: Fish Pond 图 4 ： 鱼塘

figure 5: Swamp 图 5 ： 湿地

West River

The West River provides a huge amount of clean water, bolstering regional sustainable development. Water quality in the West River is the best of all rivers in the region, reaching Grade 2 in National Surface Water Standards. The annual flow of West River ranks second in China and is five times that of the North River and 10 times that of the East River. More than 40 million people rely on East River as a source of water, including the populations of Hongkong, Guangzhou, Shenzhen, and Huizhou. The government plans to transfer water from the West River to meet these areas' increasing need for water. Preserving water quality of the West River is not only important for Gaoming but also essential for the Pearl River Delta.

Rivers and Canals

15 rivers/canals run through Gaoming and connect it to the West River. Current and future urban centers of Gaoming are bounded by rivers - Xiuli River on the North and West, Cangjiang River on the South, and West River on the East.

Fish Ponds

Fish ponds are a unique characteristic of the Pearl River Delta. They feature the traditional sustainable agriculture practices, icluding a closed ecological cycle, no pollution discharged to the nature, and the minimization of foreign inputs. Fish ponds are declining and farmers are changing their practices due to economic growth and urban expansion.

Waterfront

Gaoming has plenty of waterfront and riverfront areas. And these waterfront and riverfront are diverse in scale, from the West River waterfront (hundreds of meters) to the Xiuli Riverfront (dozens of meters). They're also diverse in usage; waterfronts are part of urban centers, rural areas, and historical districts. Intimate waterfronts would attract more economic, recreational and cultural activities.

WATER TRANSPORTATION

The water network provides Gaoming with water transportation alternatives. Gaoming is connected by the West River to Hongkong, Guangzhou, Macau, and other cities. The inner river network, if connected, could bring tourists and residents to the city center and provide recreation and transportation.

西江

西江提供大量清洁的水源以支持当地的可持续发展。 西河的水质在这个区域是最佳的, 达到全国水质二级标准。 西江水每年的流量在中国排列第二，是北江的五倍和东江的十倍。 超过四千万人依赖东江作水源, 包括香港、广州、深圳和惠州 。 这些城市计划从西江引水以适应对水需求的增加。 保护西江的水质不仅对于高明很重要，而且对整个珠江三角洲也至关重要。

figure 6: West River 图 6 ： 西江

河流

15 条河流流经高明连接到西江。高明现在和未来的市区都被河流环绕, 秀丽河在北部和西部, 沧江在南部,西江在东部。

鱼塘

鱼塘是珠河三角洲的一个独特特征。 它们是一个传统的生态农业模式，对周边的自然环境没有任何污染，外来输入资源需求少。 鱼塘正随着经济发展和城市扩张在下降。

figure 7: waterfront 图 7 ： 水滨

河滨

高明有大量的河滨和江滩。 这些河滨江滩大小不同的, 范围从沿西江边的几百米到沿秀丽河二三十米。这些地区的使用也不同，有城镇中心区、农村和历史街区等。怡人的江滩会吸引更多的经济, 娱乐和文化活动。

水路运输

河流网络提供高明以水路运输机会。高明由西江连接到香港, 广州、澳门和其它城市。这些内河网络如果连接起来, 能够为游人和居民到市中心提供娱乐及交通服务。

figure 8: water transport and industry 图 8 ： 水路运输和工业

CONSTRAINTS

Water Pollution
Rapid urban development exerts great pressures on water systems. Industrial and population growth increase water consumption and pollution discharge. Construction of pollution treatment facilities does not keep up with pollution growth. Increasing impervious areas decreases the ground's natural capacity to mitigate pollution and increases stormwater runoff. Eco-industries and eco-industrial parks have not been incorporated.

Segmentation of Water System
Many rivers/canals are segmented and obstructed by human activities or sedimentation. The floodgates cut the connection of rivers/canals to West River. The Xiuli River is interrupted by fish farm facilities and sedimentation. The segmentation of the water system decreases the ecological capacity (natural remediation and flood control), natural amenities, and recreational opportunities of the water resources.

The Decline of Water Diversity
Fish ponds and swamps in urban edges are being filled or covered for infrastructure and real estate development. The river beds and banks are paved and losing natural beauty.

Separation of Water System
Water is separated from human activities. Residents and tourists have limited opportunities to appreciate water, due to the flood control systems (levies and dikes), and lack of public access to waterfronts and trails along rivers.

制约

水污染
迅速发展的城市对水系统带来了巨大的压力。 工业和人口的增长使得水消耗量和污水增加。 污染治理设施的发展没能与污染增长同步。 不可渗透区域的增加降低了自然界对污染的自理能力，并且增加了暴雨时期的峰时排水量。生态工业与生态工业园还没有被进一步规划安排。

水系统的零碎
许多江河和水道被人类活动或沉积作用所分割和阻碍。 水闸削减了江河 / 水道与西河的连接。秀丽河被渔塘设施和沉积作用所分割成碎块。 水系统的分割减少了生态容量(自然治理和防洪)，水上风光和娱乐的机会。

水多样化的减少
城市边缘的鱼塘和湿地因为基础设施和房地产开发建设被填埋。 河床和河岸失去了往日的自然风光。

水系统的分离
水由人类活动中被分离开来。由于防洪系统的需要(阶梯和堤堰）和缺乏令公众接近江滩的小路，居民和游人欣赏水上自然风光的机会受到了限制

figure 9: factories close to Gaoming Bridge in Gaoming

figure 10: Sedimentation and eutrophication

figure 11: Lack of walkable environment

figure 12: Unaccessiable waterfront in West River

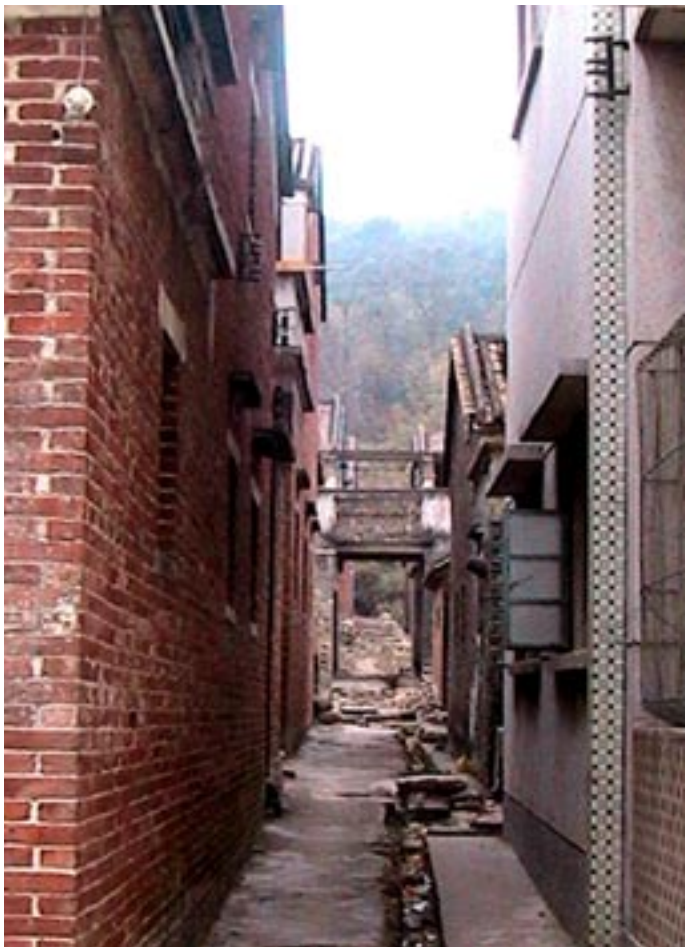


figure 1: Streets of Gaoming

STREETS
街道

STREET NETWORKS AND CONNECTIONS

Streets are the primary urban components of any city. As Jane Jacobs has pointed out, urbanism is the synthesis of the movement through various trades performed by humans. Streets act as the major career of people, and thus shape city forms. There are many theories of how people move through the cities. The controversial Kevin Lynch has argued that thismovement and navigation are guided by the visual and cultural landmarks in the city. There is also a common assumption that key activities can be located relatively independently of any spatial pattern. Although layout plays an integral role in defining the edges of the neighborhoods, the urban mediums of accessibility (i.e. streets) are the most important tool in defining the urban form.The various historic examples of streets proide an intriguing model for corridors of future cities. The linear character of the street, with all possible urban punctuations (i.e. squares, plazas, open greens), have been responsible for diagramming the overall form of the City. They are intercepted by further circulation network systems to provide an intricate labyrinth of movement arteries and traffic flows. Though there are various physical aspects of the land, topography, and human intervention that determine the overall city structure, the study of the linear phenomena of streets demands exploration.

道路网络和连接

对于任何城市而言，道路网络都是决定城市的主要因素。Jane Jacobs指出城市化是由人类各种贸易活动往来集结而成的。 街道作为人类生存活动的主要舞台，塑造了城市模式。现在有着许多理论研究人们如何在城市内移动。颇有争议的Kevin Lynch理论认为，人们的行动都是依据城市内的视觉和文化的标志物为指导的。也有一种普遍的假设，认为人们的主要活动地点根空间的形态没有太大的关系。尽管城市布局对划分社区边界有着重要的作用，城市交通载体(比如：街道)仍是定义城市形态的最重要工具。很多各具特色的历史街道例子为未来的城市道路模型提供了很生动的的参考。街道的线性特征，以及城市的标志(如：广场、街心小广场、绿化带)一起沟画出整个城市的形态。然而它们却被后来迷宫式的主干道和复杂的交通系统给分割开来。虽然有当地的地形特征和人们对土地的改造决定了城市的整体架构，街道的线性在塑造城市形态过程中的角色仍需要进一步研究。

figure 2: Bologna Italy

figure 3: Ahmedabad

figure 4: Philadelhphia

figure 5: Savannah

Streets in traditional Chinese Cities hold a unique importance in the determination of city form. The 21st century has seen the haphazard growth of the cities imposing continuous pressures on the available resources. It is important to study the basic metabolism of the future linear city where one deals with the rapid growth in the transportation networks and their related urban pressures. In the future, city streets need to be designed to cater to a host of contemporary issues, whether they are related to macro level planning problems or micro level landuse patterns.

传统的中国城市街道作为城市的一个特征标志而保持着其独特的重要性。21世纪城市的随意扩张对有限的资源产生了持续的压力。我们需要重视研究未来带线状城市的演变，以及研究城市如何可以处理交通网络的快速发展和相关的城市发展压力之间的问题，未来的城市街道设计需要适应现代的各种需要，不管是宏观的规划问题还是微观的土地利用问题。

figure 6: Street character and heirarchy

城市所规划的宏观街道网络应基于许多因素，比如地势、人口、保持邻里间合适的步行距离等。不同的街道的方形布局使得在出行方式路线选择和建筑布局上有一定的变化。它在相当程度上也决定了城市的未来发展格局。

例如，街道的传统辐射状模式在中央形成了独特的节点，并且区域的周边也可以向外扩张。棋盘格结构，如同它被许多美国城市采纳一样，有利于简易的交通路径和高效的基础设施。而地方的地势和其它自然特点在街道设计中也是不可忽视的。高明是那些自然特征较多的城市之一，比如山、河流、池塘，森林等。在街道设计时，这些因素都要考虑到。尽管每个城市的街道特征不同，但我们值得去了解一下与高明类似的城市的各种不同形态。以下的各幅图显示了其他城市街区规划样式，为我们提供了机会去了解城市形态和街道的特色。

Macro level of street networks for the designed cities develop on the basis of many issues like topography, population, and comfortable walking distances within neighborhoods. Different street grids allow variance in the movement patterns and the basic civic structure of the city. To a certain extent, it also decides the future growth patterns of the city.

For example, the radial pattern of the streets creates district nodes at the center, allowing outward increases in the peripheral boundaries. The grid system as it exists in many American cities favors easy traffic movements and efficient infrastructure. Topography and other natural features on the site also play an integral role in the street layout. Gaoming is one of the sites that is defined by a plethora of natural features like mountains, river, canals, water ponds, and forests, which need to be addressed while the street pattern is laid out. Although the street characteristics vary from city to city, it is worth looking at how the various patterns of the known cities relate to the site in focus. Figures 2-5 show the superimposed layers of street patterns from other cities which provide an opportunity to understand the scale of the urban fabric.

figure 7: Natural canals,Section
图 7 ： 自然水道，截面

figure 8: Natural canal integrated with streets,section
图 8 ： 自然水道与街道整合，截面

figure 9: Natural canals integrated with streets
图 9 ： 自然水道与街道整合

figure 10: Natural canals and open space,section
图 1 0 ： 自然水道与开放空间，截面

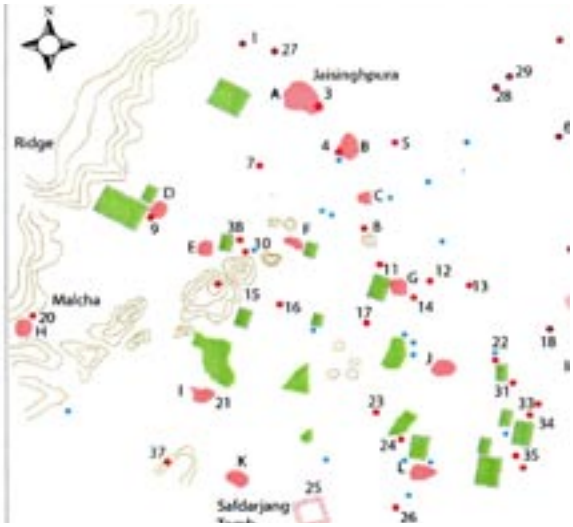


figure 11: Delhi region with preexisting villages

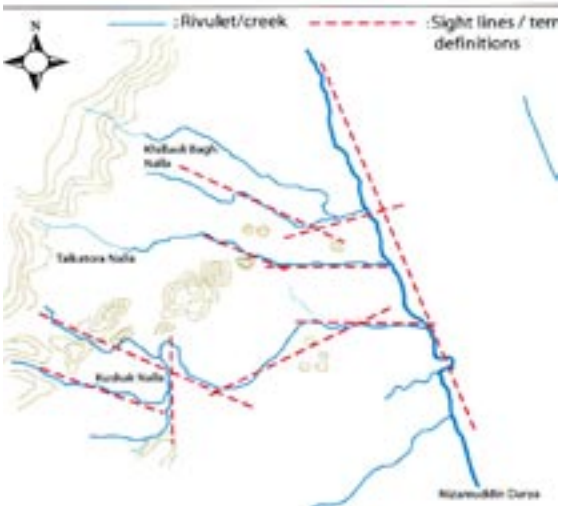


figure 12: Delhi region with preexisting water channels

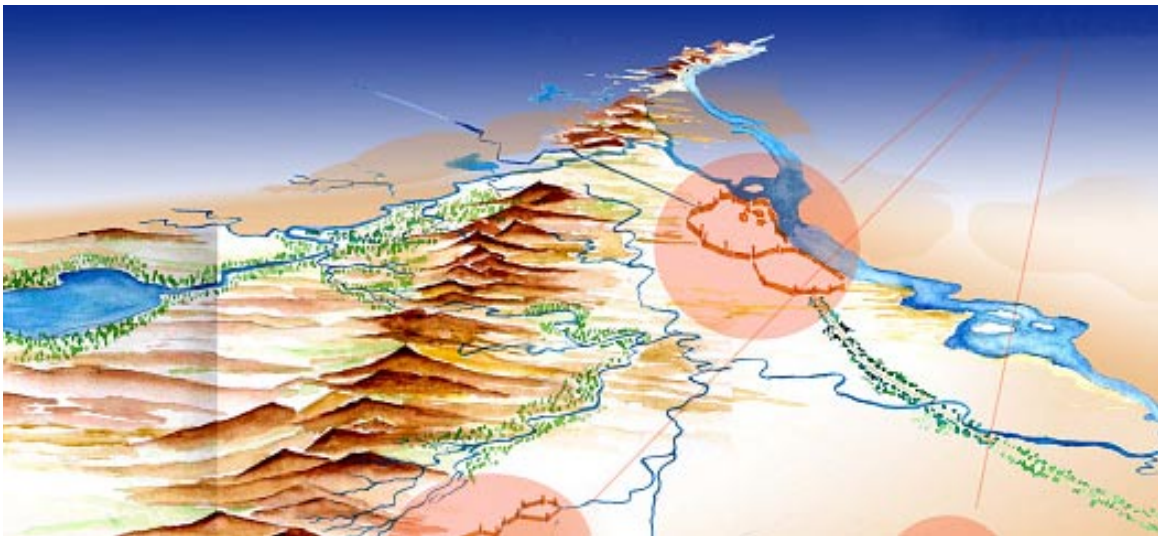


figure 13: Delhi - The evolution of seven cities (source: A. Singh)

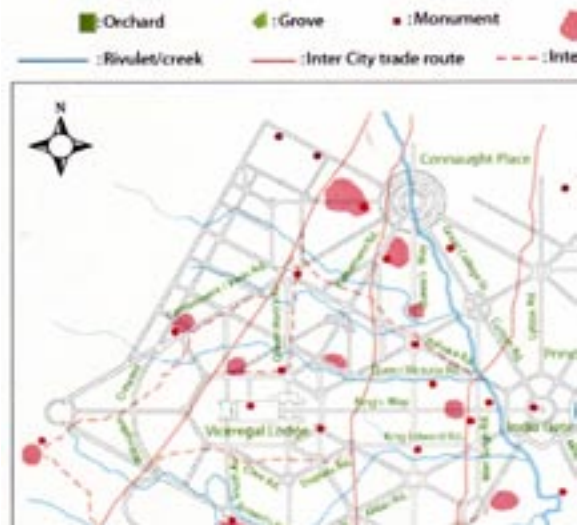


figure 14: Lutyen's plan with exisiting villages and ponds

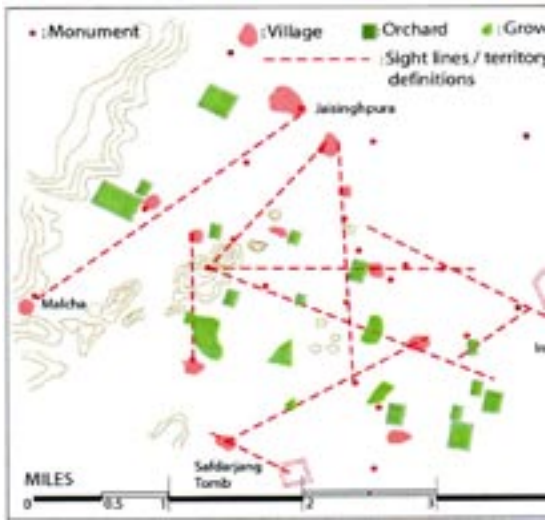


figure 15: Lutyens's plan highlighting view axis

CASE STUDY ONE: DELHI, INDIA

Water is the prime determinant of sustainability for any region.Cities have evoloved and died on the basis of water availability. Delhi is yet another city which sprung up along the river Yamuna, and continues to thrive with the population of 13 million.

Initially, several villages marked their footprints along the river, which created a triangular peninsula with a river on the east and Aravalli ridge on the west. The triangular plane had a well-estabilished water network of fresh water canals and *Bawalis* (water ponds) which attracted various settlements to grow along them. Finally, the Lutyens plan in 1947 projected another idea of city planning, which in many ways cared for the exisiting nature of water drainage and natural topography of the region.

The new layers of streets in the Lutyen's plan incorporated ancient villages and forts which later became the focus of the city's beautiful resources. The new boulevards connected new and old city centers creating interesting junctions and public spaces.

专题研究之一：印度德里

水是任何一个区域持续发展的决定因素。城市发展和消亡往往取决于水资源的供应。印度的德里是沿Yamuna河而发展的一个城市，它持续繁荣发展，现有人口1300万。

最初，在位于被东部河流冲积而成的三角形半岛和Aravalli以西，有几个小村庄。清澈的河网和Bawalis湖吸引着人们在这个三角形地带定居。1947年的Lutyens计划提出了另一种城市规划思想，强调注意现存的自然排水体系和当地地形的重要性。

在Lutyen所设计的新型街道规划合并了的古老村庄和城堡，成来为了城市美丽风景的焦点所在。新的大道连接了新城跟旧市中心区，创造了有趣的连接点和公共空间。

figure 16: Lutyens's grid with water channels,Source-Source: The New Delhi Plan,Danny Cherian

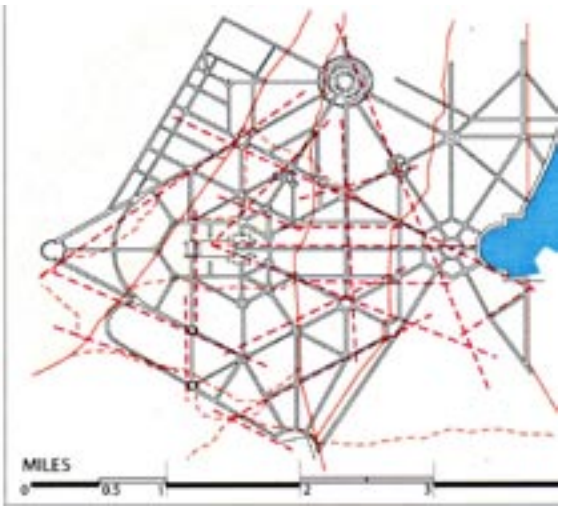


figure 17: Lutyens's plan, Source-The New Delhi Plan,Danny Cherian

figure 18: Character Streets,ZhouZhuang,City of Canals

figure 19: Character Streets,ZhouZhuang

figure 20: Character Streets,ZhouZhuang

figure 21: Character Streets,Hong Kong Mid levels

figure 22: Street Section,ZhouZhuang

figure 23: Street Section,ZhouZhuan

CASE STUDY 2 : CHARACTER STREETS

There are numerous examples of cities in China where we see how the street networking system is well knit with the pre-exisiting water features and canals. ZhouZhuang is one of the Chinese cities which shows a remarkable example of how water can become the theme for the entire city in generating the character streets. The macro level of street pattern superimposed with the natural waterways and ponds exhibits how planning can guide and shape the new landuse pattern. Pollution becomes the major concern in these cities where water coflicts with the modern infrastructural commodities. Therefore, water needs to be seprately treated although it might become a common theme for design.

专题研究之二：特色街道

在很多我们所看到的中国城市例子里，街道系统和现存的河流水系常常连接在一起的。周庄是中国城市中的一个经典例子：水是如何成为整个城市的主题，并帮助塑造有特色的街道。宏观的城市街道布局融合在自然水路和池塘之中，显示了一个有效的规划是如何可以引导新的土地利用形式。然而水污染往往成为水系统和现代设施发展间的主要摩擦。所以，尽管水可能只是设计的一个共同主题，它仍需要进行单独研究。

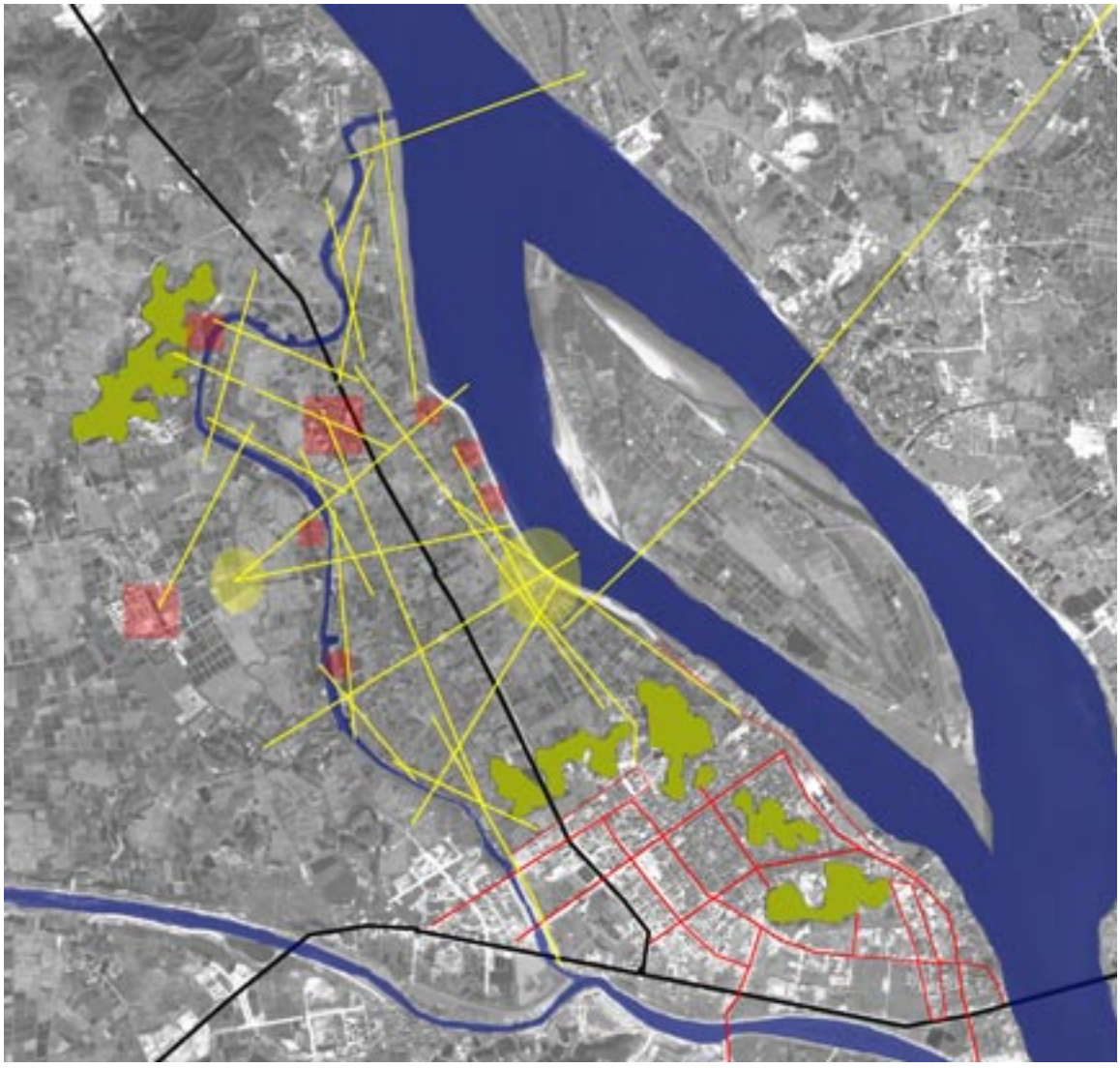


figure 24: Gaoming and Anticipated street patterns

The case studies teach us how we can integrate the natural feature of the site in the designing of street pattern. Gaoming is a city of water, mountains, and green forests. The new city needs to deal with the exsiting natural features (i.e. fish ponds, mountains, river edge, forests) so the new pattern of the streets can allow for effcient natural drainage and highlight the natural hidden beauties of the delta.

The newly designed streets and boulevards identify possible zones for city landmarks and integrate the exsiting villages, which have the potential for meaningful preservation.

专题研究告诉我们如何将自然特点与街道设计结合在一起。高明是一个具有山有水的绿色森林城市。这个 新兴城市在设计新的道路网络的时候需要考虑到现有的自然特点(例如： 鱼池、山、河岸、森林) 街道，使新的道路系统可以高效自然排水及突出在三角洲暗藏的秀丽景色。

新近设计的街道和林荫大道可帮助确定城市标志区域的界限，以及帮助融合有保存价值的村庄。

在高明规划

figure 1: Housing in Gaoming
图 1 ：在高明的住宅

HOUSING
住房

With Gaoming growing at an unprecedented pace, housing construction will constitute a majority of new urban development. The focus of this analysis is to understand the roots of current regional housing trends, as well as look for culturally driven design innovations. Issues related to climate, economics, as well as cultural predispositions all shape the image and typology of local Gaoming housing. The investigation of smaller scaled elements, such as apartment layouts, shows how individual environmental decisions shape macro-scaled urban forms. By crossing various levels of scale, planners and designers can better understand the consequences of living units. Another perspective we investigated was the impact of densities on the region. With 250,000 people moving into the area, we studied various forms and interpretations of housing densities. Currently, the new developments are following two notable patterns: the contextual high-density apartment buildings and mid-density detached gated communities. These models are leaving a significant impact on urban form. By looking at other strategies and projecting multiple densities, we hope to create more diversity in form and public space.

HOUSING TYPOLOGIES

Urban housing built in the middle to late twentieth-century is rooted in Soviet-influenced socialist influences (Rowe, p283). The forms are characterized by repetitive linear housing blocks, divided by nondescript streets. The housing blocks were roughly five to six stories high with a series of floor-through apartments. The residential streets below were appropriated by for various activities, including laundry and parking. These housing patterns, coupled with long-standing Chinese traditions and superstitions, continue to develop in the more market-driven housing projects. Through a series of culturally- and economically-based decisions, one can trace the development of this typology.

随着高明快速的发展, 住宅建设将成为新城市发展的主脉。 本报告的分析集中于了解当前地方住房趋式和寻找文化驾御下的设计创新。气候、经济和文化因素都影响了高明当地的房屋外表和类型。 一些对住宅细部的研究, 譬如公寓的布局, 帮助解释个人环境决策如何可以影响到大型的城市形态。通过融合不同的大小尺度, 规划师和设计师能更好了解居住空间。 另外一点我们研究的是区域人口密度的影响。 因为将有近250,000人迁入这个区域, 我们研究不同的模式和各种住房密度形态。有两种 新的发展模式值得注意，高密度公寓楼和独立的封闭性中密度社区。 这些模式将会对城市形态带来重大的影响。 通过看到其他多样化密度的方案, 我们希望该区有更多化的城市形态和公共空间。

住房形态

修建于二十世纪中晚期的城市屋型源于苏联社会主义的影响(Rowe, p283) 。 此模式具有重复的狭长街区特征，并由单一的街道划分。街区房型是五到六层的公寓楼房。走道由居民占用，作日常生活或堆放东西用。 这些住房样式结合着长期的中国传统和迷信, 朝着市场主导的住房形态发展。 受着一系列文化和经济因素的影响，住房形态在不断转变。

A dominant housing typology in Gaoming is the “‘modular block” building, characterized by a repeating apartment module to create a “housing block” (see figure 4). The physical requirements for cross-ventilation translate through the urban-scale development of the Chinese housing and remain a central idea in the form of the city. The floor-through apartments allow breezes to ventilate and cool the apartment during the hot and humid sub-tropical months. A single access stair tower, accessible by two apartments per floor, is a typical plan configuration. This planning organization has a significant presence in the skyline of Gaoming.

The limited access from individual stair towers in these linear projects hampers the efficiency of an elevator. In an ideal situation, an elevator would be required at every common lobby and accessed by each apartment. However, a project with multiple stair towers with limited access would need several elevators for complete accessibility. As a result, many projects are built without mechanized vertical circulation. At the same time the maximum number of stories for a building without an elevator is limited to seven floors. This leads to a single, consistent building height which creates a uniform image of the city.

One typological variation is the “point block” access tower. These towers are often radial in plan and provide at least two exposures for sunlight and ventilation. The projects often incorporate an elevator and are taller than the linear buildings. During our field research, we observed many of the projects applying a combination of the linear and single point access buildings to compose the overall housing development. The projects often provide a variety of open space for their residents with gardens and other manicured recreation spaces.

In addition to ventilation requirements, solar orientation plays an integral role in the layout of the urban fabric. Defined in traditional Chinese planning by Fung-Sui geomancers, the cardinal orientation allows for passive solar heating in the winter and shading in the summer. By locating many of the stairs and vertical core elements on the North side of building, the main living spaces can be South-facing side. Combined with the repetitive slab buildings, Gaoming maintains a rigorous rectilinear urban pattern.

figure 2: Older Housing in Gaoming
图 2 ：相对旧些的住宅

figure 3: Plan of new development in Gaoming
图 3 ：在高明新型住宅的平面图

figure 4: New development in Gaoming
图 4 ：在高明的新住宅开发

Source:
Junhua, Lu, Peter G. Rowe, Zhang Jie ed. Modern Urban Housing in China 1840-2000. New York: Prestel, 2001.
Chen, Ke. Housing in the Special Economic Zones: A Preliminary Study of Housing Provision and Conditions in Shenzhen. Hong Kong: Departement of Architecture, The Chinese University of Hong Kong, 1997.

figure 5: Residential tower in Gaoming

figure 6: Gaoming skyline

figure 7: Street-level retail at the base of development

高明的主要房型是有标准街区的建筑,具有重复的房型街区特征。中国城市房屋的发展标准保留着通风需求这一中心要素。在炎热潮湿的月份，楼道可以通风使公寓较为凉爽。 一门两户的楼房是这种典型的结构。这种结构是高明的典型住宅模式。

这种直线型设计方案阻碍了电梯的有效利用。 在最理想情况下, 电梯应在大厅中心服务于每层楼的多个用户。 但是, 直线型设计方案需要多部电梯才可以服务所有住户，结果 许多楼房没有配置电梯。 楼层因为没有电梯而最高层限制在七层; 一致的楼层高度造成了城市单一的形象。

一种有别于直线型设计的房型是“塔式”楼房。 这种楼型楼梯在中间，成放射性对着住户，每一住户至少有两边受阳光照射和通风。这样的项目可共同使用一个电梯并且比直线型楼房的楼层高。经过我们实地研究, 我们观察到许多项目都是合并了直线型和塔式楼房的形式来完善整个小区的发展。这些项目经常提供花园和其他娱乐场所给当地户。

除通风要求之外, 阳光朝向在城市设计中也是一个缺一不可的理念。由于中国传统的风水观念,朝向主要考虑到房屋在冬天受到阳光照射，在夏天能避荫。 通过将楼梯和一些电梯定位于楼层的北部，主要的生活区域在房屋南部。这些重复性的混泥土建筑物组合使高明保持着严谨的直线型都市样式。

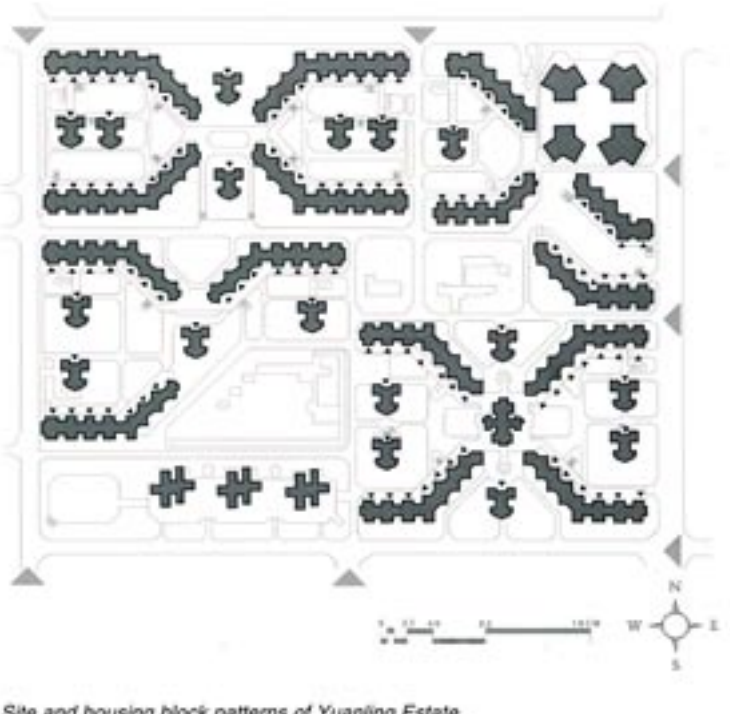
CHINESE HOUSING TYPOLOGY
Source: Housing in the Special Economic Zones:
A Preliminary Study of Housing Provision and Conditions in Shenzen,
Dpartment of Architecture: The Chinese University of Hong Kong, 1997

TYPICAL UNIT

Nangshui Estate: 518 p/ha
View of Typical Module

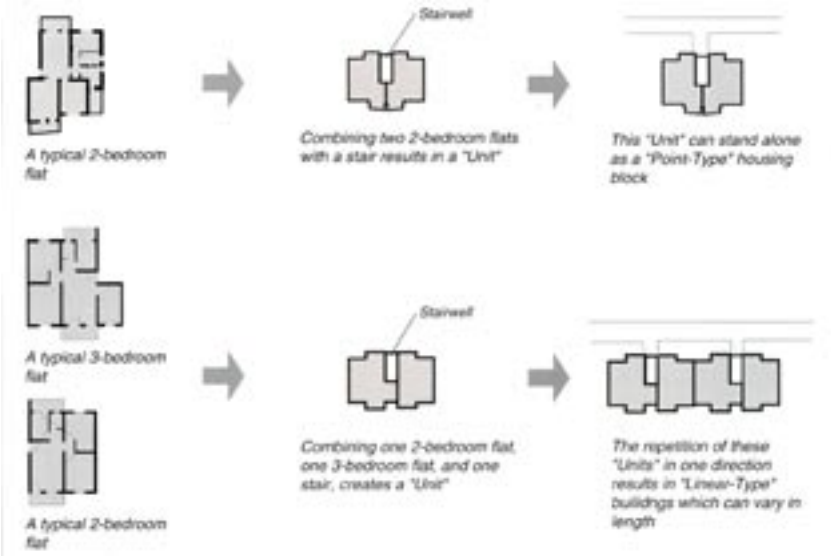
SITE PLAN

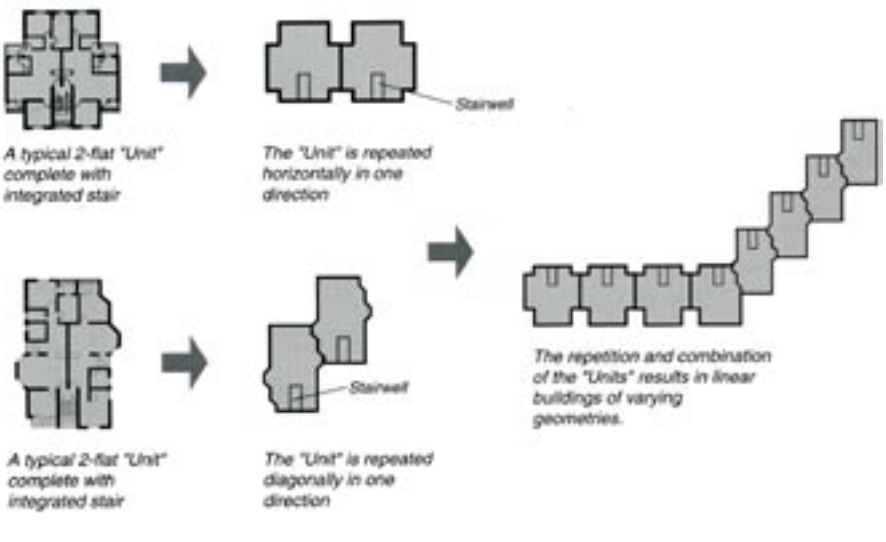
Yuanling Estate: 650 p/ha
View of Typical Module



Site and housing block patterns of Yuanling Estate

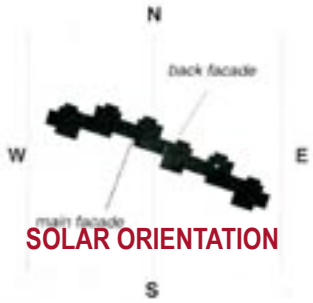
UNIT TO BLOCK MORPHOLOGY



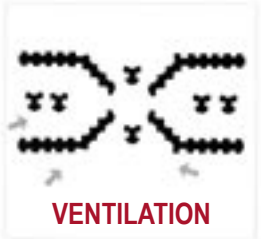


ENVIRONMENTAL

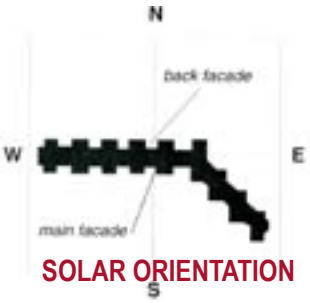
VENTILATION



SOLAR ORIENTATION



VENTILATION



SOLAR ORIENTATION

HOUSING DENSITY by project

Density: 80-120 p/ha

Density: 120-150 p/ha

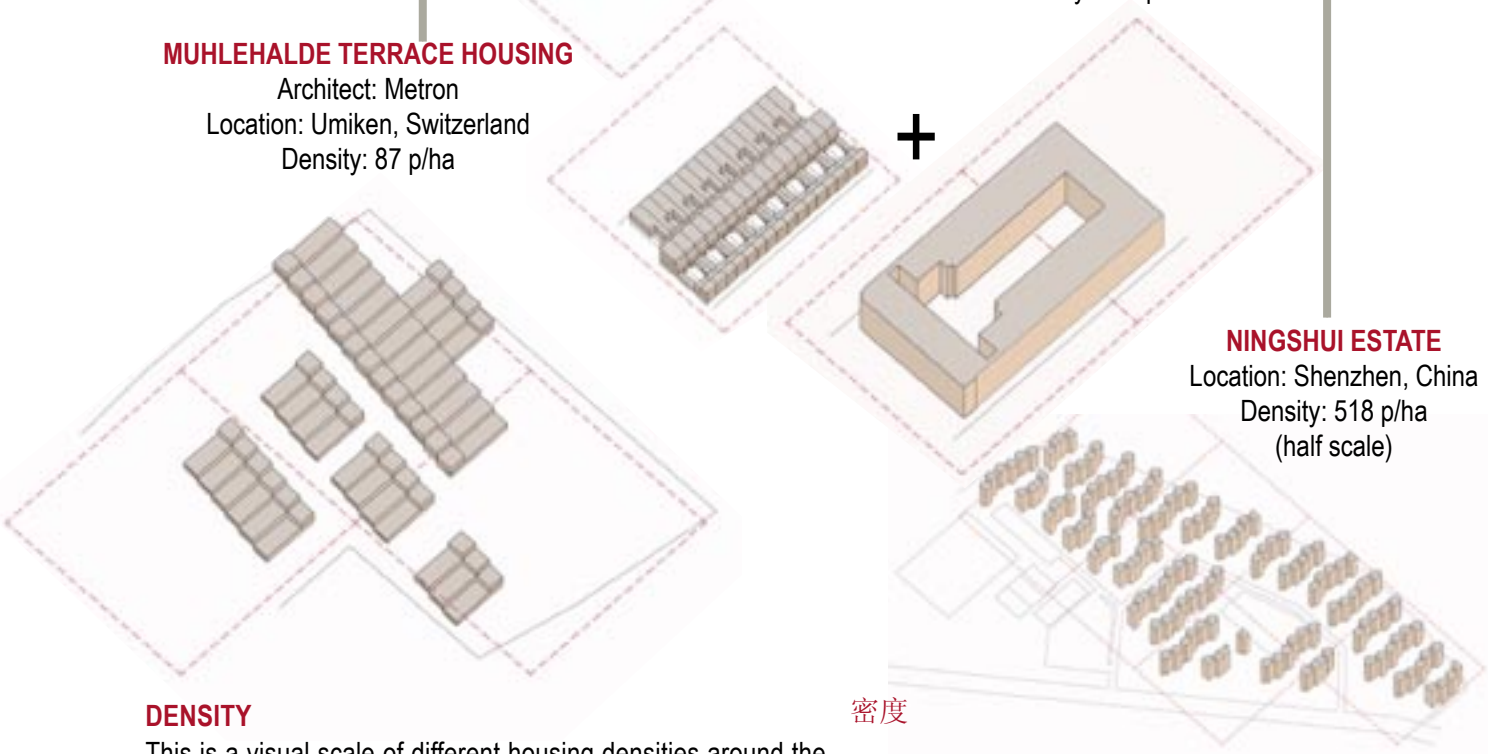
Density: 200-300 p/ha

EICHLER HOMES
Architect: Ashen & Allen
Location: San Francisco Bay, USA
Density: 140 p/ha

BORNEO/SPORENBURG
Masterplan: West 8
Location: Amsterdam, the Netherlands
Density: 400 p/ha

MUHLEHALDE TERRACE HOUSING
Architect: Metron
Location: Umiken, Switzerland
Density: 87 p/ha

NINGSHUI ESTATE
Location: Shenzhen, China
Density: 518 p/ha
(half scale)



DENSITY

This is a visual scale of different housing densities around the world. The projects were selected not only to demonstrate the range of the density, but to address specific issues of ventilation, solar orientation, communal open space, and vertical circulation. The numbers included in this table are based on the number of people per hectare by the project boundary. The anticipated growth of Gaoming would require a net density of 861 people per hectare.

密度

此图所示的世界不同地方的房屋密度比较。这是一个全世界不同密度的形象比例。 所选取的例子不单单是着重于它们的密度，也因为它们对通风、房屋朝向、公共开放空间和垂直运输等问题的解决方案。 这个表里的数字基于每公顷的人口数。高明的人口预测将会达到每公顷861人的密度。

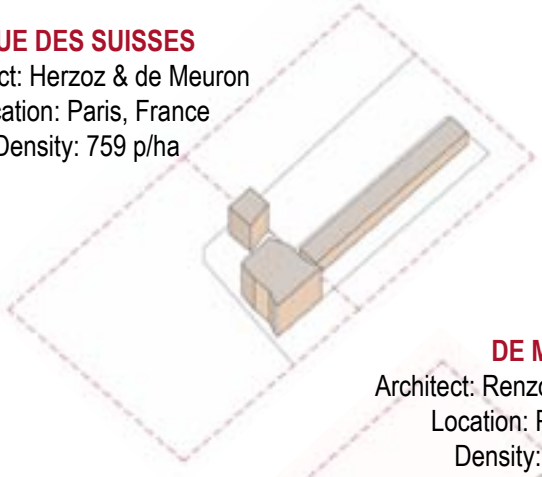
Density: 200-300 p/ha

Density: 400 p/ha

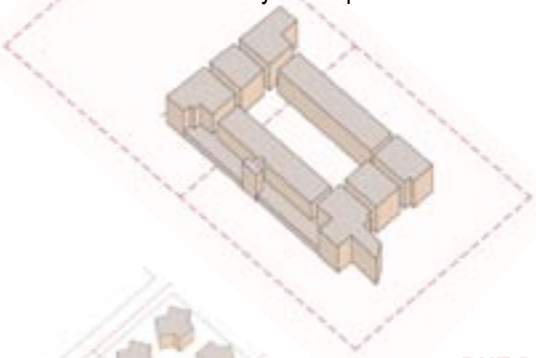
Density: 2000+ p/ha

700 800 900 1000 1500 2000+

RUE DES SUISSES
Architect: Herzoz & de Meuron
Location: Paris, France
Density: 759 p/ha



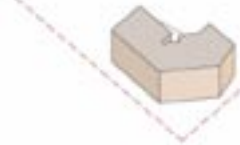
DE MEAUX
Architect: Renzo Piano Workshop
Location: Paris, France
Density: 1315 p/ha



LANGHAM COURT
Architect: Goody Clancy Architects
Location: Boston, USA
Density: 743 p/ha

LOT LINE

RUE DU CHEVALERET
Architect: Henri Ciriani
Location: Paris, France
Density: 1688 p/ha



YUANLING ESTATE
Location: Shenzhen, China
Density: 650 p/ha
(half scale)

ONE HECTARE : 2.471 ACRES
: 100m x 100m

HOUSING CASE STUDIES

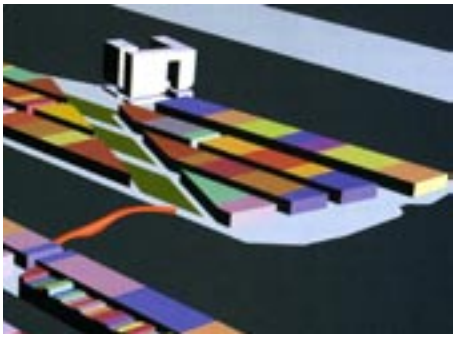
FREE PARCELS: BORNEO 7 AMSTERDAM, THE NETHERLANDS

44 DWELLINGS: BORNEO 8 AMSTERDAM, THE NETHERLANDS

LANGHAM COURT BOSTON, USA

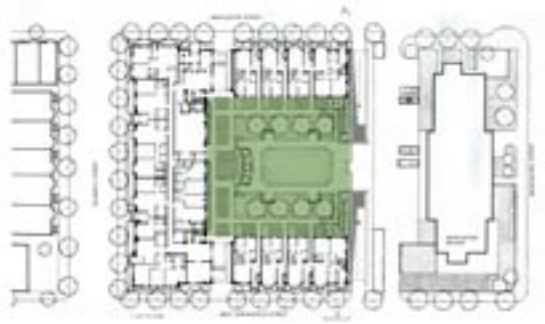
EICHLER HOMES CALIFORNIA, USA

The 23-hectare Borneo/Sporenburg urban development on the outskirts of Amsterdam maintains a density of 400 people/ hectare. The typical low-rise, high density units are 16m deep, 9.5m high along the street. They are organized around an internal light-well, which provides both light and air in the compact planning. The development also maintains a variety of project-based densities, ranging from less dense "townhomes" to the more typical apartment buildings.



Also located in Borneo/Sporenburg, this project utilizes a variety of apartment layouts to promote mixed family units. Again organized around a light well, the apartments let in light and breezes throughout the day. The street facade maintains a repetitious, but intimately scaled rhythm. These units utilize adjacent street parking.

Langham Court is a mixed-income, 84-unit housing complex adjacent to Downtown Boston. Its relationship to the existing street edges blends into the surrounding historic district. Historic elements are incorporated into the design to build upon the existing neighborhood character.
The interior courtyard allows sunlight into the interior units and hosts a variety of community driven events. Underground parking is accessed through ramps at one end of the courtyard.



The Eichler Homes became popular in the 1950s and 1960s in California for taking advantage of the mild climate of the region. The houses would feature a central outdoor atrium which is both an entrance garden and an organizer of the interior space (most rooms face the courtyard). The garage was typically pulled into the house structure, so to be less prominent from the street view. The backyard was extensively landscaped to optimize its use.

HOUSING CASE STUDIES

MÜHLEHALDE TERRACE HOUSING UMIKEN, SWITZERLAND

RUE DU CHEVALERET PARIS, FRANCE

DE MEAUX PARIS, FRANCE

RUE DES SUISSES PARIS, FRANCE

The parallel rows of 3 bedroom, L-shaped patio houses are organized on each side of a central stair. A funicular tram connects a public entrance and parking at the bottom of the hill with the dwellings at the top of the hill. The inclined elevator stops at every 3rd level where there is a lobby in a two level structure. This housing typology falls outside existing models for public or social housing; this is expensive in situ concrete construction suitable for middle income residents.

The main characteristic of this 9-story building that completes the chamfered block of a block is the vertical circulation. The elevators stop every two floors and serve a row of flat units and a row of duplexes that feature a double height ceiling space at the living room. The ground floor is used for retail stores along the corner. The project also counts with two floors of underground garage.

This courtyard group of 220 apartments is an infill project responsive to the existing context. The height and alignment of the neighboring buildings are respected and the new project is divided into discreet elements that refer the original parcelization of the block. The creation of an inner landscaped garden court is derived from the typical block typology-solid along the street and open space on the interior of the block.

The project focuses on rebuilding the typical perimeter blocks of Paris with the strategy to put the smaller flats in the infill buildings and organize the family dwellings together in the garden area. The infill buildings are built to the neighborhood height of 7 floors, while the interior slab is only 3 floors in height. The long narrow block is designed as a free-standing element in a long narrow garden and is protected with curving rolling wooden blinds that are in sharp contrast to the folding metal blinds that cover the facades of the street buildings.

在高明规划

figure 1: a village in the Gaoming building area
图 1 ：在高明地区的一个村庄

VILLAGES
村庄

Given their location near the west river, many of the villages in Gaoming represent a tradition of agriculture and water culture which is quickly disappearing with the industrialization and densification of the region. Rather than develop over the older architecture in the city in the name of modernization, it may be possible to use the village structures as a way of accentuating and adding value to the city by adding a tasteful historical element to new developments.

While the agricultural underpinnings of many of the existing villages may not be financially sustainable with rising land prices and the opportunity cost of new development, the structures and more personal scale of the villages can be incorporated into the design of open space, retail areas, parks, or even residential areas. There exist many cases where small urban villages have been successful in otherwise modern high density environments around the world, some of which will be highlighted in this section.

But while historical value is good for development, this study makes a preliminary recommendation to preserve only buildings which show potential value for future developments. By no means should preservation be the goal; instead, preservation should be pursued if it is in line with the goals of development.

位于西江河畔的许多高明村庄都拥有传统的农业和水乡文化。但是许多这些文化伴随着工业化与高密度的发展而快速消失。与其以现代化之名推掉旧建筑重建，可以考虑通过对村庄的适当保护，并在新的发展中增加有意义的历史元素来建立特有的城市品位。

随着不断增长的土地价格和机会成本，现在有不少村庄都不可以以农业作为经济支撑。村内和个人的建筑物可以融合到村庄的再发展设计中。例如跟开放空间系统、商业、公园、甚至住宅联系在一起。在世界各地都有在新发展的高密度地区被保留下来的村庄。本章将会介绍其中的几个例子。

虽然村庄的历史价值对发展有利，本章的初步建议只是提出保留对将来发展有潜在价值的村庄建筑。单纯的保护并不是最终的目标；所推行的应该是跟发展目标一致的村庄保护。

figure 2: Satellite Photo with potential village redevelopment sites marked in red
图 2 ：高明地区卫星图（红色部分为有潜力成为受保护村庄地区）

SITE ANALYSIS

The majority of village sites in Gaoming are dependent on water as a source of livelihood. There are two main types of villages here on the site. The first kind of village is surrounded by agriculture or open space. The second kind of village serves as a buffer between the city and agricultural land. Continued urban expansion threatens the existence of villages on the fringe, which currently occupy prime development sites; but, loss of fishponds, small streams, or access to the river will threaten the existence of all the villages. The satellite image above indicates the current placement of the villages in regards to the city.

区域分析

大多数的高明村庄都以水为生。这里的村庄主要有两种类型：第一类村庄被农田或开放空间环绕；第二类村庄位于城市和农田之间，起到缓冲作用。持续的都市膨胀对周边村庄的生存带来了威胁。很多村庄都成为目前的主要开发对象。而鱼塘、河道和河流出口的进一步减少也会威胁所有其他村庄的生存。以上的卫星图象表明城市和当前村庄的相对位置。

FUTURE PLANNED CONTEXT

As indicated by the future plan for the city, many of the villages will be replaced by urban areas while others will be integrated with green open space, or surrounded by the urban development but not yet redeveloped. The villages will provide a stark and historical contrast to the new industrialization of the area and, where feasible, can provide a physical amenity to the city if managed properly. The purpose of this report is to assess the potential ways to reprogram select villages in order to maximize their value for the future design of Gaoming.

未来规划背景

依照城市的未来规划，许多村庄将由市区取代。而其他地区也将由融合到绿色开放空间中，或围绕在城市周围而不再开发。如果管理适当，这些村庄可以提供宜人的自然环境，为新的工业带提供一个直接的历史对比。这个报告的目的是评估部分村庄再发展的潜力以达到他们的最大价值。

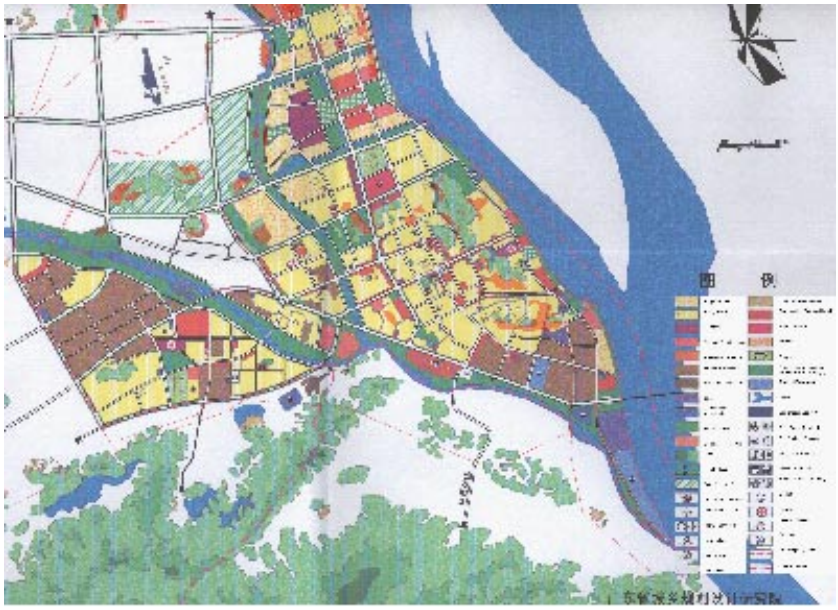


figure 3: Map of potential future redevlopment plan and village context
图 3：未来在发展规划和村庄背景

LIMITATIONS OF REPROGRAMMING

One of the key problems facing village preservation is the small size and density of villages. Because of their low density and the high cost of land in the city, they would be too expensive to function as housing. Similarly, Gaoming, as an industrial city, has very little outside tourism, and the villages have limited marketability as historic sites. Without tourism and housing options, there are limited roles villages can serve for Gaoming. Given these current constraints, the following case studies try to highlight adaptive reuse options available for village preservation in the region. These are:

- Themed Retail
- Local Cultural Attraction
- Educational

重新规划的局限

村庄保存所面对的一个关键问题的是村庄的小面积和密度。 由于它们在城市中的低密度和土地的高价值，它们作为住宅区将会太昂贵。高明是一个工业比重较重而外来旅游相对小城市，这些村庄作为历史古迹的市场价值有限，很难吸引外来游客。因为没有旅游业的支持也转化为现代城市住宅也困难，所以这些村庄对高明的价值也有限。考虑到这些当前的局限，以下案例研究设法突出这个区域可以借鉴的村庄保护的措施，包括：主题零售业，地方文化吸引和教育使用。

CASE STUDY 1:
KAMPONG AYER, BENGAR SERI BEGAWAN, BRUNEII DARUSSALAM

Kampong Ayer, which means water village in Malay, is a village located in the middle of the river on stilts, next to the capital of Brunei, Bendar Seri Begawan. Brunei has a water culture similar to Guangdong province, and the Kampong Ayer has existed in more or less its current form since 500 AD. Preservation of the villages on the river have made them immune to development pressures on land, while also retaining their traditional appeal for visitors from the city and abroad. The government over the years has provided electricity, services, and schools on stilts for the villagers in order to preserve the communities. They remain one of the largest tourist attractions for the country today.

While this option may not be feasible for the much deeper and faster flowing West River, there exist individual groups of buildings within the city bounds which are similarly positioned above fish ponds and other water bodies which demonstrate potential applications for Gaoming.

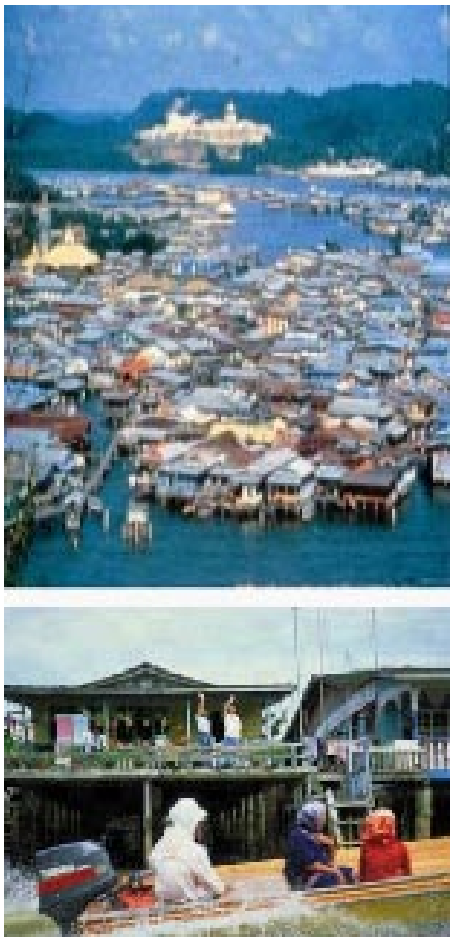


figure 4: Brunei Kampong Ayer besides the capital city Bengar Seri Begawan supplies 10% of the nation's housingstock
图 4 ： 首府Bengar Seri Begawan旁 Brunei Kampong Ayer为马来西亚提供了十分之一的住宅。

CASE STUDY 2: XINTIANDI, SHANGHAI, CHINA

Xintiandi is a retail and entertainment haven in downtown Shanghai which incorporates the original Shikumen architecture of Shanghai at the beginning of the 20th century. Not all of the original Shikumen housing was preserved; rather, the developers of Xintiandi chose a small area of retail to develop at a lower density than the surrounding built down town, and incorporated the older architecture and scale into the new design. The area encompasses 2 blocks of housing. While this is a small fraction of the original housing stock, it is enough to create a strong signature for the area.

The preservation and redevelopment of the old housing, at $58 million USD, is very expensive, but the potential returns on investment are also high, with on site revenue of $8.7 million USD per year, not including economic gains to the surrounding retail area.

figure 5: Xintiandi and surrounding density
图 5 ： 新天地和周边的密度

figure 6: commercial preservation of village typology in Gaoming
图 6 ：村庄建筑类型在高明被商业建筑保存下来

figure 7: Xintiandi Shikumen house converted into a Starbucks, adjacent to newer development
图 7 ：新天地的石库门被改作星巴克，而后面的楼房为更新的发展。

figure 8: Traditional low end architecture converted into high end modern establishments
图 8 ：传统的低档建筑被转变被再发展成为高档现代建筑

专题研究之一：KAMPONG AYER

Kampong Ayer在马来亚语里指的是水村，位于在婆罗州的首府Brunei, Bendar Seri Begawan。村庄的建筑是以支架支撑建在河上, 。婆罗州的水文化与广东省相似，并且Kampong Ayer,从公元500年开始就在相当程度发展为我们今天所见到的形态。对Kampong Ayer的保存使它免受来于土地发展的压力，同时也吸引了其他城市和国外访客来观光。政府多年来为保存这个在支架上的社区此村庄，提供了电、教育和其他应有的服务。Kampong Ayer已经成为当地最多人观光的景点。

虽然这个发展选择可能不适应又深流水又快的西江, 但在高明地区有一些建筑也像Kampong Ayer的建筑一样，只是不过是被支撑在鱼塘之上，因而可以考虑相仿的保护措施。

CASE STUDY 3:
SINGAPORE CHINA TOWN HISTORIC DISTRICT

In 1997, Singapore declared the China Town area a historic district. Like Xintiandi, many traditional buildings and shop areas were oriented for retail, thus creating a small, low density pedestrian-oriented market in the middle of a high density downtown. The government took a more hands-on approach in the redevelopment of this historic area by augmenting the existing features with a more tourist-friendly approach. The city installed ornamental lamps and light posts to demarcate areas of the historic themed zones, as well as aesthetically inappropriate amusements such as an 'historical' roller coaster and an over abundance of souvenir shops.

Unlike Xintiandi, the redevelopment of Singapore was both a social and economic disappointment, one to which the government eventually admitted failure. The lesson learned here was that historic preservation and redevelopment, when done in a way which is not sensitive to the market preferences, may be worse than no active preservation effort.

figure 9: Traditional Straights Chinese housing in Singapore China Town after redevopment

figure 11: Themed light fixtures and lamps
图１１：主题灯具和灯笼

案例研究三：
新加坡中国城的历史街区

1997年，新加坡宣布中国城是一个历史街区。同新天地一样，很多传统的建筑和店铺是作为商业用途的，因而形成了在高密度的市中心里的一个低密度的适合步行的市场。政府过多地参与了旧城改造：从旅游的考虑增加了已有的特色；在历史主题区安装了装饰灯和柱子；并且不合时宜的安装了一些不符合美观效果的娱乐设施：比如“历史性的”过山车，同时纪念品商店也过多

与新天地不同，新加坡的旧城改造在经济和社会效益上都是令人失望的。政府最后也不得不宣布是失败的。这里的教训是历史街区的保护和重建，当所采取的方式对市场的偏好不敏感时，可能还不如不采取任何行动。

figure 10: Straights Architecture before redevlopment
图１０：在再发展前的建筑

WATERFRONT
水滨

- Public Education On Pollution Source Control
  污染源控制的公共教育
- Guidelines
  指导原则
- Forms Of Development
  发展模式
- Possibilities For Gaoming
  高明的机遇

OPEN SPACE GUIDELINES

- Provide public access and open space to and along the waterfront
- Protect natural ecology, vegetation, and aquatic habitat
- Provide shoreline treatment to prevent erosion, protect water quality and enhance public access appropriate to community and environmental needs.

RECREATIONAL PROGRAMMING GUIDELINES

- Facilitate water-based recreation - such as fishing, sailing, kayaking, canoeing and boating, swimming, and nature appreciation - that is consistent with local culture, site conditions and the protection and enhancement of natural resources.

figure 1: Battle Creek Michigan: Social Space at the water's edge.
图1：美国密歇根州Battle溪：水岸的社交空间

figure 2: Battle Creek Michigan: Social Space at the water's edge.
图2：美国密歇根州Battle河溪：水岸的社交空间

figure 3: Queens, NY. Social Space at the water's edge.
图3：纽约皇后区，水岸的公共空间

figure 4: Queens, NY. Social Space at the water's edge.
图4：纽约皇后区，水岸的公共空间

figure 5: Water production activities in China.
图5：水上生产（捕鱼）

开放空间指导原则
- 提供通向水岸和水岸两侧的公共道路和开放空间
- 保护自然生态，植被和水环境
- 采取河岸治理以防止侵蚀，保护水质，增加河岸对公众的开放以适应社区和环境的需要

娱乐休闲规划指导原则
发展水上休闲：垂钓、帆船、皮筏艇、独木舟、游艇、游泳以及自然风光欣赏，与当地的文化、自然条件以及保护和发展自然资源相结合。

figure 7: Chinese Public Event: Dragon Boat Race
图7：中国传统活动：赛龙舟

figure 6: Water transportation in China.
图6：水上交通

figure 8: Suzhou Water Culture Fest
图8：苏州水文化节

ARCHITECTURE/URBAN DESIGN GUIDELINES

- Promote consistency and continuity of new development with adjoining and/or surrounding neighborhoods, keeping with the area's height, scale, and density.
- Protect views to, from, and along waterfronts.
- Link waterfront areas with parks, nature preserves, historic and cultural sites, commercial main streets and adjoining communities.

figure 9: Oswego, NY: Waterfront regeneration.
图9：纽约州奥斯威戈：水滨重建

COMMERCIAL PROGRAMMING GUIDELINES

- Relocate non water-dependent land uses, such as industrial facilities, bulk storage, public works and parking, away from the water's edge.
- Promote a mix of uses to help revitalize existing communities and foster active, diversified and sustainable waterfront development.
- Preserve, upgrade, expand, and adapt for re-use an appropriate stock of existing residential commercial buildings.

POLLUTION CONTROL GUIDELINES

- Prevent non-point source pollution, particularly storm water runoff.
- Use strategies to intercept water contamination

figure 10: Toronto, Canada: Music Education Waterfront Park.
图10：加拿大多伦多：水滨公园中的音乐教育

figure 11: Richmond, VA: Canal Walk Project.
图*11*：弗吉尼亚里士满：河道散步径项目

figure 12: Richmond, VA: Canal Walk Project.
图*11*：弗吉尼亚里士满：河道散步径项目

figure 13: Narragansett Landing: Preservation and Reinvention at the waterfront.
图13：美国纳拉甘塞特：水岸保护和重建

建筑/城市设计指导原则

- 保持新发展项目和周围环境在建筑高度、规模、密度上的整体一致性和连贯性。
- 保护沿河的视觉走廊。
- 将水滨地带和公园、自然保护区、历史文化景点、商业街以及比邻社区连接。

商业区规划指导原则

- 将沿岸非水滨用途的场所搬迁，例如：工厂、仓库、办公楼、停车场。
- 鼓励多功能用地混合，以重建现有社区和发展生动、多样和可持续发展的社区。
- 保护、升级、扩大和修缮现有商住楼。

控制污染指导原则

- 预防非点源污染，尤其是城市径流
- 采取措施拦截水污染物
- 对公众进行污染源控制的教育

figure 14: Narragansett Landing: Preservation and Reinvention at the water-front
图13：美国纳拉甘塞特：水岸保护和重建

FORMS OF WATERFRONT DEVELOPMENT

The formal design of development along the water's edge can take on various shapes. A linear shape includes coast, lake front, or river. A network shape includes links and nodes. Nodes include ports and marinas as well as Network extensions.

figure 15: Gulangju Coastal Re gion, Xiamen, China : Linear development form.
图*15*：厦门沿海鼓浪屿：海岸发展模式

figure 16: Cano de San Antonio: Nodal development form.
图*16*：圣安东尼奥：节点发展模式

figure 17: Proposed Woodbridge Development in Houston, Texas Metro: Network devevlopment form.
图*17*：休斯顿*Woodbridge* 地区发展规划
：网状发展模式

figure 18: Paseo del Alamo water garden.
图18：沿河花园

滨水地区发展模式

沿岸发展设计可以采取不同的模式：线形，包括海岸、湖岸和河岸；网状，包括连接线和节点，其中节点包括港口、码、以及网的延伸。

figure 19: Paseo del Alamo water garden.
图19：沿河花园

figure 20: Paseo del Alamo water garden: Network Extension.
图20：沿河花园：网状扩张

figure 21: Villages at Gaoming Waterfront.

图21：高明水边村庄

POSSIBILITIES FOR GAOMING

The nature of different elements along the water's edge provides a unique opportunity for a multitude of programs. The location of villages at the waterfront can allow for preservation strategies and commercial enterprise. The linear form of the waterfront can encompass various recreational activities that are culturally specific to China. In addition, the various fishponds can provide opportunities for environmental education on the practical uses for water in Gaoming.

高明的未来

沿岸不同的自然环境为各种各样的项目创造了独特的条件。依山傍水的保护区和商业企业。线性的水岸可以承担各种娱乐休闲活动的需要，尤其是有中国文化特色的活动。此外还有许许多多的鱼塘可以为高明实际水利用情况提供不可多得的环保教育素材。

figure 22: Zonal Programming at Gaoming waterfront.

图22：高明水滨带状规划,商业/休闲/自然

figure 23: Fishponds at Gaoming Waterfront.

图23：高明水滨的鱼塘

OPEN SPACE
开放空间

As a city of forests, mountains, and rivers, Gaoming possesses tremendous natural resources: hectares of woods, countless fish ponds, the West and Xiuli Rivers, a network of canals, and more. As the city grows and develops, Gaoming must make careful decisions to ensure that these natural resources and landscapes are protected and preserved for future generations.

This section presents an inventory of Gaoming's existing natural assets, an assessment of the challenges the city will face in the next decade as many new residents arrive, and a series of planning recommendations for parks, open space, and water bodies to help keep Gaoming a beautiful, natural city for decades to come.

作为有山有水的城市，高明有着丰富自然资源：大量的树林、不计其数的鱼塘、西江和秀丽河，河网体系等等。随着城市的发展，高明必须做出慎重的决定去保护这些自然资源和风景，确保造福子孙后代。

这个章节概括了高明现有的自然资产，评估了高明在下个世纪由于大量人口迁入所面临的各种挑战，以及一系列的关于公园、公共空间、水体设计的规划建议以保持高明在下个世纪依旧是一个风景优美的城市。

现有模式和情况

今天的高明有着大量的绿色开放空间环绕在城市西边的小山附近。虽然在居住区修有公园，而且现在的市中心有一定数量景观广场，但是这些开放空间很少有连接在一起。当前绿色空间和娱乐中心的规划都没有解决这个问题。因为地点和道路的问题，居民们也不容易去到沿河区和现有公园。

挑战

新高明的规划将要求考虑到城市现有的自然资源，城市的布局和政府有限资源的局限和挑战。

河流

虽然河流可以作为城市的一种财富，它们也影响着水如何流过这个区域。规划必须体现将来的策略：随着城市的扩张考虑人们如何跨越河流。

洪涝区

任何一个新的发展必须考虑如何处理现今和未来城市河道和鱼塘的洪涝。

快速增长

预计的人口增长速度将加重自然和市政资源的负担，给城市带来更大的发展压力不去保护开放空间，而去开发这些开放空间。

制度容量

规划必须考虑到现有的政府基础设施的局限性。例如建立一个大型的城市公园体制会需要创造一个新的市政实体来管理这个公园。

缺乏连接

今天高明的工业走廊和其它大型单一的土地利用分隔了城市的河流、鱼塘、公园和森林。建立这些空间之间的连接可能需要调迁一些工厂或其他的土地利用。

EXISTING PATTERNS AND CONDITIONS

Today, Gaoming has extensive green, open space clustered around the hills to the west of the city. Although the city is currently building parks in residential areas and the existing city center has a number of hardscaped plazas, few of the open spaces are connected. The current plan for new green spaces and recreational centers does not solve this problem. Residents also have poor access to the riverfront and to some of Gaoming's existing parks

CHALLENGES

Planning for the new Gaoming will require taking into consideration the limitations and challenges of the city's existing natural resources, layout, and governmental capacity.

Canals

While the canals can be an asset to the city, they also affect how and where water flows through the region, and planning must accommodate future locks and strategies to move people across the canals as development expands.

Floodplains

Any new development must consider the existing and future floodplains of the city's rivers and fish ponds.

Rapid growth

The speed of the projected population growth will strain Gaoming's natural and municipal resources and put increased pressure on the city to develop, rather than preserve, some buildable open spaces.

Institutional capacity

Planning must take into consideration the limitations of the existing governmental infrastructure. Establishing a large city park system, for instance, would require creating a new municipal body to manage the parks.

Lack of connections

Today, Gaoming's industrial corridors and other large, single-use land parcels divide the city's rivers, fish ponds, parks, and forests. Creating connections between these spaces may require relocating some industries or land uses.

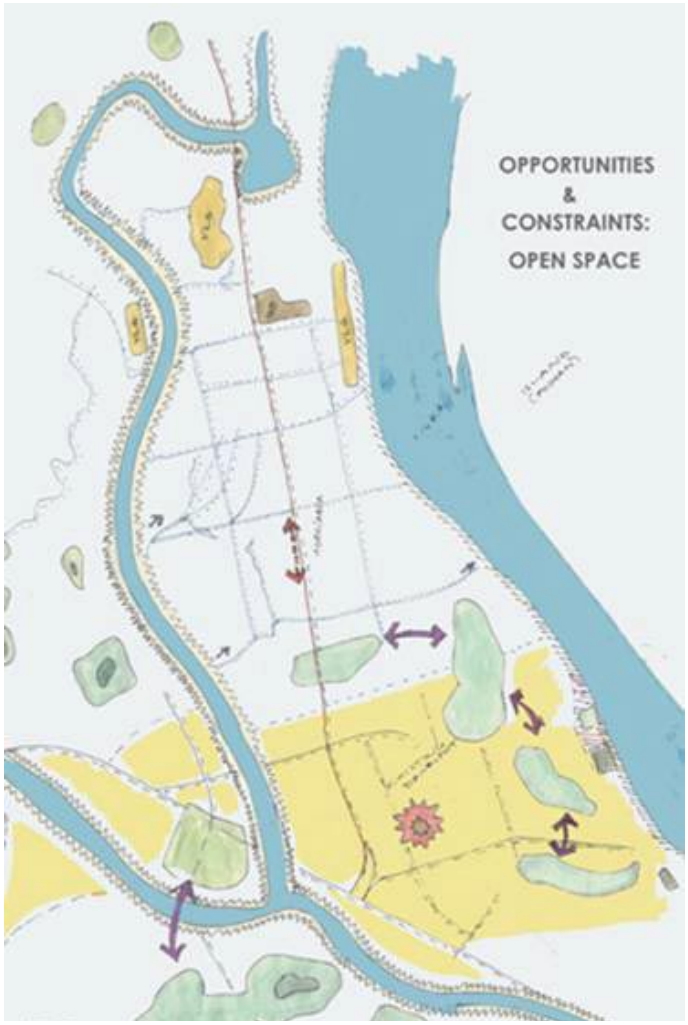


figure 2: Oppportunites for and constraints on open space development in Gaoming

figure 1: Existing open space conditions

figure 3:

OPPORTUNITIES

Gaoming's assets and existing conditions can also help support the creation of a more comprehensive network of parks, water bodies, and open spaces. Current de facto preservation of the city's hills, for instance, can lay the groundwork for a system of large regional parks. As agricultural land is converted to new uses, Gaoming can preserve some stretches of land to create connections between parks and rivers. Finally, the development of the West and Xiuli River waterfronts presents a key opportunity to establish public access to these rivers and to develop linear waterfront parks or recreational paths for city residents.

机遇

高明的资源和现有的情况也能帮助支持一个集公园、河流和开放空间为一体的更加全面的网络体系。例如这个城市山的保存能作为大型地区公园的基础。 当农田开发作为别的用途时，高明可以保存一些土地来连接公园和河流。最后，西江和秀丽河河滨的发展将会为城市居民提供可接近的江边带状公园或休闲道路。

figure 4: Boaters

figure 5: The San Antonio, Texas Riverwalk

RECOMMENDATIONS

- Emphasize ecological sustainability where possible through the use of native plant species and green corridors.
- Utilize sustainable energy such as solar and wind power where possible.
- Cluster development to ensure that open space parcels are as large as possible; capitalize on travel patterns by connecting these spaces to trail networks and emphasizing circularity.
- Plan for the long term: designate land for open space now.
- Focus on the lived experience when designing connections between the built environment and open space.
- Collaborate with local schools and include them in environmental education and preservation initiatives.
- Educate local community members through formal and informal measures: establish programs at city museums or educational institutions, for instance, or install educational signs and exhibits along the rivers.
- Program public spaces to reflect local culture and identity.

建议

- 在那些有可能使用本地植物种类和建立绿色走廊的地方尽可能强调生态平衡。
- 尽可能运用可持续的能源譬如太阳能和风力。
- 成片开发确保开放空间尽可能的大；通过连接这些空间形成网状或环状出行路线
- 长远规划：现在就要划定开放空间。
- 在设计建筑物和开放空间的连接时，要考虑未来居住者将要经历的体验。
- 与地方学校合作使他们参与生态环境教育和保护计划。
- 通过正式或非正式的形式来教育居民：在城市的博物馆或教育机构开展一些活动，例如安装教育标志并且沿河展示。
- 规划体现地方文化和标志性的公共空间。

figure 6: Trail Map indicating recreation types and services

figure 7: Tai Lam Chung

专题研究之一：香港公园体系

香港的公园体系平衡了当地的布局：自然禁建区成为连接在一起的公园，从而构成了公园体系。在2004年，有1200万人游览了这个公园。

香港面积1092平方公里，大约四分之三在乡间，有着美丽的沙滩，岩石海滩和高山。

为了保护和在适当时候开放乡村给人们游览，1976年颁布的乡村公园法令为划定、开发和管理乡村公园和特定的区域提供了一个法律的框架。 香港然后成立了一个乡村和海洋公园委员会给予政府关于乡村公园和特定区域的各方面建议。

CASE STUDY ONE: HONG KONG PARK SYSTEM

Hong Kong's park system leverages the region's topology: natural no-build zones became interlinked parks to create a park system visited by 12 million people in 2004.

Hong Kong covers 1,092 square kilometers; about three-quarters is considered countryside, dramatically landscaped with sandy beaches, rocky foreshores, and high mountains.

To conserve and, where appropriate, open up the countryside for the people, the Country Parks Ordinance was enacted in 1976 to provide a legal framework for the designation, development and management of Country Parks and Special Areas. Hong Kong then established a Country and Marine Parks Board to advise the government on all matters concerning the Country Parks and Special Areas.

给予高明的经验

开放空间的创新使用可以：保存和把不同功能的绿色空间连接在一起的。

保护当地的自然资源：这些资源可以有不同的生态功能，比如作为野生动物走廊和分洪区。

长远规划应为将来的使用划定绿色空间，甚至是在这些资源可开发以前就应该这样做。

LESSONS FOR GAOMING

Innovative use of open space, preserved, and linked green spaces with variety of uses.

Enable preservation of district's natural assets, which also serve ecological functions as buffers to wildlife corridors and flood plains.

Long-term plan designated land for future use as green space, even before resources were available to develop it.

CASE STUDY TWO: CHENGDU RIVER PARK

The Living Water Park in Chengdu, Sichuan, China cleans the water and provides for education and recreation. The riverfront park is part of a larger six-acre Living Water Park that uses biology to cleans the water and has become a model for many cities in China and internationally. The park was designed by landscape architect Margie Ruddick, environmental artist Betsy Damon, and the City's landscape architects, scientists, ngineers, architects, and other visiting designers.

LESSONS FOR GAOMING

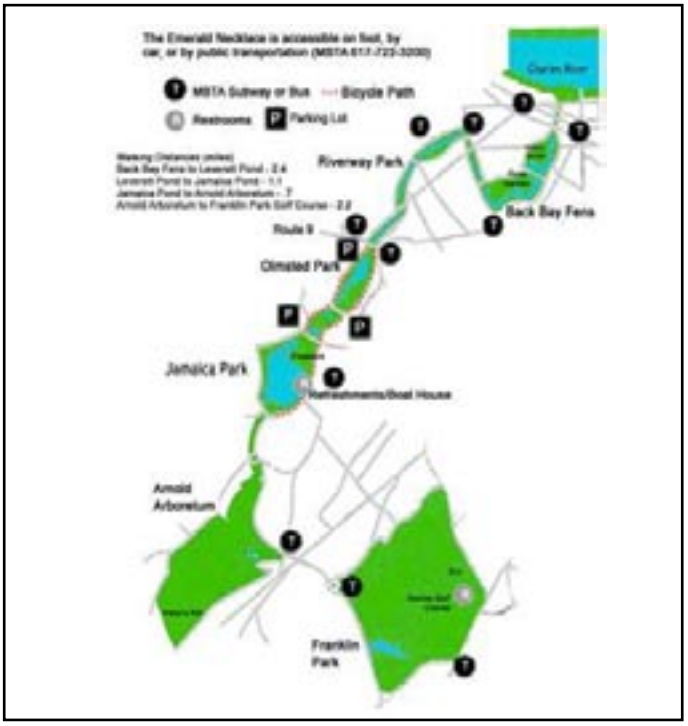
- Links town to river
- Creates recreational opportunities
- Emphasis on clean technology and constructed wetlands
- Attracts visitors

专题研究二: 成都流水公园

中国四川成都的流水公园既清洁了水质又提供教育和休闲场所。 这个临江园区是大的六英亩的流水公园的一部分。使用生物净化的流水公园成为了中国和国际许多城市的一个模范。 公园由景观师Margie Ruddick, 环境艺术家Betsy Damon, 和这个城市的景观师, 科学家, 工程师, 建筑师, 还有其它访问设计师共同计。

对高明的经验

- 连接城镇与河流
- 创造休闲机会
- 突出无污染的清洁技术和建造的湿地
- 吸引游客



CASE STUDY THREE: EMERALD NECKLACE

1887 年由景观师Frederick Law Olmsted设计，波士顿的鲜绿色项链式设计构想为在整个城市连接公园和绿色空间的一条连续的公园线。它通过作为湿地吸收暴雨水提供了重要的休闲环境功能。

Designed in 1887 by landscape architect Frederick Law Olmsted, Boston's Emerald Necklace was envisioned as a continuous line of parkland that links parks and green spaces throughout the city. It provides important recreation as well as environmental benefits by acting as a wetland for storm water absorption.

对高明的经验

- 提供在暴雨排水中的重要作用
- 提供多种类型公园和休闲活动
- 连接的各空间的网络
- 长远规划的结果和预留土地将来使用的重要性

LESSONS FOR GAOMING

- Plays vital role in storm water management
- Offers many types of parks and recreational activities
- Network of linked spaces
- Result of long-range planning and the importance of setting aside land as it becomes available for use at a later date

在高明规划

DESIGN AND PLANNING TYPOLOGIES
设计和规划类型

This final research endeavor serves as a synthesis and capstone project. In response to the feedback of the Gaoming officials, the class shifted its focus from master planning to issue-based research. The class organized into various teams to look more in-depth at particular issues of interest including water and hydrology, transportation, density and form, civic centers, and villages. Using the knowledge from the original research and site analyses, innovations from the midterm plans, and insight from officials in Gaoming, each team sought an in-depth understanding of these critical issues in the Gaoming context.

Each team structured its research around a common framework, which focused on Policy, Design, Implementation, and Case Studies. The case studies shed light on detailed options in each area and provide important lessons from successes and failures. The following section presents each teams' findings and recommendations.

最终的研究成果应是一个综合和总结性的项目。根据高明政府的反馈，工作室把研究重心由总体规划转向课题研究。工作室分为不同的小组，更深入的研究各个课题，包括水与水文、交通、密度和建筑形态、城市中心、村庄等。通过综合最初研究和实地分析的结果，中期规划的发现和高明官员的意见，每个小组对这些高明的关键课题有了更深入的认识。

每个小组的研究围绕着一个共同的框架展开，这个框架集中在政策、设计、执行和案例研究上。案例研究聚焦在每个案例详细的选择方案上，从他们的成功和失败中得出总要的经验和教训。以下将介绍各个小组的研究结果和建议。

在高明规划

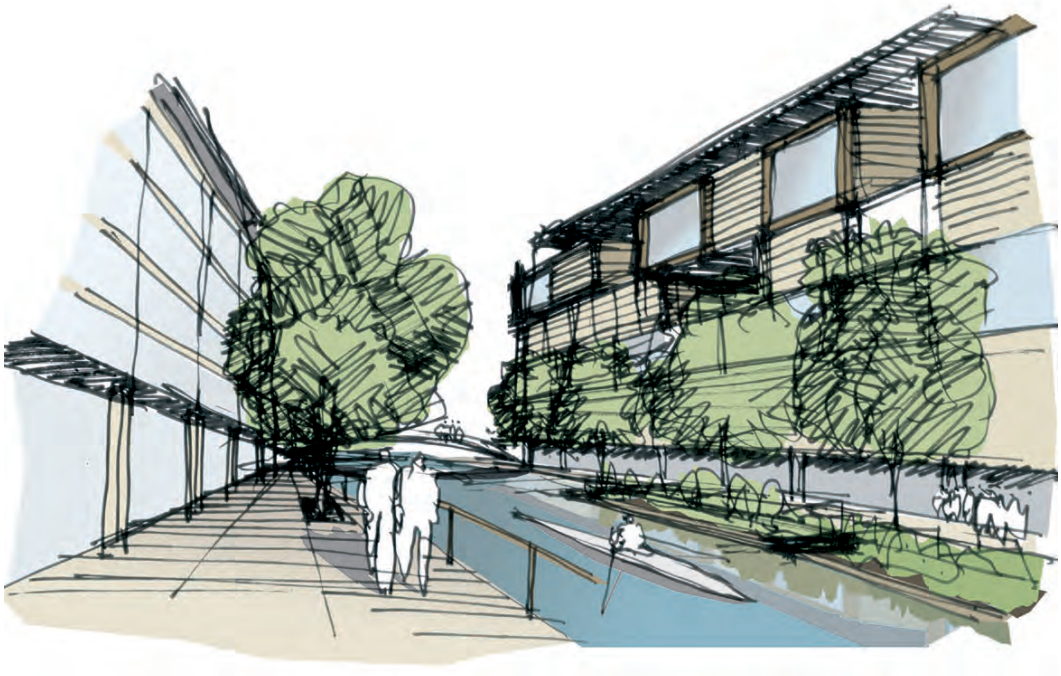


figure 1: canals with wastewater treatment system can be an urban organizer for the new developments
图 1 ：带有污水处理装置的都市水道可以为都市的新开发起到组织作用。

WATER

水

Gaoming's location on the West River represents its defining characteristic as well as its greatest opportunity. Years of rapid economic growth throughout the Pearl River Delta are threatening the region's environmental integrity. In order to preserve this natural asset, as well as ensure the health and economic welfare of future generations, it is crtitical that the city work now to improve the environment. For Gaoming, the management of water pollution is a key.

This chapter addresses the value of a comprehensive water pollution strategy to manage all aspects of the problem. Additionally, this chapter offers recommendations for policy, technolgy, and implementation, including case studies, to assist in the development of a water pollutuion management strategy.

高明紧邻西河的地理位置不仅是它区别于其他地区的重要特征，也标志着巨大的机遇。珠江三角洲多年来经济持续高速增长严重威胁着这一地区的环境质量。为了保护这片自然遗产，也为了保证子孙后代健康与经济的持续发展，从现在起就开展环境保护工作至关重要。对高明来说，环境保护非常重要的一环就是水污染治理。

本章从多方面阐述水污染治理决策的价值。本章还包括实例分析在内的政策、技术和实施等方面的建议，以协助发展水污染治理的策略方案。

水污染减缓策略方案

减少非渗水性地区面积
主要目标：提高整体水质，通过增加雨水在当地的渗透量减少对污水处理厂的依赖性。

减少非渗水性地区面积高明应该控制（如果可能的话减少）当地非渗水性地区面积。政策方案之一就是利用经济杠杆鼓励土地所有者和开发商将非渗水性地区减到最低。土地所有人可根据在其产业上的非渗水性地区（如停车场、房顶、车道）面积的总量缴纳一定数量的月费。那些实行较好雨水管理措施的业主可得到税务方面的优惠。雨水使用费用与记录已经在美国的很多城市中施行。

高明环境保护局应该监测非渗水性地区并对其进行记录，让有关部门的领导和规划者了解这方面的信息，以便决定哪里适合发展，而哪里应该控制发展。

WATER POLLUTION IMPROVEMENT STRATEGIES

Reduce Impervious Areas
Primary objective: To improve overall water quality and reduce reliance in waste water treatment plants by increasing the amount of rain water infiltrated on site.

Gaoming should control, and reduce where possible, impervious areas in the city. A policy approach would utilize economic incentives to encourage property owners and developers to minimize total impervious areas. A monthly fee can be charged on the property owners, based on the measured total impervious area of their properties, such as parking area, roof, and driveway. And those owners who adopt better on-site stormwater management measures can be offered tax credits. Stormwater user fee and credits have been implemented by many United States cities.

Gaoming EPA should monitor and inventory impervious areas throughout the city so that this information is available to decision makers and planners as to where the most suitable sites for development are as well as where to curb growth.

figure 2: The Increase of impervious area in Gaoming
图 2 ：在高明不断增加的非渗透性表面

Natural Remediation

Primary objective: To reduce the cost and chemicals needed to treat polluted water and to provide further treatment to water that has been treated traditionally but is still not as clean as the water body it will be discharged into.

Although traditional bio-chemical wastewater treatment technologies still dominate city planning, natural remediation is becoming increasingly accepted throughout the world as an environmentally-sensitive and cost-effective method to treat storm water, gray water, and food industry wastewater.

Natural remediation can be wetlands, constructed wetlands, living machines, and restorers. Constructed wetlands have been used in numerous countries including Australia, Canada, China, the United Kingdom, and the United States. In 1997, natural remediation was recommended in the United State's Office of Science and Technology Policy report to Congress.

Compared to traditional wastewater treatment methods, natural remediation has the advantage of cost saving (especially, operation costs) and further treatment (good outflow quality, particularly good a as a secondary treatment). Equally important, natural remediation can improve the natural landscape, provide recreational and environmental education opportunities, and create fauna and flora habitat. Admittedly, natural remediation has the disadvantage of large land requirement, which makes it difficult highly urbanized areas.

Gaoming has the opportunity to implement natural remediation throughout the city and region. A large number of swamps, fish ponds, and underdeveloped lands can be easily transformed into various types of wetlands.

Source: Executive Office of the President, Office of Science and Technology Policy, 1997. A Report to the Congress: Science and Technology Shaping the Twent First Century; http://clinton2.nara.gov/WH/EOP/OSTP/SNT/chapter4.html

天然方法

主要目标：减少污水处理所需要的成本以及化学试剂，而对于经过传统方法处理但还达不到排放要求的水体进行深度处理。

尽管传统的生化污水处理技术仍比较普遍，天然方法治理污水因其环境影响小、成本收益高等特点正为世界上越来越多的人所接受，其覆盖面包括雨水、灰水、食品加工产业污水等。

天然方法包括湿地、人工湿地等。人工湿地已在多个国家使用，包括澳大利亚、加拿大、中国、英国以及美国。在1997年美国科技政策办公室的报告中就将天然方法推荐给了国会。

与传统污水处理方法相比，自然方法有如下优点：节省成本（特别是运营成本）、深度处理（处理后的水质量好，特别是作为二次净化使用时）。同样重要的是自然方法可以改善自然景观，提供消遣旅游的机会，创造动植物栖息地，提供环境教育机会。当然自然方法也有占地面积要求高的缺点，在高度城市化的地区较难实行。

高明有在市内和整个地区实行天然方法的可能。大量的沼泽、鱼塘和未开发用地可以很轻易地转化为各种类型的湿地。

Building-Level Strategies
Primary objective: To minimize overall water use at the household level, capture as much stormwater as possible through roof gardens, porous surfaces, and storage tanks, and to minimize the overall environmental impacts of buildings.

It is expected that Gaoming's population will double in the coming two decades. That housing pressure, along with the corresponding growth in business and industry, will create a major construction boom in the city. Gaoming is in a good position to stop any potential problems by implementing building and construction policies that include sound water management.

Roof gardens have been used widely throughout the world and, depending on building design, can range from full-scale vegetable gardens to low-maintenance grass. In any variation, they are very effective at absorbing stormwater on site and, therefore, reducing the amount of the runoff. They are also very good at reducing the urban heat island effect, which in many cities with high degrees of impervious surfaces and little green space, can raise temperatures by several degrees, resulting in increased energy use to power fans and air conditioners and overall greater inefficiency.

There are a lot of opportunities for gray water reuse. One way to achieve this is through double plumbing, in which gray and black water are piped separately so that the gray water can be reused. Some common reuses are irrigation and toilets. Reusing water reduces the overall amount of water needed from the water treatment plant as well as reduces the amount of water then sent to the waste water treatment plant. Rain, gray and black water can also be used with constructed wetlands, Living Machines, and Restorers.

Incentives, such as green building tax credits can be introduced to encourage developers to incorporate green design into their real estate projects. Green building desing guidelines and best-practices should be developed and disseminate to provide technical assistance.

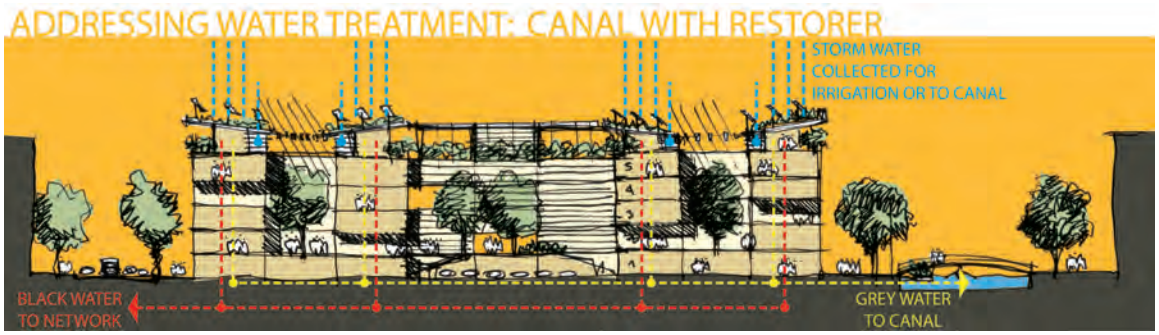
居民住宅策略方案
主要目标：将居民用水总量减到最少，通过房顶花园、渗透性表面和蓄水池等尽可能多地利用雨水，以便降低民居对环境的影响。

据预测，高明的人口在未来20年内将翻一番。随之而来的住房压力和商业工业增长将带来一个主要的建设高潮。高明可利用这个契机，通过在房屋建筑过程中实施先进的水管理措施，避免任何将来可能发生的潜在问题。

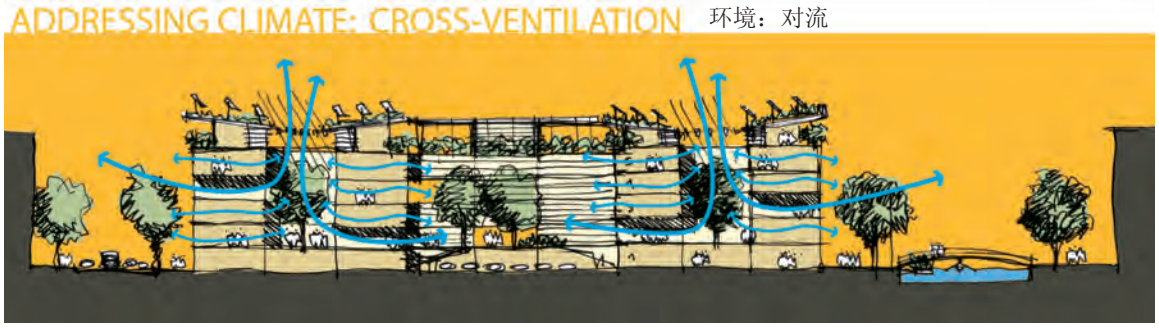
屋顶花园的使用在世界上十分广泛。按建筑设计的不同，其形式从全方位的植物园到低维护需要的草地应有尽有。不管形式如何，都是非常有效的吸收雨水、从而减少雨水流失的手段。屋顶花园也是减少城市热岛效应影响的有效手段。城市热岛效应是在城市中非渗透性区域面积过大造成的局部升温现象，造成了电扇、空调用电量的增加和整体的低效。

还有很多灰水再利用的机会。方法之一就是通过双管道系统将灰水和黑水分开，让灰水再利用。比较普遍的利用方式包括灌溉和厕所马桶冲洗。水的再利用可以减少自来水厂的用水需求压力，也减少了污水处理厂的处理量。雨水、灰水和黑水也可以用于人工湿地等。

可以利用绿色建筑税收优惠等刺激手段鼓励开发商在房地产项目中融入绿色设计。发展、宣传绿色建筑指导方针和最优方法以提供技术支持。



水处理：有污水修复器的水道



环境：对流

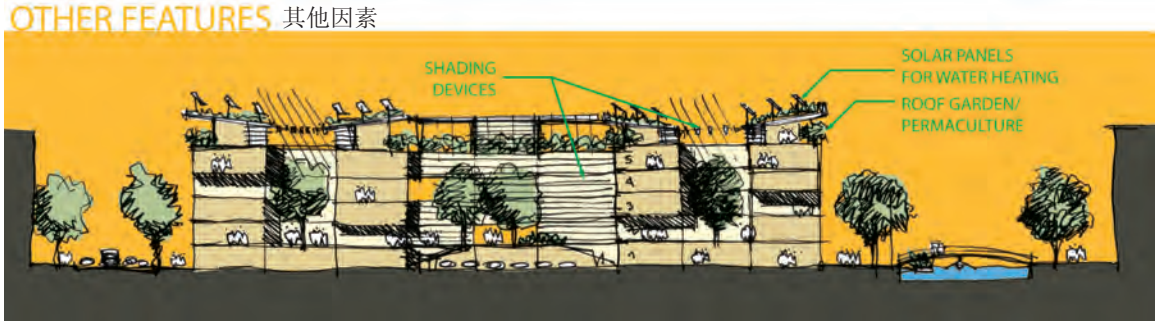


figure 3: housing typology with diverse strategies for a sustainable Gaoming
图 3 ：在住宅设计中可以使用的不同可持续策略

IMPLEMENTATION

To implement the project, we have to take in account of benefits and costs, phasing, and planning.

BENEFITS AND COSTS ANALYSES

An initial benefit-cost analysis was conducted to compare bio-chemical treatment and constructed wetland, based on the data provided by Shenzhen Environmental Institute. To meet the treatment capacity for 250 thousand people in the new urban center (100% treatment rate and not including stormwater), traditional treatment requires 210 million RMB for infrastructure construction and 33 million RMB per year for operation and maintenance, while wetland treatment only needs 140 million RMB and 8 million RMB, respectively.

This indicates that constructed wetland is cost-effective in terms of investment and operation. Besides the cost saving, it can bring environmental benefits. For example, Gaoming would decrease its BOD discharge by 1465 tonnes if it adopted constructed wetlands. In addition, wetlands can improve landscape amenities, provide recreational opportunities, and create habitats for wildlife. It is difficult to monetize these improvements.

However, constructed wetlands need at least four times more land than bio-chemical treatment. This makes constructed wetlands especially difficult to implement in high land-value regions. Individual case studies can be done to compare the benefits and costs.

实施

要实施这个计划，我们要考虑收益和成本、阶段划分和规划。

收益和成本分析

根据深圳环境科学研究所的数据，我们进行了费用效益分析来比较生化处理和人工湿地处理两种方法。要达到新城区25万人口的处理能力（100％处理率，不包括雨水），传统的处理方法需要花费2.1亿元人民币的基础设施投资费用，再加上每年3千3百万元的运转和维护费。而湿地处理的费用只有1.4亿元和8百万元。

显然，从投资和运转上看，人工湿地是划算的。除了节约成本，人工湿地还可以带来环境效益。例如：人工湿地可以使高明每年减少1465吨的生化需氧量排放。此外，湿地还可以提高景观效益，创造娱乐休闲的机会，以及为野生生物创造生存环境。这些人工湿地所带来的价值无法衡量的。

然而，人工湿地的用地量至少是生化处理方法的4倍，在土地价值高的地段尤其难以实施。应根据个案研究来比较收益和成本。

Table 1: Comparison of Implementation of Traditional Wastewater Treatment and Constructed Wetland in Gaoming New Urban Center 表1：高明新城区采用传统废水处理方法和人工湿地处理方法的比较

	Bio-chemical Treatment 生化处理	Constructed Wetland 人工湿地
Investment (thousand RMB) 投资（千元）	210,000	140,000
Annual Operation Cost (thousand RMB) 年运转成本（千元）	33,853	8,303
Outflow Quality (BOD concentration: 出水污染物浓度（生化需氧量浓度：毫克/升）mg /l)	30	5

Note: It is assumed: 1) The total population is 250,000; 2) Per capita water consumption is 0.7 cubic meters per day; 3) 100% of wastewater is treated. The result is based on the estimate by Shenzhen Institute of Environmental Science.

* We think the land requirement is underestimated.

注：假定：1）总人口为250，000；2）人均用水量为0.7立方米每天；3)处理废水达到100％。结果依据深圳环境科学研究所估计。

*我们认为这个结果低估了对土地的要求。

土地用量

湿地、人工湿地、修复器、生命机器等自然处理方法的成本和复杂程度依次增加。产生的废水排放量是确定土地用量的关键。我们考虑三个不同的水处理场景，并计算了生命机器和湿地的土地用量。通过分析，我们得出高明新区处理废水和雨水的土地用量在0.6平方公里至6.8平方公里之间。

阶段

随着高明的发展，我们需要更多的湿地来处理日益增加的废水排放和雨水。1）为保持一定的处理能力，湿地保护带将纳入规划之中，为未来湿地扩展留下空间。2）变湿地处理为更高级的自然修复措施（例如生命机器）将提高处理能力而不增加土地用量。3）高明应开发排污交易和污染税等经济手段，来降低控制污染的社会成本。

LAND REQUIREMENT

Natural remediation varies from wetland, constructed wetland, restorer, living machine, and others, in ascending order of the costs and complexities. The amount of wastewater generated is key to land requirement. We consider three different scenarios of water management, and calculate the land requirements for living machine and wetland. From the analyses, we derive the land requirement for treating wastewater and stormwater in Gaoming new urban center is between 0.6 square kilometers to 6.8 square kilometers.

PHASING

With the growth of Gaoming, we need more wetlands to treat increased wastewater and stormwater. 1) In order to maintain the capacity, wetland zone is incorporated into planning for future expansion of wetlands. 2) And transforming wetlands into more advanced natural remediation (e.g. living machines) can increase the treating capacity without increasing the area. 3) Gaoming should explore pollution trading, tax and other incentives to lower the social costs of pollution control.

Source: Executive Office of the President, Office of Science and Technology Policy, 1997. A Report to the Congress: Science and Technology Shaping the Twenty-First Century; http://clinton2.nara.gov/WH/EOP/OSTP/SNT/chapter4.html

Table 2: Land Requirement Analysis (Unit: Square Meter)
表：土地用量分析（单位：平方米）

	RetentionTime (day) 水力停留时间（天）	Scenario 1 场景 1	Scenario 2 场景 2	Scenario 3 场景 3
Living Machine 生命机器	3	1,024,521	787,808	598,808
Wetland 湿地	20	6,830,137	5,252,055	3,992,055

注：计算依据污水产生量和*John Todd*提供的水力时间的数据。表中做出几个假设：1）湿地有效深度为0.75米；2）考虑到降雨量不同，我们将日平均降雨量增加一倍（年降雨量和蒸发量的差别为600毫米）。
在土地用量上，生命机器和湿地处理代表两种极端（最大和最小用地）的技术。实际的土地用量在上文给出的范围内之间。
场景1：没有雨水保持和废水再利用。
场景2：雨水保持率为60%。
场景3：雨水保持率为60%，废水重复利用率为30%。

Note: The calculations are based on retention time provided by John Todd and wastewater generation. Several assumptions are made to derive the results: 1) The usable depth is 0.75 meter; 2) In consideration of rainfall variation, we double the average daily stormwater (yearly difference of precipitation and evaporation of 600mm).
Living machine and wetland treatment cover two extreme technologies, in terms of land requirement. The real land requirement should vary within the range.
Scenario 1: without stormwater retention and wastewater reuse.
Scenario 2: stormwater retention rate is 60%.
Scenario 3: stormwater retention rate is 60%; and 30% of wastewater is reused.

OPERATIONS AND MAINTENANCE

Natural remediation has its unique maintenace and operation issues, including mosquitoes, siltation, weed, and liability. Better design can minimize the maintenace and ensure the operation in the long term.

Siltation

Wetland loses treating capacity due to siltation. On-site detention minimizes the load of pollutants in the sources. Detention facilities in front of wetlands can increase their effectiveness and reduce sediment and litter entering the wetlands. Education campaigns with urban residents, industry, and road authorities can prevent wastes and sediment washing into stormwater systems. Dredging is necessary for long-term maintenance.

Weed and Mosquito control

Mosquitos associated with wetlands can potentially endanger human health by transmitting malaria and other diseases. The design should increase the depth of wetland and facilitate rapid drainage, which decrease the habitats for mosquitoes. The intorducion of fish, tadpoles and other natural enemies can increase the ecological diversity and control mosquitoes. Pesticide is the last choice and can not be used in sensitive areas
(Source: http://medent.usyd.edu.au/fact/freshwet.htm)

The establishment and spread of weeds can decrease the ability of wetlands to perform their remediation functions. Water level management and introduction of predator animals can control weeds.

Safety

The design of wetlands should minimize the risk of children drowning and becoming a haven for rats, snakes, and other dangerous creatures.

运作和维护

自然修复方法有特殊的维护和运作问题，包括控制蚊虫、淤积、杂草和风险。好的设计可以减少维护和保证长期运作。

淤积

淤积会使湿地降低处理能力，甚至失去再建设的必要。现场截留从源头降低污染负荷。湿地前的截留设施能提高湿地处理的效率，减少沉积物和漂浮物进入湿地。对城市居民、工厂和交通管理人员的教育，能够减少废物和沉积物冲入雨水系统。要想实现长期保持，清淤也是必要的。

杂草和蚊虫治理

湿地里的蚊虫会通过传播疟疾和其它疾病危害人类健康。设计应加深湿地深度，加快排水速度，以消灭蚊虫的生活环境。引进鱼类、蝌蚪和其它蚊虫的天敌可以在控制蚊虫的同时，增加湿地的生态多样性。杀虫剂是最后的选择，但不能用于敏感地区。

（来源：http://medent.usyd.edu.au/fact/freshwet.htm）

杂草的产生和蔓延会降低湿地的修复功能。可以用水面管理和引入食草动物来控制杂草。

安全

湿地设计应将儿童溺水的危险降到最低，并避免湿地成为老鼠、蛇等危险动物的避难所。

WATER TO INFORM CITY CHARACTER

figure 4: Gaoming Today (all water shown in blue)
Existing water bodies and fish ponds can inform future planning by forming the foundation of a water network and creating a distinct character.
图4：今日高明（所有水体以蓝色表示）
现有的水体和鱼塘可以通过建立水系基础和本地地方特色来帮助未来的规划。

figure 5: sequence of transformation, from fishponds to urbanized canal
图5：转化过程：由鱼塘到都市水道

WATER TO INFORM CITY CHARACTER

figure 6: Example of siteplan, with key features such as Bus Rapid Transit (BRT), opera house, environmental educational center / recycling center, windmill park, and cultural center:
图6：细部规划的不同要素，例如公交快速线路、剧院、环保教育和回收中心、风车公园、文化中心等。

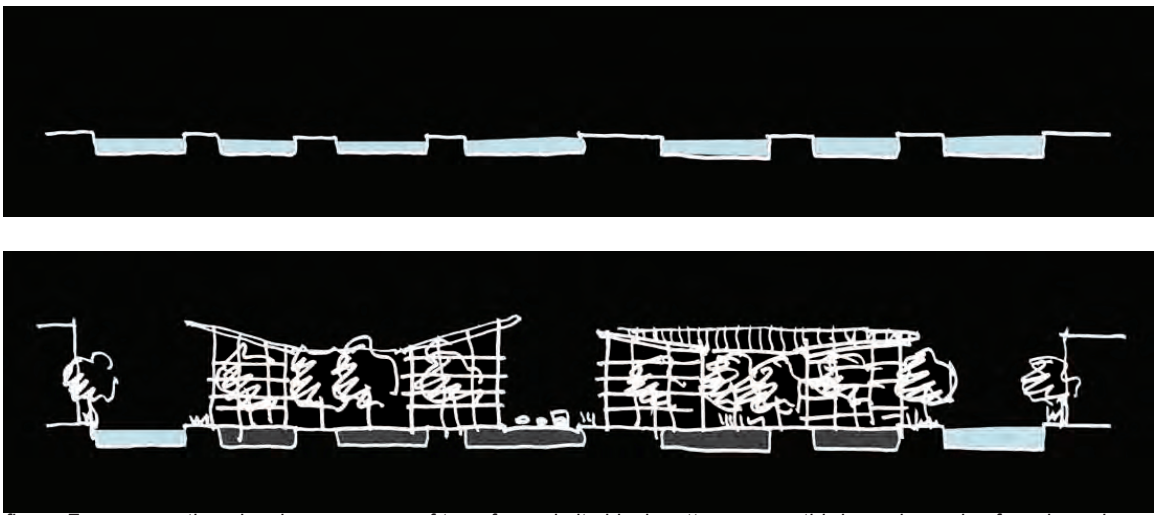


figure 7: cross section showing sequence of transformed city block pattern, every third canal remains for rain and gray water (proposed)
图7：截面图描述城市街区形态的转化过程，每隔三个水道就保留水体作雨水和污水处理之用。

CASE STUDY ONE:
THE RESTORER, CONSTRUCTED WETLANDS CANAL CLEANSING, FUZHOU, CHINA

GENERAL CONTEXT

Fuzhou is a large city on the coast of southeast China with a population of about 1.5 million. There are 80 kilometers of open canals that transport roughly 130,000 m3 wastewater per day through the city, out to the Min River and eventually to the Min Estuary, an important fishery for the Fujian province. The canals had become heavily polluted, particularly with raw sewage. City officials found that setting sewer pipes and pumping wastewater to conventional treatment plants would be prohibitively expensive. They were looking for a mechanism to treat the water in the canals themselves.

KEY FEATURES

Restorer Technology is comprised of
• a floating platform to support planted ecosystems,
• an aeration system to maintain an aerobic aquatic ecosystem
• a walkway for operator access
• a bio-augmentation system

Cleaning the water are 100,000 plants, 10,000 koi carp, and two strains of bacteria. This is an example of a constructed wetland where natural processes are put to work in a constructed system.

This system has drastically improved the condition of the water. It is clear, does not smell and supports fish. The Restorer also improves the landscape aesthetics and appeal of the neighborhood.

专题研究之一：修复措施，人工湿地运河清理，中国福州

概述

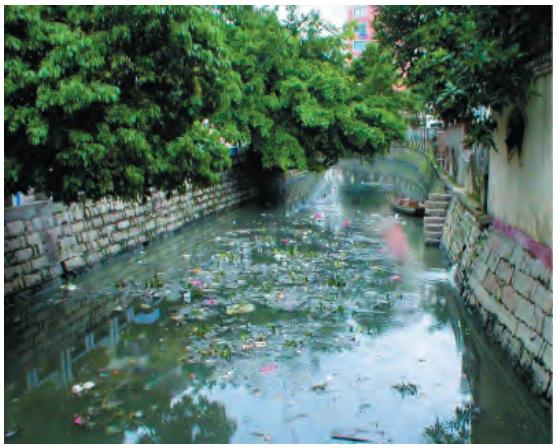
福州是中国东南沿海一个有一百五十万人口的大城市，每天产生约130, 000立方米废水通过80公里长的开放运河，流经福州市，流入闽江，最后到达福建省的重要渔业基地闽江口。运河被严重污染，尤其是未处理的污水。市政府发现建造排水管和将污水抽到传统的污水处理厂将非常昂贵。于是他们在寻找一种方法能在运河里处理废水。

重要特征

修复技术包括：
• 一个可以支持种植生态系统的浮动平台
• 一个可以维持有氧水上生态系统的通风系统
• 一个可供操作者进入的通道
• 一个生物繁殖系统

处理废水需要100, 000株植物、10, 000尾鲤鱼和两种细菌。这是一个自然处理方法在人工系统中应用的的人工湿地的例子。

这一系统极大的改善了水质，水变清了，不再发臭了，水里有鱼了。修复还增加了景观效益，吸引了社区居民来水边



figures 8 and 9: Fuzhou, China, before and after
图8和9：中国福州，水道修复之前和之后

PROCESS / IMPLEMENTATION

The project has faced challenges. There was a major fire in the floating blower building. The canal was entirely drained once due to a dam failure. The system has also endured several torrential rains and tropical storms. Still, the biology appears to be thriving and treating water.

COST-BENEFIT ANALYSIS

The Restorer costs about US$10 per person per year compared to conventional sewage treatment at US$80.

The chemical oxygen demand (the amount of oxygen needed to decay all organic matter in the water) has fallen from about 100 mg per liter to 40 mg per liter, indicating a high degree of treatment effectiveness.

Source: MIT Foshan Planning Studio, 2004: http://web.mit.edu/11.952/www/en/resources/restorer.html

方法/执行

这个计划也面临过一些挑战：浮动鼓风建筑有过一场大火，一次决堤使得运河水曾经完全排干。但是这个系统还是经受了几场暴雨和热带风暴的袭击，生物开始繁殖，改善水质。

费用效益分析

与传统的污水治理每年每人花费80美元相比，修复计划每年每人只花费10美元。

化学需氧量（腐烂所有的水中有机物的需氧量）从100毫克每升降到40毫克每升，表明治理的高效性。

http://web.mit.edu/11.952/www/en/resources/restorer.html

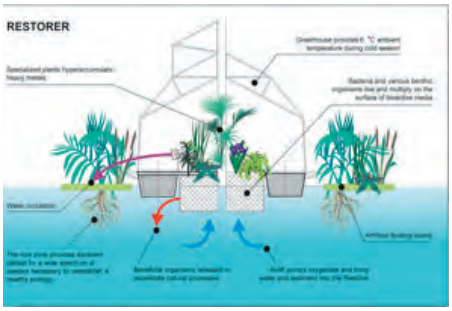


figure 10: Fuzhou, China
图10：中国福州

CASE STUDY TWO:
TWO RIVERS AND FOUR LAKES IN GUILIN CITY, CHINA

Guilin is a famous tourism city in China. Guilin initiated the project Two Rivers and Four Lakes in 1998. It connects the inner river and lake systems to the outer large river (Li River) so that tourists and residents can navigate through the city by boats. The project engaged more than 300,000 tourists in 2004.The water network connects all the important sceneries in the city. The core principles of the project are:

1) Connect rivers and lakes and make water transport available (project connected the Li and Taohua Rivers with the Rong, Shan, Gui, and Mulong Lakes)

2) Create mountain, lake and river vistas

3) Remove sludge and divert wastewater economy.

4) Transfer clean water from Li River to lakes through covered trenches

专题研究之二：两江四湖，中国桂林

桂林是中国的旅游胜地，她在1998年启动两江四湖计划。将内河、湖泊系统连入外部的大河（漓江），使游人和市民可以乘船游览桂林。2004年，两江四湖计划接待了超过30万游客。水网连接桂林的所有重要景点。两江四湖的建设原则是：“連江接湖、架橋修路、清淤截污、引水入湖、顯山露水、綠化美化、文化建設”

1）连接江湖，形成水上交通（计划连接了漓江、桃花江、和榕湖、杉湖、桂湖、木龙湖）

2）创造山、湖、江的美景

3）清除河道和湖中的淤泥

4）由隐蔽的沟渠将漓江水引入湖泊


figure11 : Metasequoia along the bank, Guilin
图11：桂林湖江边水杉


figure 12: camphor garden, Guilin
图12：桂林樟园

5) Build sidewalks bridges with varying designs along waterfront

6) Green and beautify the region including the construction of ten kilometers of ecological waterfronts and parks, and planting over 5,000 trees and rare plants

7) Preserve cultural sites and build the reputation as a historical & tourism city

We can also learn from the financial mechanisms by Guilin City. During 1999-2001, Guilin spent 15 billion RMB on urban infrastructure and development projects, the government financing 1.2 billion RMB of that amount.

The government encouraged private sector participation in the projects. Projects were granted through a competitive bidding process so as to promote cost-savings. Another financing technique the government used was to sell the naming rights of bridges. The money raised was then used to help finance the projects. All in all, Guilin successfully employed market mechanisms to facilitate urban development, that benefited both the environment and the economy.

5）在水边修建各式各样的人行桥

6）绿化和美化景区：包括修建10公里长的生态水岸和公园，种植5千多株树木和珍稀植物

7）保护人文景观，打造历史和旅游名城

桂林的融资机制也是值得我们学习的。在1999至2001年间，桂林政府在城市基础设施和发展上只投入了12亿人民币，却拉动了150亿人民币的投资。

政府鼓励私人部门参与两江四湖计划。所有项目实行招标，以节约成本。政府还拍卖桥梁的冠名权，筹集的资金被用于项目建设。总之，桂林成功的将市场机制应用到促进城市发展当中，使环境和经济双双受益。

CASE STUDY THREE: CONSTRUCTED WETLANDS IN MELBOURNE, AUSTRALIA

The rapid growth of south east Melbourne has led to increased runoff and deterioration in the health of urban waterways. The state government has set a target of reducing stormwater discharges of nitrogen across Melbourne into Port Phillip Bay by 500 tons by 2010. Research shows that stormwater is the major source of toxins, pathogens, litter and sediments that are discharged into the bay.

专题研究之三：人工湿地，澳大利亚墨尔本

墨尔本东南地区的飞速发展导致水土流失增加和城市水体污染。州政府确立目标，到2010年，墨尔本减少径流中排放到到菲利浦港湾中的氮减少500吨。研究表明雨水是排放到港湾的毒物、病原体、垃圾和沉淀物的主要来源。

Assisted by AUS $3.5 million funding from the Commonwealth Clean Seas Program, Melbourne Water is constructing a series of 10 wetlands within the cities of Casey, Kingston and Greater Dandenong. Innovative, water-sensitive urban design is also being employed in some housing and freeway developments.

Through a series of catchments and different types of marshes, the wetlands treat the urban water runoff and bring it to a level similar to rural runoff. The sites work as part of a sequential treatment train. Primary treatment of sediment and litter is conducted at the source through education campaigns, the installation of traps at strategic locations, detention and settling ponds, carbon filters, and constructed wetland features.

635,000 plants have been established in the wetlands to filter stormwater, create havens for native wildlife, and provide an attractive location for recreation in this otherwise urban area.

Source: Environment Australia, 2002. Introduction to Urban Stormwater Management in Australia.

Website: ht tp://www.deh.gov.au/coasts/publications/stormwater/treatment.html

由全国清洁海洋计划资助350万澳元，墨尔本水域正在在Casey、Kingston和大Dandenong建造一系列由10个湿地的组成自然处理系统。一些住房和高速公路发展还使用了创新的和整合水体的城市设计。

通过一系列流域和不同类型的沼泽，湿地处理城市和乡村的径流。实地工作是连续的治理链的一部分。沉积物和漂浮物首先是通过在环境教育活动，在重要地点安置滞留和沉淀池，以及人工湿地特征来实现的。

湿地种植了635,000株植物以过滤径流，为野生生物创造家园，并且为城区提供了娱乐休闲场所。

来源：澳大利亚城市雨水处理介绍。澳大利亚环境部，2002。

网站：*http://www.deh.gov.au/coasts/publications/stormwater/treatment.html*

figures 13 and 14: constructed wetlands in Melbourne, Australia　图13：澳大利亚墨尔本的人工湿地

TRANSPORTATION
交通

Gaoming today is in a fortunate position. Its streets are lively and full of commerce, its people enjoy a high level of mobility, and its amenities are accessible.

Gaoming is also incredibly fortunate because it has the chance to create such vitality, mobility, and accessibility in the Gaoming Central Area. Rarely does a district have an opportunity to affect transportation systems for generations to come. This chapter describes how transportation systems planning can maintain the good qualities of today's Gaoming while enhancing those of tomorrow's modern water city. To that end, this chapter is grounded in the assumption that transportation infrastructure planning has tremendous and lasting impact on the future of a place and its people. How streets are planned and how land use is coordinated with transportation now will affect the lives, economy and environmental quality in Gaoming for decades, even centuries. Therefore, this chapter considers transportation planning in the context of maximizing economic growth, preempting pollution and congestion, and maximizing the value and use of the water features in the Gaoming central area.

现在的高明是幸运的，街道生机勃勃、商业繁荣，人们喜爱频繁的流动性，生活设施便利。

高明的幸运还在于它能够在城市中心区保留这种活力、流动性和可达性。很少有地区能有机会能像这样影响几代交通系统。本章展现高明的交通系统规划如何能在保持现有水准的同时改善未来现代水城的交通状况。为此，本章假设交通基础规划对一个地区的未来和其居民有着重大而深远的影响。我们现在如何规划街道，如何协调土地利用与交通将影响高明未来几十年甚至几个世纪的生活、经济和环境质量。因此，本章讲述的交通规划考虑到最大化经济增长，防止污染和交通堵塞，最大化高明中心区水的价值和开发。

通过整合土地利用和交通规划、适应性规划、选择性规划，高明可以实现交通系统效率最大化和支出最优化。同时，还能实现其环境保护、经济发展和社会公平目标。通过案例分析和先例，本章指出象在Curitiba这样的地方，交通系统对于城市经济至关重要。在Curitiba，一个像新加坡、Portland一样的环境典范城市，在整个区域发展之前所做的交通规划直接与城市的环境质量和运输功能相联系。

建立在这些成功经验的基础之上，本章为高明交通规划提供一个建议框架。首先，概述了一些先例和高明的交通规划环境；然后，分析了一些案例以及它们对于高明的可借鉴之处。本章为高明保持甚至改善其街道和交通系统的流动性、可达性和活力提供了政策、财政、技术和执行方面的建议。旨在开始规划现在的交通要素，以实现经济价值、平衡和环境质量的最大化。

By integrating land use and transportation planning, planning for adaptability, and planning for choice, Gaoming can maximize the efficiency of its transportation system and expenditures. At the same time, it can accomplish its environmental, economic ,and equity goals. Through case studies and precedents, this chapter shows that in places such as Curitiba, Brazil; Portland, Oregon; and Singapore, the transit system is critical to it the city's economy. Transportation planning in advance of development at the regional scale is directly tied to the environmental quality and transit functionality of the city.

This chapter therefore builds on these lessons to create a framework of recommendations for Gaoming. It first summarizes precedents and the transportation planning context in Gaoming. Then a number of case studies are reviewed and their application to Gaoming is considered. The chapter concludes with policy, finance, technological, and implementation recommendations for Gaoming to maintain, or even increase, the mobility, accessibility, and vitality of Gaoming's streets and transportation system. The goal is to begin planning these transportation elements today to maximize economic value, equity, and environmental quality.

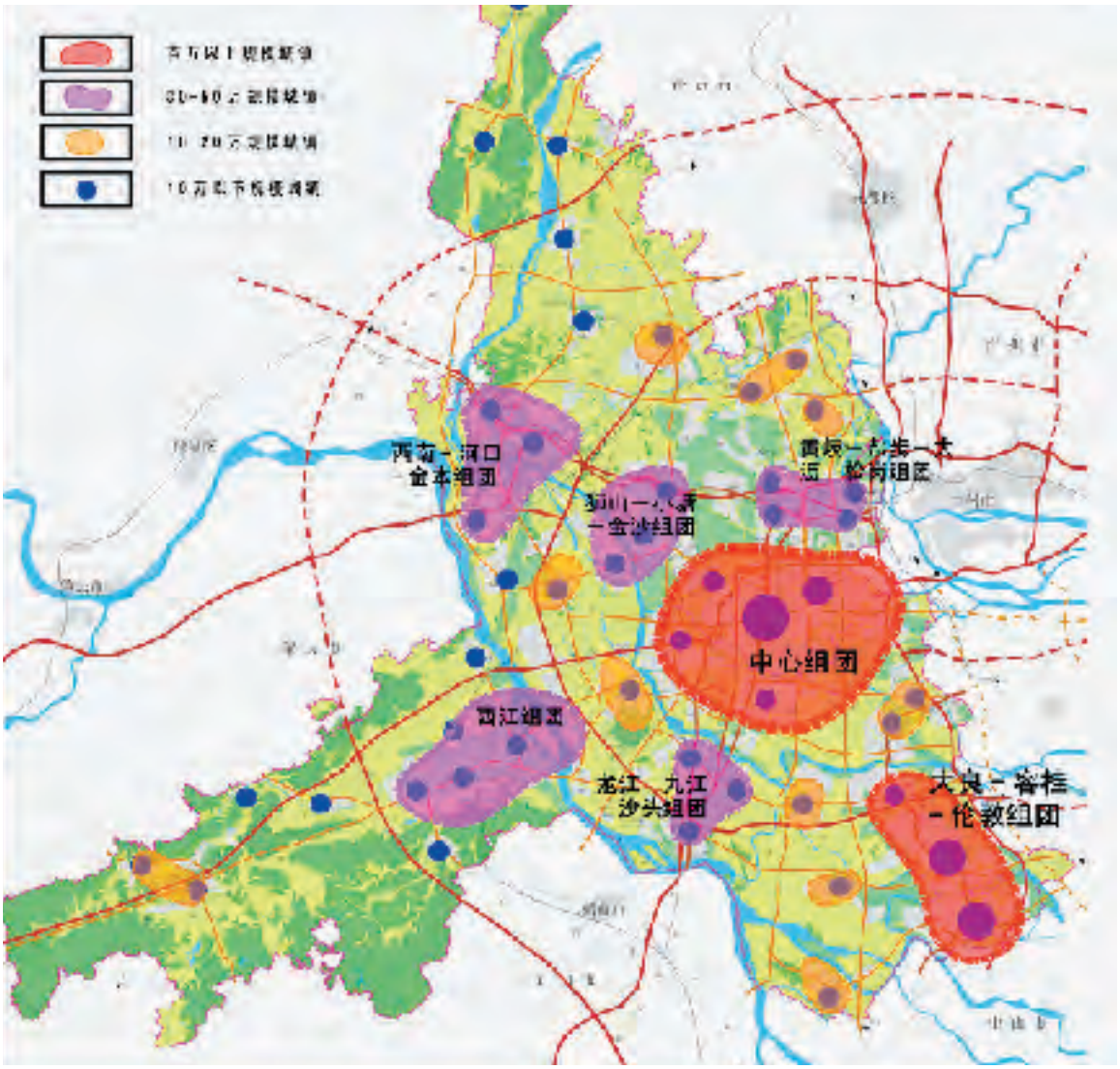


figure 1: Foshan City's regional plan
图 1 ： 佛山地区的区域规划

figure 2: Fish ponds on the edge of the city
图 2 ： 城市郊区的鱼塘

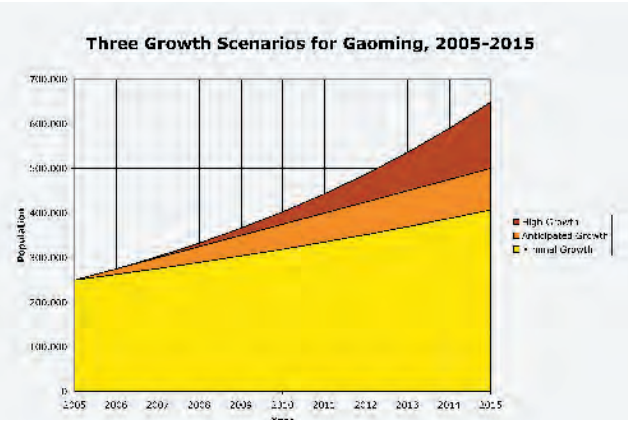


figure 3: Three growth scenarios for Gaoming
图 3 ： 高明成长的三种假设速度

CONTEXT

The population and economy in Gaoming are about to boom as the district plans the new Gaoming Central Area to accommodate projected growth. Gaoming will double in population within fifteen years. Its growth will not only expand north of the downtown, but west throughout the district. Its economy will grow with industry, a new research park and local commerce. All of this will increase local income and quality of life for everyone in Gaoming.

Transportation plans for Gaoming and the City of Foshan are also well documented. A new east-west expressway is planned north of the Gaoming central area, the foshan light rail may connect to Gaoming in the future, and the district is completing contruction of its waterfront walkway along the West River.

MOTOR VEHICLE GROWTH

But consider the result of similar growth in Chinese cities in the past. In the 1980s Guangzhou also experienced explosive population and income growth. And just as income grew, so did the motor vehicle ownership rate. Having the option of driving is an excellent accomplishment where it did not exist before. But the unintended consequence of such dramatic income and vehicle growth is that residents do not have equal opportunities to choose other modes of movement, such as public transit, motorcycles, taxis or walking. People in Guangzhou have also lost the choice to live with high environmental quality. With so many vehicles, air pollution has also increased, as has congestion. The same patterns emerge in Foshan, Beijing, Los Angeles and Sao Paolo. Cities around the world are now spending billions of dollars to remedy the congestion costs, air pollution and poor health, and infrastructure investments dedicated to moving motor vehicles. Gaoming now has the choice to save these costs by minimizing the congestion and pollution altogether – without sacrificing the choice of driving. To do so, this chapter recommends planning for transportation choices (among which vechicles are one), intregrating transportation plans with land use planning, and planning for adaptability.

Our recommendations expand on preexisting regional, city and district transportation planning. But the broader transportation context and local land use planning should be planned in concert and iteratively. For example, if light rail transit comes to the Gaoming central area, land use plans will have to be reconsidered. In turn, transportation plans will then have to reflect such land use change.

背景

高明未来的中心城区将要满足快速增长的经济和人口需求。高明人口将在未来15年内翻倍；增长将不仅限于城北，还将向城西扩张；经济将随着工业、新兴研究园和当地商业的繁荣而发展。所有的这些将提高每一个居民的收入和生活质量。

高明和佛山市有丰富的交通规划资料：高明中心区北面将建一条新的东西向的高速公路；佛山的轻轨将连接高明；沿西江的水滨大道建设即将完工。

机动车的发展

类似于过去中国城市发展的结果，二十世纪八十年代，广州也经历了人口激增和收入增加。随着收入的增加，机动车拥有率也不断增加。拥有机动车是以前从未有过的荣耀。但是这种收入和车辆的激增所带来的意料之外的后果是市民没有同样的机会来选择其它的交通方式，如：公共交通、摩托车、出租车或步行。广州市民也失去了高环境质量的生活。过多的车辆导致空气污染和交通堵塞。佛山、北京、洛杉矶和Sao Paolo也出现了相同的情况。如今，全世界的城市在花费数十亿美元来弥补交通堵塞、空气污染、健康下降，基础设施投资被用于减少机动车辆。高明现在可以通过减少交通堵塞和污染来减少这些开销，而不减少交通的选择。为此，本章建议规划交通选择（包括机动车），综合交通规划和土地利用规划、适应性规划。

我们的建议详细阐述了区域、城市和区的交通规划，但是大的交通环境和当地土地利用规划应相互照应。例如：如果轻轨交通进入高明中心区，我们将不得不重新考虑土地利用规划，相应的，交通规划也必须做相应的调整以反应出此土地利用变化。

CASE STUDY ONE:
Pioneer Square, Portland, Oregon, Usa

"Pioneer Square is a wonderful example of what you get when you think of a transportation investment first as the means to the end of a livable community. By turning over our station budget, we helped make the square real, and got a station in Portland's "living room." Pioneer Square is the most important block in the state because it's where everything comes together, it's a symbol of our revitalized downtown, it's the first place you take out-of-town guests, and it's the centerpiece of our bus and rail system."

–G.B.Arrington, Director, Strategic Planning for Tri-Met

The early parallel developments of transit systems and public space can provide strong civic opportunities for a city. Pioneer Courthouse Square, located in Portland, Oregon in the United States, was developed through a partnership with the regional transportation system, the Metropolitan Area Express (MAX), and city in the 1980s. Both projects benefited from a proactive and integrated approach to their development. The transit system provided financial feasibility to the public square, as well as accessibility and convenience for many of the residents. The square offered the public a "living room" for the city as a major destination point, as well as a major transfer point for various transportation systems. The intent of the park was to create an active open space by creating social and civic opportunities within the city. The influx of people to the area spurred economic development around the square, bolstering the local economy.

The community was very active in the design and development process. A design competition was created to organize the community goals and needs. The existing relationship between the MAX and the public square provided a starting point for the designers. By developing many proposals for the site, the community could visualize the intangible needs and goals of the project. The process included numerous public presentations and community feedback sessions. Over time, a contextually and culturally sensitive project evolved, combining many community-initiated elements with a fixed transportation program. The process fostered a sense of ownership and pride in the public space, which resulted in an sustainable and active focal point for the city. Required elements of the transportation system have been carefully incorporated into the public plaza. The light rail

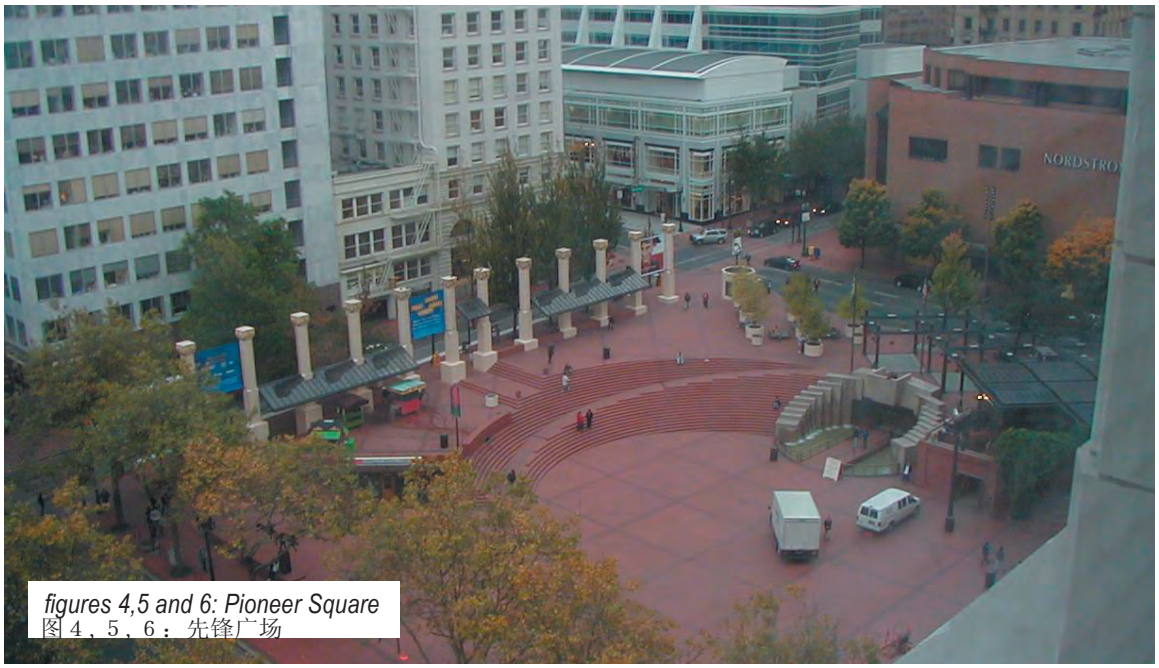
专题研究之一：先锋广场，
美国俄勒冈州波特兰市

"先锋广场是一个绝好的例子，它是你想先以交通投资为手段而建造的一个适宜居住的社区。在充分利用预算的情况，我们使这个广场成为现实，在波特兰的"客厅"建起一个车站。先锋广场是俄勒冈州最重要的街区，因为所有的活动都汇集在这里。它是我们重生的市区的象征，是你会带外来游客第一个游览的地方，是公交车和火车系统的中心."

*–G.B.Arrington, Tri-Met*战略规划主管

早期平行发展的交通系统和公共空间可以为城市提供许多市民活动的机会。在二十世纪八十年代，位于俄勒冈州波特兰市的先锋广场从与地区交通系统、大都市快速交通（MAX）和城市的合伙关系发展而来。这两个计划从预先统一的发展步骤中受益。交通系统不仅为公共空间提供财政上的可行性，还为众多居民提供可达性和便利。广场作为一个主要的目的地，为城市提供了公共"客厅"，也同样是各种交通系统的主要转换点。公园的目的是通过在城里创造社交和市民活动的机会，来创建一个活跃的开放空间。涌向这里的人流带动了广场周围经济的发展，支撑着当地经济。

社区在设计和发展进程上显得非常活跃。他们还进行了一场设计比赛来安排社区目标和需要。大都市快速交通和公共空间之间现存的关系是设计师们的出发点。通过陈述许多设计方案，社区可以设想此项目的无形需要和目标。过程包括无数的公开汇报和社区反馈会议。渐渐的，一个前后相承，文化敏感的项目形成了。它将许多来自于社区的元素和固定的交通项目相结合。这个过程培养了人们对公共空间的一种拥有感



figures 4,5 and 6: Pioneer Square
图 4，5，6：先锋广场

和自豪感，其结果是出现一个持续的积极的城市焦点。必要的交通系统要素被仔细的融入到公共广场中去。有着可以保护乘车人不受恶劣天气干扰的玻璃天顶的轻轨车站就是广场上一个显著的建筑。在公共空间的隐蔽处还规划了其它的服务设施，如办公室、卫生间和问讯处。

通过在开发的初期提供公众参与，高明可以着手将复杂的城市交通系统和当地文化、社区目标结合在一起。活跃的开放空间与地区交通节点（公交快速交通或轻轨）的结合符合大佛山地区节点经济的目标，也会提升城市品质。

station maintains a prominent presence on the square with a glass canopy to protect riders from inclement weather. Other services, such as management offices, restrooms, and information centers, were planned to mesh seamlessly with the public space.

By providing a participatory process in the initial stages of development, Gaoming can begin weaving together the complex systems of urban circulation with the local culture and goals of the community. Active open spaces incorporated with regional transit nodes (BRT or light rail) coincide with the larger regional nodal economic goals of Metropolitan Foshan and can enhance the quality of the city.

Source: Transit Cooperative Research Board. TCRP Report 22: *The Role of Transit in Creating Livable Metropolitan Communities.* New York: Project for Public Spaces, 1997.

figure 7: Designated bus lane, Curitiba

CASE STUDY TWO: Curitiba, Brazil

In the past forty years, Curitiba has emerged as a leader in integrated transportation and land use planning. Curitiba is 431 square miles. In 1965, the city had a population of 400,000; by 1995, it had grown to over 1.6 million. During the 1970s and 1980s, Curitiba's population growth reached 4% annually. Because national policy favored large infrastructure projects, the policies and planning in Curitiba represent bold innovations.

Financing

The infrastructure projects in Curitiba are low-cost, non-rail interventions, because the municipal government did not have access to additional finance sources for massive public transportation infrastructure. Buses can be implemented quickly, which allowed for political support through quick successes. A surface system is organic and can be built incrementally to keep pace with population growth and other changing needs of a dynamic city. Buses are privately run. The city pays companies based on distances, which supports geographic expansion through market mechanisms. The system is also self-financing, which avoids the heavy public-transportation subsidies.

Planning Process

The mayor of Curitiba, Jaime Lerner, exhibited tremendous leadership, insisting on small incremental steps which would yield low-cost successes to gain political support for the project. Lerner is now the governor of the state in which Curitiba lies

CASE STUDY TWO: Curitiba, Brazil

专题研究之二：**Curitiba**，巴西

在过去的40年，Curitiba成为综合交通和土地利用规划的先导者。Curitiba方圆431平方英里，1965年时只有人口40万，到1995年已经达到160万。在二十世纪七、八十年代，Curitiba的人口以每年4%的速度增长。由于国家政策对大型基础设施项目有利，Curitiba的政策和规划表现出大胆的革新。

融资　在Curitiba，基础设施项目是低成本、没有过多干涉的项目，因为市政府没有其它可供大型公共交通基础设施建设的资金来源。公共汽车可以在政治支持下很快成功通车。表面系统是有组织的，可以逐步建设以适应人口增长和一个生机勃勃的城市的其它变化需要。公共汽车由私人运营，而市民按距离付钱给运输公司，这就在市场机制上支持地理扩张。此外，系统可以自给自足，从而避免繁重的公共交通补贴。

规划过程　Jaime Lerner市长显示出了卓越的领导才能。为了争取政治上的支持，他坚持缩小发展步伐，以实现低成本成功。Lerner现在是Curitiba所在州的州长了，他为当今这座世界名城留下一份令人难忘的遗产。

方针 / 理念

Curitiba在创新、高效的交通系统中建立起城市的声望和特点。规划包括交通基础设施和发展方针，以防止泛滥和建造过多的城市开放空间。

应对快速城市发展所带来的挑战的指导原则是：

- 道路沿直线型通道或轴线发展
- 将交通投资和土地利用规章作为指导发展的最有力的手段
- 规划考虑到人的流动性而不是车

Curitiba完整的公交车网络是一个由不同运载能力的线路组成的：大容量的公交车占用专用车道，限站停靠的公交车占用单行道，环形线路连接各个公交车道，100条支线公交车行驶在密度低的地区，20个交通中转站方便持单票的人转车。

分区和设计

市中心是为行人和公共交通设计的，汽车只在第二位。交通线路就像是城市的脊梁，将城市设计与发展的要素有机的组合起来。

市政府官员将区域法作为引导交通轴线沿线混和用途发展的工具。轴线沿线的定向发展将有助于交通和土地的可持续发展。

土地利用和道路交通总是相辅相成的，从繁忙的交通中受益的土地使用一般位于交通要道旁。发展高密度的住宅区会缓解密集的混和用途发展和人口低密度之间的矛盾。这一策略也有助于控制土地投机买卖，因为开发商清楚的知道他们在什么地点可以建什么样的房子。Curitiba利用密度奖励来鼓励更多的

and has left an impressive legacy of this now world-renowned city.

Policy / Concept

Curitiba has built its reputation and character around an innovative and efficient transportation system. The plan included transportation infrastructure and development policies that protected areas from flooding, creating more open space throughout the city.

The set of guiding principles to deal with the challenges of the rapidly developing downtown are:

- channeling growth along linear corridors or axes;
- utilizing transportation investment and land use regulation as the most powerful tools to direct growth; and
- planning for mobility of people, not cars.

Curitiba's integrated bus network includes a hierarchy of capacity lanes: high-capacity buses on dedicated ways, limited-stop high speed buses on one-way, orbital routes that interconnect busways, 100 feeder lines between low-density neighborhoods, and 20 intermodal stations for transfers with a single fare.

Zoning and Design

The urban core is designed for pedestrians and transit, with automobiles relegated to second-tier status. Transit lines serve as the spine of the city and become the organizing element in city design and development.

City officials employed zoning laws as a tool to direct mixed use development along the transit axes. The directed development along linear axes promoted sustainable transportation and land development.

Land uses and roadways are always compatible. The land uses that benefit from busy traffic are located along major transit corridors. Higher density residential development buffers this high-density, mixed-use development from lower density

residential. This strategy also helps keep land speculation in check, as developers know exactly what they can build and where. Curitiba employs density bonuses to inspire more concentrated development.

Management and Organization

- Municipal agency oversees day to day operations, fares, management of private companies.
- Long term planning happens through a municipal planning agency.
- Ten private companies operate specified routes.

Implementation / Phasing

The implementation of this project depended heavily on the vision and decisions of Mayor Jaime Lerner. Lerner's strategy was to implement quick and successful efforts to gain support and political legitimacy.

Results / Data

The following are some key pieces of data about the bus system in Curitba and its successes:

- One quarter of population uses public transportation
- More than one million passengers each weekday
- 75% of all commuters
- 110 passengers/vehicle
- In 1995: 222,200 trips per weekday; 6 passengers per km/day or 1300 passengers per bus per day
- Per capita fuel consumption is 25% lower than in comparable Brazilian cities
- Traffic congestion lowest in Brazil
- Urban air pollution lowest in Brazil
- Stimulates economic activity
- Buses leased to private entities so they can compete

集中开发。

管理和组织

- 市政府机构监视每日的运营、收费以及私营公司的管理
- 通过市政府规划部门来实现长远规划
- 十家私营公司经营指定的路线

执行 / 阶段性

项目的执行在很大程度上取决于Jaime Lerner市长的远见和决策。Lerner市长的策略是实现迅速而成功的成绩，以获取支持和政治上的合法性。

结果 / 数据

以下是关于Curitba公共交通系统及其成就的一些重要数据

- 四分之一的人口使用公共交通
- 工作日每天运送乘客超过一百万人次
- 人数达到所有通勤者的75%
- 110位乘客/车
- 1995年：工作日每天有222,200次往返，每天每公里有6位乘客，或是每辆公交车每天运送1300位乘客
- 人均耗油量比相同规模的巴西城市低25%
- 交通堵塞在巴西最低
- 城市空气污染在巴西最低
- 刺激经济活力
- 公交车出租给私人运营，引入竞争
- 市民按距离付钱给运输公司
- 通过市场机制支持地理扩张

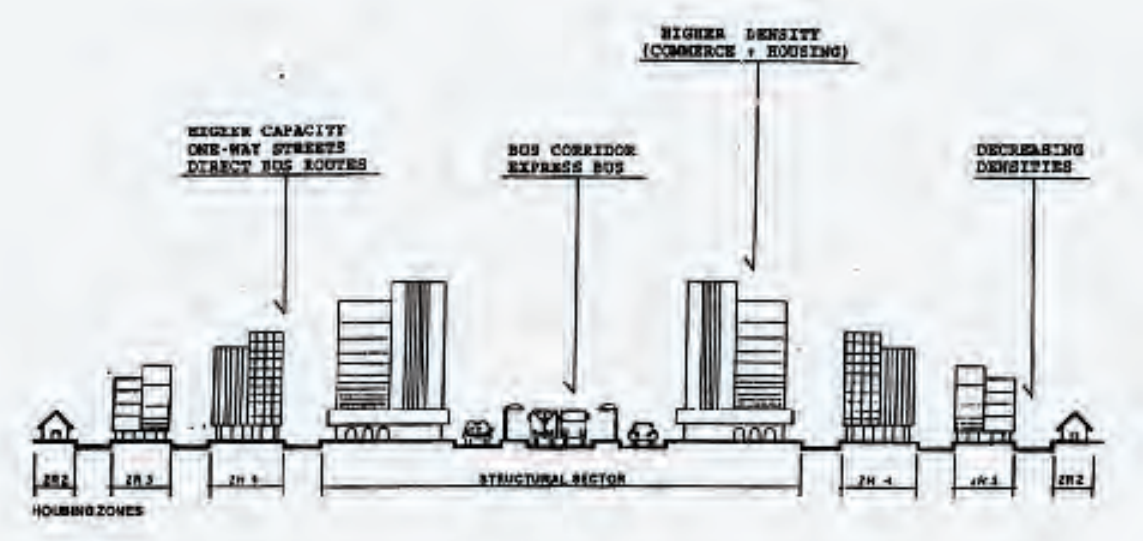


figure 8: Multi-modal cross section
图 8 ： 不同的交通模式的截面图

figure 9: Pedestrians in Curitiba
图 9 ： Curitiba街上的行人

figure 10: BRT in Curitiba
图 1 0 ： Curitiba的快速公交运输系统

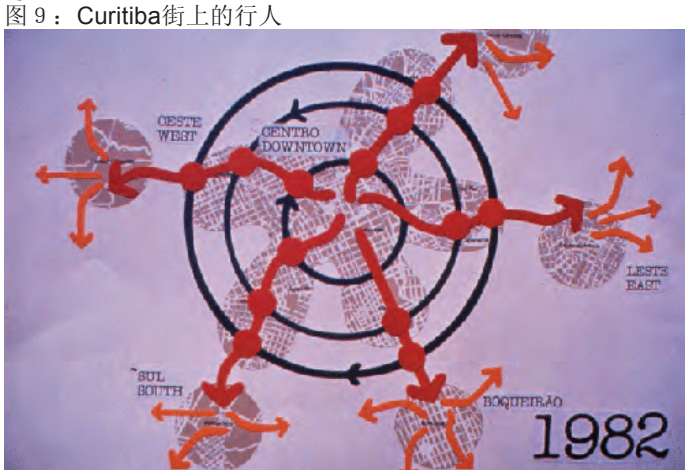


figure 11: Curitiba Plan
图 1 1 ： Curitiba规划图

CASE STUDY THREE: Tampines, Singapore

The new towns surrounding the central area of Singapore can bring many relevant planning precedents to the urban development of the new Gaoming civic and residential areas.

Developed in 1980, Tampines is one of twenty-two new towns to be planned around the country. The new towns are organized around public transit nodes, created to decentralize the downtowns. The Foshan masterplan similarly anticipates this type of development with the creation of their nodal masterplan. The intention on this case study is to demonstrate how mixing of civic and commercial uses around the major transit stops can create self-sustaining cities with commercial, residential, and recreational activities. The local transportation system consists of a series of local buses that converge at the central subway station.

Singapore's planners have developed transportation policies for incremental long term development, allowing systemic flexibility for community feedback. The projects were developed to grow and adapt to the changing needs of the city and its growing population.

The Singapore government was also proactive in regulating automobile usage through "command-control" type policies, while developing a sophisticated public transportation system (buses, heavy-rail transit (HRT)). The physical developments centered on the various transit stops and nodes throughout the island. Anticipating China's (and specifically the PRD's) increase in automobile usage, the pro-active approach to limiting cars and promoting public transportation should be introduced early to help form cultural patterns of travel.

Proactive development around the transportation nodes has cultivated a community reliant on public transportation. By encouraging local enterprises and retail around the transit stops, the town center has developed into a mature 'downtown.' The implementation of various programs eased some of the pressures from the center city and strengthened its own regional identity. The planners' "forward thinking" built flexibility and change into their plans to actively face the changes of the future.

专题研究之三：新加坡Tampines

开发于1980年，Tampines是22个围绕着新加坡的新城之一。规划将新城建设在公共交通节点周围，目的是分散市区密度。从佛山各节点的总体规划可以看出，佛山市总体规划也是期望类似的发展模式。这一案例分析的意图在于说明在主要交通枢纽周围的商住混和用途如何能建造商业、住宅、休闲娱乐兼有的，自给自足的城市。当地交通系统由一系列汇集在中心地铁站的公交车组成。

新加坡的规划师们为不断增加的长远发展逐渐形成一套交通方案：系统的灵活性将允许社会反馈。项目的发展将会适应城市和人口增长的不断变化的需要。

新加坡政府一边运用“控制－命令”型政策预先规定汽车使用，一边发展高度发达的公共交通系统（公交车、重轨交通）。物质开发集中在岛上各种交通枢纽和节点周围。预见到中国，尤其是珠江三角洲汽车使用的增长，就应尽早想办法预先控制车辆增长和鼓励公共交通以形成旅游的文化模式。

交通节点周围的预先开发已经使人们习惯于依靠公共交通。通过辅助交通枢纽附近的当地企业和零售业，城镇的中心真正发展成为一个成熟的“市中心”。发展不同的项目减轻了一些城市中心的压力，强化了城市的地方特色。规划师们的“超前意识”使得规划具有灵活性并且可以不断修改他们的规划以积极面对未来的变化。

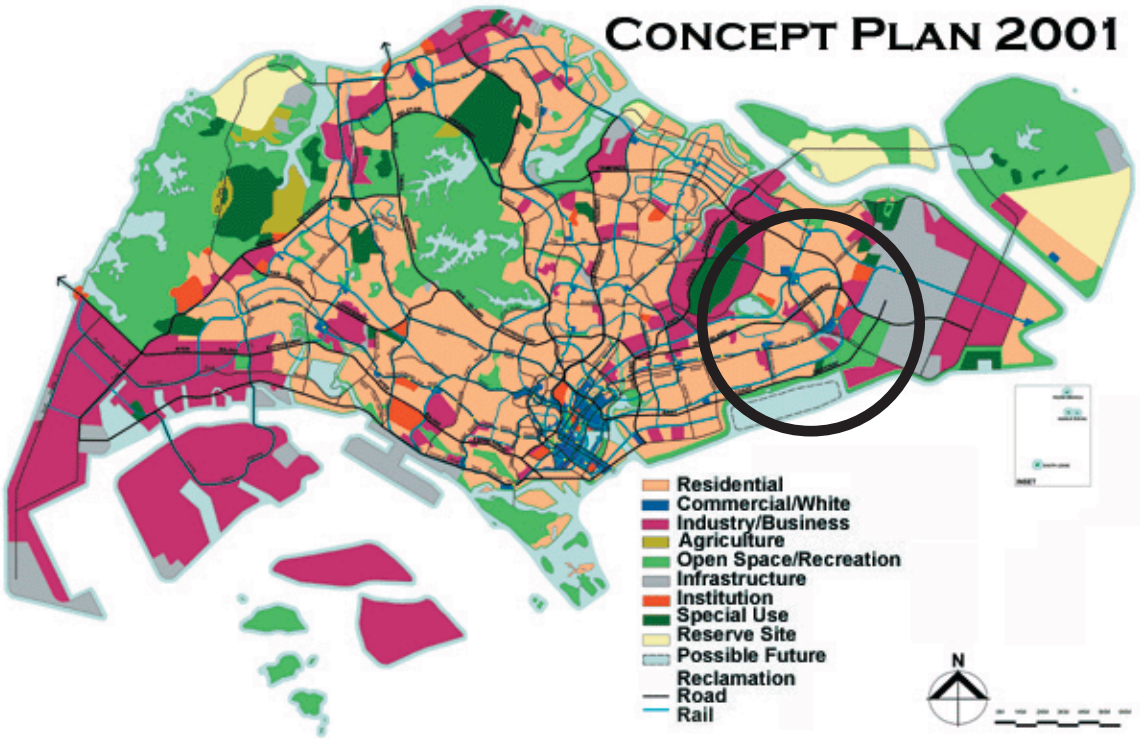


figure 12: Singapore Concept Plan 2001

图 1 1：新加坡2001概念规划图

成功原因

- 政治决心：及早发现问题，能够采取预防措施
- 最初的进展让政府能够对真正的问题未雨绸缪，而不仅仅是构思作出反应
- 人民支持政府的建议
- 关于规章，政府作出迅速而深思熟虑的决策
- 经济和社会规章证明政府是从长远考虑交通发展方案
- 解决方案多维空间化，例如：如果道路右侧在为巴士快速交通做改造，则备用道路作出相应开发以弥补修路带来的损失
- 物质设计上考虑到灵活性以适应人口变化和协调

REASONS FOR SUCCESS

- Political will: the issue was identified early enough to take preventive action.
- The initial process allowed the government to react to real problems, not just speculation.
- The government proposed policies supported by the population.
- The government made quick and thoughtful decisions regarding the regulations.
- Transportation policies developed with long term goals in mind. This is demonstrated with economic and social regulations.
- The solutions offered were multi-dimensional. For example, if a right of way were retrofitted for a BRT line, then alternative roadways were also developed in tandem to compensate for the loss of roadway.
- The city allowed for flexibility in the physical design to adjust for changing demographics and for fine tuning.

在高明规划

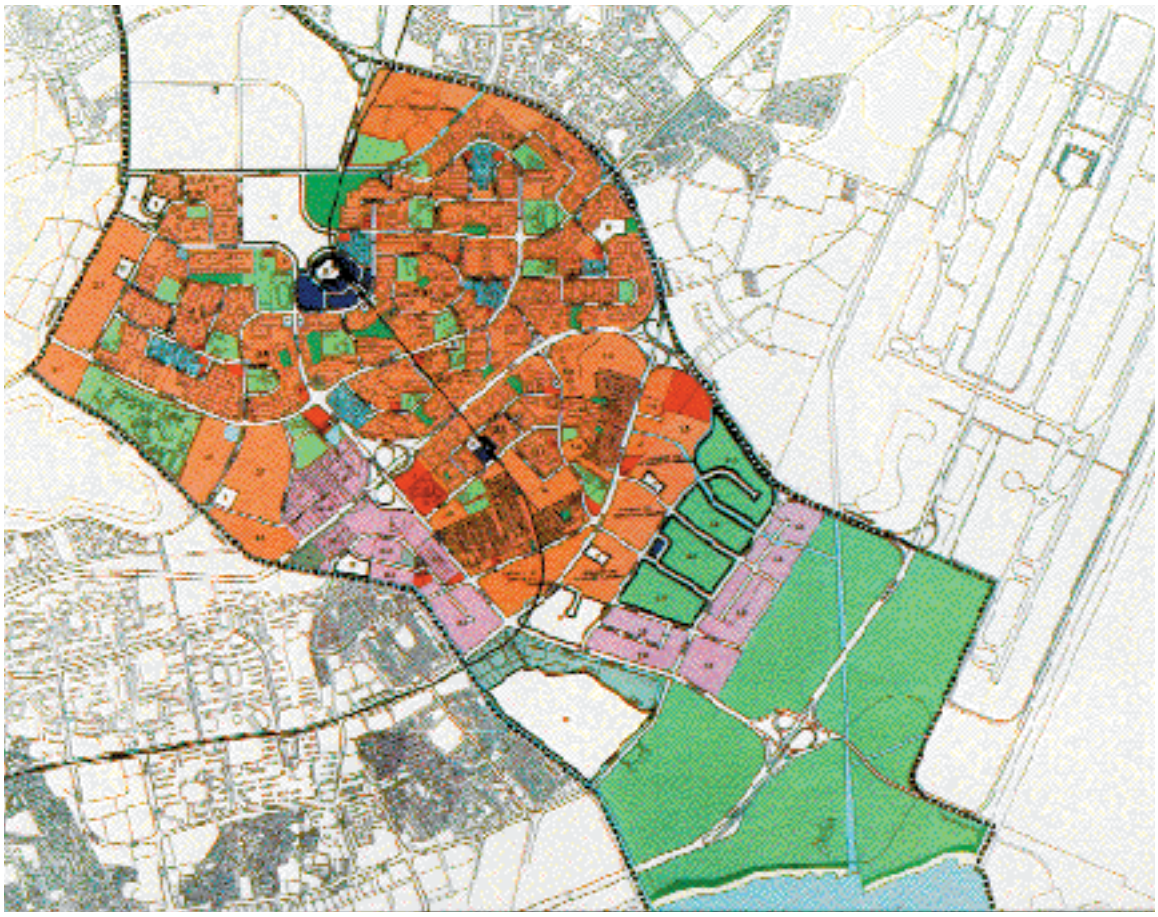


figure 13: Tampines Plan 图 1 3 ： Tampines规划图

CONTEXT

Singapore's planners utilize the term "Forward Planning" to describe a proactive planning process, integrating community feedback throughout the various stages of a project's development. Recognizing potential issues related to population growth in the 1960s, Singapore developed a master plan that focused on the decentralization of the downtown core. A series of new towns were developed to control the growth throughout the city-state. The program targeted sustainable development with semi-autonomous towns that still relied on the main downtown core. By 1971, a master plan was created with the help from the United Nations to control the congestion and growth of the city.

Tampines began construction in 1980 and was completed a decade later.

背景

新加坡的规划师们用“超前规划”来形容一个预先的规划举措，那就是在项目发展的各个阶段考虑到社会反馈。在二十世纪六十年代就认识到人口增长带来的潜在问题，新加坡将总体规划的重心放在分散市中心的密度上。一系列新城的开发被用于控制这个城市国家的发展。规划的目的在于在建设可持续发展且仍依靠主要市中心的半自治城镇。到1971年，在联合国的帮助下，一个旨在控制交通堵塞和城市发展的总体规划形成了。

Tampines于 1980年开始建设，十年后真正完成。

政策

机动车拥有规定

- 用财政手段控制汽车的拥有量。在1968年6月，公开市场上进口税由10%增加到30%；到1972年10月，增加到45%。此外，各种费用和税收被用来抑制汽车购买。截止1974年1月，税收由车辆价值的25%提高到55%。在六十年代市区的发展中，盖起了高楼。这一发展增加了市区的人口和汽车数量。
- 建议错开工作时间和搭伴车来减轻交通拥挤。
- 为尽力缓解中心商业区的交通拥挤，仅限特许车辆和和搭伴车通过。有了来往于停车场和中心商业区的班车，城市外围的停车场随之增加。
- 高额的停车费使开车更加不便。采用了累进制的计价表。
- 到1990年，一种新的竞价系统被用于限制汽车拥有。这次，这个系统很好的适用于各种车辆：小车、大车、周末车。每种车辆都有一定的限额，但是这个计划并不受欢迎，政府多次调整需要和花费。
- 为鼓励中心区外的汽车拥有率，政府则向车主们提供折扣。原先的周末汽车计划变成了非高峰时期计划。
- 通过征收包括道路使用的其它税来负担维护费用。

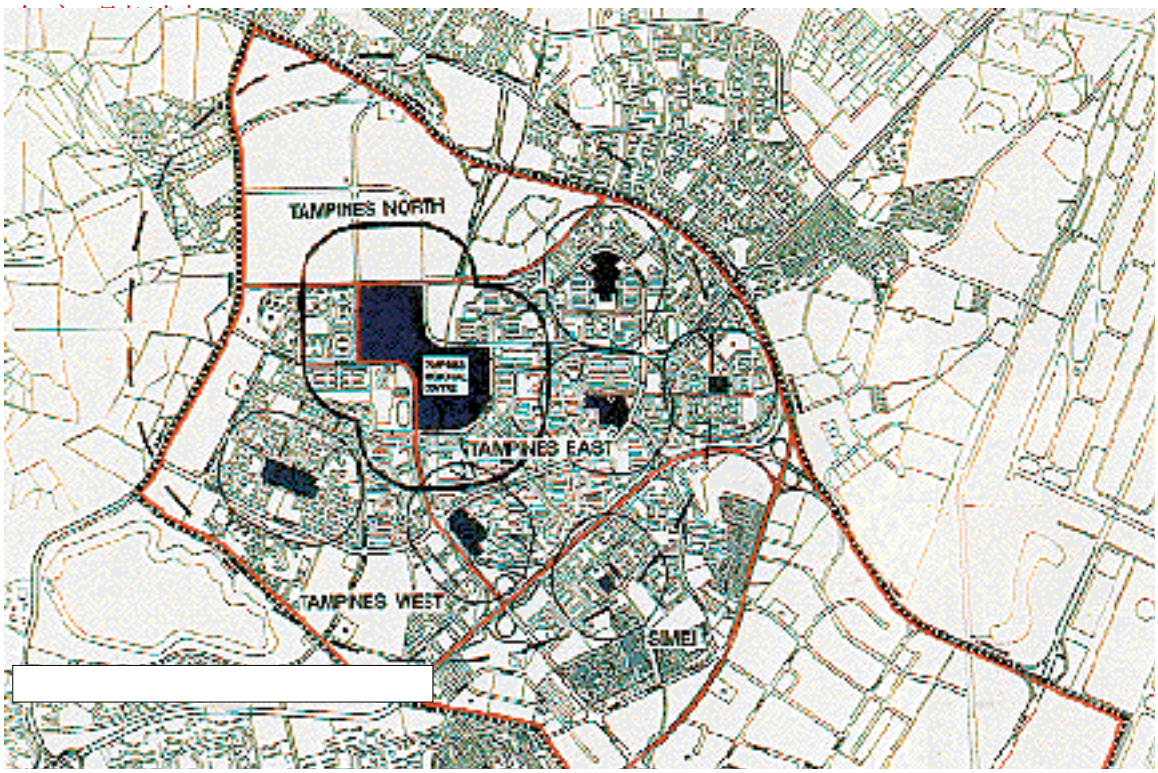
POLICY

Vehicle Ownership Policies

- Fiscal measures were taken to limit automobile ownership. Import duty was increased from 10% to 30% of the open market value in June 1968. The amount was increased to 45% in October 1972. In addition, various fees and taxes were imposed to inhibit car purchases. By January 1974, taxes were raised from 25% of the value to 55%. With the development of the downtown areas in the 1960s, taller buildings were being developed. This development increased both the number of people in the area and the number of cars brought into downtown.
- The government encouraged staggered work hours and car pools to ease congestion.
- In an effort to decrease congestion in the central business district, the area was restricted to licenses and car pooling vehicles. Outside car-parks were developed with shuttles running from lots to the central business district.
- High parking charges were introduced to further discourage auto usage. A stepped meter was adopted.
- By 1990, a new bidding system was introduced to disincentivize car ownership. This time it was fine-tuned into different categories: small cars, big cars, weekend cars. There was a quota for each type of car. This program was unpopular, and the government adjusted the requirements and costs many times.
- To encourage car ownership outside of the center, the government provided rebate incentives to owners. Originally called the “Weekend Car Program,” it was changed to the “Off-Peak Program.”
- Other taxes including road use were implemented to pay for maintenance.

figure 14: Tampines Bus Station
图１４：Tampines的公交车站

figure 15: Tampines HRT Station
图１５：Tampines的HRT站



Integrated Land Use

- The establishment of the Land Transport Authority in 1995 integrates integrated land use development along transit corridors. The LTA is interested in delivering effective cost-efficient land use policies and programs. It is also interested in encouraging and improving appropriate commuting options for citizens.
- The government's strategy is to minimize the number of trips. Shorter trips imply less dependence on cars.
- A hierarchy of transit systems was developed to cater to the various development areas.

TECHNOLOGY

A number of innovations were introduced to improve traffic:

- State-of-the-art signal optimization packages help to fine tune the average speed and patterns of traffic.
- A series of buses and taxis systems have been constantly upgraded to maintain a modern system.
- Mass rapid transit was conceived of in 1983 and fully completed in 1990. The project was fully financed by the government. The project integrated a network of 67 kilometers of tracks and 42 stations. The subway was managed privately by the Singapore Mass Rapid Transit Ltd.

Source: Yuen, Belinda. *Planning Singapore: From Plan to Implementation.* Singapore: Singapore Institute of Planners,

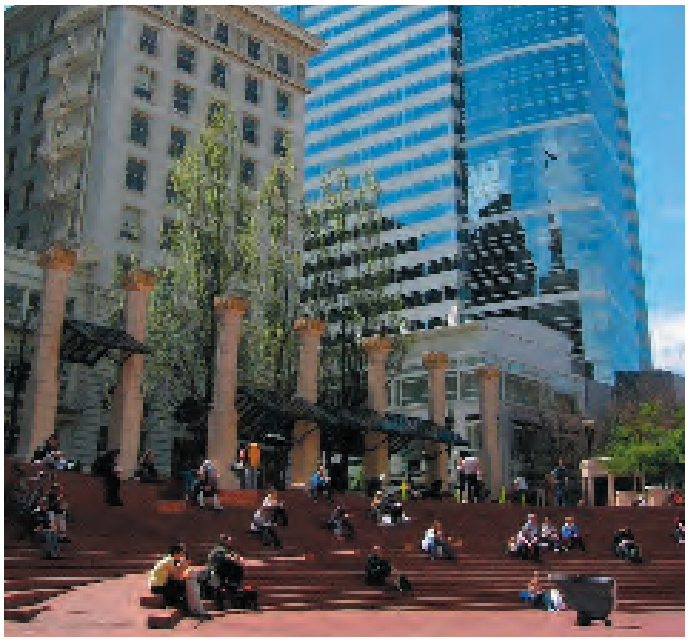
综合土地利用

- 1995年成立的土地运输当局整合交通沿线的土地综合利用发展。他们关注制订有效的成本一效率土地利用政策和项目，鼓励和改善适当的市民通勤方式。
- 最小化行程策略：行程越短，对汽车的依赖越少。
- 发展不同层次的交通系统以满足不同发展区域的需要。

技术

一系列创新举措被引入交通

- 交通：先进的信号优化组合有助于提高平均速度和改善交通模式
- 一系列的公交车和出租车系统被不断升级以适应现代系统。
- 1983年酝酿的大规模快速交通最终在1990年完工。此项目完全由政府出资，是一个综合了67公里长轨道和42个站点的网络。1987年，地铁由私营的新加坡大规模高速交通公司管理。



CONCLUSIONS

As Gaoming moves into the new millennium and develops rapidly, the district must capitalize on the opportunity to implement innovative transportation strategies. The cases presented here underscore the need for integrating transport and land use planning, planning for adaptability, and planning for choice. Specifically, Gaoming should:

- promote transit-oriented development (TOD);
- maximize modal choice; and
- encourage regional coordination where possible.

Next steps

The years to come will be critical for the growing city, and as development moves forward, the district must support early and visible successes and work to create a single transportation department to coordinate initiatives. Gaoming should also reserve land set-asides and adaptable rights-of-way for future development as Portland accomplished with TOD set-asides and Singapore with "forward thinking."

A bright future lies ahead for Gaoming, and quality of life for the future residents of the district can be significantly enhanced by creating a transportation infrastructure now that can support the district for years to come.

总结

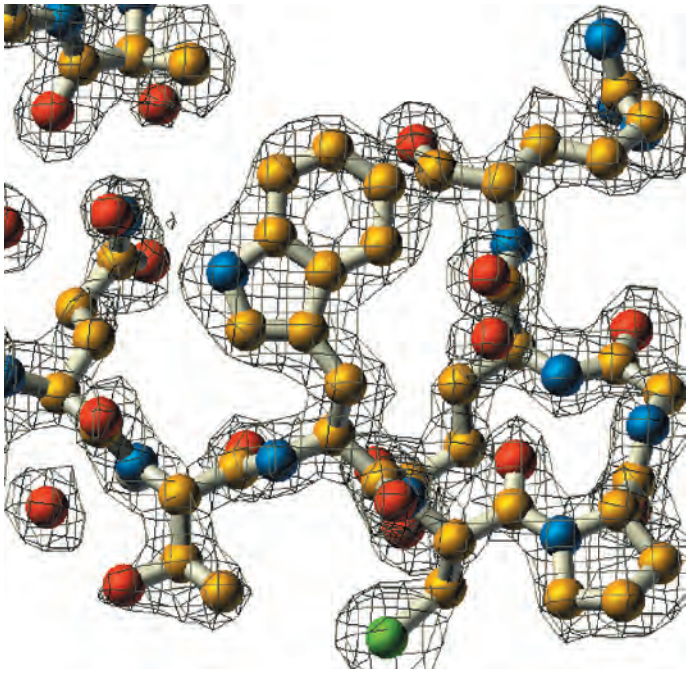
随着高明步入新千年和飞速发展，高明应利用机遇实现交通革新策略。以上分析的案例强调有必要综合交通和土地利用规划、适应性规划和选择性规划。高明尤其应当：

- 加速发展交通为导向的城市发展（TOD）
- 最大化形式选择
- 在可能的地方尽量做到地区协调。

下一步

随着不断发展，今后几年对于发展中的城市至关重要。地方必须支持早期令人瞩目的成就，并且应设立单独的交通局以协调这些新举措。高明还应借鉴波特兰发展TOD和新加坡从"超前意识"中获得成功一样，为今后发展保留预备土地和适应性的优先道路。

高明有着光明的未来，现在建设能服务未来的交通基础设施将会大大提高今后人们的生活质量。



Source: www.danforthcenter.org - Molview Lite CPK Model - Density

figure 1: Nature: Density as the Intensity of Diversity.
图1：自然：作为多样性强度的密度
Photo source: www.tropicalisland.de

DENSITY & FORM : HIGH DENSITY

密度和形式:高密度

This research investigates the relationship between form and density in order to propose an urban fabric that can foster cultural and economic prosperity. Five hundred (500) persons per hectare were set as a base for investigation in order to correspond to the population projection provided by the city of Gaoming.

Currently in Gaoming up to eight-story buildings are walk-ups, which are much taller than other countries, which uses five stories as maximum walk-up height. In the future, local economy will grow, and people will demand a higher quality living environment in which convenience is critical. This research, therefore, introduces some methods for reducing the costs of multi-story housing without compromising living standards.

This research defines density as the intensity of space and activities. Increasing diversity, flexibility, and adaptibility of uses is a key factor for successful urban design to create integrated communities with strong socio-economic, and cultural bases.

这项研究探讨形式和密度之间的关系从而提出可以提高城市文化和经济繁荣程度的建议。为遵循高明市的城市人口预测，本研究将500人每公顷作为研究基础。

目前高明市内无电梯楼房的楼层数限制为8层，这一标准大大高于其他国家通常采用的5层标准。未来当地经济将进一步发展，人们将会追求更高的生活环境质量，尤其是生活环境的便利程度。因此，本研究将提出既降低高层建筑成本又可保证生活质量的建议。

本研究将密度定义为空间和活动的强度。本研究得出的结论是，在同一个框架中提高空间和使用方式的多样性、灵活性和适应性是成功的城市设计的关键因素。因为这样可以创造建立在稳固的社会经济和文化基础上的一体化的社区。

figure 2: source: an architectural record book, McGraw Hill Book Company inc. 1962

CASE STUDY ONE : Stockholm, Sweden

Diverse building forms, large green space around buildings, integrated landscape, street hierarchy with logic in density changes and distributions

专题研究之一：瑞典 斯德哥尔摩

多样的建筑形式、建筑周围的大型绿色空间、一体化的景观、不同建筑密度和建筑分布的街道等级性分布

figure 3: source: www.housingprototypes.org 2004

CASE STUDY TWO : Paris, France

专题研究之二：法国 巴黎

Waterfront promenade, building elevations, tree lines, rhythm in opaque and transparency facades, modern contemporary architectural styles

邻水的步行街、建筑立面、绿化带、封闭和通透建筑立面形成的节奏感、现代的建筑风格

figure 4: source: www.housingprototypes.org 2004

CASE STUDY THREE: Stockholm, Sweden

Balconies along the waterfronts, proximity to the water with leisure facilities, low traffic along the edge, warm building materials

专题研究之一： 瑞典 斯德哥尔摩

邻水的阳台、邻水的休闲设施、城市边缘的低交通流密度、具有温暖感的建筑材料

CASE STUDY FOUR : West End, Vancouver BC Canada

Natural open space, varying builidng forms, visual corridors, leisure facilities with heavy landscape along the shore

专题研究之四：加拿大温哥华西部

自然的开放空间、多样的建筑形式、视觉长廊、沿海岸具有景观特点的休闲设施

figure 5: source: http://en.wikipedia.org/wiki/Vancouver

CASE STUDY FIVE: Copenhagen, Denmark

Communal facilities within block, mixed compositions of low and high rise, pedestrian oriented environment with easy vehicular accesses off street

专题研究之五：丹麦 哥本哈根

街区内的社区公共设施、低层和高层建筑的有机组合、为行人设计的环境同时在街道外易于接近车辆

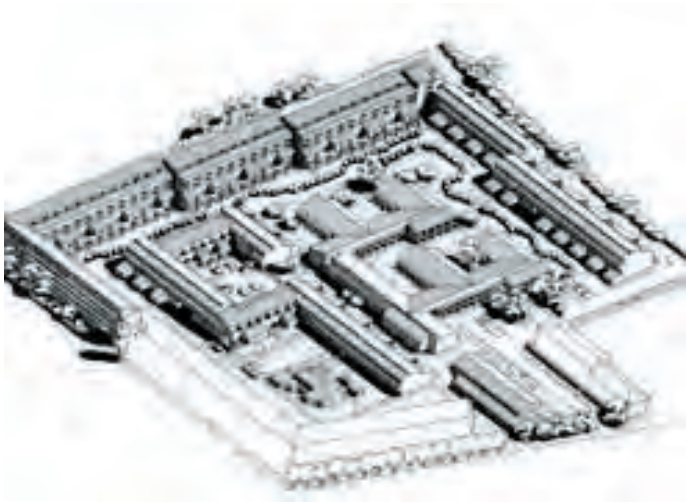


figure 6: source: www.housingprototypes.org

CASE STUDY SIX : Oslo, Norway

Color expressions, varying facade, large balconies, light building materials, diverse housing unit types

专题研究之六：挪威 奥斯陆

色彩表达、多样的立面、大阳台、轻型建筑材料、多样的住房单元类型

figure 7: source: www.housingprototypes.org

REDUCING THE COSTS OF MULTI-STORY BUILDINGS :

降低多层建筑的成本

As societies' gain wealth, individuals demand more ammenities in their living enviornments. This, coupled with increasing labor and material costs will make high-quality, low -cost building extremely difficult. This section provides some options for reducing building costs.

不断增加的人力成本和建筑材料成本使得建设高质量低成本的建筑十分困难。本段为降低建筑成本提出几种可选择的方案。以下是高层住宅高效使用电梯的例子。但是，随着经济的发展，人们对于生活质量的期望提高，将会使住房标准的重要性超过建筑成本的重要性。

Below are examples of high rise flats with the maximum use of elevators.

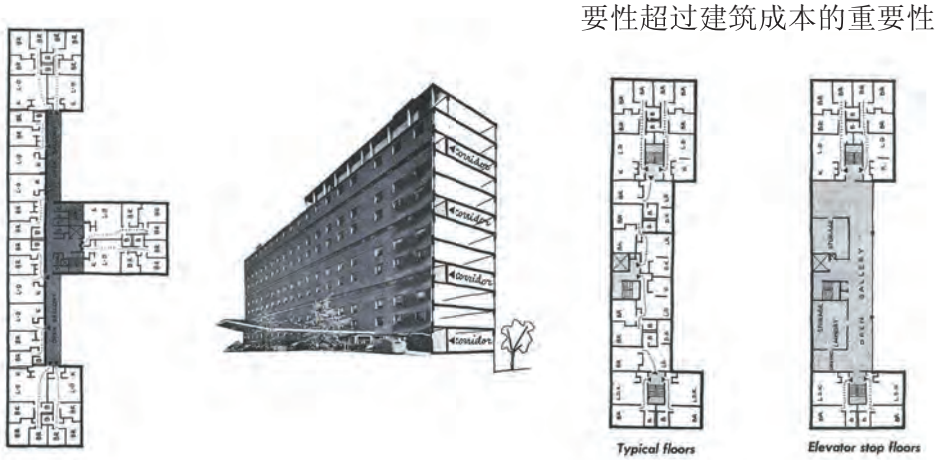


figure 8: Ogden Court, Chicago (left) & Eastgate, Cambridge (right) Source: McGraw Hill Book Company inc. 1962
图8：芝加哥Ogden Court（左），剑桥西门楼（右）

Skip floor elevator system

In Singapore, many old multi-story housing without elevators are now retrofitted for elevators, which was quite costly. To help China avoid similar cost increases, it is important to investigate floor plans that can maximize elevator uses.

跨楼层电梯系统：

在新加坡，许多没有电梯的老式多层住房现在被改造成适应电梯系统的形式，这些工程十分昂贵。随着人们富裕程度的提高，中国将会面临同样的问题。尽管如此，探讨有效使用电梯的方案仍然十分重要。

Due to the expense of elevators, many multi-story housing uniits are built without elevators in China. Eight- and nine-story housing is perceived as mid-rise, quite taller than that of many others countries where five-stories are the maximum walkup height.

电梯是一种非常昂贵的设施，这使得许多多层建筑缺少电梯。在中国，8到9层的住房被认为是中等楼高，可步行到顶层，这个标准比大多数国家规定的5层要高得多。

In skip floor elevator systems, only a limited number of floors have direct access to elevators. The other floors either walk up or down to reach individual housing units. The elevator thus serves a large number of people without much waste of corridor space. Moreover, amenities can be added at the elevator access floors.

在跨楼层电梯系统中，只有某些楼层可直接使用电梯(单数的楼层)，其他楼层的居民可以步行到这些楼层乘坐电梯。在这个系统中，电梯可以为这个楼房的居民服务，又不牺牲走廊的空间。一些便利设施可以建立在电梯直接到达的楼层。

Building structure

Various building structural systems depart from the conventional rigid frame structure. A cellular structure, first introduced by Europe and called stressed skin structure, utilizes the strength of building material property with geometric compositions. Below compares a cellular structure with other conventional structures.

Load bearing wall: 承重墙

Its cost is less than skeleton frames since walls integrate materials to load bearing. There is no extra partition to fit in for spatial enclosure which increases the dead load of buildings. However, this structure limits the flexibility of space.

蜂窝结构将比框架结构成本更低，因为蜂窝结构的墙将材料和承重结合起来。因此不需要多余的隔墙来围绕空间，而多余的隔墙将会增加建筑的净自重。但是蜂窝结构会降低空间的灵活性。

Skeleton frame: 框架结构

This structure allows extremely flexible space, but due to the separation between building materials and load bearing, it requires excessive structural design to support the dead loads of the partitions.

这种结构允许空间有极大的灵活性，但是由于建筑材料和承重的分隔，它需要更多的结构设计来承担隔墙的净自重。

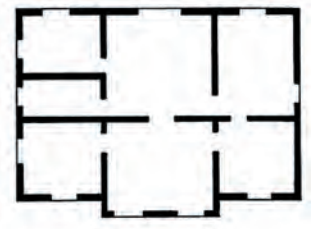
Cellular structure: 蜂窝结构

This structure minimizes partition walls and utilizes building materials for load bearing. It provides column free space and combines sheer with the elasticity of structures. However, this structure requires complicated structural design. As such, unless there is technical expertise, this structure may cost more than other structures.

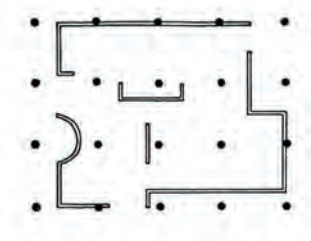
这种结构使得隔墙的使用达到最小，使用建筑材料来承重。它提供了无支柱的自由空间与结构的灵活性的结合。但是这种结构需要复杂的结构设计。如果没有专业技术，这种结构的成本将高于其他结构。

建筑结构

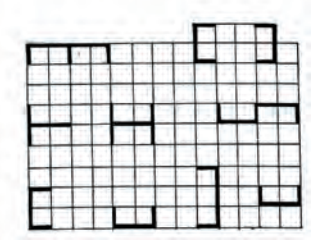
蜂窝结构是一种不同于传统呆板的框架结构的结构系统。它最先由欧洲传入，最早被命名为强化表面结构，将建筑材料的强度和几何结构结合使用。以下是蜂窝结构和其他传统结构的比较。



Load Bearing Wall 承重墙



Skeleton Frame 框架结构



Cellular Structure 蜂窝结构

figure 9: Source an architectural record book, McGraw Hill Book Company inc. 1962

NEW URBAN DESIGN WITH COMPARATIVE ANALYSIS :

This section conducts comparative analysis between a proposal and an existing condition. Each uses five hundred (500) people per hectare density as a base. Given the same density, the existing block form is uniform and monolithic, whereas the proposed block form is pliable. The proposed block has continuous green space networks and generates activities through the varied intensity of land uses.

Urban design concept

This research suggests density as the intensity of space should be as a new standard for urban design. Implementing diverse programs in open space is critical to provide multiple choices and distinctive urban character. Open space should be large enough to accommodate many activities, yet small enough to generate and maintain intimacy.

Integrated communities are communities where diverse socio-economic characteristics flourish. They have been recognized as a model for sustainable communities by many sociologists. Urban places with distinctive character can create integrated communities which draw people beyond the neighborhood boundaries.

Flexibility and adaptability will densify space since these elements draw on synergetic effects through the intensity of space. This research proposes "the palimpsests of activities" in space since space bears the memory of activities that have taken place. Space will become richer through adaptations. Therefore, adaptable and flexible space and land use are essential for sustainable urban design.

新城市设计的比较分析

本段对提案和现存情况的比较分析，使用500人每公顷作为密度的基准。在同样的密度之下，现存的街区形式是单一和整体性的，提案的形式是可变的。提案有连续的绿色空间并通过土地使用的强度来产生不同的活动。

城市设计概念

本研究将密度定义为空间的强度，这对城市设计来说是一个新的标准。在开放空间中应用多样的设计为城市提供了空间使用的多种选择，并赋予城市独特的特点。开放空间必须具有足够大的面积来提供各种活动的场所，但是又需要控制在一定的面积以内来维持亲密感。

一体化的社区是多种社会经济特点蓬勃发展的社区。社会学家认为这种模式是可持续发展的社区模式。具有独特特性的城市空间可以创造一体化的社区，从而人们的活动可以超越小区的边界。

灵活性和适应性可以增强空间的使用，因为它们可以带来空间强度的合能效应。本研究提议在空间中建立“历史活动的体现物”，因为空间记载着历史事件的记忆。通过调整空间会变得更丰富。因此，灵活性和适应性对于可持续的城市设计是十分必要的。

figure 10: An existing Urban Form 图10：现有城市形式

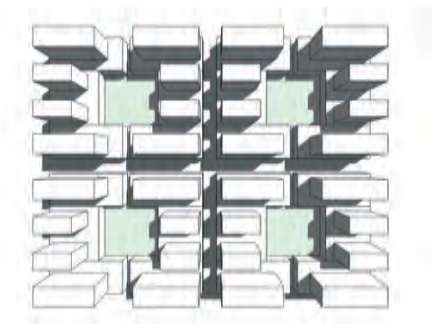
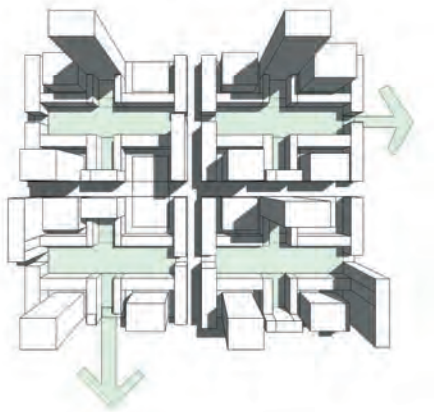


figure 11: A new proposal 图11：新建议的形式



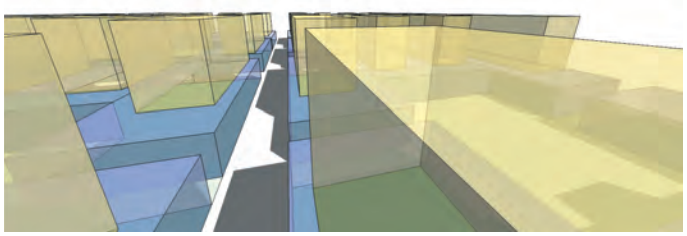
"Urban rooms," such as squares or parks, not only generate spatial identities, but also function as shelters for communities. As a person needs a shelter, so does a community. Therefore, this research recommends that Gaoming provides many unique urban rooms, small and big, with distinctive programs and landscape features, so that people can interact and further develop a sense of belonging.

Density around urban rooms should reflect market demand, but social welfare policies should safeguard affordability of communities. The size of neighborhoods should be based on the radius of programs rather than that of pedestrian walking distance because mobility changes constantly with respect to personal interest, economic resources, and technology.

Kevin Lynch in his book Site Planning introduces the concept of the social unit, a concept that maps the size of communities based on numbers of people and strength of their social networks. In the book, Lynch argues that in general people can greet by name up to thirty persons within a neighborhood; therefore, thirty persons should be conceived of as a module for the social unit of communities. Urban design proposed by this research experiments the social unit concept in order to reflect the intensity of social networks within space.

Lastly, this research concludes that diversity will draw on intensity and that intensity will generate adequate density from which integrated economic engines will derive.

figure 12: An existing Urban Form 图12：现有城市形式



“城市的房间”，比如广场和公园，不仅可以产生空间的特征，也可以作为社区的家。人需要家，社区也需要家。因此，本研究建议城市提供许多大小不同的独特的“城市房间”，具有独特的内容和景观。人们可以相互交流，产生更强的归属感。

城市房间周围的密度应该体现市场需求，但是社会福利政策必须保证社区的承受能力。小区的大小应该以各种活动的半径为基础，而不应以步行举例为基础。因为流动性随着人们兴趣的变化、经济资源的变化、科技的变化而变化。

凯文林奇的《场地规划》一书介绍了社会单元的概念。这一概念以人口和社会网络的强度为基础描绘社区的大小。林奇认为通常一个人在一个小区中可以叫出最多30个人的名字。因此，30人应该被看作社区的社会单元的度量标准。本研究提议的城市设计试用社会单元的概念来反映空间中社会网络的强度。

最后，本研究得出的结论是多样性依赖于强度，强度可以产生足够的密度来整合经济发展的动力得到的结果。

figure 13: A new proposal
图13：新建议的形式

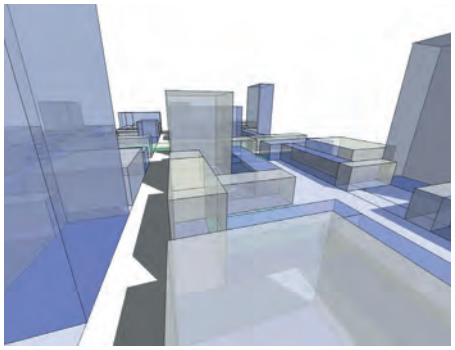


figure 14: An existing Urban Form 图14：现有城市形式

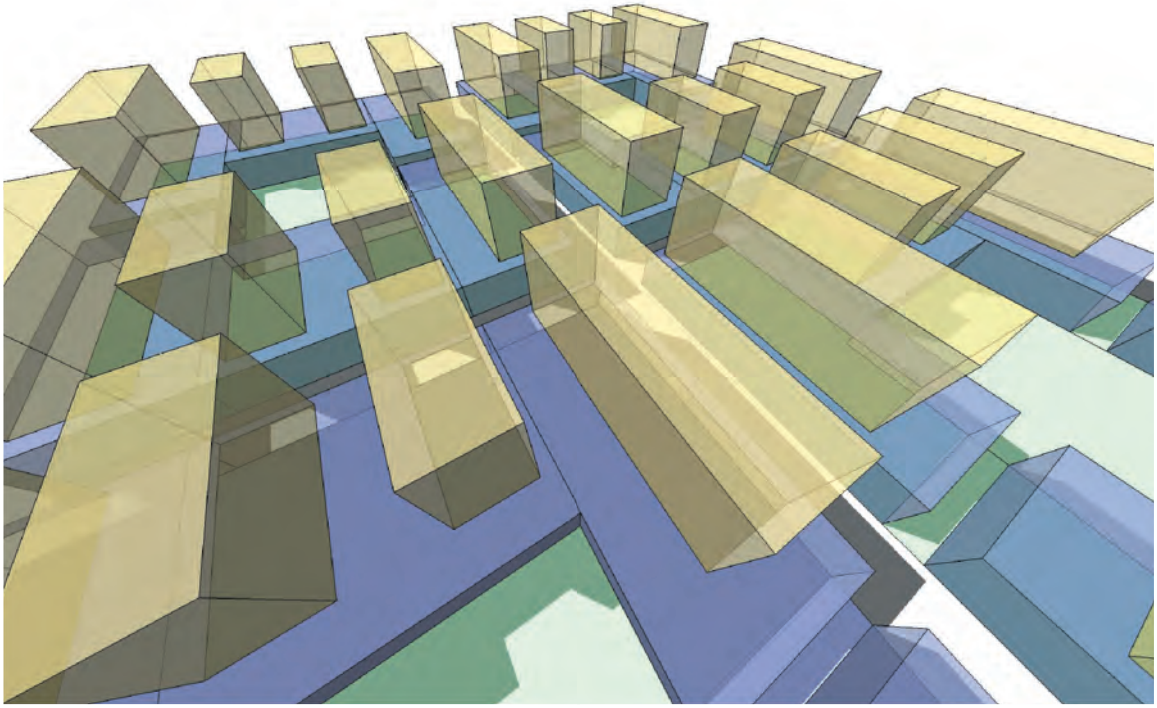
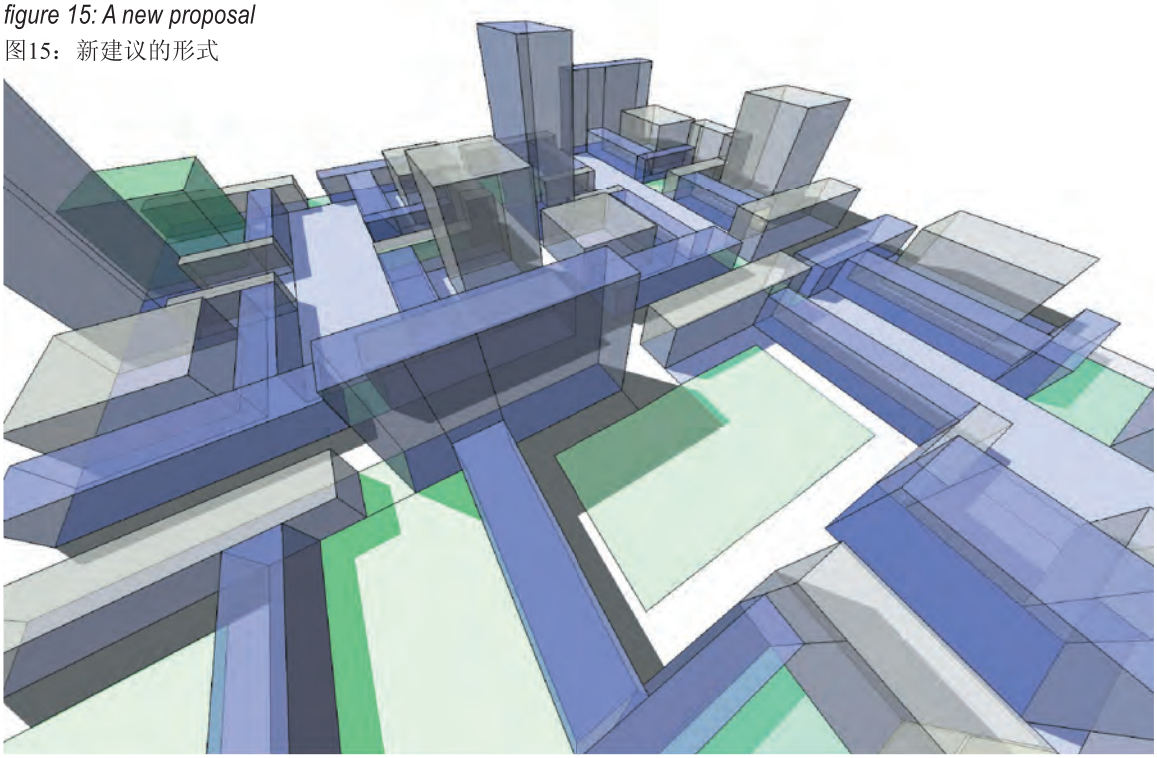


figure 15: A new proposal
图15：新建议的形式



DENSITY AND FORM: MID-DENSITY
密度和形式：中等密度

Context Analysis in Gaoming

A walk through the current city of Gaoming reveals streets and few open spaces, which are intensely used and therefore can be seen as the prime locations for social interaction. These social interactions foster a sense of community, which must not be forgotten during design for expansion of the city. Therefore, it is necessary to plan for these open spaces within the new fabric of the city. As it is desirable that open spaces always be provided within walking distance from any given point within each neighborhood, the formulated location of each space relies on a standard policy of open space allocation for each new housing block. As the policy will allow freedom for the developer to choose either green space or designated community facilities, the balance between impervious surface, green space, and built form will be a diverse mix, reflective of the street life in Gaoming.

Recommendations

This policy of open space allocation for housing blocks will bring a sense of identity and civic pride, as each green space will beautify not only the block itself, but also the larger community of the Gaoming as a whole. Recommendations for Gaom-

高明市背景分析

在现在的高明市行走，只能看到很少的开放空间。这些开放空间都被密集地利用，因此它们可以被看作社会交流的主要场所。这些社会交流加强了社区的感觉，这种感觉在设计城市扩张的过程中不应被忘记。因此，在新的城市结构中规划这些开放空间是十分必要的。理想的开放空间设计应该使人们从任何社区中的任何一点都可以步行到开放空间，因此构想中的开放空间的位置依赖于对每个新居住区进行开放空间分配的政策。由于政策允许开发商在绿色空间或指定的社区设施之间进行选择，所以不受影响的地表空间、绿色空间和建筑形式的平衡将是一个多元化的混合，就像现在高明市的街道上的生活一样。

建议

该居住小区开放空间分配政策将提高市民的归属感和自豪感，因为每个嵌入居住区的绿色空间将不仅属于小区本身而且属于高明市的整个社会。为了使高明市达到均衡分配绿色空间的目标，我们的建议如下：

ing to achieve this even distribution of green space are:

Policy

- Gaoming should establish a Parks and Open space Board
- This Board should then set aside land for integrated green public/ semi-public space
- The Board shall place a tax on residents in order to cover surveillance and maintenance costs of open green space.
- This Board shall be monitored by the City of Gaoming

Finance

The City of Gaoming shall oversee the Board, but shall have no direct connection with the finance of the Board. The Open and Green Space Board shall manage independently all its financial takings.

Implementation/ Phasing

First, the Parks Board shall establish a set ratio of built floor area to require green space for each unit of developable land

figure 1: Chart showing different levels of public / private space in various existing project

图1：下表显示了不同现有项目的公共/半公共空间

政策

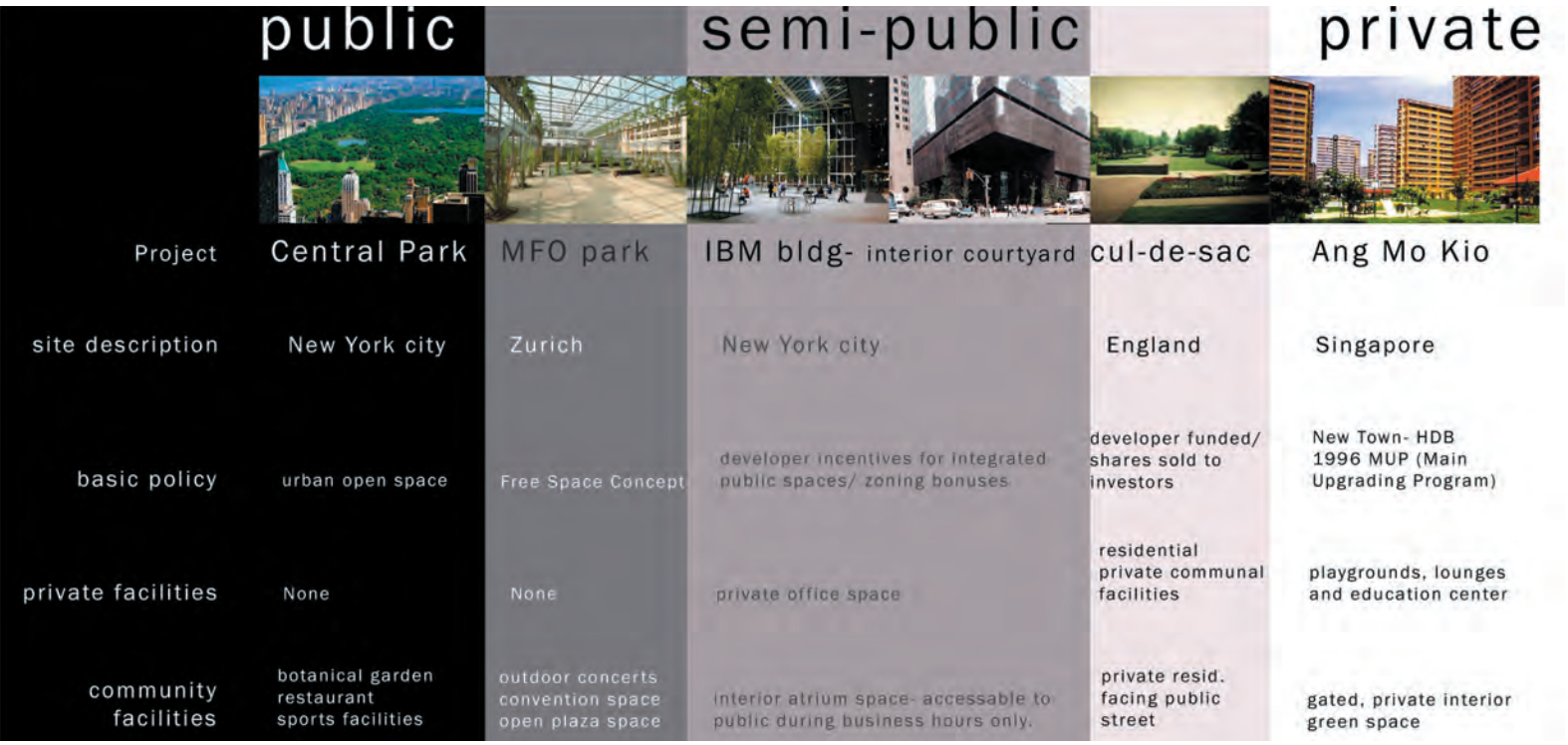
- 高明市应该建立一个公园与开放空间管理委员会
- 该委员会应该为整合的绿色公共或半公共空间留出土地
- 该委员会应该对居民征税，将税款用来监管和维护开放绿色空间。

该委员会应该由高明市财政局管理高明市政府应该监督该委员会，但是不应该有财政上的直接联系。开放和绿色空间管理委员会应该自行管理与之有关的财政事宜。

执行/阶段

首先公园管理委员会应该为每个标准化的可开发用地单元建立一个固定的开放绿色空间/建筑楼层空间比例。

这些标准化的用地单元应该是300米×300米见方，如果交通线路不允许，用地单元可以是类似300米×300米见方的其他面积。



SINGAPORE: ANG MO KIO HOUSING COMPLEX

Background

Completed in 1982 as a New Town prototype and upgraded in the late 1990s, Aug Mo Kio has 11 residential blocks with 1100 units total divided into “precincts” in order to promote walkability and a sense of neighborhoods

Green Policy

A recent study was conducted in order to evaluate the quality and usage of spaces in numerous of the Ang Mo Kio Housing precincts. The study proved that the more intimate peripheral spaces, those which were partially covered by the building mass, were the ones most frequently used for all types of activities throughout the day. This is due to the fact that the climate is more comfortable when there is partial shading. Therefore, the vast open green space provided in the center of these typical housing complexes proves the least desirable place for inhabitants to take part in social activities.

Design Guidelines

The upgrading of this particular housing project included the introduction of various community facilities and more activity facilities soley for private use of the residents.

新加坡：ANG MO KIO 住宅综合区域

背景：

完成于1982年的新城原型，90年代末进行了升级，有11个居民区，1100个单元。
被分化为分区，以增强支持步行能力、提升居民区的感觉。

绿色政策：

最近对ANG MO KIO 的各个小区进行了研究，以评价空间的利用和使用质量。研究证明，联系紧密的边缘空间，也就是部分被建筑群覆盖的空间，是一天中各种活动使用最频繁的空间。这是由于当有部分被建筑物的影子覆盖时，人们的感觉更加舒适。因此，建立在这些建筑综合体正中的开放绿色空间被证明是人们最不喜欢进行社会活动的地

设计指导思想

对这个居住区工程的升级包括各种专为小区居民使用的社区设施和各种活动设施的提供。

figure 2:
Interior photograph of atrium space in IBM building, NY (above)
图2：纽约IBM大楼内的中庭空间（上）
figure 3:
Photograph of interior private green space of Singapore housing precinct (left)
图3：新加坡住宅区内的私家绿地（左）

ZURICH, SWITZERLAND: MFO PARK

Background

MFO Park opened in July of 2002. Zurich held a competition held for the design- promoted citizen involvement in the final scheme selection. Accommodates everyday use as well as large planned events. This park was built as the second of four public areas in the Centre Zurich North. Its size is around .85 ha and it is open for every person who is interested in games, open-air cinema, theatre or concerts.

Green Policy

Every two years a questioning of the citizens is carried out to check the quality of life in Zurich. The survey in 1999 showed that the green areas and parks as well as the public transportation system are the main reasons quoted for this high quality of life. When asked about the biggest problem confronting the city of Zurich at present time, citizens mentioned traffic most frequently. The city will concentrate its future efforts on:

- Rearrangement of existing green spaces
- Maintenance of existing green spaces

figure 4: Photograph of covered outdoor space- used for concerts
图4：户外有顶空间，用于演奏表演

igure 5: Photograph of covered outdoor space- public
图5：户外有顶公共空间

figure 6: Photograph of open public plaza space
图6：开放公共广场空间

- Designing of new green spaces

Design Guidelines

In the Free Space Concept (set forth in 1999 by the City of Zurich) three specific amounts of square meters of green spaces per inhabitant were calculated and fixed.

- Every working place should reserve five square meters free space in the city.
- Eight square meters of green should exist per every inhabitant of the city.
- Fifty square meters of undeveloped land should be acquired per every floor surface area of buildings. (as per www.urge-project.ufz.de/zurich)

Objectives

- A significant open space framework
- A chance for sustainability
- Public open spaces in all districts
- Free areas at the doorstep
- Living space for nature in the city
- Diversified agricultural areas

Summary
More integration of housing developments with open green

瑞士 苏黎世：MFO公园

背景：
开放于2002年7月，曾进行过设计竞赛，在末轮的选拔中提升市民的参与程度。为日常使用和大型活动提供场所。
本公园是北苏黎世中部四个公共区域中第二个建立的。它的大小约为0.85公顷，为对游戏、室外活动、戏剧或音乐会感兴趣的人们开放。
绿色政策：
每两年苏黎世会对市民进行一次问卷调查来检验苏黎世的生活质量。1999年的调查显示，绿色空间和公园、公共交通系统被认为是苏黎世高生活质量的主要原因。当被问到现在苏黎世面临的最大问题的时候，人们提到最多的是交通问题。从这一观点来看，城市未来可以将精力集中在：
-重新安排现存的绿色空间
-维护现存的绿色空间

设计指导思想：
在《自由空间概念》（苏黎世市1999年提出）中，计算和确定了三种不同的人均绿色空间面积。

-城市中的每个工作空间应该保留5平方米的自由空间，
-城市中的每个居民应该保留8平方米的绿色空间，
-建筑的每层空间应该保留50平方米的未开发土地

目标：
-重要的开放空间框架
-可持续发展的机会
-所有区内都有公共开放空间
-门阶处的自由空间
-多样化的农业区域

小结：更多的住房发展与开放绿色空间的整合。

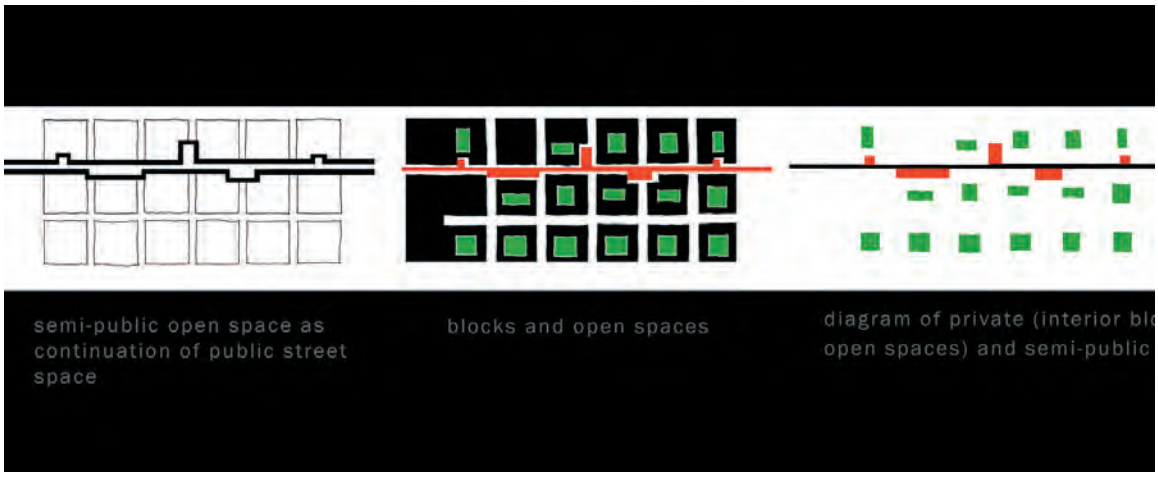
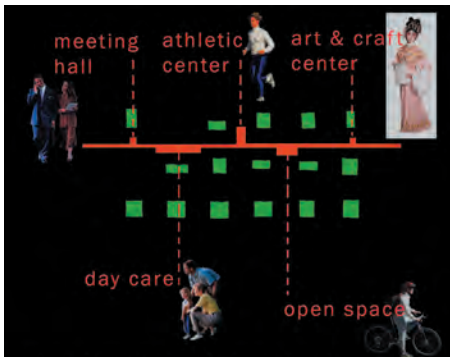


figure 7: Diagram of introduction of semi-public space into private blocks.
图7：图表所示由半公共空间到私人空间的过渡

PROPOSAL

Open space / housing block integration
The most appropriate housing typology for Gaoming, China is a hybrid of Western building technologies and systems with the traditional Chinese building form. Looking at the traditional Chinese housing typology one can see a very strong presence of the community and an emphasis on social interaction. Therefore, having recognized the importance of this interaction, a new housing typology may be designed with dedicated volumes of space, which must be accessible to the public. This typology may take the form of the current perimeter block, however, should be continuously punctured along the street edge, allowing the public space of the street to bleed into the "trapped" space at the center of the block.

This would recreate the dynamic public street environment, which characterizes many traditional neighborhoods, while providing modern housing facilities of an improved standard. The block's central green space may still be closed off to the public, as is desired for reasons of security, however, this private space would be smaller than what is currently being built. The small sacrifice of a portion of this space will prove beneficial as it is traded for public access, which will promote a more



提案：

开放空间与居住街区的整合

对中国高明市来说，最适当的住房结构是西方建筑技术和系统与传统中国建筑形式的结合。观察中国传统住房结构，我们可以发现有非常强的社区存在，而对社会互动也非常强调。因此，认识到互动的重要性，新的住房结构应该为大众活动创造大量的特定空间。这一结构可以采取现存的有周界街区，但是沿街一面应该开放，允许街道的公共

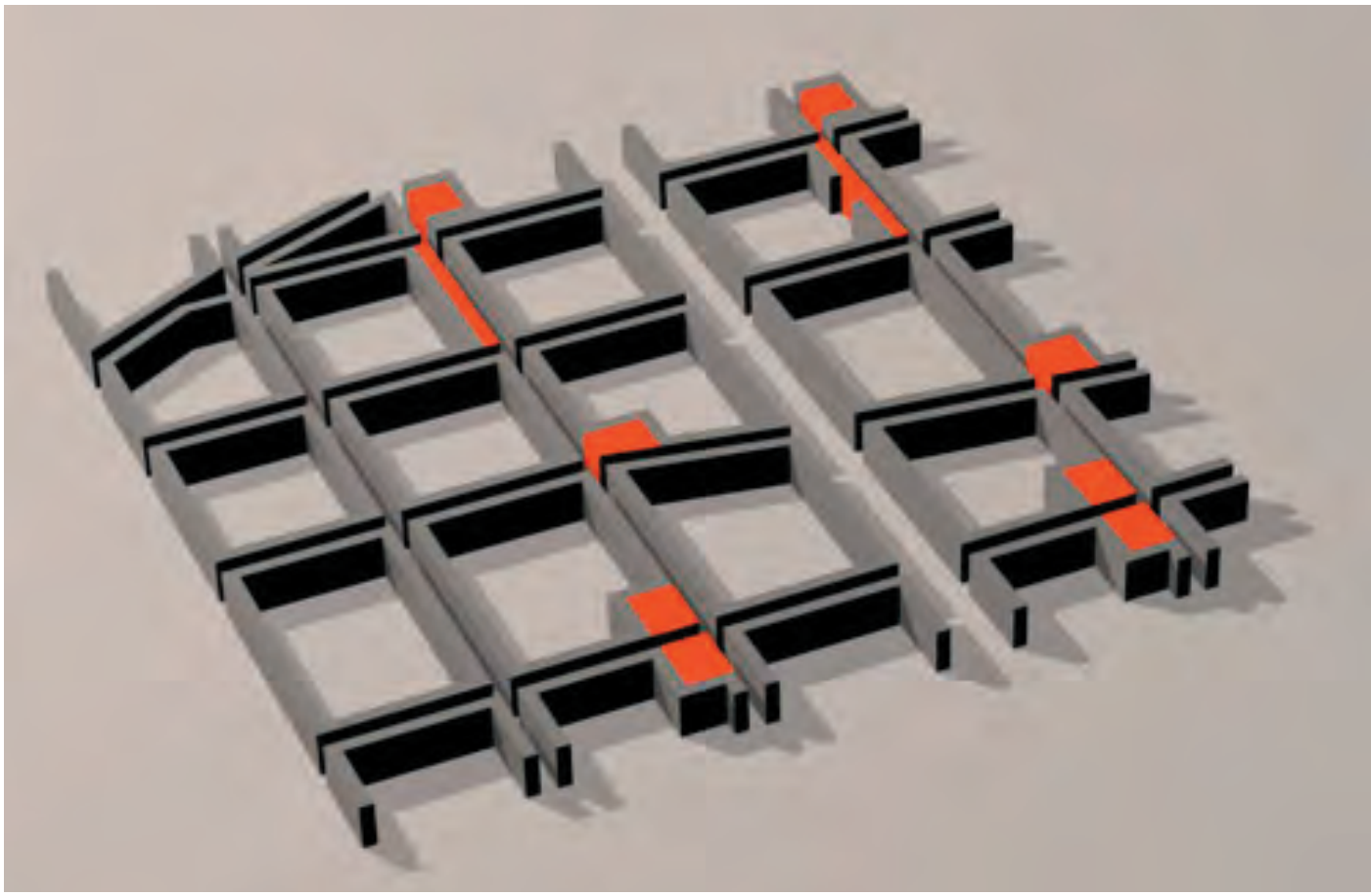


figure 9: Diagram of semi-public open space inserted into housing blocks.
图9：概念图显示了半公共开放空间被镶进居民区中

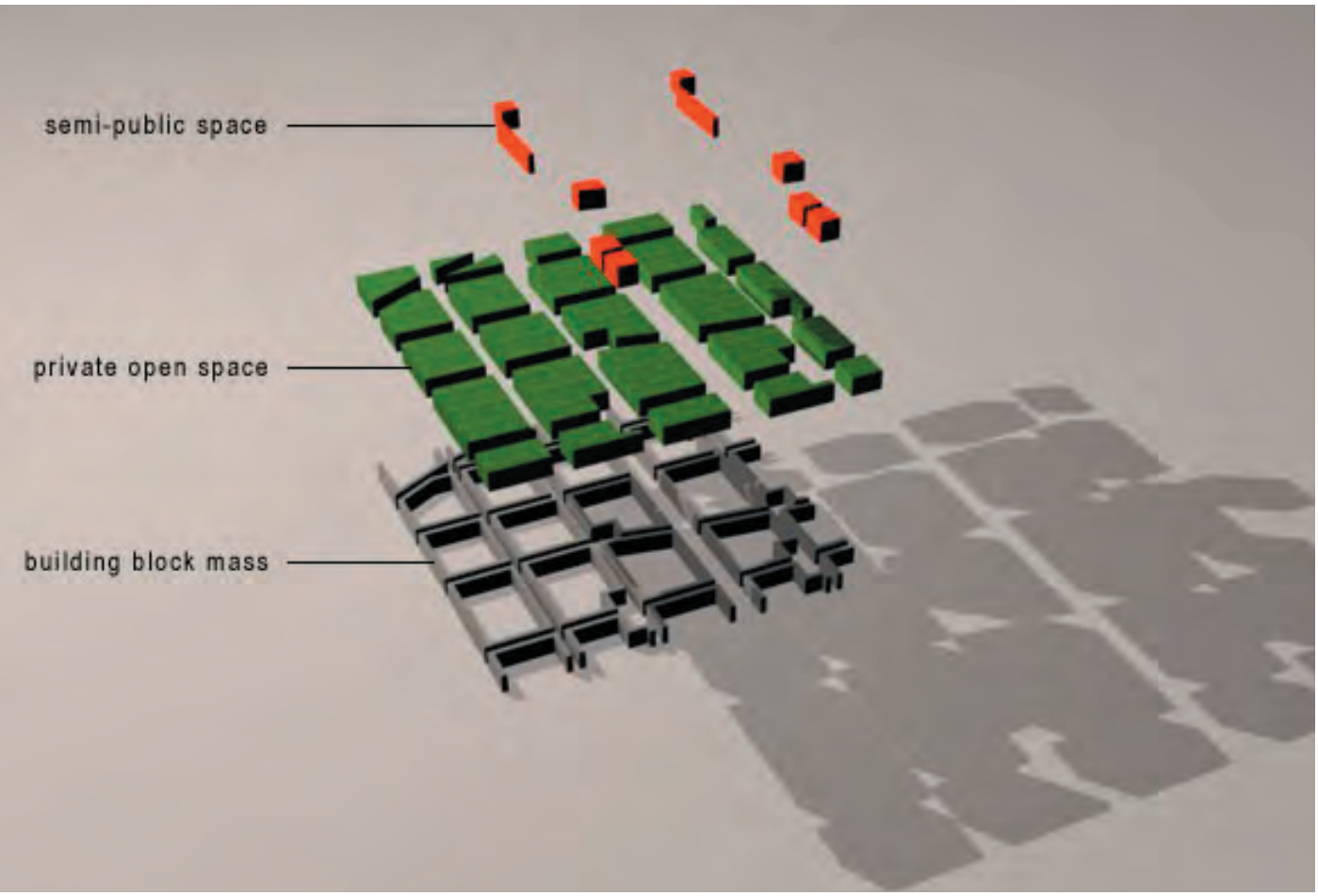
active community environment for the neighborhood.

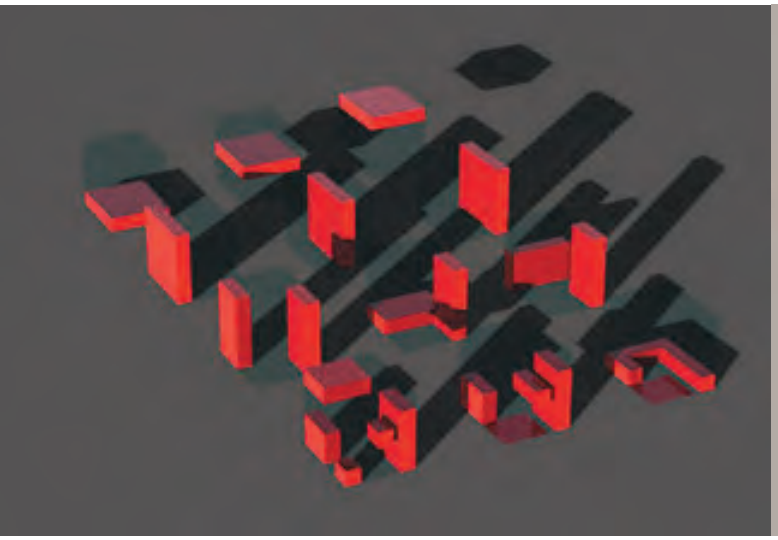
Each semi-public open space may be either left as open park/plaza space or may house a community facility such as a meeting hall, athletic center, or cultural center. The integration of various programmatic elements will bring diversity in uses to the neighborhood, creating readily accessible amenities and leisure activities, as they will continuously be thread throughout the fabric.

空间融入街区的封闭空间之中。

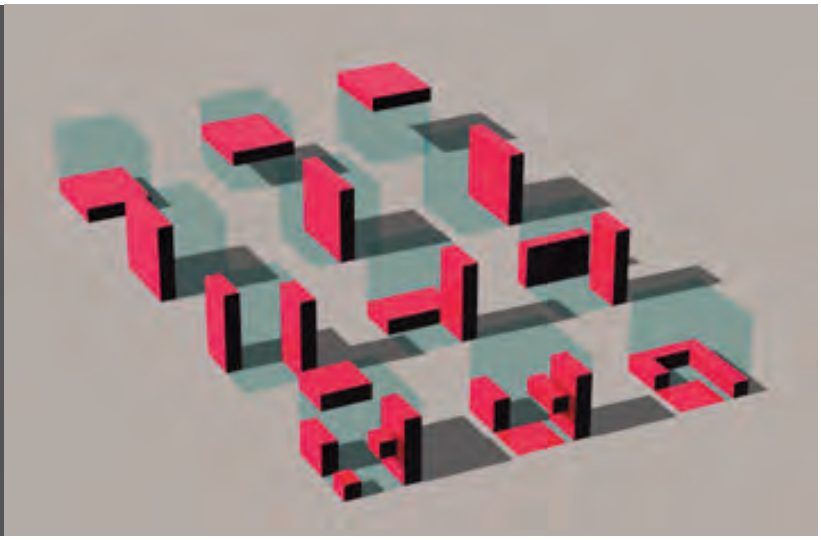
这将重新创造动态的公共街道环境，这些环境已经具有了许多传统的小区，新的设计提供了更高标准的现代住房设施。为了保证街区的安全，街区的中心绿色空间将仍然会对公众封闭，但是这些私人空间将会比现存的小。稍微牺牲这部分空间将会对增加公众可接近的空间有利，这将会创造更加活跃的社区环境。

在高明规划





Shading at 3:00 pm. December
楼宇所造成的影子，十二月下午3点



Shading at 3:00 pm. June
楼宇所造成的影子，六月下午3点

Opposite page above: exploded diagram of open space hierarchy with mid-density housing blocks
Opposite page below: Schematic street perspective, shows continuous integration of semi-public spaces

对页上图：分解了的开放空间层次和中等密度住宅群
对页下图：街面透视图，显示了连续的半公共空间的整合

OPTIMAL SUN AND SHADE COMPOSITIONS

In order to optimize sun shading and exposure, various volumetric configurations were investigated using the two extremities of daylighting: one mid-day summer and the other mid-day winter. This may be useful in design of semi-pulbic open spaces. As seen in Ang Mo Kio housing project, the most important attribute of an open space is its availability to please those wishing to take in sun and those who wish to be shaded from the sun.

ENHANCEMENT OF STREET LIFE

As seen in the schematic street perspective to the left, introduction of these semi-public spaces into each housing block would provide an active street life for pedestrians and therefore enhance the social interaction within any given neighborhood.

最优化的阳光和阴影组合

为了优化阳光阴影和无遮蔽空间，我们使用两种极端的光照：夏天的中午和冬天的中午，探索了各种体积的布局下的情况。这将对半公共空间的设计有所贡献。正如在Ang Mo Kio住宅项目中看到的，开放空间最重要的特征是它对希望接触阳光和不希望接触阳光的人们来说的可得性。

加强街道生活

正如在左侧的街道透视图所示，在每个住宅街区引入这些半公共空间将会为行人提供更活跃的街道生活

在高明规划

CIVIC CENTER
市政中心

The Civic Center in Gaoming's proposed master plan is featured prominently. Many of the principles that inform the plan are well founded: dynamic mix of uses and integration of civic center with the Xiu Li River. From our observations of these elements we catalogue five examples of civic centers in Boston, MA; Milwaukee, WI; Providence, RI; Shatin, China; and Bilbao, Spain. Through each of these examples we explore context, location, design program, services/cultural events/functions, surrounding land use patterns, development history, and lessons learned. The geographic location of the site is contextualized at a macro and micro level. The location of the civic centers is also explored symbolically in relation to water bodies, the center of the city, and other civic aspects. The program elements are also detailed including materials, parks, plazas, structures, statues and sculptures.

Civic centers are also important gathering places and as such we looked at the services, cultural events and functions of the civic center. American planners focus on the importance of mixed use development and we immediately picked up on this element of the proposed plan. Another focus of these case studies is the surrounding land use pattern. The intent of this focus is to understand what works well in terms of creating dynamic, well-used space. Finally, we looked at the development history of the civic center including funding and phasing the project. We do not intend for these case studies to be prescriptive, but rather they serve to highlight cases that have succeeded in some areas and not as well in others.

在高明的总体规划中，市政中心举足轻重。在总体规划中的很多指导原则都可以在市政中心中找到：例如多元的混合土地利用和整合市政中心与秀丽河。我们列举了五个城市的市政中心为参考：美国麻萨诸塞州的波士顿、威斯康辛州的密尔沃基、罗得岛州的普罗维顿斯、香港沙田，以及西班牙的毕尔巴鄂。对以上的市政中心，我们分别考察了其背景、位置、设计、服务 / 文化活动 / 功能、周边土地利用模式、开发历史及经验教训。位置从宏观和微观两个角度进行了分析，包括与水体、城市中心、以及其他市政要素的关系。此外，我们对设计要素的材料、公园、建筑、结构、雕塑等也进行了详细阐述。

市政中心是重要的集会场所也担当了市政服务和文化活动中心的功能。美国规划界注重混合土地利用开发，在高明的未来规划中看到了类似的手法。另外，专题研究重点分析了市政中心周边的土地利用模式。我们希望由此帮助我们了解如何可以更好地创建有活力和高使用率的空间。最后，我们考察了市政中心的开发历史，包括项目资金利用和项目分期。所提供的例子并不意在提供确定性的答案，而是提供一些可供参考的个案。

城市设计原则

1. 混合土地利用
提供多元功能，多角度充分利用空间

2. 平衡公共和私人空间的尺度
既方便公共集会，又设计精巧，使得在尺度上创造适以人为本的使用空间

3. 设计适应不同群体的需要
市政中心根本上是要为每一个市民服务，其设计应该方便每一群体的使用，方便老人、儿童、中年夫妇、携带小孩的年轻夫妇、放学的青少年、蹒跚学步的幼儿等等

4. 保护本土文化
大众的日常文化在现在看来似乎没有保存的价值，但是它却因快速发展而面临逐渐遗失的危机。市政中心的设计不应该忽略本土文化的重要性，而应该保留、延续、再开发本土文化并使其在环境上和文化上都成为当地历史的一部分。

5. 多种交通方式和多进入点
市政中心应该通过各种交通形式与城市的各个部分相连。机动车道固然重要，但良好的步行径系统对于吸引公众使用公共空间也十分关键。

6. 城市形象建设
市政中心集中表达城市形象。高明定位山林水都，其市政中心应该反映和强化这一城市形象。

7. 丰富的活动
除注重鼓励日常使用外，市政中心也是提供市政功能和活动的空间。除了硬件建设外，正正是这些集体活动帮助谱写了一个地方的历史。

8. 开放空间
开放空间是市政中心不可获缺的一部分。

URBAN DESIGN GUIDELINES

1. Mixed use
Provide a diverse mix of products to invite use throughout day and night.

2. Balance between public scale and scale
Ability to accommodate public gatherings, but also designed carefully so that the scale will not intimidate individual personal uses.

3. Design with different constituents in mind
A civic center essentially belongs to everyone, so it should be designed in away that is welcoming to different constituents: seniors, middle-age couples, young couples with children, after school teenagers, toddlers learning to walk, and others.

4. Preserve local culture
Ordinary people's daily culture may not seem important to preserve at this point, but it certainly is being eroded gradually with fast development. The design of a civic center should not dismiss the importance of local culture, but rather should preserve, extend, and reinvent local culture and make it become a part of the local history, both physically and culturally.

5. Multiple modes and access points
The center should be connected to different parts of the town through various transportation modes. Vehicular connection is important for formal uses, while pedestrian connection is critical for attracting people to use a public space.

6. Identity construction
The civic center shall be the epitome of the city's identity. As Gaoming is water capital with green hills, the civic center shall reflect and reinforce such identity.

7. Activities
In addition to encouraging daily uses, the civic place should hold a space for civic functions and activities. It is these public activities that help create collective memories of a place in addition the civic center's physical design.

8. Open space
Open space should be an integral part of the civic center.

figure 1: Site of interest: City Hall Plaza 图 1 ： 市政厅广场所在地

figure 2: Boston waterfront 波士顿滨水区

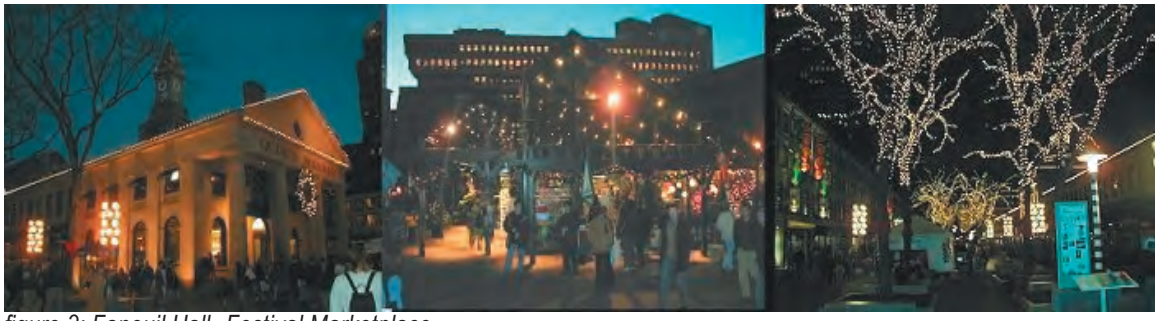


figure 3: Faneuil Hall--Festival Marketplace
图 3 ： 法尼尔倭一节日市场

CASE STUDY ONE: BOSTON, MASSACHUSETTS, USA

Introduction

Boston is a city of 580,000 people located in the state of Massachusetts on the east coast of the United States. There are two highways that slice through the city; one is less than a mile from City Hall Plaza. Boston is an interesting case because it is of a similar size to Gaoming, it is very near Boston Harbor and the Charles River, and there are lessons that can be learned from City Hall.

专题研究之一 美国麻萨诸塞州的波士顿

引言

波士顿位于美国东海岸的麻萨诸塞州，人口５８万。城市空间被两条高速公路划分为几个区；其中一条高速公路连接市政厅广场。对于高明，波士顿是个很恰当的例子，它靠近海港和查尔斯河。我们可以从波士顿市政厅的建设中得到有益的启示。

在高明规划

Location

Boston City Hall Plaza is in the historic heart of Boston on the site of an old neighborhood, Scollay Square. The neighborhood was redeveloped in 1968 as a civic center in Boston. City Hall is well located and is in walking distance to Faneuil Hall (a tourist market place), the Boston waterfront, the financial district, and two major transit locations. The elevated highway that divided Boston from its waterfront has been removed and in the coming years city officials will make an effort to reconnect the urban fabric with Boston Harbor. The planned Rose Kennedy Greenway is a 30-acre linear park.

Design Program

The design program of City Hall Plaza is spartan. The plaza has a very austere feel and impresses visitors as a serious structure. From an American aesthetic perspective, this is not always the most welcoming design—and as a gathering place, the plaza fails. There is very little foliage and during summer months the plaza is sun drenched. During the fall and winter it is windswept and often abandoned.

Materials

City Hall and the surrounding plaza are austere. City Hall is designed in the monumental style and is built of reinforced concrete primarily. There are very few additional decorative elements on the exterior of the building. The building is at grade with the road on the west side of the site, and is above grade at the east side. There is a set of stairs that descends towards a popular tourist destination site, Faneuil Hall. Surrounding city hall is an expansive plaza of brick pavers, occasionally punctuated by ribbons of concrete. Set on the pavers are a few concrete geometric structure. These serve the functional purpose of benches.

Parks and Plazas

Again, there is a brick plaza that encircles City Hall (see aerial view). There are very few decorative elements throughout the plaza.

Structures, Statues and Sculptures

There are concrete trash receptacles and some concrete benches, but no statues to speak of.

位置所在

波士顿的市政厅广场位于波士顿的历史核心区，建于早先的斯科利广场社区。该社区在１９６８年作为波士顿的市政中心得到了再开发。市政厅区位良好，徒步可达旅游市场的法尼尔楼、波士顿滨水地带、金融区、以及两个主要的公共交通中心。

过去分割了城市与滨水带的高架高速公路已经被迁移。政府人员将在未来的几年内努力重新将波士顿港和城市干线连接起来。规划中的罗丝肯尼迪绿带是一个占地３０亩的线性公园。

设计

市政厅广场设计属斯巴达风格，设计庄严肃穆。从美国审美的角度来看，这一设计并不大受欢迎。另外，广场的集会功能也没能实现。广场附近缺乏树木植被，夏季广场炎热干燥，秋季和冬季多风荒凉。

材料

市政厅和其周围的广场形成了严肃质朴的气氛。市政厅是钢筋混凝土结构，透露着一股庄严的气派。建筑的外面，星星点点可以看到一些点缀物。东西两条路夹着整个建筑群，形成一个东低西高的坡度。拾阶而下，就来到了法尼尔楼，这里是游客经常游览的地方。市政厅周围的广场，方砖和石子构成了其间的小路，铺路砖上还显现着几何图形，铺路砖上的图形提示人们路边长凳的功能。

公园和广场

刚才提到，市政厅的外面是一个砖砌的广场（看航空照片），该广场点缀着一些装饰物。

结构，雕像和浮雕

广场上有一些水泥做的垃圾箱和水泥长凳，但是没有任何雕像和浮雕。

figure 4: Financial District
图 4 ： 金融区

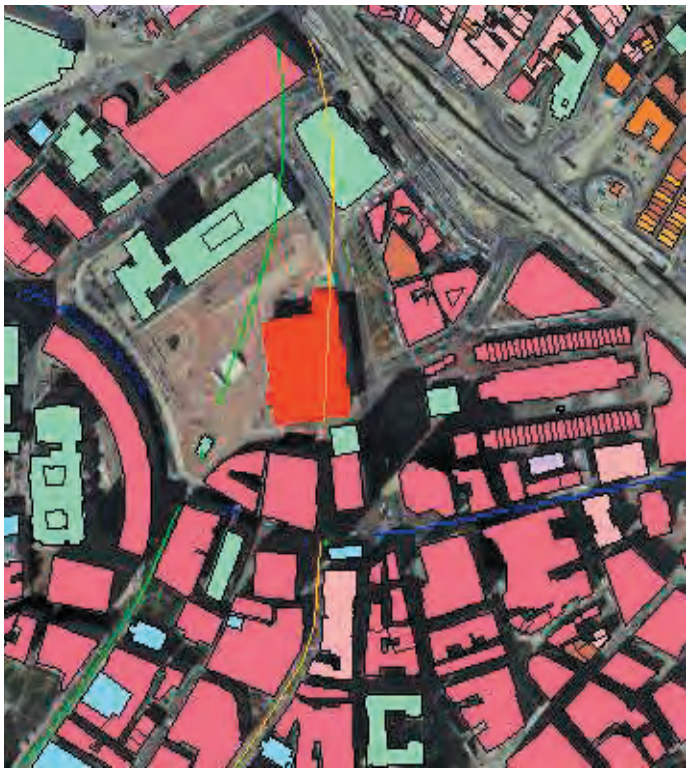


figure 5: Surrounding Land Use Pattern, BRA
图 5 ： 市政中心周边土地利用

figure 6: Boston City Hall
图 6 ： 波士顿市政厅

figure 7: Boston City Hall as gathering space
图 7 ： 市政厅为群众聚集点

figure 8: Beacon Hill neighborhood
图 8 ： 灯塔山社区

Services/cultural events/functions
When temporarily programmed to host events or functions, City Hall is a very good location for thousands of people to gather. Events are held at city hall ranging from concerts, to parades, to sports celebrations, to political rallies.

Surrounding land use patterns
The surrounding land use pattern is similar to those of the other five case studies and represents best practice in the mix of uses. The orientation of land use creates a dynamic synergy and this is evident by the popularity of the location. City Hall sits at a point between different nodes—residential, financial district, government buildings, festival marketplace.

DEVELOPMENT

City Hall is built on the old neighborhood of Scollay Square. Scollay Square was a seedier part of the city; despite that (or maybe because of this) it held particular appeal for many Bostonians. Many citizens of Boston objected to the way in which Scollay Square was razed without much input from the users of that space, but the city felt pressure from the economic downturn during the 1940s and 1950s and looked to redevelopment projects as a way to revitalize the economy.

LESSONS LEARNED

Given, American aesthetic, City Hall Plaza is not a success. The plaza is exposed to the elements—windswept and sun drenched during the summer. However, the surrounding land uses redeem the design program in that the site is used to cross from nodal development to nodal development.

figure 9: Overview of Boston
图 9 ：波士顿远眺

服务 / 文化活动 / 功能
活动需要时，市政厅是一个举办庆祝活动的好地方，它可以容纳上万人聚会。这里曾经举办过音乐会、巡游、体育庆典和政治集会。

周围土地利用模式
市政大楼周围的土地利用模式和其它五个案例类似，都是混合使用模式，目的是创造一个鲜活的受人欢迎的环境。市政厅就正好坐落在人们不同的活动场所的交点处，它连接了住宅区，金融区，政府机构区，和交易市场。

发展

市政厅位于一个叫斯科利广场社区的旧小区，此区曾经是一个破烂不堪的地方，尽管如此波士顿人还是很喜欢这里。在20世纪40年代和50年代之间，经济处于萎靡不振状况，当地政府想通过开发此地来振兴当地经济。此举遭到了许多波士顿人的反对，特别是市政府在开发过程中并没有咨询市民的意见。但是由于害怕四五十年代当地经济继续下滑，市政府还是按照执意开发以此作为从振当地经济的策略。

经验教训

从美国的审美观来看，市政厅广场项目并不成功。在炎热的夏季，该广场没有任何遮风避暑的去处，人们完全被暴露于酷暑之中。然而，广场连接了城市开发的不同节点，此种土地利用模式由此弥补了广场设计上的不足。

figure 10: City Hall plaza
图 1 0 ：市政厅

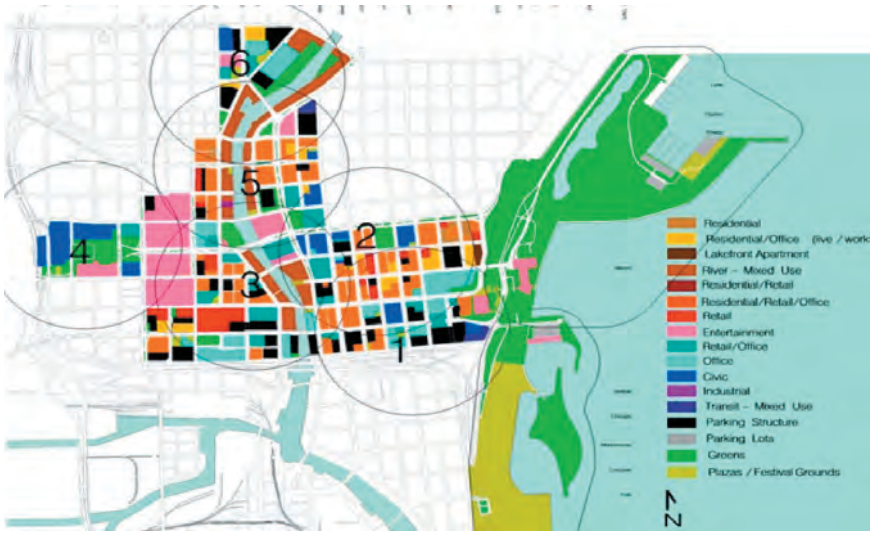


figure 11: Land Use Plan
图 1 1：土地利用图

CASE STUDY TWO: MILWAUKEE, WISCONSIN, USA

Introduction

Milwaukee is located in the midwestern United States in the state of Wisconsin. It is similar in both the location and size to Gaoming. The city of 580,000 is straddled by the Menomonee River to the east and a small canal to the west. The focus of the case is on an area that is very near to the canal—the location of City Hall and other civic institutions.

Location

City Hall occupies a triangular parcel that sits symbolically and geographically at the center of the downtown area. There are three prominent areas that surround City Hall: East Town, West Town, and Park East.

East Town is a diverse neighborhood, with uses ranging from corporate offices to local restaurants. Cathedral Square and the River draw regional audiences through activities such as Jazz in the Park. The neighborhood is fostered by a residential community as well as commercial and employment establishments.

West Town offers concentrated, large-scale retail within the downtown area. Street trees, flowers, benches, banners and art enhance the streetscape.

Outdoor cafes predominate in this area, and balconies of upper-level residential units have premier views of river activity.

专题研究之二 美国威斯康辛州的密尔沃基市

引言

密尔沃基市位于美国中西部的威斯康辛州，所处的地点和城市大小都和高明相似。Menomonee河在东边穿越了这座58万人口的城市，另一小河则在西边穿过。这个案例研究的焦点是靠近小河的一片区域：市政厅和其他民事机关所处的地段。

位置所在

市政厅位于一个三角形地带，在象征意义上和地理上都是市中心。三个显著的区域围拢着市政厅：东镇，西镇，和园东。

东镇是一个多样化的社区，土地多样化。在教堂广场和河道举行的各种活动，譬如公园中的爵士乐表演，吸引着市民慕名而来。整个社区由住宅区、商业和办公区组成。

西镇在市中心地区内集中了大规模零售店。街道旁的树木、花草、长凳、横幅和艺术增强美化了街道。

室外咖啡厅是这里的主要特色。高层住宅的阳台为欣赏河景提供了最

好的角度。作为休闲娱乐中心，这里有多功能影院、宾馆和餐馆。

自2002年一条高架公路被拆除后，园东片区发生了显著的改变。这里现在的标志是一个表演艺术的中心、溜冰场、酒吧、餐馆和一个新的多功能电影/休闲综合中心。餐馆和室外咖啡厅均沿河而建。在河的西侧，开发呈现居住、办公和零售相结合的土地利用方式.

设计

密尔沃基的市政厅是1895年由H.C.Koch公司设计。多年来，它都是作为这个城市最高的大厦。设计是依据荷兰和比利时的艺术协会大厦为基础。为了适合三角形的地块，市政厅的设计为楔子式。建筑的顶部是有着响钟和时钟的塔冠。

设计和材料的使用均认真地考虑到吸引访客和强调这个地点的重要象征性。市政厅前种植高度比较低的植物和各色的花卉。前庭是市政厅的重要组成部分，而周边的设计和使用均衬托到其重要性。附近的地段通常被用来作为写字楼和零售。

周围的土地利用方式

市政厅周边的土地利用方式是多元化的，但主要还是商业用途。有一些居住用地和文化设施用地。需要再次强调的一点是：市政厅位于市中心的节点位置，并且为周边地区提供了一个多用途动态背景。

经验教训

与高明地理位置的相似性，密尔沃基是一个有趣的案件。两个城市均位于一条主要水路和一条次要水路之间。以市政厅为城市的背景，其大楼和所在位置被用作城市行政中心的象征并与其它的区域连接起来。高明可以借鉴如何赋予区域标志性意义的方式来处理其市政中心。

An entertainment complex containing a multiplex cinema, restaurants and a hotel is also located here.

The Park East neighborhood has changed significantly since an elevated freeway was torn down in 2002. This neighborhood is now dominated by a Performing Arts Center, a skating rink, bars and restaurants and a new multiplex movie/entertainment complex. Restaurants and outdoor cafés flank the river. On the river's western edge development continues to provide a mixture of housing, offices, and retail.

Program

Milwaukee's City Hall was designed in 1895 by H. C. Koch and Company and for many years was noted as the tallest building in the city. The design of the building is based on guild halls in Holland and Belgium. City Hall is wedged shape to fit the triangular parcel. The bell and clock tower top the structure.

Design and materials are carefully thought out to attract visitors and to emphasize the symbolic importance of this site. The median in front of City Hall is planted with low plants and colorful flowers. A forecourt is the predominant element of City Hall and the surrounding uses emphasize its importance through both design and use. These parcels have been in-filled with office and retail.

Surrounding Land Use Patterns

The land use pattern surrounding the City Hall are diverse, but are primarily commercial uses. There are some residential as well as some cultural uses. Again, the site where City Hall is located is at the nexus of the downtown area and it is a backdrop for a dynamic integration of uses.

Lessons Learned

Milwaukee is an interesting case because of the physical similarities with Gaoming. Both are located between a major waterway and a secondary waterway. Milwaukee has used the city hall as a backdrop for the city. The building and its location is imbued with a civic symbolism that brings together the rest of the city. Gaoming can learn from the ways in which Milwaukee has imaged the area.

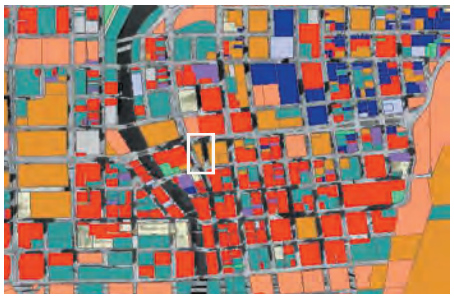


figure 12: Varied land use pattern
图 1 2 ： 多种土地利用形式

figure 13: Calatrava Museum of Modern Art
图 1 3 ： 卡拉特拉瓦所设计的现代艺术馆

figure 14: City Hall
图 1 4 ： 市政厅

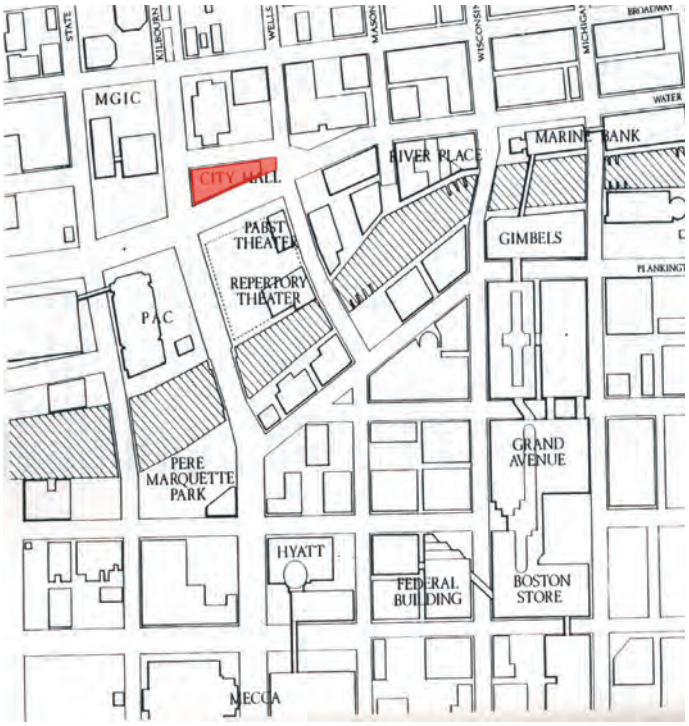


figure 15: Site plan
图 1 5 ： 区域图

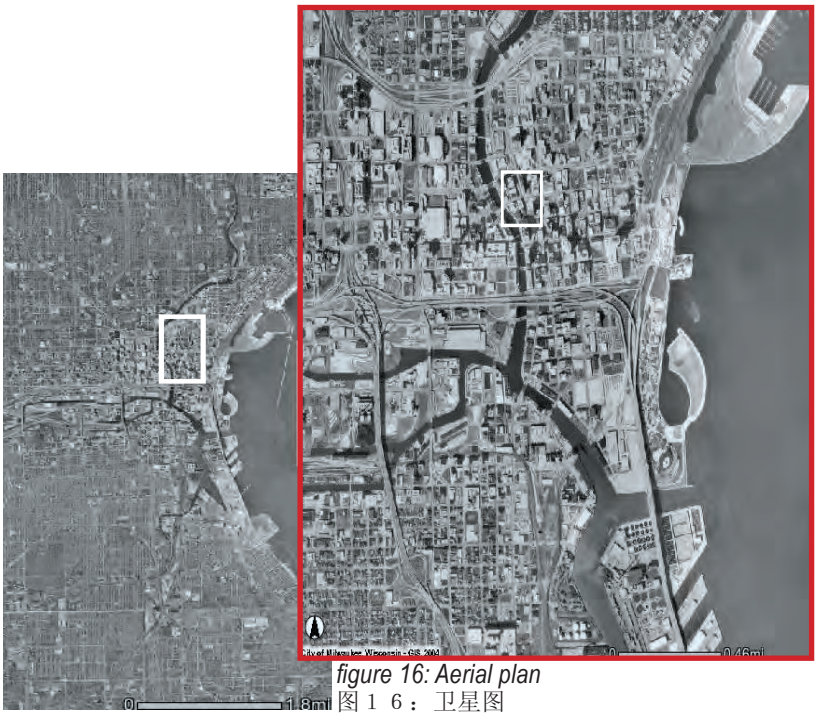


figure 16: Aerial plan
图 1 6 ： 卫星图

专题研究之三：
西班牙的毕尔巴鄂市

引言
毕尔巴鄂市是西班牙的海港和第六大城市。它位于在西班牙巴斯克地区的心脏地带并且集中了地区的大部分经济活动。城市的人口大约是35万，而大都市区的人口约为一百万。在15年以前，这个城市是一个在衰退的工业中心。但是通过建设新的具有美学特色的建筑，这个城市近来成为欧洲其它地区“文化游客”的旅游胜地。

位置所在
毕尔巴鄂市位于西班牙的沿海地带，Biscay海湾的内陆。 城市由毕尔巴鄂河一分为二。 河西的地区传统上是工业区,河东的地区是一个发展中的区域的以服务业为基础的中心。毕尔巴鄂的行政中心在离河250米的河东地区。在它的地理中心是Moyua广场，毗邻它的是市政厅。

毕尔巴鄂市的行政中心以传统的西班牙建筑学和材料为标志。这些与近代的建筑形成了鲜明的对比，近代建筑展现出完新的建筑风格和材料。对城市的经济和社会生计的更为重要的不是广场和周围的的行政大楼，而是近来周边地区的高速发展。它们当中最引人注目的是由盖里设计的古根海姆艺术馆，位于市政厅北大约250米的河边。

市政中心的功能
作为政府所在地和重要的旅游景点，毕尔巴鄂市的行政中心与地方艺术馆和传统建筑相结合，在西班牙其它新近发展的城市中是一个独特的地方。市政中心对大会、地方事件和活动等都具有相当的吸引力。

CASE STUDY THREE:
BILBAO, SPAIN

Introduction
Bilbao is Spain’s sixth largest city and seaport. It is located in the heart of the Basque region in Spain, and accounts for the majority of the region’s economic activity. The City’s population is approximately 350,000 and its metropolitan area is approximately one million. As recently as fifteen years ago, the city was a declining industrial center, but with the installation of new aesthetically distinct architecture, the city has recently become a tourist destination for “culture tourists” from the rest of Europe.

Location
The city of Bilbao is on the coast of Spain, inland of the gulf of Biscay. The city is bisected by the Bilbao River. The area to the west is traditionally the industrial sector, the area to the east of the river is a growing service based economy hub for the region. The civic center of Bilbao lies 250 meters from the Bilbao river on the eastern side of the city. At its geographic center is the plaza Moyua and adjacent city hall.

The Bilbao civic center is marked by traditional Spanish architecture and materials, which lie in stark contrast to the more recent developments which display a completely new architectural style and materiality. Of more importance to the economic and social livelihood of the city is not the plaza and surrounding administrative buildings, but rather the recent high profile developments surrounding it, most notably among them the flamboyant Bilbao Guggenheim Museum designed by Frank Gehry, located approximately 250 meters north of the city hall on the river.

Function of Civic Center
Combined with the local museums and traditional architecture, the Bilbao civic center is a unique place among other newer developed cities in Spain as a huge tourist attraction as well as a seat of government. The civic center is an attractive venue for conventions as well as local events and attractions.

Economic Background and Development Strategy:
Traditionally a small Mediterranean town of fishermen, the city experienced a booming in its port activity and heavy industrials manufacturing sectors in the 1950s and 1960s. Changing

figure 17: Bilbao tourist map 图 1 7 ：毕尔巴鄂市旅游图

figure 18: The new city development
图１８：新的城市发展

figure 19: The same brownfield after redevelopment
图１９：荒地被开发之后

figure 20: The old city
图２０：旧城区

market conditions in the 1970s instigated a severe decline in the city's industrial base and population over the next twenty years. Between 1975 and 1996, Bilbao lost almost half of its manufacturing jobs.

In 1985, the city undertook many regulatory and policy approaches for city revitalization in response to the economic crisis. By the beginning of the 1990s, Bilbao had created a plan to revitalize the city which described three approaches to urban regeneration: spatially, strategically, and by developing large urban projects.

The plan first spatially mapped out former industrial and brownfield sites that the city felt presented opportunities for new redevelopment. The first site they noted was an abandoned 35-hectare inner port where the Guggenheim Museum now lies. After choosing the site, the city created a strategy to define Bilbao's future.

The next phase of defining the city was done through large-scale investment in infrastructure and transportation projects. This included the metro designed by the famous British architect Norman Foster, completed in 1995. This was followed by port extensions and other large infrastructural developments including an airport terminal designed by Calatrava. These image improving developments made way for the development of the Guggenheim museum, the establishment of which established Bilbao, a recently industrial city, as one of Europe's new cultural capitals.

While the Guggenheim Museum cost 1.27 billion dollars (10.8 billion yuan), during the first year, government estimates showed that the museum was responsible for $210 million in increased economic activity in the region, of which $30 million was claimed by the government in taxes. The museum also adds value to the pre-existing museums and cultural sights in the civic center by creating further tourist and local draw to the area.

经济背景和发展战略:
历史上作为一个地中海的渔业小镇,毕尔巴鄂市在20世纪50到60年代经历了港口和重工业的兴旺发展。70年代市场条件的改变导致了城市的工业基础和人口在接下来的两个世纪里严重衰退。在1975年和1996年之间, 毕尔巴鄂几乎丢失了其制造业一半的工作。

1985年,城市采取了许多管理和政策的方法来推动城市复兴以应付经济危机。到90年代初,毕尔巴鄂推出了一个规划来复兴城市。这一规划描述了城市复兴的三种途径:空间复兴、战略复兴、和通过开发大型城市项目来复兴。

规划首先在空间上勾画出城市认为有新开发机会的前工业用地和废弃土地。他们所选的第一块用地是一个被摒弃的35公顷内港,也就是今天古根海姆艺术馆的所在地。在选择了这个地点以后,城市拟定了一个战略来为毕尔巴鄂的未来定位。

为城市定位的下一个阶段是对基础设施和交通项目进行大规模的投资。这包括在1995年完工的由著名英国的建筑师福斯特设计的地铁。这一工程之后是港口的扩展工程和其它一些大型基础设施项目,包括由卡拉特拉瓦所设计的航站楼。这些改善城市形象的工程促成了古根海姆艺术馆的建成。此艺术馆使得一个衰退的工业城市成为欧洲新的文化首都之一。

虽然古根海姆艺术馆耗资12.7亿美元(约合108亿人民元),在第一年,政府估计博物馆使得区域的经济活动增加了2.1亿美元,其中3000万美元为政府税收。因为吸引了更多的游客,古根海姆艺术馆也帮助增加了现有博物馆和文化景点的价值。

figure 21: Aerial of the city and river
图 2 1 : 毕尔巴鄂市和其河流鸟瞰

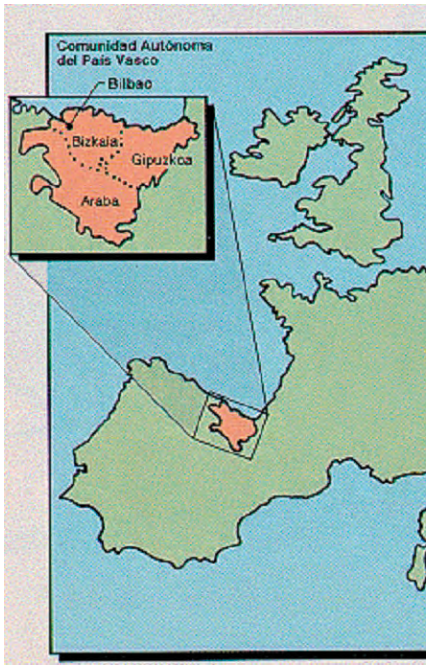


figure 22: Location of Bilbao in relation with Spain
图 2 2 : 毕尔巴鄂市在西班牙的位置图

CASE STUDY FOUR: SHATIN, HONG KONG, CHINA

Context

Sha Tin is one of the three new towns developed in 1973 in Hong Kong to alleviate pressure on housing in its urban areas. After about thirty years of development, Sha Tin's population reached 628,634 in 2001 within its jurisdiction of 69.2 square kilometers. Surrounded by steep mountain ranges more than 300 meters above the sea level on three sides, and with Tolo Harbor in the northeast, most of the development in Sha Tin is clustered and situated on narrow strips of flat land along the Shing Mun River. With a density of 9,082 people per square kilometer in 2001, Sha Tin is one of the most densely inhabited new towns in Hong Kong.

专题研究之四：中国香港的沙田

背景

沙田是香港在1973年为了减轻城区住房压力而开发的三个新城之一。经过大约三十年的发展以后，在其69.2平方公里行政范围内，沙田的人口在2001年达到了628,634。三面由海拔300米以上的陡峭的山脉环绕，东北是吐露海湾，沙田绝大多数的开发都集聚在沿城门河一带狭长的平地。人口密度在2001年是9,082人每平方公里，为香港居住密度最高的新城之一。

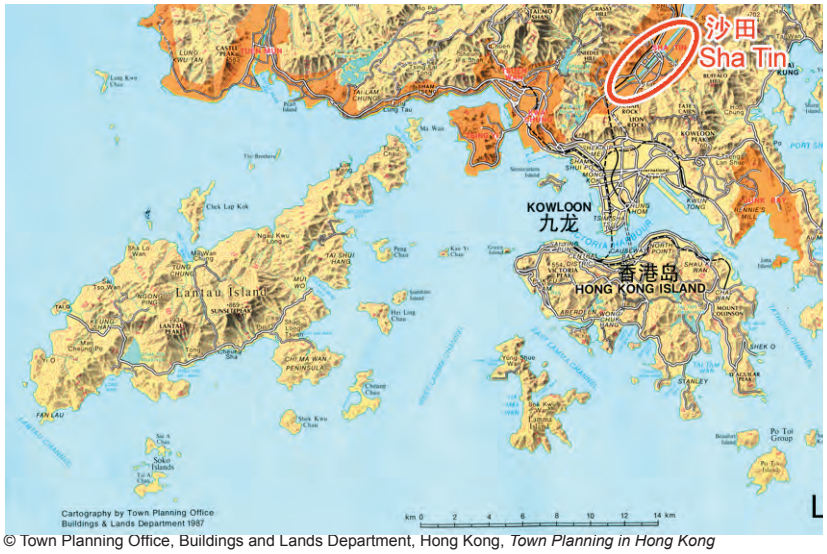


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figure 23: Sha Tin is one of the new town systems developed by the Hong Kong government in 1970s.

图23：沙田是香港政府自70年代以来所兴建的一系列新城中的一个。

Programs and Events

The vibrant life at the urban core of the town is attributed to its design features as well as to the events happening there. The Town Centre is composed of a various functions of facilities, including civic/cultural, commercial flagship, entertainment, as well as residential clusters. These various structures and programs offer abundant opportunities for different events to serve different constituents throughout the year.

Civic and cultural buildings are one of the major components for the identity of the Town Centre. Looking upward from the Shing Mun River bank, the cardinal orange color of Sha Tin Town Hall dominates the heart of the Town Centre. With more than 1,500 seats, it is the central facility for performing arts in the Sha Tin area and eastern New Territories. Situated on the same elevated limestone plaza is the Sha Tin Central Library, which is similar to the Town Hall, with its modernist style and color scheme. These two modern cultural institutions form the core civic functions of the Town Centre. The Town Centre Plaza is one of the most popular leisure places for local residents as it is surrounded by cultural, commercial, as well as government offices and housing. As the Sha Tin government registrar office is also located on the plaza, the staircase leading from the scenic Sha Tin Park to the plaza is a frequent spot for shooting wedding pictures after the registration ceremony. The convergence of public and private activities in the Town Centre Plaza and the cultural and civic structures truly bring vibrant civic life to Sha Tin.

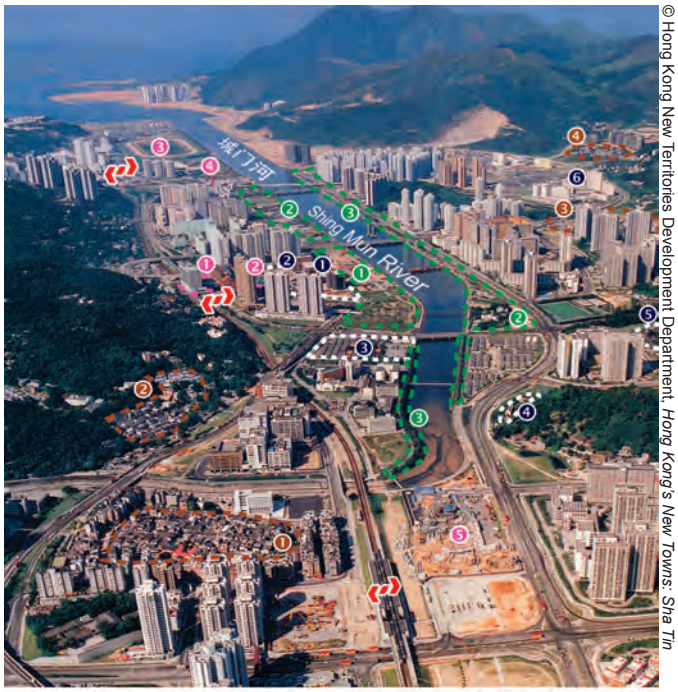
Several government buildings, including administrative and court functions, are scattered around these two cultural anchors. In order to reinforce the civic center as a cultural hub, several cultural institutions at the peripheral of the Town Centre are also incorporated. Hong Kong Heritage Museum opened its doors in 2000. The five-storey design is largely inspired by traditional Chinese court-yard architecture, with a terra cotta color scheme similar to the Town Hall and Central Library within a walking distance. On the other bank of the Shing Mun River are two indigenous cultural structures that have witnessed the rapid changes of the area in the past thirty years. Across the foot bridge over the Shing Mun River is Che Kung Temple in memory of the legendary patriot Che Kung, whom was regarded by the locals as the area's guardian. Within walking distance to the east is Tsang Tai Uk, the biggest and most well-preserved

figure 24: Sha Tin was a place with farms and scattered villages before 1970s. Shing Mun River had serious water quality and sediment problems.

图24： 七十年代前的沙田主要是农田和零星散布的村庄。城门河有严重的水质和沉积物问题。

figure 25: (next page) Key establishments in Sha Tin civic center area

图25:(下页)沙田市政中心主要建筑物



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Sha Tin 沙田 (1987)

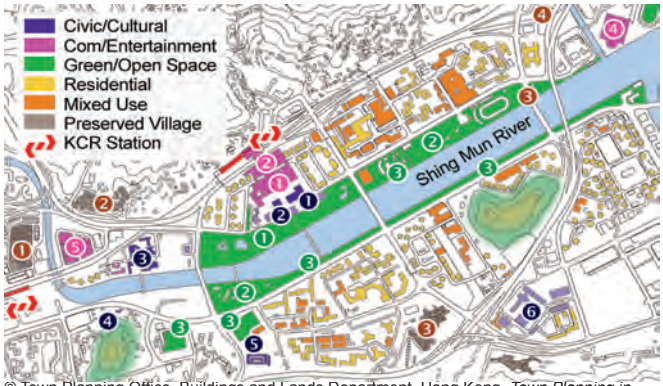
Civic/Cultural Facility 公共/文化设施
❶ Sha Tin Town Hall 沙田大会堂
❷ Sha Tin Central Library 沙田中央图书馆
❸ Hong Kong Heritage Museum 香港文化博物馆
❹ Che Kung Temple 车公庙
❺ Tsang Tai Uk 曾大屋
❻ Prince of Wales Hospital 威尔斯亲王医院

Green and open space 绿色和开放空间
❶ Sha Tin Park 沙田公园
❷ Community Park 社区公园
❸ Riverfront Green Belt 河岸绿带

Commercial / Entertainment 商业/娱乐
❶ New Town Plaza 新城市广场
❷ Snoopy's World 史诺比开心世界
❸ Race Course 赛马场
❹ Jubilee Sports Centre 银禧体育中心
❺ Seasonal Playground 季节性游乐场

Preserved Villages 受保护村庄
❶ Tai Wai 大围
❷ Tung Lo Wan 铜锣湾
❸ Sha Tin Wai 沙田围
❹ Siu Lek Yuen 小沥源

KCR Stations 九广铁路车站



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活动

充满生气市政中心归功于它的设计特点和在那里所举办的活动。市中心的组成包括具有各种功能的设施，如市政/文化、商业旗舰、娱乐和住宅区。 这些多元的设施一年四季都为不同社群的活动提供了活动场所和机会。

市政和文化建筑是构成市政中心定位的重要组成部分。从城门河岸向上看，市政厅的橙色是镇中心核心地带的主题色调。这个拥有超过1500座位的中心是沙田和东部新区表演艺术的中心设施。沙田中心图书馆也位于的广场，有着和市政厅相似的现代派的式样和色彩设计。这两个现代文化机构形成了镇中心的核心市政功能。由于四周是文化、商业和政府机构，市中心广场是当地居民最常来的休闲场所之一。由于沙田政府的登记处也在广场旁，从风景秀丽的沙田公园到广场的台阶上常常会有刚刚进行了婚姻注册仪式的伴侣在照相。在周边的文化和市政建筑的衬托下，公共活动和私人活动在市中心广场融会在一起，给沙田带来了充满活力的民众生活。

几个政府大楼，包括行政和法院功能，散布在这两个文化中心周围。为了加强市中心作为一个文化核心的功能，几个文化设施也分布在市中心的边缘。2000年香港文化博物馆正式开放。五层楼的设计在很大程度上是吸收到中国传统庭院建筑的启发，陶红色的色调与位于步行距离内的市政厅和中央图书馆的色彩很相似。在城门河的对岸是两个原有的文化设施，它们见证了这一地区在过去30年的快速变迁。跨过城门河上的步行桥便来到纪念传说中的车公庙，供奉着当地的守护神。向东步行几分钟是曾大屋，是香港最大、保存最好的客家围屋建筑。这个历史性的灰色砖建筑一百五

walled Hakka dwelling complex in Hong Kong. The original gray-brick structure with five courtyards around the central ancestral hall has been continuously inhabited for more than 150 years. Although it has become a cultural icon for visitors, Tsang Tai Uk is still occupied as a housing complex with very few alterations to its original Hakka vernacular architecture. The animated civic life in the Town Centre is thus sustained by a mixture of both modern and traditional cultural activities as well as government functions.

The green and open space system centered around the Town Centre further highlights its importance in the civic life of the residents of Sha Tin. The eight-hectare Sha Tin Park provides numerous options for different users, such as Tai Chi practicers, bird-watching enthusiasts, children and toddlers at the playground, or simply couples taking a morning walk or evening jog. Linking the Sha Tin Park and the two other regional parks in the area is an extensive network bike paths and trails, totaling 50 kilometers. These bike paths and trails radiate out from the Town Centre, penetrating through regional parks, crossing over the River, touching community open spaces, and reaching up to the hills. The green strips along the banks of Shing Mun River offer shades from the tropical sunshine for chatters, pedestrians, joggers, as well as cyclists.

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figure 26: Some of the major cultural institutions and events in Sha Tin civic center fulfilling different people's interests, this page, from top to bottom: Sha Tin Town Hall and public library; Che Kung Temple; annual dragon boat race on Shing Mun River. Next page, from top to bottom: Hong Kong Heritage Museum; Tsang Tai Uk; Chinese garden in Sha Tin Park; and Snoopy's World (figure 27)

图26： 沙田市政中心的数个主要文化单位满足不同人群的兴趣，本页，由上自下：沙田大会堂和公共图书馆；车公庙；每年一度在城门河上的龙舟比赛。下页，又上至下：香港文化博物馆；曾大屋；沙田公园中的中式花园；史诺比开心世界。

在高明规划

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十年以来一直有人居住。五个庭院将祖宗祠堂环绕在中央。虽然已经成为了旅游景点，但曾大屋现今仍然是一个住宅群落，并且在原有的建筑上改动极小。沙田市中心生气蓬勃的民众生活由现代、传统的文化活动和政府功能共同组成。

集中在市中心的绿色开放空间系统进一步突出它在沙田居民生活中的重要性。八公顷的沙田公园为不同的使用者提供了多种选择，　譬如太极练习者、弄鸟人、操场上的小孩或仅仅是清晨或傍晚散步的夫妇。连接沙田公园和这一地域的两个其它地方公园的是一个由自行车道和步行道构成的延伸网络，总计50公里。这些自行车道和步行道从市中心放射性向外展开，穿越地方公园，　横跨河流，连接社区露天场所，直到进入山中。沿城门河岸的绿化带为闲聊、晨运、慢跑和骑自行车的人在热带阳光中提供了庇荫的场所。

CASE STUDY FIVE:
PROVIDENCE, RHODE ISLAND, USA

Introduction

Providence the capital of Rhode Island, is located in the New England region with a history dating back to 1636. It is situated at the head of Narragansett Bay, the second largest estuary on the East Coast. Despite its small size of 18 square miles, its density in 2000 (9,401 persons/mile^2) is three times as dense as major metropolises like Atlanta (3,161 persons/mile^2). After suffering from cycles of economic recessions, its median household income soared to $42,090 in 1999, higher than most cities with a comparable size. Many of the recent growth have been attributed to the city's successful revitalization in its civic center.

专题研究之五：
美国罗德岛州的普罗维顿斯

引言

罗德岛州的首都普罗维顿斯位于新英格兰地区，其历史可追述到1636年。它位于Narragansett海湾的顶端，是东海岸的第二大出海口。尽管它的面积只有18平方英里，它2000年的人口密度(9,401人每平方英里)是象亚特兰大（3,161人每平方英里）这样大都市的三倍。在度过了经济衰退的周期以后，它的家庭收入中位数在1999年猛涨到42,090美元，比大多数同等规模的

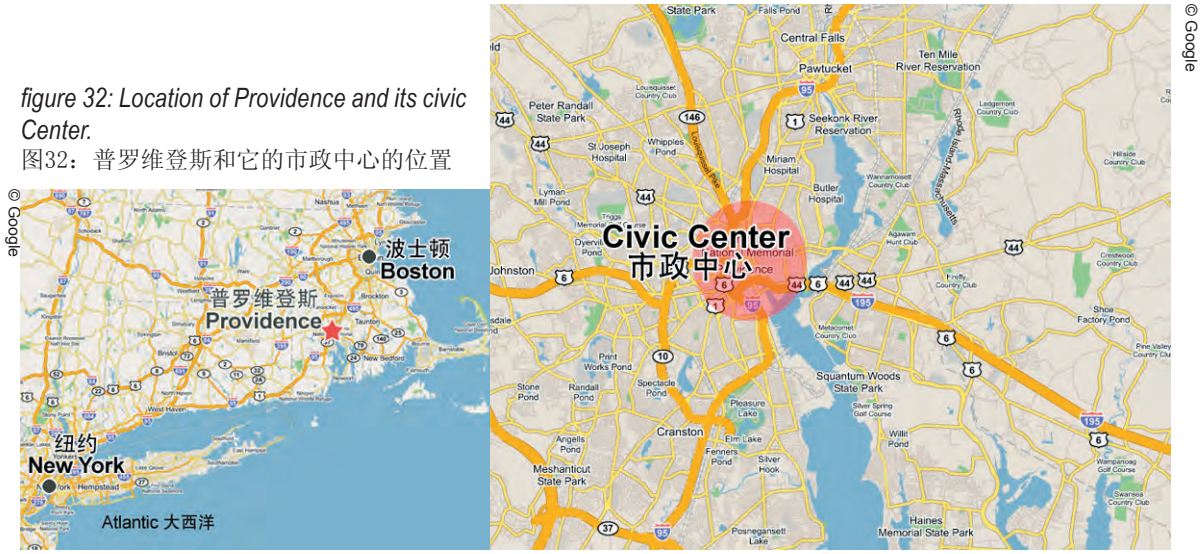

figure 32: Location of Providence and its civic Center.
图32：普罗维登斯和它的市政中心的位置

在高明规划

As the backbone of the civic center, the Providence River has been largely ignored in the past. Office buildings were built on top of the river, while a huge portion of it was covered up by surface parking lots as well as bridges. After a continuous effort to revitalize since the 1970s through several plans, one of the major milestones in the Renaissance effort is its exceptional task of relocating the human-made confluence of the Woonasquatucket and Moshassuck Rivers, including uncovering two-thirds of a mile of the rivers. The relocation of the Providence River helped the locals to rediscover the civic center's history as well its potential for the future. The relocation is only the stimulant for a sequence of major redevelopment projects that jointly contributed to the Renaissance era of Providence:

- Developed miles of promenade linking newly built and existing small parks and plazas;
- Constructed twelve new bridges, restoring historical pedestrian links among historical College Hill, downtown historical districts, and Capital Center;
- Relocated rail tracks with new below-grade alignments;
- Established a new train station in the civic center above the underground track alignments;
- Relocated the World War I monument from a problematic and isolated traffic roundabout to the newly created Memorial Park by the waterfront;
- Created a new WaterPlace Park as a central node along the riverfront, surrounded by local restaurants, amphitheatre, fountains, boat landing and multiple pedestrian connections (a total of 11 acres of new open space consisting of rivers, riverwalk and parks);

城市都高。许多最近的发展都归功于城市对中心区的成功改造。

作为城市的骨架，普罗维顿斯河在过去基本上被忽略了。办公楼修建在了河上，河面相当大的一部分被它的表面停车场和桥梁所掩盖。70年代以来，几个规划项目不断地为这个城市的复兴而努力。其中一个改建努力里程碑是对人造的Woonasquatucket河和Moshassuck河的汇流处进行改道，这包括重新开挖2/3英里的河段。普罗维顿斯河的改道使得当地能够重新发现市政中心的历史河未来的发展潜力。河流的人工改道是激发了此后一系列大型项目，普罗维顿斯进入到了重建时代。

- 开发了数英里的步行道连接新建的和原有的小公园和广场；
- 修建了十二座新桥梁，在具有历史意义的学院山、市中心历史保护区和州议会中心之间恢复历史上就有的连接步行径；
- 将铁路轨道迁到地下；
- 在市政中心的地下轨道上新建了一个火车站；
- 将一战纪念塔从一个有问题的孤立交通环岛迁到了沿河新建的纪念公园；
- 新建了一个滨江公园以作为沿河地带的中央节点，四周围绕

© B. Evans

figure 34: The identity of Providence's civic center is given by both physical redevelopment and series of cultural events.

图34：环境的再发展和一系列的文化活动给与了普罗维登斯市政中心新的特征

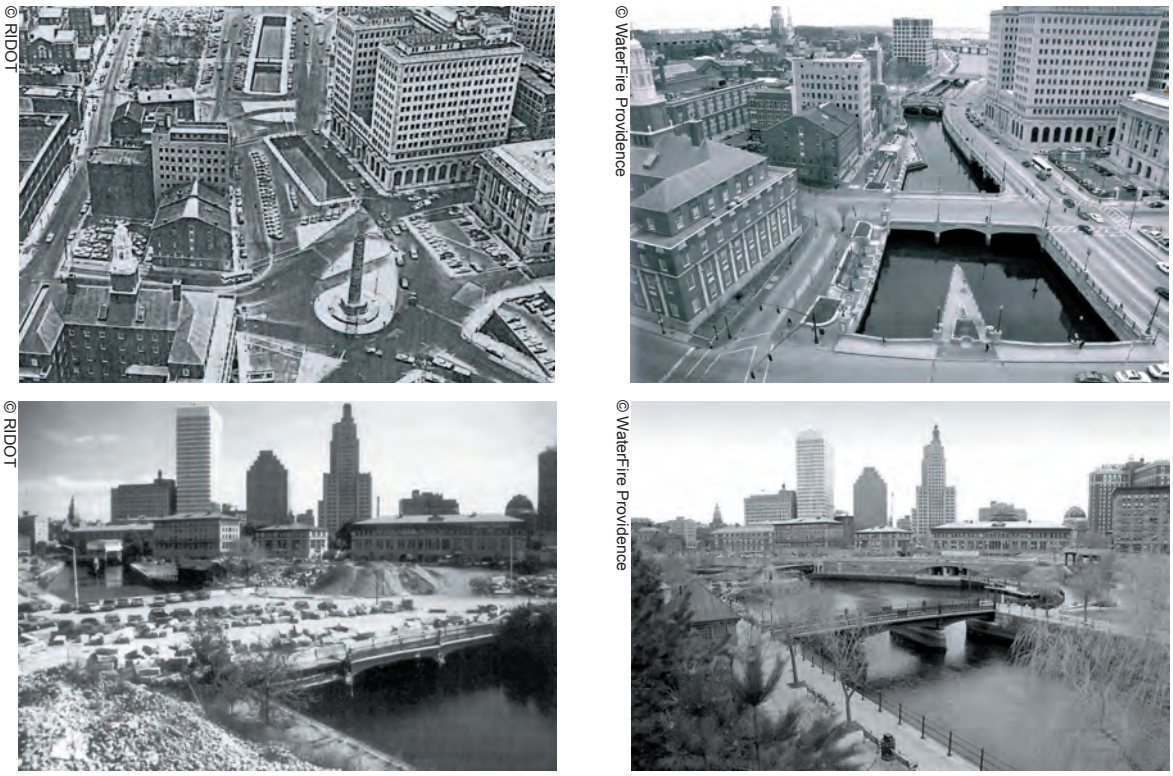

figure 35: (Top pair) The WWI Memorial Monument was located at an isolated traffice circle (left, early 1990s). It was relocated later along the riverfront two blocks down, and Providence River was uncovered (right). (Bottom pair) Waterplace Park and the riverwalks were built from the rubble of the past.

图35：（上面一对图片）一战纪念碑在90年代之前是坐落于一个隔离的交通圈上。此纪念碑后来被从新安置在江边，而被覆盖的普罗维登斯河也得以从见天日。

（下面一对图片）Waterplace河滨公园和江边散步径在旧日的废墟中被重建

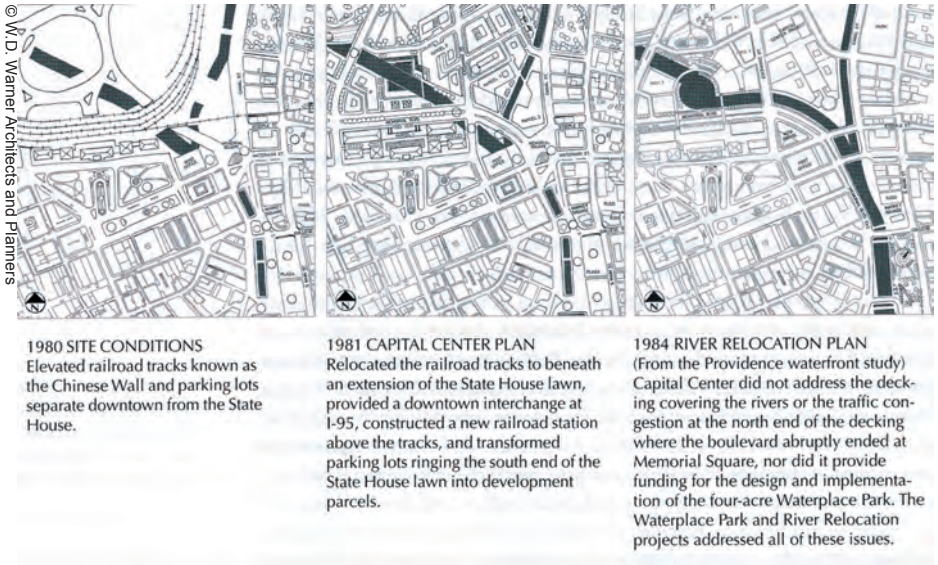

figure 36: Various plans for revitalizing Providence's civic center.

图36：普罗维登斯市政中心不同的再发展计划

- Constructed three docking sites for boat traffic;
- Realigned downtown arterials connecting to the new Memorial Boulevard, and connected local roads that serve the Capital Center district;
- Added an interstate highway interchange between a previously dead-ended belt highway in civic center and Memorial Boulevard.

After ten years since the inception of the relocation of Providence River, the current day civic center is a vibrant community focal point with mixed uses, including residential, office, commercial, educational, civic, as well transportation hub. In addition, there are two design issues that deserve further discussion:

Small and diverse urban cultural spaces

Learning from the devastated past of extinguishing the civic center's attractiveness by putting huge lifeless parking lots there, Providence specifically wanted small and diverse urban cultural spaces in the redeveloped area. These small urban spaces were also deliberately designed to subtly theme the local aspects of its railroad and waterfront history. Light poles, stone railing carvings, landscaping, street furniture, tree gates, signage and historical interpretation panels offer variety of ways for people to learn about the place and rediscover its identity. Newly constructed bridges were designed and detailed with ceramic titles depicting historical maps, photos, and exhibits of a theme consistent with historical location and importance.

餐馆、剧院、喷泉、码头和多种步行径（共计11英亩的开放空间由河流、河边小道和公园组成）；

- 修建了三个码头供游船停靠；
- 重新规划了市中心的主干道连接新的纪念大道，以及通向议会中心区的道路；
- 在原先的终止于市政中心的高速公路和纪念大道之间增加了州际高速公路的入口；

在开始普罗维顿斯河改道工程十年以后，今天的市政中心是一个充满活力的综合性社区，成为住宅、办公、商务、教育、行政和运输枢纽。此外，两个设计问题值得进一步讨论：

小型多元化都市文化空间

以往普罗维顿斯将大型死寂的停车场安置在市中心，握杀了它吸引力。在吸取这个悲惨教训后，普罗维顿斯特别着重要在市政中心再发展地区创造小型多元化的都市文化空间。这些小的空间都刻意巧妙而低调地突出当地的铁路和水滨历史。街灯、石栏杆雕刻、植被、街

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figure 37: Time lapse 图37：岁月迁移

figure 38: Satellite images of the civic center area in 1952, 1982 (facing page) and 2002. Notice the relocations of rail tracks and the river, the addition of the freeway, and the changes of buildings in the area.
图38：1952，1982（对页）和2002 年市政中心的卫星照。留意铁轨和江河道的搬迁，新加建的高速公路，以及由此引起的周边的变化。

figure 39: Bird's-eye-view of the civic center (2002) after major redevelopment efforts.
图39：经过主要再发展工程后市政中心的鸟瞰图

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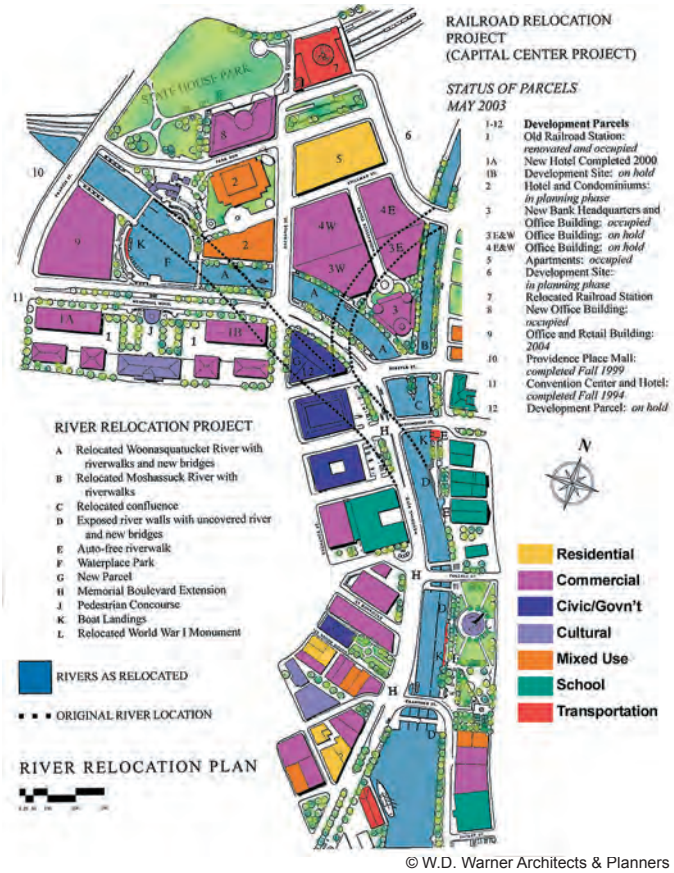


figure 40: General land uses in the Capital District after the completion of the railroad and river relocation projects, 2003.
图40：在铁轨和河道迁移工程后州府区的土地使用概况

Design culture and preservation ethic

The designs of various cultural elements in the civic center are intended to faithfully reflect its proud history of a port town and a rail road hub rather than replicating extravagant structures that were not genuine to the local culture or history. Historical themes are part of the details along the riverwalk, suggesting the eras of the railroad and steamboat. The cultural history of Providence is carefully told and illustrated mostly through preservation and newly created subtle cultural spaces, but never conveying a sense of artificiality to create a false memory of the place's past.

A diverse water culture as a new identity

The identity of Providence is not only created by its physical environment, but also a collective culture that people cherish, build, and improve together. For instance, the WaterFire, a one-time art installation by Barnaby Evans that turned into a regular festival ritual, has become one of the hallmark cultural identities of Providence. The event has evolved to now become a haunting blend of eclectic and powerful music, bonfires along the waterfront, water and its fronts, street theaters, and hundreds of intrigued participants. The sparkling bonfires, the fragrant scent of aromatic wood smoke, the flickering firelight on the arched bridge, the silhouettes of the fire-tenders passing by the flame, the torch-lit vessels traveling down the river, and other factors help reconnect Providence's citizen to rebuild its cultural connection with the River. Other art and cultural happenings scattered along the river further add diverse dimensions to the recreation of its local culture along the riverfront.

The annual Convergence Art Festival acquires and places local art work through out the civic center area for public display. These art pieces are returned to the artists after a year on loan, and the event organizer searches for another around of art pieces. Free summer concerts are also organized to celebrate the conclusion of the old display cycle and to introduce the new ones. The importance of such ceremony has become more and more prominent as it continues to attract a culturally and ethically diverse group of participants with sundry art tastes. In addition, Shakespeare in the Park is another popular event that provides free Shakespeare plays at the WaterPlace amphitheater.

道椅凳、树围栏、街标和历史解说牌都帮助人们从不同角度去认识它的过去和从新发掘它的未来形象。新建的桥梁特别设计和融合了带有历史地图细节和图片的瓦片，展示了跟当地历史性和重要性相吻合的主题。

设计文化和历史保护伦理

市政中心设计中的不同文化元素均致力于忠诚反映本地港口和铁路中心的光辉过去，而并非尝试刻意带入不忠于本地文化历史的大型豪华设计。历史主题贯穿江边行人径的设计细节，提醒人们过于了的铁路和蒸汽船时代。普罗维顿斯的文化历史都是通过古建保护和新的小型文化空间谨慎地真实反映其历史过去。它的设计并没有通过刻意做作来制造这个地方的虚假过去。

多元水文化作为新的城市形象

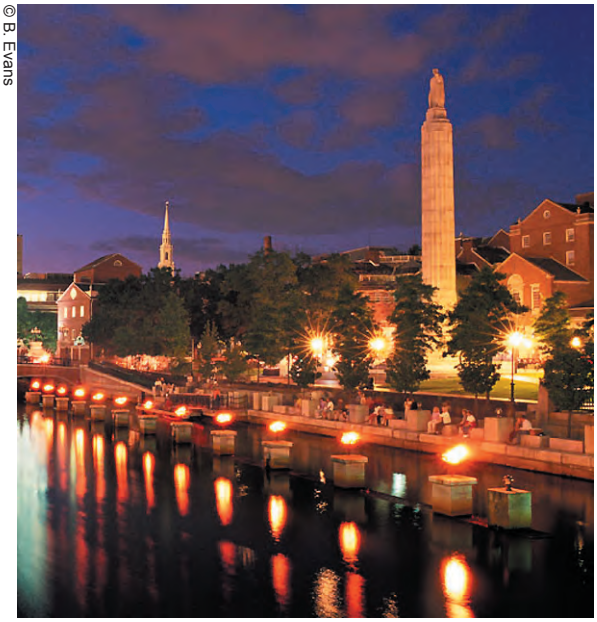
普罗维顿斯的形象塑造不单单是通过环境的改造来达到，而是通过一种人们共同珍惜、建立和提高的集体文化所缔造。例如“水火”，一个由艺术家Barnaby Evans所开始的单次艺术活动渐渐演变成常规的节日庆典，最终成为普罗维顿斯的一个重要文化活动。“水火”现在已经发展成为一个包括多种音乐会、水滨营火、街道戏院和有数千人参加的活动。烈焰的营火、芬香的焰烟、拱桥上的投影、透过火焰隐约见到的人群背影、河上带有火炬的船只等把普罗维顿斯的市民重新带回到了来河边。其他在河岸不同地方举行的文化活动也为当地的河滨文化提供了多个侧面。

年度艺术集会将当地艺术家的作品放置在市政中心不同的地方展览。艺术作品将在一年后交还给艺术家们，然后艺术集会将再搜寻其他作品。免费音乐会也将在新旧作品交接的时候举行，以示庆祝。这样的庆祝活动因为吸引着越来越多不同

figure 44: The Renaissance of the civic center is not just about the redevelopment of the physical environment, but it is also about the (re-)inventions of a wide range of cultural activities. Prometheia in the civic center area.
图44：市政中心的复兴不单单依靠环境的再造，也依赖一系列广泛的文化活动的再生。图为在市政中心举行的Prometheia活动。

figure45: Ballroom Dance at the Sovereign Plaza.
图45：在独立广场进行的交谊舞交流

figure 46: The success of WaterFire requires the public's engagement. Volunteers lighting up the bonfire (below). New WWI Memorial Park by the water during WaterFire. (Right)
图46：″水火″(WaterFire)文化活动的成功需要大众的参与。义工点燃“水火”活动的篝火（下图）。在江边从新建造的一战纪念公园（右图）



The physical environment of the civic center only creates half of the collective memory of the place, and the other half relies on these cultural events, whether historical or modern, bringing together people to create a shared experience resonating within each and every soul of the place. It is only then that the identity of the diverse water culture of a place emerges.

族裔和艺术品位的人来参加而变得更为重要。此外，在莎士比亚园活动期间，不同的莎士比亚剧目也会在水滨扇形剧场免费公演。

市政中心的环境仅仅创造了一个地方的集体记忆的一部分，而记忆的其他部分是由这些历史和现代的文化活动所共同组成。这些活动把这个地方的人们带到了一起，制造了在他们每一个人的脑海中都可以产生共鸣的共同经验。只有这样，一个崭新的多元水文化才会在这个地方出现。

http://www.andrew.cmu.edu/user/jsavitt/rhodeisland.html

figure 47: The Renaissance at Providence's civic center is created by both physical redevelopment and a diverse cultural events that colletive remade the shared memory and history of this place and its people.
图47：普罗维顿斯市政中心的复兴归功于环境的再发展和一系列不同的文化活动。新的环境和文化活动一齐再造了这个地方和人民的共同记忆和历史。

EXPLORING CULTURAL GEOMETRIES
探索文化几何

Gaoming is popularly known as the “Pearl of West River” because of its natural environment and the scenic beauties. The city’s cultural pattern has evolved from this environments, as well as from an active public participation.

These existing cultural events and rituals can provide clues to planning and urban design solutions. By incorporating cultural elements in the development process, the planners can actively build opportunities for active urban spaces. Cultural, artistic, and hertiage districts can enhance the urban experience by creating civic destinations. These areas build community identities, as well as economic growth.

因为它的自然环境和如画的美丽风景，高明也被称为“西江明珠”。这个城市的文化格调源自于它的环境和积极活跃的公众参与。

这些现有的文化状况和习惯能为规划和城市设计方案提供线索。通过在发展过程中合并文化元素，规划师可以积极地为城市空间制造机会。文化的、艺术的和传统的区域可以通过创造文化基地来丰富城市体验。这些地区创造了社会的特性和经济增长。

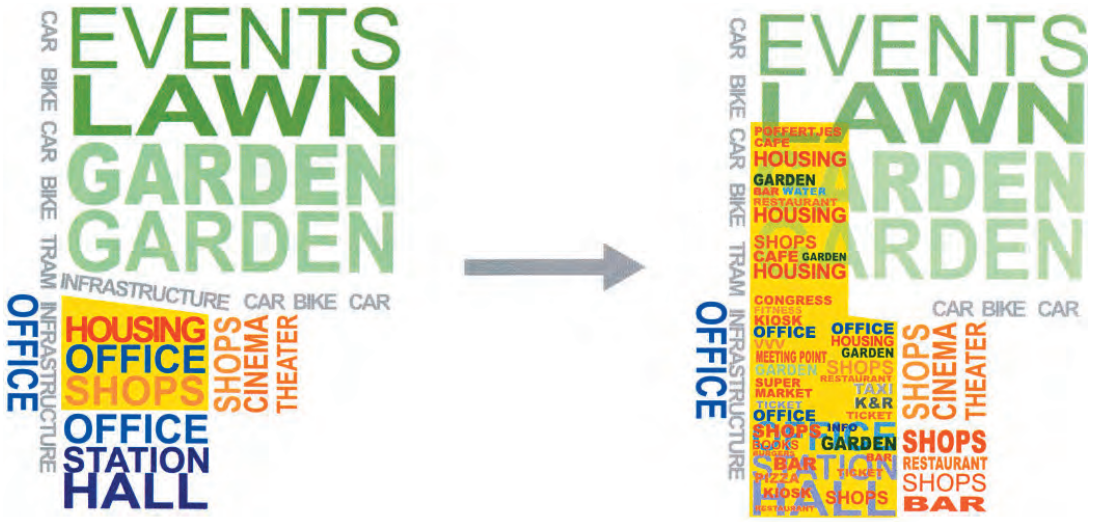


figure 1: City Infastructure and Facilities 图 1 ：城市基础设施

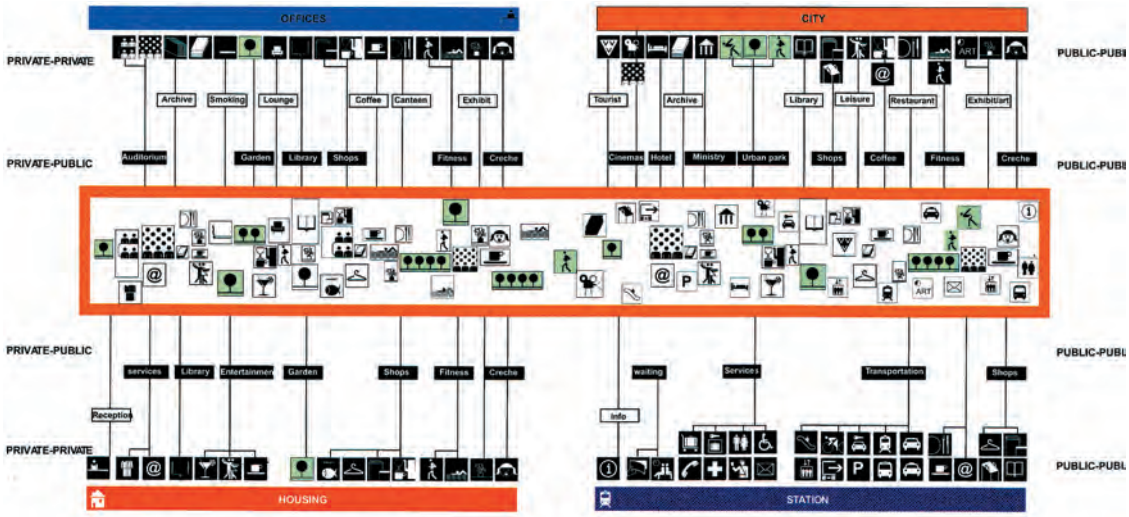


figure 2: Public Amenities and Recreational Attributes 图 2 ：公共娱乐和其他因素

Developing Cultural tourism for the city Gaoming

The focus on cultural tourism can bring together many different professional disciplines. Urban planners, preservationists, tourism managers, as well as municipal authorities need to coinate and work together to build a culturally sensitive city.

- Stimulate partnerships for an effective source of mobilization and investment at an national and local level;
- Enlist the participation of many community organizations;
- Focus upon capacity development and strengthen local institutions.

为高明发展文化旅游

着重文化旅游可以汇聚很多不同种类的专业学科。城市规划师、古建保护人士、观光事业经理人和地区权威人士需要调整并且共同合作来建立一个有文化气息的城市。

-为了更有效地获得投资资源，鼓励在国家和地区范围上的合作伙伴关系
-鼓励不同社会组织的共同参与
-着重于能力发展和加强地区制度

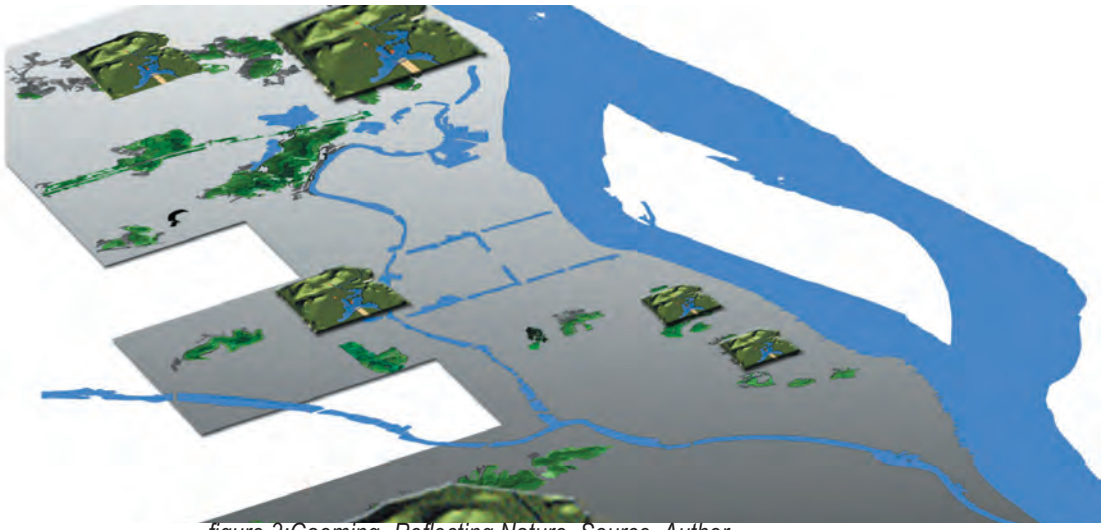


figure 3:Gaoming- Reflecting Nature, Source- Author

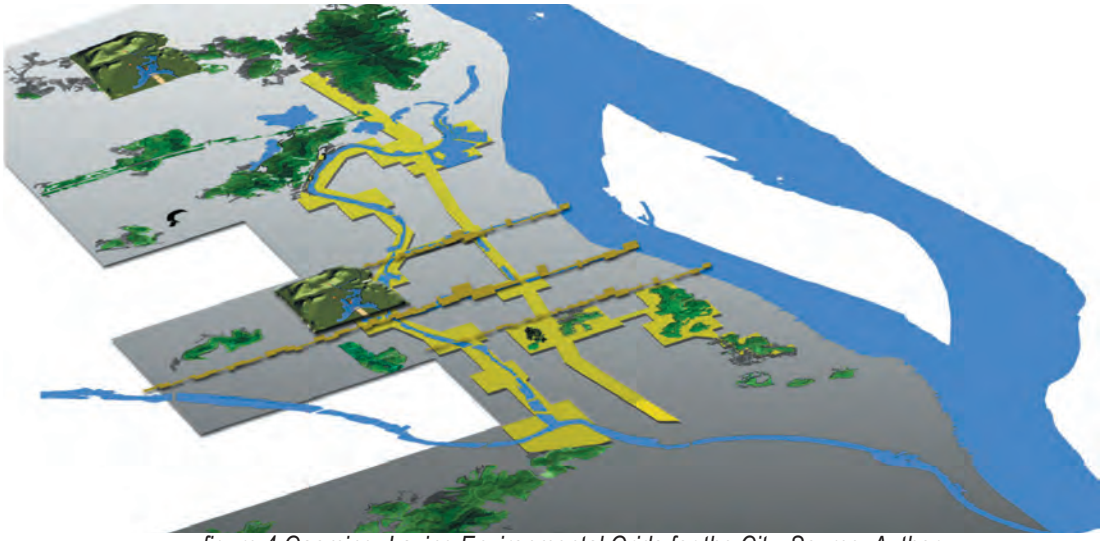


figure 4:Gaoming- Laying Environmental Grids for the City, Source- Author

figure 5:Gaoming-Mapping Culture nodes of the City, Source- Author

figure 6:Greening Gaoming- Exploring Ecological zones, Source- Author

figure 7: Gaoming- Design and Water Culture

The following projects utilize maximum “green” surface areas with terraces or hard landscapes. The incorporation of ecological characteristic are prevailent throughout design. These projects were developed as part of the “Planning Frameworks” section of the studio.

后面的项目利用最大程度的“绿色”表面区域、阶梯式或者硬环境。生态特征的结合普遍地贯穿设计。这些项目发展成为工作组的“规划框架”的一部分。

figure 8: Gaoming- Reflecting River Front- Green Strategies for Eco-Polis Costruction

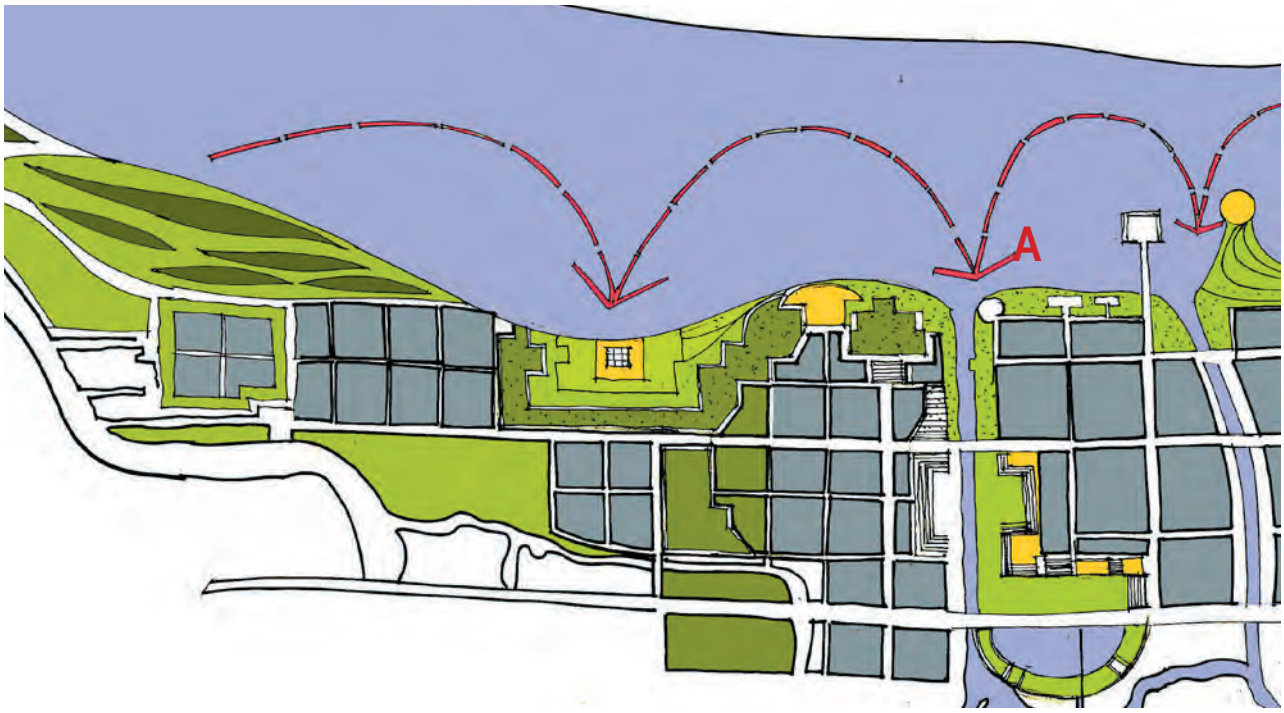


figure 9: Culture Corridor Reflecting River Front, Inland Waterways, Source- Network City

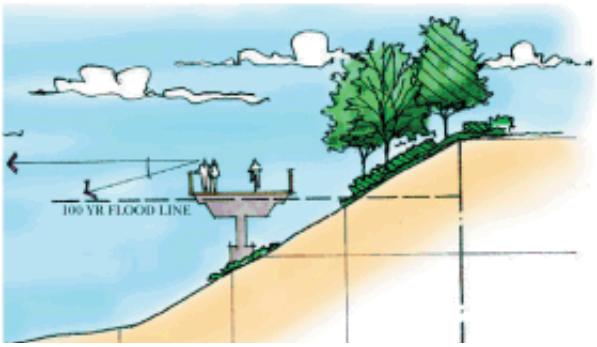


figure 10: Section at A

River Edge Development
Due to the large range of river water levels, the sectionally-driven design strategy allows for an efficicent interaction bettween water edge and the built form.

河沿岸发展
由于河水的潮退大，注重截面关系的设计战略可以营造建筑与水边更加有效的互动

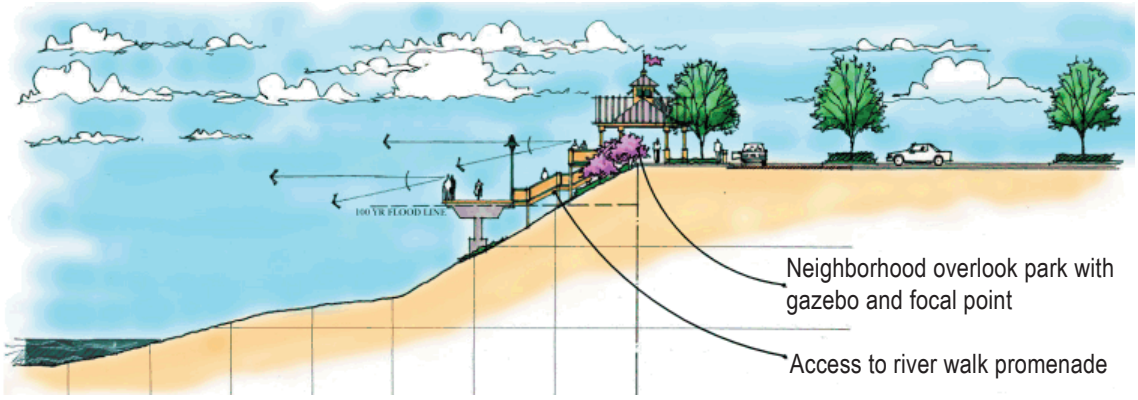


figure 11: Section at B

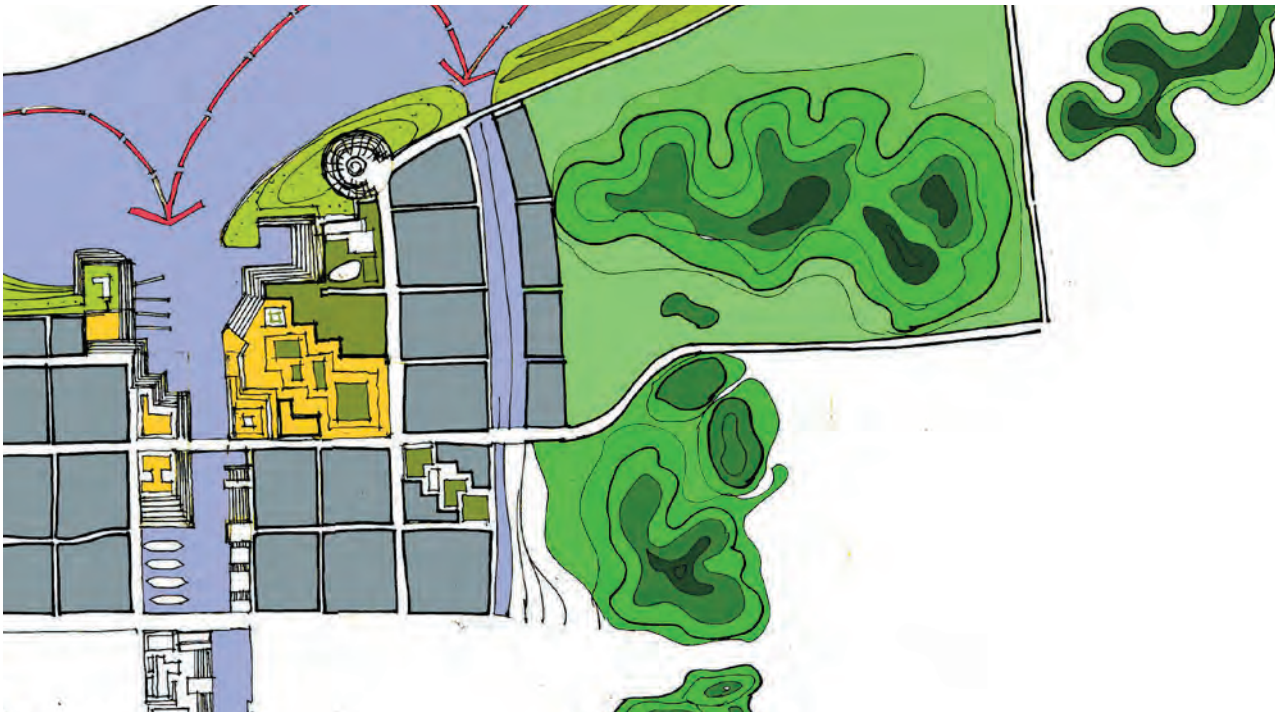


figure 12: Culture Corridor Reflecting River Front, Source- Authors

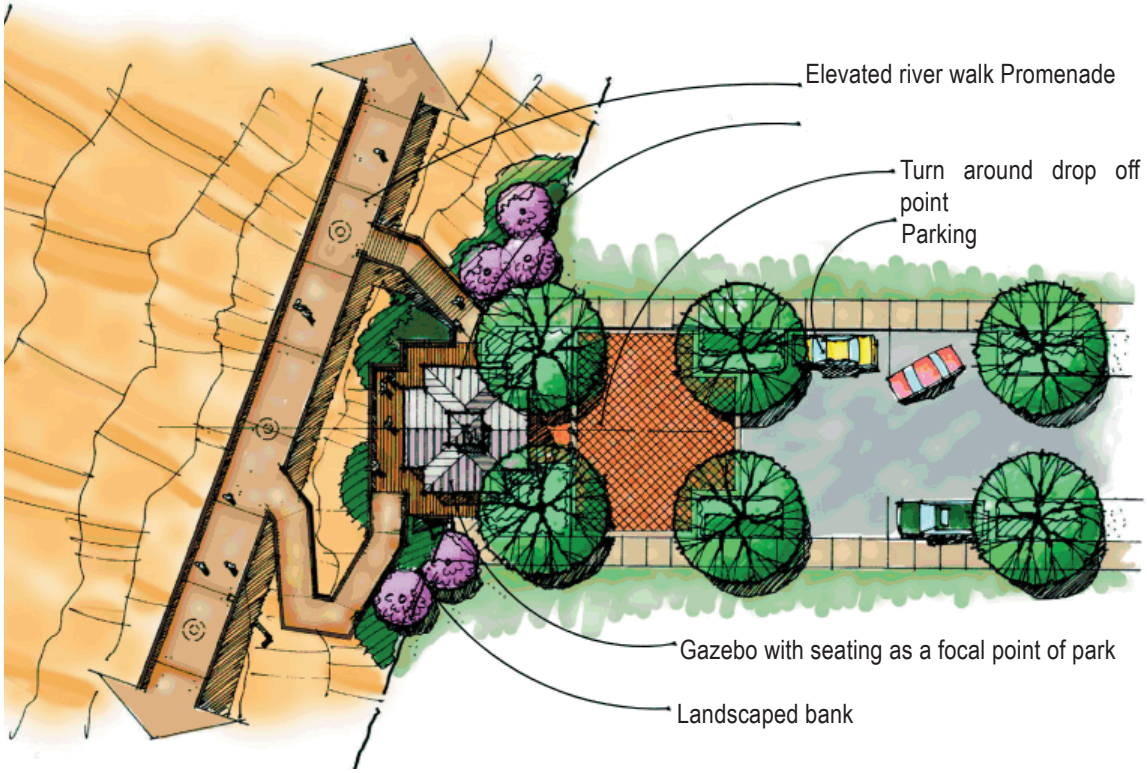


figure 13: Detail Plan at B

在高明规划

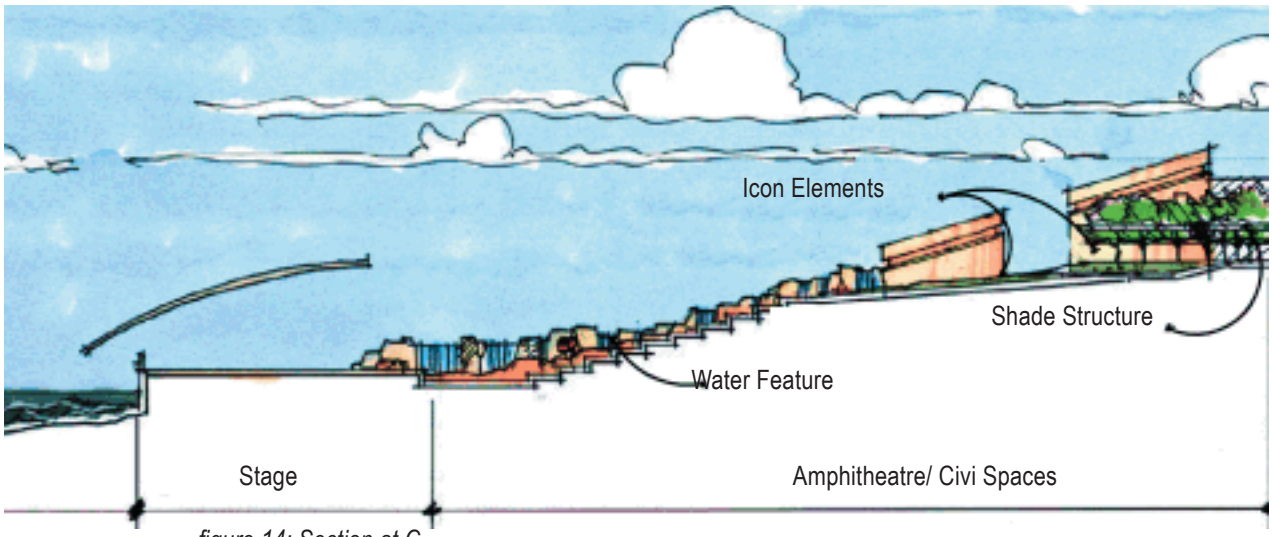


figure 14: Section at C

Urban design moves :

- Relocate the open areas to the riverfront in order to encourage interaction with open space.
- Provide accesibility to the the West River
- Create the unique city landscape to strengthen the image of Gaoming.
- A combination of public plazas, open courts, stages, open air theaters, and iconic buildings can enhance the cultural and civic zones to build a culturally diverse Gaoming.

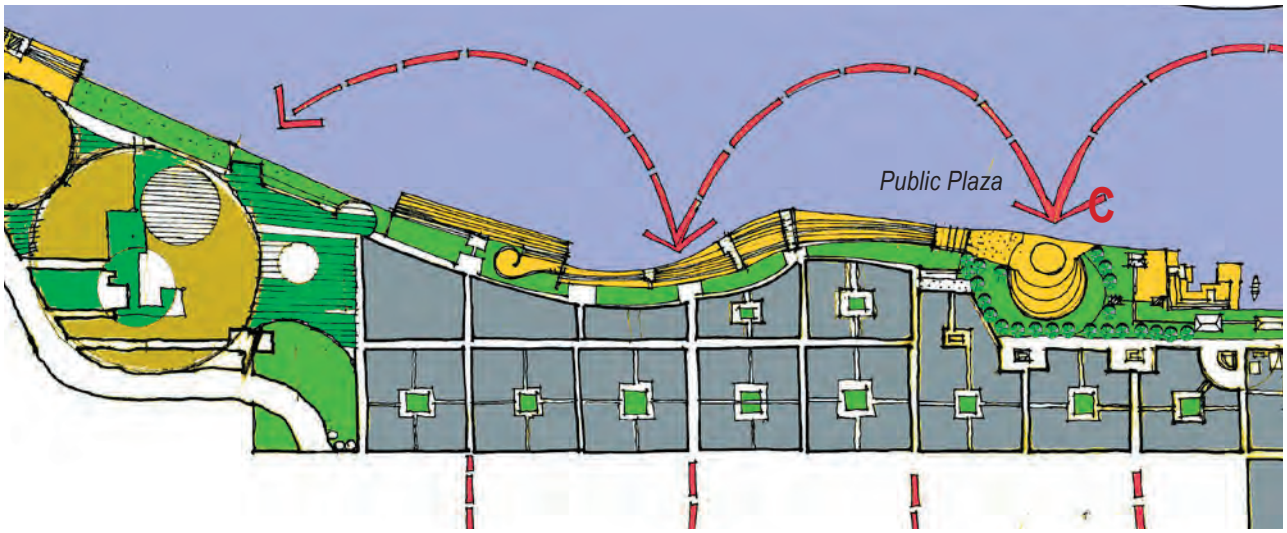
城市设计步骤

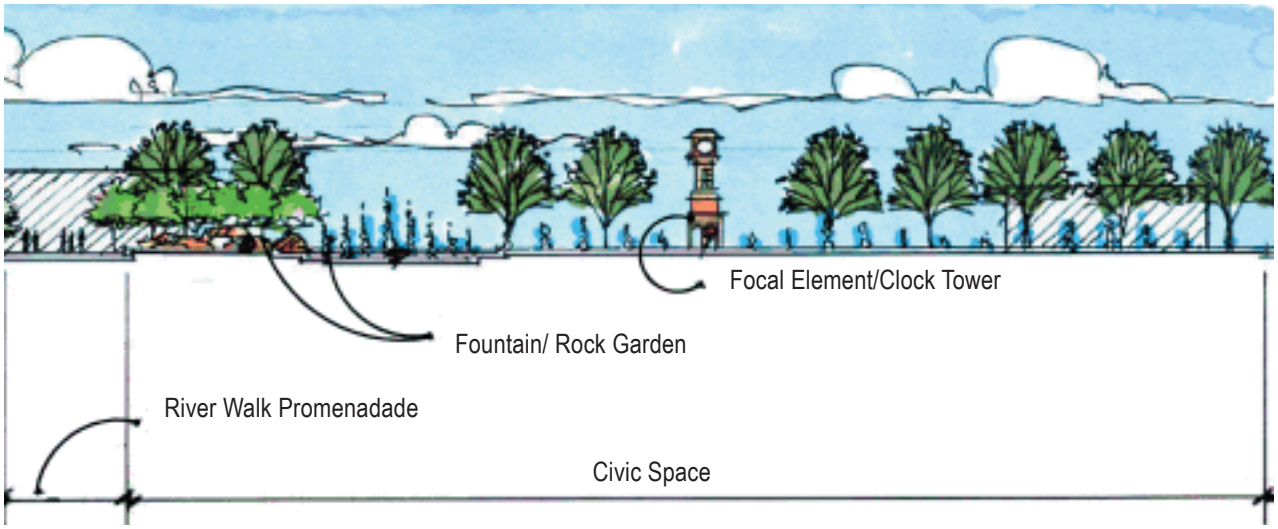
-为了鼓励与户外空间的相互配合，重新布置河边地区的户外地带

-提供可到达西江的途径

-创造城市独特的风景来加强高明的形象

-公共广场、户外庭院、阶梯、露天剧院和标志性楼房的结合可以加强文化区域，从而建立一个有文化多样化的高明





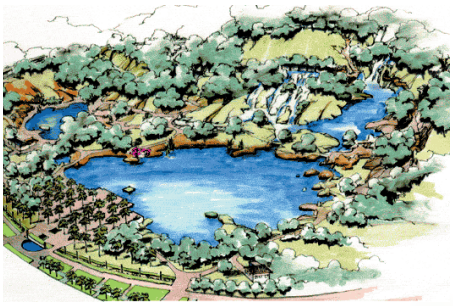


figure 15: Ecological gardens

figure 16: Culture Corridor Reflecting River Front, High Density along River Edge, Source- Maturing City

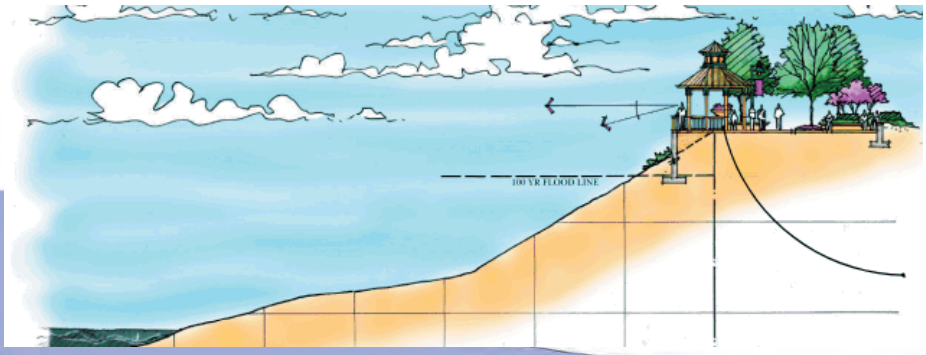


figure 17:Section at D

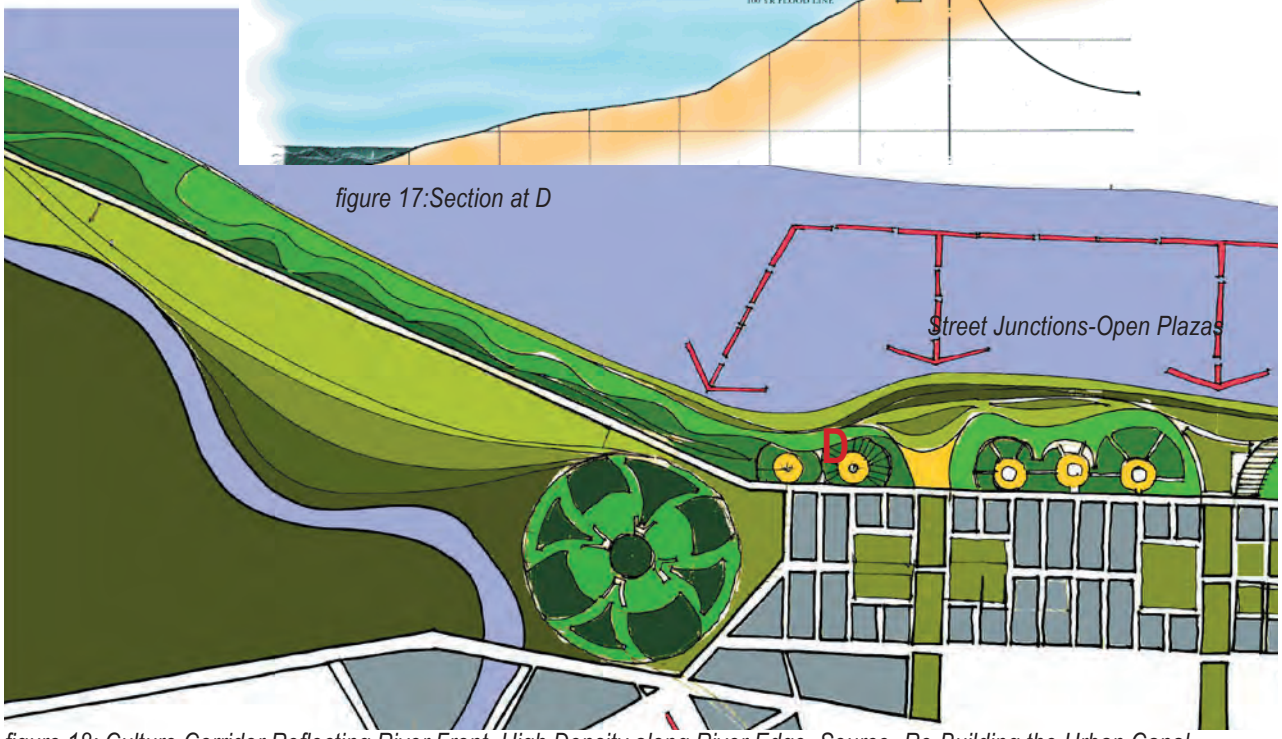


figure 18: Culture Corridor Reflecting River Front, High Density along River Edge, Source- Re-Building the Urban Canal

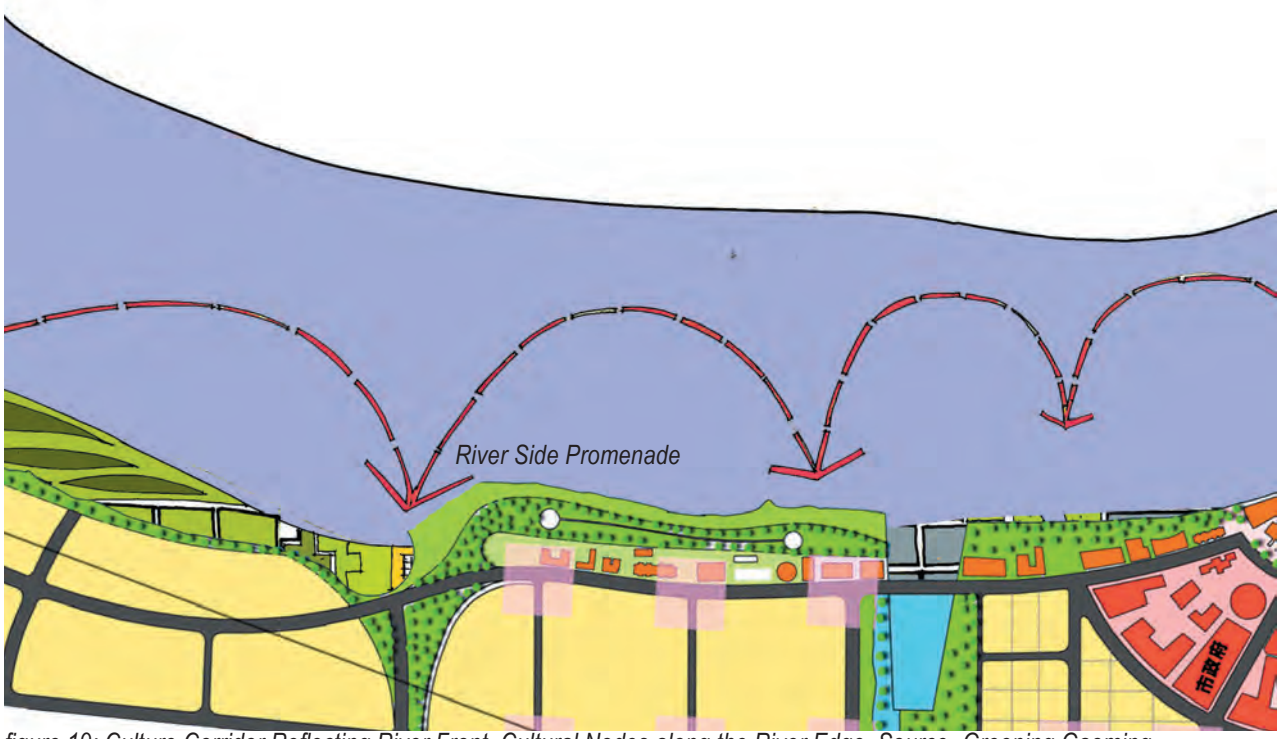


figure 19: Culture Corridor Reflecting River Front, Cultural Nodes along the River Edge, Source- Greening Gaoming

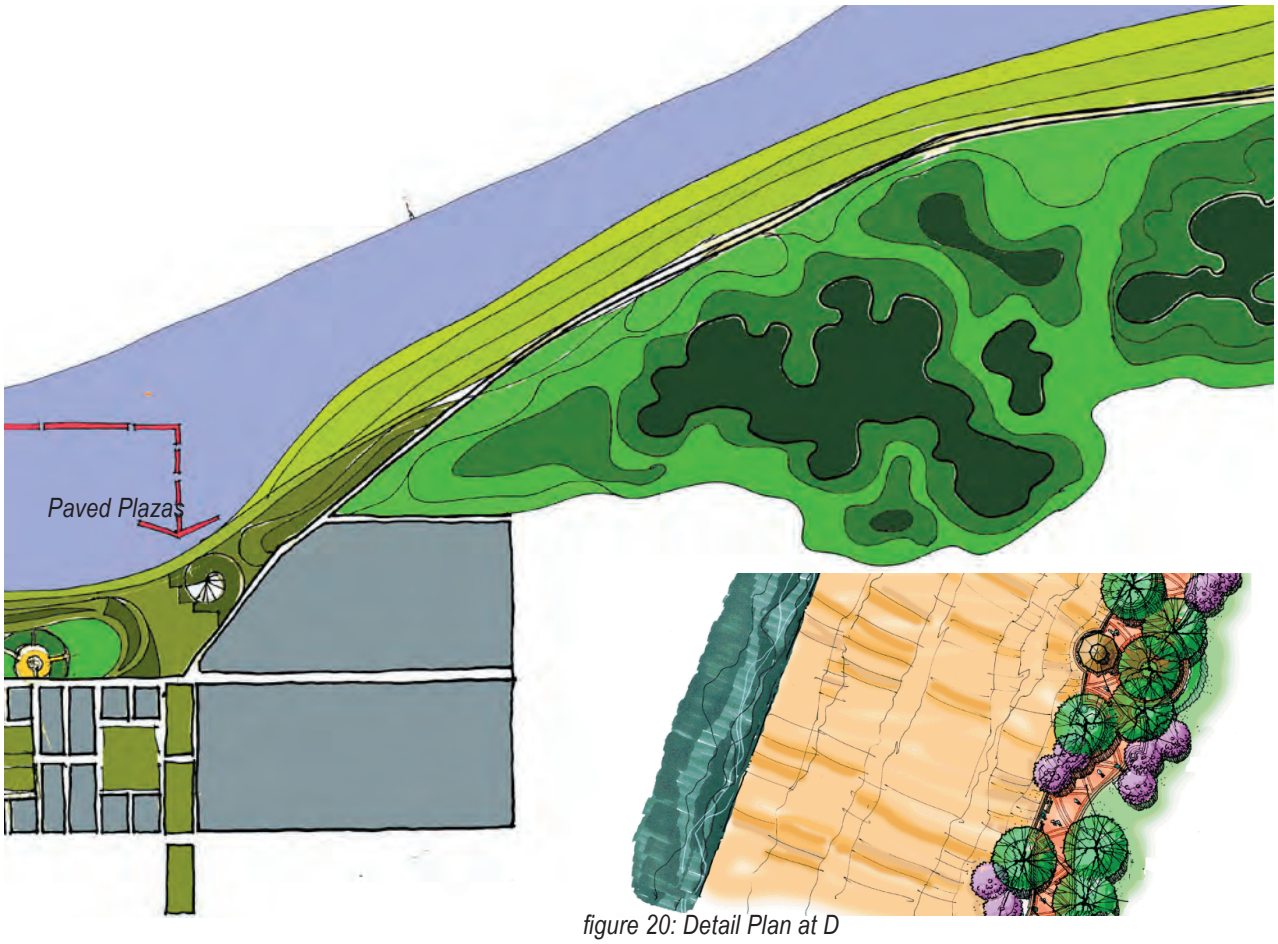
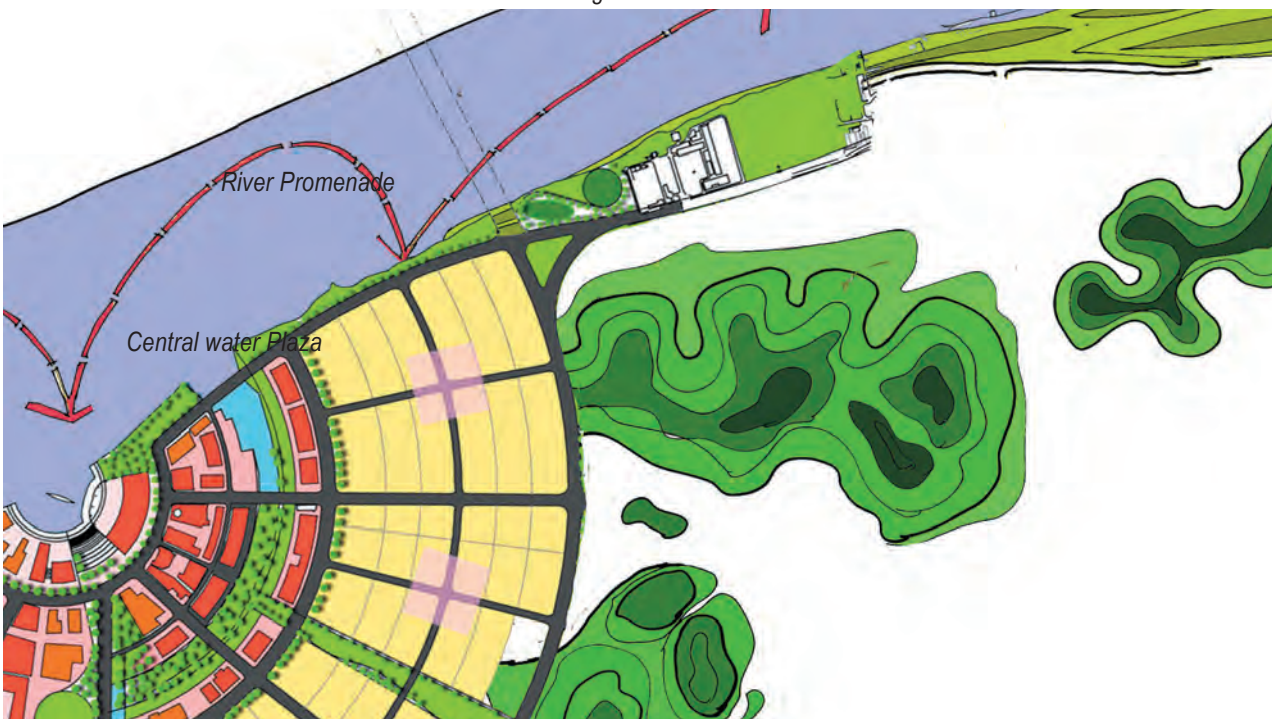


figure 20: Detail Plan at D



在高明规划

VILLAGE REGENERATION
乡村重建

- **Objectives**
- **Premise**
- **Principles**
- **Case Studies**
- **Design Opportunities**

- 目标
- 前提假设
- 基本原则
- 案例研究
- 设计机遇

OBJECTIVES FOR REGENERATING A HISTORICAL LANDSCAPE

- To preserve the aesthetic quality of a property or area
- To accommodate the needs of a changing urban, suburban or rural landscape.
- To utilize village as a unique aspect of the urban parks and open space system

以重现历史景观为目标

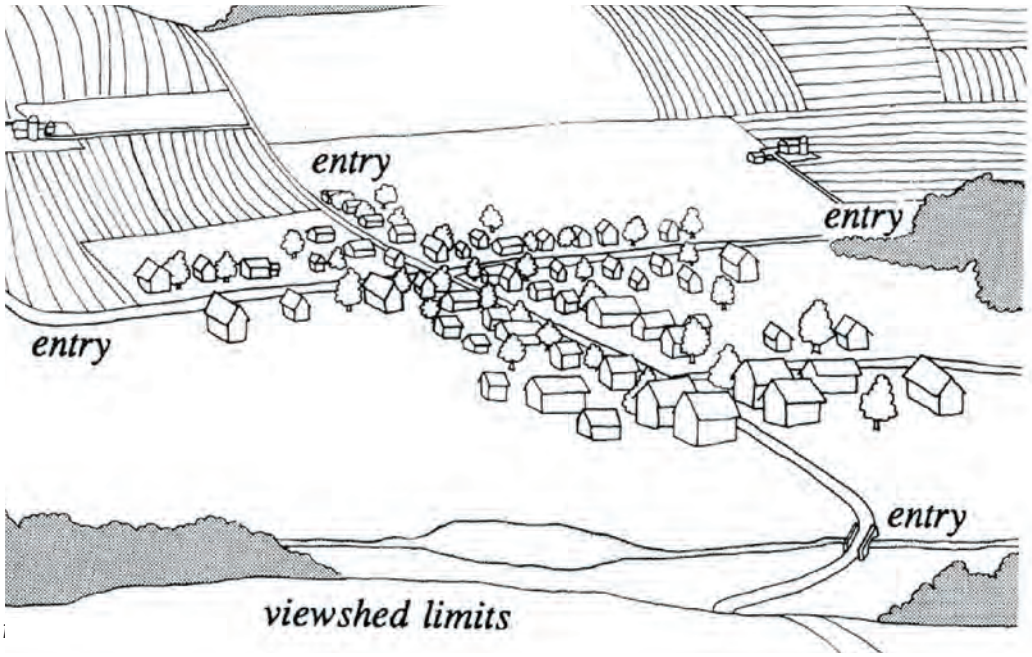
- 保护一个地区或建筑的美学价值
- 适应、调节城市、近郊和农村地区发展变化的需要
- 充分利用乡村地区，使其成为城市公园与公共开放空地系统中独特的一部分

PREMISE BEHIND DESIGN RESEARCH

As Gaoming moves forward, the village can potentially be seen as an urban park or an open space. In the future, the treatment of the boundary between the villages and new developments may be similar to the boundary treatment between park and urban edge. The placement of new infrastructure can also enhance the diverse nature of this regeneration.

设计研究的假设前提

随着高明的不断发展，乡村可以被视为未来城市公园或开放空间。在未来的发展中，乡村与新开发区的边界处理与公园和城市的边界处理应当相类似。新的公共设施也可以提高重建的多样性。



PHYSICAL REHABILITATION

Regeneration of Gaoming's villages will involve a high degree of intervention and the resulting loss of historical fabric. Changes are necessary to distinguish the physical nature of the village from the new development. These physical changes will also focus on pedestrian and vehicular circulation, entries, and boundaries.

PRINCIPLE ONE:

Entry Points and Access

- Emphasizing entrance to a village strengthens the visual transition from village to city.
- Creating and widening cross streets enhances public and sanitation access to village.

PRINCIPLE TWO:

Boundary/Circulation

- Establishing and differentiating boundaries and restricting major vehicular circulation to the exterior is important in maintaining the identity of the village.

修复外貌

在对高明村庄的重建修复过程中将会增加干预并导致部分历史结构的流失。在发展的过程中有必要进行改造以区分乡村自然原貌与新发展的区域。这些改造将包括行人和汽车的流通、入口和村庄的界限。

原则之一: 入口处

-强调乡村的入口将增强从城市到乡村过渡的视觉效果。

-建立和拓宽相交的道路将提高乡村公共设施与卫生水平。

原则之二: 边界与流通

建立和区分边界，限制通往外界的主要机动车道是保持其乡村特征的关键。

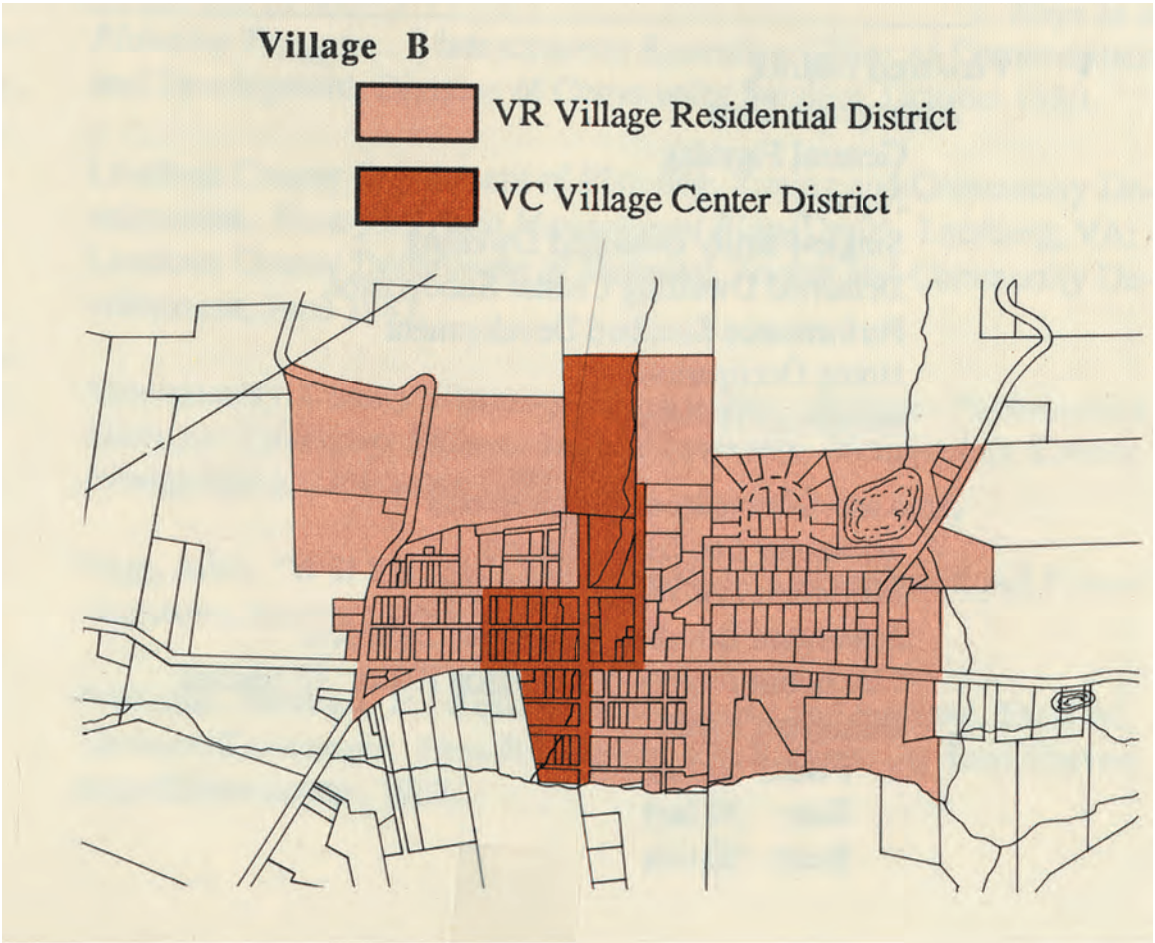


figure 2: Village Planning Handbook: Bucks County Planning Commission

CASE STUDY ONE:
MORSE VILLAGE VISITOR CENTER: SINGAPORE

Entry
Emphasized through a gated entrance.

Boundary
Buildings aligned on periphery to create a buffer between village and city.

Circulation
Vehicular circulation surrounds the village and parking is included to maintain the pedestrian friendly village.

专题研究之一：
新加坡Morse村游客中心

入口:
以大门的形式强调入口

边界:
建筑排列在圆周一线，以建立城市与乡村之间的缓冲区。

流通:
村庄与停车场周围的机动车道使村庄交通便捷。

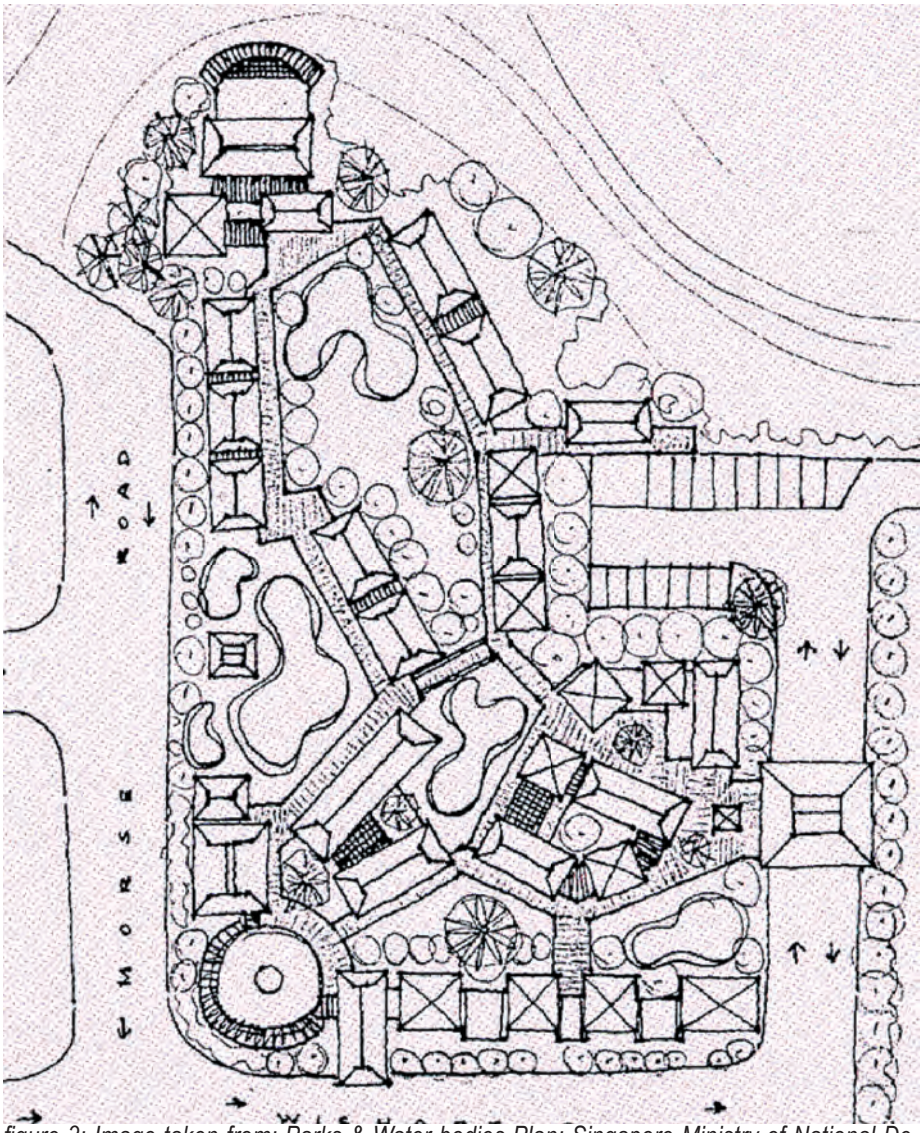


figure 3: Image taken from: Parks & Water bodies Plan: Singapore Ministry of National Development.

CASE STUDY TWO:
MILLEGATE VILLAGE: NEWARK, BRITAIN

Entry
Gate marks entrance to village center.

Circulation
Vehicular Street is added and passes through gate to create access to village interior. Pedestrian streets are preserved and paved to create an intimate setting for commercial programming.

专题研究之二：
英国纽瓦克郡Millegate村

入口:
大门标志着村庄的入口

流通:
机动车道从大门入口处直通村庄内部中心区。原有人行道被保存并铺砌了石头，为商业区增加了亲近的气氛。

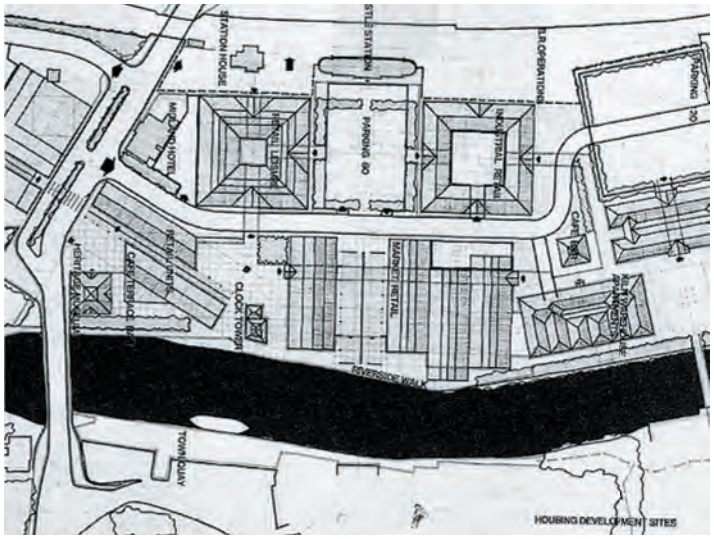


figure 4: Images taken from: Urban Design Street and Square: Architectural Press

DESIGN OPPORTUNITIES

Gaoming is an ideal site for potential village regeneration:

- Villages are surrounded by canal and fish ponds, increasing their potential for preservation.
- Location by the waterfront taps into the theme of “Model Water City.”

设计机遇

高明是村庄重建的理想地点：

- 被运河与鱼塘包围，乡村受到保护的可能性将增强
- 与水域接近的地理位置有助于发展"模范水乡"模式

figures 5, 6: Locations of villages

图5和图6：村庄的地点

在高明规划

PLANNING FRAMEWORKS
规划框架

The aim of the midterm exercise was to explore alternative planning scenarios, to investigate possible design scenarios, and to present potential options to Gaoming planners. Students worked in teams of three to develop master site plans for the Gaoming waterfront and the surrounding area. During the group's second trip to China in March, the class presented the five plans to Gaoming planning officials to solicit feedback and identify concrete next steps.

In their midterm work, students presented:

1) A planning context and a series of preferred scenarios, including an overall annotated plan at the regional and city scale;

2) An overall master plan for the site, including land uses; blocks and streets; general concepts for landscape open space and hydrology; and a phasing or development schedule diagram.

3) An illustrative neighborhood plan, including details and recommendations for a specific area.

4) A series of vignettes that describe architectural and other design concepts such as waterfront, streets, open space, and housing.

Gaoming planners and officials provided feedback on the group's ideas at a meeting and presentation in March; overall, they found many of the ideas stimulating, and welcomed the student input, especially on case studies and other best practices. Because Foshan had already begun to evaluate the proposed Gaoming land use plan, city officials requested that the next stage of research center on specific recommendations for Gaoming in each of the focus areas.

期中考察的目的是探寻各种规划情景，研究可能的设计情景，以及给高明的规划师汇报可行的方案。在此阶段，每三个学生组成一组，对高明滨水和周边地区制定了总体规划。在小组3月份第二次访问中国的时候，学生们向高明规划官员提出了5套总体规划方案，并且征求反馈和确定下一步研究方向。

在他们的期中工作中，学生们的汇报包括了：

1） 规划背景和一系列设计推荐，包括了总体区域和城市规划图表。 这些规划设计和图表描述了总体模式概念和解释了设计方案。

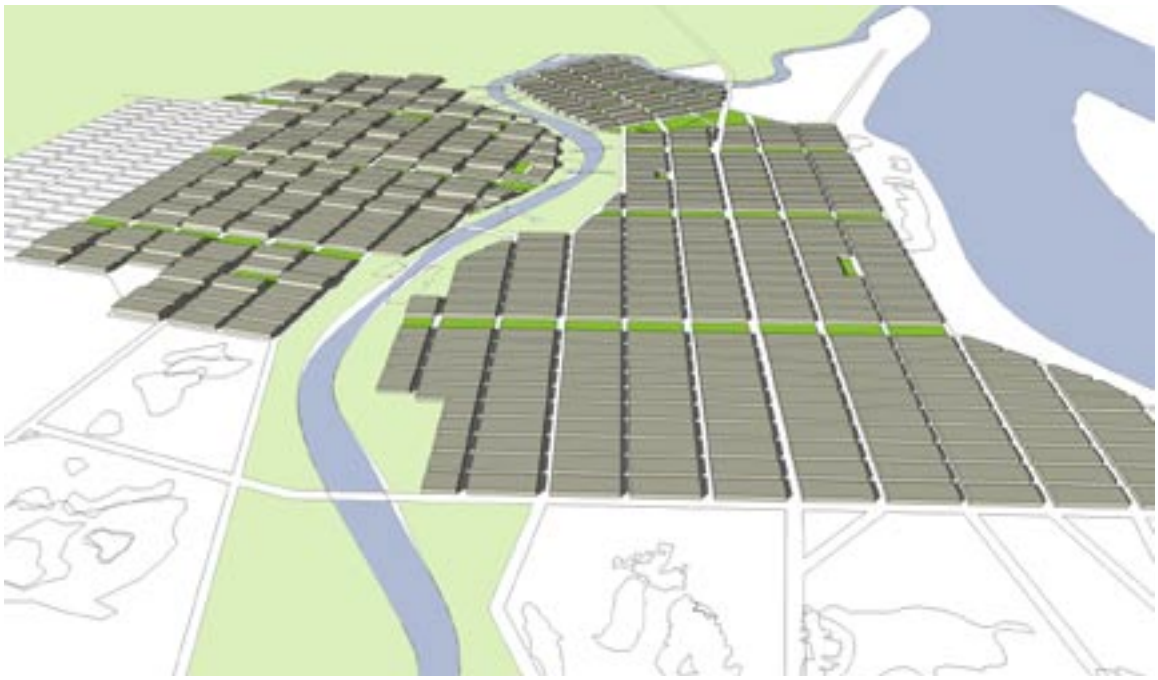
2） 区域的总体规划包括：
土地利用 街区和街道
开放空间和水文的总体概念
分布实施和发展步骤的示意图

3）小区规划注解，包括对特定规划区域的细节和建议。

4）一系列的插图用于描述建设和其他设计概念，包括滨水地区、街道、开放空间和住房。

高明规划师以及官员对每个小组的设计规划都提出了宝贵的意见。总体来说，他们觉得不少设计很有新意，并表示欢迎学生的建议，特别是那些案例研究和最优实践例子。因为佛山已经开始评估高明提出的土地利用规划访案，官员们提出下一步的研究重心应放在高明每一个重点区域的具体建议上。

在高明规划



RE-BUILDING THE URBAN CANAL

重建都市秀丽河

Project Team: Marlon Aranda, Ariel Bierbaum, and Ifeoma Ebo

Gaoming has a bright future ahead. With expanding industry spurring economic development, Gaoming will become an important city in the Pearl River Delta. This new central city will provide comfortable, interesting, diverse, and vibrant life for residents and visitors.

This plan seeks to lay out fundamental frameworks and systems to help guide Gaoming's future growth. The foundations of the plan emanate from the natural shape and systems of the site. Gaoming has benefited from centuries of human manipulation, from the original levies of centuries ago to the advancement in manufacturing industrial technology. This next phase of development serves as the next stage in the evolution of this beautiful and valuable landscape. The plan provides a unique, attractive design with diverse and vibrant programming to ensure increased access to all citizens of Gaoming.

高明有着广阔的发展前景。伴随着产业扩展对经济的激励, 高明未来将成长为珠江三角洲的一个重要城市。新的中心城区将为居民和游客提供舒适、有趣、多元化和充满活力的生活。

本规划着眼于为高明的未来发展提供基本的框架和系统性的指导。本规划的基础是建立于当地现有的自然形态和规划区的地理条件。高明历经当地居民的世代开发, 从原始的耕作时代跨越到当前先进的工业时代。高明下一阶段的发展将重点着眼于生态景观的规划和建设。本规划一系列特征鲜明、风格各异、充满活力的设计为为高明市民共同构造和分享美好的未来提供参考。

figure 1: Hydrology diagram
图1：水文状况示意图

河流水系

自然河流所构成的水系为暴雨的排水和防涝管理提供了基础。此规划设计采取由北向南排水的方案。暴雨水首先排到附近现有的溪流和绿色洼地里。洼地能够首先过滤排入的浊水，并最终将水排入秀丽河。这个排水体系将有助于维护西江的良好水质。

秀丽河的东段通过一系列的绿色带和活动场地贯穿整个规划的主线。城市的开发也将扩展到秀丽河的西侧，创造更多的沿河景观和活动机会。秀丽河通过一系列的绿色走廊连接西江，而这些绿色带也起到了暴雨排水的功能。绿色带也同时提供休闲娱乐的效用，为现有城区向新区提供了非常好的自然过渡。规划的地段依河流的走向，自然呈现出棋盘格的布局。这种棋盘格的布局为功能分区提供了灵活的便利：新区的中心即可南北向沿主路布局，也可更加自由的规划。这种棋盘格的形态有助于统合和兼容各种多元化的设计方案。

WATER FLOW

The natural flow of the canal and river provide the foundation for the stormwater management system. The plan capitalizes on the north-south flow. Stormwater drains within each neighborhood into the green swales, built on the site of the existing streams. These streams flow through the swales, cleaning the gray water, and depositing it back into the canal. This hierarchy of waterways helps facilitate the maintenance of the West River's good water quality.

The eastern canal is the organizing feature of the plan. Development expands on the other side of the canal, creating opportunities for additional waterfront views and activity. The canal connects to the West River via a series of "green fingers." These green fingers are functional as a main element in the stormwater management system. They provide recreational benefits and serve as a design element, easing the transition between the existing city and the new development. The grid pattern provides order to the site, while following the organic shape and flows of the land and water. The grid also allows flexibility in phasing: the new city center may evolve from the south to the north, by node, or more randomly, but the grid provides a consistent and replicable framework to unify these varied development patterns.

figure 2: Neighborhood Node diagram
图2：社区节点示意图

NEIGHBORHOOD NODES

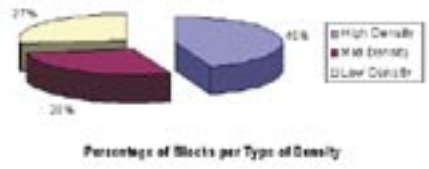
社区组团

Neighborhood nodes develop along the natural topography and features of the landscape. All neighborhoods will have a mix of vibrant activity, including retail, residential, and recreational amenities. A focus activity will be centered in each neighborhood, be it governmental, educational, or cultural. The system of nodes allow for adaptation as the city grows and needs of residents change. Educational and cultural assets are a key facet to keep younger people in Gaoming. Development in downtown areas also must be flexible to allow for growth of other sectors of the economy and changing market needs.

社区组团的规划是依据当地的地形和自然形态的特征。 所有的社区都将开发为具有综合功能的社区: 包括居住、零售和娱乐功能。政府、教育和文化活动的中心将规划在各个社区的中心。组团式的布局考虑到适应将来城市发展和人口增加的需要。 教育和文化设施是吸引青年人定居高明的关键因素。新区中心的规划具有相当的灵活性，以适应未来各种经济部门的发展和市场需要。

figure 3 : Streetlife
图3：街道生活

figure 4 : Figure/Ground diagram
图4：地面轮廓示意图



轮廓布局

现有的河流体系特点显示了新的轮廓和组团节点布局。 除秀丽河和西江外, 由溪流和小河组成的河网体系显示了社区特有的格局。现有溪流体系的规划是以绿色带管理暴雨排水系统为基础。

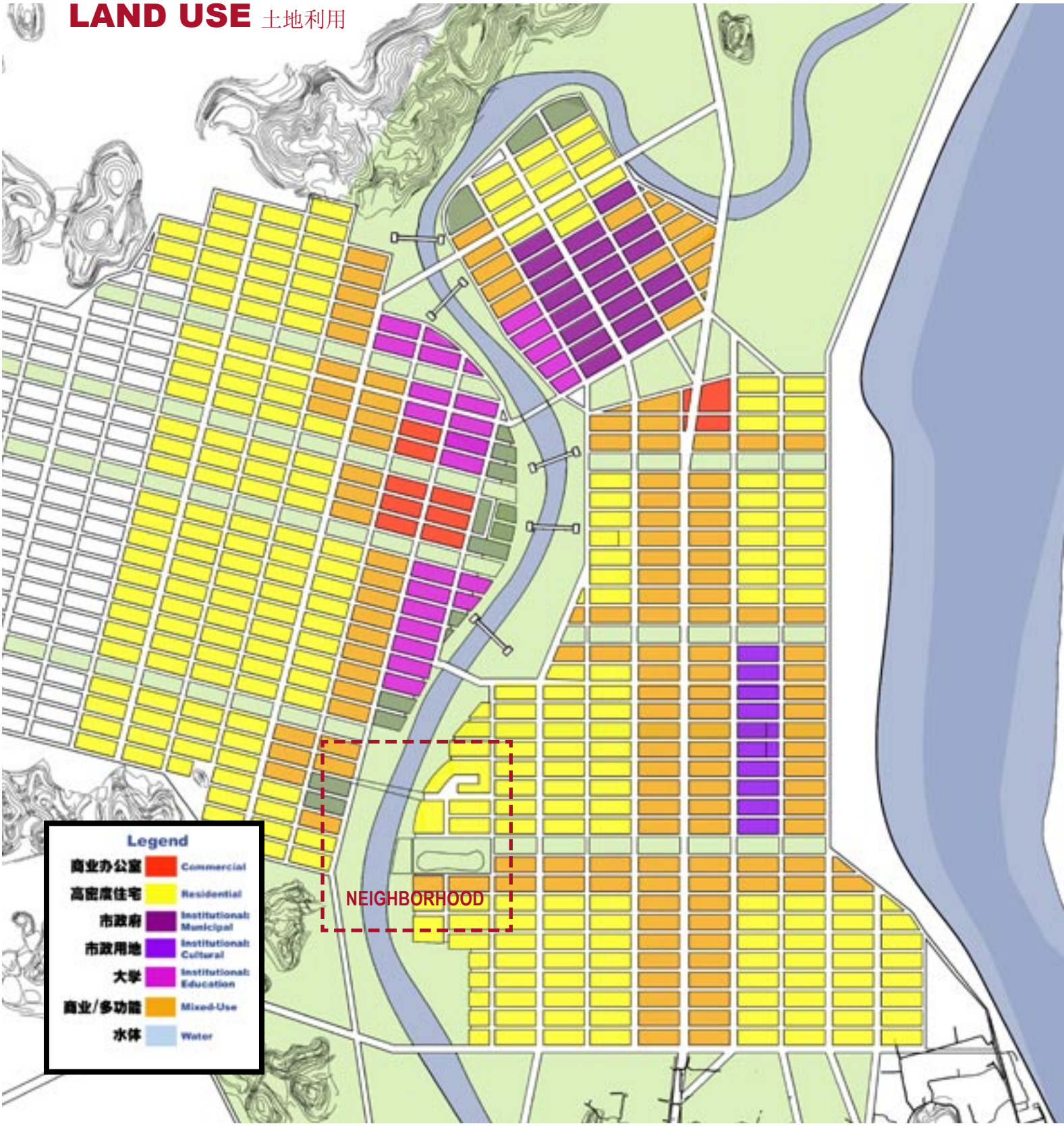
与总体轮廓布局一起, 自然地形是决定基础设施建设的关键因素。南北向的新区主干道连接了新区中心的各个街区和组团。在秀丽河以西，也规划了南北向的大道。 不同等级的道路构成的道路系统, 有助于发展高品质社区。 建议在秀丽河的多个点建设步行和车辆桥梁以连接河两岸的社区。

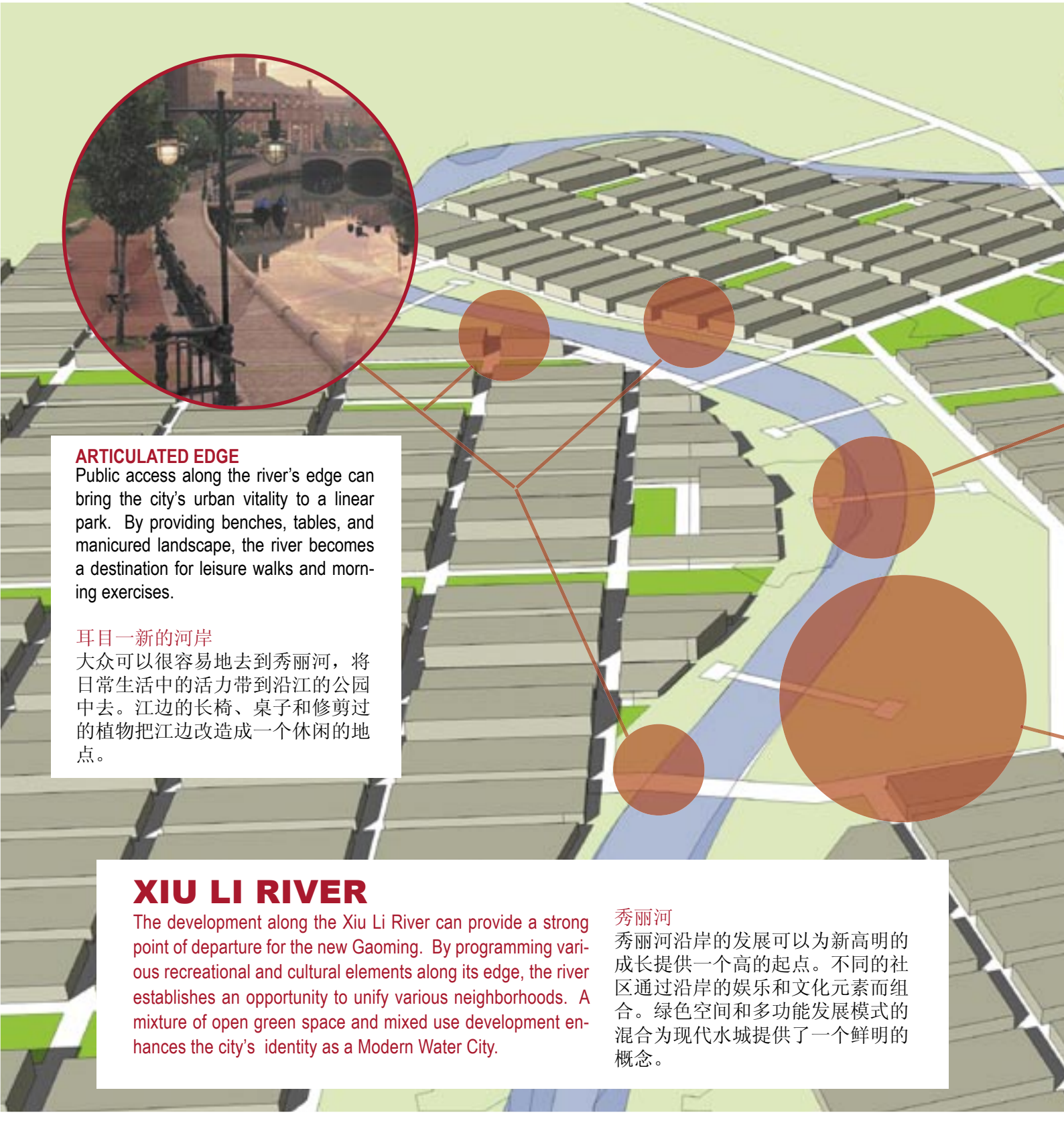
URBAN FIGURE

The existing network of water features informs the new figure and nodal patterns. In addition to the canal and the river, a system of streams and canals inform the orientation and placement of the neighborhood grids. Existing streams are the foundation of the stormwater management system along the green fingers.

As with the basic figure of the site, natural topography informs key infrastructure development. The main arterial road provides north-south orientation for the blocks in the central part of the site. Other major north-south avenues develop to the west of the canal as well. A hierarchy of streets facilitates quality neighborhood development. Pedestrian and vehicular bridges are located at multiple points along the canal, building connections between nodes.

LAND USE 土地利用





ARTICULATED EDGE
Public access along the river's edge can bring the city's urban vitality to a linear park. By providing benches, tables, and manicured landscape, the river becomes a destination for leisure walks and morning exercises.

耳目一新的河岸
大众可以很容易地去到秀丽河，将日常生活中的活力带到沿江的公园中去。江边的长椅、桌子和修剪过的植物把江边改造成一个休闲的地点。

XIU LI RIVER

The development along the Xiu Li River can provide a strong point of departure for the new Gaoming. By programming various recreational and cultural elements along its edge, the river establishes an opportunity to unify various neighborhoods. A mixture of open green space and mixed use development enhances the city's identity as a Modern Water City.

秀丽河
秀丽河沿岸的发展可以为新高明的成长提供一个高的起点。不同的社区通过沿岸的娱乐和文化元素而组合。绿色空间和多功能发展模式的混合为现代水城提供了一个鲜明的概念。

WATER PLAZA

Theaters along the water provide a unique urban experience. They can be the setting for various cultural festivals and concerts.

河滨广场

河沿岸的露天剧院提供了都市的感受，可以成为不同文化和节日活动的场所。

OPEN GREEN SPACE

Open space along the water can provide cooling effects in the humid summers, and accommodate various recreational activities

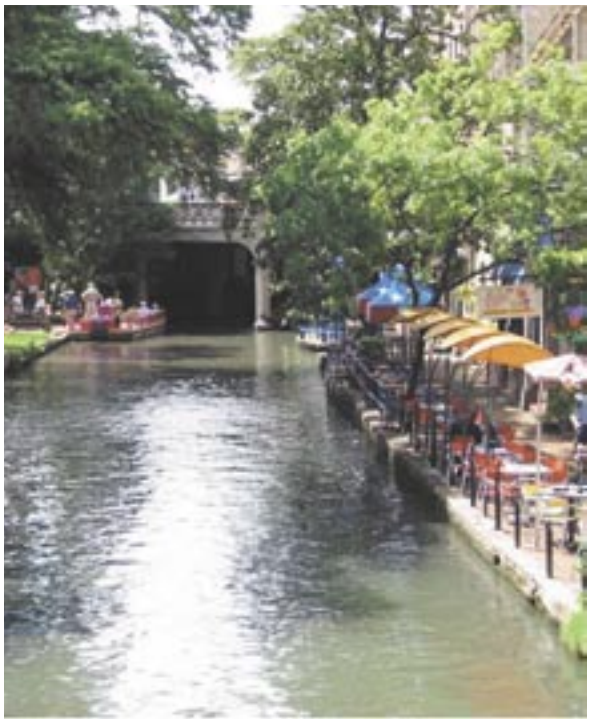
开放绿色空间

河边的开放空间可以在闷热潮湿的夏季提供一个清凉的活动空间。

CENTRAL INDIANAPOLIS WATERFRONT CAPITAL CITY LANDING Indianapolis, Indiana USA

Located in midwestern United States, this waterfront park links the downtown civic and commercial core of Indianapolis, Indiana with the river. Designed by Sasaki Associates, the park incorporates the fundamental topographic connections between land and water. One of the principal organizing elements is the extension of the Central Canal through the park. A main plaza serves as the centerpiece of the park. It is oriented to the river via a grass and stone amphitheatre that breaks through the existing floodwall. This new landscape supports civic and cultural developments on sites adjacent to and in the park. *http://www.sasaki.com*

SAN ANTONIO RIVER WALK San Antonio, Texas USA



The River Walk serves as a source for civic pride and the defining physical feature by which the city is identified. It is a key element of the city's character, a vital driver of the tourist industry, and a significant contributor to the city's economy. Stretching for 2.5 miles and located 20 feet below street level, cobblestone and flagstone paths border both sides of the San Antonio River as it winds its way through the middle of the city's business district. The River Walk is programmed in a diversity of ways, including quiet, park-like spaces, more active commercial zones, and higher density entertainment areas. The San Antonio River has a history of flooding; the canal's natural course has been channelized and reengineered for flood control, so as to facilitate permanent development. Local government created landscape elements and extended the canal to link it with other water features in the area. A non-profit business association promotes and supports economic development along the River Walk. Currently, numerous entertainment venues, hotels, restaurants and businesses operate along the River Walk, in buildings with entrances that open to the river. *http://www.thesanantonioriverwalk.com*

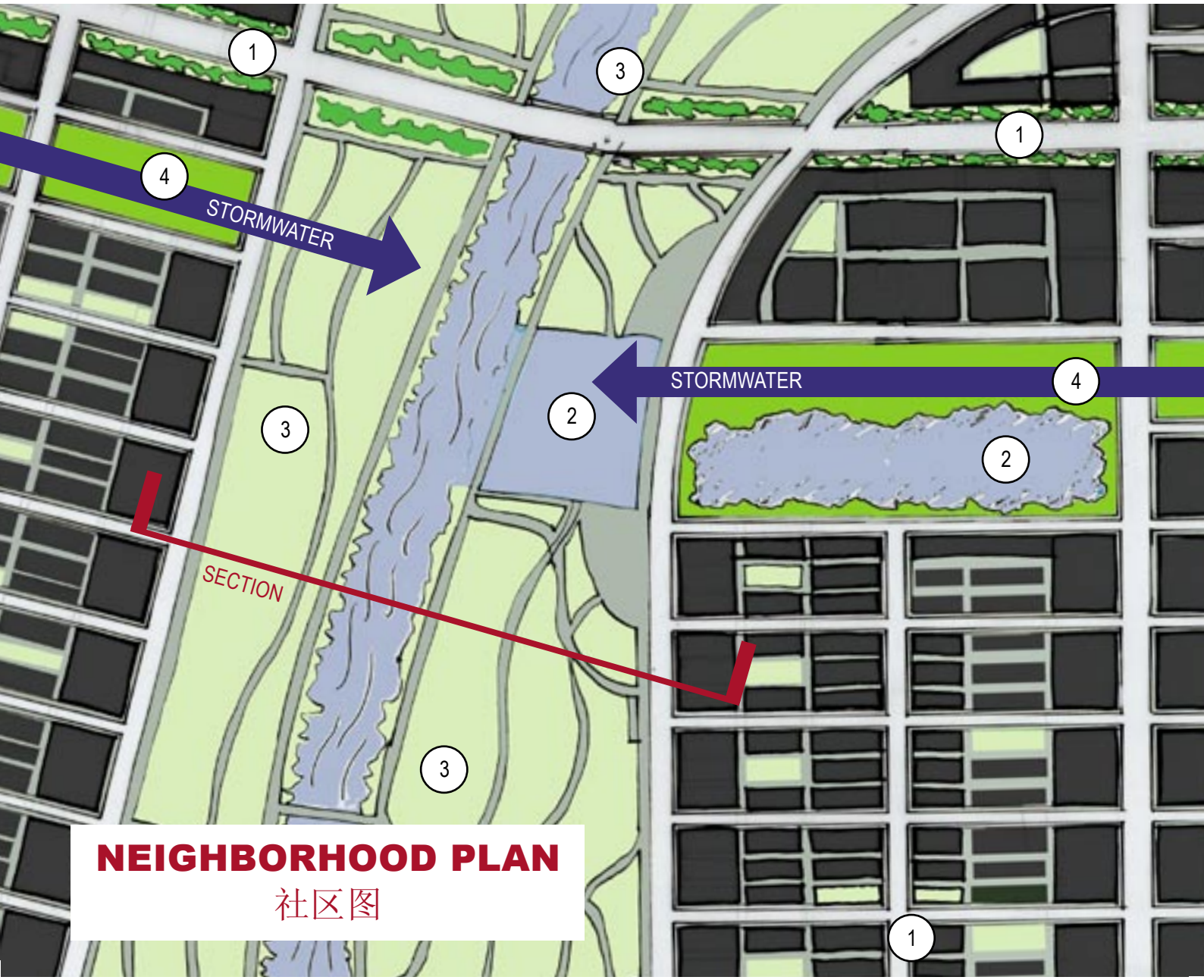
RIVERWALK AND WATERPLACE PARK Providence, Rhode Island USA

Riverwalk and Waterplace Park is the focal point of the revitalization plan of downtown Providence, Rhode Island. The City of Providence rerouted the Providence River, removed a bridge covering it, and created a lively vibrant public space. The new space includes a series of bridges inspired by Venice, each with their own character. The welcoming and thoughtful design is well-utilized; the space is used for festivals, public art installations, and recreational activities all times of year, day and night. Located at the foot of State Capitol Hill, this riverfront is accessible to all citizens and fosters diverse and vibrant activity.

位于美国中西部, 印第安纳州的印第安纳波利斯的滨江公园将市中心的商业核心地段和河流有机地联系在一起。 由Sasaki Associates设计, 公园完美地结合了当地河流和地形的特征。设计的一个主体理念就是通过滨江公园延伸和扩充河道，使之与城市更加紧密的联系在一起。公园中心有个中央广场，它的设计打破了现有的防洪堤的形式而用草和石头修饰成阶梯状。这个新景点为公园附近当地居民提供了新的休闲娱乐的场所。

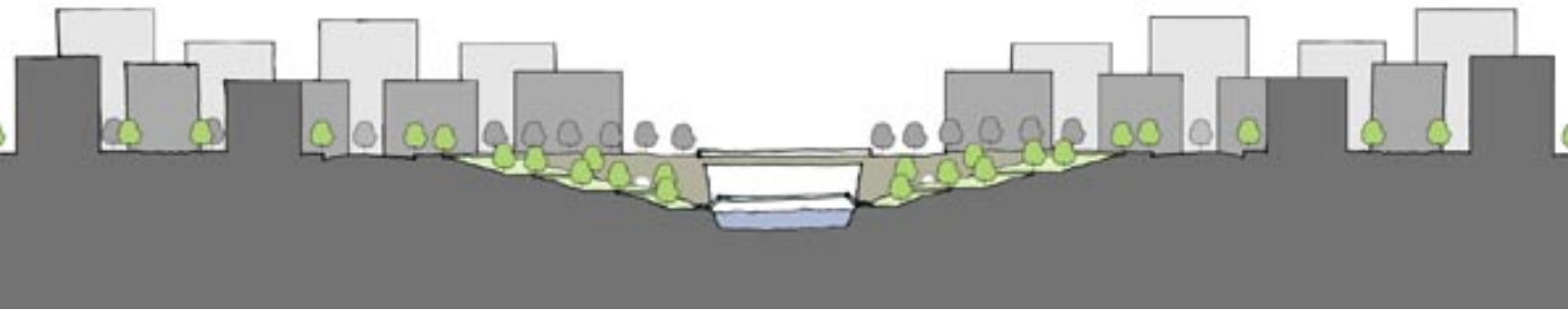
河畔小迳是圣安东尼奥市引以为豪的城市标志。作为城市的一个重要景点，河畔小迳吸引着大量的游客, 是城市经济重要组成部分的旅游业支柱。 延绵2.5 英里，低于街道水平面20英尺，鹅卵石和石板路连接的河畔小迳毗邻圣安东尼奥河的两岸，蜿蜒穿越城市的商业中心。河畔小迳融会了各式的设计, 包括安静的公园式空间、活跃的商业区和更高密度娱乐区。圣安东尼奥河有过遭遇洪水的历史。河的主航道为防洪被重新建造和渠化, 以保障周边地区的发展。 当地政府创建了各种景观元素并将这条河延伸与其他的水体连为一体。一个非盈利性的组织管理、支持和推动沿河地区的经济发展。当前, 众多的娱乐场所、酒店、餐馆和商厦的门都沿街对河打开。

江滩公园是罗德岛州的普罗维登斯市中心旧城改造的重点项目。 普罗维登斯市搬移了一座桥梁并改变了普罗维登斯河的流经线路, 创建了一个充满活力的公共活动空间。 新的空间布置包括了一系列受威尼斯启发而架的桥梁, 每个都有其独自的特征，设计中显示出好客与周到。新的空间作为城市全年节日艺术展览和娱乐活动的场所。 位于州议会山脚下的这个江滩公园对所有居民和各样活动都开放。



NEIGHBORHOOD PLAN

社区图



DIVERSE STREETSCAPE 多元化的街景

Boulevard streets with ample landscaping include various building typologies, land uses, and housing densities. Viewsheds to the canalfront are preserved and emphasized by the linear corridor.

林荫大道旁伴有多元化的城市景观：建筑高低错落、不同功能的土地使用相互结合、不同密度的布局。沿河的规划布局强调了对河畔和视觉效果的保护。

INLETS 河流的入口

Inlets bring the beauty and activity of the canal into the city. The additional waterfront space allows for additional recreational activities and enhanced viewsheds. [Photograph of Central Indianapolis Waterfront Capital City Landing in Indianapolis, Indiana USA courtesy of Sasaki Associates]

河流的入口给城市带来了美景和活力。 扩充了的江边空间提供更多的娱乐空间，增强了视觉效果。（美国印第安娜州印第安纳波利斯中央滨江公园的照片）

TIERED LEVY 阶梯平地

A stepped levy provides an interesting design element in a public park, while maintaining its flood-protection purpose. These sites are able to withstand flooding, but during drier seasons provide ample space for passive recreational activities. [Photograph of Central Indianapolis Waterfront Capital City Landing in Indianapolis, Indiana USA courtesy of Sasaki Associates]

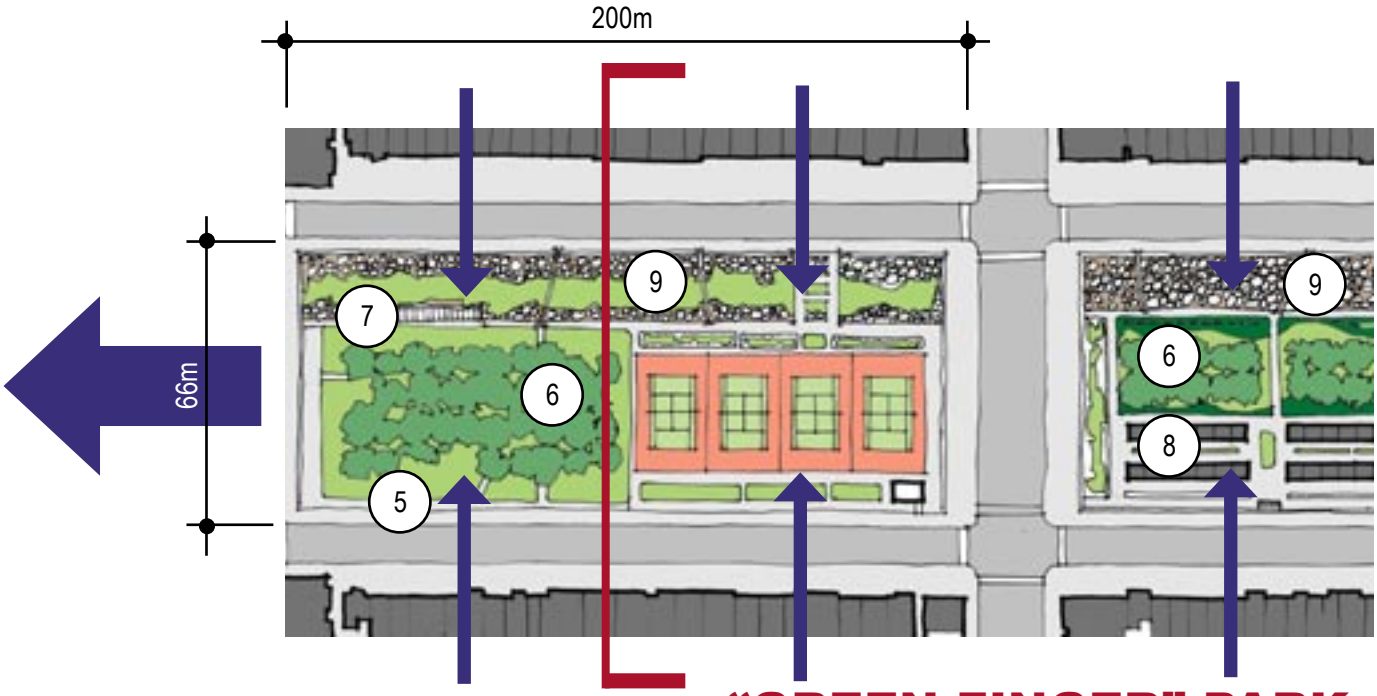
阶梯台阶为公园提供一个有趣的设计元素, 同时也保持了防洪的的作用。 这些地点都能防御洪水, 并在旱季期间为娱乐活动提供了宽裕的空间。（美国印第安娜州印第安纳波利斯中央滨江公园的照片）

CONNECTIONS 连接

Other types of parks and open space provide the links between the east and west sides of the canal. These spaces include multi-modal transportation access and areas for passive and active recreation.

其它类型的公园和露天场连接了河流的东西两岸。 这些地域包括多种形式的运输通道和娱乐活动空间。

在高明规划



“GREEN FINGER” PARK

“绿指”公园

CULTURAL ACTIVITY 文化活动

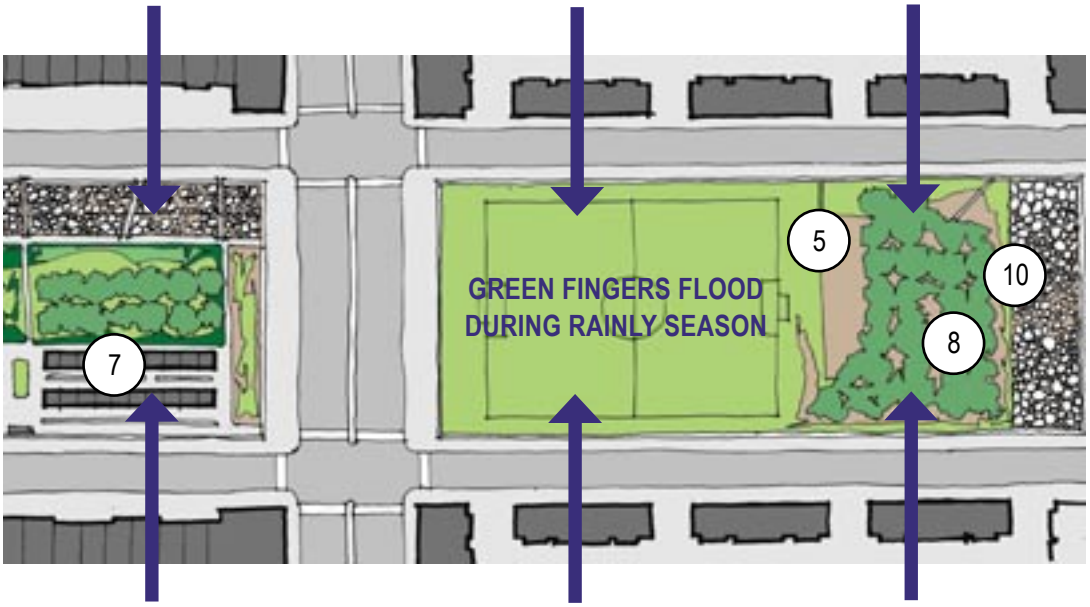
Festivals and other temporary cultural activities may take place in a swale. This activity helps maintain a diverse and lively street life, honors local culture, and allows the swale to perform its environmental function.

节日和其它大型文化活动可以在洼地举行。这些活动帮助维护多样的街道生活，弘扬地方文化，同时也不影响洼地的环境功能。

AGRICULTURE 农业

Areas of the swale may be used for small scale agricultural development. This practice enhances the aesthetics of the landscape, preserves local culture, and allows the swale to perform its environmental function.

洼地区域也可以被用来进行小规模的农业发展。这种实践美化了风景，保存了地方文化，同时也不影响洼地其环境功能。



PROGRAMMABLE OPEN SPACE

可容纳不同功能的开放空间

COMMUNITY RECREATION 公共休闲

Areas of the swales provide space for recreational activities, such as community gatherings, tennis, and other sports. This activity helps maintain a diverse and lively street life, enhances local culture, and allows the swale to perform its environmental function.

洼地区域也为休闲娱乐提供了空间, 譬如社区聚会, 网球和其它体育活动。这些活动帮助维护多样的生动的街区生活, 提高社区文化, 同时也不影响洼地的环境功能。

MARKETS 市场

Swales offer space for temporary commercial activity. Vendors can set up food, dry goods, and other retail stalls along the road. This activity helps maintain a diverse and lively street life, promotes local economic development, and allows the swale to perform its environmental function.

洼地也可提供临时商业空间。贩卖者可沿路摆设零售摊位。这些商业活动有助于维护生动多样的街道生活, 促进地方经济发展, 同时也不影响洼地的环境功能。

Wet Swales focus on groundwater through a shallow pool and wetland vegetation. They produce standing water and are thus not well-suited for residential use.
湿洼地通过浅水洼和湿地植被汇聚地下水。由于湿洼汇聚不流动的水，它们不适合在住宅区使用

Grass Channels are the least expensive options. They are best for pretreatment for stormwater in a larger treatment system.
长满草的洼地是最经济的选择。它们也是大型预处理暴雨水的最佳方式。

Dry Swales include a soil bed and underdrain system at the bottom of a channel.
干洼地包括土壤床和渠道底部的排水系统。

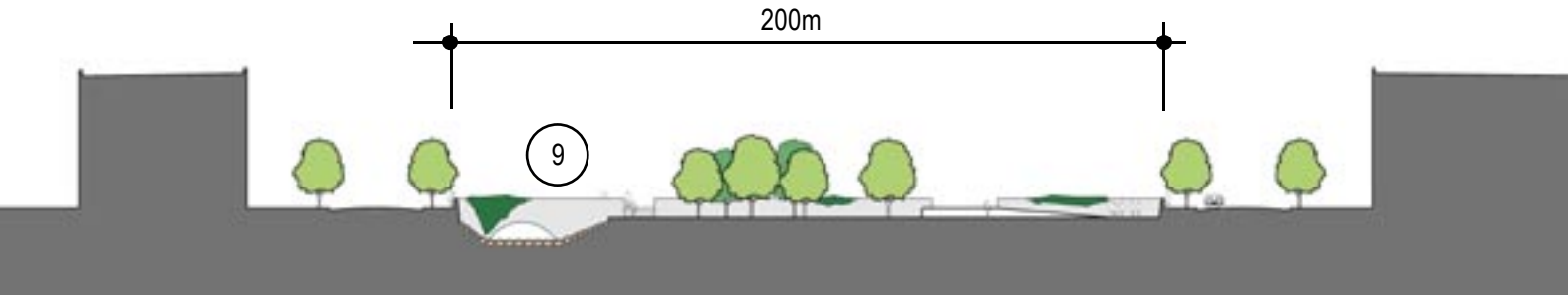
VEGETATED SWALES

Swales are a series of vegatated, open channels designed specifically to treat stormwater runoff for a specified water quality volume. Stormwater flows through the channels, and various vegetation treats the water by filtering it through underlying soils and gravel. Design may vary depending on the context, grade of land, and volume of water. Swales are a versatile linear application that can treat highway and residential road runoff well.

洼地是特别针对排除有特定容量的暴雨水而设计的一系列被植被覆盖的开放性渠道。暴雨水流经渠道时，被各样的植被吸收过滤沉淀下土壤和石渣。设计也可根据环境，土地等级和水的容量变化而改变。洼地也可有效地利用于高速公路和一般道路排水。

Swales are designed with flat side slopes. Flat channels are between two and eight feet wide. A small bay at the beginning of the channel should be incorporated to pretreat the water by catching sediment. Dense vegetation in the channel slows the velocity of the water, thus mitigating erosion and acts as a filter. Vegetation also creates aesthetically pleasing open space.

洼地应该设计成平缓的斜坡。平面渠道的宽度在二至八英尺之间，在渠道开始的小湾应预先对雨水进行过滤沉积处理。密集的植被在渠道中减慢流水的速度，起动了过滤和减少流水侵蚀的作用。植被也给公共空间带来了审美的视觉效果。



BALANCING URBAN GROWTH
平衡城市增长

Project Team: Il Joong Kim, Karuna Murdaya, and Caitlin O'Connor

figure 1: Concept collage 图1：概念组合

Gaoming is connected to the Pearl River Delta (PRD) by both waterways and industry. It is a city in transition and an integral part of the PRD economic engine. It is a city of rich, varied landscapes from gridiron of urban blocks to a patchwork of fish ponds to organic clusters of villages. In the coming decade, the city will experience much change and must have a vision to guide that transformation. We envision the city's future development to be flexible, adaptable, functional, and most of all sustainable in the long run as illustrated in our plan.

Our overall scheme reads as a system of neighborhoods connected by five North South (N-S) and three East West (E-W) arterial roads. We imagine the existing central artery of the city will be the main axis point along which the neighborhood, circulation, and open space system will be oriented. At three points along the main axis at the nexus of open space system are large, dense commercial centers. These will become main economic engines and places accessible to all neighborhoods. View corridors to the riverfront are emphasized and open space will be strategically preserved.

高明在水运和工业方面与珠江三角洲保持着密切联系。它是一座处于转型中的城市，同时也是珠江三角洲经济开发区的一部分。高明具有丰富、多样的景观：整齐的网格型城区、鱼塘和自然村落分布其间。在未来的十年间，这座城市还将发生很大的变化。因此，与发展变化相适应的规划策略将显得极为重要。在我们的规划中，我们从长远的角度出发，将高明的未来发展路线定为灵活的、适应力强的、功能齐全的可持续型发展。

我们整体的规划将居住区域用五条南北走向、三条东西走向的干道连结成为一个完整综合的体系。由此可以想像，已经存在的城市中央主干道将成为住宅区、交通和公共空地系统沿其分布的轴线。在这条主要轴线上分布有三个比较大的公共场所区域，它们都是密度比较高的商业中心。这些地区将成为服务于所有居民的主要经济活动区。河边的景观通道将可以得到强调，公共空地也将得到战略性的保护。

figure 2: example of urbanized canal as central aspect of open space
图 2：都市河道作为开放空间的主要元素。

The neighborhoods, four in total, will share the public open space network. Each will have distinctive characters depending on the locations. Within each neighborhood, we envision a central commercial node that will serve up to 1km diameter from any point in the neighborhood strengthening pedestrian oriented environment. An grid of blocks is envisioned in each of the four areas, measuring 150m x 200m maximizing south facing. The large block sizes around the nexus define a larger system and are intended to be flexible and adaptable as the economy matures. Each neighborhood and districts will have a distinct character and the block system will be oriented to best suit the existing topography. The development phases of each neighborhood will correspond to regional economic demands, so a neighborhood which meets current demands will be developed first.

Five N-S and three E-W arterial roads integrate central Gaoming with the Pearl River Delta region and the waterfront. These roads will be regularly intersected by smaller secondary roads that will both increase circulation and also slow traffic on these main arteries. Our vision for the street network is continuation of the green open space network as it will link large open parks with boulevards. The street network also reflects the topography of the site and designed to maximize the park space with easy accesses.

In phase one of the development scheme, much of the open space will be preserved. This serves several purposes. One, it acts as a natural environmental filter for "gray" water purification and storm water drain control, two, it is an amenity for all four neighborhoods, three, it invites citizens for cultural and social activities, four, it enhances natural ventilation for the entire city, and finally, it offers flexibility for future development as these sites are integrated into the grid network.

总共四个居民区将共享公共场所系统。每一个区域根据它们地理位置的不同而具有不同的特征。在每一个居民区内，都将建有商业中心区，以此为圆心的一公里半径范围内的居民都可以享用步行到商业中心的便利。每一个居民区都被规划成拥有网格型的、面朝南、最大面积约为150米宽，200米长的街区。随着经济的不断发展，这些街道的形状、大小还将变得更灵活更有适应性。每一个居民区和街道都将拥有各自的最适应其地形的特征。各个居民区的发展都将与整体区域经济需求相适应。这就是说，最符合当前经济需求的居民区将被优先发展。

五条南北走向的和三条东西走向的干道将把高明中心区和珠江三角洲地区以及水域集成连接起来。这些干道将有规则地和次级道路连结，从而提高这些道路的流通能力，缓解交通压力。我们对道路系统的规划实质上是将绿地系统与公园系统连接起来的一个延续。道路系统的规划还将和地形特征相结合，从而使公园绿地最大程度地被利用。

在发展规划的第一阶段中，很多公共场所将得到保护。它们将起到多种作用。第一，它将在“灰水”净化和雨水排水控制中起到自然过滤的作用。第二，它是所有四个居民区内环境最为宜人的休闲场地。第三，它可以吸引市民参与社区文化活动。第四，它将提高整个城市的自然通风扩散能力。最后，因为这些区域被整合在了整个城市网格系统中，它为未来的城市发展提供了灵活性。

figure 3: suburban area of Chicago
图 3 ：芝加哥近郊

The waterfront and canal system will be treated differently in a way that creates distinctive images and maximizes cultural and social activities depending on the neighborhood character. For example, along the waterfront, we imagine an entertainment and cultural node, supported by commercial activities and residential uses, and along the canal, we imagine playgrounds for citizens, some urban agricultural lands, and places for diverse leisure activities.

The city will have a system of green and urban networks. The surrounding green network functions as an amenity to the future developed areas as it will provide views and recreation, as well as grey water filtration and storm water management. The highly developed and densest areas will be concentrated along the arterial roads where the green network and urban network intersect..

水域和运河系统将以不同的方式得到处理，这样可以根据各个居民区的特点来设计各有特色的景观，并最大程度地发展文化和社会活动。举例来说，我们可以想像在水滨的周围，发展支持商业活动，为居民的娱乐和文化建立设施；在运河沿线，我们可以规划一些为居民设计的活动空地、市镇农业用地和一些多样化的休闲活动用地。

整个城市将拥有系统的绿地和街区。周边的绿地网络，除了提供“灰水”净化和雨水管理之外，还将提供景观和休闲功能，并成为未来城市继续发展的理想选择。高速发展和密度最大的区域，将集中分布在绿地网络和城镇网络交叉的主干道沿线。

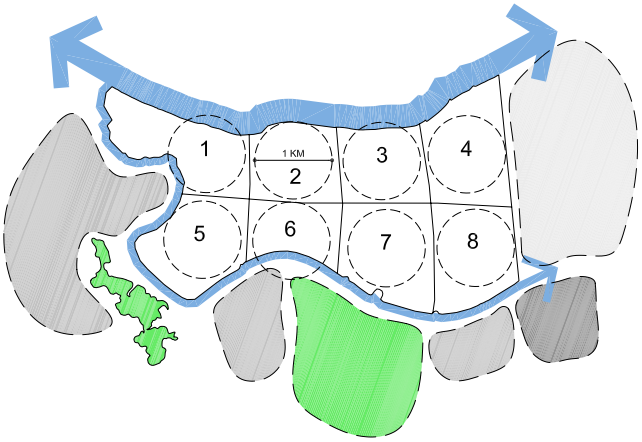


figure 4: Concept Diagram
图 4 ： 概念图

figure 5: Central Park New York
图 5 ： 纽约中央公园

DESIGN CONCEPT : NEIGHBORHOOD

设计理念 ： 居民区

Surrounded by West River, canal, the vibrant existing city, expanding light Industry, and hills, the site has great potentials to be attractive for many types of households, and will become a hub of western pearl delta region.The site will be divided into eight neighborhoods one kilometer in diameter from each node located at the centre of each neighborhood to foster pedestrian oriented civic life.

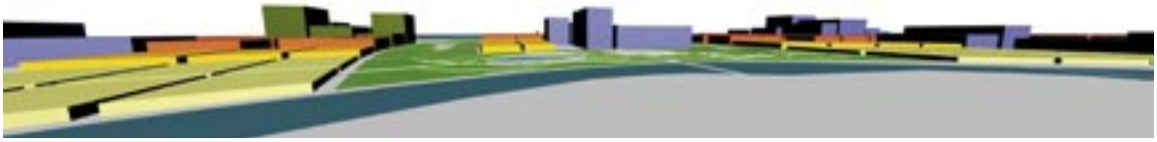
风景优美的西江和秀丽河所围绕，加上充满活力的现有城区、扩展中的轻工业区和小山，这个区域具有吸引多种类型的家庭来此居住的巨大潜力，并将成为珠江三角洲西部的核心。这个区域将被分成八个各自以居民区为圆心，以一公里为半径的步行城区。

在高明规划

figure 6: Land Use / Masterplan aerial view from East 主要 **/** 土地使用规划 由东向西的鸟瞰效果

Master Plan Calculations

	gross area	% of residential	average density	population
High density area	128	33%	800	102400
Mid density area	133	34%	500	66500
Low density area	127	33%	300	38100
Total residential	388		534	207000
Government/ Institutional	20			
Commercial	105			
Cultural	47			
Industrial	14			
Open space	250			
Total	824			
Total residential (existing city plan)	435		575	250000

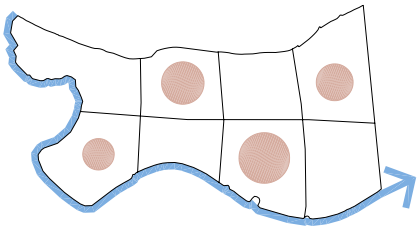


Nodal Development:

分点发展

Four neighborhoods each with distinctive node will be developed with respect to the overall population projection given from the city of Gaoming. Nodes are staggered in order to maximize open space accessibility and distinctive character.

四个不同的居民区将根据高明人口发展的需要而建。区域将被设计成交错形式，这样可以最大程度地提高公共空地的使用率。

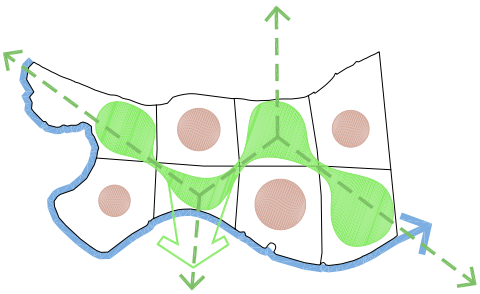


Open Space Network:

公共场所网络系统

Each open space will be linked as a systematic network of parks to expand as well as consolidate city fabric.

每一个公共场所都将被连接成为公园系统网络的一部分，并起到延伸、整合城市结构的作用。

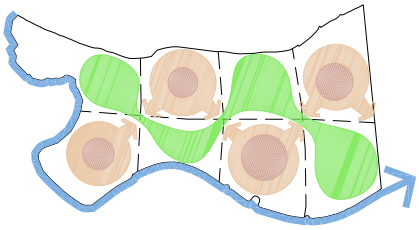


Urban Growth:

城市增长

Each neighborhood will be gravitated toward adjacent neighborhoods as the each node start to expand, generating a neighborhood network.

每一个居民区都将向邻近的区域拉伸，从每一个节点开始向外延伸，发展成为一个居民区网络系统。

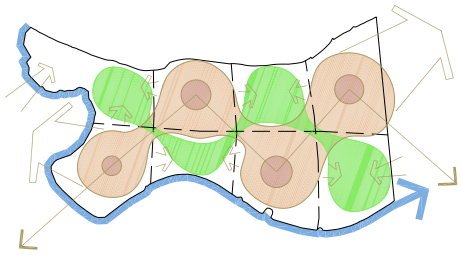


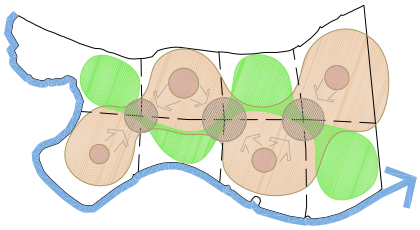
Urban Growth Management:

城市增长管理

The neighborhoods and the open space will weave into a compact expansive urban network. The open space network will not only cushion urban sprawl, consolidating urban growth pattern, but also allow flexible and adaptable urban land use.

居民区和公共场所将相互交错，成为紧密开阔的城市系统。公共场所系统不仅可以成为城市延伸的缓冲之地、巩固城市发展模式，还可以使城市用地更具有灵活性和可行性。



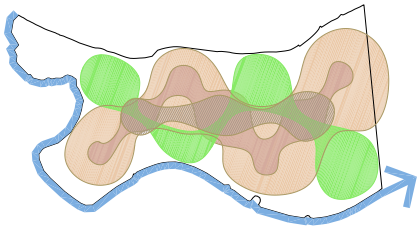


Urban consolidation - Nexus:

The overlaps between the open space and the neighborhood networks will generate nexuses which will become city centers strengthening local economy.

城市统一联接

公共场所与居民区交错的部分将成为联接区域，并成为城市中的重点经济区域中心。

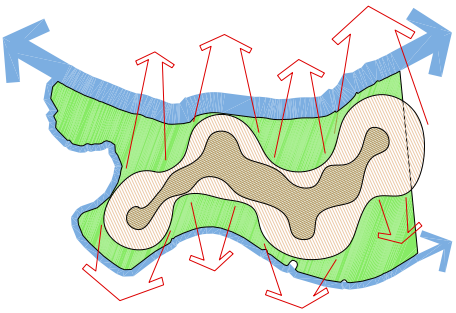


Urban Cluster Network:

City nexuses will expand in linear fashion along the main arterial road. Four networks, open space, distinct nodes (mid density), periphery (low density), and nexuses (high density), will form an interwoven urban cluster.

城市组团网络

城市中的节点将沿着主干道作线性方式延伸。四个居民区、公共场所、特殊的节点（中密度）、边缘区域（低密度）和节点（高密度）将形成一个相互交错的城市组团网络。

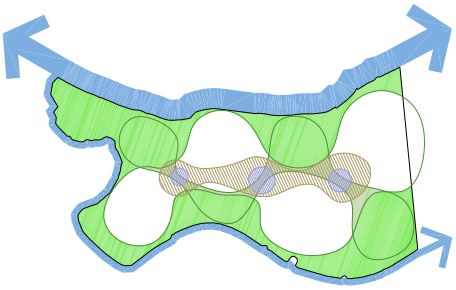


Higher Land Value:

Each neighborhood will take advantage of unobstructed views toward waters with easy accesses to parks. The waterfront views and large park (leisure space) will increase land value as they attract private real estate markets.

更高土地价值

充分利用西江和其他河流的水岸景观，建筑高度向水岸线梯次下降。建设大型开放公园提供更多的休闲设施。水岸和休闲设施都可以吸引房地产的发展，从而提高土地价值。



Sustainable water treatment - Gray:

Gray water from the high density areas will be treated separately through a special ground treatment system integrated to the open space park minimizing water treatment costs.

可持续的水处理
–灰水处理

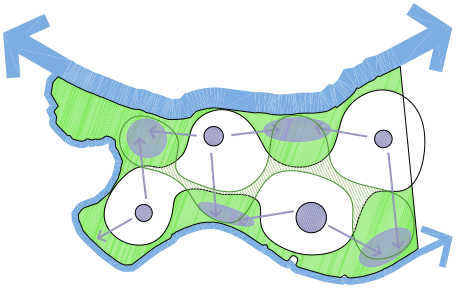
高度密集区的“灰水”处理将通过一个被整合在公园公共场所中的特殊地面处理系统分开处理，从而有效地降低水处理成本。

Water Treatment - Storm:

Storm water run-off will be collected to the large open space parks which will be able to retain water capacity over the 100 year flood level. The storm water treatment is separated from the gray water treatment in order to engender low tech natural water purification systems.

可持续水处理

雨水径流将被收集到公园公共场所区域，这样可以保持容量水位在百年洪水警戒范围内。雨水处理将和“灰水”处理分开进行，这样可以鼓励使用不需要大量技术的自然水质净化系统。



Flood Control:

Some part of existing dike will be converted into the integrated open space parks which can hold 100 year flood away from the living areas of the city. Variation in water level becomes integral part of the open space park design.

洪水防治

现有堤坝中的一部分将被转化成为公园开放空间的一部分，这样可以在防止洪水威胁城市居民区。水位等级的变化将成为公园公共场所设计中完整的一部分。

Transportation:

Two longitudinal and five transversal arterial roads along with public transit will be laid out. Those roads will intersect each node so that residents at each neighborhood will have convenient access to public transportation, improving air quality as well as reducing energy consumption. The arterial roads will be boulevards linking open space systematically within formalized urban fabric.

交通

公共交通系统中的两条纵向和五条横截的干道将被规划穿过每一个节点。这样在每一个居民区内的居民都可以很方面地利用公交系统。公交系统使用率的增加可以提高城市空气质量并降低能源消耗。在正式的城市结构范围之内，主干道将被系统地建成连接公共场所的林荫大道。

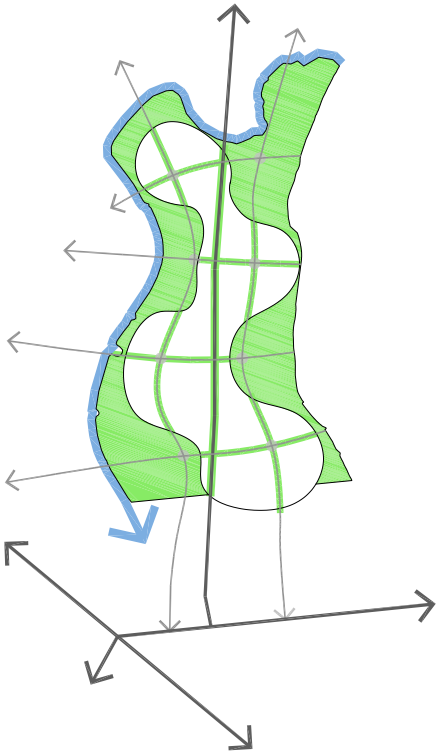
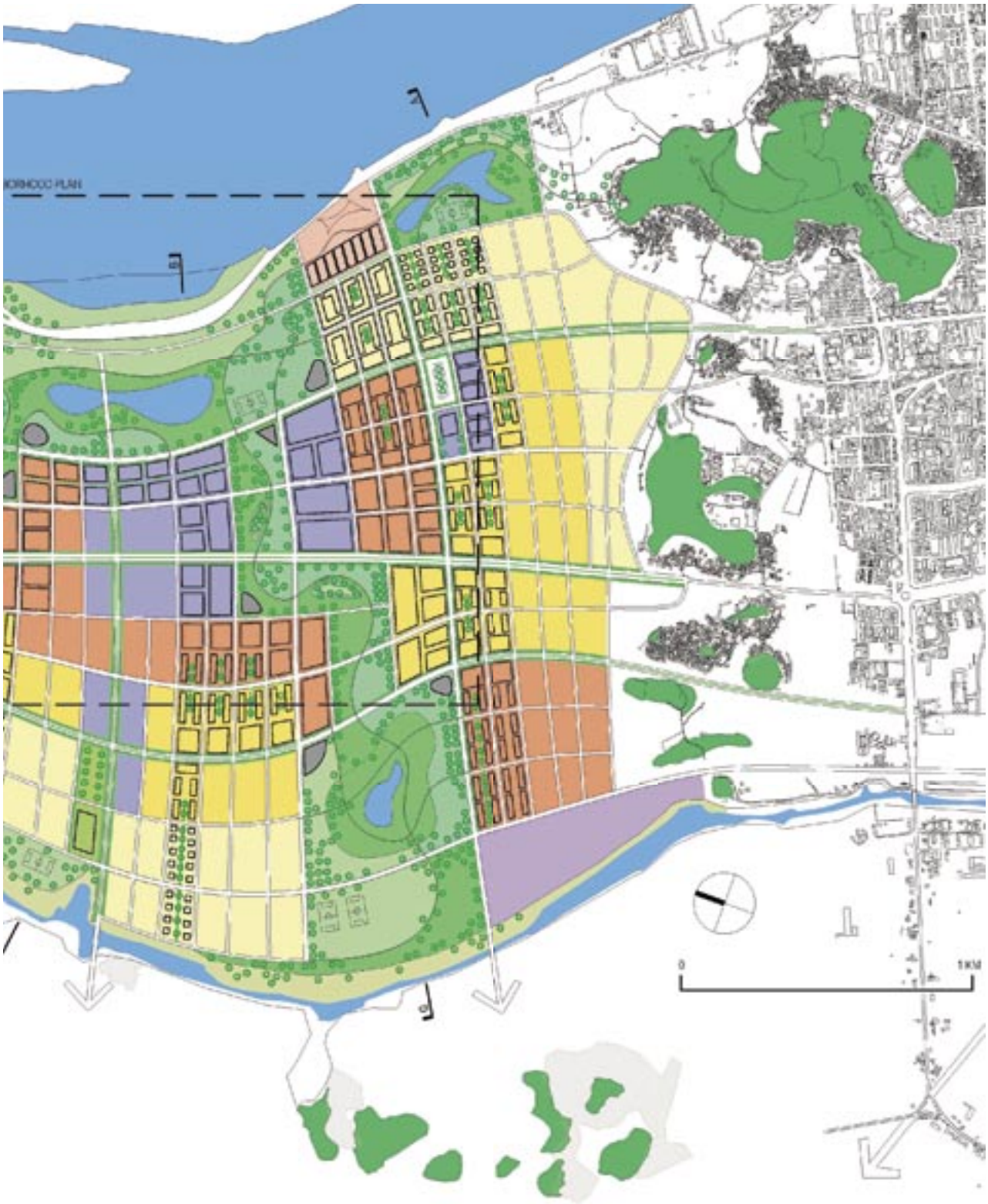


figure 7: Land Use / Masterplan
总体规划图 /土地使用规划



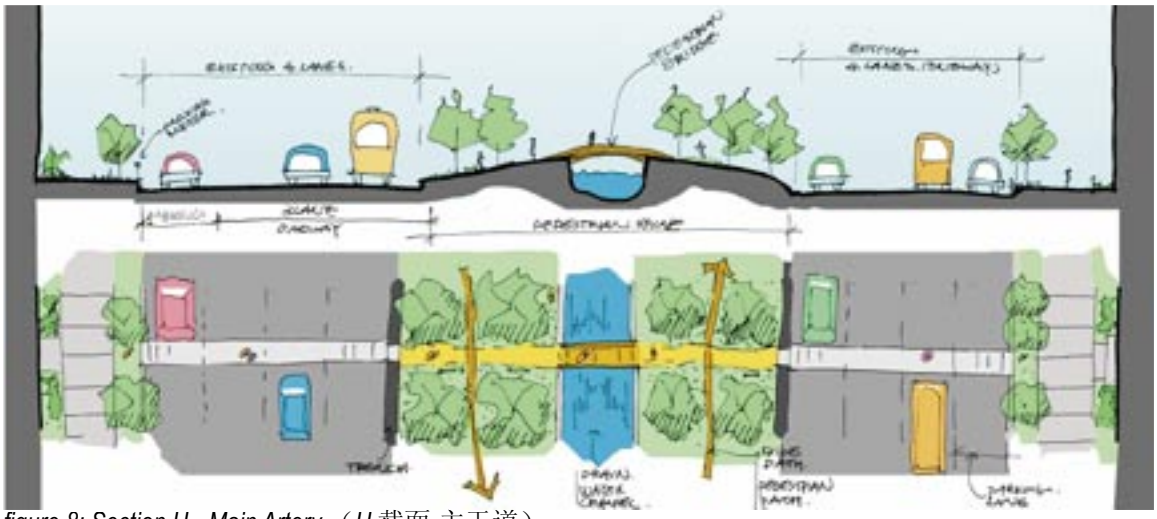


figure 8: Section H - Main Artery （*H* 截面-主干道）

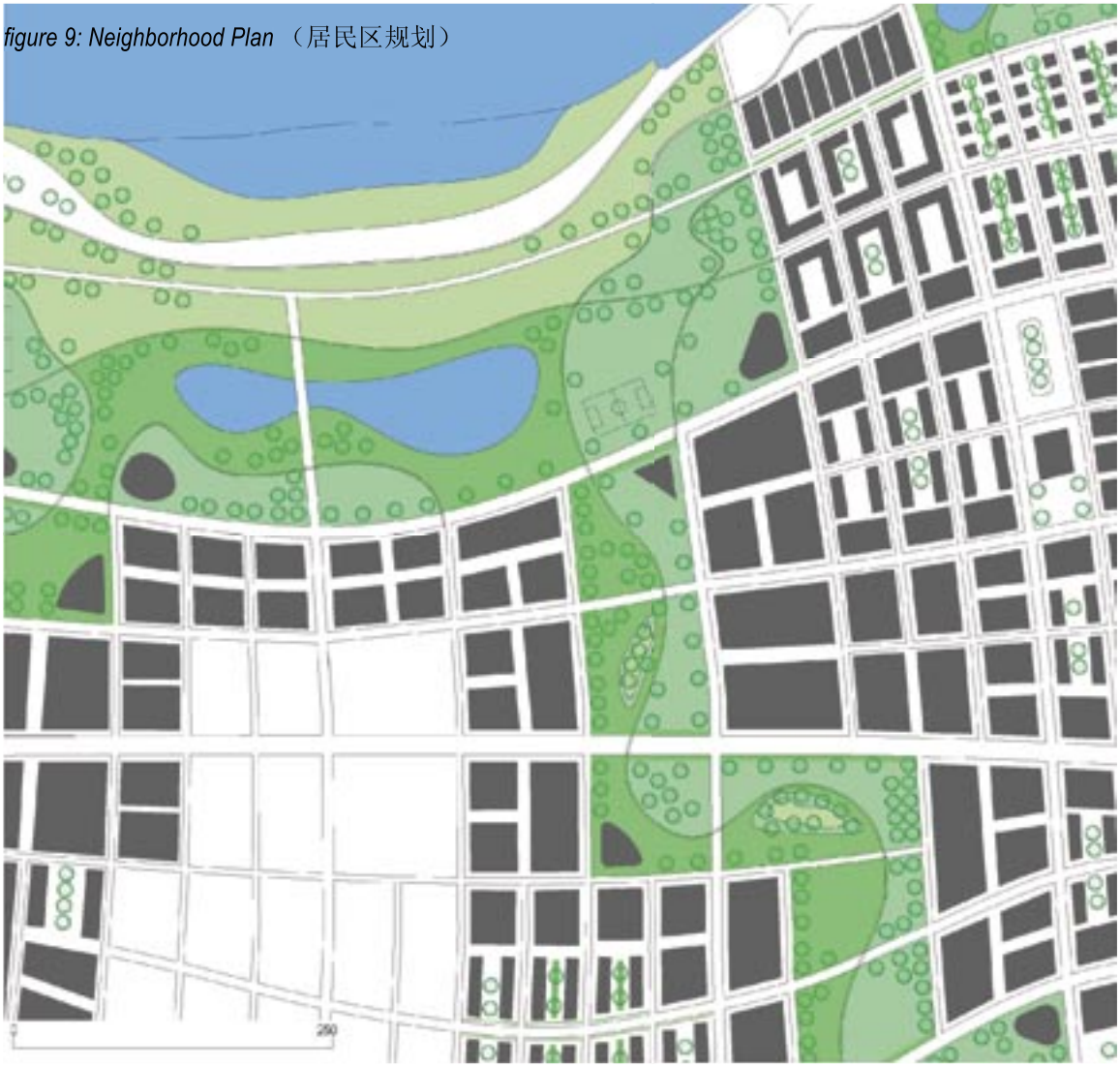


figure 9: Neighborhood Plan （居民区规划）

figure 10: Section A - West River Edge 1 （A截面- 西江河岸1）

figure 11: Section B - West River Edge 2 (B截面- 西江河岸2)

figure 12: Section E - Xiuli River Edge 1 （E截面- 秀丽河河滨1）

figure 13: Section D - Xiuli River Edge 2 （D截面- 秀丽河河滨2）

figure 14:Section G - Xiuli River Edge 3 （G截面- 秀丽河河滨3）

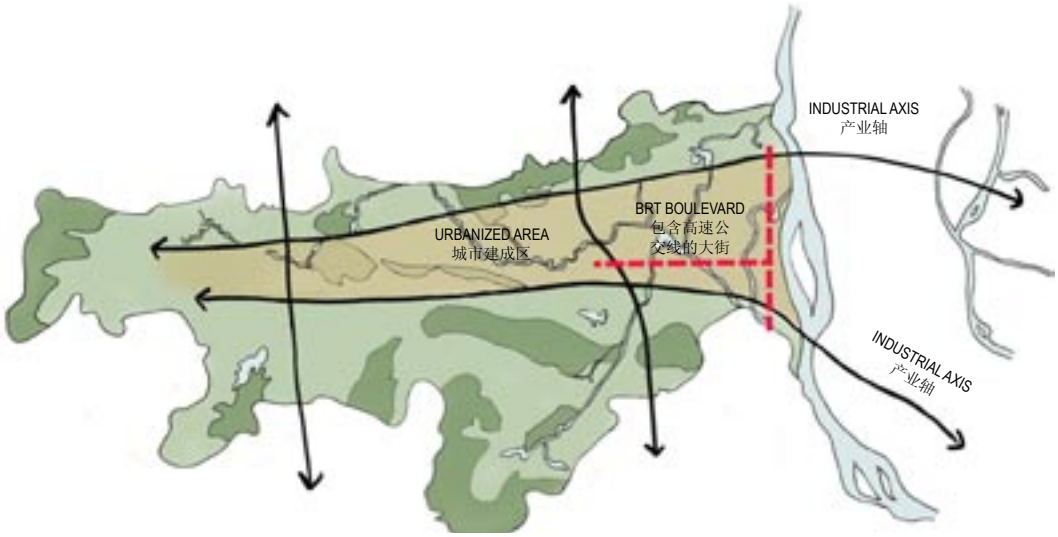


figure 1: Regional context with anticipated connections
图 1 ：区域概况及所规划的连接

GAOMING: A MATURING CITY
高明：一个成熟中的城市

Project Team: Christine Caine, Diana Sherman, and Leonardo Shieh

CONNECTIONS

The key features of this proposal—the boulevards, civic nodes, amenities and attractions, and green space network—provide visual and physical connections between the waterfront and the western half of the city, as well as between the two industrial corridors to the north and south. Moreover, the canal system integrated into the boulevard design provides connections between water bodies and establishes a sense of continuity for the city.

AXES THROUGH THE CITY

A central feature of this proposal are the two primary axes that run through the city: a north-south corridor along the existing arterial road through Gaoming, and a new east-west corridor that will connect residents to the waterfront. Transit lines will also follow these axes, which will be visually demarcated by broad, tree-lined boulevards along dense commercial stretches.

INDUSTRIAL CORRIDORS

In order to enhance the quality of life for the residents of Gaoming, industrial uses will be contained in two broad corridors, one to the north and one to the south of the city. This will allow the city to better address industrial waste, and will concentrate commuting activity to support mass transit development. In addition, buffers between industrial uses and residential-commercial uses will ensure that Gaoming's identity is not focused solely on its industrial existence.

联系

本规划提议的关键组成部分大街、城市节点、便利设施与吸引物、绿色空间网络都为城市的邻水区与城市西部之间，和城市北部和南部的两个产业走廊之间提供了视觉上和物质上的联系。此外，与大街的设计结合的运河系统为不同的水体之间提供了联系，并为城市建立了连续性。

穿越城市的主轴

本规划提议的一个中心组成部分是两个穿越城市的主轴：一个是沿现有城市主干道南北向的走廊，另一个是连接居民区与邻水区的新东西向走廊。根据这两条走廊，我们还设计了运输线。在运输线穿越密集的商业区部分使用宽阔的、有树木边界的大街作为运输线的边界。

产业走廊

为了增强高明市居民的生活质量，工业用地将被限制在分别位于城市南部和北部的两个宽阔的走廊中。这可以使城市更好地处理工业废物，可以使通勤活动更加集中从而支持大规模公共交通的发展。另外，工业用地和居住、商业用地之间的缓冲带可以保证高明的城市特点不会只集中在工业上。

MODULAR STREET GRID

The crux of this plan for Gaoming is a system of modular blocks—a grid that can be adapted and divided in new ways as the city grows. Each block is 300 meters by 300 meters; in the densely-populated city center, these large blocks may be sliced into nine smaller blocks by smaller streets to create pedestrian-friendly neighborhoods with a residential or commercial character, as appropriate. In less dense areas, however, this block may be divided into only four smaller blocks, as there may be more open space and larger lot sizes. In industrial areas, the block may not be broken up at all—but as the city grows and development moves westward, the established grid can be subdivided and smaller blocks created without the need for new access roads or other infrastructure changes.

组合式的街道网格

本计划的一个关键点是一个组合式的板块，也就是一种可以随着城市发展不断调整和分化的结构。每个板块有300米×300米见方。在人口密集的城市中心，这些大的板块被较小的街道分隔为九个小块，从而创造一种适合步行的居住小区或者商业小区。在低人口密度的地区，大板块可以被分为四个小板块，这样可以保证更多的开放空间和更大的地块面积。在工业区，这些大板块不会被分割，但是随着城市向西扩张和发展，这些板块会被进一步分割，新的板块将会产生，但不需新的道路和其他基础设施。

COMMERCIAL AND RESIDENTIAL DEVELOPMENT

High-density commercial and residential buildings will be clustered around the main transit corridors, with density decreasing as development moves away from the central axes. Typologies will allow for the concentration of commercial and retail uses at street-level along the major roads, with housing or office above. In the interior of each block, buildings will be at a more human scale, with attached town homes and public green spaces woven between towers. Low density areas will be at the city edges and in the areas immediately adjacent to regional open spaces.

商业区和居住区的发展

高密度的商业建筑和住房将会集聚在城市主要运输走廊的四周，随着发展逐渐远离中心轴线，建筑密度会随之下降。所规划的布局将会在建筑的底层集中商业和零售业，住房和办公使用在建筑集中在上层。在每个街区的内部，建筑会有更加人性化的规模，别墅和公共绿色空间将会穿插在高楼之间。城市边缘和接近区域性开放空间的区域将会有较低的建筑密度。

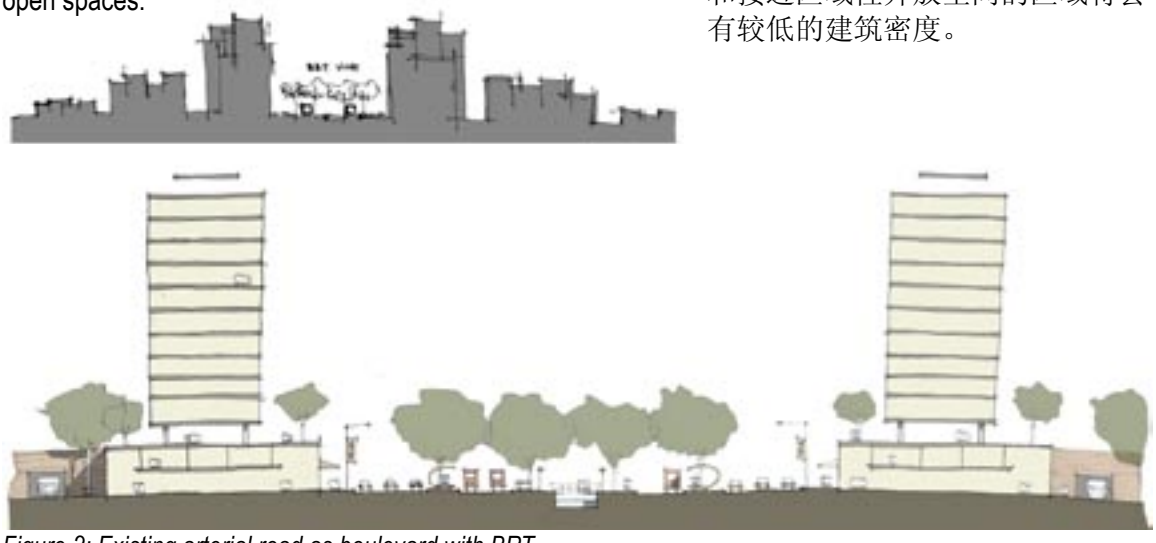


Figure 2: Existing arterial road as boulevard with BRT
图 2：现有的主干道作为大街（包括快速公共汽车运输线）

TRANSPORTATION

Central Boulevards

Two central boulevards run through Gaoming in this proposal, creating shared space for drivers, transit users, and pedestrians. The street edge will be landscaped to create a pedestrian realm where residents and shoppers will feel buffered from the six lanes of traffic. Designated, well-marked crossings will allow pedestrians to cross the boulevard and to reach bus rapid transit stops. Canals along the boulevards' medians will enhance the aesthetics of the boulevards while providing for storm runoff and occasional flooding.

Bus Rapid Transit (BRT)

Two bus rapid transit lines will form axes across the city, connecting the waterfront to the canal and the western end of Gaoming and linking the two industrial edges of the city. One line will follow the existing arterial road that runs north-south through the city, capitalizing on the existing infrastructure to create a wide boulevard with six lanes of traffic, two dedicated BRT lanes, and ample space for pedestrians and landscaping. The use of Compressed Natural Gas buses will ensure that the system has as little impact as possible on the city's environment.

City Bus System

A local bus system will feed out of the BRT system to connect residents to the major transportation axes, and to link the BRT to the industrial corridors. Because less infrastructure is required for the bus system than for the BRT system, it can easily respond to the changing needs of the city as population grows.

Regional Connections

Two bridges—one existing, one currently planned—link Gaoming to Foshan across the West River. These ties are critical for the area's industries, which will benefit in accessability to other parts of the province. These proposed axes can be extended westward to connect the eastern portion of Gaoming to its western clusters as these areas grow into a single metropolitan area.

交通

中央大街

在本提案中，两条中央大街穿越整个高明市，为司机、运输线使用者和行人提供共享的空间。街道边缘将会美化成为一个步行区域，将居民／购物者和六车道的繁忙交通隔绝起来。仔细规划和清晰标定的交叉路口使得行人可以穿越大街到达快速公共汽车站点。大街中央的运河增加了街道的美感，同时也可以用作雨水和洪水排放。

快速公共汽车运输线（BRT）

两条快速公共汽车线将会形成穿越城市的轴线，连接邻水区与运河以及城市的最西端，同时连接城市边缘的两个工业区。其中一条线将会沿着现有的南北主干道贯穿城市，利用现有的基础设施来建立一个包括六条机动车用道、两条BRT专用道和充足步行空间和绿化空间的大街。压缩天然气(CNG)汽车的使用将会保证本系统对城市环境的影响达到最小。

城市公共汽车系统

一个独立于快速公共汽车运输系统之外的本地公共汽车系统将会连接居民区和主要的交通轴线，并同时连接BRT与工业走廊。由于本地公共汽车系统比快速公共汽车运输系统需要较少的基础设施，本地公共汽车系统可以灵活地响应由于人口增长带来的需求变化。

区域联系

一条现有的大桥和一条规划中的大桥穿越西江的西部并连接高明市和佛山市。这两条纽带对本地区的工业极为重要，因为本地工业依赖于与省内其他部分的连通。这些规划中的轴线可以向西部延伸，从而连接高明市的东部与西部，使得这些区域形成一个整体性的城市区。

GREEN SPACE AND CIVIC SPACE

REGIONAL OPEN SPACE

Several significant green spaces take advantage of the existing topography and open space to create large regional parks. These spaces encircle the city, providing access to nature for the many residents and creating a comprehensive parks system that will formalize the preservation of open space while allowing the city to continue to grow.

区域性开放空间

几个主要的绿色空间利用了现存布局和开放空间，构造成为大型区域性公园。这些空间环绕城市，为居民提供接近大自然的机会，并建立了一个综合的公园系统，在允许城市持续扩张的同时，有效地保护了开放空间。

figure 3: Diagram with open space and neighborhood node systems

图 3 ： 公共开放空间和小区节点系统图示

NEIGHBORHOOD PARKS

Gaoming's local parks will be woven throughout the urban fabric; every resident will be within a short walk to a nearby green space. Amenities in and design of these spaces will vary, however; some parks may provide recreational space for sports, while others will offer serene passive uses. Still others may include water features or nature trails, and some parks will function as cultural or artistic spaces.

小区公园

高明市本地的公园将会被编织进整个城市结构中；每个居民都可以步行到临近的绿色空间。但是各个空间的便利设施和设计将会不同；有的公园会为运功提供休闲空间，而有的则会提供安静休息的功能。其他的可能会以流水或自然小路为特征，有些公园则会成为文化和艺术的空间。

PUBLIC PLAZAS

In addition to the parks throughout the city, public gathering spaces will provide areas for practicing tai chi, exercising, or other outdoor activities. Some plazas are sited near industrial or commercial centers to encourage workers to use these areas during breaks or in the mornings or evenings.

公共广场

除了遍布城市各处的公园，公共聚集的空间将会为居民提供打太极拳、锻炼或者其他室外活动的场所。有些广场位于工业中心或者商业中心，可以鼓励工人们在午休时间或早晚使用这些场所。

EXISTING VILLAGES

Several existing villages dot the urban grid in this proposal. In some cases, the village will be preserved; residents can continue living there as the city grows around them, and the architectural scale of the village will be maintained. In other cases, adaptive re-use of the village architecture will create shopping and entertainment districts that will also retain the original scale and character of the region, but will integrate the space into the new urban context

现存的村庄

在本提议中，几个现存的村庄在城市网格之中呈点状分布。在有些情况下，村庄将会被保留；居民可以继续在村里生活，而城市则会绕过村庄扩张，村庄的建筑规模将会被维持下来。在另一些情况下，村庄的建筑将会进行功能上的调整，成为商业和娱乐区，原有的规模和村庄的特点将会保持下来，但是会被整合到城市背景之中。

WATERFRONT DEVELOPMENT

Although this proposal centers on the westward development and growth of Gaoming, the waterfront is also a defining aspect of the city. Connecting the space to the city center is essential, as is providing access to the river for residents. Strategies for addressing these concerns will vary along the river's edge, however; in some areas, the waterfront will be preserved as untouched natural space, while in other areas, more active uses will be encouraged.

邻水区的发展

尽管本提案是以高明市西部的发展为中心，但是邻水区是高明市城市特点的重要方面。连接邻水区和城市中心是十分必要的，因为这为城市居民提供了接近河水的机会。连接邻水区的方案会根据沿河的不同位置而有所不同。在某些区域，邻水区会被保持为未开发的自然空间，在另外的区域，将会鼓励更积极的用地方式。

CENTRAL ACTIVITY / NEIGHBORHOOD NODES

Scattered across the city are central nodes of activity: event places, commercial districts, transit confluences, iconic structures, city-scale open spaces, and more. These sites provide destinations for both Gaoming's residents and the city's regional tourists, and create a strong identity along the densely-populated corridors of the city.

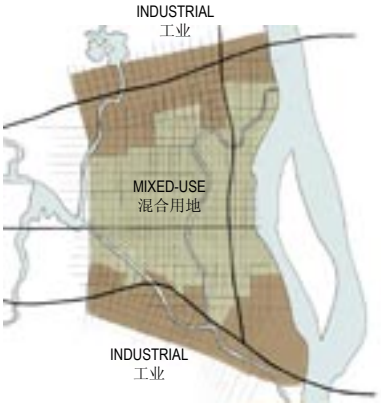
中心活动/小区节点

各种活动的中心节点将会散布在城市的各个区域：包括大型活动场地、商业区、运输线交接点、标志性建筑、城市范围的开放空间等等。这些场地为高明的市民和外来旅游者提供了目的地，并沿城市中人口密集的走廊地区确立了城市的强烈特色。

TRANSFORMING BLOCK PATTERNS AS THE CITY MATURES

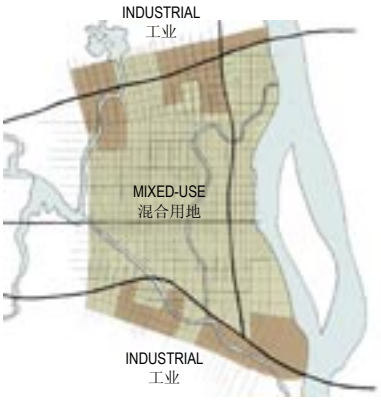
Key to Gaoming's future is a strategy for long-term sustainable development in the city. This proposal seeks to balance ecological concerns with economic stability and growth, as well as with equity issues associated with the rapid development of the region. Industrial uses will be concentrated in two corridors on the periphery of the city, creating a residential and commercial zone in the center of the city to improve residents' quality of life. As the city grows, blocks can be adapted to accommodate new economic sectors and populations.

Young
This diagram shows the initial state of the primary sector city. Dense industrial land use is located adjacent to the industrial corridors, framing the central housing zone. The industrial blocks are a full 300- by-300 meters, planned to allow for future division and integration.



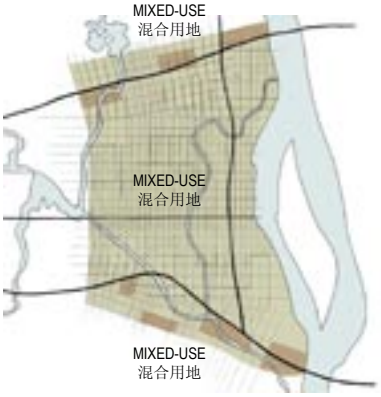
发展初期
本图显示了单一工业城市的最初形态。密集的工业用地临近工业走廊，构成中心居住区的边界。这些工业区呈300米×300米见方，便于未来的划分和整合。

Transforming
The next development stage of the city shows the beginnings of block divisions within the industrial zone. As the city moves away from economic reliance on industry, the blocks will begin to break down and allow for infiltration of housing and office spaces.

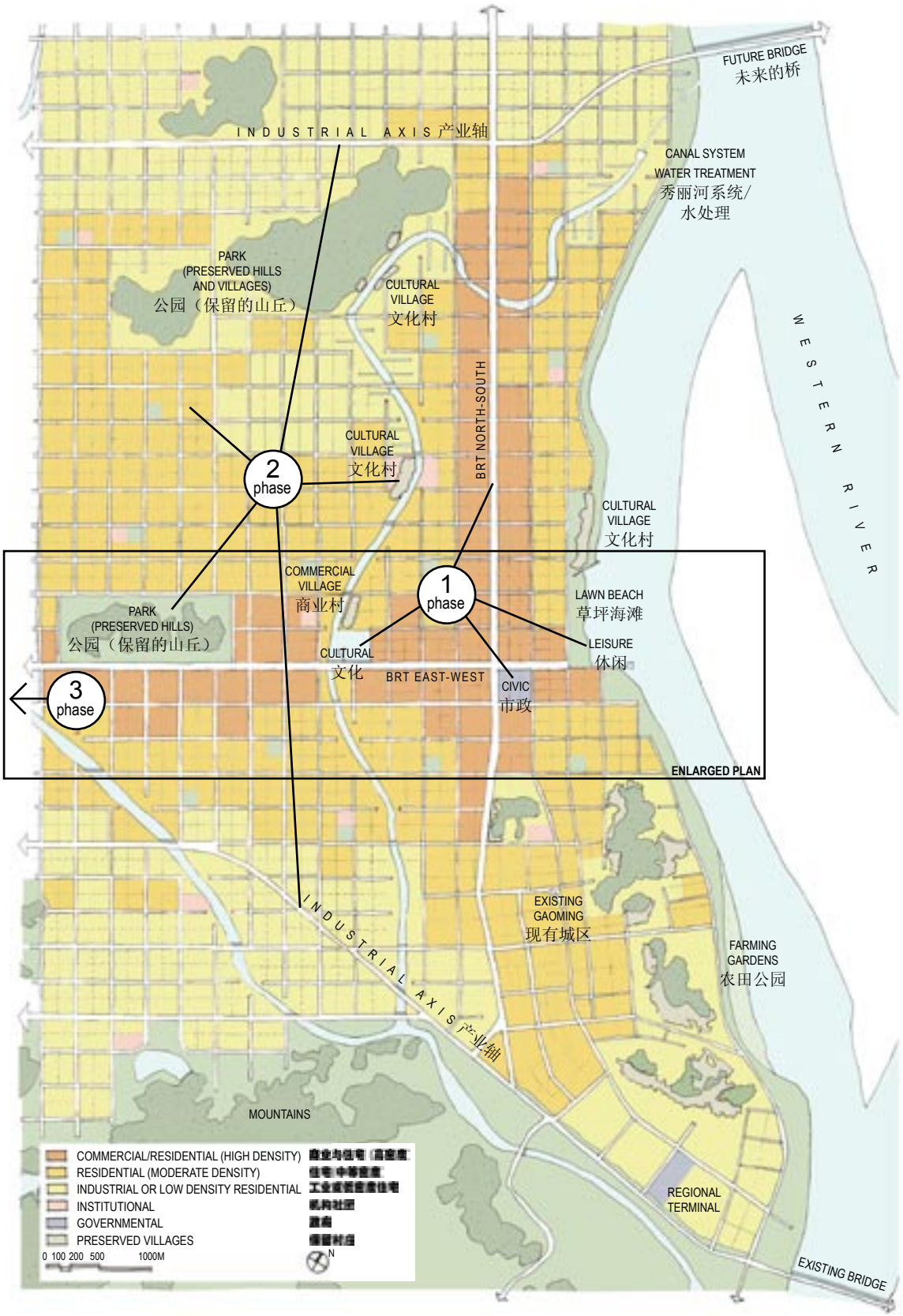


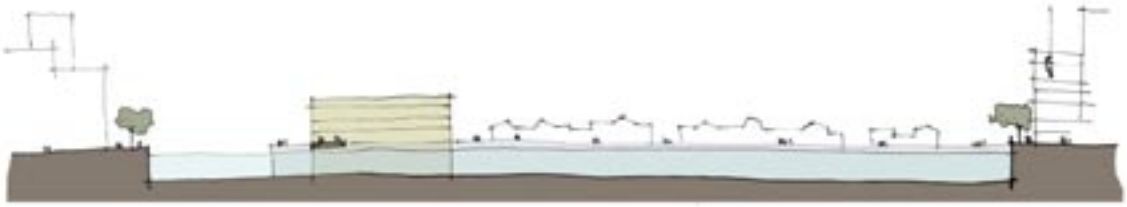
转型期
在城市的下一个发展阶段，工业区中开始了街区的划分。随着城市对工业经济依赖的降低，工业区会逐渐分化，居住和办公用地将会穿插进来。

Mature
The final state of the city presents a mature city, having transformed economically into a tertiary sector city. The majority of the initial 300- by-300-meter industrial blocks have been broken down, creating a more integrated city fabric.



成熟期
城市的最后阶段是成熟期，城市已经转化成为一个第三产业城市。大多数300米×300米见方的工业区会被分化，成为一体化的城市统一体。


FUTURE BRIDGE
未来的桥
INDUSTRIAL AXIS 产业轴
CANAL SYSTEM
WATER TREATMENT
秀丽河系统/
水处理
PARK
(PRESERVED HILLS
AND VILLAGES)
公园（保留的山丘）
CULTURAL
VILLAGE
文化村
BRT NORTH-SOUTH
WESTERN RIVER
2
phase
CULTURAL
VILLAGE
文化村
CULTURAL
VILLAGE
文化村
COMMERCIAL
VILLAGE
商业村
1
phase
LAWN BEACH
草坪海滩
PARK
(PRESERVED HILLS)
公园（保留的山丘）
CULTURAL
文化
BRT EAST-WEST
LEISURE
休闲
CIVIC
市政
3
phase
ENLARGED PLAN
EXISTING
GAOMING
现有城区
FARMING
GARDENS
农田公园
INDUSTRIAL AXIS 产业轴
MOUNTAINS
REGIONAL
TERMINAL
EXISTING BRIDGE
COMMERCIAL/RESIDENTIAL (HIGH DENSITY)
RESIDENTIAL (MODERATE DENSITY)
INDUSTRIAL OR LOW DENSITY RESIDENTIAL
INSTITUTIONAL
GOVERNMENTAL
PRESERVED VILLAGES
0 100 200 500 1000M
N



A **CULTURAL: WATER PLAZA**
Taken through the main cultural region, this section emphasizes the placement of the performance auditorium atop the grand water plaza. Illuminating a soft glow, this auditorium creates a dynamic attraction for retail, dining, and places of social leisure.

B **CIVIC: BRT SUNKEN STATION AND CITY PLANNING BUREAU**
This section is taken at the site of the city planning bureau. Sitting at the intersection of the busiest boulevards, the Gaoming resident will be reminded upon each passing of the constant growth and maturity of the city.

C LEISURE: WATER MONUMENT AND LAWN BEACH

This section is taken through the lawn beach area along the West River. The subtle slope of the green lawn allows for leisure space at the waterfront, while also allowing flooding to occur naturally along the coastline. From the lawn beach one can see the water monument floating beyond the coastline, marking the end of the boulevard axis.

A 文化：水滨广场

此切面图为主要文化区，强调介绍在大型水滨广场上表演大厅的位置。这一礼堂散发柔和的光亮，对零售、餐饮和社会休闲活动产生动态的吸引作用。

B 市政：下沉式快速公交车站和城市规划局

此切面图为城市规划局。居民们在最繁华的大街的十字路口，仿佛可以感受到城市的持续发展和成熟。

C 休闲：水滨纪念碑和草坪海滩

此切面图为西江岸边的草坪海滩。这一略微倾斜的绿色草坪为市民提供了邻水的休闲空间，同时又允许防洪作用自然形成。从草坪海滩上人们可以看到水滨纪念碑仿佛漂浮在河岸之上，界定了大街一轴的终端点。

HIGH DENSITY COMMERCIAL AND MIXED-USE AREAS

The proposed high density areas feature a mix of building typologies: office towers co-exist with mixed commercial and residential towers, and human-scale low-rise homes in the interior blocks. High density zones are concentrated along the new bus rapid transit (BRT) lines to make transit most effective and provide residents, office workers, and shoppers with easy access to the area's business, government, and commercial districts.

Population density:
250–500 persons per hectare

MODERATE DENSITY MIXED-USE AND RESIDENTIAL AREAS

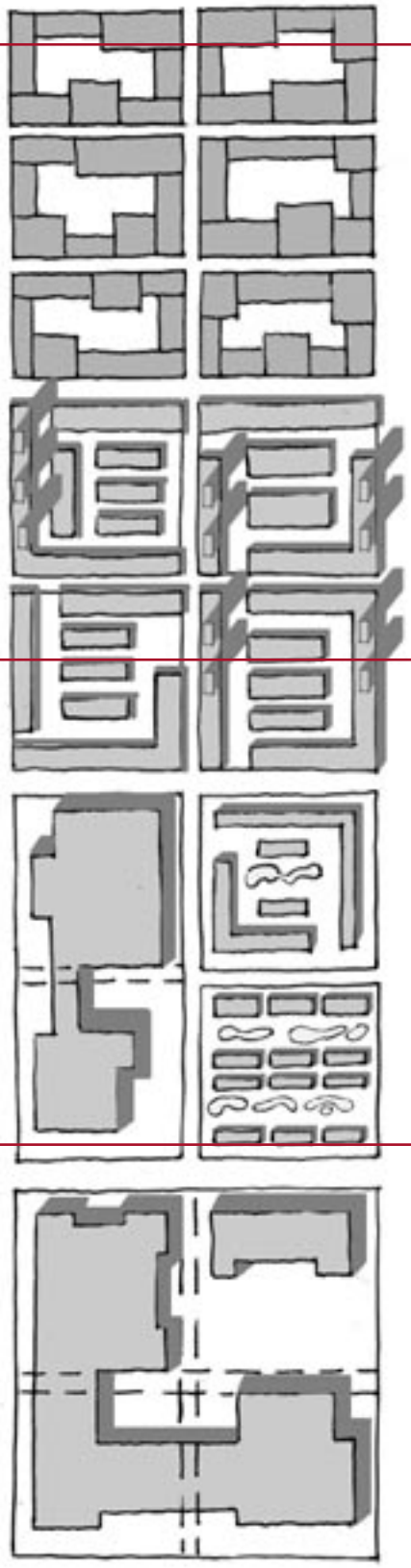
Moderate density areas offer a mix of commercial and residential space in both high- and low-rise buildings; however, the overall scale of these neighborhoods is lower, with streets oriented to the resident, rather than the visitor. Stepped buildings and pockets of open space also enhance the quality of life for residents in these districts.

Population density:
100–350 persons per hectare

LOW DENSITY RESIDENTIAL AREAS

The low density regions of the city are characterized by small attached homes, often with gardens or other outdoor space. Town houses, rowhouses, or, occasionally, detached single-family homes might be typical in these areas. Low density areas are concentrated near large open spaces to mitigate the impact of nearby development and in areas beyond the reach of the mass transit system where it would be necessary to own an automobile.

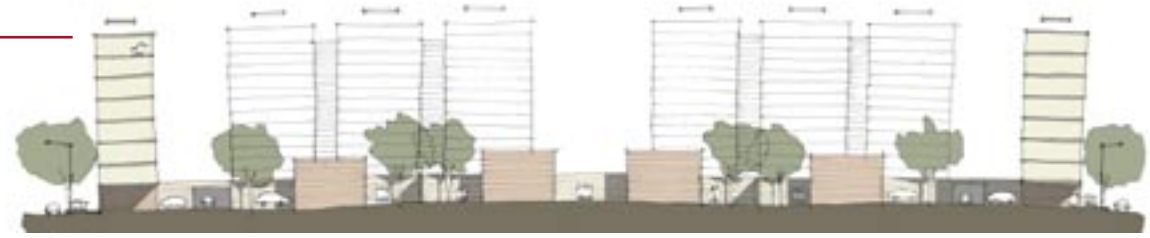
Population density:
0–100 persons per hectare



高密度商业和混合用地区域

本提案中的高密度区域具有混合的建筑布局特点：高层办公楼和商业/居住混合高层建筑共存， 规模较为人性化的低层住宅用地位于街区的内部。高密度区域主要集中在新的高速公交线周围，使得交通最为高效，并为居民、办公室工作人员和购物者提供了公司、政府部门和商业区之间便捷的联系。

人口密度：250-500人/公顷



一般建筑密度和混合使用住宅用地区域

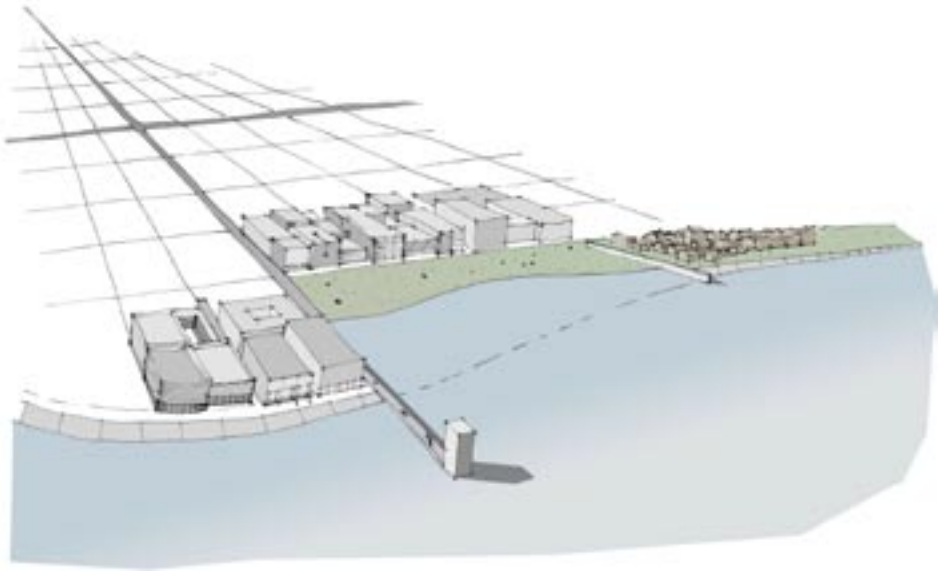
一般建筑密度区域和商业住宅混合空间区域，既有高层建筑也有低层建筑；但是，总体来说，这些小区的规模较小，街道主要为居民而非游客服务。有层次感的建筑和散布其中的开放空间增强了居民的生活质量。

人口密度：100-350人/公顷

低建筑密度的住宅区

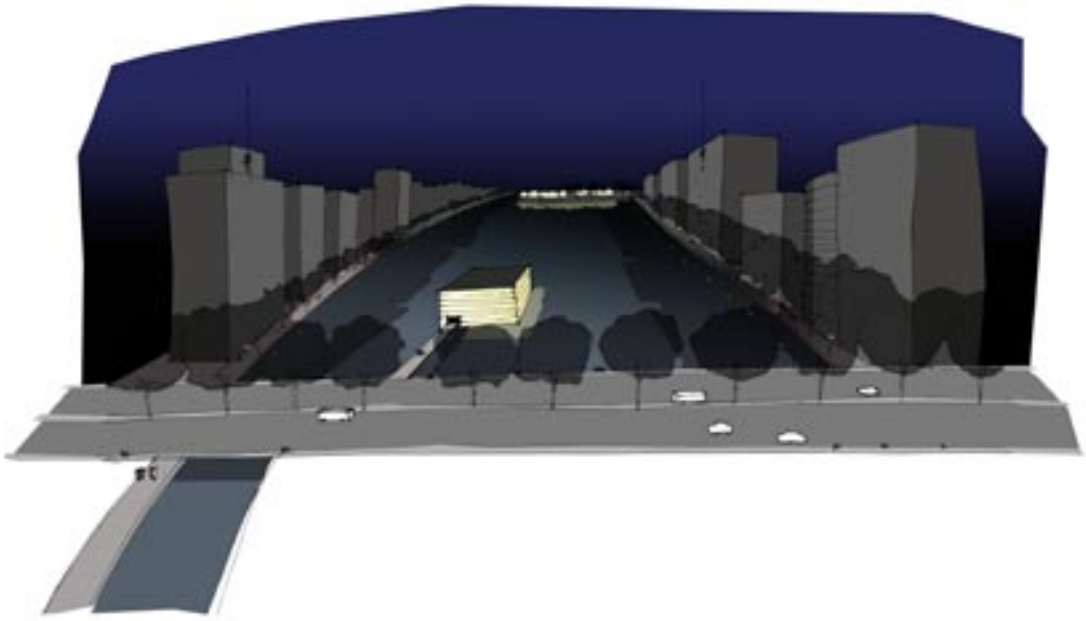
城市的低密度区的特点是小而分散的居民住房，通常住房有花园或其他室外活动空间。别墅、联立住房、或者单一家庭的住宅是这些区域的典型景观。低密度区主要集中在大型开放空间附近和城市公交系统之外的区域，居住在这些区域的居民通常需要私家车。

人口密度： 0-100人/公顷



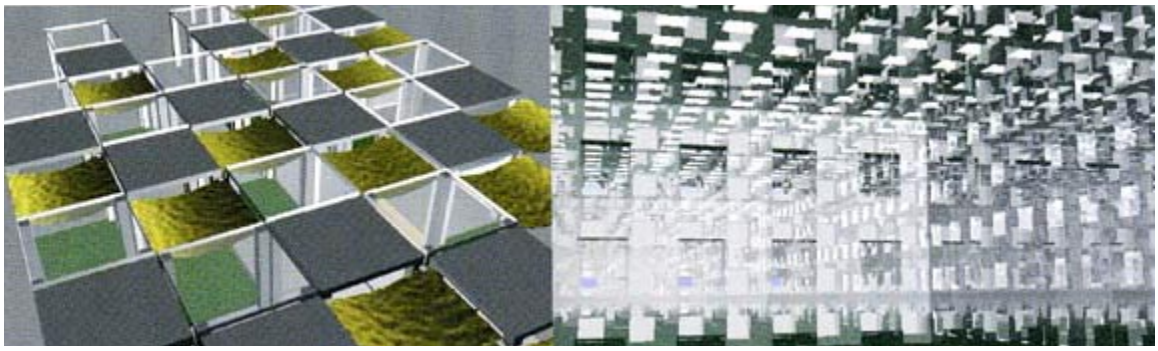
LAWN BEACH WITH WATER MONUMENT
As a symbolic counterpoint to the cultural water plaza, the water monument represents the City of Gaoming rejoicing in the waters of the West River.

草坪海滩和水滨纪念碑
作为文化水滨广场的对照物，水滨纪念碑代表了高明市拥有西江之水。



CULTURAL WATER PLAZA
At the intersection of the east-west boulevard and the main canal, a water plaza features a performance auditorium and a preserved village converted for commercial activities to attract tourists.

文化水滨广场
在东西向大街和主运河的交界处，将会建立一个水滨广场。这个广场以表演大厅和一个被完整保存但转化为商业活动的村庄来吸引游客。



GREENING GAOMING
绿化高明

Project Team: Michael Brown, Anne Dodge, and Ajit Singh

DESIGN CONCEPT

Located on the West River, Gaoming has a unique opportunity to become a green and prosperous city.

设计概念

坐落于西江畔，高明有着独特的机遇成为一座绿色和繁荣的城市。

CITYPLANNING OBJECTIVES

- Improve existing conditions while minimizing impact of future development
- Emphasize three vertical axes along the river, central road, and canal, with a mix of uses that encourages pedestrian activity and public transit
- Bring river into the city through a horizontal, green boulevard and canal, connecting people to the river
- Create a “Jade Necklace” of interlinked green parkways and view corridors for pedestrian and bicycle use
- Develop around nodes of activity, drawing people toward central areas and allowing for phasing of development

规划目标

- 改善现状的同时减少城市发展的压力
- 突出西江，主干道，秀丽河这三条垂直走廊，鼓励多功能混合用地，从而鼓励步行和公共交通
- 通过横向的绿色林荫道和运河把西江引入城市，连接居民活动和西江
- 为行人和骑自行车者创造一条由相连的绿色公园道和视觉走廊组成的“翡翠项链”
- 围绕活动节点发展，把市民引向中心区，考虑阶段性发展

figure 1: Urban Context and Street Networking- Gaoming
图 1 ：高明都市连接和街道网络

IMAGINE PROVIDING

- A new destination - a residential and commercial hub of activity for locals and tourists alike.
- The excitement of a new recreational and entertainment opportunities along the waterfront.
- A new and healthy way for residents to enjoy the outdoors and get around town (the “Jade Necklace”).

设想提出

- 新的目的地－为当地居民和游客创造居住和商业的中心
- 在水滨营造集娱乐休闲为一体的场所
- 让市民以一种全新和健康的方式享受户外活动以及环城休闲（“翡翠项链”）

figure 2 : Green Gaoming Necklace
图 2 ：高明的绿色“翡翠项链”

figure 3: Urban water ways and road networks
图 3 ：都市水系统和道路网络

figure 4: Green Boulevard and Ecological corridors
图 4 ：绿色大道和生态干道

IMAGINE CONNECTING

- Gaoming to an exciting riverfront, made more accessible by a new waterfront park and a network of green corridors and pedestrian and bicycle paths, the “Jade Necklace”
- Gaoming to the river by integrating new and existing public transportation networks
- Gaoming to river, hill and mountain features through a combination of pedestrian and view corridors
- Workers in the residential areas to their jobs through pedestrian and bicycle paths

设想连接

- 高明成为令人激动的滨水城市：构建全新的水滨公园和绿道、人行道和自行车道（“翡翠项链”）
- 高明跟江河连接在一起：通过整合新建和现有的公共交通系统
- 高明跟江河、丘陵及山脉连接在一起：人行道和视觉走廊
- 住在居民区的职工可以通过步行径和自行车径上班。

在高明规划

figure 5: Site Plan- Gaoming　　图 5 ：高明总体规划

figure 5: Site Plan- Gaoming 图 5：高明总体规划

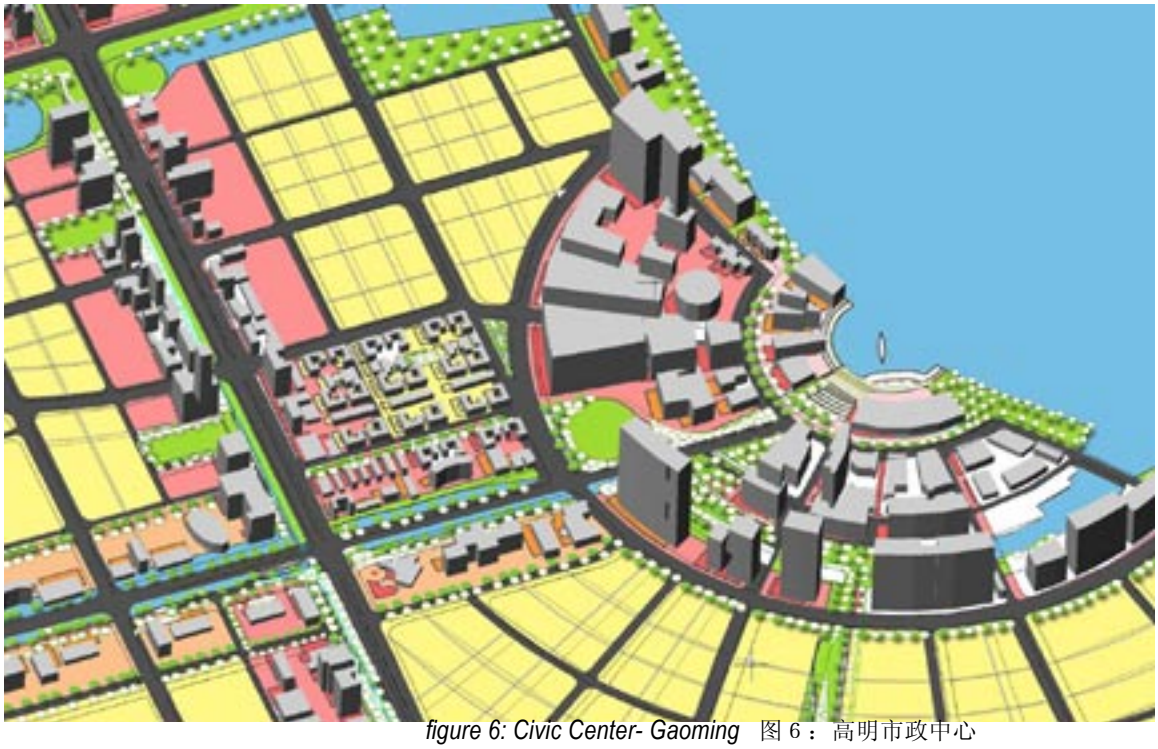


figure 6: Civic Center- Gaoming 图 6 ：高明市政中心

figure 7: View Eco-Corridors 图 7 ：生态景观轴

figure 8: Urban Boulevards and Scenic beauty 图 8 ：都市干道风景

Commercial uses clustered along main road, with a mixing of uses at intersections in residential neighborhoodsGreen fingers running from river to canal, bringing water into the cityNew Civic Center neighborhood acts as a gateway to the city from the riverBuilding heights are stepped to maximize river views

figure 9: Urban Waterways 图 9 ：都市水道

figure 10: Linear parks 图 1 0 ：直线公园

NETWORK CITY GAOMING
高明:网络之城

Project Team: Kai-yan Lee, Jeremy Shaw, and Rongtao Xu

We envision a Gaoming that reconnects with its past as it re-invents the future. In this vision, Gaoming draws on a history based on water in a diverse natural landscape of forests, rivers and hills. It also t akes advantage of an economic opportunity in the present, while protecting the health and wealth of the future generations.

我们设想中的高明，是在重新建造将来的同时，连接着过去。在这个设想中，高明的历史源自于水，而水又源自于由森林、河流、山丘所组成的丰富多样的自然地貌。在保护下一代的健康和财富的同时，高明也在充分利用它现在的经济优势。

figure 1:
Levies have defined the lowland landscape in Gaoming for centuries. Above, the succession of levy-building around the Gaoming Central Area (red circle). (Source: Marks 1997).

图 1 ：水提在过去的几个世纪中不断地改造着高明的低洼地。上图为高明中心地带（红点）附近逐渐兴建的水提。

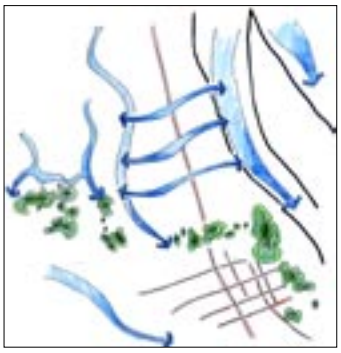


figure 2:
Network City Gaoming uses this history of levies and canals as its conceptual starting point. This figure shows a representation of the present-day water and urban network.

图 2 ：网络之城以高明本地的水提和河道为设计概念起点。上图抽象显示了现有水系和道路网络。

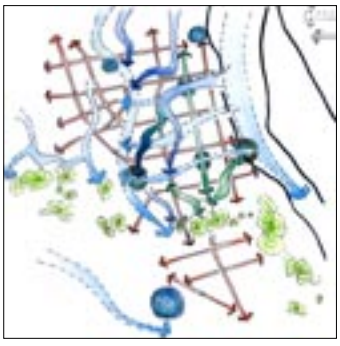


figure 3:
Diagram of the same concepts applied to blue, green and urban networks.

图 3 ：类似的概念草图描绘了蓝色，绿色和都市网络。

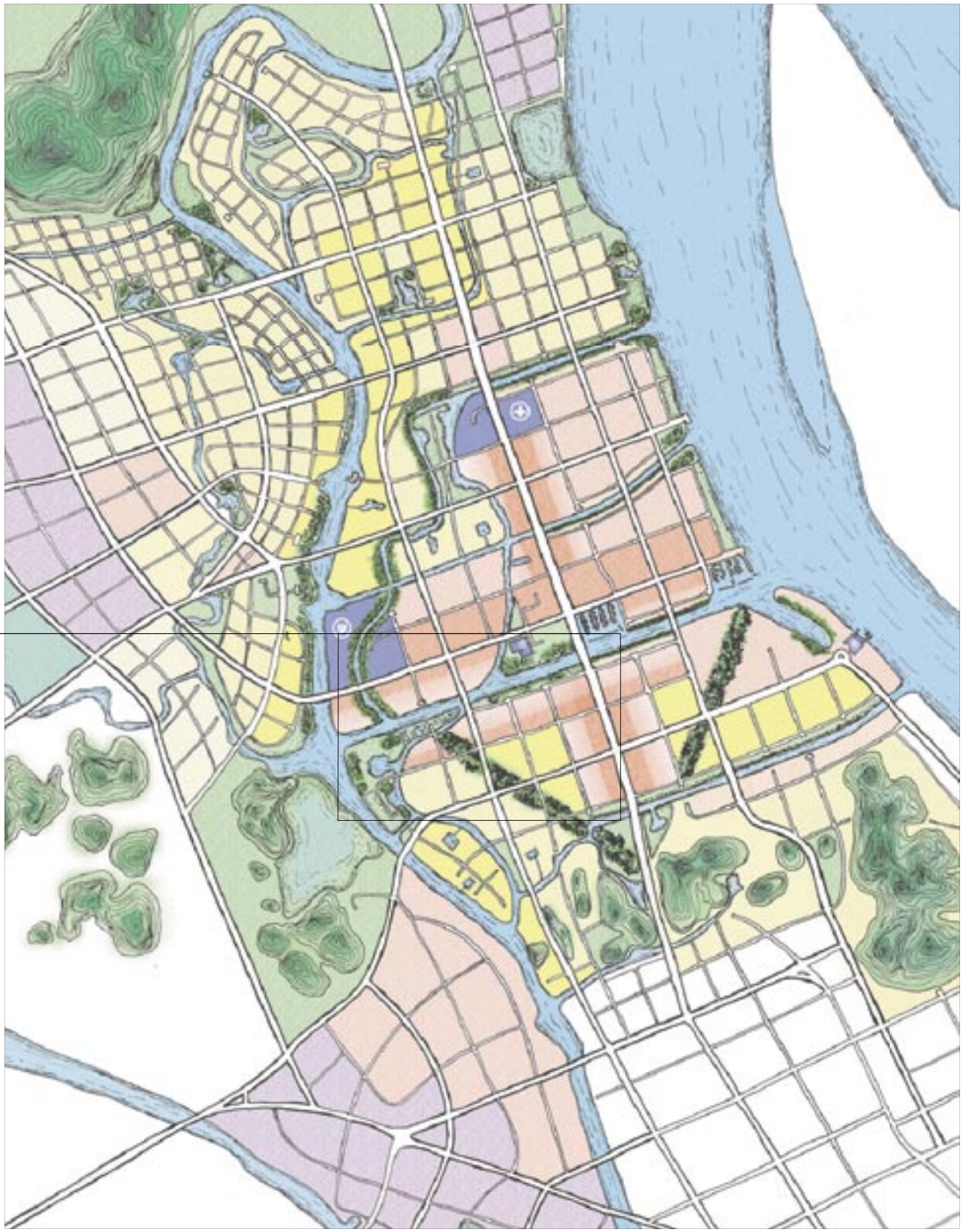
MASTER PLAN

The majority of central Gaoming is situated between the West River and Xiu Li River - both branches of the Pearl River. After centuries of wash and sediment, the Pearl River bestows a unique and rich water network upon the region - the prominent "Blue Network." In addition, low hills scattered throughout Gaoming compose another defining natural system, the "Green Network." Since their settlement hundreds years ago, features created by people became prominent, shaping today's "Urban Network." These independent networks are currently fragmented. If planned as complementary networks, each system can be enhanced in its own right, while making Gaoming stronger, more sustainable and a unique place in the world. This plan envisions just that: a Gaoming where blue, green and urban systems are cohesive, coordinated and planned sustainably for its people.

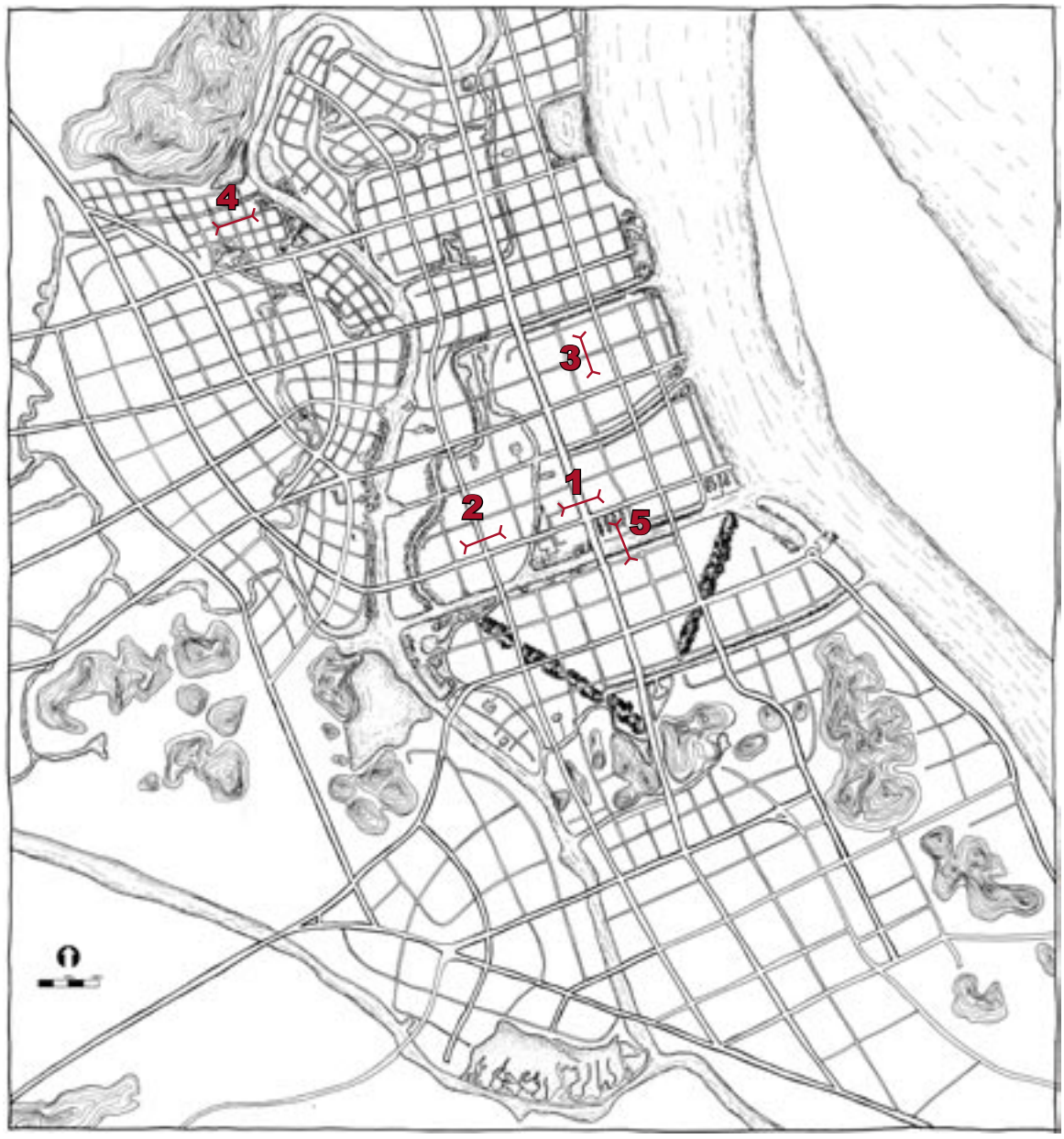
总体规划：

高明的中心区位于西江和秀丽河之间，它们都是珠江的支流。历经千百年的冲刷和沉淀，珠江流域孕育出其独特而丰富的水域网络现有明显的“蓝色网络”。此外，散落于高明的小山丘形成了另一个显著的自然系统：“绿色网络”。数百年前高明就有人居住，因而由人类活动而形成的明显特征组成了今天的“都市网络”。这些相互独立的网络现在都还是支离破碎的。如果能够作为互补的网络来统筹规划，每个网络都能充分发挥自己的长处，同时也使高明成为世界上一个独具特色的城市，更加强大，发展更具可持续性。这个方案的设想是：把高明的蓝色网络、绿色网络、和都市网络融为一体，相互协调，为市民做出可持续的发展规划。

CENTRAL NODE, SECOND ALTERNATIVE 中心节点：第二方案



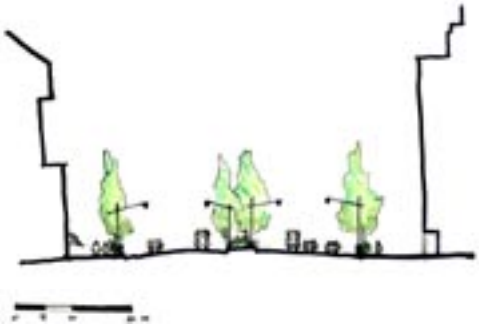
Urban Network 都市网络



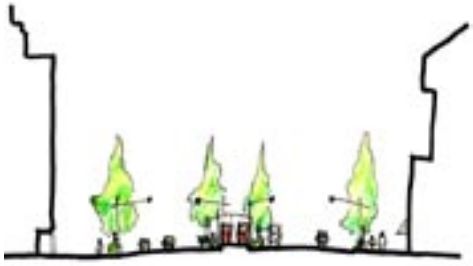
The urban network weaves into the natural Green and Blue networks, connecting both green and blue nodes, cultural spaces and corridors. Building heights and block sizes reinforce the natural nodes, such as decreased building heights along the green visual corridors. Diverse block sizes and neighborhoods provide choice and identity in the ways communities interact with their natural and urban landscape

城市网络迂回穿行于自然的绿色和蓝色网络之中，连接绿色和蓝色的节点以及文化空间和走廊。建筑高度和小区强化了自然节点，比如降低绿色视觉走廊边的建筑高度。多样化的街道规模和社区结构为其居民和自然及城市景观之间的互动提供了不同的选择及个性。

Urban Network 都市网络



- 1 -
REGIONAL BOULEVARD
区域性大道

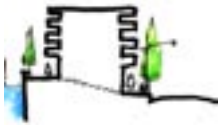


REGIONAL BOULEVARD
(2ND ALTERNATIVE)
区域性大道（变化设计）

- 2 -
LOCAL BOULEVARD
本地街道

- 3 -
MIXED-USE STREET
混合使用街道

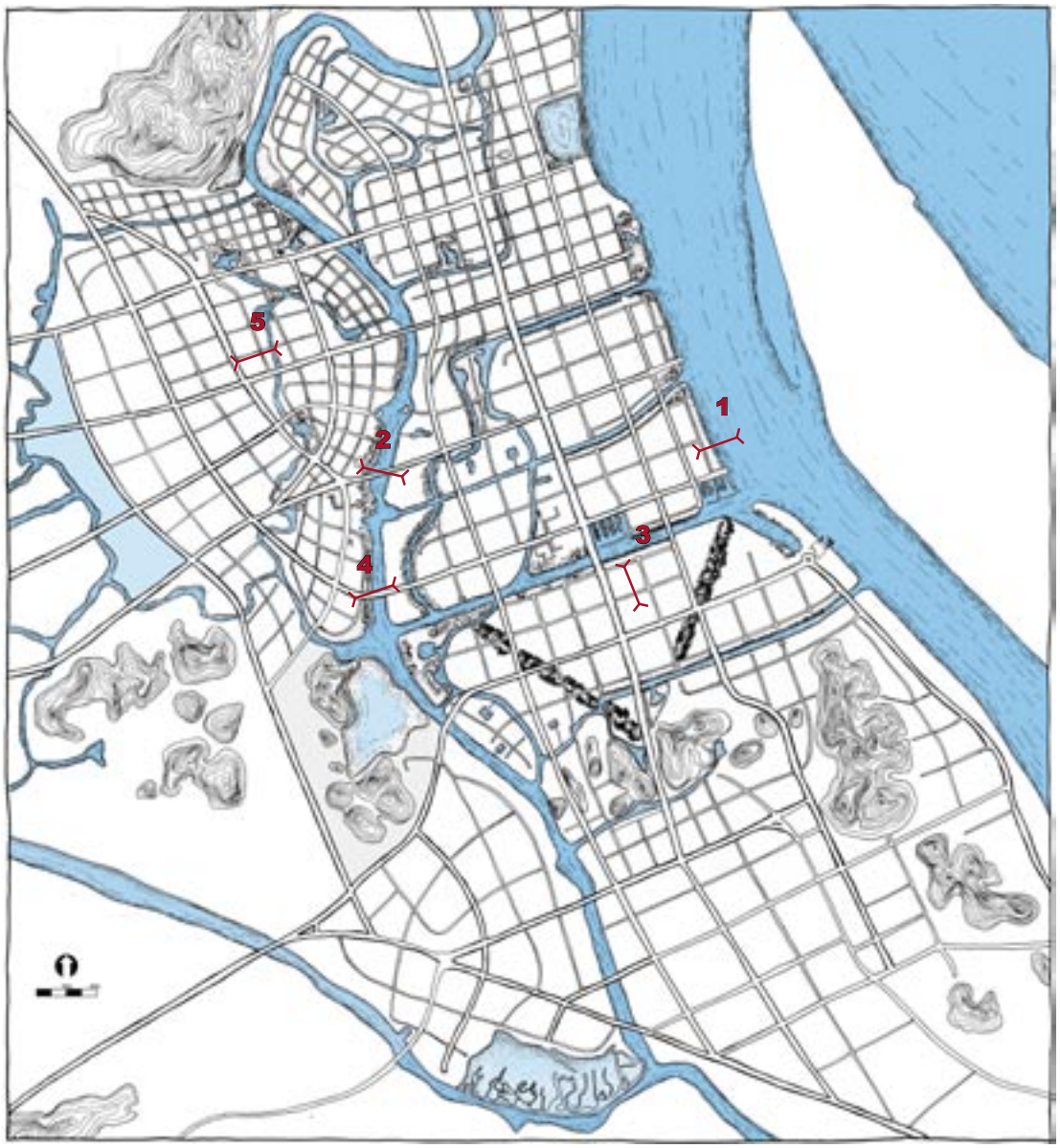
- 4 -
RESIDENTIAL STREET
居民区街道



- 5 -
CANAL COMMERCIAL
河道商业

figure 5: Street Types 图 5 ： 街道类型

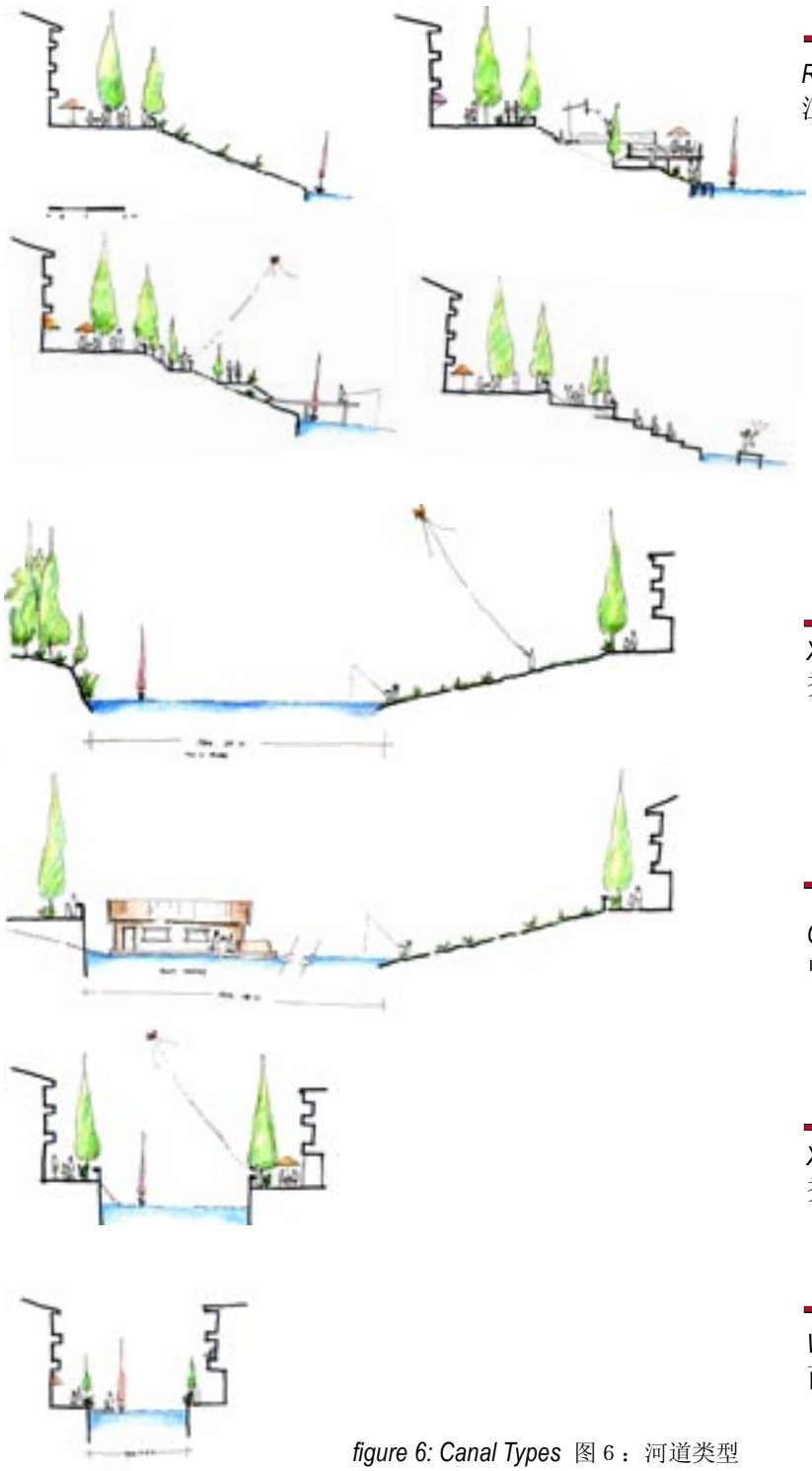
Blue Network 蓝色网络



Reintroducing water to the site is critical to making Gaoming a Model Water City. This vision imagines Gaoming's history of water inspiring a naturally beautiful, efficiently-planned, cultural landscape. Along the east-west canal and "cultural axis," locals and visitors can stroll, paddle or take a water taxi. Fish ponds are preserved for the Ji-tang eco-education center, stormwater remediation and neighborhood ponds. Water locks at the river edge control the water flow and help manage the stormwater and recreational amenities.

重新引水入城对打造高明现代水城至关重要。这个设想利用高明的水历史创造一个自然美丽布局得当的文化风景区。沿着东西向的运河以及“文化轴线”，市民和游人可以漫步，泛舟或乘水上巴士游览高明的风光。鱼塘被保护用作基塘生态教育中心，雨水调控社区池塘。河流入口的水闸控制着水流，有助于控制洪水和管理娱乐休闲设施。

Blue Network 蓝色网络



- 1 -
RIVERFRONT ALTERNATIVES
江滨不同设计

- 2 -
XIU LI RIVER RESIDENTIAL
秀丽河住宅区

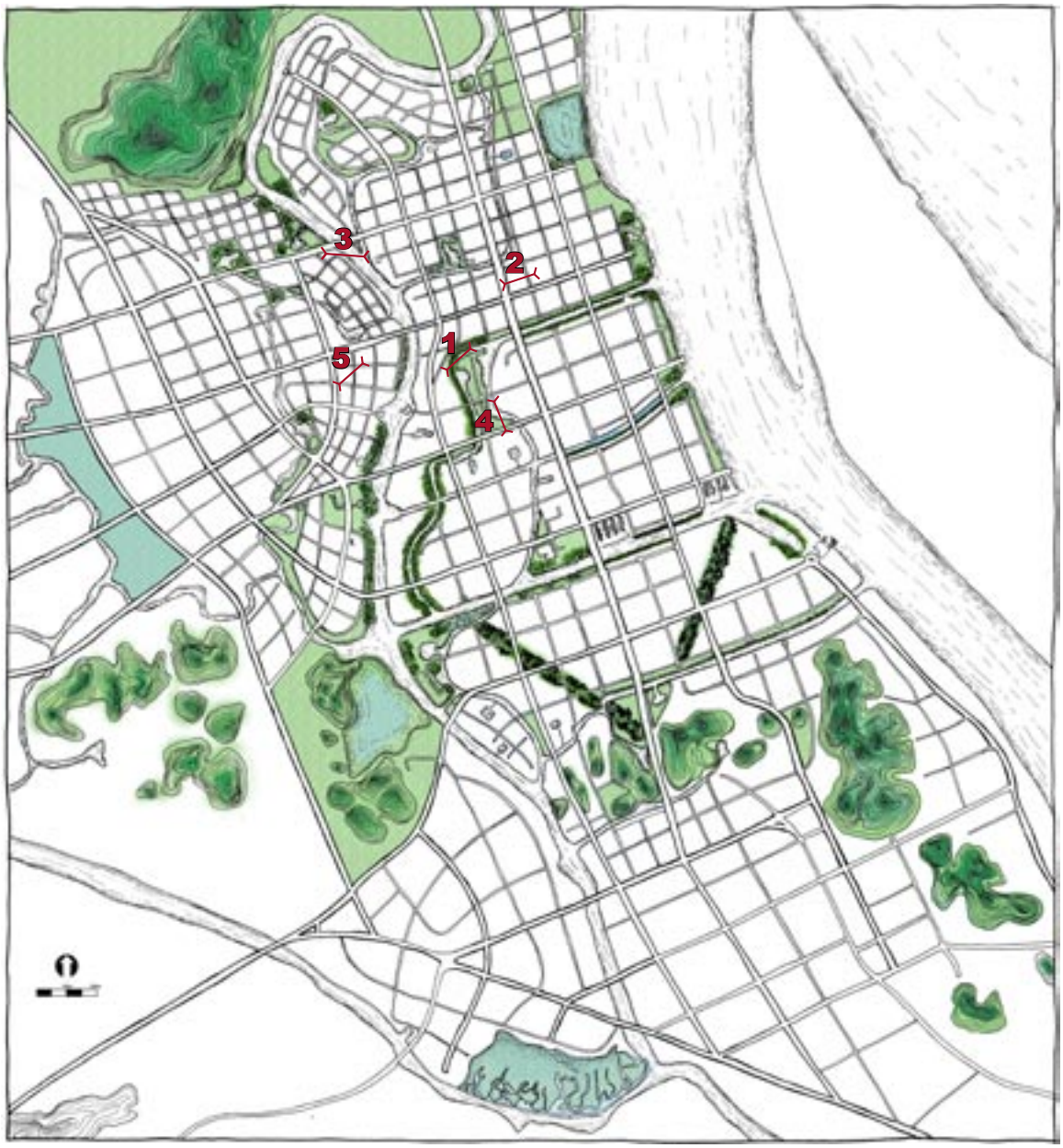
- 3 -
CENTRAL CANAL
中央运河区

- 4 -
XIU LI RIVER COMMERCIAL
秀丽河商业区

- 5 -
WESTERN CANAL NEIGHBORHOOD
西运河社区

figure 6: Canal Types 图 6 ：河道类型

Green Network 绿色网络



The Green System emphasizes green space along existing canals as well as new green corridors linking major nodes. It connects Gaoming's existing hills into a coordinated network of parks and amenities. Neighborhood wetland ponds, parks and corridors also serve as nodes in the Green System.

绿色网络在强调运河两岸现有的绿地同时，也关注连接主要景点的新绿色通道。它把高明现有的山丘连入衔接到公园和休闲设施网络中。社区湿地池塘、公园和绿色通道也构成绿色网络中的节点。

Green Network 绿色网络

- 1 -

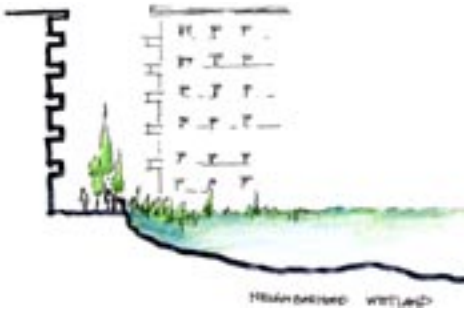
GREEN VISUAL CORRIDOR
绿色视觉走廊

- 2 -

CENTRAL AXIS GREEN
中央绿色轴线

- 3 -

URBAN GREENWAY
都市绿色径



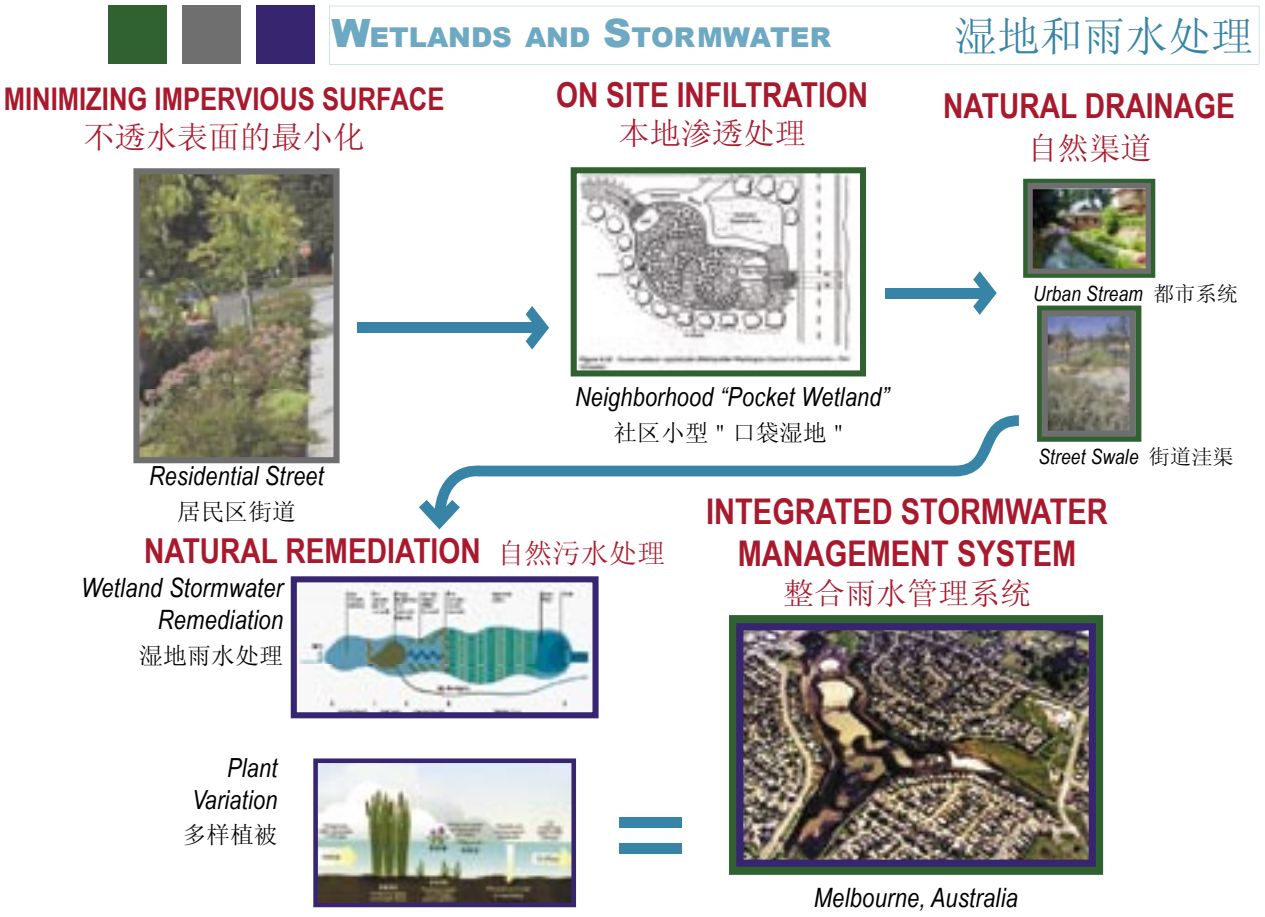
- 4 -

NEIGHBORHOOD CANAL WAY
社区水道

- 5 -

CENTRAL GREEN NODE
中央绿色节点

figure 7: Green Space Types 绿色空间类型



The West River, its clean water, and an extensive canal network make Gaoming a unique place. But with increasing urbanization, stormwater runoff is a potential threat to the water system. Pesticides, automobile-related chemicals and garbage often flow through urban stormsewers, are expensive to clean and can pollute in irreversible ways.

Gaoming now has the very rare and special opportunity to prevent this pollution, to reduce infrastructure costs and to create multiple recreation amenities. In this vision, stormwater management naturally integrates into the Blue, Green and Urban Systems all the way from a rain drop to the river. Management of such a system should include:

1. Minimizing Impervious Surfaces
2. On-site pre-treatment, infiltration and reuse systems
3. Natural drainage and conveyance (swales, stream)
4. Natural Remediation (wetlands)

西江的清水、广阔分布的运河网络是高明的特色。但是随着城市化的扩张，洪水泛滥成为对高明水域的潜在威胁。杀虫剂、汽车释放的化学物质和垃圾经常会随着城市雨水流出，清理这些污染需要很高的费用，并且这些污染物会造成无可挽回的污染。高明现在有很好的机会来防止这种污染，那就是减少基础设施建设费用，建造多功能的休闲场所。这样，洪水处理从降雨到河水就自然而然的融入到蓝色、绿色和城市网络中。对这一网络的处理包括：

1. 不透水表面的最小化
2. 本地要有预先处理、渗透和再利用系统
3. 自然的排水和水流（沼泽地，小溪）
4. 自然的处理措施（湿地）

WATER CULTURE 水文化

Adding onto the wealth of the three physical systems is the historical dimension of the local people. As the local people have inhabited Gaoming for hundreds of years, many aspects of their lives are dearly related to the Gaoming environment and water. Gaoming people use or have used water for food, drink, trade, commuting, entertainment and ceremonial purposes. However, modernization and urbanization have re-shaped their relationship with the water in unprecedented ways. The vision reintroduces this centuries-old relationship with water while continuing to modernize and develop Gaoming yet again in new, unprecedented ways.

除了以上三个硬件网络，当地的民风习俗也是重要的资源财富。高明建城已经有几百年的历史，当地居民生活的方方面面已经和高明的环境和水紧密的联系在一起。高明人利用水，或不得不利用水做耕种粮食、煮食饮用、开展贸易、通勤、娱乐以及举办仪式。然而，现代化和城市化以不可预见的方式重塑了人们与水的关系。这个设想在以崭新的、不可预测的方式继续高明的现代化和发展的同时，重新塑造了几百年来人们与水的古老关系。

PHASING 分阶段发展

Phase I
80,000 People
第一阶段：8万人

Phase II
150,000 People
第二阶段：15万人

Phase III
215,000 People
第三阶段：21.5万人

Axes and Nodes 主轴和节点

CANAL AXIS

运河主轴

It is the cultural axis, highlighting the local people's connection with water. Upon entering the axis from the West River, modern water amenities and a signature statue become the symbols of the modern era of local water culture. A landmark bridge and public walk overlay a waterlock, which protects the canal from the West River. Further along the canal, the boat market reintroduces an historic and cultural event that has ceased to exist. The cultural passage reaches its climax at the Jitang eco center, a small bay, and a constructed wetland congregate. The Gaoming City Hall sits prominently at the head blue and green nexus, at the end of a green visual corridor and in the center of the new city. Building heights step down as they approach the canal to maximize views of the water and surrounding public spaces.

这是一条文化主轴，强调了居民与水的联系。一旦从西江进入轴线，现代的亲水休闲场所和著名雕塑成为当地水文化现代化的标志。标志性的大桥和步行道与水闸交错。水闸保护了运河不受西江的影响。另外，运河沿岸的船市场重现了这个已经消失的历史文化活动。文化通道在基塘生态中心达到高潮。基塘中心是一个小港湾，聚集了很多人工湿地。高明市政府就位于绿色和蓝色网络的交接处，也是一条绿色景观道的尽头和新城的中心。在靠近运河处，建筑的高度有所降低，以便最好展示水景和周围的公共场所。

URBAN AXIS

The urban axis is the main urban center for Gaoming at the confluence of the high-rise commercial strip, civic buildings and the central canal. Economic, civic and cultural role of this area.

都市主轴

都市主轴是高明作为迅速崛起的经济带、市政建设和中心运河交汇处的城市中心，承担着这一地区的经济、市政和文化中心的角色。

Axes and Nodes 主轴和节点

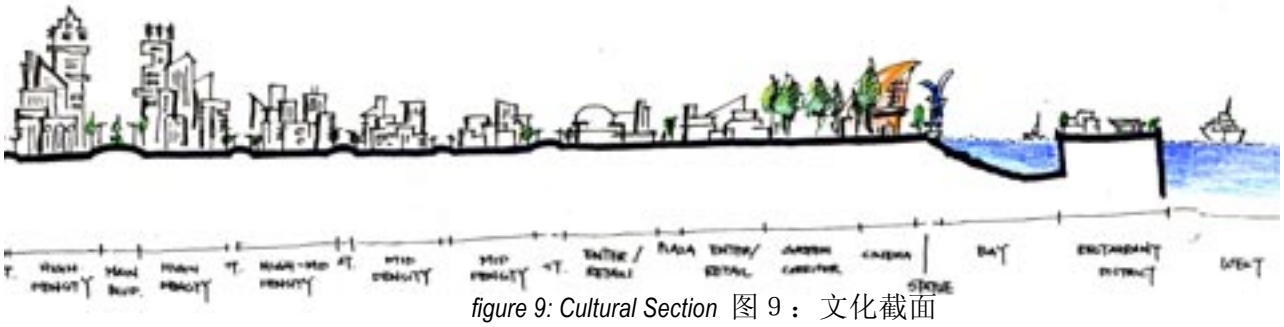


figure 9: Cultural Section 图 9 ： 文化截面

WEST RIVER NODE

The dramatic gateway and conclusion of the cultural axis, this node opens Gaoming to the Pearl River Delta and beyond. An entertainment and cultural center, ferry service and distinctive public art and infrastucture create a strong destination for the people of Gaoming and the entire Delta.

西江节点：西江是高明重要的门户和文化主轴的端点，这个节点把高明引入珠江三角洲及其他地区。西江作为娱乐、文化中心，拥有渡船服务，独特的民间艺术和良好的基础设施，使得其成为高明市民甚至是整个珠江三角洲人民的向往之地。

在高明规划

CONCLUSIONS AND REFLECTIONS
综述及思考

This planning studio focused on planning and design options for the proposed new central area along the West River in Gaoming. Of particular interest was the exploration of new ways of integrating water and hydrological factors into a modern city and its many systems including watershed and natural ecosystem protection, recreational activities, housing, transportation, and tourism.

这个规划组着重于规划和设计西江畔的新中心地区。其中特别关注的是探索新的方式，用以结合水文要素和现代城市以及它的各种系统—包括水域，自然生态系统保护、娱乐活动，住宅、交通、以及旅游观光等等。

The disciplinary differences of the students and MIT's distance from the site posed the greatest challenges to the class. However, through continued discussion and feedback, the studio successfully analyzed the existing site conditions and explored a number of policy and design alternatives for themajor infrastructure systems of Gaoming. This document represents the collective understanding, analysis, and experience of the students in the class.

学生们学术背景的差异和远离场地均对课程造成了很大的挑战。但是，通过持续不断的讨论和信息的反馈，规划组成功地分析了场地的现有状况，并且探索出了一些政策上的和设计上的解决办法。处理高明的主要下部构造系统。这个书面文件代表了全班学生集体的认识、分析和经验。

The students' commitment to their client, the city officials of Gaoming, and to Gaoming's long-term goal of becoming a sustainable, modern water city drove their work throughout the semester. The students present this book and the recommendations contained herein as a first step in an ongoing planning process that will ensure Gaoming's viabilty and the city's economic, environmental, and equitable sustainability in the years to come.

学生对高明市政府的承诺，以及将高明建设成一个可持续发展的现代水城的决心一直贯穿在整个学期的工作中。学生撰写的这本书包含了建议如何可以令高明在未来的发展中在环境、经济和公平等方面可以保持生命力并持久地成长。

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